

**ESTIMATING THE TRADE EFFECTS OF SUB-REGIONAL
FREE TRADE AREAS IN SUB-SAHARAN AFRICA: A PANEL
DATA ANALYSIS**

BY

**GLORIA QUARSHIE
(10187692)**



**A THESIS SUBMITTED TO THE DEPARTMENT OF
ECONOMICS, UNIVERSITY OF GHANA, LEGON IN PARTIAL
FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF
MASTER OF PHILOSOPHY (M.PHIL) DEGREE IN
ECONOMICS.**

JULY, 2014

DECLARATION

I, *GLORIA QUARSHIE*, hereby declare that this thesis is the original research undertaken by me under the guidance of my supervisors; and with the exception of references to other people's work which have been duly cited, this thesis has neither in part nor in whole been submitted for another degree elsewhere.



.....
DR. FESTUS E. TURKSON
(SUPERVISOR)

.....
DATE

.....
DR. BERNARDIN SENADZA
(SUPERVISOR)

.....
DATE

DEDICATION

This thesis is dedicated to the Almighty God whose grace and mercies has seen me successfully through my education; to my parents Mr. Jonathan Quarshie and Mrs. Grace Quarshie for their encouragement, prayers and support in diverse ways throughout my education; Mr. Levi Chrie Ofoe for his encouragement and support especially during my most trying times; and to all my siblings for their immense prayers and support.



ACKNOWLEDGEMENTS

I thank the Most High God whose grace and blessings upon my life has brought me this far. His daily guidance and protection has seen me through this journey and by his mighty works He sends help my way when I needed it most. May His name be praised.

Am very grateful to Dr. Festus Ebo Turkson for his useful and insightful comments, materials and guidance which have broadened my knowledge in International trade. My appreciation also goes to Dr. Bernardin Senadza for his encouragement, detailed corrections and suggestions which have greatly contributed to the successful outcome of this study. I am very grateful to Mrs. Helen Seshie-Naisser and Dr. Dankwah for their advice and contributions to this work.

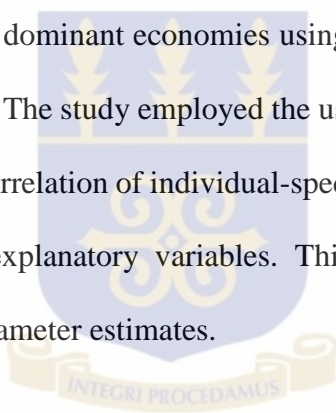
My heartfelt gratitude also goes to Mr. Louis Sitsofe Hodey, Mr. Nicholas Ashiabi and Mr. Solomon Aboagye for their assistance and advice. I also thank Madam Paulina Doku, Ms. Moud Jennifer Hughes, Ms. Florence Mac, Ms. Eunice Quarshie, Mr. Emmanuel Kweggyir Aggrey, Mr. Emmanuel Adjei Tutuani and Mr. Lawrence Tsyokpor for their immense contributions in diverse ways.

Finally, God richly bless every individual whose contribution and assistance has brought me this far.

ABSTRACT

Sub-Saharan Africa has over the years witnessed the proliferation of Regional Trade Agreements (RTAs) within the sub-region. However, intra-regional trade remains considerably low around 10 percent of its trade with the rest of the world. This has led researchers to investigate whether these RTAs have been trade-creating or trade diverting. Nevertheless, these studies have not extended their analysis to investigate the effect of the membership of some dominant economies in their respective trade blocs.

Thus, this study provides evidence on the sensitivity of the Free Trade Agreements (FTAs) to the membership of some dominant economies using a panel of forty-six (46) countries from the period 1960-2012. The study employed the use of the Hausman-Taylor estimator in order to control for the correlation of individual-specific unobservable effects that could be correlated with other explanatory variables. This method of estimation generates unbiased and consistent parameter estimates.



Results from the estimation suggest that the Economic Community of West African States (ECOWAS), East African Community (EAC) and Southern African Development Corporation (SADC) have been trade-creating whereas Economic Community of Central African States (ECCAS) and Intergovernmental Authority on Development (IGAD) have been trade-diverting. A further sensitivity analysis conforms to expectation about the influence of dominant economies (Cameroon, Kenya, Nigeria and South Africa) on the performance of the trade blocks.

It is therefore recommended based on the significant effect of distance on trade that governments provide improved infrastructure to facilitate trade among member countries across the region. Also domestic industries must be given the support to expand their productive capacities to add value to their manufactures for an enhanced export for their countries which goes a long way to impact on the GDP of their countries and further improves intra-regional trade. In addition, processes at the borders of member countries must be harmonized and made easy to facilitate the movement of goods across borders. Furthermore, member countries of FTAs in SSA must work towards using a common currency in order to reduce costs to importers and exporters through foreign exchange losses.

TABLE OF CONTENTS

CONTENT	PAGE
DECLARATION	i
DEDICATION	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
LIST OF TABLES	ix
LIST OF FIGURES	x
ACRONYMS	xi
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background to the Study	1
1.2 Problem Statement	4
1.3 Objectives of the Study	9
1.4 Significance of the Study	9
1.5 Organization of the Study	11
CHAPTER TWO	12
REGIONAL ECONOMIC COMMUNITIES IN SUB-SAHARAN AFRICA	12
2.1 Introduction	12
2.2 Formation of RECs in SSA	12
2.3 Overview of Regional Economic Communities in Sub-Saharan Africa	13

2.3.1 <i>East African Community (EAC)</i>	13
2.3.2 <i>Economic Community of Central African States (ECCAS)</i>	14
2.3.3 <i>Economic Community of West African States (ECOWAS)</i>	16
2.3.4 <i>Intergovernmental Authority on Development (IGAD)</i>	17
2.3.5 <i>Southern African Development Corporation (SADC)</i>	17
2.4 Challenges facing RECs	19
2.5 Performance of SSA in Trade	20
2.6 Impediments to Trade within SSA.....	22
CHAPTER THREE	25
LITERATURE REVIEW	25
3.1 Introduction.....	25
3.2 Theoretical Review	25
3.2.1 Models of International Trade	26
3.2.1.1 <i>Ricardian Model</i>	26
3.2.1.2 <i>Heckscher-Ohlin Model</i>	27
3.2.1.3 <i>New Trade Theories</i>	31
3.2.1.4 <i>Conditional general equilibrium models</i>	36
3.2.1.5 <i>Unconditional general equilibrium approach</i>	38
3.3 Empirical Review.....	39
3.4 Summary of chapter.....	44
CHAPTER FOUR.....	45

THEORETICAL FRAMEWORK AND METHODOLOGY	45
4.1 Introduction.....	45
4.2 Theoretical framework.....	45
4.2.1 <i>Gravity Model</i>	45
4.3 Empirical model formation.....	50
4.3.1 Explanatory variables and <i>a priori</i> expectations.....	52
4.3.2 Estimation technique.....	58
4.3.3 Measurement of Trade Intensity Index	61
4.4 Data Sources	62
4.5 Summary	63
CHAPTER FIVE	64
RESULTS AND DISCUSSION.....	64
5.1 Introduction.....	64
5.2 Descriptive Analysis	64
5.3 Estimation Results	66
5.4 Discussion of Results.....	69
5.4.1 Sensitivity Analysis	76
5.5 Summary	78
CHAPTER SIX.....	79
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	79
6.1 Introduction.....	79

6.2 Summary and Conclusion	79
6.3 Policy Recommendations.....	81
6.4 Limitations of the Study.....	83
REFERENCES	84
APPENDICES	94
Appendix I: List of countries within each RECs	94
Appendix II: Hausman Test on Random Effects Versus Fixed Effects.....	95

LIST OF TABLES

TABLE	PAGE
Table 5.1: Summary statistics for RECs, 1960-2012.....	65
Table 5.2: Hausman Test on Random Effects versus Fixed Effects estimates.....	68
Table 5.3: Effect of FTAs on bilateral trade flows in SSA.....	70
Table 5.4: Estimates excluding Cameroon, Kenya, Nigeria and South Africa.....	77

LIST OF FIGURES

FIGURE	PAGE
Figure 1: Intra-regional trade within the RECs in SSA, 1995 - 2012.....	21

ACRONYMS

AEC	African Economic Community
AU	African Union
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CES	Constant Elasticity of Substitution
DFID	Department for International Development
EAC	East African Community
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
EU	European Union
FAO	Food and Agriculture Organization
FTA	Free Trade Areas (Agreements)
GATT	General Agreements on Tariffs and Trade
GDP	Gross Domestic Product
H-O	Heckscher Ohlin
HOV	Heckscher Ohlin Vanek
IGAD	Intergovernmental Authority on Development
MTS	Multilateral Trading System
NO-RTA	No Regional Trade Agreement
OAU	Organization of African Unity
OECD	Organization for Economic Co-operation and Development
PTA	Preferential Trade Agreement

REC	Regional Economic Community
ROO	Rules of Origin
RTA	Regional Trade Agreements
SADC	Southern Africa Development Corporation
SSA	Sub-Saharan Africa
UN-COMTRADE	United Nations Commodity Trade
WDI	World Development Indicator
WTO	World Trade Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Trade is essential to every nation because it is a driving force behind economic development. A country's ability to trade ensures that its economy grows faster and is matched with increases in its productivity levels. From the theory of comparative advantage it can be said that a country's openness to trade can boost its income as well as increase consumption levels. Such benefits from trade are made possible through the adoption of technological innovations, facilitation of consumption and economies of scale (DFID, 2011,p.5). Free trade areas could be an example of the mediums through which trade among countries could be facilitated.

A Free Trade Area (FTA) is a grouping of countries within which tariffs and non-tariff trade barriers between the members are generally abolished but with no common trade policy toward non-members (OECD, 1999). Free trade areas represent an aspect of regional integration aimed at promoting trade among member countries through the liberalization of internal trade whilst allowing members to maintain different external tariffs against the rest of the world. Free trade areas (agreements) differ from custom unions by the nature of external tariffs imposed. Customs unions impose equal external tariffs on traded goods from non-member countries whilst free trade areas (agreement) are at liberty to impose different external tariffs on traded goods from non-member countries.

Statistics from the World Trade Organization (WTO) indicates that as of 31 July 2010, 474 Regional Trade Agreements (RTAs) had been notified to the WTO and General Agreement on Tariffs and Trade (GATT) of which 283 were in force. Thus, over the years, the global economy has witnessed an increase in regional integration in the form of Regional Trade Agreements (RTAs) with each continent having more than one RTA. These trade agreements among others include the European Union (EU) formed in 1999, the Association of South-East Asian Nations (ASEAN) formed in 1992, the North American Free Trade Agreement (NAFTA) established in 1993, the Common Market of the Southern Cone (MERCOSUR) established in 1991, the Common Market for Eastern and Southern Africa (COMESA) launched in 1994, the Economic Community of Central African States (ECCAS) established in 1992, the Economic Community of West African States (ECOWAS) established in 1975 and the Southern African Development Cooperation (SADC) also established in 1992.

Regional integration in the form of RTAs has become essential within the multilateral trading system (MTS). According to Crawford and Fiorentino (2005), the increase in regional trade agreements could be partly explained by the desire of countries to infiltrate the global market through the establishment of new bilateral or multilateral trade agreements given the difficulty in getting other WTO members to deepen their multilateral agreements. This need is greatly expressed in developing countries with the proliferation of trade agreements as a means to establish domestic trade reforms with the aim of speeding up the integration of their economies into the world trading system as well as making their

economies more competitive in international trade.

RTAs have become more sophisticated with the introduction of trade liberalization in services as well as in goods. A noticeable trend in RTAs is the shift of resources from multilateral trade objectives to the pursuit of preferential agreements for most countries. Also, many of the RTAs have become more innovative such that they are no longer limited by geographical boundaries. An example is the trade agreement between the United States and China. As such, these innovative improvements have given rise to North-South RTAs which have over time replaced non-reciprocal systems of preferences even though this arrangement is seen to be very costly to developing countries. That notwithstanding, South-South RTAs have also increased which explains the increasing number of regional blocs among developing countries (Fiorentino et al, 2006).

A noticeable trend within sub-Saharan Africa is the multi-membership of countries in regional or sub-regional trade agreements aimed at promoting economic coordination, cooperation or integration of individual countries. Multi-membership here refers to the number of RTAs a country belongs such as Kenya and Uganda which are both members of EAC as well as IGAD. The formation of RTAs within the sub-region is based on the objectives of the main Regional Economic Communities (RECs) which is to foster cooperation as well as facilitate economic integration. Basically there are five main Regional Economic Communities in SSA, namely, the Economic Community of West African States (ECOWAS), the Economic Community of Central African States (ECCAS), the Southern African Development Corporation (SADC), the East African Community

(EAC) and Intergovernmental Authority on Development (IGAD). These RECs which are free trade areas have been formed to serve as building blocks to achieve the sub-region's objectives of promoting economic cooperation and integration. These RECs have been formed to serve as 'building blocks' for the economic development of SSA. For the purposes of this study, RECs are treated as free trade agreements.

1.2 Problem Statement

Regional economic integration in Africa has been embraced and widely accepted among African countries after gaining independence. The idea behind regional economic integration in Africa is to give the continent the opportunity to strengthen its economies in order to participate competitively in world trade. Given the continent's record of poverty due to low levels of income and high population growth rate amongst other developmental issues, regional economic integration is vital to the continent's economic recovery to a healthy and sustainable level. Evidence of the successes of other FTA such as the European Union (EU) confirms the importance and need for regional economic integration. These benefits from regional integration however require careful structuring and implementation.

Comparatively, Africa has had the highest number of regional integration arrangements with SSA witnessing various forms of these arrangements which are mostly trade agreements (PTAs and FTAs) and customs unions. Most sub-Saharan African countries belong to at least one regional trade agreement with some countries belonging to two or more with some of these memberships overlapping. Yang and Gustav (2005) has described

African RTAs as increasing exponentially thereby creating a dense web of RTAs within the continent. However, a country's membership of an RTA is not as important as the percentage of world trade the RTA accounts for. That is RTAs involving larger economies possess more bargaining power than among smaller or less-developed economies (Crawford and Fiorentino, 2005).

Even though Africa has witnessed the formation of more RTAs, the expected benefits from these arrangements have not been impressive. For instance, intra-regional trade has been significantly low within SSA with an average export of 9% of the region's exports to the rest of the world in 1993; a figure which slightly increased to about 11% of total exports to the rest of the world as compared to Asian countries which have an intra-trade value of 50% of their exports to the rest of the world (ISS, 2013).

This poor performance of intra-SSA trade has been attributed to reasons such as the lack of product diversification which provides little basis for exchange among countries. The region's endowment in labor coupled with small capital limits the production of manufactured goods and rather favors the production of primary goods. These primary goods are then exported to the developed countries with the European market being the largest destination for African exports in exchange for manufactured goods. The proportion of African manufacturing in world manufactured exports witnessed a decline from 0.4% in 1980 to 0.3% in 2005 (UNIDO, 2005). As an aspect of industry, the manufacturing sector can facilitate the process of structural change which is fundamental to SSA's development (Page, 2012). According to Beers and Linneman (1991), countries within ECOWAS lack the potential in developing and enhancing capacities for producing and exporting

manufactured goods. However, with the structure of manufacturing gradually changing into the assignment of “tasks”, SSA countries can benefit immensely by drawing lessons from economies such as Vietnam which has exploited the benefits associated with tasking (Page, 2012).

The new trade theory of differentiated goods which is associated with product specialization requires various sectors to further reduce trade costs to allow the free movement of goods across borders. Tasking is associated with product specialization and would therefore require that SSA countries specialize in the production of goods in the most efficient way so as to reduce costs in order to become competitive in the global economy. In other words, SSA can mobilize its resources effectively in order to attract investment in these areas can tap into industry to achieve the benefits of industrialization. In order to achieve this aim, there is the need for greater regional cooperation and stability within the region. Thus regional trade blocs in SSA must promote and facilitate trade in manufactured goods among member countries to attract international demand.

The low level of intra-regional trade has also been associated with the high tariffs that are imposed on goods within the region. Even though there have been efforts by the African Union to address the issue of tariffs within the region, other problems such as non-tariff barriers continue to persist within the region. On regional integration, Viner (1950) suggests that trade agreements could have either trade creating or trade diverting effects. Trade diversion usually occurs when member countries reduce or eliminate tariffs to other member countries whilst raising external tariffs to efficient non-members. The likely result

from such actions is the protection of goods from an inefficient member country against a more efficient non-member country often leaving consumers to loss as well as government with a loss in tariff revenue.

Trade diversion has resulted in the collapse of some trade agreements. An example is the dissolution of the former EAC in the 1960's which was blamed on Kenya's growing export market at the expense of the economies of Uganda and Tanzania; a situation that was as a result of the economic dominance of Kenya within the East African region. This came about as a result of the common external tariff of the group protected the manufacturing industry of the member countries and since Kenya had a bigger manufacturing sector which was bigger than the manufacturing sectors of the other member countries, the benefits of this agreement favored Kenya at the expense of the other member countries. Most industries in Tanzania and Kenya began relocating to Kenya because of the benefits the country was enjoying and this led to disaffection within the group and finally led to its breakup. Another impact of RTAs on trade is Trade deflection. This is a situation in which a member country having the lowest external tariff is used to as an entry point for commodities that are then distributed freely to other parts of the region. As such, there is the need for member countries to factor a comprehensive Rules of Origin (ROOs). According to Burfisher et al (2005), ROOs prevent goods entering a member country with lower external tariff from being transshipped duty-free to members with higher tariffs especially in cases where the members do not have a common external tariff.

Empirical studies have sought to analyze the trade effects of South-South trade agreements

and particularly within Africa and results from such these studies have been varied. Studies such as Yang and Gupta (2005) have argued that RTAs have been ineffective in improving trade flows among member countries. Furthermore, Venables (2003) has also predicted that South-South trade agreements would have more trade diverting effects than trade creation effect so that on net, trade effect becomes negative. On the other, hand studies such as Coulibaly (2007), Deme (1995), Afersorgbor and Bergeijk (2011) and Turkson (2012) have realized positive impacts of African RTAs on trade flows of member countries.

Most studies have ignored zero-valued observations in their analysis because they consider such observations as insignificant. However, zero-valued observations give useful insights into understanding bilateral trade patterns. Factors such as geographic distance, lack of cultural and colonial link, political regime and low levels of national income all influence trade in various ways. In light of this, the inclusion of zero-valued observations is vital in generating more accurate results to help understand the pattern of bilateral trade. Realizing the actual effects of FTAs on member countries' trade patterns in SSA would aid governments in assessing these effects before entering into such agreements. This study would therefore employ the required method following in the work of Turkson (2012) as it seeks to provide insightful details into the effects of FTAs on bilateral trade flows of member countries.

1.3 Objectives of the Study

The main aim of this paper is to estimate the trade effects of sub-Saharan African (SSA) countries' membership in an FTA. Specifically, this study seeks to investigate whether;

- 1) Trade in manufactured goods increased among member countries belonging to a Free Trade Agreement (FTA) in sub-Saharan Africa (SSA).
- 2) Some dominant member countries had significant effect of their membership on trade within their respective FTAs.

Emphasis is placed on the manufacturing sector because statistics from UNCTAD for the period 2000 - 2010 indicates an upward trend in intra-African trade of manufactured goods. It is also because of similarities in comparative advantage; implying that SSA countries trade less in primary products.

The study therefore sets out to achieve these objectives based on the hypothesis;

H₀ : FTAs increase bilateral trade among member countries.

H₁ : FTAs are not trade-creating among member countries.

1.4 Significance of the Study

Low records of intra-regional trade in SSA have been an issue of concern particularly to the AU. Despite efforts by the AU to improve the level of trade within the region, intra-regional trade still remains low. This has attracted researchers in the field of international trade to investigate the causes of such low intra-regional. Studies, both theoretical and empirical have shown that due to similarities in endowments and also the lack of value addition to primary products such as fuels and agricultural goods, trade among African countries would be low. As such, the formation of many RTAs has raised a lot of questions

about the benefits to member countries. Researchers have therefore sought to investigate the motives behind these arrangements as well as the potential and actual benefits that are enjoyed by member countries.

The effects from these RTAs are expected to be either positive or negative depending on factors such as regional stability, physical infrastructure which is used to measure distance, colonial links, language barriers, landlocked and common currency among others. For instance within the regional group of ECOWAS, there is a variation in the official languages spoken because its membership is constituted by Anglophone and Francophone speaking countries who aim at achieving their divergent interests (Hanink and Owusu, 1998). Furthermore, the landlocked member countries of Mali, Burkina Faso and Niger engage actively in trade with other members of the ECOWAS region because they depend on these countries to import and export goods (Obadan, 1984).

Empirical studies focusing on RTAs in SSA have found out that most of the trade blocs have had trade-creating effect on member's bilateral trade flows. However, these studies have failed to analyze the impact of involvement of some countries on the performance of trade blocs.

This paper therefore seeks to add to existing trade literature by examining the sensitivity of the FTAs to the membership of some member countries. We also control for multilateral resistance which most other studies ignore. The study focuses on the five FTAs because it

captures the involvement of all the 48 countries in SSA. The choice of the period 1960 to 2012 also gives room to analyze the patterns of intra-regional trade.

1.5 Organization of the Study

This study is organized into six chapters. Chapter one provides a background to the study, discusses the problem statement, outlines the objectives of the study and also discusses the significance of the study. Chapter two provides an overview of the RECs in SSA which are the focus of this study. Chapter three reviews both theoretical and empirical literature in the relationship between FTAs and trade. Chapter four covers the theoretical framework and the methodology employed in the study. Chapter five analyzes data, presents and discusses the results from the analysis. Chapter six concludes with a summary and offers recommendations based on the findings and recommendations for future research in this area.

CHAPTER TWO

REGIONAL ECONOMIC COMMUNITIES IN SUB-SAHARAN AFRICA

2.1 Introduction

This chapter provides the history and trade performance of the RECs in SSA. The chapter is structured in six sections. Section 2.2 provides information on the formation of RECs within SSA. The remaining sections; 2.3, 2.4, 2.5 and 2.6 provides an overview of the RECs under study, examines the challenges facing the RECs, performance of SSA in trade and impediments to trade in SSA, respectively.

2.2 Formation of RECs in SSA

Given that African countries are on the average small in size in terms of domestic markets and underdeveloped, it is imperative for the continent to join forces in order to promote their individual as well as collective development and also strengthen capacity of the continent to participate fully in the global economy. The post-colonial era witnessed the desire of African leaders to develop the continent mainly through industrialization by engaging in import-substitution activities. The Organization of African Unity (OAU)¹ was formed in 1963 by the heads of states and governments of Africa to promote the integration of African economies into the global economic system. By a general consensus, the Lagos

¹ Renamed Africa Union in 2002 after the disbandment of the union by the then South African President, Thabo Mbeki

Plan of Action was signed in 1980 at the Summit of Heads of States and Governments to fashion out strategies for regional integration and development. To affirm the continent's commitment in achieving regional integration and cooperation, the Abuja Treaty was signed in 1991 to establish African Economic Community (AEC) with a core mandate to “promote economic, social and cultural development and integration of African economies in order to increase economic self-reliance and promote an endogenous and self-sustained development” (Sako, 2006. p.4). Regional Economic Communities (RECs) were thus established to involve all regions of the continent to serve as building blocks for regional economic cooperation and integration.

Currently, the RECs in Africa are the Arab Maghreb Union (AMU), the Community of Sahel –Saharan States (CEN-SAD), the Common Market for Eastern and Southern Africa (COMESA), the East African Community (*EAC*), the Economic Community of Central African States (ECCAS), the Economic Community of West African States (ECOWAS), the Inter-Governmental Authority on Development (IGAD), and the Southern African Development Corporation (SADC). However, given the scope of this study, focus would be on five of the RECs in SSA, namely, EAC, ECCAS, ECOWAS, IGAD and SADC. Below are brief overviews of the RECs.

2.3 Overview of Regional Economic Communities in Sub-Saharan Africa

2.3.1 *East African Community (EAC)*

The East African Community (EAC) is made up of five (5) East African countries namely Burundi, Kenya, Rwanda, Tanzania and Uganda. The Community which was initially

established in 1967, collapsed in 1977 and was re-established through the signing of the East African Community Treaty in 1999 and came into force on 7 July 2000.

The EAC agreed after consultations with the Southern African Development Corporation (SADC) and the Common Market for Eastern and Southern Africa (COMESA) agreed to the free movement of labor, capital, goods and services within the Community basically because of the overlapping memberships of Burundi, Kenya and Rwanda in COMESA. With a population of over 149 million people as at 2013 covering a land area of about 1.82 million square kilometers and with a combined Gross Domestic Product (GDP) in nominal terms of about US\$100 billion, the EAC regional economic bloc represents a small market relative to the global market. Previous findings have also found an increase in intra-regional trade but with a high level of trade diversion over trade creation within the Community. Trade within the REC recorded some level of improvement according to the 2009 EAC Report. Trade among member countries within the bloc was US\$2,715.4 million representing a 37.6 percentage increment with Kenya accounting for about 44.8 percent of this increment (EAC, 2009).

2.3.2 Economic Community of Central African States (ECCAS)

The Economic Community of Central African States (ECCAS), formerly the Customs and Economic Union of Central Africa (CEUCA- UDEAC) was first established in 1964 but became effective in 1966 by a Brazzaville Treaty. It was however re-established through a consensus by the then five member states, namely Cameroon, Central African Republic,

Chad, Gabon and Republic of the Congo to form a wider community of 10 members. It was later renamed as ECCAS in 1983 but became inactive for years due to failure of members states to pay membership dues and also due to the war in Angola, DR. Congo and Rwanda. The community however became active again in 1998 through a summit by Heads of States and Government. The community is made up of ten (10) Central African States namely Angola, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Republic of the Congo; and São Tomé en Príncipe.

In 2004, ECCAS set up an FTA and this was expected to result in the formation of a Custom's Union by the end of 2012 (WTO, 2013). This was to see to the abolishment of quantitative trade barriers and restrictions. However, the regional group has been performing poorly. Intra-ECCAS trade was about 1.2% of total intra-African trade in 2009; a figure which increased from 1.1% in 2001 ("Regional Integration Strategy Paper", 2012). The reasons for this poor performance in intra-trade within the group is as a result of non-tariff trade barriers such as poor state of roads, random immigration checkpoints along member countries' corridors as well as the multiple membership of member countries in other regional groupings.

In 2009, intra-ECCAS trade recorded a value of US\$ 0.2 billion which represented about 0.3 percent of its trade with the rest of the world (Mbekeani, 2013). The 2013 UNCTAD report indicated that intra-ECCAS trade formed about 1.7 percent of total African trade implying a GDP of US\$32,383 million between the period, 1996-2000. This figure

however dropped to 1.5 percent between 2001 and 2006 and then increased to 1.9 percent representing US\$170,929 million between 2007 and 2011.

2.3.3 Economic Community of West African States (ECOWAS)

With its current headquarters in Abuja, Nigeria, the Economic Community of West African States (ECOWAS) has a membership of fifteen (15)² West African countries. They are Benin, Burkina Faso, Cape Verde, Ivory Coast, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. ECOWAS was founded in 1975 through the signing of the Lagos Treaty. With a population of over 340 billion covering an area of about 1.97 million square kilometers and a GDP about US\$402 billion, ECOWAS seen as one of the pillars of the African Economic Community (AEC) was formed with the objective of achieving a collective independence for its member states by creating a single large trading bloc by means of an economic and trade union.

Trade within the bloc experienced some fluctuations between 2001 and 2010. For instance between 2001 and 2002, intra-ECOWAS trade improved with an increase in trade values from US\$2,255.4 million to US\$3144.3 million representing an increase of 39 percent of intra-bloc exports. This figure also represents an increase of 2.5 percentage points of the share of intra-bloc exports in the bloc's total exports to the rest of the world. However, 2010 witnessed a decline of 1.6 percentage points of the share of intra-bloc trade in total exports to the rest of the world (Seid, 2013)

² ECOWAS was initially made up of 16 countries until Mauritania withdrew its membership in 1999.

2.3.4 Intergovernmental Authority on Development (IGAD)

The Intergovernmental Authority on Development (IGAD) created in 1996, was renamed to replace the Intergovernmental Authority on Drought and Development (IGADD) which was established in 1986. IGAD's membership is made up of eight (8) countries from the Horn of Africa, Nile Valley and the African Great Lakes namely Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, South Sudan and Uganda. With a population of over 180 million covering an area of about 5.2 million square kilometers with a nominal GDP of US\$197.2 billion, the community aims at improving the trade, investment and banking environment of its member states.

Intra-IGAD trade witnessed some improvements between 2001 and 2010. However, the share of intra-bloc exports in total exports to the rest of the world declined sharply over this period. For instance, between 2001 and 2004, intra-bloc exports increased from US\$827.8 million to US\$1094.3 million representing 32.2 percent increase. However, the share of intra-bloc exports in total exports to the rest of the world declined significantly by 7.4 percentage points (Seid, 2013).

2.3.5 Southern African Development Corporation (SADC)

The Southern African Development Corporation (SADC) was formerly known as the Southern African Development Coordination Conference (SADCC). SADCC was established in 1980 with a membership of nine (9) Southern African countries. It was later

re-established as SADC in 1992. The Community has a population of about 277 million people covering an area of about 9.88 million square kilometers with a GDP of about US\$575.5 billion

The SADC Free Trade Area (FTA) which was initiated in 2000 and launched in 2008 had a membership of 12 countries³. The countries in SADC are Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe.

Intra-SADC trade has been encouraging with records showing a trade value of US\$16 billion as of 2009 representing 12.2 percent in the share of the community's world exports (Mbekeani, 2013). Intra-SADC trade as a share of total intra-African trade between the period, 1996-2000 was 32.3 percent representing US\$189,416 million of GDP of the continent. This share however experienced a decline with a share of 13.8 percent between 2001 and 2006 and 12.9 percent between 2007 and 2011 representing US\$269,324 million and US\$510,538 million respectively. Despite the increase in the GDP figures over time, the share of total intra-SADC trade in total intra-African trade decreased (UNCTAD, 2013).

³ This membership grew to 15 countries with Madagascar being on suspension due to a coup d'état.

2.4 Challenges facing RECs

As every organization, there are successes and challenges. The RECs have had their successes but have been faced with some challenges as well. These challenges have been numerous and various reasons have been assigned to them. History provides evidence that some of these challenges have resulted in the collapse of some of the RECs. As identified in Johnson (1995. p.213), Lyakurwa et al (1997. p.176) and Sako (2006) the challenges impeding the continued successes of the RECs includes:

- 1) Lack of coordination and harmonization of economic policies.
- 2) Lack of political will on the part of governments to mainstream regional commitments and agreements into national plans to ensure the success of the process.
- 3) Negative perception and assessment of the costs and benefits associated with the integration process.
- 4) Inadequate and weak physical infrastructure such as roads, telecommunications networks among others.
- 5) Conflicts and political instability within some member countries
- 6) Lack of complementarity of member countries' production structures
- 7) Failure to involve other stakeholders, particularly the private sector and other civil society groups
- 8) Inadequate human and institutional capacity to design and implement programs suitable for cooperation and integration.
- 9) Overlapping membership in regional integrations schemes
- 10) Inadequate funding for undertaking programs outlined

2.5 Performance of SSA in Trade

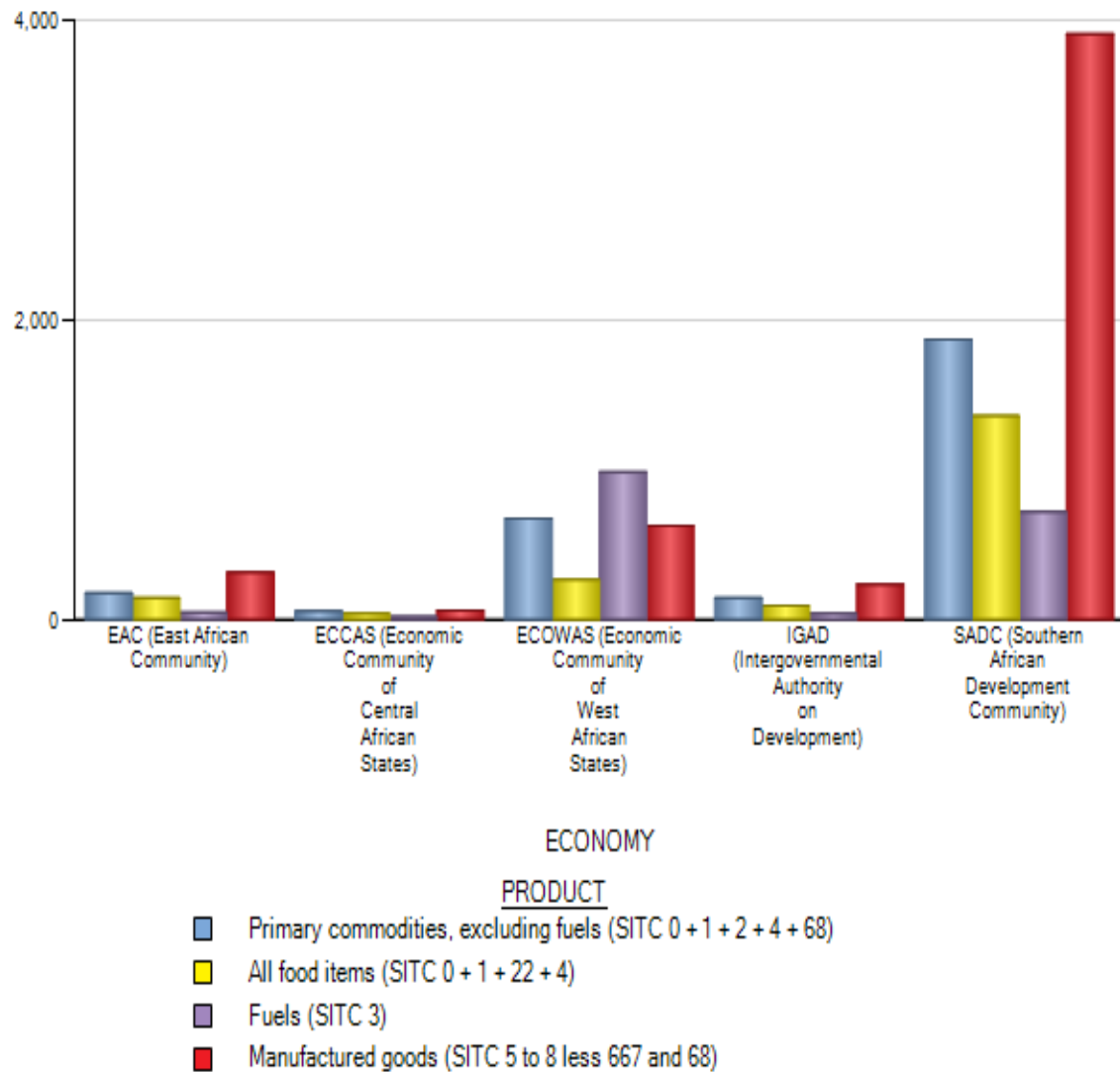
Africa's growth performance over the years has been encouraging considering the continent's poor performance in its early years. Regarded as a continent with records of quite a number of civil wars lasting for a decade and over, economic growth has been a problem. Particularly for SSA, growth rate of GDP has realized a significant upward trend with statistics showing a growth rate of over 2.3% between 2005 and 2009. Despite this improvement in GDP growth, actual combined GDP for the region in 2010 was around \$1.6 trillion compared to the United States' GDP of \$14.5 trillion (Kimenyi et al, 2012).

There have been arguments raised concerning the records of low levels of intra-African trade. For instance, according to Lesser and Moisé-Leeman (2009) a significant volume of goods was exported from Uganda to neighboring countries it shares borders with in 2006. This could be a clear indication of a perceived low level of trade between countries in the sub-continent which is attributed to limited formal statistics available. Available statistics however shows that few countries within the sub-continent engage actively in intra-regional trade. South Africa, the largest economy in SSA and also within the continent trades in comparatively high volumes of goods with other countries within the region. This is followed by other bigger economies such as Nigeria, Cote D'Ivoire and Zambia.

From figure 1, there is a clear indication that intra-industry trade within SADC is substantially high particularly in trade of manufactured goods. This high record is partly attributed to the economic dominance of South Africa within the region. ECOWAS also recorded some level of growth within the region but more in the trade of fuels than in

manufactured goods. Nigeria's dominance in the supply of fuels within the region is linked to the growth of intra-regional trade within the bloc.

Figure 1: Intra-regional trade within the RECs in SSA, 1995 - 2012⁴



Source: UNCTAD Database, June 2014

⁴ Merchandise exports measured in US Dollars at current prices and current exchange rates in millions. Period limited to 1995 – 2012 because available data was only for this period with regards to the trade category in the database.

The regions of EAC, ECCAS and IGAD recorded low growth in intra-regional trade. Despite this however, trade in manufactured goods exceeded trade in other commodities for EAC and IGAD. The growth of trade in manufactured goods was not significant within the region of ECCAS.

2.6 Impediments to Trade within SSA

Geography: Geographic location of some of the countries within SSA tends to affect their activities in trade. 16 countries⁵ out of the 48 countries in this region are landlocked. Landlocked countries trade 30% less as compared to their maritime neighbors (World Bank, 2010). As such, landlocked countries would tend to trade more with their immediate neighbors than with those countries that are relatively farther away. Being landlocked thus impedes trade because imports become very expensive and also export revenues are reduced as a result of increased transportation costs.

Border Barriers: Border barriers impact significantly on the volume of goods traded between countries. According to the World Bank's Trading Across Borders report 2012, the cost of doing business in SSA was the second highest in the world after South Asia. Figures from the report indicated that the Distance to Frontier (DTF)⁶ was 50.81. Thus the ease of doing business in SSA is on the average poor. The report also indicates that the

⁵ Botswana, Burundi, Central African Republic, Chad, Ethiopia, Lesotho, Malawi, Mali, Niger, Rwanda, South Sudan, Swaziland, Uganda, Zambia and Zimbabwe

⁶ DTF is measured on a scale of 0 – 100 with 0 indicating poor performance and 100 being a good performance

number of days it takes to export within was 30.5 days and the cost of exporting a container was US\$2,200; the highest figure in the world according to the report. Other trade barriers such as tariffs are estimated to be relatively high in SSA and recognized as a contributing factor to the low intra-regional trade recorded. This culminates into the cost of doing business which is averagely high in SSA according to the 2011 World Bank and International Finance Corporation report and is fundamentally caused by the long and cumbersome customs procedures at the various entry points of countries. In acknowledging its effect, some regional groupings such as the Southern African Customs Union (SACU) have taken steps to abolish the imposition of tariffs on goods from member countries which has contributed to the free flows of goods between countries. It has also gone further to establish a common external tariff on goods from non-member countries in line with the WTO regulations. However, border barriers still remains a problem in other regional groupings such as ECCAS which has not succeeded in eliminating tariffs to allow the free movement of goods between member countries.

Infrastructure: Poor and underdeveloped infrastructure such as roads and railway networks, air transport, telecommunication, stable power supply and water remains a problem in SSA. The lack of these infrastructures tends to increase the cost of production which translates into the price of the goods produced which also in turn become too expensive as compared to the prices of goods produced outside the sub-continent. Transport costs are generally high within SSA compared to the rest of the world and this is responsible for the low intra-regional trade among countries. Shipment of a car from

Japan to Abidjan costs US\$1500 whereas shipment of the same car from Addis Ababa to Abidjan costs US\$5000 in 2010 (UN Economic Commission for Africa, African Union and African Development Bank 2010). Air transport which could facilitate the easy movement of goods between countries with the region remains undeveloped and the few that exist are also expensive thus leaving road transport as the next best alternative for landlocked countries and maritime transport for coastal countries. That notwithstanding, most road networks within the sub-region are in poor condition and therefore prolong the required time to transport goods across borders. In this case, land-locked countries are the most affected by the poor condition of roads since that is the least expensive form of transporting goods. For instance, within the ECCAS region, 80 percent of their trade is provided through road transportation and as such poor road networks would significantly impede intra-regional trade (Gathli, 2011). Also, telecommunication networks remain restricted to some areas and are often unreliable. “Fixed-line telephone services are limited and unreliable with notoriously high call charges” (Hartzenberg, 2011. p.4).

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter seeks to review literature relevant to the study. It is structured to take into account theoretical literature as well as empirical literature. The theoretical literature focuses on the various theories that have been propounded in relation to Free Trade Areas (FTAs). The empirical review goes further to analyze empirical studies that have been conducted by earlier researchers in relation to FTAs. The reason for this exercise is to investigate and identify gaps in earlier studies on the trade effects of sub-regional free trade areas in sub Saharan Africa.

3.2 Theoretical Review

With regards to intra-industry trade, two traditional models have been considered namely, the Heckscher-Ohlin model and the Ricardian model. However, over time, trade theorists have been unable to find the justification for the formation of FTA's based on the traditional models. As such the New Trade Theory of Monopolistic Competition has been commended for its ability to explain the basis for the formation of FTAs and particularly for developing countries. Intra-industry trade in this section refers to trade in goods that have the same factor intensities. Below is a discussion on each of the models that have been mentioned above.

3.2.1 Models of International Trade

3.2.1.1 Ricardian Model

This is a two-good, one-factor model. The basic idea behind the Ricardian model is that technological differences across countries form the basis for trade. In other words within the Ricardian framework, the amount of goods that could be produced by one unit of labor would vary because of differences in production functions across countries. Under the assumptions of constant returns to scale and the absence of distortions in the market such as imperfect competition, the Ricardian model argues that comparative advantage determines trade patterns. This model asserts that smaller countries would be more likely to gain from free trade with bigger countries and also that as the productivity levels of partner countries increase, a country would benefit by way of enjoying lower prices from its partner country (Markusen et al, 1996).

Studies such as Davis (1995) have employed aspects of the Ricardian model to augment the Heckscher-Ohlin model in analyzing trade patterns. Although the Ricardian model is noted to better explain trade patterns among countries, it has received very little attention in the empirical analysis of trade and this is likely due to the lack of a clear theoretical framework to guide such analyses. Leamer and Levinsohn (1995) argued that the Ricardian model is too simple a model to analyze trade patterns. Another reason for the infrequent use of the Ricardian model in empirical research is the obvious mismatch between the real world and the extreme assumptions of the Ricardian model (Costinot and Komunjer, 2008).

3.2.1.2 Heckscher-Ohlin Model

The Heckscher-Ohlin model is a two-good, two-factor model of trade. This traditional model was formulated to assist in making predictions about trade patterns among countries and has been widely used to analyze 20th century trade theories. The model is built on the assumptions that capital and labor are the factors of production which can be used in the production of two separate goods. Additionally, the model assumes similar production functions across countries and consequently concludes that specialization is not a prerequisite under free trade since countries have the capacity to produce both goods. The model further assumes constant returns to scale in production; perfectly competitive markets as well as inelastic supply of goods. The absence of the assumption of increasing returns to scale allows for the focus on only relatively abundant resources even though a country could be well endowed with both resources.

The Heckscher-Ohlin model asserts that a country which is endowed with productive resources would produce and export the good that intensively uses its relatively abundant resource. In other words for countries that are capital abundant, they are more likely to produce and trade in goods that are capital-intensive. Thus the determinant of trade between two countries is the difference in their comparative advantages. This analogy is related empirically to developed countries such as the US and Germany which are capital-abundant and for that reason are able to produce capital-intensive goods and export to other countries. Similarly developing countries which are labor-abundant and mainly primary product producers would produce and trade in primary products such as cocoa. A key implication of the Heckscher-Ohlin model is that there is an overall improvement in

welfare as a result of free trade. In other words, rewards to factors of production would realize some gains. Even though this model tries to explain trade patterns between two countries, it fails to include the role of tariffs in free trade. The Stolper-Samuelson model which is an improvement upon the Heckscher-Ohlin model argues that tariffs do not necessarily affect import prices even though the returns to the country's relatively scarce factor increases.

The Heckscher-Ohlin model's attempt to explain trade patterns among countries seems logically plausible. However, its framework which deals with the theory of comparative advantage under the assumptions of constant returns to scale and perfect competition has been considered as insufficient in explaining intra-industry trade (Feenstra, 2002). Even though studies such as Davis (1995) have shown theoretically that under constant returns to scale, intra-industry trade would increase; very few studies have been able to empirically show how these increases could come about. Thus the traditional Heckscher-Ohlin model has been perceived as being inadequate in explaining intra-industry trade and this can be based on the fact that Davis (1995) considered an aspect of the Ricardian model which is the difference in technology across countries.

Although the Heckscher-Ohlin model has been criticized as being inadequate, some literature such as Gunning (2002) has been based on its framework to arrive at the conclusion that regional trade agreements among low income or less developed countries would not be beneficial to member countries. Reasons for these assertions are that less developed countries are characterized by similarities in factor endowments and are hence

expected to trade little. By implication, the Heckscher-Ohlin framework predicts that the relatively abundant factor would gain from trade with an increase in the export price of the good that intensively uses its relatively abundant factor, and the relatively scarce factor would lose from trade as a result of a fall in the price of the good that uses it intensively. This then brings into light the issue concerning transfers in which a country whose exports price increases gains whereas importers within that country lose.

Earlier studies on the gains and losses from trade through regional integration have been conducted under the assumption of perfect competition on the basis of comparative advantage. By this assumption, countries which are relatively small in size as illustrated by Feenstra(2002) would be expected to gain from trade when there are no tariffs but likely to lose from trade when tariffs are imposed on imports which results in an increase in the price of the imported good in the domestic market. In such situations, import-competing industries with have low comparative advantages tend to enjoy some level of protection against imported goods at the expense of the welfare of domestic consumers who would be faced with higher price for these goods. Nevertheless, in some studies the assumption of perfect competition has been overly exaggerated and so more recent studies such as Baier and Bergstrand (2007) have analyzed the welfare implications of trade under the assumption of imperfect competition. Models which allow for the assumption of imperfect competition also allow for economies of scale and product differentiation (Feenstra, 2002).

Smaller countries within which only few industries are allowed to operate may collude and obtain market power which would give them the opportunity to raise prices thereby making consumers worse-off. Openness to trade would however cause these firms to charge marginal cost prices leading to an improvement in the welfare of domestic consumers as a result of competition. In addition, trade openness would provide domestic consumers with a variety of products due to product differentiation and also result in the employment of the most efficient methods of production by producers. Markusen (1981) found out from his analysis of trade that for two countries which are identical but different in size, the smaller country would experience an increase in the good sold under imperfect competition but not the larger country indicating that gains from trade accrue more to smaller countries.

Gunning (2002) also argues that for two countries to form a trade bloc and eliminate tariffs between them but remain closed to the rest of the world, assuming one country is bigger in terms of size and the other country smaller, the benefits from trade would accrue more to the smaller country because its industry would experience a significant increase in its production for both exports and domestic production. However, the economically larger country would not experience much increase in its production levels due to the small size of its trading partner which can only import a smaller fraction of goods imported by the bigger country thus the greater gains to the smaller country. Thus his study concludes with that African trading blocs could gain from trade provided there is improved variety which would not require the domestic producer to alter its production in order to reap the benefits.

Against this backdrop, African countries are expected to trade less with each other and more with developed countries. As such, proponents of the Heckscher-Ohlin model hold

the view that trade agreements involving less developed and developed countries would be more beneficial. In other words North-South trade is expected to boost bilateral trade than South-South trade.

Other theoretical literatures such as Venables (2003) have tried to improve upon the results of previous studies by adjusting the Heckscher-Ohlin model to include the work of Vanek (1968) which is the Heckscher-Ohlin-Vanek (HOV) model. The HOV model gives room for the assumption of product differentiation implying that countries need not specialize in order to promote trade. Venables (2003) concludes that South-South trade agreements have a tendency of diverting manufacturing production from relatively poor countries to richer countries and therefore suggests a better arrangement; North-South trade. The reason for this being that considering the small nature of less developed countries such as those within SSA in terms of their GDP (a measure of the demand prospects of consumers within a country), producers would not be able to enjoy economies of scale in production and would therefore decide to produce for bigger markets made up of richer countries which can absorb their goods.

3.2.1.3 New Trade Theories

Trade theorists have over the years questioned the ability of traditional trade theories such as the Ricardian and Heckscher-Ohlin models to explain patterns of trade and the gains from trade. Their arguments are built on the premise that increasing returns to scale and production of differentiated products most often than not leads to imperfect competition and thus provides the basis for trade as compared to constant returns to scale and the

production of homogeneous products based on comparative advantage as suggested by the traditional trade theories. As a result, the imperfectly competitive models of trade formerly associated with Krugman (1979) and subsequently in Helpman and Krugman (1985) as the “new trade theory” has been widely accepted and modified by trade theorists to seek answers to trade questions such as the profitability of free trade. The Helpman-Krugman model (henceforth H-K model) introduces monopolistic competition into the traditional H-O model to provide better explanations on the pattern of trade in empirical studies. In other words, the H-K model gives greater insight into analyzing bilateral trade patterns within a multi-country setting. This model has been described by Shelburne (2007) as providing a well-structured framework for understanding and estimating bilateral trade.

Helpman-Krugman Model

This model is based on some assumptions.

- 1) Two identical economies with similar factor endowment ratios and productivity levels.
- 2) One factor of production particularly labor which cannot be traded.
- 3) Production of differentiated products with increasing returns to scale
- 4) Identical tastes and homothetic preferences of consumers across countries.

The H-K model is similar to the H-O model in that it considers endowments as a basis on which trade can be established. That is countries having similarities in endowment ratios holding country size constant *ceteris paribus* can actually trade with each other. Also the assumption of increasing returns to scale implies that few industries can operate in the market and this gives room for monopolistic competition thus giving rise to trade. That is

monopolistic competition arises when an industry which specializes in the production of goods enjoys economies of scale such that it is able to expand its operations thereby gaining dominance in the market within which it operates and therefore few industries can actually enter the market to compete. Furthermore, the assumption of differentiated products implies the availability of a wide variety of goods to consumers and particularly in countries where per capita income is high. This model goes further to assume that countries which have high capital-labor ratios are more inclined to produce differentiated goods.

New trade theorists emphasize the role of government intervention in boosting the productivity levels of industries as well as their competitiveness in international trade. Their arguments are based on the fact that other foreign industries could be enjoying economies of scale in their country and hence can to export to other countries. If this is allowed, industries in the receiving country could be competed out of the domestic market because their goods would become expensive in comparison with the imported goods. Under such circumstances, governments have to set in to provide subsidies for the domestic industry and also increase tariffs on imports in order to give the domestic industries the opportunity to survive and also become competitive. This model provides greater insights into the possible trade effects of FTAs. From the pioneering work of Viner (1950), trade agreements have been assessed based on the benefits and losses to member countries. That is the trade creation and trade diversion effects of FTAs can be better analyzed under an assumption of monopolistic competition with increasing returns to scale.

Assuming there are two countries; A and B which decide to enter into an FTA. After the formation of the FTA, consumers in both countries; A and B have two sources of the goods they consume. They could either consume goods produced domestically or goods produced in the member country. Assuming further that tastes and preference are different for consumers in both countries implying that demand across countries A and B are heterogeneous and so per capita incomes are not the same for the two countries. Given these set of assumptions, if the tastes of consumers in both countries does not change such that demand for domestically produced goods remains the same, then the formation of the FTA would not have much significant effect on the trade volumes of both countries because the volumes of bilateral trade flows would remain the same as it was before the formation of the FTA. On the other hand, if consumer tastes in country A changes so that demand for goods from country B increases, then it is expected that more of the good would be imported from country B which then implies that producers of the goods in the exporting country would gain at the expense of producers in the importing country. Under such a scenario, there is a trade creation as well as a trade diversion effect because producers in the exporting country gain as producers in the importing country loss. However the net trade effect would depend on the magnitude of the gains and losses from trade. If the gains to the exporting country exceed the losses to the importing country, then the overall effect is a net trade creating effect resulting from the formation of the FTA. On other hand, if the gains to the exporting country are less than the losses to the importing country, then there is a net trade diversion effect.

The analysis on the gains from trade when countries form an FTA can also be demonstrated when emphasis is placed on manufactured goods. Following after the analysis by Staffan Linder (1961), the Linder hypothesis asserts that trade in manufactured goods is not only dependent on production considerations such as reduced average costs but also more importantly on a significant home demand for the good. This hypothesis asserts that countries with differences in per capita incomes would have different demand patterns. If this assertion holds, then it can be argued that if countries trade within an FTA, then the country with a higher per capita income would demand more goods from its partner country as a result of the love for variety. In this case, the country that gains most is the country with the low per capita income and this result in a trade creation effect.

Theory of Customs Union

The theory of Customs Union relates to the gains and losses arising from belonging to a regional trade arrangement. Customs union is a preferential trade agreement between countries whereby tariffs are reduced or eliminated among member countries but with different external tariffs on non-member countries. The formation of a customs union is the foundation for establishing free trade among member countries. The formation of a customs union requires conditions such as a perfectly competitive market, factor mobility within countries but not within countries, elimination of transportation costs, tariffs as the only form of trade restrictions, prices reflecting the opportunity cost of production, balanced trade and the full employment of resources.

The formation of a customs union changes the relative prices in the domestic markets of member countries because of the reduction or elimination of tariffs on imports. The change in prices then results in different trade outcomes. These trade outcomes could either be positive or negative depending on the welfare effects they possess. Viner (1950) drew a distinction between these trade outcomes as trade creation and trade diversion effects. These effects by themselves cannot be classified as good or bad. According to Lipsey (1957), the determination of the benefits of a customs union must be associated with its effect on location and the cost of world production as well as the location and utility of world consumption.

3.2.1.4 Conditional General Equilibrium Models

These models identify a distinction between production and consumption decisions and the choice of trading partners. That is to say the model identifies the 'separability' of production and consumption decisions from the decision to trade with particular countries. The development of the conditional general equilibrium model in international trade is originally attributed to the works of Anderson (1979). This model is developed based on three key assumptions. It is assumed that each country specializes completely in the production of a particular good which uses its relatively abundant resource; thus resources or factors are not exchanged between countries in the production of the good. The model also assumes identical tastes and homothetic preferences among countries; by this, the share of income in the expenditure of goods produced is the same for all countries.

Additionally, the model assumes away trade frictions such as tariffs, distributional and transportation costs; by this assumption prices in both home and foreign countries are equalized. Given these assumptions it can be intuitively inferred that goods produced in a country would be demanded in equal amounts by residents of other countries due to identical and homothetic tastes and preferences. The assumption of frictionless trade implies free trade of goods among countries. Consequently, the value of exports of a good produced by country i for country j can be equated to the value of aggregate expenditure on the good by residents in the receiving country j . These assumptions formed the basis on which Anderson (1979) derived the gravity model without a price term due to the assumption of equality of prices among countries.

However, the assumption of frictionless trade as made by Anderson (1979) seems unrealistic and has been described as a limitation of the model. This is because in reality prices of goods traded between countries are not the same due to differences in production methods employed as well as costs of factors of production. Thus in an attempt to address this limitation of the model, Bergstrand (1985) modified the model by developing import demand functions based on a Constant Elasticity of Substitution (CES) model for goods traded bilaterally among countries. The basis for this modification is the assumption that the substitutability of domestic goods for imported goods and vice versa was asymmetric.

In other words, the elasticity of substitution for an imported good is assumed to be different from that of domestically produced goods. Also, another assumption that exported goods are produced to match the tastes of residents in the destination country was made. This

assumption acknowledges the increase in marginal cost of distribution and marketing in the form of advertisement associated with obtaining market share in the destination country. He therefore developed an export supply function for goods exported to destination countries with a constant elasticity of transformation function. He further assumed that the bilateral trade flows between countries to be relatively small to world flows.

These additional assumptions together with earlier assumptions made by Anderson (1979) excluding the assumption of ‘unified’ prices across countries formed the basis in deriving the gravity equation. In other words, the gravity equation derived by Bergstrand (1985) differs from Anderson’s (1979) with the former including price terms in the equation which the latter omitted. Bergstrand’s price term differed for importers and exporters. Many studies on international trade particularly concerning bilateral trade flows have been based on the general equilibrium model. Studies such as McCallum (1995) and Anderson and van Wincoop (2003) have estimated the gravity model developed by Anderson (1979) and Bergstrand (1985) but failed to include prices as a measure of multilateral resistance term.

3.2.1.5 Unconditional general equilibrium approach

Models based on this approach do not identify the ‘seperability’ of production and consumption decisions from the choice of bilateral trading partners. In other words, this model assumes that the decision to produce and consume is related to the decision to trade with a particular country. The fundamental assumption of this approach is an economy with only one sector and one factor of production, labor. It also assumes the elasticity of substitution for imports and domestic goods to be constant. This approach is formally

attributed to Krugman (1979) termed the Krugman approach. This approach assumes a monopolistic competition and was in later years termed the Helpman-Krugman model following the contributions of Helpman (1981). Based on its openness, this study would be based on this approach.

3.3 Empirical Review

With regards to the effects of FTAs in particular and Regional Trade Agreements (RTAs) in general, many studies have done empirical analysis on the subject but in one way or the other have been very inconclusive in their results. The basic model that most studies have employed in investigating effect of FTAs is the gravity model. The gravity model is an empirical framework that seeks to establish the relationship between bilateral trade flows and GDP levels of countries and the geographical distances separating them. The model has become a tool to help analyze bilateral trade patterns in international trade. This model has been basically used for cross-sectional and time series data and as described by Anderson (1979), has become the most successful empirical trade device probably due to its flexibility. It can be applied to a wide range of goods and factors of production traded across regions and continents under diverse situations.

Although this model has been very useful in extensive studies, it has its own shortcomings. According to Linders and de Groot (2006), the standard gravity model cannot easily deal with zero-valued observations despite its flexibility. This limitation of the model has led researchers in modifying and augmenting the model to take into account the effects of

variables such as language, religion and cultural links which could not be handled with the standard gravity model.

Studies such as Gunning (2001), Yang and Gupta (2005) concluded that trade agreements within SSA have not been trade-enhancing among member countries. Contrary to these skeptics of African RTAs, studies by Carrère (2004), Musila (2005), Coulibaly (2009), Afesorgbor and Bergeijk (2011) and Turkson (2012) have shown that African RTAs positively impact on bilateral trade flows with the exception of a few RTAs in their analysis which have had compliance problems with member countries. For instance, analysis in Afesorgbor and Bergeijk (2011) showed that ECOWAS and SADC had a positive intra-regional trade as compared to the arrangement with the EU and concludes that the trade enhancing effect of the regional integration analyzed was stronger than that with the EU. Similarly, Turkson (2012) found a positive trade effect within ECOWAS EAC and SADC as compared to trade agreements between SSA and the EU but a negative trade effect in ECCAS and IGAD

Arguments have also been raised about the possibility of trade diversion occurring particularly due to the characteristics of SSA economies which include the existence of a revenue constraint, asymmetry between member countries, small size of each regional bloc and their tariff schemes (Carrère, 2005). The relevance of an FTA has been assessed based on the magnitude of its trade creating and trade diverting effect. Viner(1950) explains that trade diversion may occur whenever countries belonging to a trade bloc try to make up for a shortfall in their tariff revenues by increasing tariffs on imports from non-member

countries. As noted by Oyejide (1998), Africa relies heavily on trade taxes as a source of government revenue and so a reduction in tariffs would be costly and could possibly place a heavy burden on the fiscal balance in the short-to medium term. As such, most governments choose the easiest way of generating revenues by raising external tariffs on imports from non-member countries.

The necessary condition for determining the trade effect of an RTA is the net effect of trade creation and trade diversion (Afesorbor and Bergeijk, 2011). Hine (1994) argued that the tendency for trade diversion to exceed trade creation is high for most developing countries due to the inefficient methods of production employed. Other cause of trade diversion is the high cost of transaction resulting from constraints with infrastructure and energy; and non-tariff barriers (Khorana et al, 2009). A study conducted on the welfare effects of Uganda's membership in the EAC customs union showed an overall negative welfare effects to country. Reasons attributed to this negative effects ranged from unstable macro-political environment, corrupt bureaucracy, high costs in assessing business development measures and limited capacity of the country's manufacturing sector among others (Khorana et al. 2009, p. 703).

Trade diversion is also likely to occur when countries which have less history of trade enter a trade agreement (FAO, 2003). In order for a net trade creation effect to be achieved, conclusions from literature such as Baier and Bergstrand (2003) indicates that the following pre-conditions must hold: (1) tariffs and non-tariff barriers should have been higher for member countries prior to entering a trade agreement (2) countries must be

geographically close in order to reduce transport and communication costs; and (3) production patterns of countries must be complementary to each other because this promotes specialization. These factors would increase the likelihood of trade creation exceeding trade diversion.

World Bank (2000) indicates that regional integration among developing countries has a tendency of diverting trade especially when external tariffs are high on non-member countries. Cernat (2001) concluded from his study that some South-South trade agreements showed evidence of trade creation effects while others showed trade diversion effects. Yeats (1998) in his analysis saw no probable indication of intra-trade resulting from African RTAs having any significant effect on the trade volumes of member countries. Parks (1995) also asserts from his study that RTAs which are smaller in size with respect to share of total world trade have the potential of being trade diverting. Kono (2007) in a quest to investigate the trade effects of free trade agreements concludes that FTAs have a contradictory but important conditional effect in that they promote multilateral liberalization so long as the intra- and extra-FTA comparative advantages of member countries are similar.

Methodologically, various approaches have been used by many researchers in their analysis of trade and this can be said to have influenced the results that were generated from these analyses. Carrère (2004), using a panel data from 1962-1996 involving five SSA trade agreements estimated the gravity equation with the Hausman-Taylor approach concluded that there is evidence of trade creation among member countries within an RTA

even though the level may be low. Musila(2005) analyzed data for 20 African countries covering the period 1991-1998 using the gravity model to ascertain the trade creation and trade diversion intensities in COMESA, ECCAS and ECOWAS and concluded that the trade creation and trade diversion differed by region and by period. For instance, the study found out that the intensity of trade creation was very high in ECOWAS followed by COMESA. ECCAS on the other hand did not show a stable indication of trade creation or trade diversion effect. Coulibaly (2009), also using panel data analyzed the trade effects of 22 RTAs including SSA RTAs over the period 1962-2006) with the aid of the gravity equation in a Hausman-Taylor specification realized a positive impact on member countries intra-regional exports. Other studies such as Afesorgbor and Bergeijk (2011) also studied 35 countries within ECOWAS and SADC using a gravity model and came out with the conclusion that bilateral trade within the trade blocs had improved.

Turkson (2012) using the gravity model to estimate bilateral trade flows for 73 countries (48 SSA and 25 EU countries) over the period 1960-2006 after controlling for the endogeneity of the trade agreement dummy, accounting for multilateral price resistance and zero-valued trade flows found out that the EU-ACP PTA and RTAs within ECOWAS and SADC had a positive and significant impact on bilateral trade involving SSA countries. In some cases the relative impact of the sub-regional RTAs was found to be stronger than within the EU-ACP non-reciprocal PTA.

Despite these findings, most studies fail to assess the impact of the participation of some dominant economies on intra-bloc trade within their respective RTAs. Even though Afesorgbor and Bergeijk (2011) performed a sensitivity analysis, it was limited to

ECOWAS and SADC and also the period under study was limited. Thus this study adds to the trade literature by performing a sensitivity analysis of the inclusion of some dominant economies in the EAC, ECCAS, ECOWAS, IGAD and SADC.

3.4 Summary of chapter

The chapter reviewed literature on the models and approaches used by various researchers in their effort to analyze the impact of trade agreements on trade flows in SSA. The theoretical review revealed that even though the Ricardian model is considered a better model over the Heckscher-Ohlin model in analyzing trade patterns, its lack of a clearly defined theoretical framework has contributed to its limited use in empirical analysis. The new trade theory has become widely accepted among trade analysts because of its ability to explain the formation of FTAs. The exercise further revealed the various approaches used in empirical research such as the Hausman-Taylor approach with the gravity model serving as a measuring tool together with the varied results that were generated from these studies. Zero-valued observations such as religion, cultural links and language were noted to have a positive impact on trade and therefore needed to be included in the gravity model; an exercise most empirical research have ignored. Based on these findings, this study would employ the Hausman-Taylor approach using an augmented gravity model to accommodate zero-valued observations to ascertain the trade effects of sub-regional free trade agreements in sub-Saharan Africa.

CHAPTER FOUR

THEORETICAL FRAMEWORK AND METHODOLOGY

4.1 Introduction

This chapter gives a description of the methodology used in undertaking the study. It explains the theoretical reasoning behind the study, particularly the method of estimation and provides an explanation for the source of data and how the data would be handled. It also gives details about the variables of interest as well as control variables and their a priori expectations.

4.2 Theoretical framework

This study employs the gravity model framework due to its flexibility. As an empirical model, the gravity equation has been used in many studies such as Afesorgbor and Bergeijk (2011), Baier and Bergstrand (2009), Carrere (2004) and Turkson (2012) and has proven to be a useful tool in analyzing trade patterns.

4.2.1 Gravity Model

In its simplest form, the gravity model suggests that trade between two countries; i and j , is directly proportional to the product of their GDPs and inversely proportional to the physical distance between them. Based on Newtown's Law of Gravitation, the gravity model is founded on the assumption that factor endowments which are abundant in a

particular location are drawn to the demand for these factor endowments in another location. Noted as one of the most successful empirical models in the discipline of international economics due to its predictive ability concerning the movement of goods and factors of production, the gravity equation has become a standard tool for most trade researchers in analyzing trade patterns. According to Anderson (1979), the gravity equation produces a good fit when applied to a wide variety of factors of production and goods across regions and borders under various circumstances.

Due to its lack of connection with economic theory, the gravity model until recent years was described as incapable of explaining trade flows. The gravity equation was conceptualized by Tinbergen (1962) who first used the gravity equation to empirically test the direction of trade flows in an econometric formulation. He formulated the gravity equation in a log-log form so that the parameters of the equation are elasticity of the trade flow with respect to the explanatory variables (Salvatici, 2013). From Tinbergen (1962), it was discovered that countries which shared a common land border had a tendency to trade more and this was seen to have reduced the predictability of distance in the equation. This discovery later became known as the ‘border puzzle’. Subsequent research therefore sought to investigate reasons for this puzzle. Among them were McCallum’s (1995) findings about the US-Canadian border resulting in more trade between Canadian provinces than trade between the US and Canadian provinces. This finding was however described as being overestimated and contrary to economists’ prior belief by studies such as Grossman (1998) and Obstfeld and Rogoff (2000). The border puzzle as a result remained ‘unanswered’ and therefore required further investigation. Anderson and Van Wincoop’s (2003) study

prepared the grounds to solving the border puzzle by providing theoretical justifications to the gravity equation based on general equilibrium. Their findings showed that bilateral trade reduces in the presence of borders between countries but the magnitude of this reduction is lower than what was found in McCallum's (1995) study. From the findings of Anderson and Van Wincoop (2003), it can be inferred that a gravity equation which is correctly backed by theory helps in generating efficient and unbiased parameter estimates.

Given a fair grounding, the gravity model has gained popularity in the area of international trade due to its ability to explain bilateral trade patterns. In addition to this, the gravity equation possesses a characteristic of flexibility in that it is able to accommodate additional variables different from its standard form. Normally presented in a multiplicative form, the standard gravity model is of the form;

$$X_{ijt} = \beta_0 \cdot Y_{it}^{\beta_1} \cdot Y_{jt}^{\beta_2} \cdot D_{ij}^{\beta_3} \cdot e^{u_{ij}} \quad \dots \dots \dots \quad (4.1)$$

Where

X_{ijt} Is a measure of the bilateral trade flows between country i and country j at time t

Y_{it} and Y_{jt} Represents the GDP of country i and country j respectively at time t and

D_{ij} Represents the physical distance between country i and country j .

For easy estimation, the gravity equation is normally presented in a log-linear form with an error term added. Thus equation (3.1) can be expressed log-linearly as;

$$\ln X_{ijt} = \ln \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln D_{ij} + \mu_{ij} \quad \dots \dots \dots \quad (4.2)$$

By intuition, $\beta_1 > 0$, $\beta_2 > 0$ and $\beta_3 < 0$. These coefficients are elasticities so that their estimates can be read as percentages. The variables in the above equations are fundamental to the gravity model but are not sufficient in explaining bilateral trade flows. According to Anderson and Van Wincoop (2003), the traditional gravity equation suffers from omitted variable bias because it does not account for the effect of relative prices on trade flows. Controlling for relative prices of traded goods provides information on its effect on import-competing goods and whether there are exporting opportunities for these goods.

In this regard, other variables are needed in the gravity equation to provide robust parameter estimates. Trade between regions is characterized by some level of resistance which is known as the average barrier. A common measure of the average barrier is price effects and which is very important because prices vary across regions and these variations are caused by various factors such as transportation costs and other trade barriers such as tariffs (Feenstra, 2001). As a result bilateral trade flows would be greatly affected by differences in the price of traded goods among regions. Treatment of the resistance variable has been varied among many studies. Anderson and van Wincoop (2003) referred to this resistance term as multilateral resistance term and used border effects as a measure of price effects. Other studies such as Bergstrand (1985, 1989) controlled for the multilateral resistance term using price indexes as a measure of the effect of prices on bilateral trade flows. Subsequently, studies such as Venables (2000) used fixed exporter and importer effects as a measure of price effects. These fixed exporter and importer effects could be in

the form of infrastructure such as roads, storage facilities and telephone network among others.

The average trade barrier faced by importers and exporters is high in the presence of border barriers (Anderson and van Wincoop, 2003). This implies that trade between regions is largely determined by trade barriers in relative terms. Thus the higher the trade barrier between a pair of countries and their other trading partners, the greater the intensity of trade between these pairs. For instance, assuming country i and country j are bilateral trading partners and trade barriers between country i and its other trading partners are higher relative to country j , then country i would tend to trade more with country j . Trade barriers have implications within the gravity equation in that trade between large countries are expected to record substantial decline as compared to trade between smaller countries.

Other economic distance variables such as political barriers, sharing of colonial ties, common language, common currency, adjacency, land lock and geographical area among others have been included in the gravity equation as dummies to test their effects on the estimates generated in explaining trade flows. Studies such as Rauch and Trindade (2002) found out that colonial ties had a significant effect on trade flows. Similarly, studies by Head, Mayer and Ries (2010) indicate that colonial ties have a substantial effect on bilateral trade flows.

Another alteration to the traditional gravity model is the introduction of trade agreement dummy variables as proxies to measure the effect of trade agreements on bilateral trade

flows. Aitken (1973) pioneered the approach of introducing trade agreement dummy variables in the gravity equation in estimating the trade creation and trade diversion effects of the European Community. He however treated trade agreement dummy variables as exogenous implying that countries for no reason select into a trade agreement. This generated a lot of debate in trade literature over the appropriateness of using such treatment. According to trade economists such as Trefler (1993), and Baier and Bergstrand (2005), trade agreement dummy variables should be treated as endogenous rather than exogenous because countries select into trade agreements for reasons even though these reasons are mostly unobservable. The likelihood of a pair of countries entering a trade agreement could be influenced by factors such as geographical location, intra-industry and inter-industry trade determinants. According to Caporalé (2009), the geographical location of a country in light of similarities in economic size and differences in factor endowments can greatly affect the choice of its trading partners. Over the years, other studies such as Baier and Bergstrand (2007), Musila (2005) and Turkson (2012) have adopted the approach of treating trade agreement dummy variables as endogenous. As such, this study would also treat the RTA dummies as exogenous.

4.3 Empirical model formation

This study would estimate a gravity model using a panel data set of bilateral trade flows. This is because, panel data is able to control for unobserved individual heterogeneity. Individual heterogeneity means there are individual specific characteristics of observations that are difficult or almost impossible to measure. In order to capture the effects of these individual specific characteristics which are correlated with the explanatory variables in

the model, the Hausman-Taylor panel data estimation technique, following the work of Bergstrand (1985) would be used in the study. A log-linear gravity model would be estimated which is written below as;

$$\begin{aligned}
 \ln X_{ijt} = & \alpha_0 + \alpha_1 \ln Y_{it} + \alpha_2 \ln Y_{jt} + \alpha_3 \ln D_{ij} + \beta_1 \ln N_{it} + \beta_2 \ln N_{jt} + \beta_3 \ln Area_i \\
 & + \beta_4 \ln Area_j + \beta_5 Adj_{ij} + \beta_6 Lang_{ij} + \beta_7 Comcur_{ijt} + \beta_8 Colo_{ij} \\
 & + \beta_9 Llk_{ij} + \beta_{10} Remoteness_{ijt} + \delta_1 ECA_{ijt} + \delta_2 ECCAS_{ijt} \\
 & + \delta_3 ECOWAS_{ijt} + \delta_4 IGADD_{ijt} + \delta_5 SADC_{ijt} \\
 & + \mu_{ij}
 \end{aligned} \tag{4.3}$$

Variables of interests

ECA_{ijt} = a dummy variable equal to 1 if country i and j belong to ECA trade bloc at time t and 0 otherwise

$ECCAS_{ijt}$ = a dummy variable equal to 1 if country i and j belong to the ECCAS trade bloc at time t and 0 otherwise

$ECOWAS_{ijt}$ = a dummy variable equal to 1 if country i and j belong to the ECOWAS trade bloc at time t and 0 otherwise

$SADC_{ijt}$ = a dummy variable equal to 1 if country i and j belong to the ECOWAS trade bloc at time t and 0 otherwise

$IGAD_{ijt}$ = a dummy variable equal to 1 if country i and j belong to the IGAD trade bloc at time t and 0 otherwise

Control variables

Y_{it}, Y_{jt} = GDP of country i and j at time t respectively (used as a measure for income)

D_{ij} = Distance (physical) between country i and j

N_{it}, N_{jt} = population of country i and j respectively at time t

$Area_i, Area_j$ = Area in square kilometers of country i and j respectively

Adj_{ij} = a dummy variable equal to 1 if country i and j share a common border and 0 otherwise

$Lang_{ij}$ = a dummy variable equal to 1 if country i share a common official language and 0 otherwise

$Comcur_{ijt}$ = a dummy variable equal to 1 if country i and j share a common currency at time t and 0 otherwise

$Colo_{ij}$ = a dummy variable equal to 1 if country i and j have colonial links and 0 otherwise

Llk_{ij} = a dummy variable equal to 1 if a country is landlocked and 0 otherwise

$Remote_{ijt}$ = Remoteness which is a measure of multilateral resistance at time t

μ_{ij} = a well-behaved error term.

4.3.1 Explanatory variables and *a priori* expectations

Gross Domestic Product (GDP): As a measure of a country's economic size, GDP is used to represent the demand and supply of goods and factors from an importer and exporter country respectively. That is goods and factors of production supplied by an economy are attracted to demand by another economy. Relatively large countries are expected to demand more imports as compared to smaller countries. This therefore also implies that larger countries are expected to export more goods than smaller countries. Thus, it can be said that countries which are similar in economic size are expected to trade more with each

other than with dissimilar countries. Given that two countries produce differentiated products and tastes are identical and homothetic, then bilateral exports from one country to another would be proportional to the product of their GDPs (Helpman, 1987). Based on theory and empirical applications, it is then expected that bilateral trade between two countries, would be positively related to the product of their GDPs.

Distance: Economic theory asserts that distance impedes the movement of goods from one location to another. According to Markusen and Maskus (2002), distance tends to make exports more expensive due to transportation costs. Distance here is measured by the physical distance between bilateral trading partners from their various centers of economic activity. Also, distance is used to proxy for all possible trade costs. These trade costs could either be direct costs associated with transferring goods to consumers or the losses of some of the goods that are being transported (iceberg costs). For countries that lack good infrastructure such as roads, storehouses/warehouses, wide telephone coverage, transferring goods from one country to another is associated with an element of cost depending on the severity of the absence of such infrastructure. A study conducted by Egger and Pfaffermayr (2004) indicates that distance has a significant impact on exports. Findings by other studies such as Brun, Carrere and Guillamont (2005) tend to confirm the adverse effect distance has on bilateral trade. Based on these and other findings, this study expects to find a negative relationship between bilateral exports and distance and for that reason a negative sign for the estimated coefficient. Frankel and Romer (1999) describe the effect of distance on bilateral trade as ‘overwhelmingly’ significant.

Population: The inclusion of population in the gravity equation is aimed at taking into account differences in factor endowments and the Engel Effect (changes in the demand for goods as incomes increase) based on exporter per capita incomes and importer per capita incomes respectively. In other words, the exporter and importer populations are very important in investigating how self-sufficient or dependent these populations are based on available resources. This implies that the signs of the coefficients of population variables for country pairs vary. It can be said that high per capita income of an economy implies that good infrastructures are available and would therefore trade more as compared to an economy with a low per capita income. According to Bergstrand (1989) a positive sign for an exporter population implies that a country is capital abundant whereas a negative sign indicates a country is labor abundant. Also for the importer population, a negative coefficient estimate implies a demand for necessities whereas a positive sign implies a demand for luxury goods.

Area: This is used as a measure of the physical size of a country and it is measured in square kilometers. This variable is used to measure the size of arable land within a country to determine the level of economic activity within the country. The inclusion of this variable in trade analysis has received very little attention probably due to its lack of significant impact particularly on bilateral export as realized by Turkson (2012). As a result, the sign of the coefficient estimate of the area variable is expected to be negative.

Adjacency: This is a proxy variable indicating whether pairs of countries share a common border or not. Sharing of border between country pairs can influence trade and must

therefore be included in the gravity to assess the significance of its impact. Studies such as Endoh (1999) realized that countries belonging to the same trade bloc and which shared a common border recorded increased volumes of bilateral trade flows. More recent studies such as Carrère (2004), Caporalé (2004), Coulibaly (2009) and Turkson (2012) have confirmed earlier findings of the positive impact of this variable of interest. By this, it is expected that the coefficient estimate of this variable would be positive.

Language: Language can serve as a barrier to trade particularly when it differs among pairs of countries. Sharing a common official language by pairs of countries can eliminate that aspect of distance that can impede trade. Communication is necessary in promoting trade given that information needs to be carried across to partners. As a result its impact on trade is expected to be quite significant. In the absence of a common official language, trade between pairs of countries would become less desirable because business interactions become expensive considering the need for the services of an interpreter. Melitz (2007) generated a positive coefficient for the language dummy in analyzing language and foreign trade. Similar findings by other studies such as Endoh (1999), Cheng and Wall (2005), Vicard (2011) seek to confirm the positive sign for the language coefficient estimate. Given these results, it is expected that this study would find a positive relationship between bilateral trade and common language dummy variable.

Common Currency: This is a variable to measure the effect of cultural barriers on bilateral trade. Sharing of a common currency by pairs of countries could make could easily

facilitate trade with an associated lowered cost. A common currency eliminates the problem of real bilateral exchange rate fluctuations which can affect both exports and imports but most especially imports. The inclusion of the common currency variable is attributed to Rose (2000) who found out that bilateral trade increased among pairs of countries which shared a common currency. Costa-i-Font (2010) also found a significant impact of common currency on trade even though the effect of a common currency was said to be heterogeneous across regions. Similarly, Carrere (2004), Afesorgbor and Bergeijk (2011), realized a significantly positive effect of currency unions on trade agreements by means of a trade-creating effect.

Colonial links: A study conducted by Frankel and Rose (2002) indicated that countries that shared a colonial history, traded more with each other comparatively. However, Head, Mayer and Ries (2010) found out that countries which had a colonial link (common colonial empire) recorded deterioration in trade volumes after independence. Furthermore, Afesorgbor and Bergeijk (2011) also realized that the inclusion of colonial links (historical colonial ties) as a dummy variable in the gravity equation exerted a significantly positive effect on bilateral trade flows. These and many other studies suggest that controlling for this variable in the analysis of trade flows contributes to the correct specification of the gravity model of trade.

Landlocked: This is a proxy variable which seeks to ascertain whether a country is near the coast or not. In other words countries that find themselves to be far from the sea and which are saddled by neighboring countries would be classified as landlocked. A land-locked

country would be faced with a higher cost of exporting and also importing as compared to a country near the coast since goods would have to be transited to a country near the coast with respect to exports and from the coast in-land with respect to imports. Consequently a country's location to a larger extent determines its major economic activities. Landlocked countries therefore tend to engage less in international trade. Studies which have analyzed the effect of this variable on bilateral trade such as have found a negative sign for the coefficient estimate. Findings by Carrère (2004), indicates a negative sign for the coefficient of the land lock dummy variable. More recent studies such as Turkson (2012) have confirmed the sign of the coefficient estimate of this variable. As such, this study expects to find a negative sign for the coefficient of this variable.

Remoteness (Multilateral resistance): Brun et al (2005) defined remoteness as a weighted distance between a country and its trading partners. This variable is used as a proxy for multilateral trade resistance. As used by Soloaga and Winters (2001), using remoteness to measure the level of multilateral resistance to trade which changes over time is more appropriate. Remoteness index for that matter takes into account relative transport costs which have influences on the prices of traded goods. Its inclusion in the gravity equation as found out by Brun et al (2005) reduces the expected impact of distance on bilateral exports and in so doing, yields meaningful parameter estimates. They further found out that the more remote a pair of countries is from the rest of the world or other trading partners, the greater the trade intensity between these pairs. In other words, for a pair of countries which have limited trade options with nearby countries, these pairs would record

higher volumes of bilateral trade. As a result, the coefficient estimate of the remoteness dummy variable is expected to have a positive sign.

Regional dummies: the introduction of trade agreement dummy variables in the gravity equation is to estimate the trade effects of the FTAs on bilateral trade flows. Endoh (1999) originally introduced dummy variables to proxy trade agreements for different groups in order to analyze the trade effects of these trade agreements on trade flows. Studies such as Frankel and Rose (2002) found a positive impact on the bilateral trade volumes of countries that belonged to the same Regional Trade Agreement (RTA). The use of dummies to proxy RTAs is to enable the researcher capture the trade creation and trade diverting effects of the trade agreements of interest (ECA, ECCAS, ECOWAS, SADC and IGAD). Five dummy variables would be constructed to represent the five Free Trade Agreements (FTAs). The reference category would be pairs of countries which do not belong to the same FTA or any of the FTAs at a specified time period.

4.3.2 Estimation technique

The study would employ panel data estimation technique to analyze the trade effects of FTAs in SSA. Panel data sets have the ability to control for unobserved individual heterogeneity. That is those individual-specific characteristics of observations that are difficult or almost impossible to measure are taken into account by panel data sets. Overlooking these characteristics can generate biased parameter estimates. In other words, panel data allows for variables which possess different characteristics (individual-specific

effects) to be estimated in a regression model. In addition to this, panel data provides more information on explanatory variables and as such reduces the level of collinearity between them (Baltagi, 2005). Panel data sets therefore allow for the control of omitted variables.

In assessing the relevance of FTAs for bilateral trade, there is the need to employ a well-formulated panel data gravity model in order to capture all trading bloc effects. This is because regional trading blocs are usually captured by dummies which are introduced into the regression model. A key assumption underlying the use of the trade agreement dummies is endogeneity. As such there is the need for an estimation technique that can control for the endogeneity of trade agreement dummies; the Hausman-Taylor estimation technique.

Matyas (1997) suggests a panel data gravity model in which fixed time, exporter and importer effects are taken into consideration because the importer and exporter effects take into account all regional trading block effects. This approach is similar to that suggested by Baltagi, Egger and Pfaffermayr (2003) but which includes all interaction terms between unobserved exporter and importer characteristics. This exporter and importer effects according to Egger (2004) measures a country's tendency to trade given all its partner countries and does not in any way capture any deviation. Another approach suggested by Cheng and Wall (2001) involves the estimation of panel data model in which fixed time and bilateral effects are taken into consideration. It has been argued by Egger (2004) that this approach ends up eliminating all the cross-sectional variations even though it allows for the estimation of the trade bloc dummy variable thereby restricting interest on the short-term effects of joining a trade bloc. An alternative approach used by Krueger (1999) in

which fixed time and regional block time-specific effects are captured. This approach is however complex since it generates parameter estimates which are difficult to interpret.

To overcome the estimation problem of the panel data gravity model, Egger (2004) suggests three alternative approaches. According to him, the time-varying component of every panel data involves a within (time-varying) and between (time-invariant) part. The within part is the difference between the original variable and the between part whereas the between part of any variable is the overall observed period average. He therefore suggests a first approach which is to estimate a two-stage fixed effects model with bilateral effects as suggested by Cheng and Wall (2001) with trade bloc dummies and run an OLS regression. A second approach is to estimate a model with the original variables and their between parts by the method of Generalized Least Squares as proposed by Mundlak (1978). A third approach is a panel data model estimated by Hausman and Taylor (1981) widely known in trade literature as the Hausman-Taylor estimation technique and this takes into account both the original form and between parts of the trade agreement dummy variables together with other time-varying and time-invariant variables. The Hausman-Taylor estimation method uses instrumental variable approach to correct the problem of autocorrelation associated with a standard random effects model. It also controls for the endogeneity of the trade agreement dummy variables. The Hausman-Taylor method uses instrumental variables approach whereby exogenous variables (variables uncorrelated with the individual specific effects) serve as their own instruments whereas the time-varying endogenous variables are represented by the deviation from their individual means. Also, the time-invariant endogenous variables are represented by their individual averages.

The Hausman-Taylor estimation technique supersedes other approaches based on the fact that it eliminates the possible correlation between the explanatory variables and the panel error term. As a result, estimates of all effects, both long-term and short-term of the regional trading bloc dummies that are obtained turn out to be consistent and efficient. Egger (2004) reiterates that a panel data model that takes into account time and bilateral specific effects with the aim of dealing with the problem of endogeneity bias would be able to generate consistent and unbiased parameter estimates of the gravity model. Hence the Hausman-Taylor estimator uses the average values of the time varying exogenous variables and the deviations from these averages as instruments for the time invariant endogenous variables (Turkson, 2012. pp.12). Based on its ability to generate robust parameter estimates, this study would estimate the trade effects of FTAs in SSA using the Hausman-Taylor estimation technique. Thus, this study would estimate a Fixed Effects and a Random Effects model together with the Hausman-Taylor model.

4.3.3 Measurement of Trade Intensity Index

In order to analyze the trade-creation and trade-diversion effect of countries' involvement in trade agreements, there is the need to first establish how often country pairs belonging to the same trade bloc trade with each other relative to other countries. That is the intensity of trade between country pairs must be calculated. The trade intensity index for pairs of countries is the ratio of the total trade share of destination in total exports of the origin country to the share of the destination in the total exports of the world (Turkson, 2012). Measurement of the index is given by;

$$T_{ij} = \frac{\Sigma X_{ij} / \Sigma X_{iw}}{\Sigma X_{iw} / \Sigma X_w}$$

Where

T_{ij} = Trade intensity between country i and j

X_{ij} = represents exports from country i to destination country, j

X_{iw} = represents exports from country i to the rest of the world

X_w = represents total world exports.

The index lies within a range of 0 and ∞ . As suggested by Turkson (2012), pairs of countries which have a history of bilateral trade prior to entering the same trade agreement are expected to have a higher trade intensity index.

4.4 Data Sources

This study uses a panel data set of 48 countries from three main sources. Data on bilateral trade is sourced from the UN COMTRADE database from the period 1960 to 2012. GDP and population data are also obtained from the World Development Indicators (WDI) database of the IMF. Data on contiguity, common language and other dummy variables are obtained from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) database.

4.5 Summary

This study would adopt an ‘augmented’ gravity model based on a conditional general equilibrium model under the assumption of monopolistic competition and product differentiation as used by Baier and Bergstrand (2007). The variables of interest within the gravity equation are the five FTAs under consideration. The Hausman-Taylor approach would be used in estimating the model based on its ability to generate robust parameter estimates by controlling for the heterogeneity of unobserved effects.

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1 Introduction

This chapter presents the estimation of variables within the model; the results generated and further interpret the results based on theory. This chapter would be presented in five (5) sections; section 5.2 presents descriptive analysis of some key indicators for SSA; section 5.3 discusses how the estimation of the model was performed; section 5.4 discusses the results obtained and also performs some sensitivity analysis and section 5.5 summarizes the chapter.

5.2 Descriptive Analysis

The descriptive analysis relates to forty-six (46) SSA countries spanning the period 1960-2012). The key statistics under review are the mean and standard deviation for exports, trade intensity index and GDP for the RECs under study. From table 5.1, the highest record of bilateral exports was within SADC with an average record of US\$ 37.1million and this was followed by EAC which also recorded an average trade flow of US\$23.4 million. IGAD, ECOWAS and ECCAS also recorded average trade flow values of US\$14.2million, US\$10.5million and US\$6.4million respectively. Within the SADC trade bloc, South Africa's exports to its partner member countries were the highest and this could be attributed to the economic position of the country within the region. With a mean GDP of US\$9.5 billion; the highest among the FTAs, SADC's performance comes as no surprise

because its popularity as the largest and well-performing trade bloc over the years has always been with merit and also confirms the theoretical assertion concerning the gravity model that a higher GDP is commensurate with higher volumes of trade (Helpman, 1987). This outstanding performance is however dampened by the relatively low intensity of intra-SADC trade. From table 5.1, trade intensity index for SADC is the lowest among the FTAs as compared to an index of 614.2 for IGAD. The lack of product diversification within the manufacturing sector of the region is greatly responsible for low trade intensity index because the composition of trade which accounts for 98% of total trade is confined within four broad categories; primary agricultural products, manufactured food, textiles and clothing (SADC report, 2011).

Table 5.1: Summary statistics for RECs, 1960-2012

Regional group	Exports(millions of US\$)		Trade Intensity Index		GDP (billions of US\$)	
	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
SSA	17.9	138	88.9	486.2	6.2	37.9
EAC	23.4	79.1	241.3	364.7	3.5	7.9
ECCAS	6.4	47.7	89.1	242.3	2.2	5.7
ECOWAS	10.5	105	59.2	201.8	5.5	37.6
IGAD	14.2	66.8	614.2	2109	4.5	9.9
SADC	37.1	211	52.5	129.2	9.5	48.7
NON-SSA	2.8	30.7	2.1	32.4	19.2	51.5

Source: Authors Compilation

Another outstanding performance among the FTAs is that within the EAC and this is because given that three of the member countries, namely, Burundi, Rwanda and Uganda are landlocked countries, the average trade flow value is commendable compared to ECOWAS which recorded lesser trade flow value. Furthermore, countries within the EAC

trade bloc traded more with each other and this is backed by a trade intensity index of 241.3; the second highest within SSA even though its average GDP was lower than ECOWAS. This is accounted for by increased trade in capital and consumer goods among member countries (EAC, 2009). On the other hand, the low record of average exports in intra-ECCAS trade is as a result of the poor nature of transport infrastructure within the region (ECA, 2012).

Comparatively, intra-bloc trade flow is encouraging given that the average trade flow within the least performing bloc, ECCAS, was more than twice higher than within groups of countries within Africa which were not members of any trade bloc within SSA (non-SSA). This corresponds with an overall average trade intensity index of 88.9 compared to an average of 2.1 for non-SSA which trades more with EU partners than among themselves.

5.3 Estimation Results

This section presents results from the estimation using the ‘augmented’ gravity model. The results displayed are for forty-six (46) SSA countries from 1960-2012. The starting period for each FTA is dependent on the year each country joined the trade blocs under study. Three models were estimated; the random effects, fixed effects and the Hausman-Taylor model. The random effects model was estimated to investigate whether differences within the individual country pairs are correlated with the dependent variable.

The study also estimated a fixed effects model to correct for correlation between the heterogeneity (individual-specific) effects and the other dependent variables. Results from the Random and Fixed effects model are displayed in table 5.2 The Hausman test was performed and the results suggested that the fixed effects model should be used because it identified that the heterogeneity effects were correlated with the other explanatory variables in the model. From the Hausman test in Table 5.2, Prob>Chi2 is less than 0.5 percent which indicates that the differences in the coefficients are significantly different and therefore the Fixed Effects estimator is preferred over the Random Effects estimator.

With the choice of the fixed effects model over the random effects model, the gravity equation was then estimated with the fixed effects and the Hausman-Taylor model. In order to generate more accurate results, three fixed effects models were estimated. The first model (1) was estimated by controlling for only time effects; the second model (2) was also estimated with time being controlled for but this was to investigate the overall impact of an SSA country belonging to an RTA; and the third model (3) was estimated by controlling for both time and bilateral fixed-effects. Results from the third estimation showed that controlling for both time and bilateral fixed effects produced better estimation results. The decision to estimate a Hausman-Taylor model is to allow the study to analyze unobserved individual specific effects (heterogeneity) on the regressors; an exercise which is not allowed in the fixed effects model. As such this study would focus on the results generated by the Hausman-Taylor estimator. Similar to the estimation exercise with the fixed effects model, four (4) Hausman-Taylor models were estimated.

Table 5.2: Hausman Test on Random Effects versus Fixed Effects

	(b) FE	(B) RE	(b-B) Difference	$\sqrt{\text{diag}(V_b - V_B)}$ S.E.
Exporter GDP	0.4333324	0.4785109	-0.0451785	0.0170099
Importer GDP	0.0984755	0.1442996	-0.0458241	0.0158731
Exporter population	0.9769157	0.137209	0.8397066	0.1512661
Importer population	0.881575	0.216156	0.6654191	0.1466226
Common currency	0.4223372	0.463472	-0.0411348	0.0271828
Remoteness	0.4454353	0.4598519	-0.0144166	0.0260359
ECOWAS	0.5312001	0.5450381	-0.013838	0.0194228
EAC	0.3279535	0.4092812	-0.0813277	0.016519
SADC	0.8475025	0.8873566	-0.0398541	0.0253397
ECCAS	-0.1124403	-0.1568458	0.0444055	0.0237727
IGADD	-0.4437135	-0.2187291	-0.2249844	0.0489438

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(58) = (b-B)'[(V_b - V_B)^{-1}](b-B)$$

$$= 423.01$$

$$\text{Prob} > \chi^2 = 0.0000$$

(V_b - V_B is not positive definite)

Source: Author's estimation

The study first estimated a model to determine the effect of belonging to an RTA by controlling for only time effects in model (4) and then controlling for both time and bilateral-fixed effects in model (5). The result from this exercise was to generate better parameter estimates when time and bilateral-fixed effects were together controlled for than just controlling for time effect as is mostly done in panel data analysis. The study then went further to estimates a model in which the various regional dummies were included and also controlled for time effects in model (6) and time effects with bilateral-fixed effects in model (7). This exercise also proved to be an efficient way in analyzing data when using a panel

because it produced more efficient results as compared to controlling for only time effects. The results are presented in Table 5.3.

5.4 Discussion of Results

This section presents a discussion on the findings from the estimation results shown in Table 5.3 on the effects of GDP, population, distance and other explanatory variables on bilateral trade flows of member countries belonging to the same FTA. Below are the discussions in relation to *a priori* expectations of the signs of the regression coefficients.

Gross Domestic Product (GDP): The expected signs of the coefficients of the exporter and importer country's GDP conform to *a priori* expectations. The coefficient of the exporter country's GDP indicates that a percentage increase in the GDP of the exporting country would increase exports by almost 5 percent and about 1 percent for the importing country. This is backed by the significance of the GDP variable for the bilateral pairs clearly indicating that the variable in question has a significant impact on bilateral trade as suggested by theory as well as most trade literature such as Afesorgbor and Bergeijk (2011), Carrere (2004) and Musila (2005) among others. From Turkson (2012), similar results were found out confirming that in SSA, GDP levels are low and therefore its effect on bilateral trade is significantly minimal with values hovering around 5 percent for the exporter GDP and 1 percent for the importer GDP.

Table 5.3: Effect of FTAs on bilateral trade flows in SSA

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Exporter GDP	0.433*** (0.040)	0.425*** (0.092)	0.364*** (0.090)	0.446*** (0.039)	0.331*** (0.052)	0.450*** (0.039)	0.449*** (0.039)
Importer GDP	0.099*** (0.038)	0.084 (0.087)	0.326*** (0.089)	0.096*** (0.036)	0.297*** (0.049)	0.107*** (0.036)	0.111*** (0.037)
Exporter population	0.977*** (0.159)	0.744* (0.399)	2.045*** (0.509)	0.307*** (0.084)	2.584*** (0.307)	0.389*** (0.087)	0.880*** (0.157)
Importer population	0.882*** (0.155)	0.670* (0.369)	0.669 (0.486)	0.371*** (0.086)	1.203*** (0.298)	0.444*** (0.089)	0.895*** (0.153)
Common currency	0.422*** (0.075)	0.469*** (0.169)	0.479*** (0.145)	0.474*** (0.071)	0.520*** (0.083)	0.433*** (0.073)	0.448*** (0.073)
Remoteness	0.445*** (0.052)	0.450*** (0.117)	0.059 (0.111)	0.456*** (0.050)	0.092 (0.059)	0.446*** (0.050)	0.421*** (0.050)
RTA		0.365*** (0.094)		0.378*** (0.044)	0.287*** (0.049)		
Distance				-1.508*** (0.153)	-1.782*** (0.377)	-1.436*** (0.161)	-1.669*** (0.121)
Colony				0.277 (2.788)	-2.906 (6.404)	0.044 (2.919)	-2.104 (2.098)
Contiguity				1.344*** (0.390)	1.110 (0.926)	1.354*** (0.409)	1.229*** (0.291)
Common language				0.775*** (0.194)	0.827 (0.507)	0.786*** (0.204)	0.806*** (0.162)
Landlocked				-0.635*** (0.147)	-68.95* (40.15)	-0.655*** (0.154)	1.763** (0.715)
Exporter area				-0.127* (0.069)	-1.524 (11.18)	-0.167** (0.072)	-0.627*** (0.142)
Importer area				-0.090 (0.071)	13.12** (6.302)	-0.132* (0.074)	-0.476*** (0.139)
ECOWAS	0.531*** (0.064)		0.467*** (0.153)			0.530*** (0.063)	0.535*** (0.063)
EAC	0.328** (0.128)		0.306 (0.241)			0.340*** (0.125)	0.338*** (0.125)
SADC	0.848*** (0.074)		0.744*** (0.151)			0.814*** (0.072)	0.843*** (0.073)
ECCAS	-0.112 (0.096)		0.290 (0.207)			-0.123 (0.094)	-0.135 (0.095)
IGAD	-0.444** (0.176)		-0.350 (0.333)			-0.395** (0.172)	-0.421** (0.173)
Observations	33,289	33,289	33,289	33,289	33,289	33,289	33,289
R-squared	0.892	0.892	0.899				
Number of bilateral pairs	1,840	1,840	1,840	1,840	1,840	1,840	1,840

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The implication of this finding therefore suggests that bilateral trade among country pairs would be influenced by a significant growth in both the exporter and importer countries' GDP.

Distance: From Table 5.3, the expected sign of the coefficient of distance from the exporter country to the importer country also conforms to *a priori* expectations. That is a percentage decrease in distance would result in about 16 percent increase in bilateral trade. This confirms the assertion in trade literature about the negative effect distance exerts on bilateral trade flows among pairs of countries. Interestingly, the effect of distance on bilateral trade flows in the context of SSA countries is highly associated with the high cost of transportation due to the poor nature of road infrastructure and limited storage facilities at the various ports of the countries within the region. Evidence from the estimated results shows a significant effect of distance on bilateral trade flow. Comparing these results to that of Turkson (2012), it shows that distance significantly affects bilateral trade but the only difference is that bilateral trade would improve by 13 percent with a reduction in distance according to Turkson (2012) whereas this study found a 16 percent improvement in bilateral trade with a reduction in distance. This slight difference can be attributed to the additional number of years this study covers. Thus policy measures that are targeted towards reducing transaction costs can significantly impact on bilateral trade flows.

Population: Results from Table 5.3 shows a positive and significant effect of population on bilateral trade. Thus a percentage change in the exporter country's population would translate into a 3 percent increase in bilateral exports. Similarly, a percentage increase in

importer country's population would result in about 8 percent increase in bilateral trade. According to Bergstrand (1989), a positive coefficient estimate for both the exporter and importer country indicates that the exporting country is capital abundant and therefore produces and exports more capital-intensive goods and the importer country also produces luxurious goods. The sign of the coefficient estimates of both the importer and exporter country's population conforms to those estimates found in Turkson (2012) but with a variation in the effects of these variables on bilateral trade. For instance in Turkson (2012), bilateral trade would be increased by approximately 4 percent when there is a percentage increase in the exporter and importer country population. On the other hand, this study found population's effect to be higher that was found in Turkson (2012) but the variation is because the data used in this study spanned more years than Turkson (2012).

Area: The physical size of a country can give information about the economic activity that is dominant engaged in. The reference point is the size of arable land available to a country. A country with vast arable land is expected to produce more primary goods because such a country is likely to have agriculture as the dominant economic activity. If this assumption holds then countries endowed with land resources would export more relatively to those with less land resources. From the regression results, the coefficient estimates of the exporter and importer area are both negative and significant. The sign of this coefficient is similar to that found in Turkson (2012) but this study found only the exporter country's area to be significant at the 10 percent level whereas the importer country's area was insignificant. Thus the dominant economic activity of a country affects its bilateral trade flows.

Contiguity (Adjacency): pairs of countries sharing a common border are expected to engage more in bilateral trade than countries which do not share a common border. As such the expected sign of the coefficient estimate of the variable in the regression results is expected to be positive. This expectation is confirmed as the variable carries a positive and significant coefficient similar to the finding in Turkson (2012) indicating a positive impact on bilateral trade. The implication of this then is that countries that share a common border are able to engage in trade at reduced costs associated with distance.

Common Language: language is considered as an effective tool in exchanging information between people. Countries which share a common official language have a greater advantage of exchanging information at no cost or at a reduced cost at most. Therefore, the absence of a common language between bilateral pairs can serve as a barrier with an associated cost in the exchange of information. In this regard, countries which share a common official language are expected to engage more in bilateral trade than those country pairs which have differing languages. Language's impact on bilateral trade flows is confirmed by the positive coefficient of the language variable from the regression results and is also in line with the results from trade literature such as Melitz (2008), Micco et al (2003) and Musila (2005) and Turkson (2012). In Turkson (2012), the impact of language on bilateral trade was less with a positive effect of 5 percent whereas this study found an effect of 8 percent on bilateral trade.

Common Currency: The use of a common medium of exchange aids in trade facilitation by avoiding the problem of converting one currency to another. As such countries which share

a common currency and belong to the same trade bloc would be expected to record higher bilateral trade flows than country pairs which have different currencies. Similar to the findings in Turkson (2012), the estimated results shows a positive significant impact of the common currency variable on bilateral trade flows; a result which confirms previous findings in trade literature such as Afesorgbor and Bergeijk (2011), Carrere (2004) and Costa-i-Font (2010).

Colonial Links: Findings from Head et al (2010) suggests that countries which have a history of belonging to a common colonial empire tend to trade less with themselves over time. Thus the effect of a colonial link on bilateral trade is not evident in the short-run but becomes evident in the long-run. From the estimated results, the sign of the variable is negative as suggested by Head et al (2010) but its effect in the model is insignificant. Turkson (2012) however realized a positive impact of colonial ties on bilateral trade.

Landlocked: The inclusion of this variable in the model is very important because it has an impact on trade. The estimation results indicate that being landlocked exerts a significant effect on bilateral trade contrary to what was found in Turkson (2012). The positive sign of this variable could imply that contrary to what was expected, landlocked countries tend to trade more with each other than with coastal partners.

Remoteness: This is a variable that measures the price differences between bilateral pairs and their other trading partners which is determined by the average distance between a country and other countries other than its bilateral partner. The estimation results indicate

a positive significant impact of the remoteness index on bilateral trade flows similar to the findings in Turkson (2012). The implication of this is that the more remote country pairs are from their other trading partners, the more these bilateral pairs would trade with each other. The inclusion of the remoteness variable is very vital in the estimation results because it reduces the assessed impact of distance on bilateral trade (Brun et al, 2005).

Trade Agreement dummies: the findings of this study with respect to this variable conformed to the findings in Turkson (2012). For instance, the coefficient estimates for ECCAS and IGAD are negative indicating a trade diverting effect associated with a country's membership in its respective trade bloc. Bilateral trade within ECCAS and IGAD decreased by 12.6⁷ percent and 34.4 percent respectively as compared to the reference category of NO-RTA. Clearly IGAD had a trade diverting impact on member countries' bilateral trade. On the other hand, SADC, ECOWAS and EAC show some positive impact on trade of member countries implying a trade creation effect. For instance within the EAC bloc, the coefficient estimates indicates that bilateral trade within the trade bloc increased by 40 percent. Similarly within ECOWAS and SADC, bilateral trade increased by 71 percent and 132 percent respectively. The sterling performance of SADC is due to the industrialization in South Africa.

⁷ An appropriate way to interpret the coefficient estimates of the trade agreement dummies is by the formula $(\exp^{\beta} - 1)$.

5.4.1 Sensitivity Analysis

This study performs a sensitivity analysis whereby dominant economies (South Africa, Nigeria, Kenya and Cameroon) are excluded in each regional grouping in order to estimate their membership's impact on intra-bloc trade. The study again took into account all the control variables. Results from the exercise showed that all the control variables maintained their signs and level of significance. The analysis indicates that as suspected the participation of these countries in their respective trade blocs contributes to the improved performance of the bloc. For instance from table 5.4, the result shows that there is trade creation in ECOWAS EAC and SADC without Nigeria and Kenya and South Africa respectively, this positive effect is also significant. However, this trade creating effect is less without the participation of the dominant economies.

Similarly, the estimated results indicate that intra-IGAD trade is more trade diverting ($\exp^{0.719} - 1 = -0.51$) without the participation of Kenya thus confirming the country's economic dominance in the region. The results further shows that although ECCAS is also more trade-diverting without the participation of Cameroon, this effect is however not significant.

Table 5.4: Estimates excluding Cameroon, Kenya, Nigeria and South Africa

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Exporter GDP	0.396*** (0.041)	0.425*** (0.092)	0.347*** (0.089)	0.446*** (0.039)	0.331*** (0.052)	0.415*** (0.039)	0.414*** (0.039)
Importer GDP	0.063* (0.038)	0.084 (0.087)	0.310*** (0.089)	0.096*** (0.036)	0.297*** (0.049)	0.0741** (0.036)	0.0770** (0.037)
Exporter population	0.852*** (0.158)	0.744* (0.399)	1.928*** (0.512)	0.307*** (0.084)	2.584*** (0.307)	0.355*** (0.086)	0.756*** (0.156)
Importer population	0.796*** (0.155)	0.670* (0.369)	0.549 (0.487)	0.371*** (0.086)	1.203*** (0.298)	0.420*** (0.088)	0.811*** (0.152)
Common currency	0.482*** (0.075)	0.469*** (0.169)	0.499*** (0.148)	0.474*** (0.071)	0.520*** (0.083)	0.490*** (0.072)	0.504*** (0.072)
Remoteness	0.503*** (0.053)	0.450*** (0.117)	0.085 (0.111)	0.456*** (0.050)	0.092 (0.059)	0.504*** (0.050)	0.475*** (0.050)
RTA		0.365*** (0.094)		0.378*** (0.044)	0.287*** (0.049)		
Distance				-1.508*** (0.153)	-1.782*** (0.377)	-1.501*** (0.157)	-1.749*** (0.121)
Colony				0.277 (2.788)	-2.906 (6.404)	0.620 (2.847)	-1.520 (2.114)
Contiguity				1.344*** (0.390)	1.110 (0.926)	1.330*** (0.399)	1.184*** (0.294)
Common language				0.775*** (0.194)	0.827 (0.507)	0.772*** (0.199)	0.795*** (0.163)
Landlocked				-0.635*** (0.147)	-68.95* (40.15)	-0.669*** (0.150)	1.573** (0.720)
Exporter area				-0.127* (0.069)	-1.524 (11.18)	-0.144** (0.070)	-0.545*** (0.143)
Importer area				-0.090 (0.071)	13.12** (6.302)	-0.113 (0.072)	-0.418*** (0.139)
ECOWAS	0.244*** (0.068)		0.257* (0.153)			0.248*** (0.067)	0.248*** (0.067)
EAC	0.473*** (0.166)		0.485 (0.320)			0.493*** (0.162)	0.494*** (0.163)
SADC	0.765*** (0.082)		0.981*** (0.168)			0.753*** (0.080)	0.762*** (0.081)
ECCAS	-0.131 (0.123)		0.580** (0.255)			-0.138 (0.121)	-0.164 (0.121)
IGAD	-0.744*** (0.270)		-0.240 (0.561)			-0.733*** (0.264)	-0.719*** (0.265)
Observations	33,289	33,289	33,289	33,289	33,289	33,289	33,289
R-squared	0.892	0.892	0.899				
Number of bilateral pairs	1,840	1,840	1,840	1,840	1,840	1,840	1,840

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.5 Summary

Results from the estimated gravity equation conform to *a priori* expectations with the exception of a few and they also assume coefficient estimates that are similar to previous studies. The results indicate that most of the control variables are very necessary when estimating bilateral trade. This is because these variables provide better explanations to the reasons why trade occurs among bilateral pairs. The estimated results of the trade agreement dummies indicated some level of trade creation within ECOWAS, SADC and EAC but trade diversion within ECCAS and IGAD. The memberships of South Africa, Nigeria, Ethiopia and Kenya in SADC, ECOWAS, ECCA, EAC and IGAD respectively clearly showed that their membership within the various trade agreements played a vital role in the achievement of their respective groups.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents a summary and conclusion of the study and further recommends some policy measures based on the outcome of the study. The next section; section 6.2 is focused on the summary and conclusions of the study. This is followed by section 6.3 which provides some policy recommendations based on the findings of the study. Section 6.4 discusses the limitation of this study and suggests areas which require further empirical studies.

6.2 Summary and Conclusions

The study sought to investigate the effect of membership in a trade block in SSA on bilateral trade. This is because reports on the continent and particularly the sub-region clearly indicates that the region is made up of several trade agreements with some memberships overlapping into other RTAs as in the case of Kenya in both EAC and IGAD.

Studies have been conducted to assess the impact of such trade agreements within the region and also in terms of collaboration with regions in other parts of the world. Their conclusions have however not been encouraging as they present a gloomy picture about the effect of such arrangements among countries within the region. Despite these findings,

the formation of new RTAs has been increasing and this raises a lot of question concerning the actual effects of these arrangements on the member countries' trade patterns. It is in light of this that this study sought to also investigate empirically the actual effect of these regional integration schemes. Thus the study selected five regional groupings which are the building blocks to facilitate the integration of Africa into the global economic system.

In order to produce consistent, efficient and unbiased parameter estimates based on which a conclusion would be drawn, the Hausman-Taylor approach was used to analyze data from the CEPII, WDI and UNCOMTRADE databases. The choice of this estimator over the fixed effects and random effects model was due to its ability to take into account the individual heterogeneity of the observations as well as control for the heterogeneity of the trade agreement dummy variables in the model; a key function that the fixed effects model could not perform.

Taking into account other factors that could affect bilateral trade besides belonging to an FTA, the estimation results from the study indicated that on the whole bilateral trade among countries belonging to the same FTA increased significantly. Thus the study found out that except for ECCAS and IGAD, FTAs impacted positively on the bilateral trade flows of member countries. However the study also found out that despite the trade creating effects of ECOWAS, EAC and SADC, the magnitude of the effect was reduced when some key countries such as Kenya, Nigeria, Cameroon and South Africa from their respective regional groupings. This is given backing by the 2011-2012 Executive Secretary report on SADC which identified that even though the trade bloc was doing well as compared to

other trade blocs, export were skewed coming mainly from South Africa. Also a 2009 EAC report affirmed the assertion that Kenya continued to dominate the trade bloc thus accounting for the overall success of the group.

These results indicate that contrary to what some studies have suggested about the effectiveness of trade agreements among developing countries and particularly within SSA, intra-bloc trade performance has improved and the continent can achieve its aim of fostering regional cooperation and integration by using trade as one of its major channels.

6.3 Policy Recommendations

The study's findings of the positive impact of the FTAs on intra-trade within the blocs suggests that countries within the sub-region must engage more in the production of goods for domestic consumption and ultimately for exports in order to increase their GDPs which has a significant impact on bilateral trade. This would go a long way to facilitate intra-regional trade and help achieve the AU's goals of economic integration.

Infrastructure which is a key problem within the region has to be properly structured in order to ease the difficulty in transporting goods to their destinations. Results from the analysis suggest that distance impedes trade and specifically in SSA where road infrastructure are poorly maintained in addition to poor telecommunication networks among others. Thus measures that ensure the improvement of these needs must be put in place to facilitate trade. Lessons can be taken from countries within the SADC region that

have been successful in connecting their transportation networks for the sole purpose of facilitating the easy transfer of goods across national boundaries. Thus it is imperative for other RTAs to also collaborate and connect their railway networks.

Secondly, SSA countries must diversify their production portfolios in order to attract markets within the region. Even though progress has been made with some countries producing manufactured goods, it still remains low and therefore much attention is needed to expand industries in the region to make use of the available resources coupled with efficient production methods which would ensure them lower costs and ultimately make them more competitive against western goods in both the continent and outside it as well. Governments also have a responsibility to formulate favorable industrial policies to encourage the establishment and maintenance of industries. In addition to this governments must also work hard to ensure there is stable supply of electricity; a facility which is lacking in the sub-region and which has contributed to the high costs associated with goods produced in the region and even the collapse of some major industries.

Thirdly, governments must also make it a point to involve civil society groups and other stakeholders in their decision making body whenever they are taking steps to join an RTA. This would provide the parties the opportunity to assess the impact such integration arrangements would have on their business and subsequently position themselves adequately to reap the benefits and also forestall any likely losses that may be envisaged. If this is done, trade diversion can be prevented or properly managed.

In addition, member countries of FTAs in SSA must work towards using a common currency in order to eliminate foreign exchange losses to exporters and importers. When this is done, costs of goods traded among member countries would significantly decline and this would boost intra-bloc trade.

Furthermore, processes at the various border posts and sea ports must be harmonized to reduce the congestions at these locations. This is because the study identified the significant positive effect contiguity had on bilateral trade. In addressing this, customs procedures must be well structured and made easy for the movement of goods across borders.

6.4 Limitations of the Study

This study did not look at the effect of including zero-flows in the estimation results due to the challenges associated with estimating zeroes which requires more sophisticated methods which are beyond the scope of this study. Studies have suggested that their inclusion in results contributes to generate consistent and unbiased parameter estimates and to make more accurate predictions.

Also the study's use of remoteness index as a proxy for multilateral resistance is associated with some level of bias and thus price terms should rather be used. This study could not use the price terms directly because of the unavailability of such data. Thus future researchers can take it up to investigate whether this assertion is true.

REFERENCES

- Afesorgbor, S.K., & van Bergeijk, P.A.G., (2011). Multi-membership and the Effectiveness of Regional Trade Agreements in Western and Southern SSA: A Comparative study of ECOWAS and SADC. ISS Working Paper Series vol. 520, The Hague: Institute of Social Studies (ISS).
- AfDB (2011). Regional Integration Strategy Paper (RISP). Regional Department Center NEPAD, Regional Integration and Trade Department.
- African Union Permanent Observer Mission to the United Nations and Office of the Special Adviser for Africa (2010): Africa's Regional Economic Communities Briefing to UN Member States.1-8.
- Aitken, N. D. (1973). The Effects of the EEC and EFTA on European Trade: A Temporal Cross-Section Analysis. *American Economic Review* 5, 881-892.
- Anderson, J. E. (1979). A Theoretical Foundation for the Gravity Equation: American Economic Association, *American Economic Review*. 69(1), 106–116.
- Anderson, J.E. & van Wincoop, E., (2003). Gravity with Gravitas: A Solution to the Border Puzzle', *American Economic Review*, 93 (1), 170-192.
- Azam, J. (1990). Informal Integration through Parallel Markets for Goods and Foreign Exchange in the Long Term Perspective Study of Sub-Saharan Africa, Vol. 4, Washington DC: World Bank
- Baier, S. L., & Bergstrand, J. H. (2005). Do Free Trade Agreements Actually Increase Members' International Trade? Federal Reserve Bank of Atlanta Working Paper Series (3)
- Baier, S. L., & Bergstrand, J. H. (2009). Estimating the effects of free trade agreements on international trade flows using matching econometrics. *Journal of International Economics*, 77(1), 63–76.

- Baltagi, B.H., 2005. *Econometrics Analysis of Panel Data*. Wiley, Chichester
- Baltagi, B. H., Egger, P., & Pfaffermayr, M. (2003). A generalized design for bilateral trade flow models. *Economics Letters*, 80(3), 391–397.
- Bergstrand, J.H., (1985), ‘The Gravity Equation in International Trade. Some Microeconomic Foundations and Empirical Evidence’, *Review of Economics and Statistics* 67(4), 474-481
- Bergstrand, J.H., (1989). The Generalized Gravity equation, monopolistic competition, and the factor-proportions theory in international trade. *Review of Economics and Statistics* 71 (1), 143–153.
- Bergstrand, J. H. (2014). The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence. *Review of Economics and Statistics*. 67(3), 474–481.
- Blundell R., Bond S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics*, 87(1), 115-143.
- Burfisher, M. E., Robinson, S. & Theirfelder, K. (2003). Regionalism. Old and New Theory and Practice. International Conference, Agricultural Policy Reform and the WTO.
- Brun, J.F., Carrere, C., Guillaumont, P., & de Melo, J., (2005). ‘Has Distance Died? Evidence from a Panel Gravity Model’, *World Bank Economic Review*, 19(1), 99-120.
- Caporale, G., Rault, C., Sova, R., & Sova, A., (2009). On the Bilateral Trade Effects of Free Trade Agreements between the EU-15 and the CEEC-4 Countries. *Review of World Economics*, Springer, vol. 145(2), 189-206
- Caporale, G. M., & Rault, C. (2011). Europe Agreements and Trade Balance: Europe Agreements and Trade Balance; Evidence form Four New EU Members, (5683).

- Carrere, C., (2004): African Regional Agreements Impact on Trade with or without Currency Unions. *Journal of African Economies*, 13(2), 199–239.
- Cheng, I –H., & Wall, H. J., (2001). Controlling for Heterogeneity in Gravity Models of Trade. Research Division Working Paper 99-010. Federal Reserve Bank of St. Louis.
- Costa-i-font, J. (2010). Regional Single Currency Effects on Bilateral Trade with the European Union, (26). LSE ‘Europe in Question’ Discussion Paper Series.
- Costinot, A., & Komunjer, I., (2008). What Goods Do Countries Trade? A Structural Ricardian Model, 1–42.
- Coulibaly, S. (2013). Evaluating the Trade Effect of Developing Regional Trade Agreements. A Semi-parametric Approach. *Journal of Economic Integration*, Vol. 24, No. 4 (December 2009), pp. 709-743, 24(4), 709–743.
- Crawford, J., & Fiorentino, R. V., (2005). The Changing Landscape of Regional Trade Agreements. World Trade Organization Discussion Paper No.8.
- Davis, D. R., (1995). Intra-Industry Trade : A Heckscher-Ohlin-Ricardo approach. Department of Economics, Harvard University, Cambridge. USA. *Journal of International Economics*, 201–226.
- Deardoff, A. (1998). Determinants of Bilateral Trade : Does Gravity Work in a Neoclassical World. In Frankel, J. (Ed) *The Regionalization of the World Economy*. University of Chicago Press.
- Deme, M. (1995). The Impact of ECOWAS on Intraregional Trade Flows. An Empirical Investigation. *The Review of Black Political Economy* (Winter 1995), 113-129.
- DFID, (2011). Regional Integration and Trade in Sub-Saharan Africa. Trade and Investment Analytical Papers. Topic 8 of 18. 1-15
- EAC, (2008). Trade Report, 2007. East Africa Community, Arusha, Tanzania.

- ECA, (2004). *Assessing Regional Integration in Africa*. Addis Ababa, Economic Commission for Africa.
- ECA, (2012). Report on international and intra-African trade. <http://www.uneca.org> retrieved June, 2014.
- Egger, P., (2004). Estimating Regional Trading bloc Effects with Panel Data. *Review of World Economics*, 140, 151-166.
- Elbadawi, I. A., (1997). The Impact of Regional Trade and Monetary Schemes on Intra-Sub-Saharan Africa trade. In A. Oyejide, I. Elbadawi, & P. Collier (Eds.), *Regional Integration and Trade Liberalization in Sub-Saharan Africa*. London: Macmillan Press Ltd.
- Endoh, M., (1999). Trade creation and trade diversion in the EEC, the LAFTA and the CMEA: 1960-1994, *Applied Economics*, 31:2, 207-216.
- FAO, (2003). Regional integration and food security in developing countries. Technical Cooperation Department. Retrieved January 9, 2014. <http://www.fao.org/documents>.
- Feenstra, R.C., (2002). *Advanced International Trade: Theory and Evidence*. University of California, Davis, and National Bureau of Economic Research.
- Feenstra, R.C., (2002). Border Effects and the Gravity Equation: Consistent Methods for Estimation. *Scottish Journal of Political Economy*, Vol. 49(No. 5).
- Fiorentino, R. V., Verdeja, L., & Toqueboeuf, C. (2006). *The Changing Landscape of Regional Trade Agreements*. 2006 Update.
- Frankel, J.A., (1997): *Regional Trading Blocs in the World Economic System*. Institute for International Economics, Washington DC.
- Frankel, J. A., & Romer, D., (1999). Does Trade Cause Growth? *The American Economic Review*, Vol. 89, No. 3, 379-399

- Gathli, J. T. (2011). *African Regional Trade Agreements as Legal Regimes*. Cambridge University Press.
- Ghosh, S.K., (1976). Estimating from a more general time-series cum cross-section data structure. *The American Economist* 20:15–21
- Greene, W. H. (2003). *Econometric Analysis*. (P. Education, Ed.) *Journal of the American Statistical Association* Vol. 97, 1026. Prentice Hall.
- Gunning, J. W. (2002): *Trade Blocs: Relevant for Africa?* *Journal of African Economies* 10(3), 311-335.
- Hanink, D. M., & Owusu, J. H., (1998). Has ECOWAS Promoted Trade among Its Members? *Journal of African Economies*, 7(3), 363–383.
- Hartzenberg, T., (2011): *Regional Integration in Africa*. World Trade Organization Economic Research and Statistics Division. Staff Working Paper ERS-2011-14
- Hausman, J.A and W.E. Taylor (1981). Panel Data and Unobservable Individual Effects. *Econometrica*, 49(6), 1377-98.
- Head, K., T. Mayer & J. Ries (2010). The erosion of colonial trade linkages after independence, *Journal of International Economics*, 81(1), 1-14.
- Helpman, E., (1987) ‘Imperfect competition and international trade: evidence from fourteen industrial countries,’ *Journal of the Japanese and International Economics* 1, 62–81
- Hine, R. (1994): *International Economic Integration* “In” D. Greenway and A. Winters (eds) *Surveys in International Trade*. Blackwell Publishers, UK, pp. 254-269
- ISS (2013): *Realizing the dream of greater intra-African trade*: Institute for Security Studies July edition. Retrieved June 16, 2014. <http://www.issafrica.org>.
- Johnson, O.E.G (1995): *Regional Integration in Sub-Saharan Africa*. *Journal of European Integration*, 18 (2/3), 201-234.

- Khorana, S., Kimbugwe, K., & Perdikis, N. (2009). Assessing the Welfare Effects of the East African Community Customs Union 's Transition Arrangements on Uganda, *Journal of Economic Integration*, 685–708.
- Kimenyi, M. S., Lewis, Z. A., & Routman, B.,(2012). Intra-African Trade in Context. Brookings Africa Growth Initiative, 1–5.
- Krueger, A. (1999). Trade Creation and Trade Diversion under NAFTA. NBER Working Paper no. 7429, Cambridge, MA.
- Lesser, C., & Moisé-Leeman, E., (2009). Informal Cross-Border Trade and Trade Facilitation Reform in Sub-Saharan Africa. Organization for Economic Cooperation and Development. OECD Trade Policy Working Paper No. 86. Paris.
- Linder, S. B., (1961). *An Essay on Trade and Transformation*. New York. Wiley and Sons.
- Linnemann H., (1966). *An Econometric Study of International Trade Flows*. *North Holland Publishing Company*, Amsterdam
- Lipsey, R. G., (1957). The Theory of Customs Unions: Trade Diversion and Welfare. *Economica*, New Series, Vol 24, No. 93, 40 – 46
- Lyakurwa, W., Mckay A., Ng'eno, N., & Kennes, W. (1997). Regional Integration in Sub-Saharan Africa: A Review of Experiences and Issues “In” Oyejide, Ademola, Elbadawi and Collier (Eds.) *Regional Integration and Trade Liberalization in Sub-Saharan Africa*. Volume 1: Framework, Issues and Methodological Perspectives, London Macmillan.
- Magee, C.S. (2003): *Endogenous Preferential Trade Agreements: An Empirical Analysis*. The B.E. Journal of Economic Analysis Policy, 2(1), Article 15.
- Markusen, J. R., Melvin, J. R., Kaempfer, W. H., & Maskus, K. E. (1995). *International Trade, Theory and Evidence*. Scott D. Stratford and Lucille H. Sutton International (Ed). McGraw-Hill Inc.

- Markusen, J. R., & Maskus, K. E., (2002). Discriminating Among Alternative Theories of the Multinational Enterprise. *Review of International Economics*, 10(4), 694–707.
- Matyas, L. (1997). Proper Econometric Specification of the Gravity Model. *The World Economy*, 20(3), 363-368.
- Melitz, J., (2008). Language and foreign trade. *European Economic Review*, 52(4), 667–699.
- Micco, A., Stein, E., & Ordoñez, G., (2003). The Currency Union Effect on Trade : Early Evidence from EMU. Inter-American Development Bank.
- Mundlak, Y., (1978). On the Pooling of Time Series and Cross-Section Data. *Econometrica* 46 (1):69-85.
- Musila, J. W., (2005). The Intensity of Trade Creation and Trade Diversion in COMESA, ECCAS and ECOWAS: A Comparative Analysis. *Journal of African Economies*, 14(1), 117–141.
- Obadan, M. (1984) 'Regional Trade of the ECOWAS: Characteristics, Problems and Prospects. In Orimalade, A., & Ubogu, R., (Eds) *Trade and Development in Economic Community of West African States (ECOWAS)*.
- OECD, (1999). Glossary of Insurance Policy Terms. Centre for Co-operation with Non-Members.
- Page, J., (2012). Accelerating Growth through improved Intra-African Trade. Africa Growth Initiative at Brookings, 6 -7
- Pesaran, M. H., (2006). Estimation and Inference in Large Heterogeneous Panels with a Multifactor Error Structure. *Econometrica*, 967-1012.
- Pöyhönen, P., (1963). A tentative model for the flows of trade between countries. *Welwirtschaftliches Archiv*, 90, 93-100

- Rauch, J., Trindade, V., (2002). Ethnic Chinese networks in international trade. *Review of Economics and Statistics*. 84, 116–130
- Rose, A. K., (2000). One Money, One Market: Estimating the Effect of Common Currencies on Trade.
- SADC, (2011). Report of the Executive Secretary: Activity Report of the SADC Secretariat. Southern African Development Corporation. Retrieved June 25, 2014. <http://www.sadc.int>
- Sako, S., (2006). Challenges Facing Africa ' S Regional Economic Communities In Capacity Building. The African Capacity Building Foundation.
- Serlenga L., Shin Y. (2007). Gravity models of intra-EU Trade: Application of the CCEP-HT Estimation in Heterogeneous Panels with Unobserved Common Time-Specific Factors. *Journal of applied econometrics*, 22,361-381.
- Silva, J. M. C. S., & Tenreyro, S., (2006). The Log of Gravity, *The Review of Economics and Statistics*, 88(4): 641–658.
- Soloaga, I., & Winters, L. A. (2001). Regionalism in the Nineties: What Effect on Trade *North American Journal of Economics and Finance*, 12(1), 1-29.
- Tinbergen, J., (1962). An Analysis of World Trade Flows. In *Shaping the World Economy*, Tinbergen, (Ed.) New York, Twentieth Century Fund.
- Trefler, D., (1993). Trade Liberalization and the Theory of Endogeneous Protection. An Econometric Study of U.S. Import Policy. *Journal of Political Economy* 101(1), 138-160.
- Turkson E. F. (2012), “Trade Agreements and Bilateral Trade in Sub-Saharan Africa: Estimating the Trade Effects of the EU-ACP PTA and RTAs”, CREDIT Research Paper 12/07, Nottingham School of Economics, University of Nottingham, UK.

- UN Economic Commission for Africa, African Union and African Development Bank (2010). *Assessing Regional Integration in Africa. IV. Enhancing Intra-African Trade*. Addis Ababa. UN Economic Commission for Africa.
- UNCTAD (2013). *Intra-African Trade: Unlocking Private Sector Dynamism*. United Nations Publication.
- United Nations Industrial Development Organization (2000). *Industrial Development Report 2009. Breaking in and Moving Up*. Vienna. UNIDO.
- van Beers, C., and Linnemann, H., (1991). Commodity Composition of Trade in Manufactures and South-South Trade Potential. *Journal of Development Studies*, 27 (4), 102-22.
- Venables, A. J., (2003). Winners and Losers from Regional Integration Agreements. *The Economic Journal*, 113(490), 747–761.
- Vicard, V., (2011). Determinants of successful regional trade agreements. *Economics Letters*, 111(3), 188–190.
- Viner, J., (1950), *The Customs Union Issue*. Carnegie Endowment for International Peace, New York
- World Bank, (2009). *World Development Report 2009: Reshaping Economic Geography*. Washington, DC: World Bank.
- World Bank (2010). *The Cost of Being Landlocked. Logistics, Costs, and Supply Chain Reliability*. International Trade Department, Conference Edition; 1-16
- World Bank and International Finance Corporation (2011): *Doing Business 2011. Making a Difference for Entrepreneurs*. Washington. World Bank and International Finance Corporation.
- World Bank (2012). *Trading Across Borders*. www.doingbusiness.org. Retrieved June, 2014.

WTO (2013). Countries of the Central African Economic and Monetary Community (CEMAC). Trade Policy Review.

Yang, Y., & Gupta, S., (2005). Regional Trade Arrangements in Africa: Past Performance and the Way Forward. IMF Working Paper, WP/05/36, Washington, DC, IMF.

Yeats, A., (1990). On the Accuracy of Economic Observations: Do Sub-Saharan Trade Statistics Mean Anything? World Bank Economic Review, 4:135-56.

APPENDICES

Appendix I: List of countries within each REC

EAC	ECCAS	ECOWAS	IGAD	SADC
	Angola	Benin	Djibouti	Angola
Burundi	Burundi	Burkina Faso	Eritrea	Botswana
	DR Congo	Cape Verde	Ethiopia	DR Congo
Kenya	Cameroon	Ivory Coast	Kenya	Lesotho
	Central African Republic	Gambia	Somalia	Madagascar
	Chad	Ghana	Sudan	Malawi
	Equatorial Guinea	Guinea	South Sudan	Mauritius
Rwanda	Gabon	Guinea-Bissau	Uganda	Mozambique
Uganda	Republic of the Congo	Liberia		Namibia
	São Tome en Príncipe	Mali		Seychelles
		Niger		South Africa
		Nigeria		Swaziland
Tanzania		Senegal		Tanzania
		Sierra Leone		Zambia
		Togo		Zimbabwe

Source: Author's compilation

Appendix II: Random Effects and Fixed Effects estimates

Variables	Random Effects	Fixed Effects
Exporter GDP	0.479*** (0.037)	0.433*** (0.040)
Importer GDP	0.144*** (0.034)	0.099*** (0.038)
Exporter population	0.137 (0.049)	0.977*** (0.159)
Importer population	0.216*** (0.051)	0.882*** (0.155)
Common currency	-1.294*** (0.180)	0.422*** (0.075)
Remoteness	-1.496 (1.649)	0.445*** (0.052)
Distance	-0.341 (0.077)	
Colony	-0.981*** (1.517)	
Contiguity	1.528*** (0.195)	
Common language	-0.719*** (0.097)	
Landlocked	-0.550* (0.074)	
Exporter area	-0.087 (0.036)	
Importer area	-0.029*** (0.038)	
ECOWAS	0.545 (0.061)	0.531*** (0.064)
EAC	0.409*** (0.126)	0.328** (0.128)
SADC	0.887*** (0.070)	0.848*** (0.074)
ECCAS	-0.157** (0.093)	-0.112 (0.096)
IGAD	-0.219 (0.169)	-0.444** (0.176)
Observations	33,289	33,289
R-squared		0.892
Number of bilateral pairs	1,840	1,840

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1