

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

**THE IMPACT OF AFRICAN GROWTH AND OPPORTUNITY
ACT ON SUB-SAHARAN AFRICA COUNTRIES' EXPORT TO
THE UNITED STATES OF AMERICA**

By

Yeshwas Admasu

**A Thesis Submitted to the School of Graduate Studies of Addis
Ababa University in Partial Fulfillment of the Requirements for
the Degree of Master of Science in Economics**

June, 2011

Addis Ababa

ACKNOWLEDGEMENTS

I am very grateful to my advisor, Dr. Alemayehu Geda for his encouragement, wisdom and generosity in commenting and suggesting throughout this thesis work. He has given me an extensive, constructive and very helpful comment. Further, he has shaped my way of thinking about many issues and hence he will remain to be my inspiration for further research work and certainly in my future career.

I am happy to give special thanks to Debremarkos University and Addis Ababa University for sponsoring and allowing me to attend the M.Sc. Program in economics. I also owe many thanks to African Economic Research Consortium (AERC), which has sponsored me the three months stay at the Joint Facility for Electives (JFE) in Kenya and funded my thesis work. It is also my pleasure to forward my gratitude to the community of Economic Commission for Africa (ECA) library and Staffs’.

I am also very much indebted to my colleagues and friends, who helped me a lot in doing this thesis work. I especially thank Tseganesh Wubale, Ephrem Sisay, Gebreyesus G/Hiwot and Workineh Asmare for their time and thoughtful suggestions.

Last, but by no means least, my heartfelt gratitude goes to my families who have been on my right hand side since the very beginning of such a long academic journey with a multitude of support for which I lack words to exhaustively list down.

TABLE OF CONTENTS

Title	Page
Acknowledgements.....	i
Table of Contents.....	ii
List of Tables.....	v
List of Figures.....	v
List of Appendices.....	vi
Abbreviations and Acronyms.....	vii
Abstract.....	viii

CHAPTER ONE:

INTRODUCTION	1
1.1 Background.....	1
1.2 Statement of The Problem.....	3
1.3 Objectives of The Study.....	4
1.4 Scope and Limitations of The Study.....	4
1.5 Significance of The Study.....	5
1.6 Organization of The Thesis.....	5

CHAPTER TWO:

Review of the Literature	6
2.1. Theories of Preferential Trade Agreements.....	6
2.1.1. Old Trade Theory.....	6
2.1.2. New Trade Theory.....	8
2.2. The Creation of AGOA.....	9
2.3. Critical analysis of AGOA.....	10
2.4. The Gravity Trade Model.....	13
2.5. Gravity Model and Bilateral Trade.....	16
2.6. Empirical Studies on AGOA.....	22

CHAPTER THREE:

US A- Sub-Saharan Africa trade profile.....	26
3.1. Total Trade between AGOA Countries and USA.....	27
3.2. Total Export to the USA under AGOA by Product Sectors.....	29
3.3. Utilization of AGOA by Product Sector.....	32
3.4. Leading Exporters of AGOA Countries to the USA.....	34

CHAPTER FOUR:

Methodology.....	38
4.1. Theoretical Framework	38

4.2. Empirical Model and Data Sources.....	41
4.2.1. Empirical Model.....	41
4.2.2. Data Source.....	45
4.3. Estimation Methods	46

CHAPTER FIVE

Empirical Analysis and Results.....	50
5.1. Descriptive Results.....	50
5.2. Econometric Results.....	57
5.2.1. Tests of the Model.....	57
5.2.2. The Effect of AGOA on SSA Export.....	60
5.2.3. Interpretation of Economic Size, Population and other Variables.....	62

CHAPTER SIX

Conclusions and Recommendations.....	65
6.1 Conclusions.....	65
6.2 Recommendations.....	67
REFERENCES.....	69
APPENDICES.....	79

LIST OF TABLES

Title	Page
Table 3.1 Total Exports to the U.S. under GSP and AGOA by Product Sectors.....	30
Table 3.2 Utilizations of AGOA by Product Sector.....	33
Table 3.3 Leading Sub-Saharan African Suppliers to the United States.....	35
Table 4.1 Variable names, definitions and measurements.....	44
Table 5.1 Pre and Post AGOA average exports for countries which show success.....	51
Table 5.2 Pre and Post AGOA average export for countries which shows no success.....	54
Table 5.3 Arellano-Bond test for zero autocorrelation in first-differenced errors.....	58
Table 5.4 Dynamic Panel Data Estimation: System GMM results.....	61

LIST OF FIGURES

Title	Page
Figure 3.1: Total US imports by Preference programme (2009).....	26
Figure 3.2 Total trades between US and AGOA countries (2001-2010).....	28

LIST OF APPENDICES

Appendix A. List of AGOA Beneficiaries.....	79
Appendix B. Objectives of AGOA.....	81
Appendix C. AGOA Eligibility Criteria.....	82
Appendix D. Average Total Export for Pre and Post-AGOA Period, Average Export under AGOA and Percentage of AGOA Export.....	85
Appendix E. Summery Statistics of the Data.....	86
Appendix F. Correlation Matrices.....	87
Appendix G. GMM Estimation Results: One Step.....	88
Appendix H. GMM Estimation Results: Two Step.....	89

ABBREVIATIONS AND ACRONYMS

AGOA- African Growth and Opportunistic Act

ARDL- Auto Regressive Distributed Lag

CIA- Central Intelligence Agency

CEPII- Institute for Research on the International Economy

EU- European Union

FTA- Free Trade Area

GDP- Gross Domestic Product

GMM- Generalized Method of Moments

GSP- Generalized System of preferences

HTS- Harmonized Tariff Schedule

LSDV- Least Square Dummy Variable

OECD- Organization for Economic Cooperation and Development

PTA- Preferential Trade Agreements

SSA- Sub-Saharan Africa Countries

US- United States of America

USAID- United States Agency for International development

USDOC- United States Department of Commerce

USITC- United States International Trade and Commissions

USTR- United States Trade Representative

ABSTRACT

The African growth and opportunistic act (AGOA) is a US initiative which provides preferential access to Africa's product in US market since its enactment in 2000. This thesis seeks to assess the impact of AGOA on SSA countries total export to US. For this purpose, a dynamic panel data gravity model with endogenous explanatory variable is used and the generalized method of moment estimators is employed. The estimation is conducted for a panel of 33 AGOA eligible SSA countries over a period of nine years (from 2001 to 2009).

The result shows a positive and significant effect of AGOA on overall export of SSA countries to US, but the coefficient is not different from zero. Therefore, the Act is essential for SSA long-term economic growth and poverty reduction. This study recommends the elimination of demand side constraints as well as targeting on the agricultural sector and extending the Act beyond 2015.

Keywords: AGOA, Dynamic Panel Data, Export of SSA, Gravity model, GMM estimators, preferential access, and Sub-Saharan Africa and United States.

CHAPTER ONE

INTRODUCTION

1.1. Background

The African Growth and Opportunity Act (AGOA), which was introduced by the American president in May 2000, is a trade and investment policy that grants duty-free access to many products from Sub-Saharan African countries. This act is a US initiative which extends bilateral trade preferences to eligible SSA countries and is an extension of the generalized system of preferences (GSP) programme: under GSP, some products of some countries can be imported into the US duty free (Nouve, 2005).

AGOA is meant to increase trade and investment opportunities and benefits for qualifying SSA countries with the United States of America. In particular, the Act intends to benefit the textile industry based on the ground that this industry has the potential to contribute positively to employment creation, as it is labor intensive and requires only modest investment (USITC).

AGOA is based on the assumption that the increased trade and investment opportunities will result in economic growth of SSA countries, which will lead to poverty reduction in this countries (Mattoo, Roy and Subramanian, 2002). Also, the Act offers substantial incentives for African countries to liberalize their economies by following “free market” policies with the hope of creating conducive environment for trade and investment. Further, it provides improved access to US credit and technical expertise. In return, beneficiary countries are committed to promote political and economic stability, improve their economic policy environment, participate

more actively in the globalization process, and foster human and workers' rights in Africa (Mattoo, Roy and Subramanian, 2002).

The programme establishes a high-level dialogue on trade and investment between the US and SSA countries via a US-SSA Trade and Economic Forum. The legislation was enacted after years of debate and negotiation in the United State and elsewhere about "aid vs. trade" and what could be done to assist the low income countries in SSA (Emmanuel, 2007). Generally, it is accepted that trade could play an important role for SSA countries. Economically, trade offers shorthand long term opportunities to improve economic efficiency and raise incomes. Politically, trade also can help reinforce domestic reforms and lead to greater stability and peace.

AGOA has been amended three times, since its inception in 2000, to extend the preferential access for export of beneficiary SSA countries. The first amendment was made in 2002; the next was in 2004 and the last was in 2006. The second amendment in 2004 extended this preferential access to 2015 (www.agoa.info).

Currently, 41 SSA countries are declared eligible for benefits under the programme. The products eligible for duty free access to the US market under AGOA, among others include textiles, footwear, luggage, handbags, watches, and flatware. The Act authorizes the President of US to remove countries and/or products from the list if they are not making progress toward the conditions stipulated, or if there are import surges that are causing or threatening to cause damage to the US industry (USDOC, 2007).

1.2. Statement of the Problem

AGOA was initiated by the Clinton Administration as part of its “trade not aid” economic philosophy towards Africa. The subsequent Bush Administration maintained and expanded AGOA provisions, which are currently in their tenth year of existence. As its name signifies, the purpose of the Act is to promote African bilateral trade with the United States. Eligible Sub-Saharan Africa countries could benefit from preferential tariffs on their exports to the US, provided they are committed to and making progress towards democratic governance, poverty reduction and creation of a business-friendly economic environment (www.agoa.info).

AGOA is similar to other preferential market access programs and may create a policy induced “comparative advantage” for SSA exports. The success of the program in promoting export growth in the region depends on how compatible the commodities are under AGOA with the export profiles of countries in the region and on the response of countries in taking advantage of the opportunities. This in turn depends on the AGOA program incentives and the flexibility in the economic structures in different countries to transmit the incentives to producers of exported commodities.

This paper attempts to address three questions. The first question is what is the impact of AGOA on SSA countries total export? Another question is, how well did countries is using the provision in AGOA? The last question is, in the short time the program has been in place, which countries have been able to take advantage of the program and conversely, why haven’t some countries taken advantage?

1.3. Objectives of the Study

The general objective of this paper is to examine the impact of African Growth and opportunity Act on Sub-Saharan Africa countries total export to US and there by contribute to the exciting literature.

Specific objectives;

- To examine whether the beneficiary countries are using the chance or not
- To estimate the impact of AGOA on eligible SSA countries export to United States of America
- To draw conclusion and recommendations

1.4. Scope and Limitations of the Study

This study is delimited to the assessments of the impact of AGOA preferential arrangement on Sub-Saharan Africa countries total export to the United States. For this purpose the study uses 33 AGOA eligible SSA countries and a period of nine years. The period ranges from 2001 to 2009. Since AGOA is signed in 2000 and came to enactment in 2001, the period 2001 is used as a starting year.

The year 2010 is not included in this study because of data constraint. Moreover, because of time and data constraints this study does not intend to deeply investigate the effect of AGOA on each country and each product sector. Data inconsistency is the other problem that this study suffers from.

1.5. Significance of the Study

This study provides important contribution. Firstly, it provides information on AGOA and the SSA-US trade overview. In addition it gives literature review of the existing study on AGOA. Further, the study indicates SSA countries which are using the chance given by US under AGOA and those which are not using the chance. Lastly, it provides recommendations on the basis of the conclusions, which helps SSA countries to better use the preference scheme given by US under AGOA.

1.6. Organization of the Thesis

This thesis is organized in six chapters as follows. The first chapter has already introduced the study area of investigation. Chapter two provides the theoretical literature on AGOA with gravity model and the empirical studies on AGOA. In chapter three, a brief overview of SSA-US trade profile is presented. In chapter four, the theoretical and empirical model is specified with the estimation methods employed in the study. Chapter five provides the descriptive statistics and the econometric results as well as the discussions on the results. Lastly, in chapter five the conclusions and recommendations are presented.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theories on Preferential Trade Agreements

2.1.1. Old Trade Theory

Trade theorists have reached a consensus on the welfare enhancing nature of global free trade. According to Adam Smith, free trade enhances the wealth of nation because it permits the best allocation of resources across national borders. On the other hand protectionists (mercantilist) interfere with this optimal allocation of resources, reduce the size of the market and hinder an appropriate division of labor there by reducing national income. However, the Heckscher-Ohlin-Samuelson theoretical framework indicates that under free trade factors of production will be allocated among countries in consistency with comparative advantage. Such a reallocation of resources will increase efficiency and thereby increase welfare. Preferential trade agreements introduce additional complexity because liberalization is taking place in a second best world, where some distortions are eliminated like tariffs within the PTA, while other remain e.g. other intra-PTA domestic policies and tariffs on non-PTA trade (Burfisher, Robinson and Thierfelder, 2003).

Several PTAs contain selected elements of each of Free trade areas and custom unions in addition to various aspects of deep integration. According to Burfisher, Robinson and Thierfelder (2003), under PTAs there are trade creations, trade diversions and terms of trade changes. Trade creation occurs when a PTA member increases imports from a lower-cost PTA partner, and its own high-cost domestic production declines. There are also consumer benefits because they can

purchase goods at a lower price than the domestic variety. Lower prices increase consumer income, and by increasing demand, this effect may lead to increased imports from both PTA members and non-member countries.

Trade diversion occurs when intra-PTA trade replaces imports from more efficient non-member countries as a result of the PTA's tariff preferences. Trade diversion is mainly a cost to PTA partners that must pay a higher price for their imports, but it is also costly for outside countries that lose exports, and may be forced to lower their export prices.

The effect of PTAs on terms of trade depends on the countries power to affect world market prices. When countries involved in a PTA are large enough to affect world market prices, there are terms of trade effects in addition to trade creation and trade diversion effects (Burfisher, 2003). A PTA is likely to improve the terms of trade for its members and worsen them for non-members. Lower demand for non-member imports (because imports from member countries become cheaper due to tariff preference, despite a possible cost advantage of the non-member country) may lead to lower export prices of the non-member country. Furthermore, increased trade within the PTA may lead to a decline in the availability of goods non-members, thereby raising the price of nonmember imports from the PTA and may force the non-member to produce such goods themselves. The deterioration of terms of trade of non-member country is of course the mirror image of the terms of trade improvement experienced by the PTA member. So even if a PTA member loses tariff revenue in connection with a diversion of trade from non-members, these losses may be outweighed by improved terms of trade vis a vis non-members. The effect on national, regional and global welfare depends on the relative size of each of this effect.

2.1.2. New Trade Theory

The new trade theory considers a variety of effects of preferential trade agreements by attempting to integrate the more recent aspects of regional integration. This theory includes analysis of rent seeking behavior, game theory, industrial organization theory and new growth theory. In this theory PTAs are assumed to lead a wide range of effects other than trade creation, trade diversion and terms of trade change. More specially, PTAs are thought to lead to better opportunities for exploitation of economies of scale in a larger market and increased competition.

In addition, there are information, technology and knowledge transfers from developed countries to developing countries that increase productivity; increased investment opportunities in a larger and perhaps more stable trading environment with advanced technologies and hence increase in productivity; exploitation of different factor proportions for parts of the production process; and gains from specialization, i.e. a larger product variety and thereby intensified intra-industry trade (Burfisher, 2003).

According to Ethier (1998), the link between international trade and factor productivity is explained by investment creation. New regionalism may be seen as an integrated part of a development strategy for developing countries that hope that internal reforms and more open trade regimes will attract FDI from developed countries. Moreover, trade-related growth effect through FDI or productivity increases may encourage domestic policy reform creation thereby enhancing the welfare benefits from regional trade agreements.

2.2. The Creation of AGOA

The background to the creation of AGOA lies in US foreign policy of post-Cold War. By the end of the Cold War, America's foreign policy toward Africa was characterized by indifference and there was no coordinated trade policy for the continent (Gambari, 1996). There was virtually no place for Africa except where there were humanitarian catastrophes caused by conflicts or natural disasters. By the end of the Cold War, the US policy toward Africa was characterized by budget cuts and inaction on issues perceived to be controversial (Shraeder, 1996). Budget cuts resulted not only in the reduction of staff in the Bureau of African Affairs but also in the closing of American consulates and embassies in some countries of Africa, such as in Cameroon, Kenya and Nigeria and closing of CIA's operations and withdrawal of its staff in some parts of the continent (Shraeder, 1996). In fact by 1994, Africa's share of total US foreign assistance programs had fallen from 10.3% or \$18.13 billion of its overall budget in 1985 to \$1.36 (or 7.6%) of US overall budget of \$17.99 billion in 1994 (Shraeder, 1996).

From the mid 1990s, America's policy toward Africa shows a gradual shift. President Clinton initiated programs to address some of the problems faced by the continent. The president adopted the "engagement and enlargement" policy with the aim of expanding the community of market democracies through which global order would grow both more prosperous and more secure (Ambrose and Brinkley, 1997).¹

¹ According to Ambrose and Brinkley (1997), the enlargement of the community of market democracies was anchored on: strengthen the community of market democracies, foster and consolidate new democracies and market economies where possible, counter the aggression and support of the liberalization of states hostile to democracy, and help democracy and market economies take root in regions of greatest humanitarian concern.

By US policy of enlargement, domestic growth for Africa depended largely on a foreign policy that promoted global free trade and US exports. Hence in July 1994, Clinton began a series of policy papers which ultimately wove his foreign policy premise of enlargement into the so-called En-En document: The National security strategy of Engagement and Enlargement. (Ambrose and Brinkley, 1997:408).²

The bill which led to the creation of AGOA was opened in 1995, and after a five-year dispute it was passed on May 18, 2000 by the US Congress under the Trade and Development Act Title II which came into force on October 1, 2000.³ It gave the President of the United States the authority to designate a sub-Saharan African country as eligible or to remove it from the list of designated beneficiary countries, or a country considered not to be making sufficient progress or violating the eligibility criteria (Emmanuel, O. (2007)).

2.3. Critical analysis of AGOA

AGOA Critics have pointed out that AGOA is a unilateral trade preference program that provides access to the US market for Sub-Saharan African countries, but it is not a trade agreement. Thus, it is not binding and this characteristic makes it unreliable as America can change or withdraw it at any time. For instance, according to Flatter (2002), all the costs incurred in the infrastructure development would be a loss in the event of AGOA being withdrawn. Furthermore, the rules of origin are unilaterally determined by US congress and are outcomes of

² The central to this policy document was the belief that the line between US domestic and foreign policies has increasingly disappeared-that US must engage actively abroad to open foreign markets and creat jobs for its people.

³ It designated 34 Sub-Saharan Africa countries as beneficiaries and modified the Harmonized Tariff Schedule (HTS) of the US to reflect the apparel and textile trade preferences made available under section 112 of the act.

negotiations among conflicting US interests (Flatter, 2002). This has two implications: AGOA beneficiaries lack power on their ability to fully benefit from AGOA, since they have no influence on the rules of origin. There is also no room for Africans to define their own developmental agenda (Flatter, 2002).

In addition, the uncertainty regarding AGOA's future could make it difficult for the gains, though uneven to be sustained through long term investments and the creation of new regional value chains with the potential to deepen intra-African trade (Karingi, S.N). Despite, the benefits have been uneven in both country and product diversity, as a large number of studies indicates the largest share of US imports from Africa continuous to be oil and other energy related products. The diversification benefits of AGOA have been limited to a few countries that have been able to take advantage of the preferential market access to export non-oil products, with textile and apparel dominates this diversification drive (Laura Paeza).

Furthermore, People who support or represent businesses dominate the US congress and thus their decisions are likely to benefit business interests (Naumann, 2005). One example of this is how the US retailers opposed the delay of quota removal as they stood to benefit from cheap imports (Naumann 2005). According to Naumann, the removal of quotas provides brand names (US retailers) with a better option of production location, which helps to diminish production costs. Thus, US congress fails to accept the request of delay in quota removal for developing countries, but rather allow the demands of US business (Naumann, 2005).

AGOA also faced criticism, especially from US interest groups and international anti-globalization movements. In the US, labor unions and textile lobby groups were mainly

concerned that elimination of trade barriers on textile and apparels would cause in significant loss of jobs (Cooper, 2002; Friedman, 2000a; 2000b). Recently, US fruit growers urged the administration to re-impose a 15.3% import duty on canned pears, claiming that AGOA gave South African pear farmers an unfair advantage over US farmers (Poole, 2002). Opponents have also charged that AGOA benefits will remain essentially illusory for most countries in SSA (Mutume, 1998). Though largely unconfirmed, several restrictions of the current SSA-US trade relationship implicitly support the latter criticism, at least in the short run. First, the SSA's exports to US are dominated by petroleum products and highly concentrated in a few countries. Second, US trade policies generally give a mixed signal to trading partners (Lindsey, 2002). Especially, the price distortions in the world agricultural markets are mostly the result of subsidies to agricultural products and other tariff and non-tariff barriers in OECD countries (Nouve et al., 2002).

Even with these limitations, preferential trade opportunities would generally tend to have a positive effect on total exports from developing countries (Cheng and Wall, 1999 and Rose, 2002). However, their impacts on agricultural exports are less clear, primarily due to high distortions in the world's agricultural trading system. For example, SSA's share in the European agricultural markets has declined despite nearly three decades of trade preferences extended to SSA under several ACP-EC agreements⁴ (Rose, 2002). Thus, to estimate the impact of AGOA on SSA countries total export to USA a gravity trade model is used.

⁴ ACP-EC agreement is the partnership agreement between the members of the African, Caribbean and Pacific Group of States of the one part and the European community and its member states of other part, which was signed on 23 June 2000 in Cotonou, Benin and was concluded for twenty-year period from March 2000 to February 2020, and enter into force in April 2003.

2.4. The Gravity Trade Model

The gravity model is a workhorse tool in a wide range of empirical fields. The gravity model as a baseline model to analyze bilateral trade flows has shown an extensive success in estimating a variety of international trade policy issues ranging from regional trading groups to various trade distortions over decades now (Dick Nuwamanya Kamuganga, 2007).

The gravity equation is one of the most empirically successful in economics. It relates bi-lateral trade flows to GDP, distance, and other factors that affect trade barriers. It has been widely used to infer trade flow effects of institutions such as customs unions, exchange-rate mechanisms, ethnic ties, linguistic identity, and international borders.

The gravity trade model was developed in the 1960s. It has been used in pioneering works by Tinbergen (1962) and Pöynönen (1963). The model, which is widely known for its empirical robustness⁵, is based on a simple and intuitive rationale. It postulates that the volume of trade between two countries is proportional to their economic sizes (capacity to supply exports and to absorb imports) and inversely proportional to costs of trading. The distance between the two trading units has traditionally served as a proxy for trading costs (Lairds and Yeats, 1990).

Besides their empirical robustness, gravity trade models also have strong theoretical foundations both in traditional and in the new trade theories (Wall, 1999; Cheng and Wall, 1999; Rose 2002; Evenett and Keller, 2002). The lack of rigorous theoretical underpinning has traditionally been the major criticism against gravity trade models. However, Wall (1999) indicates that such criticism has been weakened since Deardorff (1998) established a consistency between gravity

⁵ The empirical robustness is often taken, according to Wang (1999), to mean high R-squared

models and variants of traditional trade theories, such as the Ricardian and Heckscher-Ohlin models. Wall (1999) also points to “earlier works by Anderson (1979) and Bergstrand (1985) who derived gravity equations from trade models with product differentiation and increasing returns to scale” (Wall, 1999; p. 35), suggesting that gravity models may also be consistent with the new trade theory pioneered by, among others, Paul Krugman, Elhanan Helpman and Gene Grossman (Kofi Nouve and John Staatz, 2003).

Tinbergen (1962) and Poyhonen (1963) did the first econometric studies of trade flows based on the gravity equation, for which they gave only intuitive justification. Linnemann (1966) added more variables and went further toward a theoretical justification in terms of a Walrasian general equilibrium system, but the Walrasian model tends to include too many explanatory variables for each trade flow to be easily reduced to the gravity equation. Leamer and Stern (1970) followed Savage and Deutsch (1960) in deriving it from a probability model of transactions. Leamer (1974) used both the gravity equation and the HO model to motivate explanatory variables in a regression analysis of trade flows, but he did not integrate the two approaches theoretically.

These contributions were followed by several more formal attempts to derive the gravity equation from models that assumed product differentiation. Anderson (1979) seems to be the first to provide clear microfoundations that rely only on assumptions that would strike present-day readers as absolutely standard.⁶ Anderson (1979) first assumes Cobb-Douglas preferences and then constant-elasticity-of-substitution (CES) preferences. In both cases he made what today

⁶ The cornerstone of Anderson’s theory rested on an assumption that was viewed as ad hoc at the time, namely that each nation produced a unique good that was only imperfectly substitutable with other nations’ goods.

would be called the Armington assumption, that products were differentiated by country of origin.

Anderson and Van Wincoop (2001) is a recent well known effort to micro-found the gravity equations. The basic theory in Anderson and Van Wincoop (2001) is very close the Anderson (1979); the main value added is the derivation of a practical way of using the full expenditure system to estimate key parameters on cross-section data. Since this procedure is difficult, they also use an alternative procedure of using of nation-dummies

Leamer and Stern's famous 1970 book provided some foundations. The best is based on what could be called the 'potluck assumption'.⁷ The expected value of nation-i's consumption produced by nation-j will equal the product of nation-i's share of world GDP times nation-j's share of world GDP. In this way, bilateral trade is proportional to the product of the GDP shares.

The monopolistic competition model of new trade theory has been another approach to providing theoretical foundations to the gravity model (Helpman, 1987 and Bergstrand, 1989). Here, the product differentiation by country of origin approach is replaced by product differentiation among producing firms, and the empirical success of the gravity model is considered to be supportive of the monopolistic competition explanation of intra-industry trade.

⁷ According to 'potluck assumption', nations produce their goods and throw them all into a pot; then each nation draws its consumption out of the pot in proportion to its income.

More generally, the emergence of the ‘new trade theory’ in the late 1970s and early 1980s (e.g. Krugman 1979, 1980, 1981, Helpman 1981) started a trend where the gravity model went from having too few theoretical foundations to having too many.

2.5. Gravity Model and Bilateral Trade

The gravity equation has been frequently and successfully used for nearly thirty years to further understanding of the determinants of bilateral trade flows across countries and, subsequently, to analyze commercial policy measures. Its basic formulation is a log-linear function upon a well-defined set of variables. The explanatory variables are the incomes and populations of both countries and the distance between them. Almost all the empirical works use the log-linear form and these variables, but they add others according to their particular circumstances. On the other hand, theoretical studies regarding the microeconomic foundations of the gravity equation (Anderson (1979), Bergstrand (1985 and 1989) and Helpman and Krugman (1985, ch. 8)) provide rigorous explanations for the log-linear form. Present day situation reveals the existence of a wide consensus, at both empirical and theoretical levels, about three main topics on the gravity equation: the great usefulness of its basic formulation as an instrument for bilateral trade flows modeling, its adequacy to each particular situation by adding the proper variables and, finally, the strong conviction that the log-linear form is the correct specification for it (Kofi Nouve and John Staatz, 2003). The simple empirical form of the equation can be written as in Equation (1) below:

$$\ln x_{ijt} = \alpha(i,t) + \beta \ln z_{ijt} + \gamma w_{ijt} + \varepsilon_{iit} \text{-----} (1)$$

Where z is a vector of traditional gravity model variables (incomes) and w is the vector of additional variables in the augmented gravity equation. The term $\alpha(i,t)$ is a linear function of constant terms. For a panel data, $\alpha(i,t)$ may include country-specific, time-specific and a combined cross-section and time-series intercepts; the parameters β and γ represent vectors of coefficients corresponding the vectors z and w , respectively.

The model adopted in this study is the standard gravity model in which bilateral trade flows and the patterns between two economies is directly proportional to their economic size and inversely proportional to distance apart. Economic size is usually measured by the country's total output (GDP), where as the physical distance separating the two countries is a proxy for trading costs.

In the augmented gravity model the populations in the two countries are included as additional measure of as the size of these countries. The population variable can either appear explicitly in the gravity trade equation (e.g., Cheng and Wall, 2004) or implicitly in the form of GDP per capita (e.g., Frankel, Stein, and Wei, 1995). The empirical gravity trade equation also includes additional geographical and institutional variables that are assumed to facilitate or impede bilateral trade. These include dummy variables indicating country adjacency, common language, membership in custom and monetary unions, as well as bilateral exchange rate.

According to Barry Eichengren and Douglas A. Irwin (1996), it is important to include a variable that captures the historical patterns of trade. Therefore, the lagged dependent variable is included in the empirical gravity trade equation to capture the past trend. The reason for including the lagged dependent variable is that for countries that trade a lot in the past, businesses have set up distribution and service networks in the partner country, which has lead to entrance and exit

barriers due to sunk cost. In addition, consumers have grown accustomed to the partner country's products (habit formation) (Bun, M.J.G and J.F. Kiviet, 2002). It is therefore very likely that current bilateral trade between those countries also high and any temporary disruption to current trade patterns due to war, depression, or temporary tariffs, for example could provide an incentive for exporters to sink the fixed cost of penetrating foreign market (Eichengren and Irwin 1996).

With regards to how past trade pattern affect current trade flows the traditional trade theory and the new trade theories have different ideas. Traditional trade theory provides little guidance on the question of how past trade pattern affect current trade flows. Typically, current trade is related to current factor endowment and current technologies. There is no reason in these models why earlier factor endowments and technologies, much less earlier trade flows, should influence current trade patterns independent of current factor endowments and current technologies. In contrast the new trade theories of trade in the presence of monopolistic competition suggest that initial conditions can influence trade flows in a ways that introduce a role of history (Eichengreen and Irwin, 1997).

There is some empirical evidence consistent with the model that includes the lagged dependent variable. Among these Roberts and Tybout (1995) and Bean (1988) found evidences. Roberts and Tybout (1995), using firm level data from Colombia, examine the role of fixed costs in determining whether a firm exports or not. They find that previous export experience has substantial effect on the probability of exporting, rejecting the view that sunk cost are unimportant. Bean (1988) finds evidence from the UK's trade in the 1980's which suggests

structural change in the UK's export and import patterns as a result of the appreciation of the sterling in the early 1980's.

Eichengreen and Irwin (1997) therefore add lagged trade as a regressor to their gravity model and show that lagged trade is indeed important and conclude that the standard gravity model formulation, which neglects the role of historical factor, suffers from omitted variable bias. Because there are reasons to anticipate a positive correlation between the predominant direction of trade flows in the past and membership in preferential arrangements in the present, there may be a tendency to spuriously attribute to preferential arrangements the effect of historical factors and to exaggerate the influence of the former.

Therefore, from the literature it is concluded that including lagged dependent variable (dynamics) is important to obtain a proper gravity model specification from an econometric point of view. This is in line with the strong economic arguments for the relevance of dynamics in trade relations. Including lagged dependent variable in panel gravity models is not only important from an econometric point of view, but also yields estimation results that are reasonable in an economic sense.

Existing empirical studies used cross-sectional data or panel data to estimate gravity models. Although early studies like Aitken, 1973 and Bergstrand, 1985 used cross-sectional data, most researchers nowadays use gravity models based on panel data (Matyas, 1997; DeGrauwe and Skudelny, 2000; Wall, 2000; Glick and Rose, 2001). According to Maurice J.G. Bun and France J.G.M. Klaassen (2002) one reason for this is that the extra time series observations result in more accurate estimates. Moreover, in a cross-section analysis unobserved country-pair specific

time invariant determinants of trade are necessarily captured by the disturbance term. As these variables are likely correlated with observed regressors, the usually least squares estimator is inconsistent. In contrast, with panel data the effects of such unobserved determinants can be modeled by including country-pair “individual” effects, so that the source of inconsistency just mentioned is avoided (J.G. Bun and J.G.M. Klaassen, 2002).

Static panel gravity models are usually estimated by the LSDV estimator, also called fixed effect or within estimator. LSDV consists of removing the country-pair effects by taking deviations from country-pair means, which is called the within transformation, and then applying least squares on the centered variables. If trade is a static process, so that the static model is correct, the LSDV estimator is consistent for a finite time dimension T and an infinite number of country-pairs N (J.G. Bun and J.G.M. Klaassen, 2002).

The estimation of a dynamic panel mode, if trade is a dynamic process, is potentially more difficult and problematic. The basic reason is that the transformation needed to wipe out the country-pair fixed effects (within or first difference operator) leads to correlation between the transformed lagged dependent variable regressors and the transformed error term. For a finite T and an infinite N this correlation renders least squares methods on the transformed model biased and inconsistent. The correlation, however, vanishes as T gets large (J.G. Bun and J.G.M. Klaassen, 2002).

To avoid the inconsistency of the least square dummy variable, Arellano and Bond (1991) proposed a Generalised Method of Moments (GMM) estimator as an alternative to LSDV. They

suggested transforming the model into a two step procedure based on first difference to eliminate the fixed effects, as first step. In the second step, the lagged dependent variable is instrumented using the two period lagged differences (or two period lagged level) of the dependent variable (Raimondi, Scoppola and Olper, 2010). The Arellano-Bond estimator uses these instruments to define the moment conditions. The resulting GMM estimator is consistent for finite T and $N \rightarrow \infty$ ⁸ (J.G. Bun and J.G.M. Klaassen, 2002).

In the case of the gravity model, first-differencing the equation removes fixed effect but also the time invariant regressors of the specification and, when the regressors are of interest, the resulting loss of information may be a serious inconvenience (De Benedictis and Vicarelli 2005). Moreover, with highly persistent data and short panel (along the time dimension), as in the case of all bilateral exports flows, the GMM estimator may suffer of a severe small sample bias due to weak instruments (Blundell and Bond 1998). As a solution, Arellano-Bover (1995) and Blundell-Bond (1998) built a system of two equations, known as System-GMM, which supplements the equations in first differences with equation in level. In particular, the System-GMM estimator utilizes instruments in level for the first-differenced equation and first-differenced instruments for the equation in level.

According to Bun and Klaassen (2003) LSDV is superior to GMM, asserting the conclusion of Judson and Owen (1999) that for moderate or large T (time dimension) the LSDV estimator is recommended. Their estimation emphasized the importance of dynamics in panel gravity models of trade flows and used ARDL (1, 1) dynamic panel structure to describe short run dynamics

⁸ J.G Bun and J.G.M. Klaassen (2002) indicates, in dynamic panel data models the number of valid moment conditions increases with the number of time periods T and that for asymptotic efficiency reasons one should use all available moment conditions. However, it is well-known that finite sample bias of GMM estimators increase as the number of moment conditions gets larger(as T gets larger)

including time specific constants and treating country effects as fixed. They indicated that the LSDV estimates give better results than the GMM estimates. Hence, they prefer the LSDV estimates to indicate the magnitude of the trade dynamics.

Antonucchi and Manzocchi (2006) estimated a dynamic panel fixed effect gravity model using GMM. They followed a two-step procedure; first they estimated a standard FEM regression and then a cross section regression with country specific individual effects as a function of time-invariant variables (i.e. distance and dummies).

Benedictis and Vicarelli (2004) underlined that robustness of a common panel functional form depends upon the choice of static or dynamic specification. They used generalised method of moments (GMM) to estimate export flows.

2.6. Empirical Studies on AGOA

Given that the AGOA program has a short history, there is relatively little, if any, literature on the program's effectiveness to date. Earlier studies on Sub-Saharan Africa's trade have focused on trade performance in general (e.g., Amjadi et al. 1997).

While the AGOA initiative was initially greeted with a lot of skepticism and some cynicism, current statistics on Africa exports to US and increasing evidence from the continent suggest that some of the 38 eligible African countries may be taking advantage of the initiative (Nouve, 2003). The US official page on AGOA (www.agoa.gov) provides evidence of success stories in multiple countries, including Lesotho, Ghana, Mali and Uganda. In addition, several authors,

including Lall (2003) and Gibbon (2003), have suggested that African textile and apparel exports to US responded positively to AGOA preferential opportunities.

According to USAID (2006), between 2004 and 2005 alone, there has been a 40 per cent increase in the total volume of US imports from SSA countries. Analysis of US-SSA trade data that extend from 1989 to 2004 also reveals a 46.3 per cent increase in US imports of non-manufactured goods and a 1030.4 per cent increase in US imports of manufactured goods from SSA countries pre- to post-AGOA periods. Although these figures appear to indicate a rise in the post-AGOA US imports from SSA, whether the changes are the result of the unilateral trade policy concession, or the inertia in the eligible SSA countries' global trade pattern, or adjustment in other economic policies of the SSA countries, or a combination of these factors is not clear cut (USAID, 2006).

Mueller (2008) uses a Prais-Winston gravity model to assess the extent of the contribution of AGOA to exports from eligible countries from 2000 to 2004. His results show a negative but non-significant coefficient for AGOA, implying that AGOA eligibility is found to have no significant impact on non-oil trade for eligible countries. On his finding the effect of AGOA on apparel export is also not statistically different zero, though the coefficient in this case positive. Seyoum (2007) employing gravity model finds that AGOA has had a marginally positive but statistically non-significant impact on total SSA exports to US up to 2004.

Tadesse and Fayissa (2008) took into account the impact of AGOA on the initiation of imports (i.e., trade initiation, when AGOA product or country imports were negligible prior to its enactment) and on the volume of exports (trade intensification), using data at the HS 2-digit level. They found that a trade intensification effect for coffee, tea, mate, spices and knite apparel,

which collectively make up 15% of AGOA exports. They also found evidence of substantial export initiation for 12 products, most of which had very small trade shares including cosmetics, plastics and cotton (knit apparel was included).

Among the available studies, using panel data of US agricultural trade with 46 SSA countries, Nogueira and Staatz (2003) found that gains induced by AGOA in increasing agricultural exports of Africa were not significantly different from zero, although the response of African exports to the Act was positive as stipulated in the legislation. Employing the triple difference-in-difference method of controlling for the “endogeneity of policy” Frazer and Van Biesebroeck (2007) conduct an in-depth study of important policy implication with greater data coverage. The authors found that AGOA has had large and robust impact on US apparel imports from SSA countries. Citing positive achievements under AGOA, Collier and Venables (2007) also indicate that trade preferences such as AGOA serve as a catalyst for trade in manufactured goods, leading to rapid growth in exports and employment. Their study thus stresses the need for designing trade preferences that are consistent with international trade in fragmented ‘tasks’ (as opposed to complete products) and making them open countries with sufficient levels of complementary inputs such as skills and infrastructure. Nogueira (2003) using a dynamic panel trade model assesses the impact of AGOA on aggregate exports from SSA to US up to 2004. He finds that AGOA has had a strong positive effect on aggregate SSA exports to the US.

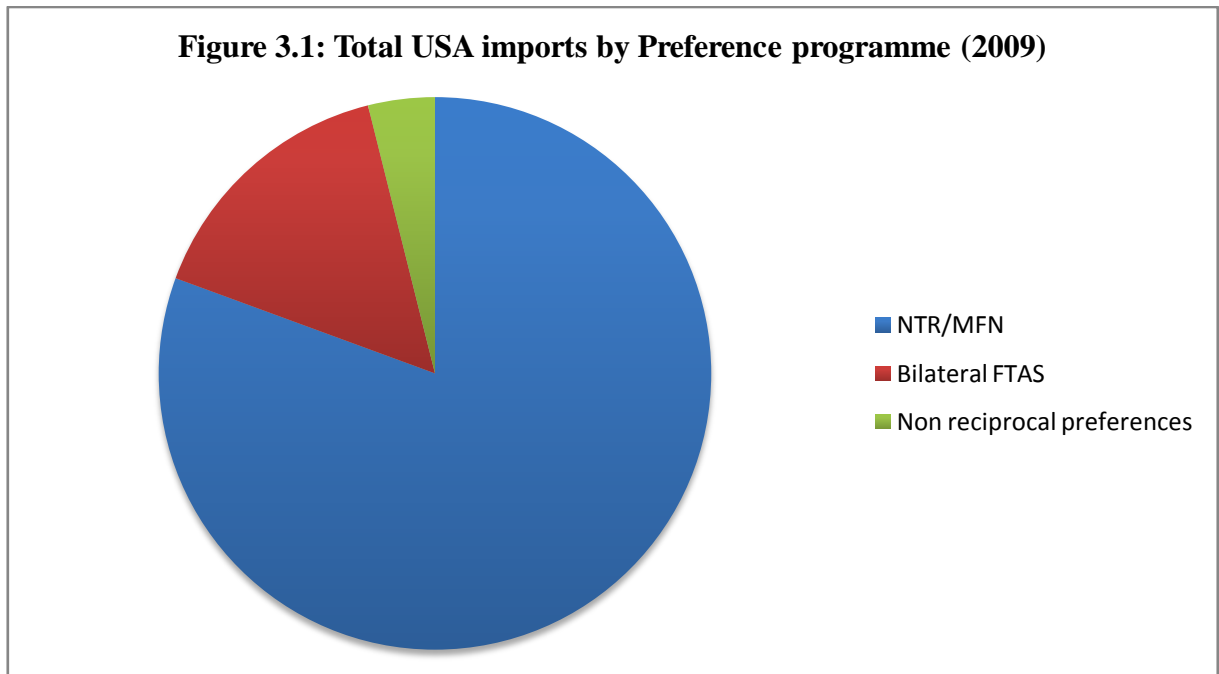
Existing studies on the impact of AGOA on Africa have been mostly counterfactual (e.g., Mattoo, Roy and Subramanian, 2002). Actual evaluation of the impacts have been either preliminary (UNTAD, 2003), or overwhelmingly dominated by the analysis of the textile sector (e.g., Olarreaga, Ozden, 2005; Lall, 2003). The impact of AGOA on other sectors, such as

agriculture, have also been considered in the literature (Nouve and Staatz, 2003; Shappouri and trueblood, 2003). Systematic studies that examine the effect of AGOA on overall exports from SSA to the United States are very few in the literature. Thus, the present paper is an attempt to fill this gap.

CHAPTER THREE

USA - Sub-Saharan Africa Trade Profile

At the outset of this overview of SSA-US trade, it is useful to place AGOA and preference programs generally in some context. The 2009 data, although arguably not the most representative year given the global financial crisis and its impact on trade, shows that over 80% of total US imports (\$1,247bn out of \$1,547bn) was classified under normal tariff relations (NTR⁹) and hence unaffected by any preferential arrangements. Bilateral FTAs (such as Chile-US and Australia-US) account for \$240bn worth of US imports in 2009, equivalent to 15.5% of total imports. Non-reciprocal imports, considered to be imports under preference regimes such as the GSP and AGOA, accounts for \$60bn out of the total, or 3.9%.



Source: United States International Trade Commission; Based on US Department of commerce

⁹ The US uses this term to describe non-discriminatory trade, in lieu of WTO term “most favoured nation”.

AGOA accounts for the largest share of imports under non-reciprocal trade programmes (\$28bn or 1.8% of total US imports), followed by GSP imports (\$20bn or 1.3%). The Caribbean Basin Trade and Partnership Act (CBTPA), Caribbean Basin Initiative (CBI) and Andean Trade Preference Act (ATPA) together accounted for \$12bn (0.8%) of total US imports. While trade under AGOA accounts for the largest share of non-preferential imports in value terms, this should also be seen in the context of the large of oil imports included therein.

Energy-related exports (oil and gas) account for a large part of AGOA countries' exports to the US, and inflate the figures provided above. Over the past three years, the share of energy-related exports as a percentage of total exports from AGOA beneficiaries has ranged between 80-83%, and since these products are mostly eligible for AGOA benefits, they likewise account for a very large share of AGOA exports, ranging from 90-93% in the years 2007–2009. The current Most Favoured Nation (MFN) tariff that the US imposes on crude oil imports (of HTS 27090020) is 10.5c/barrel. It can be argued that this category is not at all dependent on AGOA preferences, and a more realistic impression of eligible exports is gained by removing the impact of energy-related trade under the programme.

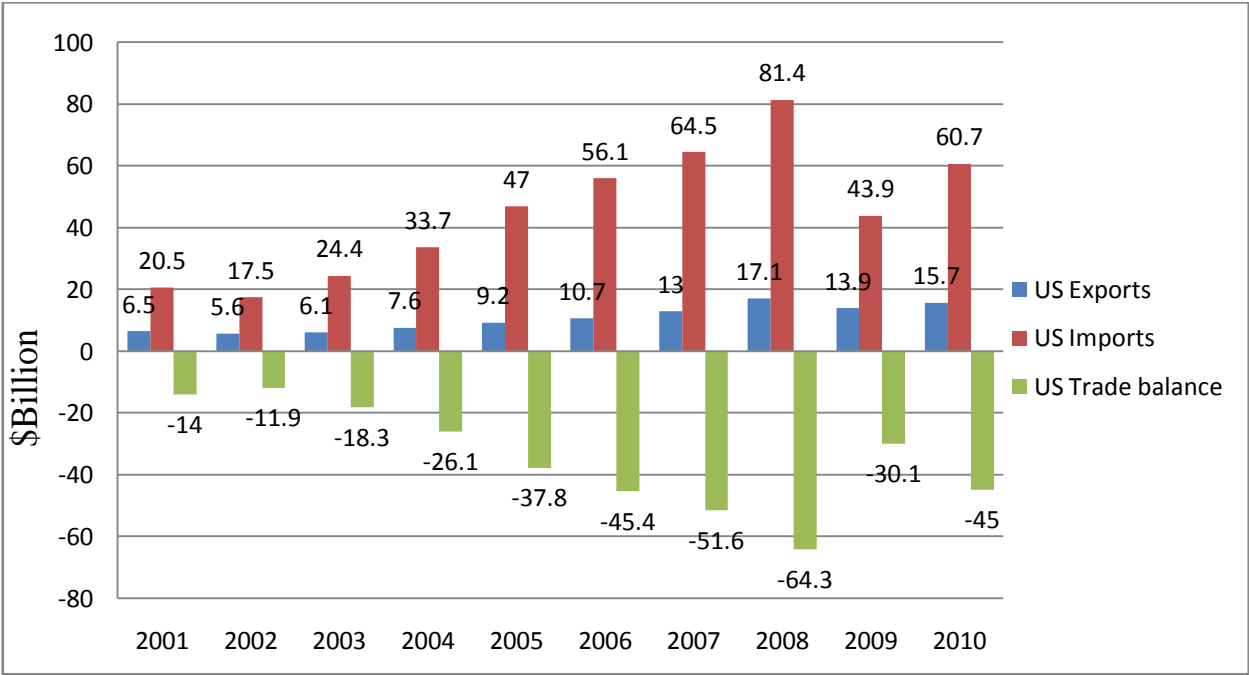
3.1. Total Trade between AGOA Countries and USA

Currently, a total of 41 Sub-Saharan African (SSA) countries qualify for the trade benefits offered by AGOA. As shown in the trade graph, combined exports of 39 AGOA countries have consistently exceeded the collective value of their imports from the US¹⁰.

¹⁰ See the eligible AGOA countries in the appendix part

Aggregate trade, based on US trade data, between the US and an AGOA-eligible country has increased significantly since pre-AGOA times. However, there was a substantial drop in the 2001/2002 period, although this was reversed as indicated by the release of full-year data for 2003. 2004 aggregate trade between AGOA countries and the US is substantially higher than in previous years, but includes the contribution of Angola which became eligible at the start of 2004. Angola's share of the 'total exports' value was US\$ 3,9bn in that year. In 2008, AGOA Countries exports peaked at \$81.4bn, before receding \$43bn in 2009. The 2008 export growth continues to be due to a significant increase of 31.9 percent in crude oil imports (accounting for 79.5 percent of total imports from Sub-Saharan Africa).

Figure 3.2 Total trades between USA and AGOA countries (2001-2010)



Source: United States International Trade Commission; based on US commerce department

The 2009 export decline is most probably as a result of the financial crisis and the possible impact of stimulus packages for US producers to the detriment of AGOA beneficiaries. After this sharp decline it increases to 60.7 in 2010 (close to 2008 levels again), as they recover from the difficult trading conditions experienced in 2009. The trade surplus with the US in favor of AGOA beneficiaries increase continuously and peaked at \$64.3bn in 2008, although this was reduced to 30.1bn, by more than half, during 2009.

The value of aggregate trade flows naturally obscures the composition of trade, and requires a closer analysis to readily draw conclusions with regard to, for example, the benefits of trade to the countries concerned. To highlight this point, a substantial portion of the value of SSA countries' combined exports to the U.S. consists of 'energy-related' products, which comprise mainly of oil and natural gas. Items from the various manufacturing sectors, on the other hand, dominate U.S. exports to SSA countries.

3.2. Total Export to the USA under AGOA by Product Sectors

It is important to consider the total export aggregated by product sector to the US under AGOA. Table 3.1 provides a sectoral breakdown of exports to the US from AGOA-eligible countries for the year 2006 to 2010. During these years (2006-2010), exports in the energy-related category were the dominant export category by value at between \$30.3bn (in 2009) and \$61.2bn (in 2008). Included in this table is a 13% contribution by categories that previously qualified for (GSP) preference prior to the enactment of AGOA, and can therefore not be considered 'new' benefits.

The value of energy-related exports is almost 10 times greater than the second-largest export and covers over 85% the total export of the eligible AGOA countries to the US under AGOA¹¹.

Table 3.1 Total Exports to the U.S. under GSP and AGOA by Product Sectors

(Unit: '000 U.S. dollars, Customs Value)

	2006	2007	2008	2009	2010
Agricultural products	360,803	271,538	250,214	290,422	418,602
Forest products	14,443	11,562	6,762	323	3,337
Chemicals and related products	284,739	308,885	428,269	263,462	366,822
Energy-related products	41,081,606	47,674,569	61,154,766	30,295,551	40,225,878
Textiles and apparel	1,261,128	1,270,589	1,138,837	918,240	730,628
Footwear	2,487	2,175	712	494	445
Minerals and metals	596,337	796,266	1,263,964	413,129	799,479
Machinery	27,874	29,331	23,189	23,618	13,207
Transportation equipment	495,315	588,548	1,911,828	1,436,008	1,651,458
Electronic products	16,427	21,324	16,941	21,912	26,673
Miscellaneous manufacture	98,033	76,596	63,346	43,141	33,407
Total	44,239,193	51,051,383	66,258,828	33,709,298	44,269,935

Source of Data: U.S. International Trade Commission USITC, based on U.S. Dept. Commerce

¹¹ Oil exports (crude and non-crude) continued to dominate export from Sub-Saharan Africa with \$71.2 billion in oil exports in 2008, accounting for 82.2% of all exports to US. Platinum export remained the second leading Sub-Saharan export with a 3.5 share. Motor vehicles and parts replaced Diamonds as the third leading Sub-Saharan export, accounting for 2.3% of export. Other leading exports from Sub-Saharan Africa included: diamonds; iron and steel; woven and knit apparel; ores, slag and ash; cocoa; organic chemical; and petroleum gases and other gases.

Transportation sector exports worth almost between \$0.5bn (in 2006) to \$1.9bn (in 2008). It accounts for 41% of total non-energy AGOA exports and 3.73% of total AGOA exports in 2010. The transportation sector comprises primarily motor vehicles and parts, and is one of the success stories under AGOA albeit mainly for South African-based exporters. Exports in this sector account for 17.9% of total non-energy exports, with a large share of goods shipped under AGOA preference (93% in 2009, almost all of which comprised categories not previously eligible under the GSP).

Minerals and metals export worth between \$0.41bn (in 2009) and \$1.3bn (in 2008). They make up only 19.77% of all non-energy AGOA exports and 1.81% of total AGOA exports. The primary reason for this lies in the fact that the respective main export categories within this section (unwrought platinum, various categories of diamonds) have MFN duties of 0% and therefore no preferences are claimed. The main AGOA exports are aluminium alloy (3% MFN rate), ferromanganese (1.5% MFN), ferrochromium (1.9% MFN) and ferrosilicon manganese (3.9% MFN). Most of these were previously available as GSP benefits.

Agricultural products export valued at between \$0.25bn (in 2008) and \$0.42 (in 2010). It covers only a very small share of total AGOA export. In 2010 the share of agricultural export to the total AGOA export and the non-energy AGOA export are 0.95% and 10.35% respectively.

Textile and apparel (clothing sector) exports worth between \$0.73bn (in 2010) and \$1.27bn (in 2007). It accounts for 19.76% of non-energy exports and 1.81% of total AGOA exports in 2010. To many, AGOA beneficiary countries, the textile and clothing sector is of critical importance in

terms of exports, employment, investment and general economic upgrading. Most trade comprises made-up garments produced locally from imported fabric. Moreover, most of the leading exporters to US were countries whose capacity to export to the US has been largely confined to clothing trade textiles.

Machinery exports valued at between \$0.001bn (in 2010) and \$0.003 (in 2007). It covers only a very small fraction of total AGOA export (0.03% in 2010) and non-energy AGOA export (0.3% in 2010). Other exports like miscellaneous manufactures export, Forest products and Footwear exports accounts a very small share of total AGOA export (0.84%) and total non-energy AGOA exports (0.92%) in 2010.

3.3. Utilization of AGOA by Product Sector

It is important to overview the utilization of AGOA by product sector to have a clear picture of how the different product sector responds to AGOA benefits. Table 3.2 provides utilization of AGOA by product sector for the years 2006 to 2010. In terms of utilization of AGOA, the textiles and apparel products stands first with a utilization of 89.8% (in 2010) to 97.35% (in 2009)¹².

The transportation equipment sector is the second with a utilization of 84.17% (in 2006) to 96.43% (in 2010) next to textiles and apparel. The third is energy related products in terms of

¹² The reason for this is that most of the leading Sub-Saharan exporters to the US were countries whose capacity to export has been largely confined to the clothing trade textiles. Moreover, most of the trade comprises made up garments produced locally from imported fabric.

the utilization of AGOA. It utilizes 78.46% (in 2010) to 87.9% (in 2007) of the total energy-related export to US.

Table 3.2 Utilizations of AGOA by Product Sector (Unit: Percent of total sectoral imports)

	2006	2007	2008	2009	2010
Agricultural products	28.07	23.47	18.19	19.91	22.68
Forest products	8.70	6.32	4	4.2	3.84
Chemicals and related products	36.59	31.15	30.26	26.68	17.63
Energy-related products	85.92	87.90	85.26	80.42	78.46
Textiles and apparel	94.19	95.26	96.21	97.35	89.79
Footwear	57.39	40.59	36.88	38.63	30.06
Minerals and metals	10.00	10.77	17.38	10.83	14.02
Machinery	8.85	6.93	6.46	10.43	4.14
Transportation equipment	84.17	87.97	93.16	92.69	96.43
Electronic products	19.29	22.78	17.82	26.92	30.57
Miscellaneous manufactures	52.91	41.89	45.16	32.01	14.59

Source of Data: U.S. International Trade Commission USITC, based on U.S. Dept. Commerce

With respect to less utilization of AGOA the forest products, machinery, electronic products and agricultural products sector are the major ones. The forest products sector utilizes only 3.84% (in 2010) to 8.7% (in 2006). It is also the least in terms of utilization of AGOA. The machinery

sector utilizes between 4.14% (in 2010) and 8.85% (in 2006). The agricultural products sector utilizes between 28.07% (in 2006) to 18.19% (in 2008) of the total AGOA export to US.

3.4. Leading Exporters of AGOA Countries to the USA

Most AGOA-eligible SSA countries have recorded some exports to the US, although the bulk (by value) is concentrated among a relatively small number. Table 3.3 provides the top ten exporters of Sub-Saharan Africa countries to US under AGOA¹³. Nigeria, Angola, Gabon and South Africa overall exports to the US far exceed those of the other countries, while only a hand full of the AGOA-eligible SSA countries have recorded exports to the US of any real significance¹⁴.

Nigeria's export to US accounts around half of all exports shipped under this trade program. In 2009 and 2010 Nigeria's export to US accounts 44.36% and 49.27% of total Sub-Saharan Africa exports to US respectively. Its AGOA (including GSP) utilization is 88% of country export. Angola is the second leading exporter to the US next to Nigeria, and extension account for the largest share of AGOA eligible trade. For the year 2009 and 2010 Angola's export to the US accounts 21.2% and 19.4% of the total export. Angola only gained eligibility only in December 2003, and trade data from 2004 onwards strongly reflects this contribution. Its utilization of AGOA (including GSP) reaches 90%.

¹³ The trade data provides a statistical overview of all AGOA-beneficiary countries' to the US as well as exports under GSP+AGO (GSP trade now falls under the broad AGOA program).

¹⁴Detailed bilateral trade profiles for each AGOA eligible country as well as for various regions as a whole, disaggregated by sector, can be accessed in the appendix part.

Table 3.3. Leading Sub-Saharan African Suppliers to the United States Unit: '000 U.S. dollars,
Custom value

	Total Export to US		AGOA(incl GSP)	
	2009	2010	2009	2010
Nigeria	19,474,031	29,907,131	17,229,613	25,157,692
Angola	9,305,811	11,778,529	8,367,558	9,837,742
South Africa	5,876,698	8,199,239	2,385,216	3,102,336
Congo (ROC)	3,187,384	3,308,922	1,471,701	1,935,580
Chad	1,878,579	2,037,630	1,676,016	1,640,015
Gabon	1,285,454	2,222,520	1,210,017	1,124,268
Congo (DROC)	317,951	435,150	244,328	394,357
Namibia	327,607	195,036	1,596	747
Lesotho	304,154	298,926	277,124	280,392
Kenya	280,423	311,127	207,859	225,491

Source of Data: U.S. International Trade Commission USITC, based on U.S. Dept. Commerce

Following Angola's inclusion South Africa has remained the third largest aggregate value of export to the US, and under AGOA. Its share of total export to the US is 13.38% and 13.51% for the year 2009 and 2010 respectively.

Other than Nigeria, Angola and South Africa, significant AGOA exports have been from Congo (ROC), Chad, Gabon, Congo (DROC), Namibia, Lesotho, and Kenya. However, many AGOA

eligible countries in 2010 still recorded less than US\$ 1mn worth of US-bound exports¹⁵. Among the major exporters, trade is often fairly concentrated in a small number of sectors.

The bi-lateral country trade analysis reveals that the AGOA benefits to Nigeria, Angola and Gabon currently accrue almost exclusively through the export of 'energy-related' products. These include oil and natural gas products. However, some smaller volumes of non-energy exports were also recorded and compared to many other AGOA beneficiaries, these exports are sizable when considered on their own. In the case of Nigeria, during 2009, apart from oil export it also exported \$mn (2008: \$34mn) worth of cocoa beans to the US, \$3mn of cashew nuts (2008: same), animal feed ingredients (2009: \$1 mn; 2008: same) as well as sheep skins, spices, cocoa paste, handbags and so forth.

South Africa in contrast to Nigeria and Angola in particular, but also to every other AGOA beneficiaries, its exports has been relatively diversified, and also include many manufactured and high value-added products. In 2009, 90% of South Africa's US-bound exports qualified for AGOA preferences.

Other countries in the list of leading exporters to the US whose main export category entails clothing exported under AGOA's special; apparel provision. Since these permit exporters to make up garments from imported cloth, they have provided exporters with flexibility in terms of their sourcing requirements and this enhanced their competitiveness in the US market.

¹⁵ See the appendix part

In general U.S. imports from Africa remained highly concentrated among a small number of suppliers. Four countries – Nigeria, Angola, South Africa, and Republic of Congo – accounted for 86.21% and 87.63% of US purchases in 2009 and 2010 respectively. Oil imports from Angola and Republic of Congo outpaced oil imports from Nigeria. Imports of platinum and diamonds declined from South Africa and increases in imports of vehicles and iron and steel products were not enough to bring South Africa’s import share up.

CHAPTER FOUR

METHODOLOGY

This paper uses a gravity trade model to characterize the marginal impact of African Growth and Opportunistic Act on Sub-Saharan Africa Countries exports to United States. The analysis is restricted to one-way bilateral trade from African countries to US, which is enough to answer the question regarding whether AGOA has increased exports from SSA to the US. Thus, in this section the writer present the theoretical framework of the gravity model followed by the empirical model and estimation methods.

4.1. Theoretical Framework

This study adopts a theoretical gravity model derived by Anderson (1979) to examine the impact of AGOA on the eligible SSA countries' export to the US. The gravity model utilizes the gravitational force concept as an analogy to explain the volume of trade, capital flow and migration among the countries of the world. This model specifies the volume of trade flows between countries as a function of their respective incomes and geographic distance. The gravity trade model is widely used in empirical trade analysis for its power in explaining the amount of trade between countries. Anderson (1979) and Anderson and van Wincoop (2001/2003) call it one of the most successful empirical device in economics. In its basic form, the model assumes that the trade volume between two countries (or regions) is increasing in the economic size and decreasing in trading cost and barriers between these countries. Equation (2) below illustrates the theoretical relationship.

The Specifications of the Gravity models begin with Newton’s law for the gravitational force (GF_{ij}) between two objects i and j (Keith Head, 2003). In equation form, this is expressed as:

$$GF_{ij} = \frac{M_i M_j}{D_{ij}} \quad \text{Where } i \neq j \text{-----(1)}$$

In this equation, the gravitational force is directly proportional to the masses of the objects (M_i and M_j) and indirectly proportional to the distance between them (D_{ij}).

Gravity models of international trade implement equation 1 by using trade flows or exports from country i to country j (X_{ij}) in place of gravitational force. Distance is often measured using “great circle” calculations (Tadesse and Fayissa, 2007). Thus, from equation 1 the following equation is derived.

$$X_{ijt} = \Lambda \left(\frac{GDP_{it} GDP_{jt}}{D_{ij}} \right) \text{-----(2)}$$

In the above equation X_{ijt} is country i ’s total export to country j at time t , GDP_{it} is country i ’s gross domestic product at time t , GDP_{jt} is country j ’s gross domestic product at time t , D_{ij} is the geographical distance from country i ’s capital city to country j ’s capital city and Λ is the constant of proportionality (Alemayehu Geda, 2006).

The product of country i ’s gross domestic product (GDP_{it}) and country j ’s gross domestic product (GDP_{jt}) is a measure of economic size, the geographic distance between country i ’s and country j ’s capital city serve as a proxy for trading cost (Lairds and Yeats, 1990).

In the augmented gravity model specifications the populations in the two countries are considered as additional measure of the size of these countries. The population variable can appear explicitly in the gravity trade equation or implicitly in the form of per capita variables. When the population variable appears explicitly equation 2 can be rewritten as follows (Cheng and Wall, 1999):

$$X_{ijt} = \Lambda \left(\frac{GDP_{it} POP_{it} GDP_{jt} POP_{jt}}{D_{ij}} \right) \text{-----} (3)$$

Where POP_{it} is the total population of country i at time t , POP_{jt} is the total population of country j at time t .

In the case when population parameter appears implicitly in the form of per capita variable equation 2 can be rewritten as follows (Frankel, Stein, and Wei, 1995):

$$X_{ijt} = \Lambda \left(\frac{GDP_{it}/POP_{it} GDP_{jt}/POP_{jt}}{D_{ij}} \right) \text{-----} (4)$$

Where GDP_{it}/POP_{it} is per capita gross domestic product of country i at time t , GDP_{jt}/POP_{jt} is per capita gross domestic product of country j at time t .

As assumed in the model, both countries (importer and exporter) GDP and population affect positively the total export (the dependent variable), but the effect of physical distance on the total export is negative (Cheng and Wall, 1999).¹⁶

4.2. Empirical Model and Data

4.2.1. Empirical Model

Gravity models are estimated in terms of natural logarithms, denoted “ \ln ”. In this form, what is multiplied in the equation becomes added, and what is divided becomes subtracted, translating the theoretical model which is explained above, equation 3, into a linear and estimable equation:

$$\ln X_{ijt} = \alpha_{it} + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln POP_{it} + \beta_4 \ln POP_{jt} + \beta_5 \ln D_{ij} + \varepsilon_{ijt}$$

----- (5)

The time invariant nature of the distance variable may be problematic in the analysis of panel data. Thus, in order to make the distance a varying variable over time, various approaches have been suggested in the literature. This approach suggested relative definitions of distance. The distance variable adopted in this thesis is the relative distance based on Kadir K. and M.O. Saray, which is defined as;

$$rD_{ij} = \left(\frac{D_{ij} \cdot GDP_{jt}}{\sum GDP_{jt}} \right)$$

----- (6)

¹⁶ Note that: the economics of equation can lead to the interpretation of GDP as income, and when applied to agricultural goods, Engel’s law allows for GDP in the destination country to have a negative influence on demand for imports and with regard to the effect population, there is a possibility of import substitution effects as well as market size effect and if the import substitution effect dominates, then total population in the importer country negatively affects the total export.

Where, rD_{ij} is the relative distance between the countries i and j, D_{ij} is the geographical distance between countries i and j, GDP_{jt} is the gross domestic product of country j at time t, and $\sum GDP_{jt}$ is the sum of the GDPs of the country j for the year 2001 to 2009.

The empirical gravity trade equation also includes additional geographical and institutional variables that are assumed to facilitate or impede bilateral trade. These include dummy variables indicating, common language, landlocked, membership in customs and monetary unions, common border, bilateral exchange rate, as well as institutional variables such as viability of contract and the effectiveness of rule of law. In this paper the dummy variable common border is not included because of the fact that all Sub-Saharan Africa countries do not share common border with US. Instead the dummy variable landlocked is used to capture the effect of having a port or not. Other variables like membership in monetary Unions and institutional variables are also not included in this particular study as it is not the concern of the paper. The bilateral exchange rate is included as explanatory variable in the model. It helps to control the effect of exchange rates fluctuation over time on SSA countries export to US (Tadesse and Feyessa, 2007). The empirical gravity model, equation 5, including the dummy variables landlocked and common language as well as exchange rate is written as follows:

$$\begin{aligned} \ln X_{ijt} = & \alpha_{it} + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln POP_{it} + \beta_4 \ln POP_{jt} + \beta_5 \ln rD_{ij} \\ & + \beta_6 \ln EXRT_{ijt} + \beta_7 LLOCK_i + \beta_8 CLANG_{ij} + \varepsilon_{ijt} \text{ -----(7)} \end{aligned}$$

The AGOA export variable is the other variable that is included in the empirical model. The inclusion of this variable as an explanatory variable is on the basis of the possibility for SSA

Table 4.1 Variable names, definitions and measurements

Variable Names	Variable definitions	Measurements
$\ln X_{ijt}$	The logarithm of Country i total export to country j at time t.	US Dollars (\$)
α_{it}	The constant term	
$\ln GDP_{it}$	The logarithm of country i gross domestic product at time t.	US Dollars (\$)
$\ln GDP_{jt}$	The logarithm of country j gross domestic product at time t.	US Dollars (\$)
$\ln POP_{it}$	The logarithm of country i total population at time t.	Number (in millions)
$\ln POP_{jt}$	The logarithm of country j total population at time t	Number (in millions)
$\ln rD_{ij}$	The logarithm of the relative distance between countries i and country j.	In kilometers
$\ln AGOA_{ijt}$	The logarithm of country i AGOA export to country j at time t.	US Dollars (\$)
$\ln X_{ijt-1}$	The logarithm of the lagged dependent variable	US Dollars (\$)
$\ln EXRT_{ijt}$	The logarithm of country i exchange rate to country j at time t.	ratio of prices
$LLOCK_i$	A dummy variable indicating whether country i is landlocked or not.	1 if country i is landlocked 0 if not
$CLANG_{ij}$	A dummy variable indicating whether country i have common language with country j or not.	1 if country i and j have common language 0 otherwise
ε_{ijt}	An assumed independently and identically distributed error term.	
$\beta_1, \beta_2, \dots, \beta_{10}$	Regression Coefficients	

4.2.2. Data and Data Sources

In this particular study panel data are used for assessing the impact of AGOA on SSA countries export to US. For this purpose 33 AGOA eligible Sub-Saharan Africa countries and a time span of 9 years are employed. The time span covers from 2001 to 2009. The reason for selecting 2001 as the starting year for my analysis is due to the fact that AGOA has started to be enacted since 2001. Because of data limitation in most variables 2010 is not included in this study.

The data used in this paper are secondary data extracted from different sources. The total export (X_{ijt}) and AGOA export ($AGOA_{ijt}$) data of each AGOA eligible SSA country to US is taken from the United States International Trade Commission (USITC) database. The gross domestic product (GDP) of each country is from World Bank national accounts data, World Development Indicator CD ROM (2010). The GDP data are in constant 2000 U.S. dollars. Dollar figures for GDP are converted from domestic currencies using 2000 official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.¹⁷ The population data of each country is taken from International Monetary Fund, World Economic Outlook Database (October 2010). The data for exchange rate is obtained from International Monetary Fund, International financial statistics Database (IFS). Finally the data for distance and the dummy variables common language and landlocked is taken from the Institute for Research on the international Economy (CEPII) Database. Even if there are several language variables that can be used to create dummy variables, this study employ the official language in gravity equation for common language. In the CEPII database there are two types of distance measures: simple

¹⁷ World Bank, World development indicator

distance, for which only one city is necessary to calculate international distance; and weighted distances, for which data are needed on the principal cities in each country¹⁸. In this paper, the simple distance measure which are calculated following the great circle formula is employed, which uses latitudes and longitudes of the most important city (in terms of population) or of its official capital. The two variables (latitude and longitude) incorporate internal distances of the country.

4.3. Estimation Methods

The model to be estimated is equation 7 which is the dynamic panel data model. In this model AGOA export is one of the explanatory variables. Since AGOA exports are jointly determined with total exports, the former is likely to be endogenous in equation of the later. The model also includes the lagged dependent variable as an explanatory variable, this is on the basis of the time dependency between the current period export (at time t) and the previous period export (at time $t-1$), implying that export in previous period have some power in explaining variation in current period export. Thus, the inclusion of AGOA exports and the lagged dependent variable in the empirical model violates the strict exogeneity condition on the error term. As a result of this estimating the model by fixed effect (FE) would generate inconsistent result. According to Baltagi (2001) and Wooldrige (2002), FE would produce consistent results if the error terms ε_{ijt} were strictly exogenous with respect to the explanatory variables. Applying random effect (RE) to the model would also generate inconsistent result because of the correlation between the unobserved effect and the explanatory variables.

¹⁸ The weighted distance measure use city-level data to assess the geographic distribution of population inside each nation. The idea is to calculate distance between two countries based on bilateral distances between the largest cities of those two countries, those inter-city distances being weighted by the share of the city in the overall country's population.

The least square dummy variable (LSDV) estimators are biased and inconsistent for finite T and large N because of the correlation between the lagged dependent variable and the error term. As shown by Nickell (1981), the LSDV estimator yields biased estimates in the case of dynamic panels. Although this bias tends to zero as T approaches infinity, it cannot be ignored in small samples.¹⁹

To bypass the inconsistency of LSDV, numerous alternative estimators have been proposed; see for example Baltagi (2001) for a broad overview. A class of estimators, which is nowadays most commonly used estimator for dynamic panels with fixed effects, is generalized methods of moments (GMM) estimator by Arrelano and Bond (1991).

The econometric problem in this model is an unobserved dynamic panel data model with endogenous explanatory variables. The standard way to deal with triple issue is to use the GMM estimator. For this estimator, the model is transformed into first differences instead of deviations from country-pair means to remove the country-pair effects. This gives correlation between the transformed regressor and the transformed disturbance term. This correlation does not vanish when T gets large. Thus, first differencing removes heterogeneity (unobserved effect problem) without removing endogeneity problem (Nickell, 1981).

Then an instrumental variable estimation of the differenced equation is performed. Thus, the endogeneity problem is solved using a set of instruments represented by higher order lags of the lagged dependent and other endogenous variables in the model (Nickell, 1981). As proposed by

¹⁹ Judson et al. (1996), using Monte Carlo studies, finds that the bias can be as large as 20 per cent even for fairly long panels with T=30

Anderson and Hsiao (1982), valid IVs include higher order differenced lagged dependent variable or simply lagged dependent variable. Differenced lagged AGOA export variable or lagged AGOA export variable may also be used as instruments for $\Delta AGOA_{ijt}$. The Arellano-Bond estimator uses these instruments to define the moment conditions. The resulting GMM estimator is consistent for finite T and $N \rightarrow \infty$.²⁰

The estimation technique used in this study is based on the system GMM estimator by Arellano and Bover (1995). The system estimator adds level equations to the differenced equation. As indicated above the instrument set used in the difference estimator includes lags of the level of predetermined and endogenous variables. However, in the system estimator level variables are instrumented by lags of their own differences and differenced variables are instrumented by lags of their own levels. The system estimator addresses the weak instrument problem arising from using lagged levels of predetermined and endogenous variables in the difference estimator. Moreover, Using Monte Carlo studies, Blundell and Bond (1998) showed for the AR(1) model that the finite sample bias of the difference GMM estimator can be reduced dramatically with the system GMM.

The time-varying components of the multilateral resistance term are controlled by including lagged bilateral exports in the right hand side of the equation. Consequently, time-varying exporter dummies are not included into the GMM regressions nor other explicit fixed effect

²⁰ Note that in dynamic panel data models the number of valid moment conditions increases with the number of time periods and that for asymptotic efficiency reasons one should use all available moment conditions. However, it is well known that finite sample biases of GMM estimators' increases as the number of moment conditions gets larger.

dummies (Martinez-Zarzoso et al. (2009). Thus, the landlocked and common language dummies are dropped from the empirical model.

The two equations used in the system GMM, that is the level equation and the differenced equation are the following:

$$\begin{aligned} \ln X_{ijt} = & \alpha_{it} + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln POP_{it} + \beta_4 \ln POP_{jt} + \beta_5 \ln rD_{ij} \\ & + \beta_6 \ln AGOA_{ijt} + \beta_7 \ln X_{ijt-1} + \beta_8 \ln EXRT_{ijt} + \varepsilon_{ijt} \text{-----(9)} \end{aligned}$$

$$\begin{aligned} \Delta \ln X_{ijt} = & \beta_1 \Delta \ln GDP_{it} + \beta_2 \Delta \ln GDP_{jt} + \beta_3 \Delta \ln POP_{it} + \beta_4 \Delta \ln POP_{jt} + \beta_5 \Delta \ln rD_{ij} \\ & + \beta_6 \Delta \ln AGOA_{ijt} + \beta_7 \Delta \ln X_{ijt-1} + \beta_8 \Delta \ln EXRT_{ijt} + \Delta \varepsilon_{ijt} \text{-----(10)} \end{aligned}$$

The system GMM estimator thus combines the standard set of equations in first differences with suitable lagged levels as instruments, with an additional set of equations in levels with suitable lagged first differences as instruments. Thus, the GMM estimator represents also a natural strategy to account for the endogeneity of the preference factor (AGOA), as well as measurement error and weak instruments.

Consistency of the GMM estimator requires a lack of second order serial correlation in the residuals of the differenced specification. The overall validity of instruments can be checked by a Sargan or Hansen test of over-identifying restrictions (see Arellano and Bond, 1991).

CHAPTER FIVE

Results and Discussions

5.1. Descriptive Analysis

The tables below shows the pre-AGOA and post-AGOA average total export, the average AGOA export and the utilization of AGOA as a percentage of total export of selected countries.²¹ Table 5.1 indicates countries which are successful in terms of utilizing the opportunities given by US under AGOA. Among this countries Lesotho, Swaziland, Kenya, Madagascar and Malawi are the major ones.

Lesotho's pre-AGOA average total export was \$96565308.97 but in the post-AGOA period this figure increases to \$362930436.5, which is 3.76 times the pre AGOA period total export. From this amount 91.32% is exported under AGOA, which is consisted of almost entirely apparel. As the largest apparel exporter to the US, Lesotho is of particular interest. The response of Lesotho actually built on a longer historical experience in which trade preferences and policies also played an important part.²² Thus even prior to the passage of AGOA, firms based in Lesotho, most of which were subsidiaries of Asian multinationals were exporting to the US. Indeed, after 1999, ninety per cent of all Lesotho's apparel exports went to the US with only 0.8% going to South Africa and just 0.2% to the EU.²³

²¹ In the appendix there is a table which contains all AGOA eligible countries data.

²² The industry was launched in the 1980s when Taiwanese manufacturers, originally based in South Africa, moved to Lesotho in order to avoid trade sanctions imposed by the US and Europe on what was then Apartheid regime more investors were attracted in the late 1980s, after the European Union signed the Lome convention, which granted special preferences to the ACP countries that had formerly been colonies.

²³ The firms, almost entirely foreign owned, typically provide assembly, packaging and shipping services and depend on their Asian headquarters to generate orders, design the clothes and send them the fabric they need.

Table 5.1 Pre and Post AGOA average exports for countries which shows success

(Unit: US dollar)

COUNTRY	Ave. T. Export (in \$) 1991-2001	Ave. T. Export (in \$) 2000-2010	Average AGOA Export (in \$)	% of AGOA Export to total
Lesotho	96,565,308.97	362,930,436.5	331,418,205.1	91.32
Swaziland	37,124,037.95	140,494,255.4	113,047,318.1	80.46
Kenya	105,503,295.8	288,136,699.1	210,371,328.7	73.01
Madagascar	80,836,220.8	296,985,993.4	193,992,736	65.32
Malawi	67,793,950.62	72,002,933.7	38,948,910.2	54.09
Cameroon	81,498,802.73	268,738,435.8	137,462,189	51.15
Mauritius	248,380,121.5	229,655,882.9	114,713,017.7	49.95
Nigeria	6,154,413,857	21,397,776,802	10,122,531,759	47.31

Source: Compiled from the United States International Trade Commission (USITC) Database

Swaziland is among the countries which show success in utilizing the given preferential treatment by US (AGOA). Its pre-AGOA total export was \$37124037.95, which grows to \$140494255.4 in the post-AGOA period. The post-AGOA period average total export is 3.76 times that of the pre-AGOA average total export. From this amount 80.46% is exported under AGOA, which includes apparel, sugar, prepared fruit products and plastics. Swaziland has a relatively strong apparel sector.

Kenya is the other country which shows success under AGOA. Its pre-AGOA average total export was 105503295.8 but in the post-AGOA period this amount increases to 288136699.1, which is 2.73 times the pre-AGOA period. From the post-AGOA average total export 73.01% is exported under AGOA. Apparel, nuts, cut flowers, sporting equipment, plastic goods and jewelry are some of the products that Kenya exports under AGOA.

Madagascar also shows some success in utilizing AGOA. It exports 65.32% of the total average export using the chance given by US (under AGOA). Its pre-AGOA average total export was \$80836220.8. This amount increases to \$296985993.4 in the post-AGOA period, which is 3.67 times the pre-AGOA period. Madagascar's export under AGOA consisted mostly of apparel but also included packing materials and semiprecious stones.

Despite the above mentioned countries some other countries are also successful in utilizing the chance given by US (AGOA). These are Malawi, Cameroon, Mauritius and Nigeria. These countries exports 54.04%, 51.15%, 49.95% and 47.31% of their total average export under AGOA respectively. Their post- AGOA period average total exports are 1.06, 3.3, 0.93 and 3.48 times their pre-AGOA period average total exports respectively. Malawi's export under AGOA includes tobacco, apparel, sugar, nuts, and lentils; Cameroon's is consisted mainly of petroleum products, but also included hides and skin, cocoa paste, kola nuts, rubber products and plywood; that of Mauritius includes apparel, tuna, sugar, sunglasses and jewelry; and that of Nigeria's consisted mainly of petroleum products but also included hides and skins, soup preparations, tungsten, cassava and spices.

Table 5.2 shows countries which exports a very insignificant amount under AGOA. In contrary to the above one, there are several countries which are still not using the chance of exporting under AGOA properly. Among these countries Sierra Leone, Guinea, Niger and Burkina Faso are the major.

Sierra Leone's pre-AGOA average total export was \$16243861.6, which increases to \$22059241.5 in the post-AGOA period. This country exports a very insignificant amount under AGOA, which accounts only 0.0014% of the total average export.

Guinea is the other country which exports a very small amount using the chance of AGOA. The share of AGOA export from the total export is 0.0035%. Its pre-AGOA average total export was \$11274428. This amount reduces to \$80276827.2 in the post-AGOA period, which is 0.72 times that of the pre-AGOA period. Wood ornaments, musical instruments, tuna, kola nuts and spices are the products Guinea exports under AGOA.

Niger's export under AGOA from the total export is 0.0139%, which is very small. Its pre-AGOA average total export was \$11880945.55, which increases to \$41257020.5 in the post-AGOA period. This amount is 3.47 times the pre-AGOA period average total export. Niger's export under AGOA is consisted mostly of jewelry.

Burkina Faso exporting 0.0403% of the total export under AGOA is the other country which exports a very insignificant amount using the chance given by the US government through AGOA. Its pre-AGOA average total export was \$1993113.667, which is \$1905297.7 in the post-

AGOA period. Basketwork, jewelry, and wooden ornaments are among the products that Burkina Faso exports under AGOA.

Table 5.2 Pre and Post AGOA average export for countries which shows no success

(Units: US dollar)

COUNTRY	Ave. T. Export 1996-2000	Ave. T. Export 2001-2010	Ave. AGOA Export	% of AGOA Export to total
Sierra Leone	16,243,861.63	22,059,241.5	300	0.0014
Guinea	112,744,281.7	80,276,827.2	2,838.1	0.0035
Niger	11,880,945.55	41,257,020.5	5,718.9	0.0139
Burkina Faso	1,993,113.667	1,905,297.7	768.3	0.0403
Djibouti	198,622.45	2,636,445.5	1,675.8	0.0636
Gambia	1,638,402.467	729,476.5	562.5	0.0771
Zambia	45,006,565.17	26,685,098.6	22,722.3	0.0851
Mali	5,960,381.75	5,120,603.8	8,541.9	0.1668
Rwanda	4,978,150.5	10,050,982.9	34,440	0.3427

Source: Compiled from the United States International Trade Commission (USITC) Database

In addition to the countries which explained above, there are also other countries which are exporting a very small amount using the chance. This includes Djibouti, Gambia, Zambia, Mali and Rwanda. These countries AGOA export ranges from 0.0636% to 0.3427% of their total export. Their post-AGOA average total export is 13.27, 0.45, 0.59, 0.86 and 2.02 times the pre-

AGOA period total export respectively. Djibouti's export under AGOA is consisted entirely of cereal flours; Gambia's is consisting entirely of tomato paste; Mali's export includes musical instruments, semi-manufactured gold and jewelry; Zambia's export includes jewelry, wooden ornaments and cut flowers; and that of Rwanda's export consisted mostly of tungsten concentrates but also included jewelry, baskets, and semiprecious stones.

Surprisingly, even though Nigeria, Angola, South Africa and Congo (ROC) are the leading SSA exporters to US, they are less successful in using the act given by US. Especially South African, which is the third largest exporter, exports only 11.66% of their total export under AGOA. This may relate to the fact that almost half of South Africa's clothing export do not make use of advantage of AGOA preference because of producers find it more cost-efficient to import Asian textiles (primarily from China) and hence do not meet the stringent rules of origin. Motor vehicles, petroleum products, metal and minerals, apparel, citrus fruit, wine, chemicals, raisins, nuts and jewelry are among the products that South Africa exports under AGOA.

The above discussions show the individual country response to AGOA, but it does not show the sectoral responses. In terms of sectoral value added and structural transformation under AGOA, the textile and apparel sector shows an expansion with a utilization of AGOA by 94%. Notwithstanding the prominence of energy, mineral and related products the sector represents a rising share of SSA AGOA export. This may be due to the heavy emphasis that AGOA places on Africa's emerging textile and apparel industry as the primary sector for trade benefits. This sector is consider to hold the highest potential of fostering Africa's competitiveness and export

led pro-poor growth by generating greater employment due to its relative labor intensiveness. The sugar-related sectors also show expansions to a lesser extent next to the apparel sector.

Even though the textile and apparel sector is the primarily observed in terms of increased sector value added, the benefits to Africa economics should not be overstated. This is because of the entrance of foreign firms in to different AGOA eligible countries to export using the chance given by US under AGOA. For example, although Lesotho appears to be the major beneficiary in the sense that it exports almost the entire apparel product to US under AGOA, there are limited linkages to the local economy and exports are susceptible to changes in AGOA rule of origin. Its clothing export under the act are 'cut, make and trim' by subsidiaries of (primarily Asian) multinationals which provide all the input. Another example is Kenya, which is a major beneficiary in the sense that clothing export to US rose four-fold from a minimal pre-AGOA base. The majority of firms involved in this rise are recent non-Kenya entrants, located in export processing zone.

In spite of the apparel sector expansion in value added under AGOA, agricultural commodity, which most SSA countries depends, account for less than 1% of AGOA exports with a utilization of 18% to 28%. This is because of preference erosion and AGOA has important exclusion on specific agricultural products, such as sugar, peanuts, dairy and tobacco, which are among the main revenue generating exports sustaining many African countries. In addition, US subsidies for domestic producers, such as cotton subsidies, eliminate any competitive advantages of Africa's agricultural sector under AGOA. This subsidy artificially lower world cotton prices, thereby reducing revenues of Africa cotton exporters and curtailing the development of a textiles

and apparel sector in Africa. Further, substantial agricultural products do not enjoy preferences neither under AGOA nor the US GSP. These products are also subject to considerable tariff escalation, eliminating virtually any market access opportunities for African agricultural products. Non-tariff barriers such as standards and SPS also impose additional demands exporters, further undermining agricultural market access for African countries.

5.2. Econometric Results

5.2.1. Tests of the Model

The model employed in this study is a dynamic gravity model with endogenous variable. This model is estimated using the Arellano-Bond and Arellano-Bover GMM estimator. In this type of estimation there are two basic tests. These are the Arellano-Bond test for autocorrelation and the Sargan or Hansen J statistic test of over identification. In addition to this, heteroskedasticity test is also necessary to decide the standard error type, i.e. whether to use the robust standard error or the GMM type error. Thus, these tests are conducted.

The Arellano-Bond test for autocorrelation is applied to the differenced residuals. The null and alternative hypothesis of the test is:

$H_0 =$ There is no autocorrelation

$H_1 =$ There is autocorrelation

The test for AR(1) process in first differences usually rejects the null hypothesis and the test for AR(2) in first difference is more important, because it will detect autocorrelation in levels. Below is the result of the test (table 5.1).

Table 5.3 Arellano-Bond test for zero autocorrelation in first-differenced errors

Order	z	Prob > z
1	-1.9308	0.0505
2	1.5989	0.1098

From the above table it is clear that for the AR (1) the null hypothesis is rejected 10% of significance but at 1% it is not rejected. The result in the above table also shows that AR (2) correlation is not detected in the model. That means for the AR (2) process the Arellano-Bond test fail to reject the null hypothesis of no autocorrelation.

The Sargan test is used for testing the validity of the over-identification restrictions. This statistics is the special case of Hansen’s J statistic under the assumption of homoskedasticity. The null hypothesis of the test is over-identifying restrictions are valid (the instruments as a group are exogenous). The higher the p-value of the Sargan statistic the better is the model. Thus, the test result in this analysis reveals that the null hypothesis cannot be rejected because the p-value of the Sargan statistics is 0.3412.

In the context of GMM, when robust or cluster options are specified, the over-identifying restriction may be tested via the commonly employed J statistic of Hansen (1982). The J statistic is distributed as χ^2 with degree of freedom equal to the number of over-identifying restrictions. This test is the most common diagnostic utilized in GMM estimation to evaluate the suitability of the model. A rejection of the null hypothesis implies that the instruments are not satisfying the

orthogonality conditions required for their employment. This is because they are not truly exogenous, or they are being incorrectly excluded from the regression. Thus, in this study the p-value of the Hansen test statistics is 0.531, thus the test fail to reject the null hypothesis of over-identifying restrictions are valid.

The test for the presence of hetroskedasticity is also conducted in this study. The principle is to test for a relationship between the residual of the regression and the explanatory variables. In this study the Breusch-Pagan/ Cook-Weisberg test for hetroskedasticity is used. This statistic is distributed as χ^2 with p degree of freedom under the null of constant variance (homoskedasticity) and under the maintained hypothesis that the error of the regression is normally distributed. The result of the test indicates the rejection of the null hypothesis of constant variance. This confirms the presence of hetroskedasticity. Thus, the study used the robust standard error in the estimation process.

Therefore, on the basis of the Arellano-Bond test of autocorrelation and the Sargan and Hansen J test of over-identifying restriction there is no problem in the model. Thus, the model is estimable using GMM estimation methods. Table 5.1 indicates the Stata output of the estimation of the empirical model by GMM. Thus, in the table the dynamic panel data one step and two step robust results are presented.

5.2.2. The Effect of AGOA on SSA Aggregate Export

The effect of AGOA on SSA countries aggregate export to US can be seen from the estimated model coefficient. As expected this estimated coefficient shows that AGOA had a positive impact on overall African exports to US, with estimate coefficient of 0.063. It is also statistically significant at 5 per cent level. Empirically this finding is in line with Lall (2003), Gibbon (2003) and Nouve and Staatz (2003) findings. Other studies like Frazer and Van Biesebroeck (2007), Fayissa and Tadesse (2007), and Nouve (2005) also find that AGOA has had a more positive impact, which is consistent with this study. However, this study is not consistent with Muller (2008) and Seyoum (2007) findings. Muller finds a negative but non-significant coefficient for AGOA and Seyoum finds a marginal positive but statistically non-significant impact of AGOA on total SSA exports to US up to 2004.

Based on the theoretical traditional gravity model, the estimated coefficient of AGOA implies that a 1 per cent increase in AGOA exports convert in to a 0.062 to 0.066 per cent increase in overall SSA export to US.

The result may be due to the fact that the least developed SSA countries are attracting large amount of new investment and exploiting their cheap labor force. The increase in exports represents a small fraction of these countries GDP. However, even though the gains are small in aggregate, the experiences of individual countries show that the trading opportunities provided by preferential access (AGOA) can make use of resources in a way that promotes long run growth. (See Subramanian and Roy, 2001).

Table 5.4 Dynamic Panel Data Estimation: System GMM two step and one step results

Dependent Variable	TWO STEP (WC-Robust)		ONE STEP (WC-Robust)	
	Coef.	P> z	Coef.	P> z
ln_xijt				
ln_xijtlag	0.585	0.003*	0.585	0.002*
ln_gdpit	0.529	0.427	0.593	0.373
ln_gdpjt	4.843	0.005*	4.537	0.070**
ln_popit	0.016	0.977	0.003	0.994
ln_popjt	-10.300	0.017**	-9.446	0.069**
ln_rdiijt	-0.202	0.873	-0.150	0.899
ln_agoaiijt	0.066	0.013**	0.062	0.020**
ln_exrtijt	0.005	0.976	0.018	0.906
_cons	-90.454	0.033**	-87.882	0.081***

Arellano-Bond AR(1) in D1			0.0535	
Arellano-Bond AR(2) in D1			0.1098	
Overall Significance, p>chi2			0.0000	
Number Of Observation			397	
Number of Countries			33	

* Statistically significant at 1% level

** Statistically significant at 5% level

*** Statistically significant at 10% level

Even though this study shows a significant coefficient of AGOA with a very small coefficient, apparel is the only product grouping in which AGOA seems to have stimulated any significant increase in exports. Export under the apparel sector is dominated by countries which are successful under AGOA, i.e. Lesotho, Kenya, Madagascar, and Malawi. The agricultural sector does not show any significant change under AGOA. This may be due to the exclusion of a range of high-duty products under AGOA and the act offers very limited additional market access over and above the GSP. The act extends preferences to just 26 additional agricultural tariff lines- less than two percent of the total number of agricultural lines.

Despite the shortcomings of the act in extending preferences to agricultural products it is important to consider the supply side constraints. These constraints include poor infrastructure, complex business environment, unskilled labor markets, governance issues and the like, which explains much of Africa's poor export performance over the last few decades.

5.2.3. Interpretation of Economic size, population and other variables

In line with the basic expectation of gravity models, the sign of the coefficients of the economic size variables (the GDP of importing and exporting countries) are positive. The exporter countries GDP (SSA GDP) is not statistically significant with a coefficient of 0.529.

Unlike the SSA GDP, the US GDP is statistically significant with a coefficient of 4.843. This implies that a one per cent increase in US GDP leads to a 4.53 per cent increase on the aggregate export of SSA countries. This result is due to the fact that the GDP growth in US may translate in to increased demand for imports in US. The changes in US GDP are more likely to induce

increases in the consumption of non-agricultural products, which tend to be more income elastic than agricultural products.

Despite the ambiguity in the literature regarding the expected sign of population variables in a gravity framework, the estimation result in this study shows a negative sign of this variable coefficient for the importer country. The SSA population variable is positive but statistically insignificant with a coefficient of 0.016. Though the theoretical literature is ambiguous regarding the sign of the population coefficients, there is a tendency to interpret them following Bergstrand (1989). On the basis of Bergstrand interpretation for exporting countries, a negative population coefficient indicates that exports are capital intensive, where as positive sign suggests that they are labor intensive. African exports to US are more likely to be labor intensive.

Still using Bergstrand's framework, the negative US population coefficient suggests that US imports from Africa tend to be income elastic. The US population variable is statistically significant with a coefficient of 10.30. This observation of US import demand for SSA's products may be income elastic reinforces the conjectured justification of the positive sign observed on US GDP.

The lagged dependent variable with a coefficient of 0.585 has a positive and a significant effect on the total export of SSA to US. This means a percentage change in the lagged dependent variable leads to a 0.585% change in the total export. Therefore, countries which trade a lot in the past have the advantage of using habit formation and the set up of distribution and service networks for their products.

The relative distance variable has a positive coefficient as expected in the literature. This variable coefficient is statistically insignificant in the model. The coefficient of this variable is 0.202.

The bilateral exchange rate variable has a positive but statistically insignificant coefficient in the model. A unit per cent change in bilateral exchange rate causes a 0.005 per cent increase in SSA countries export. Despite the ambiguity in the literature regarding this variable, one would have expected depreciated bilateral exchange rate to favour SSA exports. This is also the case in this study.

CHAPTER SIX

Conclusions and Recommendations

6.1. Conclusions

This study analyzes the impact of African Growth and Opportunistic Act (AGOA) on Sub-Saharan Africa (SSA) countries total export to the United States of America. Even though the bulk, by value, is concentrated among a relatively small number of countries, most AGOA-eligible SSA countries have recorded some exports to the US. Four countries – Nigeria, Angola, South Africa, and Republic of Congo – accounted for 86.21% and 87.63% of US purchases in 2009 and 2010 respectively, these countries overall exports to the US far exceed those of the other countries. In addition, exports under AGOA are dominated by energy-related product, which is almost 10 times greater than the second-largest export and covers over 85% of the total export of the eligible AGOA countries to the US under AGOA.

In terms of utilization of AGOA, the textiles and apparel products stands first with a utilization of 89.8% (in 2010) to 97.35% (in 2009). The transportation equipment sector is the second with a utilization of 84.17% (in 2006) to 96.43% (in 2010) next to textiles and apparel. The third is energy related products in terms of the utilization of AGOA. It utilizes 78.46% (in 2010) to 87.9% (in 2007) of the total exports of the sector to US. The agricultural products sector utilizes between 28.07% (in 2006) to 18.19% (in 2008) of the total export of the sector to US.

The econometric analysis, employing a dynamic panel data gravity model, indicates that AGOA has statistically significant positive impact on overall export of SSA to the US. Even if it has a

statistically significant impact, economically AGOA has a very small impact on the total SSA export to US since the coefficient is not different from zero. The estimation result shows that a 1% increase in AGOA export leads to a 0.066% increase in total SSA exports.

Despite the significant effect that AGOA has on total export, only few countries are benefiting from the act. Among this Lesotho, Kenya, Swaziland and Madagascar are the major one. These countries are successful in utilizing the act since its enactment. The success of these countries is mostly related to the enlarging apparel sector, which is mostly owned by foreigners. In contrary to the above successful countries, there are several countries which are still not using the chance of exporting under AGOA properly. Among these countries Sierra Leone, Guinea, Niger and Burkina Faso are the major. These countries export a very insignificant amount under AGOA.

In terms of Sectoral value added and transformation the apparel sector has shown expansion. Notwithstanding to the prominence of energy, mineral and related products the sector represents a rising share of SSA AGOA export. This may be due to the heavy emphasis that AGOA places on Africa's emerging textile and apparel industry as the primary sector for trade benefits.

In spite of the apparel sector expansion in value added under AGOA, agricultural commodity, which most SSA countries depends, account for less than 1% of AGOA exports. This is because of preference erosion and AGOA has important exclusion on specific agricultural products. In addition, subsidies given by US for domestic producers, such as cotton subsidies, eliminate any competitive advantages of Africa's agricultural sector under AGOA. Further, substantial agricultural products do not enjoy preferences neither under AGOA nor the US GSP. Supply side constraints; poor infrastructure, complex business environment, unskilled labor markets,

governance issues and the like, which explains much of Africa's poor export performance over the last few decades has also its own impact.

In general, the impact of the Act is positive and statistically significant but economically it is not different from zero. In addition, U.S. imports from Africa remained highly concentrated among a small number of suppliers. Moreover, the export under AGOA is overwhelmingly dominated by energy related products. Finally, despite the domination of the energy related sector, the apparel sector shows expansion but this sector is mostly dominated by foreigners, which reduces the gain to Africa. The agriculture sectors, which most SSA countries depend, are neglected in the AGOA preference which is given by US.

6.2. Recommendations

On the basis of the conclusions given above, the following recommendations are stated for those eligible Sub-Saharan Africa countries under AGOA and to USA.

Firstly, diversification of the export sector is important to be able to use the Act effectively. Exports under AGOA are predominantly driven by oil and gas. In order to develop a diversified base from Africa, there is need for private investment in a diverse range of industries. Thus, private investments on non-oil exports are essential for developing a strong export base in Africa and to benefit all sectors and countries from AGOA preferences.

Secondly, in order for AGOA to become effective and lead to economic growth and poverty reduction it needs to target the agriculture sector. Currently, AGOA gives limited level of investment and incentive needed to create capacity and expand economic activity in the

agriculture sector, which is supporting over 70 per cent of the overall African population. Thus, targeting on this sector gives a great opportunity for SSA countries to promote their economy and reduce poverty in their country. Infrastructural developments are very important to make the agriculture sector of SSA countries more competitive in US market.

Thirdly,, it is important to eliminate demand side constraints that affect AGOA agricultural export. This includes, abolishing US agricultural subsidies that make American agricultural exports cheaper than locally produced products in AGOA beneficiary countries, and extending the AGOA preferences to all SSA agricultural products.

Lastly, the short life of AGOA should be extended to a longer period. When AGOA was enacted in 2000, it was meant to last for only eight years. Since, substantial time was necessary to establish the productive capacity and infrastructure to take advantage of the benefits of the preferences scheme, extending the Act to a longer period of time is invaluable. Thus, even if the act was extended to 2015 in 2004, there is a need for AGOA extension beyond this to attract investors and build capacity to produce AGOA eligible products.

REFERENCES

- Aitken, N.D (1973), *the Effect of the EEC and EFTA on European trade: a temporal cross section analysis*, American economic review, vol. 63, 881-92.
- Alemayehu, G. (2010), *Fundamentals of International Economics for Developing Countries: A Focus on Africa: Volume I: Trade Theory and Policy*. London: Palgrave Macmillan (Forthcoming).
- Ambrose, S.E. and D.G. Brinkley (1997), *Rise to Globalism: American Foreign Policy since 1938*. 8th Revised edition, New Baskerville, USA: Penguin.
- American Society of International Law (2002), *trade development between the United States and Sub-Saharan Africa*, the American Journal of International Law, Vol. 96, no. 4, pp. 978- 979.
- Amjadi, A., A.Yeats, F. Ng, and U. Reincke (1997), *Did Domestic Policies Marginalize Africa in International Trade?* Washington, D.C.: World Bank.
- Anderson, J.E (1979), *a theoretical foundation for the gravity equation*, American economic review, Vol. 69, pp. 106-16.
- Anderson J.E., Van Wincoop E. (2003), *gravity with gravitas: a solution to the border puzzle*, American.
- Anderson T.W. and C. Hsiao (1982), *Formation and Estimation on Dynamics Models Using Panel data*, Journal of Econometrics, Vol. 18: pp. 47-82.

- Arellano M. and S. Bond (1991), *Some Tests of Specification for Panel Data: Monto Carlo Evidence and an Application to Employment Equations*, the Review of Economic Studies, Vol. 58, pp. 277-97.
- Arellano M. and O. Bover (1995), *another Look at Instrumental Variable Estimation of Error Component Models*, Journal of Econometrics, Vol. 68: pp. 29-51.
- Armington, Paul (1969), *A theory of demand for products distinguished by place of production*, IMF staff papers, Vol. 16(3), pp. 159-76.
- Baltagi, B.H. (2001), *Econometric Analysis of Panel Data*, New York: John Wiley and Sons
- Bean, Charlesr (1988), *Sterling Misalignment and British Trade Performance*, in Richard C. Marston (ed), *Misalignment of exchange rate: effects on trade and industry*, Chicago: University of Chicago Press.
- Bendictis and Vicarelli (2005), *Trade Potentials in Gravity Panel Data Models*, the B.E. Journal of Economic Analysis and Policy, Vol. 5: Iss.1 (topics), article 20.
- Bergstrand, J.H. (1985), *the gravity equation in international trade: some microeconomic foundations and empirical evidence*, Review of economics and statistics, Vol. 67, pp. 474- 81.
- Bergstrand, J.H. (1989), *the Generalized Monopolistic Competition and the Factor-Proportion Theory of International Trade*, Review of Economic and Statistics, Vol. 71, pp. 143-53.
- Blackman K. and G. Mutume (1998), *no Trade and Investment Miracles Expected*, inter press.

- Blundell, R. and S. Bond (1998), *Initial Conditions and Moment Restrictions in Dynamic Panel Data Models*, Journal of Econometrics, Vol. 87, 115-43.
- Brenton, P. (2003), *Integrating the Least Developed Countries in to the World Trading System: the Current Impact of the EU Preferences under the Everything but Arms Mimeo*, World Bank Chain for Clothing, World Development, Vol. 31(11): pp 1809-27.
- Brenton, P. and Mombert Hoppe (2006), *the African Growth and Opportunistic Act, Exports, and Development in Sub-Saharan Africa*, World Bank Policy Research Working Paper, No.3996.
- Bun, M.J.G and J.F. Kiviet (2006), *the Effects of Dynamic feedbacks on LS and MM Estimator Accuracy in Panel Data Models*, Journal of Econometrics, Vol. 132, pp. 409-44.
- Burfisher, M.E., S. Robinson, and K. Thierfelder (2003), '*Regionalism: Old and New, Theory and Practice*' Paper presented to The International Agricultural Trade Research Consortium (IATRC) Conference, Capri, Italy.
- Centre for Research and Studies on the World Economy (n.d.), dist_cepil.xls.
<http://www.cepii.fr/francgraph/bdd/distances.htm>
- Cheng, I. H. and H.J. Wall (1999), *Controlling Heterogeneity in Gravity Model of Trade*, Federal Reserve Bank of St. Louis Working Paper.
- Collier, Paul and Anthony Venables (2007), *Rethinking Trade Preferences: How can Africa Diversify its Exports*, the World Economy, Vol. 30(8): pp. 1326-45.

- Cooper, H. (2002), *Fruit of the Loom: Can Africa Nations use Duty-Free Deal to Revamp the Economy?* Wall Street Journal, New York.
- Deardorff, A.V. (1982), *the General Validity of the Heckscher-Ohlin Theorem*, American Economic Review, Vol. 72: pp. 683-94.
- Deardorff, A.V. (1998), *Determinants of Bilateral Trade: Does Gravity Work in a Neo-classical World? In the Regionalization of the World Economy*, J.A. Frankel (ed), University of Chicago press, Diversity American Economic Review, Vol. 67, pp. 297-308.
- Dixit, A. and Stiglitz J. (1977), *Monopolistic Competition and Optimum Product Diversity*, American Economic Review, Vol. 67, pp. 297-30.
- Egger, P. (2002), *an Econometric View on the Estimation of Gravity Models and the Calculation of Trade Potentials*, world economy, Vol. 25: pp. 297-312.
- Egger, Peter and Michael P. (2002), *Proper Panel Econometric Specification off the Gravity Equation: A Three-Way Model with Bilateral Interaction Effects*, Austrian institute of Economic Research and University of Innsbruck.
- Eichengreen, B. and Irwin D.A. (1996), *The Role of History in Bilateral Trade Flows*, National Bureau of Elsevier, vol. 40, pp. 23-39.
- Emmanuel, O. (2007), *North-South Cooperation: an Assessment of US Multilateral Trade Arrangement with Sub-Saharan Africa under AGOA*, Journal of Sustainable Development Africa, Vol. 9, pp. 64-83.
- Ethier, W.J. (1998), *'The New Regionalism'*, *The Economic Journal*, 108 (July), 1149-1161.

- Evenett, J.S. and W. Kellr (2002), *On Theories Explaining the Success of the Gravity Equation*, Journal of Political Economy, Vol. 110: pp. 281-316.
- Feenstra, R. (2004), *Advanced International Economics: Theory and Application*, Princeton NJ; Princeton University presses.
- Feenstra, R.C., J.R. Markusen and A.K. Rose (2001), *Using the Gravity Equation to Differentiate among Alternative Theories of Trade*, Canadian Journal of Economics, Vol. 34: pp 430-47.
- Flatter, F. (2002), *Rules of Origin and AGOA: Hard Choices For Textiles And Clothing In SADC*, USAID Report For The SADC Secretariat.
- Frankel, J., E. Stein and S.J. Wei (1995), *Trading Blocks and the Americas: The Natural, the Unnatural and Super Natural*, Journal of Development Economics, vol. 47: pp. 61-95.
- Frazer, G. and J. Van Biesebroeck (2007), *Trade Growth under the African Growth and Opportunistic Act*, NBER Working Paper, No. 13222.
- Friedman, L.T (2000a and b), *Don't Punish Africa*, New York Times, New York.
- Gambari, I.A (1996), *the Role of Regional and Global Organizations in Addressing Africa's security Issues'*, Keller, E.J. and D. Rothchild (eds.) *Africa In the New International Order*, London: Lynne Rienner Publishers, PP. 29-36.
- Guseh, James S. and Oritsejafor, Emmanuel O. (2009), *the African Growth and Opportunistic Act and Economic Growth in Sub-Saharan Africa*, In Whitehead Journal of Diplomacy and International Relations, pp. 123-41.

- Hammouda, Karingi and Perez (2005), *Unrestricted Market Access for Sub-Saharan Africa: Important Benefits with Little Costs to QUAD*, No. 11 African Trade Policy Centre.
- Harrigan James (1996), *Openness to Trade in Manufacturers in the OECD*, Journal of International Economics, Elsevier, Vol. 40(1-2), pp. 23-39.
- Helpman, E. (1987), *Imperfect Competition and International Trade: Evidence from Fourteen Industrial Countries*, Journal of the Japanese and International Economies, Vol. 2: pp. 62-81.
- Helpman, E. and P.R. Krugman (1985), *Market Structure and Foreign Trade*, Cambridge, Massachussetts: the MIT press.
- Ianchovichaina, E., Mattoo, A., and Olarreaga, M. (2001), *Unrestricted Market Access For Sub-Saharan Africa*, Journal of African Economies, Vol. 10: pp. 410-32.
- International Monetary Fund (n.d.), International Financial Statistics, IMF <http://www.imf.org/external/data.htm>.
- IMF CD-ROM (2010), *World Economic Outlook Database*, International Monetary Fund, Washington D.C.
- Karagoz, K. and Sarray, M.O. (2008), *Trade Potential of Turkey with Asia Pacific Countries: Evidence from Panel Gravity Model*, Seventh APEF International Conference on East and West Asia Economic Relations, University of Esfahan, Iran.
- Karingi, S.N., M. Siriwardana, and E.E. Rongu (2002), *Implications of the COMESA Free Trade Area and Proposed Customs Union: An Empirical Investigation*, Paper Prepared for the Fifth Annual Conference on Global Economic Analysis, Taipei, Taiwan.

Kelly, Kevin (2010), *Happy 10th Birth Day Agoa But Why Is There No Party?* The East African,

<http://www.theeastafrican.co.ke/business/-/2560/923770/-/3w4y6tz/-/index.html>

Krugman, P. (1979), Increasing Returns, Monopolistic Competition and International Trade, *Journal of International Economics*, Vol. 9, pp. 469-79.

Lairds, S. and A. Yeats (1990), *Quantitative Methods for Trade Barriers Analysis*, New York.

Lall, S. (2003), *FDI, AGOA and Manufactured Exports From A Land-Locked Least Developed African Economy: Lesotho*: QEH Working Paper Series, No. 109, University of Oxford.

Leamer, E.E., Stern (1970), *Quantitative International Economics*, Chicago: Aldine Publishing Co.

Lindsey, B. (2002), *Mixed Signal on Trade Barriers*, Wall Street journal, New York.

Linnemann, H. (1966), *an Econometric Study of International Trade Flows*, North-Holland, Amsterdam.

Raghavan, C. (1996), *Africa: NGOs start campaigns against US AGOA*, third world network.

Matyas, L. and Sevestre, P. (1996), *the Econometrics of Panel Data: A Handbook of the Theory with Application*, Kluwer Academic Publishing, Boston.

Martinez-Zarzoso I., Nowak-Lehmann D.F., Horsewood N. (2009), *are Regional Trading Agreements are Beneficial? Static and Dynamic Panel Gravity Models*, North America *Journal of Economics and Finance*, Vol. 20, pp. 46-65.

- Mattoo, A., D. Roy and A. Subramanian (2002), *the African Growth and Opportunistic Act and Its Rule of Origin: Generosity Undermined?* IMF Working Paper, No. 158, International Monetary Fund: Washington D.C.
- Mold, Andrew (2005), *Trade Preference and Africa: the State of Play and Issue at Stake*, African Trade Policy Center Working Paper, No. 12.
- Mueller, T. (2008), *The Effect of the African Growth and Opportunistic Act on Trade*, paper prepared for the 2008 annual meeting of the International Studies Associations, San Francisco.
- Mutume, G. (1998), *What Does Clinton Hold For Pretoria?*, Inter Press Service, New York
- Naumann, E. (2009), *AGOA at Nine, Some Reflections on the Act's Impact on Africa-US Trade*, www.agoa.info/download.php?file=94, New Jersey: Princeton university press.
- Nickell, S. (1981), *Biases In Dynamic Models with Fixed Effects*, *Econometrica*, Vol. 49: pp. 417-26.
- Nouve, K. (2005), *Estimating the Effect of AGOA on African Export Using A Dynamic Panel Analysis*, World Bank Policy Research Working Paper Series.
- Nouve, K. and J. Staats (2003), *The African Growth and Opportunistic Act and the Latent Agricultural Export Response in Sub-Saharan Africa*, paper presented at the annual meeting of the American agricultural economics association, Montreal, Quebec, Canada, July 27-30.
- Olarreaga, M. and C. Ozden (2005), *AGOA and Apparel: Who Captures the Tariff Rent In The Presence Of Preferential Market Access?* *The World Economy*, Vol. 28: pp.63-77.

- Poole, M.S. (1962), *African Group Comes Looking for Business*, the Atlanta Journal Policy, the Twentieth Century Fund.
- Poole, M.S. (2002), *African Group Comes Looking For Business*, the Atlanta Journal Constitution, Atlanta.
- Poyhonen, P. (1999), *A Tentative Model for the Volume of Trade between Countries*, *Weitwirtschaftliches Archive*, Vol. 90: pp. 93-100
- Roberts, M.J. and Tybout, J.R. (1997), *the Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs*, *American Economic Review*, Vol. 87(4): pp. 545-64.
- Rose, K. A. (2002), *Do We Really Know that the WTO Increases Trade?*, NBER Working Paper, No. 9273, Online, www.nber.org/papers/w9273.
- Schraeder, P.J. (1996), *Removing the Shackles? US Foreign Policy toward Africa after the end of the Cold War*, Keller, E.J. and Rothchild, D. (eds.) *Africa in the New International Order*, London: Lynne Rienner Publishers, PP. 187-205.
- Seyoum, B. (2007), *Export Performance of Developing Countries under the African Growth and Opportunistic Act: Experiences from Us Trade with Sub-Saharan Africa*, *Journal of Economic Studies*, Vol. 34(6): pp. 515-33.
- Shapouri, S. and M. Trueblood (2003), *the African Growth and Opportunistic Act: Does It Really Present Opportunities?* Paper presented to the international agricultural trade research consortium (IATRC) conference Capri, Italy statistics online. <http://www.unctad.org/Templates/WebFlyer.asp>.

- Tadesse, Bedassa and Fayissa Bichaka (2008), *The Impact of AGOA on US Imports From Sub-Saharan Africa*, Journal of International Development, Vol. 20(7), pp. 920-41.
- Tinbergen, J. (1962), *the World Economy: Suggestions for an International Economic Policy*, Twentieth Century Fund: New York, NY.
- USDOC, (2009), *US-Africa Trade Profile 2009*, International Trade Administration, Washington D.C.
- US International Trade Commission (2010), *Trade Web Database*, <http://www.usitc.gov>, Washington D.C., UCITC.
- USTR (2008), “Comprehensive Report on US Trade and Investment Policy Toward SSA and Implementation of the African Growth and Opportunity Act”, Office of the United States Trade Representative, Washington DC.
- USTR (2010), *The 2010 Trade Policy Agenda and 2009 Annual Report*, Office of the United States Trade Representative, Washington D.C.
- VanGrasstek, Craig (2003), *the African Growth and Opportunistic Act: A Preliminary Assessment*, UNCTAD/ITCD/TCB/2003/1.
- Wall, J.H. (1999), *Using the Gravity Model to Estimate the Costs of Protection*, Review Federal Reserve Bank of St. Louis, Vol. 90, pp. 33-40.
- Wooldridge, J.M. (2002), *Econometric Analysis of Cross Section and Panel Data*, Cambridge, MA, MIT press.
- World Bank, (2010), *World Development Indicators*: CD-ROM version, Washington, D.C.

APPENDICIES

Appendix A. List of AGOA Beneficiaries

COUNTRY	DATE DECLARED AGOA ELIGIBLE	DATE DECLARED ELIGIBLE FOR SPECIAL RULE FOR APPAREL	ELIGIBLE FOR SPECIAL RULE FOR APPAREL
(Republic of) Angola	30-Dec-03		
(Republic of) Benin	02-Oct-00	28-Jan-04	Yes
(Republic of) Botswana	02-Oct-00	27-Aug-01	Yes
Burkina Faso	10-Dec-04	04-Aug-06	Yes
(Republic of) Burundi	01-Jan-06		
(Republic of) Cameroon	02-Oct-00	01-Mar-02	Yes
(Republic of) Cape Verde	02-Oct-00	28-Aug-02	Yes
(Republic of) Chad	02-Oct-00	26-Apr-06	Yes
(Union of the) Comores	01-Jul-08		Yes
(Republic of) Congo	02-Oct-00		
(Democratic Republic of) Congo*	01-Jan-03		
(Republic of) Djibouti	02-Oct-00		
Ethiopia	02-Oct-00	02-Aug-01	Yes
Gabonese (Republic)	02-Oct-00		No
The Gambia	01-Jan-03	28-Apr-08	Yes
(Republic of) Ghana	02-Oct-00	20-Mar-02	Yes
(Republic of) Guinea	SUSPENDED end 2009		
(Republic of) Guinea-Bissau	02-Oct-00		
(Republic of) Kenya	02-Oct-00	18-Jan-01	Yes
(Kingdom of) Lesotho	02-Oct-00	23-Apr-01	Yes
(Republic of) Liberia	29-Dec-06		Yes
(Republic of) Madagascar	SUSPENDED end 2009	06-Mar-01	Yes
(Republic of) Malawi	02-Oct-00	15-Aug-01	Yes
(Republic of) Mali	02-Oct-00	11-Dec-03	Yes
(Republic of) Mauritius	02-Oct-00	18-Jan-01	Yes****
(Islamic Republic of) Mauritania	28-Jun-07		
(Republic of) Mozambique	02-Oct-00	08-Feb-02	Yes
(Republic of) Namibia	02-Oct-00	03-Dec-01	Yes
(Republic of) Niger	SUSPENDED end 2009	17-Dec-03	Yes
(Federal Republic of) Nigeria	02-Oct-00	14-Jul-04	Yes
(Republic of) Rwanda	02-Oct-00	04-Mar-03	Yes
(Democratic of Republic of) Sao Tome and Principe	02-Oct-00		
(Republic of) Senegal	02-Oct-00	23-Apr-02	Yes

(Republic of) Seychelles	02-Oct-00		No
(Republic of) Sierra Leone**	23-Oct-02	05-Apr-04	Yes
(Republic of) South Africa	02-Oct-00	07-Mar-01	No
(Kingdom of) Swaziland	02-Oct-00	26-Jul-01	Yes
(United Republic of) Tanzania	02-Oct-00	04-Feb-02	Yes
(Republic of) Togo***	21-Apr-08		Yes
(Republic of) Uganda	02-Oct-00	23-Oct-01	Yes
(Republic of) Zambia	02-Oct-00	17-Dec-01	Yes

NOTES:

*** Effective date of designation of the Republic of Sierra Leone as an AGOA beneficiary country was determined by the U.S. Trade Representative to be October 23, 2002**

**** Effective date of designation of the Democratic Republic of Congo as an AGOA beneficiary country was determined by the U.S. Trade Representative to be October 31, 2003**

***** Date of Federal Register Notice proclaiming Republic of Togo as Beneficiary under AGOA and applicable to goods entered from 30 days after date of publication**

***** As per HR 7222 legislative amendment (See legal text in Downloads Section)**

Appendix B. Objectives of AGOA

According to Trade and development Act of 2000 section 103, the objectives of AGOA are as follows:

1. Encourage increased trade and investment between the United States and Sub-Saharan Africa;
2. Reduce tariff and non-tariff barriers and other obstacles to sub-Saharan African and United States trade;
3. Expand United States assistance to sub-Saharan Africa's regional integration efforts;
4. Negotiate reciprocal and mutually beneficial trade agreements, including the possibility of establishing free trade areas that serve the interest of both the United States and the countries of sub-Saharan Africa;
5. Focus on countries committed to the rule of law, economic reform, and the eradication of poverty;
6. Strengthen and expand the private sector in sub-Saharan Africa, especially enterprises owned by women and small business;
7. Facilitate the development of civil societies and political freedom in sub-Saharan Africa;
8. Establish a United States-sub-Saharan African Trade and Economic Forum; and
9. Accession of the countries of sub-Saharan Africa to the Organization for Economic Cooperation and Development (OECD), Convention on Combating Bribery of Foreign Public Officials in International Business Transactions.

From the above it is quite clear that the objectives are wide-ranging and beyond ordinary nonreciprocal tariff-free trade arrangements.

Appendix C. AGOA Eligibility Criteria

The eligibility criteria under AGOA are set forth in section 104(a) of AGOA and sections 502(b) and (c) of the Trade Act of 1974, as amended (containing the GSP eligibility criteria). Section 104(a) in its entirety and a summary of sections 502(b) and (c) is included below.

AGOA grants the United States president power to designate a sub-Saharan African country the eligibility status if the president is satisfied that the following requirements have been met:

1. That the (sub-Saharan African) country has established, or is making continual progress toward establishing:
 - A market based economy that protects private property rights, incorporates an open rules-based trading system, and minimizes government interference in the economy through measures of price controls, subsidies, and government ownership of economic assets
 - The rule of law, political pluralism, and the right to due process, a fair trial, and equal protection under the law;
 - The elimination of barriers to the United States trade and investment
 - Economic policies to reduce poverty, increase the availability of health care and educational opportunities, expand infrastructure, promote the development of private enterprise, and encourage the formation of capital markets through micro credit or other programmes
 - A system to combat corruption and bribery, such as signing and implementing the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions; and

- Protection of internationally recognized worker rights, including the right of association, the right to organize and bargain collectively, a prohibition on the use of any form of forced or compulsory labor, a minimum age for the employment of children, and acceptable conditions of work with respect to minimum wages, hours of work, and occupational health and safety
- 2. Does not engage in activities that undermine United States national security or foreign policy interests; and
- 3. Does not engage in gross violations of internationally recognized human rights or provide support for acts of international terrorism and cooperates in international efforts to eliminate human rights violations and terrorist activities.

Summary of section 502(b) and (c) of the Trade Act of 1974 as amended.

The President shall not designate any country as a beneficiary country if:

1. The country is a Communist country, unless its products receive normal trade relations treatment, it is a member of the World Trade Organization and International Monetary Fund or is not dominated or controlled by international communism (Sec. 502(b)(2)(A));
2. The country is a party to an arrangement or participates in any action that withholds or has the effect of withholding vital commodity resources or raises their prices to unreasonable levels, causing serious disruption of the world economy (Sec. 502(b)(2)(B));
3. The country affords preferential treatment to products of a developed country which has, or is likely to have a significant adverse effect on U.S. commerce (Sec. 502(b)(2)(C));
4. The country has nationalized, expropriated or otherwise seized property, including trademarks, patents, or copyrights owned by a U.S. citizen without compensation (Sec. 502(b)(2)(D));

5. The country does not recognize or enforce arbitral awards to U.S. citizens or corporations (Sec. 502(b)(2)(E));
6. The country aids or abets, by granting sanctuary from prosecution, any individual or group which has committed international terrorism (Sec. 502(b)(2)(F));
7. The country has not taken or is not taking steps to afford internationally-recognized worker rights, including the right of association, the right to organize and bargain collectively, freedom from compulsory labor, a minimum age for the employment of children, and acceptable conditions of work with respect to minimum wages, hours of work and occupational safety and health (Sec. 502(b)(2)(G)).
8. The country has not implemented its commitments to eliminate the worst forms of child labor, as defined by the International Labor Organization's Convention 182 (Sec. 502(b)(2)(H); this provision was added by the Trade and Development Act of 2000 in Section 412).

In addition, the President must take into account:

1. A country's expressed desire to be designated a beneficiary country (Sec. 502(c)(1));
2. The country's level of economic development (Sec. 502(c)(2));
3. Whether other major developed countries extend preferential tariff treatment to the country (Sec. 502(c)(3));
4. The extent to which the country provides "equitable and reasonable access" to its markets and basic commodity resources and refrains from unreasonable export practices (Sec. 502(c)(4));
5. The extent to which the country provides adequate and effective protection of intellectual property rights (Sec. 502(c)(5));
6. The extent to which the country has taken action to reduce trade-distorting investment practices and policies and reduce or eliminate barriers to trade in services (Sec. 502(c)(6)); and
7. Whether the country has taken or is taking steps to afford internationally recognized worker rights, (Sec. 502(c) (7)).

**Appendix D. AVERAGE TOTAL EXPORT FOR PRE AND POST AGOA PERIOD,
AVERAGE EXPORT UNDER AGOA AND PERCENTAGE OF AGOA EXPORT**

COUNTRY	Average Total Export 1995-2000	Average Total Export 2001-10	Average Export Under AGOA	Percentage of AGOA Export
Angola	2687164044	8790712141	2891805055	32.89614094
Botswana	24819304.8	127508797.2	15895497.8	12.46619696
Burkina Faso	1993113.667	1905297.7	768.3	0.040324407
Cameroon	81498802.73	268738435.8	137462189	51.15092249
Cape Verde	994983.3333	2099577.6	770073.9	36.67756314
Chad	5411201.133	1371391235	118119900.5	8.613143901
Congo (DROC)	232186693	233218473.1	17817914	7.640009714
Congo (ROC)	405395019.1	2126924882	543025652.6	25.53102168
Djibouti	198622.45	2636445.5	1675.8	0.063562854
Ethiopia	40768109.9	74997841.1	4315098.1	5.753629753
Gabon	1763335609	1976325859	550989417.9	27.87948229
Gambia	1638402.467	729476.5	562.5	0.077110092
Ghana	176065720.7	171029253.3	31775653.4	18.57907509
Guinea	112744281.7	80276827.2	2838.1	0.003535391
Guinea-Bissau	170222.3167	3029988.6	2613115.9	86.24177332
Kenya	105503295.8	288136699.1	210371328.7	73.01094562
Lesotho	96565308.97	362930436.5	331418205.1	91.31728061
Madagascar	80836220.8	296985993.4	193992736.1	65.32050009
Malawi	67793950.62	72002933.7	38948910.2	54.09350453
Mali	5960381.75	5120603.8	8541.9	0.166814312
Mauritius	248380121.5	229655882.9	114713017.7	49.94995828
Mozambique	23110684.22	18785016.2	918160.5	4.887728018
Namibia	41206456.2	174621655.1	22424737.7	12.84189964
Niger	11880945.55	41257020.5	5718.9	0.013861641
Nigeria	6154413857	21397776802	10122531759	47.30646484
Rwanda	4978150.5	10050982.9	34440	0.342653055
Senegal	6454719.9	18864902.4	2610202.9	13.83629157
Sierra Leone	16243861.63	22059241.5	300	0.001359974
South Africa	2959951569	6555781689	764525981.3	11.66185846
Swaziland	37124037.95	140494255.4	113047318.1	80.46401455
Tanzania	28008187.77	36358105.6	1799584.2	4.949609366
Uganda	23119831.67	30926605.3	1405114.9	4.543385497
Zambia	45006565.17	26685098.6	22722.3	0.08514977

Appendix E. Summery Statistics of the Data

Variable	Obs	Mean	Std. Dev.	Min	Max
id	297	17	9.537975	1	33
t	297	2005	2.586347	2001	2009
ln_xijt	297	17.92596	2.8097	9.848661	24.36265
ln_xijtlag	297	17.85557	2.782608	9.848661	24.36265
ln_gdpit	297	22.1528	1.302032	19.1103	25.94479
ln_gdpjt	297	30.00859	.0569826	29.91736	30.07615
ln_popit	297	2.090696	1.436965	-.8051967	5.023051
ln_popjt	297	5.690966	.0242468	5.653247	5.728065
ln_dij	297	9.218227	.2660327	8.67263	9.630524
ln_agoaijt	297	11.91567	8.131409	0	23.62949
ln_exrtijt	297	5.011629	2.175693	-.3331112	8.561956
ln_rdiijt	297	7.041807	.3387738	6.382572	9.425382

Appendix F. CORRELATION MATRICES

	ln_xij~g	ln_gdpit	ln_gdpjt	ln_popit	ln_popjt	ln_ago~t	ln_exr~t	ln_rdijt
ln_xijtlag	1.0000							
ln_gdpit	0.7034	1.0000						
ln_gdpjt	0.1252	0.1017	1.0000					
ln_popit	0.3616	0.7074	0.0382	1.0000				
ln_popjt	0.1280	0.1062	0.9455	0.0404	1.0000			
ln_agoaijt	0.7060	0.5310	0.1668	0.2109	0.1446	1.0000		
ln_exrtijt	-0.2057	-0.1597	0.0128	0.1376	0.0157	-0.3252	1.0000	
ln_rdijt	0.3484	0.3114	0.2158	0.1330	0.2155	0.3892	-0.1220	1.0000

Appendix H. GMM ESTIMATION RESULTS: TWO STEP

Dynamic panel-data estimation	Number of obs	=	297
Group variable: id	Number of groups	=	33
Time variable: t	Obs per group: min	=	9
	avg	=	9
	max	=	9
Number of instruments = 35	Wald chi2(8)	=	511.85
	Prob > chi2	=	0.0000

Two-step results

		WC-Robust				
ln_xijt	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
ln_xijtlag	.5857665	.1977513	2.96	0.003	.198181	.973352
ln_gdpit	.5293335	.6665208	0.79	0.427	-.7770232	1.83569
ln_gdpjt	4.843198	1.728481	2.80	0.005	1.455438	8.230957
ln_popit	.0158377	.5582226	0.03	0.977	-1.078258	1.109934
ln_popjt	-10.30093	4.317254	-2.39	0.017	-18.76259	-1.839263
ln_rdiijt	-.2016682	1.263834	-0.16	0.873	-2.678738	2.275402
ln_agoaijt	.0657058	.0264379	2.49	0.013	.0138884	.1175232
ln_exrtijt	.005148	.1691673	0.03	0.976	-.3264139	.3367098
_cons	-90.45449	42.50242	-2.13	0.033	-173.7577	-7.151273

Instruments for differenced equation

GMM-type: L(2/2).ln_xijt L(1/1).ln_agoaijt

Standard: D.ln_gdpit D.ln_gdpjt D.ln_popit D.ln_popjt D.ln_rdiijt D.ln_exrtijt

Instruments for level equation

GMM-type: LD.ln_xijt LD.ln_agoaijt

Standard: _cons