ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

TRADE FACILITATION AND TRADE FLOWS IN THE COMESA: CASE STUDY OF ETHIOPIA AND KENYA

BY

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A PROJECT REPORT SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIRMENTS FOR THE DEGREE OF MASTERS OF ARTS IN ECONOMICS (APPLIED TRADE POLICY ANALYSIS) IN THE DEPARTMENT OF ECONOMICS

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ABSTRACT

Trade facilitation is an important aspect and tool for economic development in the context of trade promotion and trade development. Based on this fact, the main objective of this study was to analyze the impact of trade facilitation measures on exports and imports among COMESA countries with special emphasis on trade flows between Ethiopia and Kenya. To achieve this basic objective, an augmented gravity model was analyzed using both descriptive and econometric methods of analysis by using data covering the period of 2004 through 2010. The study constructed five indicators of trade facilitation measures from a total of 13 indicators from the Global Competitiveness Report. The basic findings are as follows: The number of trade documents was significantly associated with imports and this clearly shows the barrier posed by the high number of documents required to import. Although the cost of transport and time to import had the expected signs, they were not significantly different from zero. Real GDP and population were associated with the trade flows but the association was weak. Based on these findings, there is need for trade and institutional reforms focusing on reducing the number of customs documents and eventual complete elimination of documents required to import in the COMESA to boost trade flows. Efforts at addressing trade facilitation should also encourage fast tracking of a monetary union so that exchange rate variation effects on trade flows is completely eliminated.

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LIST OF ABBREVIATIONS

APEC.....Asia Pacific Economic Cooperation
AU .....African Union
CGE.....Compatible General Equilibrium
COMESA .....Common Market for Eastern and Southern Africa
CET .....Common External Tariff
EAC.....East African Community
EPA .....Economic Partnership Agreements
EU.....European Union
FDIs.....Foreign Direct Investments
GATTS.....General Agreement in Trade and Tariffs
GCR.....Global Competitiveness Report
GDP.....Gross Domestic Product
LDCs .....Least Developed Countries
NTBs .....Non-Tariff Barriers
OECD .....Organization for Economic Community Development
OLS .....Ordinary Least Squares
SADC .....Southern African Development Countries
SMEs .....Small and Medium Enterprises
UNCTAD .....United Nations Commission for Trade and Development
UNCOMTRADE.....United Nations Commodity Trade Statistics Data base
US.....United States
WB .....World Bank
WTO ..... World Trade Organization
WITS..... World Integrated Trade Solution

CHAPTER ONE

INTRODUCTION

1.1 Background Information

COMESA (Common market for eastern and southern Africa) countries have witnessed a sluggish improvement in intra-trade flows, and this trend has been attributed its own impact on economic growth of the member countries. Generally, there is a tendency for policy analysis by researchers and policy makers to focus more on policy than natural barriers to trade. However, recent evidence suggests that natural barriers may in general, and certainly in some COMESA member countries, be a more important source of trade cost than trade policy, and may well be a significant contributing reason for the sluggish response to trade liberalization in COMESA .According to Iwanow and Kirkpatrick (2007), as the pace of trade liberalization accelerates, the costs of cumbersome trade procedures and other 'behind the border' barriers to trade are receiving increasing attention. The issue of growing interest in the trade policy debate is trade facilitation, and the question is, does trade facilitation boost exports?

The term 'trade facilitation' can be defined as 'the simplification and harmonisation of international trade procedures'. These procedures include the 'activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade' (Zaidi, 2006). Clearly, this definition relates to a wide range of activities including but not limited to import and

export procedures (for example, customs or licensing procedures), transport formalities, payments, insurance, and other financial requirements. However, recently, the definition of trade facilitation has been broadened to include the transparency and professionalism of customs authorities, harmonisation of various standards and conformity to international or regional regulations. In a narrower sense, trade facilitation concerns the movement of goods in cross-border trade (Kurz et al, 2008).

Evidence from the literature shows that the welfare gains from trade facilitation may exceed gains from trade liberalization (see UNECE, 2009). For instance, a study on EAC by Ng'ang'a (2006) show that intra-bloc trade is on average 18 times higher than what would be expected in the absence of the agreement. Indeed, recent evidence suggests that natural barriers may in general, and certainly in some African countries, be a more important source of trade cost than trade policy, and may well be a significant contributing reason for the sluggish response to trade liberalization in Africa. Indeed a study reported by the World Trade Organization (WTO, 2004), indicates that for the majority of Sub Saharan African countries, transport cost incidence for exports (the share of international shipping costs in the value of trade) is five times higher than tariff cost incidence (the trade weighted ad valorem duty actually paid).

Milner, Morrissey and Rudaheranwa (2001) calculated and compared the effective protection of imports, and implicit tax on exports, due to transport costs, to the protection due to trade policy barriers for Uganda. The results of their investigation revealed that natural protection on domestic sales arising from transport costs was high, being equivalent to an effective rate of protection of 48% on average in 1994 (about a quarter higher than protection due to trade policy). They also found that the implicit tax

associated with transport costs was as high as 100% for manufactured goods, almost 40% for food products, almost 25% for coffee, cotton and tea, and about 25% for fish.

If other constraints, such as market information and reliable utilities such as electricity and telecommunications, could be quantified, the implicit taxation of exporters associated with transaction costs would be even higher. Therefore, while trade policy reforms are important to improve incentives and encourage efficiency, they would be more effective if transaction costs resulting from natural barriers are also lowered.

Trade flows have remained limited within and between African regions despite the creation of free trade zones such as COMESA, EAC and SADC. For example, in 2007, the total EAC trade with the rest of the world increased by 26.8 percent and the total intra- EAC trade increased by 22.0 percent (Ng'ang'a, 2006).

As COMESA member countries continue to liberalizc trade through reducing artificial trade barriers, transaction costs are becoming higher than the cost of tariffs. In many instances, the cost of compliance with custom formalities reportedly exceeds the cost of the custom tariffs. SME's, which are the dominant actors in developing countries, are the most affected by these high transaction costs.

The above considerations and the need to reduce costs have pushed trade facilitation into the policy agenda of many COMESA countries. Trade facilitation is becoming an important aspect and tool for economic development, and the causal effect would need to be explored for trade facilitation measures to be prudently formulated and implemented (Mutahunga, 2005). Nevertheless, Trade facilitation is of interest to business community. For example, COMESA region because of the increasing positive engagement into

business in the East and southern African Community, the business community is increasingly demanding for trade facilitation due to high transaction costs. Therefore, the main problem to COMESA government and the business community alike, is how to improve trade flows in COMESA, What is the role of trade facilitation, is there a role for multilateral agencies like WTO, AU etc? The main aim of this study is to analyze the importance of trade facilitation measures in improving and increasing trade flows and trade performance in COMESA region and in particular intends to document trade facilitation measures and trade potential within the COMESA region, analyze the benefits of trade facilitation in enhancing trade flows in COMESA region and examine the challenges and opportunities for improved trade facilitation in COMESA region

1.2 Statement of the Research Problem

Trade flows have remained limited within and between African regions despite the creation of free trade zones such as COMESA, EAC and SADC. For example, in 2010, the total COMESA trade with the rest of the world increased by 26.8 percent and the total intra- COMESA trade increased by 22.0 percent (WTO data base). Ng'ang'a (2006) noted that Kenya, Uganda and Tanzania, the three East African states have made progress in reducing their simple average tariffs by almost 50 per cent between 1994 and 1997. Within the COMESA, remarkable progress has been made towards lowering tariffs and liberalizing trade. Intra-regional trade has been liberalized to a large extent with Kenya already applying a preferential tariff reduction of 90 per cent on imports from the other two countries. The fact that trade flows have remained limited for instance in

COMESA despite tremendous progress in tariff reduction has raised a number of debates on how to improve trade performance in the region. Indeed it is increasingly being realized that tariffs, quotas and other trade policies are only one element of the overall cost of trade and that efforts to improve customs procedures, minimize the trade distorting impact of standards and reduce transport costs may have higher payoff than reciprocal reductions in overt trade policy barriers, because logistical, institutional and regulatory barriers are often more costly and generate no offsetting revenue (World Bank, 2005).

As COMESA member countries continue to liberalize trade through reducing artificial trade barriers evidence integration developments, transaction costs are becoming higher than the cost of tariffs. In many instances, the cost of compliance with custom formalities reportedly exceeds the cost of the custom tariffs. SME's (small and medium enterprises), which are the dominant actors in developing countries, are the most affected by these high transaction costs.

The above considerations and the need to reduce costs have pushed trade facilitation into the policy agenda of many COMESA countries. Trade facilitation is becoming an important aspect and tool for economic development, and the causal effect would need to be explored for trade facilitation measures to be prudently formulated and implemented (Mutahunga, 2005).

However, empirical estimates of the impact of trade facilitation on trade performance have been limited and it has proved difficult to provide strong supporting evidence of a causal link between trade facilitation reforms and trade performance (Iwanow and

Kirkpatrick, 2007). In particular, there is no study that has tried to estimate the impact of trade facilitation reforms on trade performance for the case of COMESA. Little is therefore known about the impact of trade facilitation on trade flows in the common market of Eastern and Southern African region. This study will fill this literature gap by analyzing the effect of trade facilitation on trade flows in East African countries with a focus on trade between Ethiopia and Kenya.

1.3 Objectives of Study

The broad objective of this study is to analyze the effects of trade facilitation measures on exports and imports among COMESA countries by focusing on the trade flows between Ethiopia and Kenya. The specific objectives are to:

(i). Estimate the impact of trade facilitation on exports between Ethiopia and Kenya.

(ii). Estimate the impact of trade facilitation on imports between Ethiopia and Kenya.

1.4 Research Questions

The research questions of the study are;

1. Does trade facilitation have any significant impact on exports between Ethiopia and Kenya?
2. Does trade facilitation have any significant impact on imports between Ethiopia and Kenya?

1.5 Research Hypotheses

a. Trade facilitation significantly negatively affects exports between Ethiopia and Kenya.

b. Trade facilitation significantly negatively affects imports between Ethiopia and Kenya.

1.6 Significance of the Study

This study analyzes the importance of trade facilitation measures in improving and increasing trade flows and trade performance in COMESA region. The study documents trade facilitation measures and trade potential within the COMESA region, analyze the benefits of trade facilitation in enhancing trade flows in COMESA region. Documenting trade facilitation measures is important for the COMESA region in particular and generally in developing countries because in these areas, trade facilitation has been perceived not only as a "transportation but also a customs problem", yet it is a broader issue, which includes many aspects of weak capacities that exist in many developing countries especially in Africa inhibiting their effective participation in international trade (Economic Report on Africa, 2004).

Furthermore, the study provides an econometric testing of the trade facilitation argument, by assessing the influence that trade facilitation costs has on trade flows among COMESA member countries. Iwanow and Kirkpatrick (2007) noted that much of the evidence in support of trade facilitation has focused on the improvements in procedures rather than the outcomes. Therefore, from a policy perspective, the finding of the study will intend to improve understanding of the potential contribution of trade facilitation

reforms, relative to other trade related reforms, to improve intra-regional trade among the COMESA countries.

Political leaders, the private sector, and civil society look to economic analysis as a guide to judging how trade aspects may affect the national economy as well as specific industries, regions, and households. Successful trade negotiations and lobbying depend on empirical findings. The finding of this study therefore, will inform the private sector and civil society on how trade facilitation impact on trade flows and raise their concerns in efforts to improve trade in the region. This research also helps future researchers and academicians who may be interested in similar studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Review of Definitional Issues

While there is no agreed upon definition of trade facilitation, a number of researchers have defined the term encompassing many aspects that facilitate trade. The WTOs definition is:"...simplification and harmonization of international procedures affecting trade flows. It focuses particular on the activities, practices and formalities involved in collecting, presenting, communicating, and processing data required for the movement of goods and services across international borders." The World Bank's definition is somewhat broader as it also includes: "...the environments in which trade transaction take place, transparency and professionalism of customs and regulatory environments, as well as harmonization of standards and conformance to international or regional regulations" (Hammer, 2009).

According to Njinkeu (2007), trade facilitation could be considered broadly, encompassing the environment in which trade transactions take place and therefore trade facilitation reform will pay attention to the whole process aiming at streamlining trade procedures in order to reduce the risk and transaction cost, measured in time and money, associated with international trade. It will also entail availability and cost of essential services required for import and export of goods and services, import and export procedures (e.g. customs or licensing procedures); transport formalities; and insurance, and payment requirements. (Njikkeu, 2007). Kurz et al, (2008) argued that trade

facilitation definition has taken two stands, one takes a narrow stand and define trade facilitation as that includes the so-called 'at the border procedures', such as customs documentation or the time involved in crossing a border. The broad stand on the other hand, looks at trade facilitation as one that includes some 'inside the border' elements, such as institutional quality, regulatory environment and service infrastructure. However, despite the numerous definitions of trade facilitation, deliberations in the WTO are limited to the "simplification and harmonization of international trade procedures" covering the "activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade".

A centerpiece of any empirical work on trade facilitation is the definition and compilation of relevant indicators. Njinkeu (2007) drawing from the work of Wilson, Mann and Otsuki (2003a, 2003b, and 2004) presented four indicators that simultaneously capture the main policy concerns: port efficiency, customs environments, regulatory environment, and quality of information and communication technology infrastructure. These are explained below:

Port efficiency

The port efficiency (PE) measure is constructed in accordance with GATT article V (freedom of transit) that regulates the free flow of goods across borders. PE is a proxy for the impediments to transit in port operations. Poorly-performing ports have been shown to strongly reduce trade volumes and having a greater dampening effect on trade (See Njinkeu, 2007); hence we may expect that improvement of port efficiency affects

positively trade flows. The compilation of PE indicators has been driven by data availability.

While there are many applications of this proxy in empirical works, most studies applying this measure have used to examine the relationship between port efficiency and international trade flows in a standard gravity-trade specification. For example, Clark et al. (2004) and Wilson et al. (2004) estimate this relationship using survey measures of port efficiency drawn from the Global Competitiveness Report (Blonigen and Wilson, 2006).

To measure port efficiency, Clark et al (2004), used to two proxies (i) the total square number of largest seaports by country, normalized by the product between foreign country's population and area; (ii) the ratio of foreign countries' GDP per capita on the ground that countries' GDP are correlated with their level of infrastructure. A second approach relies on firm surveys such as the Global Competitiveness Report (GCR). The GCR provides indexes based on micro-data from annual surveys at firm level, on a representative group of enterprises. PE in the GCR can be appraised by port facilities and inland waterways, and air transport indexes (Njinkeu, 2007). According to Blonigen and Wilson (2006), the potential drawback using this approach is that the survey measures are for only a point in time and may proxy other unobserved country characteristics

Another approach was developed by Blonigen and Wilson (2006) and this measure of port efficiency is time-varying, allowing controls for unobserved country-level heterogeneity in trade flows. The approach is econometrically based and provides a new statistical method of uncovering port efficiency. This approach, provides standards errors

of estimated port efficiency measure, and uses readily available and high quality data to estimate port efficiencies across hundred of ports over a number of years. It also has the flexibility to provide port efficiency comparisons on a commodity-by-commodity basis (Njinkeu, 2007). In other studies, a number of indices have been used and these include the number of documents, days for exports/ imports and the cost involve in exports/ imports (Weerahewa, 2009):

Number of documents for exports/imports:

The number of documents for exports and import includes all the documents required to export/ import goods assuming the contract has already been agreed and signed by both parties. The documents considered include bank documents, custom declaration and clearance documents port filling documents, import licenses and other official documents exchanged between the concerned parties.

Number of days for exports/imports:

Number of days for exports/imports measures the time taken to the entire export/import procedure. If a procedure accelerated for an additional cost, the fastest legal procedure is chosen. It is assumed be that neither the exporter nor the importer waste time. The waiting time between two procedures is also included in this measure.

Cost for exports/imports:

Cost involve in the export/import is the fees for a 20 foot container in US dollars. Cost components are the cost for documents, administrative fees for custom clearance and technical control, terminal handling charges and the cost of inland transport. This does not include tariff or trade taxes and only official costs are recorded.

Custom environment

Customs environment (CE) indicator measures direct customs costs as well as administrative transparency of customs and border crossings. Customs is a mandatory element in the movement of goods across borders and the procedures applied to these goods significantly influence the role of national industry in international trade and their contribution to the national economy. Effective and efficient clearance of goods increases the participation of national industry in the world marketplace and contributes to economic competitiveness of nations, encourages investment and development of industry. CE can be derived from surveys such as: i) GCR, ii) Doing Business, and iii) Investment Climate Survey. Wilson et al (2003a, 2003b, 2004) use an average of four indexes from GCR (Njinkeu, 2007).

Regulatory environment

Regulatory environment issues are dealt with in GATT article X that requires prompt publication of laws and regulations affecting imports and exports so that foreign governments and traders may clearly understand them. Well developed institutions or regulatory environment (RE) that characterizes the economy's approach to regulations are likely to decrease the transaction costs for market participants and thus increase the efficiency of markets. In GCR, the regulatory environment has three components. The first is the transparency and stability of the regulatory environment. The second component is regulatory standards, with focus on whether product, energy, safety and environment standards are perceived to be among the world's most stringent. The third is the extent to which compliance with international environment agreements is a high priority in country's government (Njinkeu, 2007).

Information and communication technology

The last measure of trade facilitation looks at the extent of information and communication technology or E-business. E-business (EB) is designed to measure the extent to which an economy has the necessary domestic infrastructure (e.g., telecommunications, financial intermediaries, and logistic firms) is using networked information to improve efficiency and to transform activities to enhance economic activity. For example, the Internet can improve the productivity in three ways. (i) Internet can lower prices by lowering search costs; (ii) Internet use can cut the cost of holding inventories by allowing large suppliers to bypass retailers and contact customers directly; and (iii) Internet usage can improve the transparency of the host countries and make it comfortable to do business. For example, in studies by Wilson et al (2003a, 2003b, 2004) the percentage of companies that use the internet for e-commerce, the effect of internet on business, and the speed and cost of internet access were used (Njinkeu, 2007).

However, Portugal-Perez and Wilson (2010) argues that trade facilitation measures can be thought of along two dimensions: investment in "hard" infrastructure (highways, railroads, ports, etc.) and in "soft" infrastructure (transparency, customs efficiency, institutional reforms, etc.).

In studies on trade facilitation that have used econometric modeling (gravity model), variables that capture trade facilitation have been either specific indictors, averaging out primary indicators and others computing indices. For instance, Iwanow and Kirkpatrick (2008) construct aggregated indicators of trade facilitation and infrastructure by applying simple average to primary indicators mainly collected from Doing Business and the World Development Indicators. Portugal-Perez and Wilson (2010) constructed an

aggregate indicator from a wide range primary indicators using factor analysis on premise that including indicators in gravity model that measures similar aspects violates the OLS assumption of independent among independent variables and introduces the multicolinearity problem. They argued that the use of factor analysis can help to circumvent multicolinearity by reducing the dimensions of the data and therefore a less arbitrary and more rigorous procedure for deriving an "aggregate" indicator compared with averaging out primary indicators (Portugal-Perez and Wilson, 2010). In this study however, to capture trade facilitation, doing business indicator variables, namely the time needed to export/import (days), documents needed to export/import (number), and the costs needed to export/import (USD per container) will be used. These have been widely used mainly because of the availability.

2.2 Review of Theoretical issues

The measurement and quantification of the potential benefits of trade facilitation have only recently been investigated. It is noted that although increasing attention has been paid to this issue, no consensus has been reached regarding the trade policy discourse on the definition of trade facilitation (Kurz, et al, 2008). However, trade facilitation is understood as the reduction, or at least the simplification, of 'at the border procedures', comprising a number of documents and the time involved in crossing the border as well as the transaction cost incurred (Kurz et al, 2008).

Trade liberalization over the years was neglected in Globallization process. However, recently a lot of work is being conducted on trade facilitation. These involve international organizations such as the United Nations Conference on Trade and Development (UNCTAD), the United Nations Economic Commission for Europe (UNECE), the World Bank, the World Customs Organization and individual researchers among others. The research effort in trade facilitation has been driven by recent success in reduction in tariffs, thanks to trade reforms both at regional and global scale and at the same time the increase in the so-called 'second generation' trade issues concerned with behind-border measures that fall under the heading of trade facilitation. The results of the studies according to Weerahewa (2009) indicate that the expected expansions in trade due to improvements in trade facilitation are quite significant.

Given the above, trade facilitation measures can be viewed as aid from various sources to improve trading environment in a recipient country. With these improvements, it is believed that trade flows will increase. In order to understand such belief, it is necessary to understand what are the determinants trade are? Theoretically, there are many factors that potentially shape the pattern of international trade.

Three trade theories have been widely used to explain trade: Ricardian comparative advantage model; Heckscher-Ohlin Model and the specific factor model, an extension of Heckscher-Ohlin Model postulated in 1930s.

According to Ricardo, a country possesses comparative advantage in the production a commodity if the ratio between its pre-trade marginal costs of that commodity, and its

pre-trade marginal cost of producing "the other" commodity is lower than that of its trading partner. In economics, the theory of Comparative Advantage explains why it can be beneficial for two countries to trade, even though one country may have the ability to produce more items cheaper than the other country. The thing that really mattered was not the real cost of production, but rather the ratio between the two countries and how easily the two could produce different kinds of things cheap. Ricardo's theory suggested that if a product can be bought from another country cheaper, then it should be rather than producing it locally.

The Heckscher-Ohlin model assumes two factors of production -- capital and labor. It is assumed that the factors are freely mobile between sectors and would move in response to any differential rewards. The model uses relative factor endowments as an explanation for trade. Therefore, the pattern of international trade would be determined by the endowments of capital and labour in respective countries, and the available technology. Thus labour abundant countries will specialize in producing labour intensive goods while capital abundant countries will specialize in producing capital intensive goods.

The Specific Factors model was originally discussed by Jacob Viner and it's a variant of the Ricardian model. Hence the model is sometimes referred to as the Ricardo-Viner model. The model was later developed and formalized mathematically by Ronald Jones (1971) and Michael Mussa (1974). Jones referred to it as the 2 good-3 factor model.

The model's name refers to its distinguishing feature; that one factor of production is assumed to be "specific" to a particular industry. A specific factor is one which is stuck

in an industry or is immobile between industries in response to changes in market conditions. A factor may be immobile between industries for a number of reasons. Some factors may be specifically designed (in the case of capital) or specifically trained (in case of labour) for use in a particular production process. In these cases it may be impossible, or at least difficulty or costly, to move these factors across industries. The specific factor model is designed to demonstrate the effects of trade in an economy in which one factor of production is specific to an industry. The most interesting results pertain to the changes in the distribution of income that would arise as a country moves to trade.

The economic theory of gravity that has been widely used to study trade performance and trade facilitation complements the preceding models by providing an explanation of bilateral trade (Anderson and van Wincoop, 2004).

2.3 Review of Empirical and Methodological Issues

Several methodologies lend themselves to empirical work to address the central questions of trade facilitations considered earlier, such as the following: What are the costs and benefits of trade facilitation reform to trade expansion and GDP? What is the extent of reform in TF necessary to generate x% of trade and what are the net welfare impacts? (Njinkeu, 2007). These include ex-post and ex-ante trade analysis. The ex-post approach uses historical data to conduct an analysis of the effects of a past trade policy and most econometric models of trade are of this form, particularly the gravity model which has been widely used in international trade. The ex-ante analysis approach answers "what if" type of questions. The analysis means what would be the future impact of a simulated

policy change or a shock. The example is the Computable General Equilibrium modeling (CGE).

CGE models describe the relationship between all sectors of an economy, partitioned in varying degrees of detail, depending on the complexity of the model and the available computing power. Such models are usually based on some form of input-output table or social accounting matrix in which all sectors are related to each other by technology and price. In developing countries, CGE models have been used for a wider range of issues, from medium- to long-term macroeconomic policy analysis to the more traditional microeconomic issues analyzed in developed countries as well. Several reasons account for this wider range of application.

First, and foremost, reliable time-series data for sufficiently long periods are usually not readily available. Second, when available, the data are often not appropriate for standard econometric analysis without considerable further preparation to remove inconsistencies. And third, significant changes in policy regimes often take place, calling for different structural models, thereby reducing the time span available for hypothesis testing with selected model.

The CGE start from some calibrated base, experiments are conducted by shocking the initial equilibrium, introducing distortions or removing existing ones, and observing the new equilibrium which results. Distortions in an economic system will generally have repercussions far beyond the sector in which those distortions occur, and where the

distortions are wide-ranging, general equilibrium is perhaps the only method which is capable of capturing the relevant feedback and flow-through effects. Therefore, in the context trade facilitation, the CGE model provides a precise numerical answer to the question "what is the impact of trade facilitation."

Indeed the several studies that have focused on the impacts of trade facilitation have attempted to quantify the impact trade facilitation on trade using the two approaches. Examples of studies that have used CGE model include APEC, 1999; APEC, 2001; UNCTAD, 2001; OECD, 2003; Dennis, 2006; Decreux and Fontagne, 2006; Francois et al 2005; Walkenhorst and Yasui, 2005; and Hertel and Keeney, 2006. For instance, APEC (1999) analyzes the effect of trade liberalization and trade facilitation on trade and real income of APEC member countries. In 2001, employing the same approach (CGE model), studied the effect of trade facilitation and compared with the effect of trade liberalization on the APEC economies. The findings shows that the effect of trade facilitation are far superior to and more practical than trade liberalization through eliminating or lowering import tariffs.

However, the gravity model has proven to be popular among empirical trade economists. Gravity models are econometric models of trade which acquire their name from their similarity to the Newtonian theory of gravitation. Newton's law states that the force of gravity between two bodies is positively related to the mass of the attracting bodies and inversely related to the square of their distance. There are a couple of reasons for the central role played by the gravity model in empirical work on international trade. The

first has to do with the high explanatory value of the model in explaining bilateral trade flows. i.e The R-squared which measures the explanatory power, is usually between 65 to 95 per cent, depending on the sample (Bergstrand, 1998). This is exceptional given the cross-section nature of the data.

The second reason is that it provides an easy method to test the role that other variables play in affecting trade. Some analysts claim that given the high explanatory power of the standard variables used in the gravity model, obtaining significant results on additional variables is likely to indicate that these additional variables are actually important for trade.

The basic build up for the gravity model is derived from gravity theory in the Newtonian physics. The model utilizes the gravitational force concept as an analogy to explain the volume of the trade, capital flows and migrations among the countries of the world. The model was first applied to international trade by Tinbergen (1962) and Poyhonen (1963), who were the first to propose that the volume of trade could be estimated as an increasing function of the national incomes of the trading partners (Wall, 2000). Since then, the gravity model has become an important quantitative tool in understanding the trade and other economic flows among countries in the world. Its major application in recent empirical work has been to understand the factors determining bilateral trade volumes of countries or regions. Such empirical tasks have been instrumental in designing country or region specific trade policies (Sohn, 2005).

However, initially the gravity model had one defect. It lacked the theoretical foundation to support its predictive power since its classic form was only based on an intuitive analogy between spatial interaction in physics and economics (Butter and Hayat, 2008). It was also limited two major factors, distance and economic size of economies. In 1985, Berstrand derived the gravity equation from a general equilibrium framework using micro economic foundations. In 1989, a generalized gravity equation was developed incorporating monopolistic competition and factor-proportions theory in international trade (Berstrand, 1989). This preceding model has been extended to incorporate factor endowments and taste variables. In recent past, the gravity model has obtained rigorous theoretical reinforcement by deriving it from models of imperfect competition and product differentiation.

Other empirical studies have shown that the gravity equation is consistent with Heckscher Ohlin theory under perfect competition (Butter and Hayat, 2008). Therefore, it now possible to derive the gravity equation from both neo-classical and new trade models as a reduced form to explain bilateral trade flows. Thus, with establishment of theoretical foundations, many studies have applied the gravity model putting emphasis on various aspects that influence trade other than the original variables or on additional to the original variables: distance and economic size. This has been motivated by desire to understand how different policy variables influence trade volumes or flows so as to design policies to promote trade and development.

For example, Sheng and Song (2008) used the gravity model to examine the bilateral trade flows between China and Australia from a general perspective by incorporating the

revealed comparative advantage indexes of Australia and China into the 'gravity model' at the two commodity level. Other studies have applied the model to explain the bilateral trade flows putting special emphasis on issues such as transaction costs, institutional factors, culture, foreign direct investment, language, home effect and globalization, among others (See Linders, de Groot and Rietveld, 2005; Xing, 2006; Linders, 2006; Butter and Hayat, 2008; Sheng and Song, 2008).

Furthermore, review of the empirical studies that have used the gravity model, reveals that the studies that have applied the model have used aggregate data, where total bilateral trade is regressed on GDP and distance and other variables that capture frictions and facilitators of trade. Little work has been done on disaggregated data or industry level data. Sohn (2005) has noted that while there are few empirical efforts on the subject, they provide strong rationale for using disaggregated data. For instance, the studies have found large estimated difference in the GDP coefficient in the gravity equation across the groups of goods. They also show that trade volumes relative to output are quite diverse across sectors. Sohn (2005) suggests that there is need for sector specific explanation for trade volumes.

Therefore, a number of have tried to examine the importance of trade facilitation measures in improving and increasing trade flows and trade performance using the gravity model. For instance, Wilson, Mann and Otsuki (2003) analyzed the relationship between trade facilitation, trade flows and GDP per capita for goods sector in APEC country. They researchers used four indicators to capture trade facilitation: port

efficiency, custom environment, own regulatory environment and E-business usage. The research findings revealed that improvement in port efficiency has the greatest positive effect on trade and followed by improving customs and E-business usage. Regulatory environmental, has a negative effect on intra APEC manufactures trades. In 2004, the same researchers conducted another study using gravity model to estimate the relationship between trade facilitation and trade flows in 75 countries. The findings of the study revealed that improvements in trade facilitation increase both exports and imports in each country and in the world.

Still in APEC, Kim and Park (2004) applied a gravity model to estimate the effect of trade liberalization and facilitation among 15 APEC member countries. The trade facilitation indicators used were custom procedures, standard and conformity, business mobility, information and communication technology. The result of the study indicates significant positive trade creation effect of improvements in trade facilitation measures.

In Africa, Kurz, Otter and Povel (2008) examined using the gravity model the effect of trade facilitation on sectoral trade in SADC trade Integration. They augmented the standard gravity model equation with doing business indicator variables, namely the time needed to export/import (days), documents needed to export/import (number), and the natural log of costs needed to export/import (USD per container). The results found out that the number of documents needed to trade does not matter; had no significant impact on trade flows. However, they concluded that the most important source of trade facilitation is time in SADC is time.

In another study by Njinkeu (2009) using a sample of African countries as reporter (exporter) and partner (importer) and other countries as partner (importer) only, estimated gravity model and the results shows that tariff is still significant and positively related to trade. The study also revealed that port efficiency of both the importer and the exporter is positively associated with trade. Comparing the effect of port efficiency on import vs. exports, the study revealed that the coefficient is higher for importer than exporter. Customs environment of the exporter was positive (negative) and significant in pooled cross-section (fixed effect regression). The regulatory variable of both the importer and the exporter was also positively associated with trade in exporter fixed effect regression.

Some recent studies have tried to determine how time delays affect international trade. Djankov, Freund and Cong (2006) assert that on average, each additional day that a product is delayed prior to being shipped reduces trade by at least one per cent. Another important insight from that work is that the use of averages as indicators of trade facilitation in Africa can be very deceptive because of the large variations across African countries. For example, while it takes 16 days to get a product from the factory to the ship in Mauritius, it takes 116 days in the Central African Republic. The other empirical evidence on the effects of trade facilitation on trade has been conducted by Kurz, Otter and Povel (2008) and Iwanow and Kirkpatrick (2007). The aim of these papers was to shed some light on the impact of trade facilitation on trade flows, and to evaluate the potential benefits of trade facilitation in terms of boosting exports.

2.4 Conclusion

It is noted in the literature that the quantification of the economic impact of trade facilitation represents a major analytical challenge. The difficulties are: defining and measuring trade facilitation, as well as choosing an appropriate modeling methodology to estimate the importance of trade facilitation for trade flows (Wilson et al. 2004; Kurz, et al, 2008; and Iwanow and Kirpatrick, 2007).

Notwithstanding, the theoretical and empirical developments mentioned above, no much empirical work has been conducted in East and southern Africa on the impact trade facilitation on trade performance. This implies that for the case of Africa and COMESA in particular, there is room for further theoretical and empirical investigations of the effects of trade facilitation on trade performance so as to design appropriate policies that can maximize welfare gains from trade performance, the major purpose of international trade. The literature reviewed above also shows that studies that have estimated the impact of trade facilitation on trade flows have mainly used the gravity model methodology. The General equilibrium (CGE) modeling framework has not been widely used because data limitations on the part of African countries in past. This study therefore opted for the gravity model approach to estimate the impact of trade facilitation on trade performance of COMESA. The study adopts the trade facilitation measures that have been recently used by the study of Agu and Achike (2010). Their study augments the four broad measures proposed by Wilson (2003) in two ways. First, the composition of the indicators is slightly different. Secondly, they drop one of the common measures of

trade facilitation (customs environment) and replace it with two measures, number of documents required for trade and time taken for trade (both drawn from the World Bank Doing Business Scoreboard). These are broader measures of policies and programme to facilitate trade among countries.

CHAPTER THREE

3.1. The Review of COMESA Region

3.1.1. Establishment and Objectives of COMESA

The preferential Trade Area Agreement between the heads of state and government of Eastern and Southern Africa on December 21st 1981 in Lusaka, Zambia, which signed the treaty and protocols, and entered into force definitely on September 30th 1982.COMESA was formally established on December 1994, replacing the Preferential Trade Area (PTA) which had been in existence since 1981. As of today, COMESA is a regional integration grouping of 19 African states which have agreed to' cooperate in development of their natural and human resources for the mutual benefit of all their people. The member states, namely: Angola, Burundi, Comoros, DR Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia and Zimbabwe. The idea of PTA originated within the framework of the OAU's Lagos plan of Act and Final Act of Lagos with the aim of African Economic Community through sub-regional economic organization.

The COMESA Treaty encompasses a large number of sectors and activities; however, the commitment of the complete COMESA mandate is given as a long-term objective. The priorities have been defined within COMESA, over the medium term, as the "Promotion of Regional Integration through Trade and Investment", to achieve COMESA as effective institution (UNCTAD, 2003). This is done by promoting "outward oriented" regional integration through trade and investment in order to become part of the global economy within the framework of WTO and other international agreements. The aims and objectives of COMESA as defined in the Treaty and Protocols are to facilitate the removal of the structural and institutional weaknesses of member states to enable them attain collective and sustained development.

The objectives outlined in the PTA were improving cooperation in the development of economic endeavors, so as to achieve the highest standard of living of its society; fostering peaceful relationship among member states; and there by the establishment of common market (ADB, 2000). But the objectives of COMESA are more specific as a contrary to the PTA's ones. The major objectives of COMESA are defined in the Treaty and its Protocols:

a) A full trade area guaranteeing the free movement of goods and services produced within COMESA and removal of all tariffs and non-tariff barriers;

b) A custom union under which goods and services imported from non -COMESA to an agreed single tariff in all COMESA states;

c) Free movement of capital and investment supported by the adoption of common investment practices in order to create a more favorable investment climate;

d) Gradual establishment of a payments union based on the COMESA Clearing House and the eventual establishment of a common monetary union with a common currency;

e) The adoption of a common visa arrangement which will eventually lead to the free movement of persons.

3.1.2. Achievements of COMESA

a) Trade liberalization is one of the COMESA's key objectives with the aim of establishing a Free Trade Area (FTA) by the year 2000. Even though member states have agreed on a tariff reduction schedule, only 13 countries have achieved the FTA of COMESA as of 2006 (COMESA Annual Report, 2006). To improve this situation, two important changes to the Treaty were made. Accommodation of multi-track (or variable geometry), so that fast-track tariff reduction can take place along side the slower states, and imposing sanctions on those countries that do not meet implementation deadlines (ADB, 2000). Elimination of non-tariff barriers: export and import licensing, quantitative restrictions, foreign exchange rationing, and other restrictions have been largely eliminated to facilitate intra-regional trade.

b) The review and restructuring of rules of origin have simplified, with more scope for import content, by adopting a 35 percent local value added criterion, by taking into account further changes at international trading practices.

C) As part of the process of facilitating trade under the Treaty, simplification and harmonization of trade statistics and customs procedures and documents will be undertaken by COMESA (COMESA's Vision and Strategy in to 21st century, 2001). These will incorporate the adoption of a single COMESA Customs Document (COMESA-CD) for clearance of customs warehousing, re-export and transit purposes; and the installation of efficient customs management systems to facilitate intra-regional trade using the Automated System for Customs Data Management (ASYCUDA).

d) The COMESA Customs Bond Guarantee Scheme and Advanced Cargo Information System to facilitate transit traffic and for cargo tracking, respectively.

e) The establishment of the Trade and Development Bank (PTA Bank) to facilitate the process of regional integration by boosting investment and offering trade financing facilities.

f) The development and implementation; of competition policy/COMESA FTA is compatible with WTO enabling clause and Article XXIV on regional groupings.

3.1.3 COMESA Free Trade Area (FTA)

The establishment of FTA involves elimination of tariffs among members whilst each country maintains its own tariff and protection policy against non-members. FTA is a best approach in boosting economic growth through efficient utilization of resources,

competitiveness, technology spillovers and capacity building though, it is not risk proof thought and practice, resulting from there are a winners or losers in the process (Tekle, Kamayama, Ito; 2005) .

The COMESA FTA was established with in aim of an integrated market for trade in trade in goods and services and to increase the COMESA region's comparative advantage towards to the world market. The benefits generating from comparative cost theory is through global competition, with the reduction of tariff and non-tariff barriers, to make sure investment is directed to particular country's sectors which is most competitive. The FTA is serving as a catalyst by increasing competition in domestic markets, lowering prices, improving quality, and making products that are more competitive in global markets. The FTA increases regional competition before infant domestic industries face unfair big competition brought by Globalization.

The COMESA FTA has emphasized the need for the following instruments to be adopted so that the free trade will be a useful stepping stone to deeper regional integration and promotes economic growth (UNCTAD, 2003);

a) Development-oriented Rules of origin;

b) A rules-based trading system;

c) Open competitive investment policies 2nd national treatment;

d) A level playing field (a common external tariff and customs union);

e) An effective and efficient regional regulatory environment;

f) The existence of a high level of advocacy and "championship."

3.1.4 Status of FTA participation

Participation of member CJUD tries within COMESA has divided in to two parts; namely FTA and Non-FTA COMESA. Thirteen COMESA member states Participating in - the FTA are: Burundi, Comoros, Djibouti, Egypt, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Sudan, Zambia and Zimbabwe by the year 2006 (COMESA Annual Report, 2006). However, they have erected their national external tariffs for goods originating from outside COMESA FTA. Trading among the FTA and non-FTA COMESA countries on preferential basis based on the reduction of tariff by the non-FTA country. DR Congo, Eritrea, Ethiopia, Seychelles, Swaziland and Uganda are yet not participating in the FTA. Ethiopia is studying the impact of FTA on her economy.

3.1.5. Trading among COMESA member Countries

Although the intra-regional trade increased in COMESA, its share in the COMESA world trade remains small. In contrast to other RECs, regional integration in COMESA failed to increase trade between member countries. Between the years 1980-1990, the intra-trade in ASEAN was 120 percent and in SADC was 880 percent while in COMESA it was only 60 percent (Umurngi, 2005).

Since the level and growth of intra-regional trade is one of the measures of progress in regional integration, the intra-COMESA trade has increased to US$ 6.3 billion in 2005 as

compared to US$ 4.5 billion by the year 2004 (COMESA Annual Report, 2006). Although all sectors contributed to this relatively high intra-regional trade, agricultural raw materials bets first increased by 87 percent; manufactures and fuels also increased by 40 percent and 37 percent gains, respectively.

Table 3.1

Intra-COMESA Trade

	1999	2000	2001	2002	2003	2004	2005
Exports	1343.8	1443.6	1285.8	1828.5	1573.5	1758.4	2554.0
Re-Exports	21.3	200.1	400.1	267.9	475.0	531.3	623.9
Total Exports	1365.2	1643.7	1685.9	2096.4	2048.5	2289.7	3178.0
Imports	1142.6	13744	1689.4	2146.8	2140.6	2216.1	3152.0
Total Trade	2507.8	3018.1	3375.4	4243.2	4189.2	4505.8	633.0

Source: COMESA Annual Report, 2006

With the advent of the COMESA FTA, there has been a significant increase in intra-COMESA trade. Trade within COMESA FTA has increased to US$2.7 billion in 2005. In other words, intra- FTA trade registered a 27 percent increase by the year 2005. Tea has taken the lion's share in tradable commodity followed by petroleum, tobacco, alginic acid, cotton and cement.

Table 3.2

Intra-FTA Trade

	2000	2001	2002	2003	2004	2005
Exports	653.9	572.8	854.0	678.4	948.4	1102.2
Re-Exports	70.8	213.1	74.4	152.8	148.0	216.1
Total Exports	724.7	785.9	928.4	831.2	1096.4	1318.3
Imports	640.2	802.7	1079.0	1026.5	1084.8	1451.6
Total Trade	1364.8	1588.6	2007.3	1857.7	2181.2	2769.9

Source: COMESA Annual Report, 2006

3.1.6. Challenges of COMESA in the Global and Regional Economy

An open world trading system is seen as enhancing the living standards of all people of the world by opening trade- and increasing competition. The goals of regional integration are consistent with those of the WTO, but it often seen as either being good if it is trade creating or bad if it is trade diverting within a global economy. COMESA has faced a challenge to ensure an outward oriented trade and investment regime in the global

economy. Because globalization exposes to competitive market forces, those nations can not able to compete in a world market will loss out this is increasingly dominated by large economies. Most COMESA countries are individually too small to achieve economies of scale with their small domestic market, undiversified production bases and poor infrastructures. Incapability of expanding the effective size of markets, improving access to export markets, provision of incentives for foreign direct investment (FDI) and increasing productivity are other challenges that have been, faced by COMESA in to 21st Century, 2001).

The economic performance of Sub-Saharan Africa closely mirrors situation in the COMESA sub-region. Unfavorable weather conditions, civil war, policy flaws, mounting debt, poor external terms of trade and other external shocks are to be known. Although the region is endowed with high population, the region is suffering from skilled human resources due to AIDS scourge, brain drain as major ones. Despite promising signs of economic growth depicts in the last half of 1990s, the COMESA region still manifests illiteracy, poverty and diseases. The decline in education, health care, social services and employment levels are evidence for the devastating effects of debt on economies of COMESA countries

3.2. Ethiopia's Export to COMESA Member Countries

The commodities traded by COMESA member countries being more or less similar. Most of Ethiopia's exports to COMESA member countries comprised by mainly vegetable products, animal products and live animals. The export of Ethiopian commodities to the member countries is insignificant. This is not to undermine the developments observed in this line. The total export of Ethiopia to COMESA member countries in 2005/06 reached more than 885 million birr, 48 percent more than what was exported to countries belonging to the regional economic grouping in the preceding fiscal year. The 48 percent growth rate of export to this group of countries compared to 24.7 percent growth rate in total export of Ethiopia during the fiscal year 2005/06 shows the increasing importance of COMESA member countries as destination of export of Ethiopian commodities.

While Ethiopia exports commodities to 12 COMESA member countries, of the total export estimated at birr 885.6 million, four countries, namely Djibouti, Sudan, Egypt and Kenya accounted for birr 867.7 million (98 percent). Even though at a varying rate, trade with all four major trading partners of Ethiopia among the countries belonging to regional economic grouping has increased during the fiscal year 2005/06.

Table 3.3

Export to COMESA Member Countries

Country of Destination	2004/05	2005/06	Growth Rate in %
Angola	734.9	595.4	-19.0
Burundi	140.2	-	-100.0
Congo, Democratic Republic	4,383.6	1,256.3	-71.3
Djibouti	361,562.2	497,593.3	37.6
Egypt	50,042.1	134,209.3	168.2
Kenya	19,320.9	21,868.7	13.2
Libyan Arab Jamahiriya	4,656.5	-	-100.0
Madagascar	1,834.8	65.6	-96.4
Rwanda	20.7	687.8	3226.5
Sudan	137,306.6	214,005.5	55.9
Swaziland	16,670.8	12,398.2	-25.6
Uganda	25.1	105.9	322.5
Zambia	1,208.9	2,264.0	87.3
Zimbabwe	515.6	603.5	17.0
Total	**598,422.8**	**885,653.4**	**48.0**

Source: Ethiopian Customs Authority Publication, 2006

Trade with Djibouti, the leading export destination both among COMESA member countries as well as the whole Africa, has increased during the fiscal year from birr 361.6 million to birr 497.6 million with annual growth rate of 37.6 percent. The second major trading partner, Sudan has imported commodities worth 214 million birr in 2005/06 against 137.3 million in 2004/05. This puts the growth rate of Ethiopian export to Sudan at 55.9 percent. Egypt puts the third among .importers of Ethiopian commodities, imported commodities worth 134.2 million birr in 2005/06. This figure compared to birr 50 million in 2004/05 shows 168 percent growth during the fiscal year. The increase in the volume: of export to Djibouti and Sudan is attributed to proportionate increase in all commodities exported to the two countries while increased export of live animals played the major role in increasing the export to Egypt. Despite their proximity and preferential trading arrangement, COMESA member countries had a very insignificant share in total export of Ethiopia. This can be explained by the type of commodities the member countries trade with, which is identical in nature.

3.3. Export Promotion Efforts in Ethiopia

The policy adopted both in the Imperial and Military government was characterized by strongly inward-oriented development strategy through exchange rate pegging to the US dollar for a long period of time, high tariff rates, extensive foreign exchange control and other non-tariff barriers as well as heavy taxation on exports. Even though both previous governments were pursuing import substitution strategy, they made effort to promote exports and diversify the entire export commodities. But the Ethiopian export products

remain undiversified and still concentrated on very few primary commodities. In 1991/92, Ethiopia pursued the Structural Adjustment Program (SAP) initiated by the World Bank and the International Monetary Fund (IMF) to address the internal and external imbalances of the economy. The measures undertaken involved deregulation of domestic prices, liberalization of foreign trade, devaluation of the national currency, significant reduction in tariffs and non-tariff barriers and others. As a result of these trade policy reforms, there is a decrease in anti-export bias incentive structure and an increase in export volume and earning (Debel Gemechu, 2002).

Its success in enhancing exports, however, in manufacturing export is highly limited. Regardless of many factors that affect exports, the problem has been the greater emphasis largely given to the increasing volume of production of the traditional primary commodities, on the belief that Ethiopia has comparative advantage on these commodities (Berhanu Nega, et.al. 2002). Now there is a change in government's policy towards export promotion, provision of such services is recognized as essential.

An Export Promotion Council (EPC) was set up in 1992 to design, implement and monitor export development policies (DTIS, 2005). The Ethiopian Export Promotion Agency was established in 1999 as a successor to EPC with the aim of conducting market research, facilitating participation of exporters in trade fairs, exhibitions and trade missions; and disseminating market information.

CHAPTER FOUR

ANALYTICAL FRAMEWORK AND METHODOLOGY

4.1 Analytical framework

The gravity model used in this work is inspired from the empirical literature on this subject. It mainly relies on the works of Iwanow and Kirkpatrick (2007); Kurz, Otter and Povel (2008) and Agu and Achike (2010). A standard gravity model, augmented with selected measures of trade facilitation constructed obtained from World Economic Forum Global Competitiveness Report and the World Bank's Doing Business Index will be used. A simple version of the gravity model assuming frictionless trade and identical and homothetic preference can be derived as follows[1]:

Assume trade flows from origin i to destination j

$$X_{ij} = \alpha_i E_j \qquad (1)$$

The value of shipment of the origin i's GDP to destination j is X_{ij}

α_i is global consumer spending on goods from i

[1] The assumption of identical and homothetic preferences has been used routinely by both theoretical and empirical international economists as a basic building block of modern international trade theory. Identical and homothetic preferences assumption are used for many propositions in trade theory, in order to assure that consumers with different incomes but facing the same prices will demand goods in the same proportions.

E_j is the expenditure of j

If we assume that $Y_i = GDP$ of i, in case of balance trade (no international borrowing or lending) $E_j = Y_j$

Market Clearance:

$$\sum X_{ij} = Y_i \qquad (2)$$

To derive the gravity model, we replace X_{ij} with $\alpha_i E_j$ in the market clearance equation and solve for the expenditure share.

$$\alpha_i = Y_i / \sum E_j \qquad (3)$$

Given that world budget constraint: $\sum E_j = \sum Y_i = Y$ we substitute Y_i / Y *for* α_i in the demand equation and yields the frictionless gravity equation.

$$X_{ij} = Y_i E_j / Y \qquad (4)$$

Incorporating bilateral distance in the model (4), the model becomes

$$X_{ij} = (Y_i E_j / Y) D_{ij}^{\delta} \qquad (5)$$

In many econometric studies, estimates of the delta spans from -0.7 to -1.2.

This study adopting the framework of Kurz, Otter and Povel and Iwonow and Kirkpatrick, use the following model expression:

$$InX_{it} = \beta_0 + \beta_1 InGDP_{it} + \beta_2 InGDP_{jt} + \beta_3 InPoP_{it} + \beta_4 InPoP_{jt} + \beta_5 InDist_{ij} + \beta_6 Boarder_{ij} + \beta_7 Land\_ex_i + \beta_8 Land\_mp_j + \beta_9 TF_{it} + \beta_{10} FT_{ij} + \varepsilon_{it} \quad (6)$$

Where:

- X_{it} denotes the natural logarithm of exports from country i to country j at time t.

-GDP_{jt} and GDP_{it} denote the two countries income used for importing and exporting country. Sheng and Song (2008) noted that since it is difficult to know what proportion of income will be spent on purchasing goods in particular countries at time t, the use of total import of good i at time t in each country can be a substitute.

-PoPi and PoPj denote population of exporting and importing country, respectively.

- Distij is the distance between i and j.

- BORDER is a binary 'dummy' variable which is unity if i and j share a common border.

- LANG is a binary "dummy" variable which is unity if i and j have a common language and zero Otherwise.

- landl_exi is a dummy taking the value one if the exporting country is landlocked;

-landl_mpj is a dummy taking the value one if the importing country is landlocked;

- TF is exporting country's i or importing country's j trade facilitation variable. To capture this variable, five facilitation indicators obtained from World Economic Forum Global Competitiveness Report and the World Bank's Doing Business Index were used. The trade facilitation variables that were used include; time needed to export/import (days), documents needed to export/import (number), and the natural log of costs needed to export/import (USD per container), regulatory environment which was proxied by exchange rate and domestic infrastructure proxied by electricity generated (See Agu and Achike, 2010). These indicators were used to analyze how trade facilitation impacts on trade flows between Ethiopia and Kenya.

- ε_{it} is the error term

- $\beta's$ are model coefficients

Equation 6 was modified to take into account trade facilitation variables. The variables that were included in the modified were mainly influenced by the data availability. The modified export equation that was empirically estimated is given by;

$$\log(EXPETH) = \beta 0 + \beta 1 \ln(RGDPETH) + \beta 2 \ln(RGDKEN) + \beta 3 \ln(POPET) + \beta 4 \ln(POPKEN) + \beta 5 \ln(ELEETH) + \beta 6 \ln(EXC) + \beta 7 \ln(\text{Cost of exports}) + \varepsilon \quad (7)$$

We also specified an empirical import equation model using the above analytical framework used to specify the empirical equation for exports. The modified import equation model that was estimated is specified as given by;

$$\log(IMPETH) = \beta 0 + \beta 1 \ln(RGDPETH) + \beta 2 \ln(RGDKEN) + \beta 3 \ln(POPETH) + \beta 4 \ln(POPKEN) + \beta 5 \ln(ELEETH) + \beta 6 \ln(EXC) + \beta 7 \ln(\text{Time to import}) + \beta 8 \ln(\text{Costs of imports}) + \beta 9 \ln(\text{Documents required to import}) + \varepsilon \quad (8)$$

Table 4.1: Variables Definition and Measurement

VARIABLE	VARIABLES	TYPE OF VARIABLE	VARIABLES DEFINITION
Export of Ethiopia to Kenya and Kenya to Ethiopia	EXPO	Dependent variable	The value of Ethiopia's exports to Kenya measured in of U S dollars
Import Value Index Of Ethiopia from Kenya and Kenya from Ethiopia	IMP	Dependent Variable	The value of Ethiopia's import from Kenya measured in of U S dollars
Real Gross Domestic Product in Ethiopia and Kenya	RGD	Independent Variable	Annual national income of Ethiopia and Kenya measured in US dollars
Population in Ethiopia and Kenya	POP	Independent Variable	Total population of Ethiopia and Kenya measured in US dollars
Electricity Production in Ethiopia and Kenya	ELE	Independent Variable	Electricity production in Ethiopia and Kenya measured in Kilowatts per hour and used as a proxy for government expenditure on infrastructure.
Exchange Rate in	EXC	Independent	Exchange rate in

Ethiopia		Variable	Ethiopia birr per 1 Kenya shilling
Trade facilitation indices	TFI	Independent	The trade facilitation indicators include: cost of shipment of a container of exports and imports, number documents required to import and the time it takes to import

Source; Researcher's Computation

4.2 Data type and sources

The data for the study will include 2 countries from East Africa. The secondary data used in this study was obtained from United Nations Commodity Trade Statistics Database (UNCOMTRADE), based on Standard International Trade Classification. Since many studies have used the standard international trade classification at the 3-digit level to study bilateral trade flows, this study used this classification. Data was obtained using World Integrated Trade solution (WITS). WITS software gives access to international trade and protection related data and offers built-in analytical tools allowing users to assess the impact of tariff changes. WITS software was developed by the World Bank. It includes several databases provided by partner international organizations and other sources. This combination of various data sources within unique software makes data retrieval and analysis easy and more comprehensive.

Data on time, documents and costs for trade stems from the 'doing business' indicators of the World Bank (online database, available: http://www.doingbusiness.org) and the rest of the data on trade facilitation measures was constructed from Global Competitiveness Report (GCR) of the World Economic Forum.

4.3 Method of Analysis

The study used econometric approaches to analyze the impact trade facilitation indicators on trade flows between Ethiopia and Kenya. The OLS technique was used for the estimation and the technique was chosen because of its simplicity. STATA (version 11) statistical package was used in the analysis. The study had intended to use panel data analysis but due to the limited number of our observations the model could not run. It was therefore not possible to control for country fixed effects and causality issues. Our results should therefore be interpreted as just associations only. However, we carried out a number of statistical tests to ensure that our results are reliable.

Heteroskedasticity tests were carried out for all the models. This set of tests allowed us to test for a range of specifications of heteroskedasticity in the residuals of the equations. All the estimation models showed joint insignificance of the regressors excluding the constant regressors, thus showing acceptance of the hypothesis of no heteroskedasticity.

The R-squared statistic is White's test statistic, computed as the number of observations times the centered from the test regression. The R-squared was above 60% in most of the estimated equations implying that independent variables explain most of the variation in the dependent variable.

The histogram and normality test were also carried out for all the models. The Jarque-Bera statistic was used to test the null of whether the standardized residuals are normally distributed. The histograms were all of bell shape. Standardized residuals for all the equations were normally distributed and Jarque-Bera statistic was not significant. All variables were log-linearized. Our study findings after carrying out these test is what follows in the next chapter.

CHAPTER FIVE

DISCUSSION OF EMPIRICAL RESULTS

5. Results and Discussion

5.1 Descriptive Analysis

5.1.1. Trend analysis of Ethiopian and Kenyan exports in relation to transport costs for exports

The trend of the transport costs for export in both Kenya and Ethiopia was constant from 2004 to 2008. The costs started rising in 2009 in both countries. Compared to the value of exports, the trend was upward from 2004 to 2010 except in the year of 2008 in both countries the value of exports reduced in both countries (see Table 5.1). This may suggest that transport costs for exports in both Kenya and Ethiopia is not associated with the value of exports. Ethiopia and Kenya are close countries and therefore a change in transport costs may not have a significant impact on export flows compared to distant countries.

Table 5.1: Trends of Ethiopian and Kenyan exports and transport costs for exports

Year	Ethiopia exports	Ethiopia Cost of exports	Kenyan exports	Kenyan cost of exports
2004	1023962	1617	25989.262	1955
2005	2458453	1617	33574.562	1955

2006	2591128	1617	50901.633	1955
2007	5237458	1617	55882.257	1955
2008	4335073	1617	51026.999	1955
2009	4444214	1957	55310.156	2055
2010	4731604	1810	63915.233	2055

Source: Author's Compilation

5.1.2. Trend analysis of Ethiopian and Kenyan imports in relation to trade facilitation indicators

The number of documents required for importing, transport costs of imports and time to import variables were used as proxies for trade facilitation. The number of documents required to import reduced from 17 in 2004 to 9 by 2010 and this was matched by an increase in Ethiopian imports from Kenya from US$18.7 thousand to US$32.8 thousand during the same period (See Table 5.2). Similarly, the time to import reduced in Kenya and was matched by an increase in the level of imports. The cost of transporting imports was constant in Ethiopia and Kenya from 2004 to 2008 and started to decline in 2008 for Ethiopian case, but started to rise in the same year for the Kenyan case. On the other hand, the value of imports did not exhibit a clear trend over the 2004 period, except in Ethiopian case where there was an upward trend in the value of imports from 2004 to 2006. However it is difficult to make any conclusion on the association between trade facilitation indicators and trade flows from this trend analysis. The next section carries

regressions to establish the association between trade facilitation indicators and trade flows.

Table 5.2: Trends of Ethiopian and Kenyan imports and trade facilitation indicators

Year	Ethiopian imports	Documents required	Transport cost of imports	Time to import	Kenyan imports	Time to import	Documents required	Tran sport cost of impo rts
2004	18685.176	17	2790	41	1561.328	62	13	1955
2005	27295.928	17	2790	41	847.889	62	13	1955
2006	63544.094	9	2790	41	1681.411	62	12	1955
2007	35809.174	9	2790	41	2164.667	37	7	1955
2008	30494.199	9	2790	41	2908.154	37	7	1955
2009	31823.126	9	2560	41	3081.036	26	7	2190
2010	32842.768	9	2660	44	963.699	25	7	2190

Source: Author's compilation

5.2 Regression Results

The first part of the analysis deals with the determinants of exports of Ethiopia to Kenya. The cost of export which was an indicator of trade facilitation was shown by results (see

Table 5.3) to be positively associated with Ethiopian exports to Kenya. This was a surprising finding because we had expected the association to be negative.

As expected an increase in population and GDP of Kenya is positively associated with Ethiopian exports to Kenya. This finding is consistent with previous study evidence by Olayiwola (2010) who also find that the GDP of Nigeria and Ghana influence export flows between the two countries. An increase in Kenya's population and GDP may imply an increase in the size of the market for Ethiopian exports. However, the association between Kenyan GDP and Ethiopian exports to Kenya is weak as the relationship is not significant in some regressions as shown in the Table 5.3 below. Ethiopian population as expected is negatively associated with Ethiopian exports to Kenya, although the association is weak. Ethiopian GDP is positively associated with Ethiopian exports to Kenya as expected. Electricity generation in Ethiopia and the depreciation of Ethiopia currency association with Ethiopian exports are not significantly different from zero, implying that they do not significantly affect Ethiopian export trade flows to Kenya.

Table 5.3: Determinants of Ethiopian exports to Kenya

Variable	1	2	3
Constant	-184.076(-33.41)*	-221.265(-16.44)**	37.667(22.76)*
Ln(Ethiopia GDP)	.261(14.50)**	.079(2.06)	.682(21.79)**
Ln(Ethiopia population)	-4.098(-5.55)	-.833(-.41)	-28.328(-18.67)**
Ln(Kenya GDP)	-.192(-2.18)	-.606(-2.62)	2.573(14.16)**
Ln(Kenya population)	15.77(41.24)*	15.224(12.88)**	22.338(47.37)*

Ln(Exchange rate)	-1.014(-4.6)		
Ln(Electricity)		.186(5.06)	
Ln(Cost of export)			.265(21.30)**
R-Squared	.86	.89	.92
Prob>F	.0032	.0099	.0024

Source: Researcher's Computation

The second part of the analysis deals with the determinants of exports of Kenya to Ethiopia. The cost of export which was an indicator of trade facilitation was shown by results (see Table 5.4) to be negatively associated with Ethiopian exports to Kenya but not significantly different from zero. This may imply that the cost of transport of export does not significantly affect Kenyan exports to Ethiopian, possibly because Ethiopia is still one of the closest countries and therefore a rise in transport costs may not have the same impact on export flows compared to distant countries.

As expected, a depreciation of Ethiopian currency against the Kenyan shillings is shown to be negatively associated with Kenyan exports to Ethiopia. A depreciation of Ethiopian currency raises the cost of Kenyan good and thus less is imported. This finding is consistent with trade theory which suggests that currency depreciation encourages exports and discourages imports. Agu and Achike (2010) also find trade theory consistent results on a study on the determinants of trade among SADC countries.

Ethiopia GDP was shown by results to be positively associated with Kenyan exports to Ethiopia as expected. However the association is weak because the significance is not

consistent as shown in Table 5.4. Other variables that were included in model such as Ethiopian population, Kenyan GDP, Kenyan population, generation of electricity in Kenya were shown not to be significantly associated with Kenyan exports to Ethiopia.

Table 5.4: Determinants of Kenyan exports to Ethiopia

Variable	1	2	3
Constant	241.563(6.81)*	150.094(.94)	-150.628(-.36)
Ln(Ethiopia GDP)	1.549(13.38)**	1.257(2.42)	.211(.15)
Ln(Ethiopia population)	-10.758(-2.26)	25.497(1.29)	32.368(.49)
Ln(Kenya GDP)	2.660(4.69)	-7358(-3.06)	-3.699(-.53)
Ln(Kenya population)	-6.573(-2.67)	-32.36(-2.51)	-16.815(-.43)
Ln(Exchange rate)	-6.568(-16.28)**		
Ln(Electricity)		16.813(3.15)	
Ln(Cost of export)			-1.324(-.10)
R-Squared	.96	.98	.86
Prob>F	.32	.19	.59

Source: Researcher's Computation

The third part of the analysis deals with the determinants of imports of Ethiopia from Kenya. This study considered the number documents required to import, transport costs of imports and time to import variables as proxies for trade facilitation. The results showed that the number of trade documents was significantly associated with Ethiopian imports from Kenya as expected (see Table 5.5). This result is consistent with findings in Limao and Venables (2001), Kurz et al (2008), Agu and Achike (2010), among others

that show that African countries significantly lag behind in customs reforms that reduce documentation and enhance turnaround time for cargo at ports.

On the other hand, the cost of transporting imports and the time to import had the expected signs but were not significantly different from zero. This may suggest that these trade facilitators do not significantly influence Ethiopian imports from Kenya probably because Kenya is one of the nearest trading partner among other trading partners.

Ethiopian and Kenyan GDP were shown to be positively associated with Ethiopian imports from Kenya as expected, a finding that is consistent with Olayiwolo (2010) study result. An increase in GDP for Ethiopia may reflect an increase in the market size for Kenyan goods. Likewise, an increase in the GDP of Kenya may imply an increase in surplus output which is exported to Ethiopia. Ethiopian population and Kenyan population had a negative association with Ethiopian imports from Kenya, but the association is weak.

Table 5.5: Determinants of Ethiopian imports from Kenya

Variable	1	2	3	4	5
Constant	247.713(10.44)*	86.479(1.48)	-25.711(-.09)	1083.173(2.40)	1190.769(2033.0)*
Ln(Ethiopia GDP)	1.024(13.22)**	.237(1.42)	.200(.18)	2.452(2.47)	2.837(2091.64)*
Ln(Ethiopia	-6.540(2.06)	7.616(.86)	24.443(.52)	-96.928(-1.94)	-107.580(-

population)					1673.13)*
Ln(Kenya GDP)	2.527(6.66)*	.728(.72)	2.014(-.39)	12.760(2.13)	14.000(1822.55)*
Ln(Kenya population)	-10.617(-6.45)*	-12.986(-2.53)	-18.542(-.67)	14.432(.91)	-16.270(815.27)*
Ln(Exchange rate)	-4.395(-16.29)**				
Ln(Electricity)		.807(5.05)			
Ln(Cost of imports)			-1.063(-.16)		
Ln(time to import)				-1.825(-2.51)	
Ln(documens to import)					-1.296(-2119.9)*
R-Squaared	.99	.99	.77	.97	99
Prob>F	.05	.16	.72	.30	.0004

Source: Researcher's Computation

As expected the Ethiopian currency depreciation was negatively associated with Ethiopian imports from Kenya. This finding is consistent with trade theory and previous study finding by Agu and Achike (2010). The generation of electricity in Ethiopia was not significantly associated

with Ethiopian imports from Kenya.

The last part of the analysis deals with the determinants of imports of Kenya from Ethiopia. This study used the number documents required to import, transport costs of imports and time to import variables as proxies for trade facilitation. The results showed that the number of trade documents was significantly associated with Kenyan imports from Ethiopia as expected (see Table 5.6). This finding is consistent with Limao and Venables (2001), Kurz et al (2008), Agu and Achike (2010), among others, study results that show that African countries significantly lag behind in customs reforms that reduce documentation and enhance turnaround time for cargo at ports. Indeed the number of documents required to import may be impeding trade flows among trade in the COMESA region because similar results were obtained also in the Ethiopian case (see Table 5.5).

Consistent with the study findings for the Ethiopian (see Table 5.5), the cost of transporting imports and the time to import had the expected signs but were not significantly different from zero. This seem to suggest that these trade facilitators do not significantly influence Kenyan imports from Ethiopia probably because Ethiopia is one of the nearest trading partner among other trading partners.

Table 5.6: Determinants of Kenyan imports from Ethiopia

Variable	1	2	3	4	5
Constant	1527.532(13.57)**	1238.814(2.45)	271.382(.21)	283.608(.38)	210.702 (221.4)

					*
Ln(Ethiopa GDP)	4.450(12.11)**	3.525(2.15)	.224(.05)	-1.244(-.52)	.0362(126.88)*
Ln(Ethiopia population)	-251.879(-16.70)**	-137.402(-2.2)	-115.0(-.56)	-18.066(-.13)	-36.753(--198.8)*
Ln(Kenya GDP)	33.350(18.53)**	1.715(.23)	13.268(.60)	4.421(.32)	1.762(923.91)*
Ln(Kenya population)	114.364(13.57)**	32.934(.81)	82.020(.66)	-1.144(-.01)	44.435(348.35)*
Ln(Exchange rate)	-20.736(-16.20)**				
Ln(Electricity)		53.097(3.15)			
Ln(Cost of imports)			-1.843(-.10)		
Ln(time to import)				-3.130(-1.48)	
Ln(documens to import)					-4.428(-44.00)*
R-Squaared	.99	.98	.83	.95	.99
Prob>F	.043	.21	.64	.38	.001

Source: Researcher's Computation

Kenyan GDP and population were positively associated with Kenyan imports from Ethiopia but the association was weak. The depreciation of Kenyan shillings was negatively associated with Kenyan imports from Ethiopia as expected. However, generation of electricity in Kenya had no significant relation with Kenyan exports from Ethiopia.

CHAPTER SIX

CONCLUSION AND RECOMENDATIONS

6.1. Conclusion

This study set out to evaluate the impact of trade facilitation measures on trade within COMESA, using trade flows between Ethiopia and Kenya. The term 'trade facilitation' can be defined as 'the simplification and harmonisation of international trade procedures'. These procedures include the 'activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade' (Zaidi, 2006). Clearly, this definition relates to a wide range of activities including but not limited to import and export procedures (for example, customs or licensing procedures), transport formalities, payments, insurance, and other financial requirements. However, recently, the definition of trade facilitation has been broadened to include the transparency and professionalism of customs authorities, harmonisation of various standards and conformity to international or regional regulations.

There is no that much, more study that has tried to estimate the impact of trade facilitation reforms on trade performance for the case of COMESA. Little is therefore known about the impact of trade facilitation on trade flows in the COMESA region. The broad objective of this study is to analyze the effects of trade facilitation measures on exports and imports among COMESA countries by focusing on the trade flows between Ethiopia and Kenya. The study aimed at addressing these questions; does trade

facilitation have any significant impact on exports between Ethiopia and Kenya? Does trade facilitation have any significant impact on imports between Ethiopia and Kenya?

The study is undertaken within the context of conclusions by Aldaz-Carroll (2006) that developing countries face an increasing need to upgrade the standards of their domestic markets and of their exports. Iwanow and Kirkpatrick (2007) noted that much of the evidence in support of trade facilitation has focused on the improvements in procedures rather than the outcomes. Therefore, from a policy perspective, the findings of the study are intended to improve understanding of the potential contribution of trade facilitation reforms, relative to other trade related reforms, to improving intra-regional trade among the COMESA countries.

To quantify the impact of trade facilitation on trade flows between Ethiopia and Kenya, a gravity model was used. We constructed five indicators of trade facilitation measures from a total of 13 indicators from the Global Competitiveness Report of the World Economic Forum and the Doing Business Index of the World Bank. Using augmented gravity models, we obtained estimates from data covering the period 2004 through 2010. The augmented gravity models for export and imports were estimated using OLS technique.

The results showed that the number of trade documents was significantly associated with imports in both countries, which highlights the barrier being posed by the high number of documents required to import on trade flows. This result is consistent with findings in Limao and Venables (2001), Kurz et al (2008), Agu and Achike (2010), among others

that show that African countries significantly lag behind in customs reforms that reduce documentation and enhance turnaround time for cargo at ports.

Consistent with trade theory, exchange rate depreciation was also shown to be negatively associated with imports. Agu and Achike (2010) also find similar trade theory consistent results on a study on the determinants of trade among SADC countries. Although the cost of transport and time to import had the expected signs, they were not significantly different from zero. As expected an increase in population and GDP of each country was positively associated with exports to her counterpart. An increase in GDP may reflect an increase in the market size for imported goods. Likewise, an increase in a country GDP may imply an increase in surplus output which is exported to the trading partner. This finding is consistent with previous study evidence by Olayiwola (2010) who also find that the GDP of Nigeria and Ghana influence export flows between the two countries. However, the association between real GDP and population and trade flows was weak.

The cost of transporting imports and the time to import had the expected signs but were not significantly different from zero in both countries. This seems to suggest that these trade facilitators do not significantly influence imports probably because the trade partners are near each other. Electricity generation was not significantly associated with trade flows in most of the estimated equations.

6.2 Policy Recommendations

First and foremost, there is need for trade and institutional reforms as an essential prerequisite for achievement of deepening integration, trade facilitation and development in the COMESA. Administrative and procedural process associated with customs operations must evolve efficient region-wide regulatory framework to reduce the number of customs documents required to import. While other trade facilitation measures such as transport costs and time it takes to import should also be addressed, the main focus should be on the reduction and eventual complete elimination of documents required to import in the COMESA to boost trade flows.

Efforts at addressing trade facilitation should also encourage fast tracking of a monetary union so that exchange rate variation effects on trade flows is completely eliminated. It should be realized that monetary unions can generate potential large benefits through trade flows and economic growth. COMESA countries need education and enlightenment on the process of monetary integration. This is because, monetary integration implies a medium to long term move towards fixed exchange rate, and eventual adoption of common currency.

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I, the undersigned, declare that this project work is my original work and has not been present for a degree in any other university, and that all source of materials used for the thesis have been duly acknowledged,

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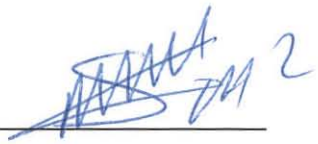
SIGNATURE 

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