ESTIMATING THE TRADE EFFECTS OF THE ECOWAS FREE TRADE AREA (FTA) ON BILATERAL TRADE FLOWS – A PANEL DATA ANALYSIS

BY

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JULY, 2019

DECLARATION

I, *ERIC KOJO ADJEI*, hereby declare that this thesis is an 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.

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DEDICATION

This thesis is dedicated to the Almighty God whose grace and mercies have seen me successfully through my education; to my beloved parents and guardians Mr. Erasmus Ofori Sarkwa and Mama Hagar Awo Akpey for the unending support, love and encouragement they have shown me in diverse ways throughout all the phases of my education; and my late mother Madam Beatrice Ama Boadu for her constant reminder of how she expected so much of me and her daily prayers she said for me. May her soul rest in perfect peace.

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ABSTRACT

The Economic Community of West African States (ECOWAS) after its establishment in 1975, was tasked with a major responsibility of enhancing intra-ECOWAS trade. This led to the establishment of the ECOWAS Trade Liberalization Scheme (ETLS) in 1990 – a mechanism designed to ensure that trade is fully liberalized in West Africa. Intra-ECOWAS trade according to the International Monetary Fund Direction of Trade Statistics (IMF DOTS) and the United Nations Conference on Trade and Development (UNCTAD) remains less than 15 percent. This has led many researchers to investigate the effects of the ECOWAS Free Trade Area (FTA) on bilateral trade flows among member states.

Using a panel data from 1995 to 2015, this thesis employs test statistics and regression analysis to measure the variables which enhances bilateral trade in ECOWAS. Results from the estimations suggests that larger GDPs, huge population sizes, sharing a common currency and language all exerts a positive impact on bilateral trade flows. On the contrary, we found that sharing colonial links does not necessarily increase trade among countries. It actually opposes bilateral trade significantly.

Based on the results, this study recommends that governments should provide massive infrastructure development to facilitate trade among member countries of the FTA. Domestic industries as well must be given essential support to enhance their production capacities to make value addition to extractive goods feasible. Also, there is a pressing need to facilitate the quick establishment of a common currency for ECOWAS. In addition, processes at the borders of member countries must be harmonized and made easy to facilitate the movement of goods across borders.

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ACRONYMS

ASEAN	Association of South-East Nations
AU	African Union
CEN-SAD	Community of Sahel-Saharan Sates
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CET	Common External Tariff
COMESA	Common Market for Eastern and Southern Africa
CU	Custom Union
EAC	East African Community
ECA	Economic Commission for Africa
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
EPA	Economic Partnership Agreement
ETLS	ECOWAS Trade Liberalization Scheme
EU	European Union
FE	Fixed Effects
FTA	Free Trade Area
GDP	Gross Domestic Product
HO	Heckscher-Ohlin
HOV	Heckscher-Ohlin-Vanek
IGAD	Intergovernmental Authority on Development
IMF	International Monetary Fund

IMF-DOTS	International Monetary Fund Direction of Trade Statistics
MERCOSUR	Common Market of the Southern Cone
OAU	Organization for African Unity
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
PTA	Preferential Trade Agreement
RE	Random Effects
REC	Regional Economic Community
RTA	Regional Trade Agreements
SADC	Sothern African Development Cooperation
SSA	Sub-Saharan Africa
UNCTAD	United Nations Conference for Trade and Development
UNECA	United Nations Economic Partnership for Africa
WDI	World Development Indicators
WTO	World Trade Organization

CHAPTER ONE

INTRODUCTION

1.1 Background

Trade has always been a major component of the economic development of nations (Krueger, 1999; Grossman and Helpman, 1990). International trade influences economic and political relations among nations. It also affords countries the opportunities to import technology and machinery they are unable to produce efficiently.

However, trade creates several challenges for developing countries, including increased competition from foreign firms (which is good for consumers in poor countries, but bad for competitive producers), instability in global market prices for import and export products, and structural changes associated with the transformation from primary goods to manufactured products (Perkins et al., 2001). Overall, it is generally believed that poor countries have more to gain from free trade than rich ones (Krueger, 1999). This is because economic growth is a necessary requirement for poverty reduction and increased access to global markets is seen as a condition for such development.

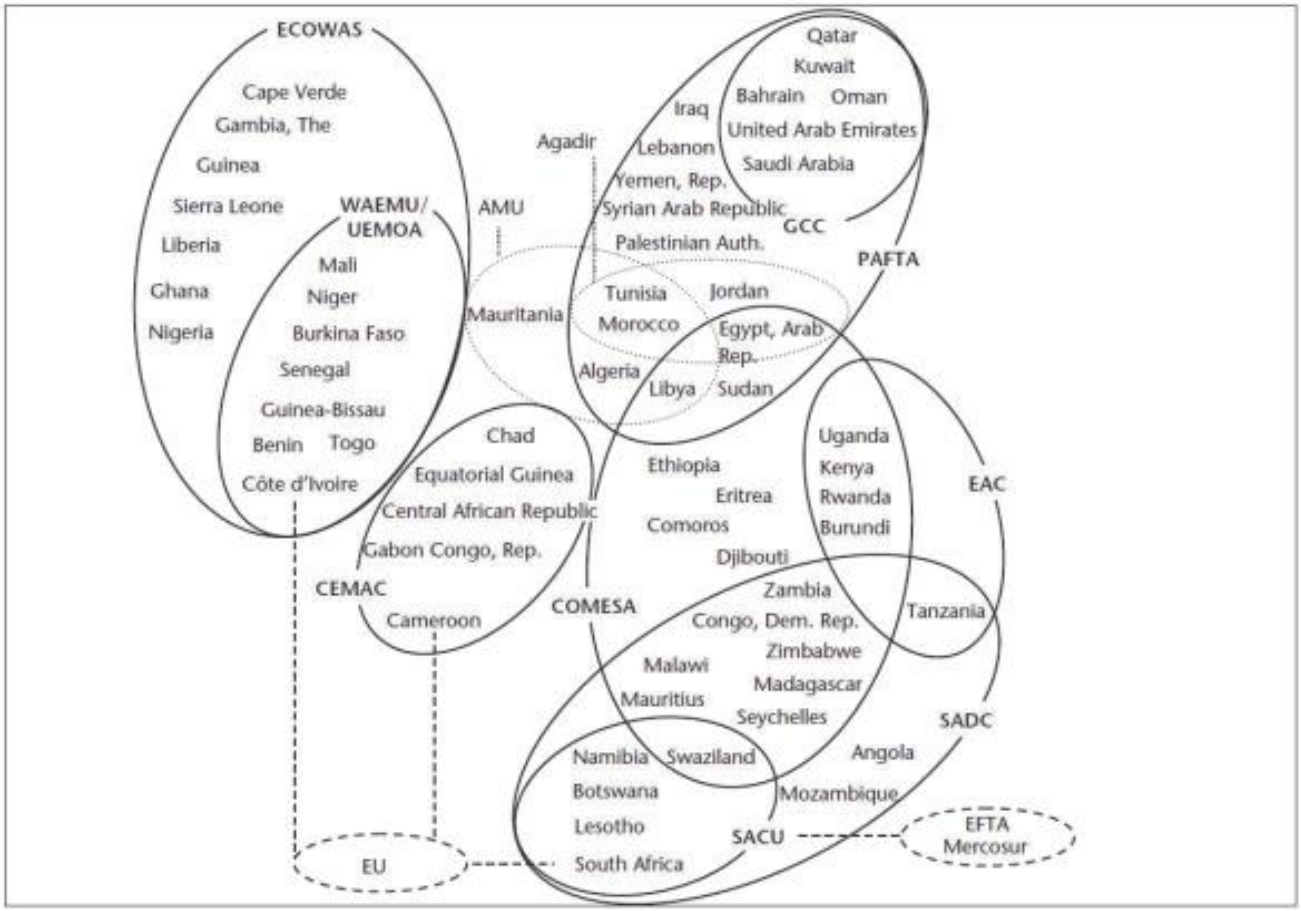
For well over forty years now, Regional Trade Agreements (RTAs) either in the form of a Free Trade Area (FTA) or a Custom Union (CU) have been gaining grounds in the global trading system. A Free Trade Area is a group of countries which come together to abolish all tariffs and any other form of import restriction on each other's goods, while each member country maintains its own tariff schedule to imports from non-members (OECD, 1999). An example of such a grouping is the North American Free Trade Associations (NAFTA). A Free Trade Area (FTA) varies a little when compared with a Customs Union (CU). A Customs Union is an association of countries

which agree to eliminate all barriers to imports from member countries while establishing a common tariff on all imports from non-members (OECD, 1999). Just like the FTA, there is free movement of goods and services among member countries. However, customs union establishes a common trade policy mostly in the form of a common external tariff (CET) against non-members.

The African continent has not been left out when it comes to the continental proliferation of RTAs where they are called Regional Economic Communities (RECs). According to (Hartzenberg, 2011), regional integration is viewed as a rational response to the challenges faced by the African continent with many small national markets and landlocked countries. As per Yang and Gupta (2005), Africa is now home to over 30 regional trade arrangements (RTAs), many of which are part of deeper regional integration schemes. On average, each African country belongs to four RTAs (World Bank, 2004). Crawford and Fiorentino (2005) advocates that the widespread of trade agreements could be partly explained by the desire of countries to get access to global markets through the formation of bilateral and multilateral trade agreements considering the difficulty involved in getting other WTO members to deepen their multilateral agreements.

RTAs are becoming more innovative in the sense that they are no longer limited by geographical locations as can be seen from figure 1.1. A very good examples is the European Union – ECOWAS Economic Partnership Agreement (EU-ECOWAS EPA). Such innovations have led to formation of more North-South RTAs which have overtime taken the place of the non-reciprocal systems of preferences – an arrangement which is seen as not so beneficial 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).

Figure 1. 1 Regional Agreements in Africa



Source: Acharya et al. (2011, Figure 2.18); WTO Secretariat.

There are basically 5 main Regional Economic Communities (RECs) in Sub-Saharan Africa out of which several trade agreements have been birthed[1]. They are; the Economic Community of Central African States (ECCAS), the Economic Community of West African States (ECOWAS), the Southern African Development Cooperation (SADC), the East African Community (EAC) and

[1] The African Union recognizes only 8 regional economic groupings in Africa which are: Arab Maghreb Union (AMU), Southern African Development Community (SADC), The Community of Sahel-Saharan States (CEN-SAD), Economic Community of West African States (ECOWAS), East African Cooperation (EAC), Economic Community of Central African States (ECCAS), Common Market for Eastern and Southern Africa (COMESA), Inter-Governmental Authority on Development (IGAD).
Some others are West African Economic and Monetary Union (UEMOA), The International Conference of Great Lakes Region (ICGLR), Mano River Union (MRU) and Southern African Customs Union (SACU).

the Intergovernmental Authority on Development (IGAD). RECs are regarded as free trade agreements for the purposes of this research thesis.

We now narrow the argument to the focus to this thesis, the Economic Community of West African States (ECOWAS). Established in 1975, the ECOWAS was tasked with the main responsibility of increasing intra-regional trade among its members (Musila, 2005). This was to be achieved by eliminating all sorts of tariff and non-tariff barriers to trade and eventually becoming an economic and monetary union after gradually going through the phases of a free trade area, customs union and common market. More specifically, ECOWAS aims at abolishing all barriers to intra-ECOWAS trade; establishing a common external tariff (CET)[2] against all non-member countries; eliminating all barriers to the free movement of factors of production across the sub-region, and harmonizing domestic policies among member countries. This led to the articulation of an elaborate trade liberalization programme which is known as the ECOWAS Trade Liberalization Scheme (ETLS)[3], in the early years of the formation of ECOWAS. The implementation of the ETLS which was originally to kick start in 1979 was finally launched in1990 after being postponed three times. The ETLS was designed to follow a special implementation programme which is as follows:

I. An immediate and full liberalization of trade in unprocessed goods and traditional handicrafts.
II. Phased liberalization of trade in industrial products, with the phasing reflecting the differences in the levels of development of three categories of ECOWAS member states.

[2] A Common External Tariff (CET) is a tariff imposed by all member countries of a Customs Union. This implies that the same customs duties, preferences and/or other non-tariff barriers applies to all imports coming to the area regardless of which country within the area it is going.
[3] Visit www.customs.gov.ng/Guidelines/etls.php

III. Gradual establishment of a Common External Tariff (CET).

By the implementation schedule of the ELTS, all trade barriers were expected to be removed by the end of 1999 but this did not happen. In their review of the situation late 1999, the Authority of Heads of Sates and Government of ECOWAS adopted a fast-track approach to the economic integration objective of the sub region which led to the proclamation of the ECOWAS sub-region as a FTA in 2000 and January 1, 2001 set as the date for its transformation into a Custom Union (CU).

Even though ECOWAS has been declared as a FTA and there is a scheduled programme for it to eventually become a Customs union, there is still the issue of implementation lag on the part of ECOWAS according Hanink and Owusu (1998). As it stands, member countries are not fully compliant in terms of the necessary obligations to the establishment of an ECOWAS-wide FTA. Also, the CET which is a basic requirement for the attainment of the status of a customs union has not been implemented.

According to the International Monetary Fund Direction of Trade Statistics (IMF DOTS), less the 10 percent of exports from ECOWAS went to ECOWAS countries in 2014.In 2015, about 12% of ECOWAS exports stayed within the sub-region whiles 6% went to other African countries and about 80% going outside of Africa (IMF, 2016). In 2014, the major single-country export destination (see table 1.2) of ECOWAS was India with an export value of USD 16.73 billion while its major import source was China with imports valued at USD 33.36 billion. This clearly shows how low members of ECOWAS trade among themselves. In addition, Venables (2003) also predicts that the net trade effect becomes negative since the South-South trade agreements do not enhance trade.

Table 1. 1 Major Trading Partners of ECOWAS, 2014.

Exports		**Imports**	
Country	Value (billion USD)	Country	Value (billion USD)
India	16.74	China	33.37
Netherlands	9.73	United States	10.03
Brazil	9.67	France	7.38
Spain	8.58	India	6.7
France	7.06	Nigeria	5.94

Source: IMF, Direction of Trade Statistics

1.2 Problem Statement

Many African leaders have been preoccupied with the ideology of Africa's regional integration since independence. Many have viewed economic integration as a means of enhancing economic growth and sustainable development and improving the living standards of the African people (ECA, 2010). Gilson (2010) also emphasizes that regional integration may help create economies of scale and to strengthen supplies and competitiveness capacities by offering to companies the possibilities to access to the market of the neighbors. The successes chalked by other Free Trade Areas (FTAs) such as the European Union (EU) establishes the need for regional economic integration.

Comparatively, Africa has the most regional integration agreements with almost all Sub-Saharan African (SSA) countries belonging to at least two or more trade agreements. This is why Yang and Gustav (2005) describes African RTAs as increasing exponentially thereby creating a dense web of trade agreements within the continent. According to the ECA (2004), intra-SSA trade remains relatively low at an annual average of less than 20 percent regardless of efforts made by the African Union (AU) to avert this situation.

The ECOWAS has not been left out of this occurrence. Despite its (ECOWAS) establishment some five decades ago and the formulation of the ETLS, the expected gains from such arrangement are not encouraging. In 1993 for instance, intra-ECOWAS trade was about 9% of the region's total exports; a figure which slightly increased to about 11% in 2003. Around the same time in 2003, intra-Asian trade was reported to be about 50% of their trade with the rest of the world (ISS, 2013).

The weak intra-ECOWAS trade and the delay of member states to fully implement decisions in relation to the FTA makes us wonder about the potential gains or losses we may derive from such an initiative. Thus, will the effective implementation of the FTA promote intra-ECOWAS trade?

According to WTO (2013), regional trade integration offers both a response to the structural challenge of the narrowness of domestic markets and increase policy predictability.

1.3 Objectives of Study

The focus of this thesis is to ascertain the effects of the ECOWAS FTA on trade flows among member states given its effective implementation. Specifically, this study seeks will pursue the following objectives;

I. To determine which variables are responsible for intra-ECOWAS trade enhancement in ECOWAS.

II. To determine whether some West African countries have significant impacts on bilateral trade flows in ECOWAS.

1.4 Significance of the Study

Despite its countless efforts to increase trade among its sub-regional groupings, the low levels of trade remain a major headache to the African Union (AU). Both theoretical and empirical studies points similarities in endowments of African countries as one of the causes of low levels of trade aside inadequate value addition to primary products like as fuels and agricultural goods. This has led many to questioning the essence of RTAs especially when it comes to what benefits member countries are likely to derive from it. Researchers are therefore interested in finding out the potential and actual gains derived from joining such RTAs as well as the motives behind joining.

Lately, the classical trade theories are unable to provide vivid clarification for the patterns of trade among economies with similar technologies and/or endowments as we see an increasing volume of trade among developing and emerging economies. For instance, Africa now tends to trade more

with Asia (see table 1.1) than with Europe and the United States of America (USA). Contrary to that, the gravity model of trade is a useful and practical tool when it comes to the explanation of the changing trade patterns that we see of late.

Despite the successes chalked by the gravity model in explaining international trade flows among trading blocs in Europe, Asia, South and North America and Sub-Saharan Africa as a whole, not much have been done with regards to explaining the recent trade patterns observed in the ECOWAS FTA. This study would therefore contribute to applied international trade literature through modeling the impacts of the ECOWAS FTA on trade flows in the region using the gravity framework. Unlike some other studies, this research would conduct a sensitivity analysis by excluding some of the dominant ECOWAS countries in the analysis to measure their significance in determining bilateral trade flows in the region.

1.5 Organization of Study

This thesis is organized in six chapters. The first chapter looks at the background of the study; discusses the problem statement and highlights the objectives in addition to the significance of the study. Chapter two gives an overview of ECOWAS and brings to bear some key pieces of information on the macroeconomic performance of ECOWAS countries. The theoretical and empirical literature on the relationship between FTAs and trade is reviewed in chapter three. Chapter four analyzes the effects of the ECOWAS FTA using some trade indicators and the gravity model. Thus, the methodology and theoretical framework of the study. Data analysis and results discussion is done in chapter five. Recommendations based on findings are given in chapter six.

CHAPTER TWO

AN OVERVIEW ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS)

2.1 Introduction

In this chapter we present the history, macroeconomic overview and trade performance of the ECOWAS FTA. It is sub-divided into 6 sections. Section 2.2 discusses the formation of Regional Economic Communities (RECs) in Sub-Saharan Africa and the remaining sections, 2.3, 2.4 and 2.5 provides an overview of ECOWAS, outlines in details the performance of ECOWAS trade and the challenges facing ECOWAS respectively. The chapter summary is provided in subsection 2.6.

2.2 Formation of Regional Economic Communities (RECs) in SSA

According to Deme (1995), African leaders regarded regional integration after their independence as the pathway to Africa's structural transformation considering the failed attempts of the use of import-substitution. This made African countries accept regional integration as a major component of their development agenda basically to overcome the challenges posed their isolated small and fragmented economies. Several pan-African organizations have been working hard towards improving political cooperation and integration in Africa since the late 1950s. Established in 1958 by the Economic and Social Council of the United Nations, the Economic Commission for Africa was tasked with the responsibility of providing assistance through policy analysis and research for the institutions promoting the regional integration agenda. With regards to this, the ECA in the 1960s recommended that the African region be sub-grouped to serve the integration purposes. Around the same time, on May 25, 1963, the Heads of States and Government of 30 out of 32

independent African countries came together to establish the Organization of African Unity (OAU)[4] at the Conference of Independent African States (ECA, 2004).

The Lagos Plan of Action was adopted in 1980 by the OAU with the goal of promoting regional integration and attaining a self-sufficient continental economy. Regional integration agreements were either established under the Lagos Plan of Action or arrangements that existed before it (UNIDO, 2000). As part of the plans of the Lagos Plan of Action was the establishment of an African Economic Community in the near future, strengthening already existing regional economic communities and the creation new ones to cover the whole African continent.

ECOWAS was already in existence at the time. The Southern African region in the 1980s had also already established the Southern African Development Coordination Conference (SADC)[5], which was later replaced by the Southern African Development Community (SADC) in 1992. Similarly, the Common Market for Eastern and Southern Africa (COMESA) which was established in 1993 was initially a Preferential Trade Area (PTA) between Southern and Eastern African countries formed around 1981. In Central Africa as well, the Economic Community of Central African States (ECCAS) was established around mid-1983 by the leaders of the pre-existing Customs and Economic Union of Central Africa.

All the arrangements mentioned above were expected to work hand-in-hand with the provisions of the Lagos Plan of Action. In June 1991 at Abuja, the OAU Heads of State and Government signed a treaty to establish the African Economic Community which had the core responsibility to "promote economic, social and cultural development and integration of African economies in order

[4] In 2002, the name was changed to African Union because of the disbandment of the union by the then South African president, Thabo Mbeki.
[5] Visit https://southernafrican.news/2017/08/18/history-and-treaty-of-sadc/ for more information on the history and treaty of SADC.

to increase economic self-reliance and promote an endogenous and self-sustained development" (Sako, 2006). This is what is popularly known as the Abuja Treaty. The Intergovernmental Authority on Development (IGAD, formed in 1986), the Arab Maghreb Union (AMU, formed in 1989), the Community of Sahel-Saharan Sates (CEN-SAD, formed in 1998) and the East African Community (EAC, formed in 1999) are all recognized as RECs established after the Abuja treaty.

2.3 Overview of the Economic Community of West African States (ECOWAS)

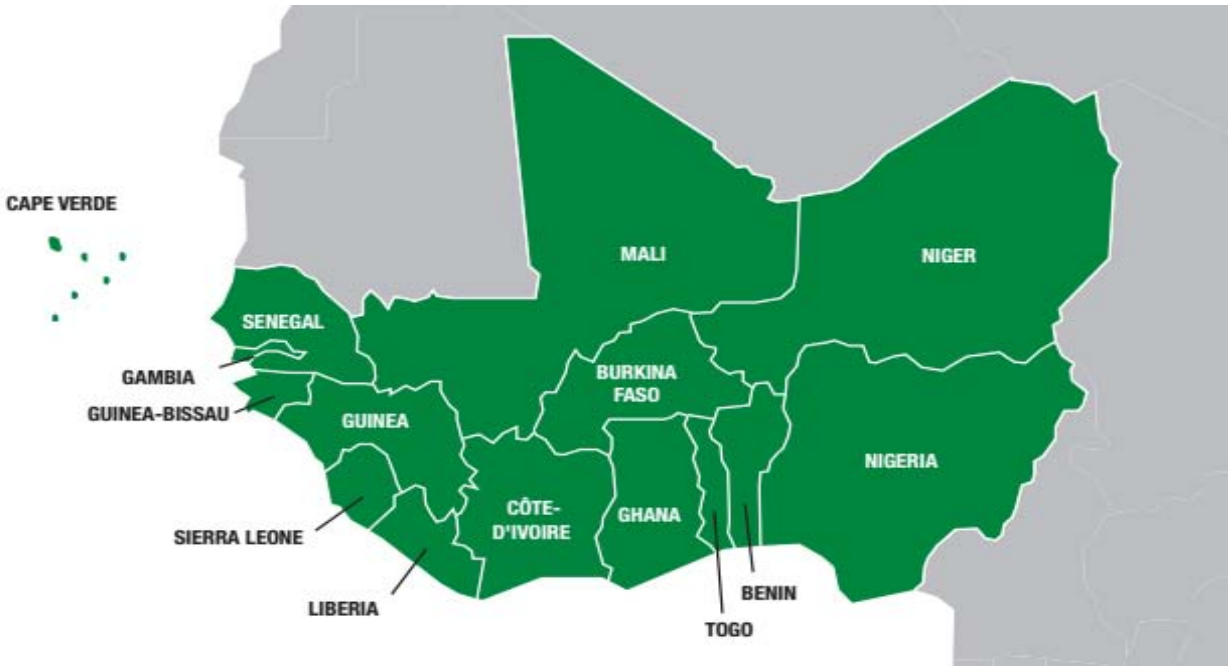
2.3.1 The Formation of ECOWAS

As advocated by the African Union, the Economic Community of West African States (ECOWAS) is the main regional body in West Africa tasked with the duty of regional integration. The member countries of ECOWAS are Benin, Burkina Faso, Cape Verde, Cote d' Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal and Togo. Even though English, French and Portuguese are the only official languages used by member countries, there exist over thousand local languages like Hausa, Ewe, Ga, Yoruba, etc. across the region. The linguistic, cultural and ecological differences among member countries presents simultaneously opportunities and challenges to the integration agenda. Map 1 presents the political map of the ECOWAS region.

According to Carrere (2004), the efforts at regional integration dates back to as far as 1945 when the CFA franc was established to bring all French speaking West African countries under a single currency union. Years on, in 1964, the then Liberian president, William Tubman proposed an economic union for West Africa which led to an agreement which was signed by Cote d'Ivoire, Guinea, Liberia and Sierra Leone in 1964. However, serious talks about a union for all West African states started in 1972. This idea was spearheaded by Gen. Yakubu Gowon and Gnassingbe

Eyadema, the then presidents of Nigeria and Togo respectively. Gen. Gowon was of the view that speeding up the pace of regional economic integration would promote uniform growth and development across West Africa. He believed that abolition of visas to facilitate intra-regional mobility, free movement of persons and goods is a step in the right directions towards establishing a regional trade area. These were heavily backed by Gnassingbe Eyadema. They toured the whole region convincing other heads of states to come aboard the integration agenda. The drafts they made during their tour was the basis for the Lagos treaty which birthed ECOWAS in 1975. Initially, the Lagos treaty was an economic initiative, but political events which followed in subsequent years led to its revision to expand its scope in 1993.[6]

Map1. 1 The Political Map of ECOWAS



Source: UNECA/ECOWAS

[6] Pieces of information on the general overview and history of ECOWAS were picked from http://www.ecowas.int/about-ecowas/history/

2.3.2 Macroeconomic Performance of ECOWAS Countries: Some Stylized Facts

We will focus on six key economic variables observed from 1990 to 2017 in discussing the macroeconomic performance of ECOWAS. These variables; Exports (EX), Imports (IM), real GDP per capita (PCY), inflation (INF), foreign direct investment (FDI) and population density (POD), are carefully selected to cover almost all macroeconomic aspects of the ECOWAS sub region. Real GDP per capita (PCY) is included in this economic outlook because it serves as a proxy for the level of economic development in a country. Inflation on the other hand is involved in the analysis as a measure of price stability among ECOWAS countries. Table 2.1 contains data for these variables sourced from the World Development Indicators (WDI). For easy and clear understanding, the average data for each variable for the entire 28-year period is used.

A careful examination of table 2.1 reveals that average per capita real income of ECOWAS member countries ranged from as low as $274.66 for Niger to as high as $2162.194 for Cape Verde Islands. Next to Cape Verde Islands, Nigeria, which used to have the highest per capita real income recorded $1,347.92 as average per capita real income over the period. We notice that aside Cape Verde Islands, Nigeria and Cote d'Ivoire, all other ECOWAS countries recorded a real per capita GDP less than $1000, which justifies the World Bank's classification of such countries as low-income countries.

The annual average amount of FDI (as a percentage of GDP) inflows observed over the study period ranged from as low as 1.1 percent of GDP for Burkina Faso and as high as 17.6 percent for Liberia. Aside Liberia, the average inflow of FDI (as a percentage of GDP) for all other West African countries ranged between 1.1 and 3.8 percent. The high levels of FDIs recorded in Liberia could partly be explained by efforts made towards infrastructural development in the country especially after the alarming series of civil wars it has been plagued by.

The average inflation observed from 1990 to 2017 ranged from as high as 20.1 percent for Ghana to as low as 2.6 percent for Senegal. Next to Ghana was Nigeria which recorded a mean inflation rate of 18.7% over the entire period. The high levels of inflation observed in Ghana, Nigeria and Guinea Bissau is reported to have eroded real incomes in these countries hence increasing cost of living and doing business.

Table 2. 1 Economic Growth Nexus in ECOWAS, Averages (1990 – 2017)

Country\Economic Variable	GDP per capita (current US$)	Foreign direct investment, net inflows (% of GDP)	Inflation, consumer prices (annual %)	Exports of goods and services (% of GDP)	Imports of goods and services (% of GDP)	Population density (people per sq. km of land area)
Benin	578.218	1.499	4.022	23.285	33.256	69.116
Burkina Faso	413.742	1.091	2.955	14.392	25.835	48.512
Cabo Verde	2162.194	5.524	3.360	30.483	62.074	112.706
Ghana	897.504	3.889	20.056	31.043	44.623	92.920
Guinea-Bissau	405.086	1.442	14.989	17.657	32.525	48.986
Guinea	520.530	2.702	7.531	26.347	39.872	38.559
Cote d'Ivoire	1016.476	1.555	3.675	42.042	35.110	56.565
Liberia	309.560	17.646	5.566	24.271	72.454	33.252
Mali	499.169	2.026	2.820	22.357	33.751	10.416
Niger	274.667	3.817	2.865	17.752	30.377	10.692
Nigeria	1347.915	2.069	18.687	22.396	15.150	150.618
Senegal	982.820	1.511	2.635	24.592	36.074	57.959
Sierra Leone	325.606	4.960	3.352	20.218	34.861	76.274
Gambia, The	604.752	3.810	6.019	26.282	36.873	140.959
Togo	433.848	2.879	4.086	34.587	47.867	102.427

Source: Authors compilation from the WDI

For imports and exports, we observe something quite striking and interesting. Cote d'Ivoire and Nigeria aside, all other West African countries had their import percentage of GDP greater than their export percentage of GDP. Total ECOWAS exports comprises mainly of extractive (natural) products like petroleum and gold and a few agricultural commodities like cocoa and cotton, thus

very little product diversity. Table 2.2 gives a breakdown of the structure of ECOWAS exports observed over a seven-year period (2006 – 2016). ECOWAS relies heavily on petroleum, its largest exports (61%) by far. Cocoa on the other hand is simultaneously the top agricultural (44%) and food product (59%) exported from the sub-region.

When the data is broken down, we realize very huge disparities among the ECOWAS countries (see figure 2.1). Nigeria alone accounts for more than 70% of exports out of ECOWAS basically due to its petroleum resource. Ghana and Cote d'Ivoire follow with 8% each due to their agricultural and food exports (UNCTAD, 2013).

Table 2. 2 Summary of ECOWAS Exports Statistics from 2006 to 2016.

Top exports	**Percentage of Total Exports**	**Top Agricultural Exports**	**Percentage of Total Agricultural Exports**	**Top Food Exports**	**Percentage of Total Food Exports**
Crude Petroleum	62%	Cocoa	46%	Cocoa	61%
Natural gas	6%	Natural rubber	10%	Fruits and nuts	11%
Cocoa	5%	cotton	10%	oilseeds	3%
Petroleum (70% oil)	5%	Fruits and Nuts	8%	Live animals	3%
Gold	2%	Oilseeds	2%	Vegetables	2%

Source: UNCTAD database, August 2017

Comparatively, ECOWAS imports are more diversified than its exports, but are however dominated by a few products as table 2.3 portrays. Crude oil, refined oil and cars comprise the top three imports into the region. For agricultural and food products, rice and wheat forms part of the topmost imports into ECOWAS. Just as the exports, there are huge disparities among countries when it comes to ECOWAS imports.

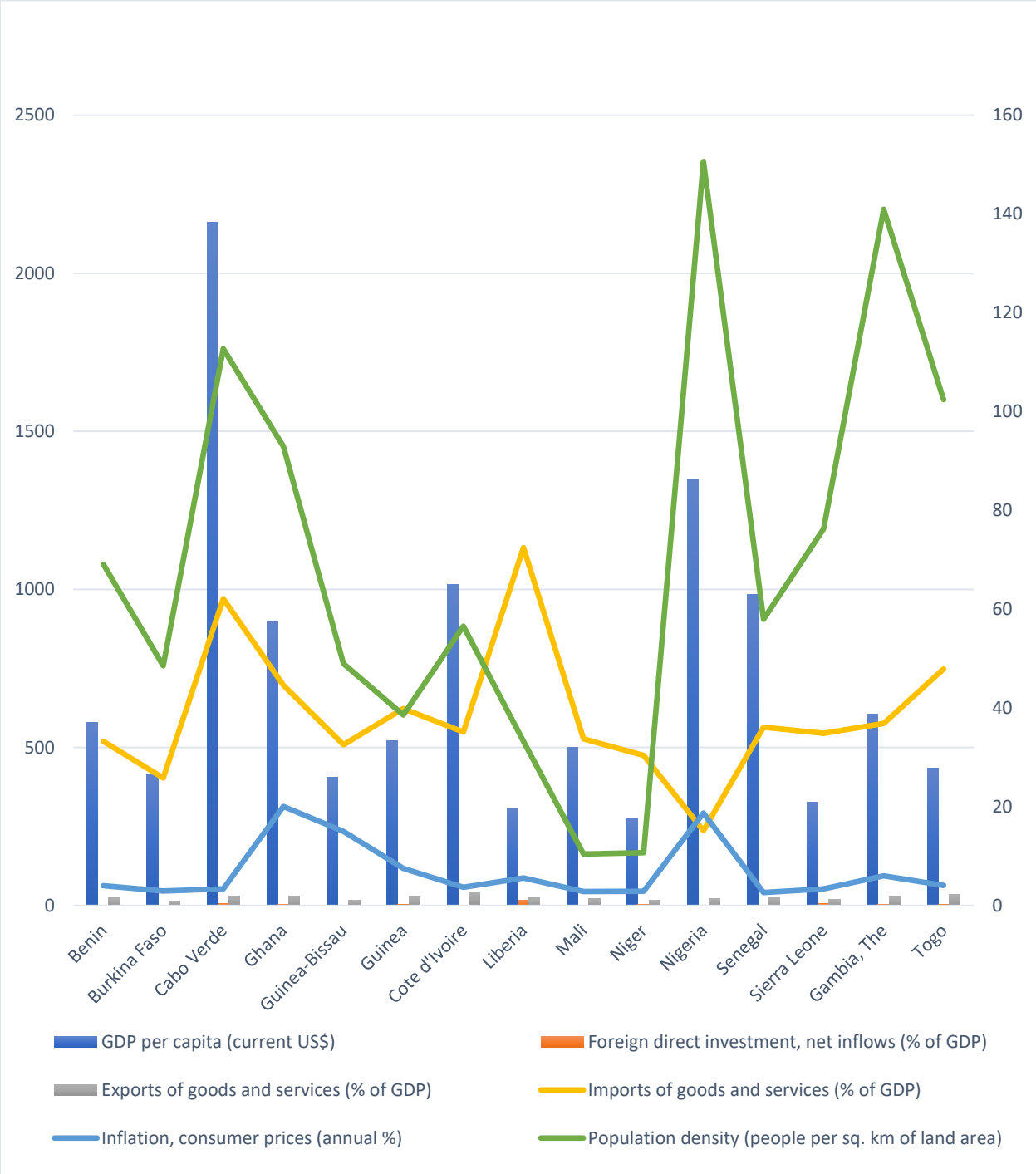
Table 2. 3 Summary of ECOWAS Imports Statistics from 2006 to 2016.

Top imports	Percentage of Total Imports	Top Agricultural Imports	Percentage of Total Agricultural Imports	Top Food Imports	Percentage of Total Food Exports
Petroleum (70% oil)	13%	Rice	18%	Rice	19%
Motor Vehicles	5%	Wheat	13%	Wheat	15%
Crude petroleum	3%	Edible Products	11%	Oilseeds and fruits	13%
Rice	2%	Fruits and Nuts	10%	Fish	10%
Ships	2%	Oilseeds	6%	Sugar	6%

Source: UNCTAD database, August 2017

Figure 2.1 presents a graphical view of the data on macroeconomic performance of ECOWAS countries during the 28-year period.

Figure 2. 1 Economic Growth Relationship in ECOWAS, 1990 - 2017



2.4 Performance and Trends of ECOWAS trade

According to the ECOWAS commission, one of the first objectives for the creation of ECOWAS remains the promotion of trade among member states (Olyiwola, 2012). ECOWAS has a great potential for trade both at global and intraregional levels. However, most documented reports on trade flows shows how woefully low ECOWAS trade is especially intra-regionally. As stipulated in key regional policy frameworks, enhancing intra-regional trade would promote economic transformation and development as it provides opportunities for economies of scale. The following sub-sections gives a breakdown of the regions trade trends and components.

2.4.1 The Intra-ECOWAS Trade Share

The intra-regional trade share compares trade among members of a FTA to their total trade. It is defined as the ratio of trade between the countries of a specific region to the total trade of these countries. Mathematically, it is calculated as follows:

Intra-regional Trade Share $= {}^{Ti}/_{Tw}$, *where;*

Ti is the sum exports from region i to region i and imports of region i from region i.

Tw is the total sum of exports of region i to the world and total imports of region i from the world.

A value of this ratio close to 1 implies that members of a FTA would face low trade costs trading among themselves compared to trading with non-member countries (Plummer et al., 2010). Given this, the implementation of the FTA would significantly increase intra-regional trade among member countries. On the other hand, a low (close to 0) ratio indicates that the formation of the FTA would have a minute effect on intra-regional trade as member countries are clearly "non-natural partners".

Table 2. 4 Intra-ECOWAS trade in percentage of total trades from 1955 - 2015

Intra-trade	$(Ti/Tw)_{1955}$	$(Ti/Tw)_{1965}$	$(Ti/Tw)_{1975}$	$(Ti/Tw)_{1995}$	$(Ti/Tw)_{2005}$	$(Ti/Tw)_{2015}$
ECOWAS	0.01	0.01	0.03	0.09	0.10	0.11

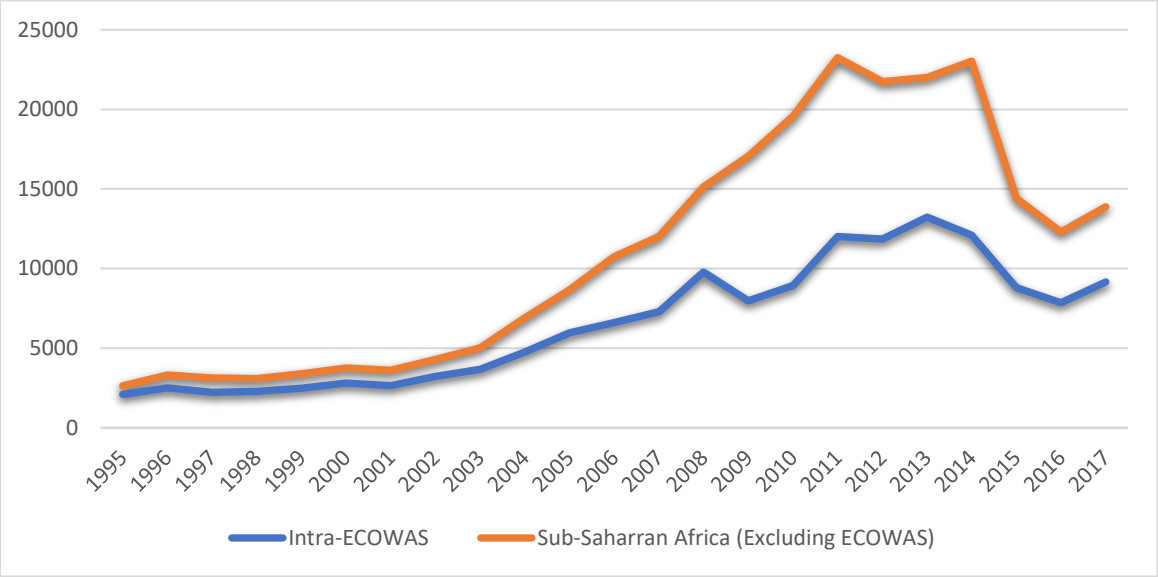
Source: Author's compilation based on UNCTADSTAT data

We notice from table 2.4 that intra-ECOWAS trade remained relatively stable but low (around 10 percent) over the past two decades. The average intra-ECOWAS now trade is about 12 percent of its total trade as compared to the approximately 3 percent around the 1975. The implication of such low intra-regional trade share for the ECOWAS FTA is that a trade liberalization scheme is likely to have a lesser impact on trade among member states according to Plummer et al (2010). As mentioned earlier, the low levels of intra-ECOWAS trade means that ECOWAS members are not "natural trading partners".

2.4.2 Intra-ECOWAS Trade Trends

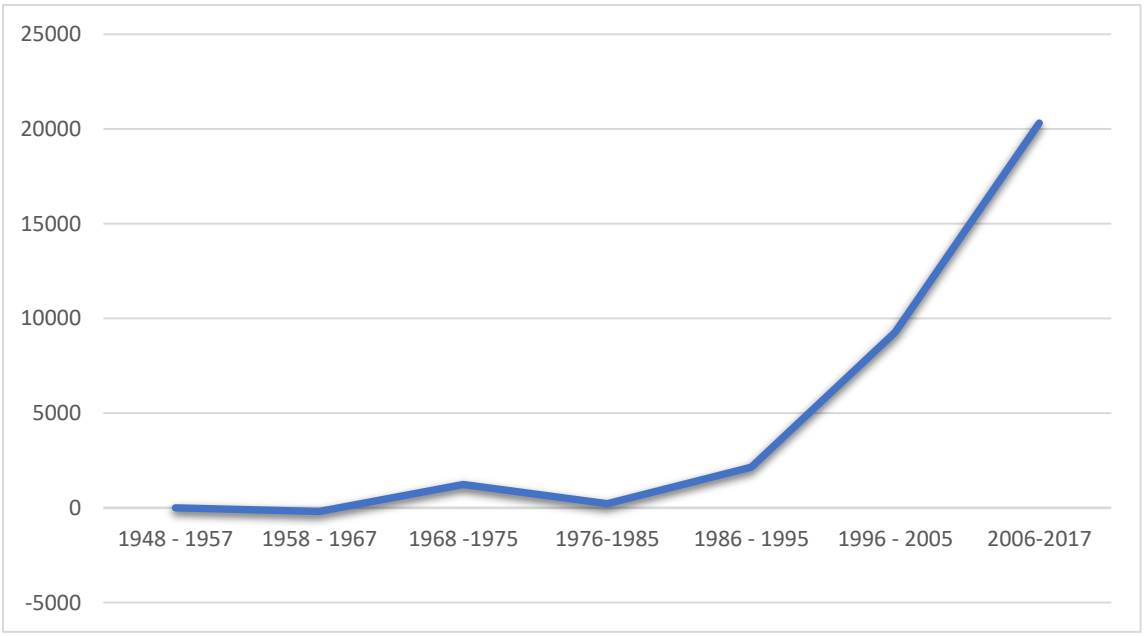
According to the ECA (2004), African intra-community trade has outperformed total intra-African trade. However, intra-ECOWAS trade as a percentage of its total trade is still very low, at an average of about 10 percent. 10 percent might seem very low, but data from International Monetary Fund's Direction of Trade Statistics (IMF-DOTS) shows that intra-ECOWAS trade was as low as about 3% in the 1970s. This is a clear indication that the formation of ECOWAS has helped improve trade in the sub-region. From figure 2.2 we see how low intra-ECOWAS trade is compared with its trade with the rest of Africa. We also see how intra-ECOWAS trade was before the establishment of the ECOWAS FTA and how that has improved over the past few decades in figure 2.3.

Figure 2. 2 Intra-SSA Trade Flows, 1995 – 2017.



Source: UNCTAD database, August 2017

Figure 2. 3 Intra-ECOWAS Net Exports, 1948 – 2017.



Source: UNCTAD database, August 2017

2.5 Challenges facing intra-ECOWAS trade

Since its establishment in 1975, ECOWAS has seen several achievements. That notwithstanding, it is still plagued with a few unresolved challenges. Here are some:

2.5.1 Lack of Implementation

The ECOWAS commission has developed a trade policy framework with the aim of promoting trade integration in the region. This trade policy framework known as the ECOWAS Trade Liberalization Scheme (ETLS) is the main operational tool the commission uses to promote the West African region as a FTA. Under the ETLS, agricultural commodities, artisanal handicrafts and industrial commodities originating from the member countries could freely circulate in the region without customs duties and any form of charges. The Common External Tariff (CET) was later launched in January 2015 as part of the requirements for transitioning to a custom union. However, ECOWAS members have made poor progress towards the actual implementation of these regional commitments. The ETLS and the CET are poorly respected in the region and this implies that despite the commitments of the commission to remove all barriers to free movement of persons, goods and services, there are still many barriers to trade.

Some reasons have been cited as the causes of the lack of implementation we realize in the region. One is the lack of capacity to implement some regional commitments. Some commitments require strong administrative structures for their successful implementation but not all member states of ECOWAS have such structures in place hence the delay in implementation. Also, there exist no monitoring mechanisms of trade policies in the region.

2.5.2 Multiple and Overlapping Memberships

Except Cape Verde Islands, all other members of ECOWAS are also members of other RECs. As desirable as it might seem to simultaneously be a member several RECs, there are a lot of issues

with such initiatives. Multiplicity of membership creates a complicated web of competing commitments and rules which comes at high cost to members in such situations. The complication of easily coordinating and harmonizing economic policies among member states which results from their overlapping memberships is what the ECA (2004) describes as; "tends to muddy the goals of integration which leads to a counterproductive competition among countries and institutions"

2.5.3 Official Trade Barriers

Import and export restrictions such as quotas and bans as well as tariffs are essential trade barriers. West African countries regularly impose such restrictions (de Roquefeuil, 2014).

Crops such as maize, wheat flour, rice, vegetable oil, beef and poultry have been heavily affected by import restrictions in ECOWAS. They can also be installed on the grounds of public health concerns (e.g. avian influenza), although regularly such restrictions are still in place long after the health threat has been solved, which suggests that protective interests may also be at play (World Bank 2015).

Export restrictions on the other hand are mostly placed on maize, millet and rice, all of which are cereals. Most West African governments place such bans in their quest for short-term food security especially in moments where food shortages are expected. This however only allows food to stay in the country in the shorty run. Such restrictions can actually affect investment decisions of value actors and thus have a long run negative effect. Another rationale for governments is to impose export restrictions on subsidized products (subsidies on inputs, machineries, etc.) to avoid leakage, as is the case currently for local rice in Senegal (World Bank, 2015).

2.4.4 Infrastructure and Transport

Intra-ECOWAS trade is heavily hampered by high transportation costs and bad road networks. This especially affects farmers and producers in the rural areas where such roads are highly prevalent. This highly affects their market access. As the urban population increases and consumption patterns increasingly shift towards more perishable and higher value products, the state of the connecting systems – roads, communication and market infrastructure and transport – becomes critical, especially since a growing share of the population is located close to the coastal areas which tend to be better connected to the ports than to the hinterland (FAO, 2015).

2.5.5 Civil Wars

Civil wars like those which took place in Nigeria in 1967, Sierra Leone in 1991 and the very recent one, Cote d'Ivoire in 2010, have had some traumatic consequences on the countries involved and the West African region as a whole. Several reasons ranging from economic, cultural through political have been cited as some of the causes of these wars. According to Nafziger (1972), the Nigerian civil war was caused by a several of interconnected events which began shortly after their independence in 1960. Memorable among these events is the military intervention in 1966 championed by young Igbo army men in which several high-profile politicians were murdered in cold blood.

West African civil wars have been characterized by varying longevities. The longest lasting civil war in the region is the Liberian civil war which lasted from 1989 to 2003. The latest civil war in West Africa, the Ivorian civil war in 2010, actually lasted for only a few months. The Sierra Leonean civil war lasted for six years whiles the Nigerian civil war lasted for three years. These civil wars have burdensome outcomes not only to countries involved but to the ECOWAS commission as a whole. Huge chunks of development funds are always diverted into peace keeping

programs during civil wars. According to Bamfo (2013), ECOWAS mobilized soldiers from Ghana, Togo, Benin, Niger and Senegal for about $1.8 million a month to help the 4,000 French troops to keep the peace in the Liberian civil war (ECA, 2004).

2.6 Chapter Summary

This chapter delved into the history of the formation of the ECOWAS FTA and other regional economic bodies in Africa. It was realized that several regional economic bodies in Africa came into being after the adoption of the Lagos Plan of Action. The chapter further went on reveal the importance of Nigeria as a key economic player in ECOWAS. Nigeria alone has an average GDP bigger than the GDPs of all other ECOWAS countries put together. Nigeria also happens to be the major exporter and importer among the ECOWAS countries. In conclusion, the chapter revealed that share of ECOWAS trade to its world trade is approximately 10 percent and identified multiple and overlapping memberships of ECOWAS countries as a major impediment to promoting intra-ECOWAS free trade.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter covers the theoretical and empirical literature review relevant to this study. The theoretical literature considers the various theories that have been propounded with regards to free trade areas (FTAs) and their relevance with regards to bilateral trade flows whiles the empirical review which is mostly based on the theory of trade creation and trade diversion exposed by Viner (1950) analyses empirical studies conducted by earlier researchers in relation to FTAs. This exercise is done to identify and fill gaps in earlier studies which sought to investigate the effects of RTAs on bilateral trade flows.

3.2 Theoretical Foundation

The Ricardian and Heckscher-Ohlin models are very popular traditional models of international trade. However, over the years, trade theorists like Kravis (1956), Tinbergen (1962) and Krugman (1991) have proven based of real-life economic observations that such traditional models do not form the basis for the formation of RTAs nor explain appropriately the trade patterns we observe. Rather, the 'New Trade Theory' of monopolistic competition and the gravity model explain to a large extent the basis for the formation of RTAs and the determinants of bilateral trade flows especially for developing countries respectively.

The international trade models developed under the new trade theories have emphasized that: increasing returns to scale; differentiation of products; technological innovation and oligopoly among others makes international trade beneficial even when trading partners are identical whereas the gravity model has been used in various studies like Musila (2005) to capture the effects

of some variables like land size and language used on bilateral trade flows. The Ricardian and Heckscher-Ohlin theories are extensively discussed in the next section. The discussion on new trade theory and the gravity model follows.

3.2.1 Ricardian Model

Named after the nineteenth century British economist David Ricardo, this model assumes that labour is the only production input. It is mostly referred to as the two-goods, one factor model. Basically, the Ricardian model postulates that technological differences across countries/regions forms the basis for international trade. Differences in technology here means that output from one unit of labour may vary from country to country. The Ricardian model further assumes that there are no distortions in the market and the production function exhibits a constant returns to scale. With all the above assumptions in place, the Ricardian model asserts that differences in technology creates room for comparative advantage which by extension determines the pattern of international trade.

Ricardo used a two-goods and two-country scenario to show that even if the absolute advantage in producing both goods rests with one country, both countries are still likely to benefit from trade should they both specialize based on their comparative advantage. We say a country has comparative advantage in producing good A if that country is relatively more efficient in producing good A compared to other countries. Specifically, country X is has comparative advantage in producing cocoa if the opportunity cost of producing more cocoa in terms of other goods is less in country X than in any other country. By this the model predicts that smaller countries are more likely to gain from free trade with bigger countries and also that a country would enjoy lower prices provided the productivity levels in partner countries increases (Markusen et al, 1995).

Despite the infrequent use of the Ricardian model, some studies like Davis (1995) augmented the Heckscher-Ohlin model with the Ricardian Model to analyze some trade patterns. Part of the reasons for the very little attention received by the Ricardian model in international trade analysis is due to the fact that it lacks a clear theoretical framework for such analysis. Another reason why the Ricardian model is barely used for empirical trade analysis is its mismatch between real world situations and extreme assumptions made (Costinot and Komunjer, 2008).

3.2.2 Heckscher-Ohlin Model

The Heckscher-Ohlin model, developed by two Swedish economists – Eli Heckscher and Bertil Ohlin, is the two-goods, two-factor model of international trade. The idea that international trade is fostered by factor endowment differences among countries remains at the heart of the Heckscher-Ohlin model (WTO, 2008). This traditional model is arguably the most influential international trade model as it has been widely used over the years to make predictions about patterns of trade and to analyze recent trade theories.

The basic Heckscher-Ohlin model assumes that there are two goods; two factors of production and two countries. It further assumes that tastes and technologies are identical across countries. However, factor endowments differ and are not mobile across countries but within industries. Also, the assumptions of constant returns to scale in production; inelastic supply of goods and perfectly competitive markets are made. The assumption of increasing returns to scale is not made here because it allows us to focus on relative factor abundance as a source of comparative advantage even though a country may be well endowed in both resources.

There are four main propositions which can be derived from the assumptions made above, they are:

- The Heckscher-Ohlin theorem which states that a country specializes in the production and exportation of the goods which utilizes intensely its abundant factor.
- The Stolper-Samuelson theorem which states that when the price of a good increases, the real return of the factor intensely used in its production increases whiles the real return of the other factor falls.
- The Rybczynski theorem which states that when the prices of commodities are held constant, we observe a more than proportionate increase in output of a commodity provided the factor used intensely in producing that commodity increases. This is accompanied by an absolute decline in output of the other commodity.
- The Factor-Price Equalization theorem which also states that given some conditions, we will observe that factor prices equalize completely through free trade in final goods.

Using a simple example to explain the above propositions, let us assume there are two countries; X and Y, where X is well endowed with labour and Y is relatively endowed with capital. We also assume that two goods are produced; cars (requires more capital) and cocoa (requires more labour). The above propositions can be simplified as follows. The Heckscher-Ohlin theorem tells us that country X exports cocoa and imports cars. The Stolper-Samuelson theorem tells us that a tariff on cocoa (more likely in Y, which imports cocoa) would increase real wages and reduce real return on capital. Immigration in country X would raise the output of cocoa more than proportionately and reduce output of cars according to the Rybczynski theorem. Finally, the Factor-Price Equalization theorem asserts that even in the absence of international mobility of labour and capital, only trade would under certain conditions equalize wages in countries X and Y.

The Heckscher-Ohlin theorem has been used extensively in explaining trade patterns observed among countries with varying endowments and it has proved very useful. However, its framework

has been flawed based on the argument that the assumptions of perfect competition and constant returns to scale are insufficient in explaining intra-industry trade (Feenstra, 2002). Also, only a few studies have been able to show empirically how intra-industry trade would increase under constant returns to scale even though studies such as Davis (1995) have theoretically shown how these increases come about.

Though the Heckscher-Ohlin model has been criticized as being inadequate, empirical researches like Gunning (2002) was based on its framework and the findings from that work was that regional trade agreements among low income countries would not beneficial. The basis for trade as per the Heckscher-Ohlin model is the differences in factor endowments among countries and by this Gunning (2002) asserts that we should expect low income countries to trade less among themselves due to their similar factor endowments.

Other works in the international trade literature such as Venables (2003) have made attempts at improving results from previous studies by augmenting the Heckscher-Ohlin (HO) model and including the work of Vanek (1968) to arrive at the Heckscher-Ohlin-Vanek (HOV) model. Unlike the HO model, the HOV model makes room for the assumption of product differentiation which implies that specialization is not a pre-requisite for trade liberalization. In his conclusion, Venables (2003) postulates that South-South agreements are more likely to divert trade in manufactures from relatively poor countries to richer countries and then suggests a North-South trade arrangement as better. The reason for this according Venables (2003) is that the small nature of the economies of SSA countries would not allow them to enjoy economies of scale and would rather make them decide to produce for bigger markets (North) which can absorb their products.

3.2.3 New Trade Theories

The old trade models (i.e. the Ricardian model and the Heckscher-Ohlin model) provided good explanations to trade patterns and trade gains until the first half of the twentieth century when economic researchers realized that comparative advantage seemed less relevant in the modern world of international trade. The world trade data and statistics now contains several empirical facts that appear to be inconsistent with the traditional theories. For instance, under the Heckscher-Ohlin model the assumptions of perfect competition; constant returns to scale and same technological levels in both countries are made but these assumptions appear to be invalid in today's context of world trade (WTO, 2008).

Consequently, most of the assumptions made under the Heckscher-Ohlin model have been relaxed by economists to give rise to what we now term as the "new trade theories" or the complementary trade theories which are based on imperfect competition; technological differences among nations and economies of scale. The new theories of trade have been broadly grouped into three. They are: (1) the Intra-industry trade models (2) the Neo – technological trade theories and (3) the Strategic trade policy models[7]. Emphasis would be laid on the intra-industry trade models for the purposes of this study.

3.2.3.1 The Intra-Industry Trade Models

Intra-industry trade refers to trade between identical nations which exports and imports goods/products which are similar but differentiated. Developed after the 1970s, the intra-industry trade models argue that product differentiation and internal economies of scale at the firm level are useful for explaining patterns of trade even when the trading partners are identical. The late

[7] The Strategic Trade Policy models, basically an extension of the intra-industry trade models, are developed in a partial equilibrium framework assuming monopolistic competition. The basis of such models lies in trade war between industrialized countries like Japan, United States and the member countries of the European Union.

1970s saw researchers like Krugman (1979), Dixit and Norman (1980), Lancaster (1980) and several others independently formalize the idea that imperfect competition and economies of scale can give rise to beneficial trade even in the absence of comparative advantage. Grubel and Llyod's (1975) work form the basis for further studies on intra-industry trade models as they found that international trade was maximum between capitally abundant identical countries. The results from the study proved that the countries imported and exported similar but differentiated goods.

The following is the main intra-industry model of trade and only this would be discussed due to its relevance to this study.

The Helpman-Krugman Model

The Helpman-Krugman (H-K) model is probably the best model which provides convincing arguments as to why countries which are similar in terms of endowments and/or technology could still gain from free trade - something the traditional models could not explain. The model assumes that there are two countries with similar factor endowments and productivity levels, the industries in these countries produce differentiated products under increasing returns to scale and consumers across countries have identical tastes and homothetic preferences.

Similar to the Heckscher-Ohlin (H-O) model, the H-K model also considers factor endowments as the basis for trade. However, the H-K model asserts that holding country sizes constant, factor endowment similarities could actually lead to gains from trade *ceteris paribus* as opposed to the H-O model which advocates for differences in endowments as being the basis for free trade. The assumption of increasing returns to scale (or "economies of scale") also implies that only a few firms operate in the market thereby creating room for monopolistic competition which consequently gives rise to trade. Specifically, under a monopolistically competitive market, industries which specialize in the production of some particular goods enjoy economies of scale

making them expand and gain dominance in the markets they belong. In addition, the assumption of differentiated goods implies that consumers are offered a wide variety of goods to choose from as observed in countries with relatively high per-capita incomes.

The proponents of the new trade theories such as Krugman (1991) argue that government intervention is very key in boosting productivity levels of domestic industries as well as the international competitiveness of their products. Their reason for this assertion is that some foreign industries could be enjoying economies of scale which means their output and exports to other countries would increase. Due to the economies of scale enjoyed by foreign industries their exports to the home country would be relatively cheaper than products from the domestic industries which could lead to some domestic industries folding up. What governments should do under such circumstances is to provide domestic industries with subsides and also increase tariffs on imported goods as such practices are believed to give domestic products a competitive edge internationally.

3.2.4 The Gravity Model

In reference to the Newtonian theory of gravitation, Tinbergen (1962) and Pöyhönen (1963) independently developed the gravity model of international trade. In the simple gravity model, the quantum of trade between countries is a positive function of their economic sizes (GDPs) and a negative function of their distance apart. The gravity model has become a very popular and standard tool used by most trade researchers due to its predictive ability concerning trade direction and movement factors of production.

The unique stability of the gravity model and its ability to explain bilateral trade flows prompted the search for a theoretical underpinning for it. Anderson (1979) was the first to try and find some theoretical basis for the gravity model. He did so by defining a model in which goods are

differentiated by country of origin (the Armington assumption) and consumers have well defined preferences over the differentiated products. By this, consumers would at least consume some of every good from each country. All goods are traded, all countries trade and, in equilibrium, national income is the sum of home and foreign demand for the unique good that each country produces. For this reason, larger countries import and export more.

Studies after Anderson (1979) have shown that the gravity model is not merely an econometric tool as has been its earlier criticism. The gravity model can arise out of a range of trade theories. For instance, Bergstrand (1985 and 1989) shows that the gravity model is directly implied by the trade model based on monopolistic competition developed by Krugman (1980). In this model, identical countries trade differentiated goods because consumers have a preference for variety. Monopolistic competition models are able to overcome the undesirable feature of the Armington models which assumes that goods are differentiated by location of production. Deardoff (1998) predicts that the gravity model can be coined out of the traditional factor-proportions model. Helpman et al. (2008) as well generated a gravity model from the theoretical model of international trade in differentiated goods with firm heterogeneity.

The gravity model is expressed mathematically as follows:

$$X_{ijt} = \beta * \left(\frac{Yit.Yjt}{Dij}\right), i \neq j, D \neq 0 \ldots\ldots \quad (3.1)$$

Where X_{ijt} represents bilateral trade flows between countries i and j respectively at time t, Y_{it} and Y_{jt} represents economic sizes of countries i and j respectively at time t and D_{ij} represents distance between countries i and j. β is a constant of proportionality. Applying logarithms to equation 3.1, we get:

$$In\ X_{ijt} = \beta_0 + \beta_1 Y_{it} + \beta_2 Y_{jt} + \beta_3 D_{ij} + \mu_{ij} \ldots\ldots \quad (3.2)$$

Intuitively, we expect β*1* and β*2* to have positive values and β*3* to have a negative value. We read the estimates of the coefficients as percentages because they are elasticities. The variables in equations 3.1 and 3.2 are fundamental and basic to the gravity equation but not sufficient to explain bilateral trade flows. According to Anderson and Van Wincoop (2003), the traditional gravity model does not account for the effect of changes in relative prices on trade flows and by this the gravity equation suffers from omitted variable bias. In view of this, the gravity equation needs to be augmented to include other variables in other to get robust parameter estimates. After Tinbergen (1962), the gravity model has been widely used and improved in empirical researches of international trade. Recent theoretical and empirical trade researches such as Yang and Gupta (2005), Musila (2005), Coulibaly (2009), Turkson (2012) and many others have included other bilateral trade determinants like population size, language spoken, currency used and the likes in the gravity equation to arrive at more meaningful results.

The introduction of trade agreement dummy variables as an estimate for the effects RTAs on bilateral trade flows is also another alteration that has been made to the traditional gravity equation. Aitken (1973) made the maiden introduction of a trade agreement dummy variable into a gravity equation in his work which sought to measure the trade creation and/or trade diversion effects of the European Community. However, he treated the trade agreement dummy variables as exogenous which implies that countries just choose to be part of some trade agreement without any specific reason. This, according to Trefler (1993), and Baier and Bergstrand (2005) is wrong. In their works, Trefler (1993) and Baier and Bergstrand (2005) postulates that the trade agreement dummy variables should be treated as endogenous since countries select into some trade agreements for some reasons. Even though such reasons might be unobservable the choice of

countries to enter into a trade agreement could be determined by factors such as geographical proximity, intra-industry and inter-industry determinants. Following studies such as Musila (2005), Baier and Bergstrand (2007) and Turkson (2012) which treated the trade agreement dummy as endogenous, this study would also treat the RTA dummy as endogenous.

3.3 Empirical Review

According to Viner (1950), empirical studies on the effects of RTAs on bilateral trade flows is based on the theory of trade creation and trade diversion. Usually the aim of such studies is to find out which of the two effects (trade creation or trade diversion) dominates the other and hence conclude on its impact on bilateral trade flows. In his conclusion, Viner (1950) entrenched that a trade agreement would only improve the welfare of member countries provided the benefits derived from trade creation outweighs the losses from trade diversion.

Within the trade literature, three main factors that have been found to be responsible for substantial trade creation and welfare gains include geographical proximity, intra-industry and inter industry trade determinants (Turkson, 2012). According to Wonnacott and Lutz (1989) and Krugman (1991), the chances of trade creation are higher provided the trade agreement is between countries which are geographically close, thus “natural trading partners”. This is believed to reduce transportation costs and some other obstructions to free trade. Also, there is substantial trade creation when the two countries, large and similar in economic sizes, are enjoying economies of scale and produce differentiated products. However, in instances where there are massive differences in factor endowments among countries, comparative advantage makes room for substantial gains from trade creation.

On the other hand, trade diversion is considered as a negative consequence of a trade agreement for both member and non-member countries. Thus, for those who are skeptical about trade agreements, a trade agreement is harmful to both countries (both member and non-member countries) provided the trade diversion effects outweighs the trade creation effects. Hine (1994) argues that for developing countries in a FTA, the chances that the trade diversion effects of a trade agreement would outweigh the trade creation effects are higher since developing countries tend to have inefficient production methods.

Several studies have been conducted after Viner (1950) using the gravity model to ascertain the effects of RTAs on trade in Sub-Saharan Africa (SSA). The gravity model is an empirical framework used in international trade researches to predict and model bilateral trade flows based on countries' economic sizes and the geographical distances between them. Lately, the gravity model has been modified by different researchers to include several other parameters like common currency, exchange rates, language spoken and so on. Such modifications are believed to explain to a larger extent the determinants of bilateral trade flows. The results however from the previous researches have shown inconclusive results. While some empirical works found RTAs to have a positive impact on intra-SSA trade, others argue that such trade agreements are actually meaningless for intra-African trade. Studies on the ECOWAS FTA will not be left out of this trend.

Foroutan and Pritchett (1993) were the first to use the gravity model to do an extensive study on the intra-SSA trade potential. Their study sought to find a good answer to the simple question – *"is the observed small proportion of intra-SSA trade less than one would expect?"* Foroutan and Pritchett (1993) found that as a result of the low levels of GDP among SSA countries, intra-SSA trade potential is highly limited and hence member countries trade less among themselves.

After Foroutan and Pritchett (1993), several other studies have been conducted on the post effects of FTAs on SSA trade which have all produced varied and inconclusive results. Studies such as Johnson (1995), Lyakurwa et al (1997), Gunning (2001), Yang and Gupta (2005) and Chacha (2008) found that as a result of high external trade barriers; lack of complementarity of products; less product differentiation; small sizes of fragmented markets and lack of strong political will among others, RTAs in SSA have not been trade enhancing. Conversely, Deme (1995), Elbadawi (1997), Cernat (2001), Carrere (2004), EAC (2008), Afersorgbor and Bergeijk (2011) found that SSA RTAs have increased bilateral trade flows among member countries. Cernat (2001) for instance conducted a study on COMESA, ECOWAS and SADC for the years of 1994, 1996 and 1998 and found that bilateral trade flows among ECOWAS and SADC members increased following some trade liberalization schemes put in place.

Methodologically, many researchers have used different approaches to ascertain the impacts of RTAs on bilateral trade flows and this to a large extent have informed that various results we see in the literature. Using a panel data involving five trade agreements in SSA from 1962 to 1996, Carrère (2004) used the Hausman-Taylor approach in estimating the gravity model and concluded that there was some evidence of trade creation in all five RTAs even though it might be low. Musila (2005) also used the gravity model to predict the extent of trade creation or trade diversion among 20 African countries observed between 1991 and 1998 and concluded that the intensity of trade creation was highest for ECOWAS, followed by COMESA and then ECCAS. Other studies such as that of Coulibaly (2009) used a gravity model in a Hausman-Taylor specification to analyze the ex-post effects of 22 RTAs (including SSA RTAs) over the period of 1962 to 2006 and concluded that RTAs have a positive impact on the exports of member countries.

Quite a good number of studies have been done on the trade impacts of RTAs involving West African countries. However, just a few have been done particularly for the ECOWAS FTA and all seem to have somewhat varied results. Using a pair-wise country trade flows from 1980 to 2000, Zannou (2009) sought analyze the determinants of intra-ECOWAS trade flows. He found that geographical and linguistic proximity, stability of exchange rates and economic openness increased bilateral trade flows whiles remoteness did impede it. In another study, Afersorgbor and Bergeijk (2011) found using the gravity model that bilateral trade within ECOWAS and SADC had improved.

In a quite different approach, Ackah et. al. (2013) sought to measure trade costs for ECOWAS over the period 1980 - 2003 using the unconditional general equilibrium model consistent with the Ricardian model to analyze their impact on trade flows. They found that over the study period, the cost of trading within SSA was the highest compared to the cost involving any other trading blocs out of SSA. Ackah et. al. (2013) also found that ECOWAS members traded at a lower cost among themselves than with trading counterparts out of ECOWAS – something they attributed to the positive impacts of the regional integration efforts in ECOWAS.

Going through the literature we notice that there is no extensive study specifically on the intra-ECOWAS trade liberalization scheme. The community is mostly considered in general studies of RTAs in SSA but such studies do no in-depth analysis of the ECOWAS FTA. Such general studies do not take into account some community specific characteristics like how the delay of some ECOWAS countries to fully comply with the necessary requirements for the successful implementation of the FTA can affect bilateral trade flows among others. Most of such studies assume effective trade liberalization but as per WTO (2013) the proposed reforms to fully liberalize in the sub-region are still awaited.

This work would make two main contributions to the international trade literature. First, it would assess the ex-post effects of the implementation of the ECOWAS FTA on bilateral trade flows in the sub-region. Specifically, it would establish what the determinants of intra-ECOWAS bilateral are. Secondly, it would exempt some dominant ECOWAS countries from the estimation to measure their significance for intra-ECOWAS trade. This approach would help policy makers to make decisions which would make the ECOWAS FTA more beneficial.

3.4 Chapter Summary

This chapter reviewed literature on the approaches and models used by various researchers in their analysis of the impacts of FTAs on bilateral trade flows. The theoretical aspect of the review revealed that the Heckscher-Ohlin model is preferred over the Ricardian model in analyzing trade patterns because the Ricardian model lacks a clearly defined theoretical framework which limits its use for empirical analysis. The chapter further revealed that the new theory of trade has become widely accepted due it the realistic assumptions it makes in its attempts to explain how RTAs affect bilateral trade flows. Empirically, the literature revealed that most researchers use the gravity model of trade to analyze bilateral trade flows among countries.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter discusses the estimation technique to be used in this study. Particularly, it explains the method of estimation and provides information on data sources and how data would be manipulated to derive informative results. This chapter also provides pieces of information on control variables and their *a priori* expectations.

4.2 Estimation Technique

This study uses the gravity framework due to its flexibility and usefulness when it comes to analyzing the effects of RTAs on bilateral trade flows. The ex post approach used here, through a gravity model, is to estimate post trade liberalization situation and then to deduce from this estimate the impact of a FTA (Frankel, 1997; Choi and Scott, 2001; Greenaway and Milner, 2002; De Rosa and Gilbert, 2005). The gravity model has been used in many other empirical studies such as Afesorgbor and Bergeijk (2011), Baier and Bergstrand (2009), Carrere (2004) and Turkson (2012) and it has provided very insightful results for policy decisions.

This study uses a panel data set because unlike time series which observes one entity over a period of time and cross sectional data which observes different entities in one time period, a panel data is a combination of both time series data and cross sectional data in the sense that it has N different entities observed at T different time durations. Panel data provides more information on explanatory variables and as such reduces the level of collinearity between them (Baltagi, 2005). Panel datasets have two subscripts, i and t, on each variable such that i represents entity and t represents time. Generally, the basic techniques which researchers consider when dealing with

panel datasets are the Ordinary Least Squares (OLS) technique, the Random Effect (RE) and Fixed Effects (FE) models. The decision to use any of the three models or any other advanced model for a panel data estimation depends on the assumptions to be satisfied by the employed data.

4.2.1 Pooled Ordinary Least Square Estimator

The technique of using the OLS estimator in a panel data estimation involves racking all-time series and cross-sectional observations into one longitudinal dataset. This implies that the pooled OLS stacks any given data involving both time series and cross-sectional units into a long regression with N*T observations before the Ordinary Least Square estimation is done. The problem however with using the pooled OLS in a panel regression is that more often than not, the unobserved individual-specific effects is combined with the observed error term which forms a joint error term. This joint error term sometimes loses its randomness and, in such instances, there is a possibility of having both the unobserved individual-specific effects and the observed error term correlate with the explanatory variables resulting in biased and inconsistent parameter estimates. This issue of heterogeneity is what usually causes the adoption of other panel data-oriented models like the RE and FE models ahead of the pooled OLS estimator.

The results from the Breausch-Pagan test presented in table 4.1 indicates the non-rejection of the alternate hypothesis in all regressions that the random effect regression is appropriate. This makes the RE model an alternative for consideration.

Table 4. 1 Breausch-Pagan Test Results

Ho: Pooled Regression is appropriate	*Ha: Random Effects is appropriate*		
ECOWAS		var	sd = squrt (Var)
	InXijt	2.823587	1.680353
	e	0.1037105	0.3220411
	u	0.3400116	0.5831052
	Test: Var (u) = 0 chibar2(01) = 23070.76 Prob > chibar2 = 0.0000		
ECOWAS(Without Ghana, Nigeria and Cote D'Ivoire)		var	sd = squrt (Var)
	InXijt	1.103177	1.050322
	e	0.1377368	0.3711291
	u	0.1522682	0.3902155
	Test: Var (u) = 0 chibar2(01) = 6365.25 Prob > chibar2 = 0.0000		

Source: Author's own computation

4.2.2 Random Effects and Fixed Effects

The Breausch-Pagan test is enough but not sufficient to determine whether the RE or the FE model is the most appropriate for the research. This is basically because in the individual-specific effects (if any) present in the panel data could either be correlated with the explanatory variables or not and as such, a test must be conducted to arrive at the most appropriate model.

$$y_{it} = \alpha + x'_{it}\beta + v_i + \varepsilon_{it} \quad \text{.....4.1}$$

Equation 4.1 is a general panel data regression model having both the observed error term (ε_{it}) and the individual specific effect (v_i). The use of the Random Effects model in a panel data estimation implies that the individual-specific effects are assumed to have no correlation with the explanatory variables. However, in an instance where the unobserved error term is found to be correlated with the explanatory variables, the Fixed Effects model is chosen by the Hausman test. This means that

the Fixed Effects model assumes that υ_i, the individual specific effect, does not vary over time but varies between entities and also correlated with $\varkappa'_{it}$.

The results from the Hausman test presented in table 4.2 shows that Prob>Chi^2 is less than 0.05 for one regression but greater than 0.05 in the other. For test results with Prob>Chi^2 less than zero, the random effects model is rejected over the fixed effects model. However, the FE model does not include all time-invariant variables regardless of their importance to this research and this happens to be a major disadvantage of the FE model.

For this particular study, most of the explanatory variables needed in explaining the effects of the ECOWAS FTA on bilateral trade flows were eliminated by the FE estimation technique.

Table 4. 2 Hausman Test Results

ECOWAS	chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 24.47 Prob>chi2 = 0.0001
ECOWAS (without Ghana, Nigeria and Cote D'Ivoire)	chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 4.56 Prob>chi2 = 0.3353

Source: Author's own computation

This study would therefore employ the Hausman-Taylor estimator for the regression analysis because despite the fact that the Hausman test rejects the RE model in favour of the FE model, most of the regressors are does not vary with time and the FE model drops all such regressors.

4.2.3 Hausman-Taylor Estimator

The Hausman-Taylor estimation technique is a much desirable approach because of its ability to eliminate the possible correlation between the explanatory variables and the error term. Consequently, obtained estimates of all effects of regional trading blocs turn out to be both efficient and consistent. Egger (2004) explains that a panel data model which accommodates both bilateral and time specific effects would be able to generate consistent and unbiased parameter estimates.

Thus, 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).

This study would therefore use the Hausman-Taylor estimation technique to estimate the trade effects of the ECOWAS FTA on bilateral trade flows in the West African region. It will similarly use the Hausman-Taylor estimation approach when conducting the sensitivity analysis. Thus, this study would estimate both the Fixed Effects and a Random Effects model in addition to the Hausman-Taylor model.

4.3 Model for Empirical Estimations

This study would employ a panel dataset of bilateral trade flows in estimating the gravity model. This is because of the ability of panel datasets to control for unobserved individual heterogeneity. Individual heterogeneity here means that there are some country specific characteristics or observations which are either very difficult to measure or almost impossible to. Following the work of Bergstrand (1985), this study would use the Hausman –Taylor estimation approach in order to capture the individual specific characteristics which would be correlated with the explanatory variables in the model. The log-linear gravity model of this study is written as follows;

$$InX_{ijt} = \beta_0 + \beta_1 InY_{it} + \beta_2 InY_{jt} + \beta_3 InD_{ij} + \beta_4 InN_{it} + \beta_5 InN_{jt} + B_6 Area_i + B_7 Area_j + B_8 Adj_{ij} +$$

$$\beta_9 InComcur_{ijt} + \beta_{10} Col_{ij} + \beta_{11} Landlock_{ij} + \beta_{12} Comlang_{ij} + \mu_{ijt} \ldots\ldots\ldots\ldots\ldots\ldots \quad (4.1)$$

Dependent Variable

X_{ijt} = Exports from country *i* to country *j* at time t

Control Variables

Y_{it}, Y_{jt} = GDPs of countries *i* and *j* at time *t* respectively.

D_{ij} = Physical distance between countries *i* and *j*.

N_{it}, N_{jt} = Population sizes of countries *i* and *j* respectively at time *t*.

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

Adj_{ij} = dummy variable which takes the value 1 if countries *i* and *j* share a common boarder and 0 otherwise.

$Comcur_{ijt}$ = dummy variable which takes the value 1 if country *i* and *j* use a common currency at time *t* and 0 otherwise.

Col_{ij} = dummy variable which takes the value 1 if countries *i* and *j* have colonial links and 0 otherwise.

$Landlock_{ij}$ = dummy variable which takes the value 1 if a country is landlocked and 0 otherwise.

$Comlang_{ij}$ = dummy variable which takes the value 1 if country *i* share a common official language and 0 otherwise.

μ_{ijt} = Error term.

4.3.1 Explanatory variables and their expected signs

Gross Domestic Product (GDP): GDP is used as a proxy for a country's economic size. Thus, it represents the magnitude of demand and supply of goods and factors of a country. Countries with relatively large economic sizes are expected to demand more imports than countries with small economies. This also implies that comparatively, large countries are expected to export more goods than their smaller counterparts. Consequently, it can be argued that countries with similar economic characteristics are expected to trade more. 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). It has been theoretically and empirically tested that bilateral trade flows between two countries is positively related to the product of their GDPs.

Distance: Distance has been used as a representation for transportation costs in many international trade researches. Despite the opposition that distance cannot be used to measure changes in transportation cost over time, the fact still remains that longer distances are always associated with higher transportation costs especially when the transport infrastructure is in poor condition. Distance makes exports more expensive (Markusen and Maskus, 2002). For research purposes, distance between two trading partners is taken as the physical distance between their major centers of economic activity and not merely the distance between their capital towns even though most countries have their capital towns simultaneously being their major economic centers. Egger and Pfaffermayr (2004) found that distance is very important in determining the direction and source of imports. Also, studies like Carrere and Guillamont (2005) confirms that there is an inverse relationship between bilateral trade flows and distance. Considering these and other findings, this study also expects to get a negative coefficient for 'distance' after estimating the model.

Population: The population variable in the gravity equation considers the differences in factor endowments and also the changes in demand for goods when income levels change (the Engel effect) which are based on the exporter and the importer per capita incomes respectively. Particularly, the importer and exporter populations are very necessary in determining how self-sufficient or dependent these populations are based on the available resources in their respective countries. This means that the coefficients of the population variables could either be positive or negative. According to Bergstrand (1989), a positive coefficient of exporter population means that the country is capital abundant whereas a negative sign implies that the country is labour abundant. In addition, for an importer population, a positive coefficient of the population variable means a high demand for luxury goods whiles and negative coefficient implies a high demand for necessities.

Area: Measured in square kilometers, the area variable is used as a proxy for physical land size. This variable is used as a measure of arable land size within a country and also used to determine the level of economic activity therein. This variable has not been involved in so many works in the past probably because of its lack of significant impact on bilateral exports as predicted by Turkson (2012). By this, the expected sign for the area variable is negative.

Adjacency: A pair of countries are said to be adjacent if they share a common border. Sharing common borders is believed to be able to influence bilateral trade flows and must therefore be included in the gravity model to assess its impacts. Endoh (1999) realized that aside belonging to the same RTA, member countries which shared the same borders traded more among themselves. Quite recently, studies such as Carrère (2004), Caporalé (2004), Coulibaly (2009) and Turkson (2012) have confirmed the findings Endoh (1999) and by this the expected sign for the estimated coefficient of adjacency would be positive.

Common Currency: Trade is easily facilitated when country pairs use the same currency. According to Rose (2000), sharing a common currency leads to countries trading more among themselves because the cost of having to change one currency to another is almost non-existent. Costa-i-Font (2010) also found common currency very relevant in determining the direction and flow of bilateral trade. Other works such as Carrere (2004), Afesorgbor and Bergeijk (2011) also realized that currency unions had a trade enhancing impact on currency unions.

Colonial Links: Countries with any sort colonial links are generally expected to trade more among themselves because of the cultural and taste similarities they share. A study by Turkson (2013) revealed that English speaking West African countries traded easily among themselves and at a lower cost than trading with their Francophone counterparts. Also, Afesorgbor and Bergeijk (2011) found the colonial link dummy variable to exert a significant positive impact on bilateral trade

flows. Others studies have however come forth with opposing results. A study such as Head et al (2010) proposes that countries which share a similar colonial master or belonged to the same colonial empire tend to trade less among themselves over time. This makes the expected sign for colonial links either positive or negative.

Landlocked: A country is said to be landlocked if it is surrounded by other countries in such a way that it does not have access to the coastline. The dummy variable 'landlock' seeks to find out whether a country's access to the coastline affects trade or not. A country's location on the globe to a large extent determines its economic activities including trade. A landlocked country for instance would have to transit goods to or from another country for onward export or import respectively and this comes with greater trade costs. Studies such as Carrère (2004) and Turkson (2012) which involved the landlocked dummy in their gravity specification found it to negatively affect bilateral trade flows. Following the previous studies, this study also expects to have a negative coefficient for the landlocked variable.

Common Official Language: One of the major barriers to international trade is the differences in official language used among trading partners. Communication is very key in enhancing trade especially when information must be shared among trading partners. Consequently, the impact of language on bilateral trade flows is very significant and high. The absence of a common official language in any business transaction warrants the need for a translator which would come at a cost. Studies such as Endoh (1999), Cheng and Wall (2005) and Vicard (2011) confirms that countries which share common official language trade more among themselves. Following from previous studies, this study also expects a positive coefficient for the common language dummy variable.

4.4 Data Sources

This study would use a panel data set of fifteen countries from three main sources. Bilateral trade data and statistics from 1995 to 2015 is sourced from the UN COMTRADE database. Data on countries' GDPs and population sizes are also obtained from World Bank's World Development Indicators (WDI). Data on land size, language used and other dummy variables are all taken from Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) database.

Table 4. 3 Sources of data and expected signs for independent variables.

Variable	Expected Sign	Data Source
GDP	Positive (+)	WDI
Distance	Negative (-)	CEPII
Population	Positive (+) / Negative (-)	WDI
Area	Negative (-)	CEPII
Adjacency	Positive (+)	CEPII
Common Currency	Positive (+)	CEPII
Colonial Links	Positive (+) / Negative (-)	CEPII
Landlocked	Negative (-)	CEPII

Source: Authors own compilation

4.5 Chapter Summary

Following the work of Baier and Bergstrand (2007), the 'augmented' gravity model based on the Hausman-Taylor specification would be employed to measure the ex-post effects of the ECOWAS FTA on bilateral trade flows.

CHAPTER FIVE

PRESENTATION AND DISCUSSION OF RESULTS

5.1 Introduction

This focus of this chapter is to estimate variables within the model to generate results for further interpretation and analysis based on theory. This chapter is subdivided into five sections. Sections 5.2 and 5.3 presents a descriptive analysis of some key indicators for the ECOWAS countries and discusses the estimations respectively. Section 5.4 presents the obtained results and section 5.5 summarizes the entire chapter.

5.2 Descriptive Analysis

The descriptive analysis covers fifteen (15) countries spanning the period of 1995 to 2015. The key statistics reviewed here are the averages and standard deviations of GDPs and exports for the ECOWAS countries.

From table 5.1, Nigeria recorded the highest mean exports of about US$ 50.9 billion over the study period and this can be attributed to their crude oil exports. Followed closely by Nigeria are Côte d'Ivoire, Ghana and Senegal with an average export of about US$ 7.9, US$ 5.3 and US$ 1.6 respectively. The major components of the export basket of Côte d'Ivoire and Ghana are cocoa, cocoa seeds and timber and that of Senegal is oil. Recording an average export of about US$ 0.03 billion, Cabo Verde islands remained the least exporter from the sub region and this could be associated with their remoteness and high trade costs involved in exports.

The foregoing statistics did not change much when the GDPs of the ECOWAS countries were analyzed. Nigeria, the economic hub of the ECOWAS region, recorded an average GDP of about US$ 194 billion. Followed by Nigeria is Ghana with an average GDP of about US$ 20 billion and

then Côte d'Ivoire recording an average GDP of US$ 19.37 billion. From table 5.1, we notice that Nigeria's average GDP alone is greater than the total average GDP (US$ 84.46 billion) of all other West African countries put together. This shows how relevant the Nigerian economy is in the West African region.

Table 5. 1 Summary statistics for ECOWAS, 1995 – 2015

Country	Exports (in Billions of US$)		GDP (in Billions of US$)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*
Benin	0.94	0.60	5.19	2.51
Burkina Faso	0.92	0.84	6.25	3.48
Cabo Verde	0.03	0.02	1.13	0.56
Côte d'Ivoire	7.91	3.40	19.37	7.75
Gambia	0.04	0.04	0.79	0.13
Ghana	5.33	4.47	19.83	14.47
Guinea	1.09	2.18	5.16	2.08
Guinea-Bissau	0.10	0.06	0.62	0.31
Liberia	0.33	0.20	0.87	0.62
Mali	1.41	0.81	7.29	4.13
Niger	0.70	2.07	4.09	2.17
Nigeria	50.89	35.51	194.30	183.12
Senegal	1.66	0.66	9.31	4.03
Sierra Leone	0.35	0.52	2.09	1.36
Togo	0.74	0.35	2.47	1.07

Source: Authors compilation using data from WDI and UNCTAD

5.3 Estimation Results

The estimation results of the 'augmented' gravity model are presented in this section. Two results are displayed. The results displayed are for all fifteen ECOWAS countries from 1995 – 2015. Table 5.2 displays the regression results for all ECOWAS countries whiles table 5.3 presents the sensitivity analysis regression results where some ECOWAS countries (Ghana, Nigeria and Cote

D'Ivoire) are exempted. The results from the estimation of four models (the Pooled OLS, the random effects, fixed effects and the Hausman-Taylor model) are presented in this section. The dependent variable for the estimation is total bilateral exports among country pairs.

Initial attempts to use the pooled OLS was rejected by the Breausch-Pagan test in favour of the random effects model. However, the Breausch-Pagan test is only necessary but not sufficient to ascertain whether to use the Random Effects model or not. We then conducted the Hausman test to confirm the appropriateness of the Random Effects model or otherwise. The random effects model is run to verify if differences among country pairs are correlated with the dependent variable. The fixed effects model is also estimated to investigate the effects of those variables which vary over time as it drops all time invariant variables. The Hausman test was conducted after estimating the random effects and fixed effects model. The results from the test suggested that the fixed effects model be picked over the random effects model in the main estimation because it identified a correlation between the individual country effects and the regressors.

The fixed effects model however is not the most appropriate model because it dropped all the time invariant variables regardless of their importance in this study. The Hausman-Taylor estimator was therefore employed to capture the effects of all dropped time invariant variables by the Fixed Effects model.

5.4 Discussion of Results

In this section, we discuss the effects of GDP, common currency, adjacency and the other explanatory variables on bilateral trade flows in the ECOWAS region as per the estimation results.

Gross Domestic Product (GDP): The GDPs of both exporter and importer countries exert a significant positive impact on bilateral exports and this conforms to *a priori* expectation. From the results we can see that a percentage increase in either importer or exporter GDP increases bilateral exports by more than five percent. The relationship between GDP and bilateral exports has been confirmed by studies such as Musila (2005), Carrere (2004) and Afesorgbor and Bergeijk (2011) among others. Similar results were also found by Carrere (2004) confirming that the low levels of GDP in the SSA region is translated into its minimal impact on bilateral trade. This implies that bilateral trade among country pairs improves greatly when the GDPs of those countries in question are a lot higher.

Population: We see from table 5.2 that both importer and exporter populations exert significantly positive impact bilateral trade. Thus, a percentage increase in population size of either the importer or the exporter country increases bilateral exports by approximately 4 percent. As per Bergstrand (1989), a positive coefficient of both importer and exporter populations implies that the exporter country has capital in abundance and hence produces and exports capital intensive goods whiles the importer country specializes in producing luxury goods. The coefficient of both importer and exporter populations conforms to results found by Turkson (2012).

Distance: The distance variable has a significant negative coefficient as expected, providing evidence that bilateral trade is inversely related with distance. The results from table 5.2 shows that a percentage increase in distance reduces bilateral trade by 12 percent. This inverse distance-bilateral trade relationship is confirmed by Carrere and Guillamont (2005). The reduction in bilateral trade flows resulting from distance between country pairs is closely linked with poor road networks and inadequate storage infrastructure. This severely affects agricultural producers in remote areas. Transport cost per ton kilometer from farms to primary markets tend to be about five

times higher than those from secondary (often rural wholesale) markets to wholesale markets located in the country's capitals (FAO, 2015). Policy interventions should target improving infrastructure and road networks and this would go a long way to promote bilateral trade in the ECOWAS region.

Area: The dominant economic activity of a country can be told from the size of its arable land. Having an enormous arable land size pre-suggests that the country is likely to have agriculture as its major economic activity. Holding the above assumption, then countries with vast land resources would export relatively more than those with less resources. From our estimation results in table 5.2 we see that the area of both importer and exporter countries impacts bilateral trade negatively. The coefficient of land area for the importer country is insignificant unlike that of the exporter country which is significant. This similar to what Turkson (2012) found.

Common currency: Several works such as Carrere (2004) and Afesorgbor and Bergeijk (2011) confirms that sharing the same currency aids in trade facilitation and eliminates the issue of having to convert one currency to the other before trading. Thus, countries which share the same currency and are members of the same trade bloc are expected to trade more among themselves. Similar to the findings of Costa-i-Font (2010), the estimated results in table 5.2 shows that sharing a common currency exerts a positive impact on bilateral trade.

Table 5. 2 Effects of the ECOWAS FTA on Bilateral Trade Flows

	Dependent Variable: Log(Exportijt)			
	Pooled OLS	Fixed Effects	Random Effects	**Hausman Taylor**
Log of GDPit	0.50***	0.44***	0.43***	**0.31*** **
	(0.02)	(0.02)	(0.02)	**(0.06)**
Log of GDPjt	0.48***	0.42***	0.42***	**0.48*** **
	(0.02)	(0.02)	(0.02)	**(0.06)**
Log of Distanceij	-0.11***		-0.12***	**-0.12*** **
	(0.01)		(0.04)	**(0.05)**
Log of Populationit	0.23***	0.41***	0.29***	**0.41*** **
	(0.03)	(0.10)	(0.06)	**(0.02)**
Log of Populationjt	0.46***	0.32***	0.47***	**0.42*** **
	(0.03)	(0.11)	(0.06)	**(0.02)**
Log of Areai	-0.06***		-0.06	**-0.05**
	(0.02)		(0.06)	**(0.06)**
Log of Areaj	-0.17***		-0.14***	**-0.14*** **
	(0.02)		(0.05)	**(0.05)**
Colonial linkij	-0.71***		-0.62***	**-0.62*** **
	(0.05)		(0.21)	**(0.22)**
Common Languageij	0.3***		0.23	**0.23**
	(0.04)		(0.20)	**(0.21)**
Common Currencyijt	0.13***		0.09	**0.10**
	(0.03)		(0.11)	**(0.11)**
Landlockedij	-0.61***		-0.63	**-0.62*** **
	(0.04)		(0.14)	**(0.15)**
Adjacencyij	0.02		0.02	**0.02**
	(0.03)		(0.12)	**(0.12)**
Constant Included	yes	yes	yes	**yes**
Observations	4116	4116	4116	**4116**
No. of Bilateral Pairs	196	196	196	**196**
Standard errors in parenthesis: ***p<0.01, **p<0.05, *p<0.10				

Adjacency: Countries which adjacent to one another are likely to trade more bilaterally than countries which do not share a common border. As such the adjacency variable has a positive *a*

priori expectation. We see from table 5.2 that adjacency, despite being insignificant, impacts bilateral trade flows positively - a results similar to the findings of Coulibaly (2009). This simply implies that countries which share a common border trade at a much-reduced cost and are to be encouraged to trade more.

Common Language: Language is considered very crucial in exchanging pieces of information between people. Countries which communicate using the same official language are therefore expected to trade more among themselves since they have a greater advantage of sharing information at no or least cost. The impact of language on bilateral trade flows is seen in the positive significant impact of the common language variable on exports. This confirms the findings of Melitz (2008), Micco et al (2003) and Musila (2005).

Landlocked: The landlocked nature of a country is very necessary in determining its trade costs and by extension its volume of trade with the rest of the world. We see from table 5.2 that being landlocked exerts a significantly negative pressure on a country's bilateral trade; just as was the *a priori* expectation and also found by Carrère (2004).

Colonial Link: According to Head et al (2010), countries which share a similar colonial master or belonged to the same colonial empire tend to trade less among themselves over time. Thus, the impact of colonial links on bilateral trade is not as evident immediately as it is in the long run. The results from table 5.2 shows that colonial links impacts bilateral trade flows in a significantly negatively way as suggested by Head et al (2010).

5.4.1 Sensitivity Analysis

This study performs sensitivity analysis by excluding some dominant ECOWAS counties (Cote D'Ivoire, Ghana and Nigeria) from the estimation to have a general idea of their effects on bilateral trade flows in West Africa. All control variables are considered again in this sensitivity analysis.

The results from table 5.3 shows that all control variables maintained their sign however, the coefficients of distance and population size diminished. For instance, from table 5.3, we see that the coefficients of both importer and exporter populations still remain significantly positive, however, their impact is less than in the estimation where all ECOWAS countries were present.

As can be referred from section 4.3 above, the diminished coefficient of both importer and exporter populations implies there is a reduction in the overall capital abundance and hence the ability to produce and export more has also reduced. The reduced impact of the distance coefficient as well means that most of the trade costs associated transportation has reduced. This is because most of the corridors used for trade facilitation runs through these countries as can be seen in map 5.1. Also these countries accounts for more than fifty percent of goods exported from West Africa.

The results shows as suspected that these countries play a major role in intra-ECOWAS trade.

Map 5. 1 West African Corridors

Source: OPA, 2013: www.borderlesswa.com

Table 5. 3 Estimates excluding Cote D'Ivoire, Nigeria and Ghana

	Dependent Variable: Log(Exportijt)			
	Pooled OLS	Fixed Effects	Random Effects	**Hausman Taylor**
Log of GDPit	0.55***	0.44***	0.49***	**0.47*** **
	(0.02)	(0.03)	(0.03)	**(0.03)**
Log of GDPjt	0.46***	0.40***	0.44***	**0.44*** **
	(0.02)	(0.03)	(0.03)	**(0.03)**
Log of Distanceij	-0.04**		-0.03	**-0.03**
	(0.02)		(0.06)	**(0.06)**
Log of Populationit	-0.05	0.43***	0.21***	**0.23*** **
	(0.03)	(0.15)	(0.08)	**(0.08)**
Log of Populationjt	0.13***	0.34**	0.28***	**0.28*** **
	(0.03)	(0.14)	(0.07)	**(0.08)**
Log of Areai	0.23***		0.08	**-0.08**
	(0.02)		(0.05)	**(0.06)**
Log of Areaj	0.05***		-0.02	**-0.03**
	(0.015)		(0.04)	**(0.04)**
Colonial linkij	-0.71***		-0.71***	**-0.71*** **
	(0.07)		(0.21)	**(0.22)**
Common Languageij	0.12**		0.09	**0.09**
	(0.06)		(0.20)	**(0.21)**
Common Currencyijt	0.16***		0.15	**0.15**
	(0.03)		(0.09)	**(0.10)**
Landlockedij	-0.53***		-0.42***	**-0.41*** **
	(0.04)		(0.12)	**(0.13)**
Adjacencyij	0.02		0.01	**0.01**
	(0.04)		(0.11)	**(0.12)**
Constant Included	YES	YES	YES	**YES**
Observations	2541	2541	2541	**2541**
No. of Bilateral Pairs	121	121	121	**121**
Standard errors in parenthesis: ***p<0.01, **p<0.05, *p<0.10				

5.5 Chapter Summary

Except for a few variables, results from the three estimations conform to *a priori* expectations and are as well similar to results from previous studies. The results also proved that most of the variables are very important when estimating bilateral trade because the variables provided better explanations to the reasons for trade among country pairs. The results from the sensitivity analysis indicated that countries which shared a common currency and a common boarder traded more among themselves. It also predicted that both importer and exporter populations exerted a positive significant impact on bilateral trade.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter, dedicated to the summary, conclusions and recommendations of the study, is sub-divided into four sections. Sections 6.2 and 6.3 summarizes the entire study and provides some policy recommendations respectively whiles section 6.4 discusses the limitations to the study and suggests some areas which requires further empirical studies.

6.2 Summary and Conclusions

This study focused on the ECOWAS Free Trade Area in order to analyze its impact on bilateral trade in the region. To get efficient, consistent and unbiased parameter estimates, this study used the Hausman-Taylor estimator to analyze data from the WDI, CEPII and UNCOMTRADE databases. The Hausman-Taylor estimator was chosen over the fixed effects and random effects model because of its desirable ability to work with individually heterogeneous datasets; a key function the fixed effects model is unable to perform.

The results of the first estimation which considered only ECOWAS countries indicated that larger GDPs; huge population sizes; sharing a common currency and language all exert a positive impact on bilateral trade flows. On the contrary, we found that sharing colonial links does not necessarily increase trade among countries. The results actually proved that colonial links rather impedes bilateral trade significantly.

The study went on to conduct some sensitivity analysis in which some dominant ECOWAS members (Ghana, Cote D'Ivoire and Nigeria) were excluded from the estimation to measure their

contribution to intra-ECOWAS trade. It was evident that removing these countries from the estimation reduced the overall significance of the estimation as the coefficient of the population variable reduced.

6.3 Policy Recommendations

Some key insights which can help inform policy decisions can be picked from the estimation results. We realize from the results that sharing a common currency among countries positively influenced bilateral trade flows. However, the talks on launching the use of a common currency for West African countries dates back to as far as the year 2003. After being postponed for more than five times, the Presidential Taskforce in charge of the Common Currency agenda for the West African Monetary Zone (WAMZ) met in May, 2018 and have affirmed an accelerated process to the use of a common currency by 2020[8]. This will increase intra-ECOWAS trade flows as the cost of having to change one currency to another is almost eliminated.

Secondly, infrastructure, a key component of economic development happens to be a major problem in ECOWAS. As can be seen from the results, distance impedes trade and in most parts of West Africa where properly structured and well-situated infrastructure like good roads, good air and sea ports and efficient telecommunication networks seems to be a problem, intra-ECOWAS trade is very likely to be limited. Thus, the ECOWAS commission should ensure that every member country makes infrastructure development a key component of their development agenda. When these measures are put in place and adhered strictly to, intra-ECOWAS trade would improve greatly. A typical example could be learnt from the SADC region where member countries have

[8] Visit http://www.ghana.gov.gh/index.php/media-center/news/4108-ecowas-common-currency-to-be-in-circulation-by-2020 for more information on the ECOWAS common currency agreement.

interconnected their major transportation networks with the sole purpose of easing the transportation of goods and nationals across country borders.

In addition, West African countries must specialize in the production of goods and exports where that comparative advantage lies to attract other markets from other countries within the region who does not have such strengths. Despite the fact a lot of progress has been made in this regard, the fact remains that a lot more has to be done. Domestic industries in the region should be expanded and strengthened to be able to make use of natural and available resources coupled with efficient production techniques to ensure that production is done much cheaply and products are very competitive against imports from outside the region. Governments must also formulate very favorable industrial development policies like tax holidays to encourage the establishment of more industries in the region. This creates employment, increases the revenue bracket of governments, and increases trade.

Also, it would be very helpful if West African governments involved civil society groups, stakeholders and international trade scholars in their decision-making process with regard to which FTA to join. This offers all parties the opportunities to assess the impacts such integration arrangements would have on their economic growth and business and subsequently position themselves to forestall any losses that may be envisaged. If this is well done, trade diversion can be well managed or even prevented.

6.4 Limitations of the Study

The study was successful in determining the effects of some variables like colonial links and common currency on bilateral trade flows in the ECOWAS FTA. The study however failed to include some pertinent regressors like; good governance, political stability, regulatory quality and

other similar regressors in the regression model. Some West African countries like Nigeria have over the past years been in the news as one of the most corrupt countries in West African and Africa at large. Other West African countries like Sierra Leone and Liberia have had issues of civil wars and political instability in past years and all of these accounts for political instability which affects the economies of such countries and by extension their international trade relations with other countries.

Another limitation was that the regression analysis was based on only total products and this may not be enough to account for the dynamics which may have been evident should the products from the agricultural and manufacturing sectors be treated separately. This are could be further investigated in future researches.

APPENDIX

Reporter and Partner Countries:

Benin, Burkina Faso, Cabo Verde, Cote D'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.

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