THE IMPACT OF FREE TRADE AND INSTITUTIONAL QAULITY ON ECONOMIC COMMUNITY OF WEST AFRICAN STATES TRADE

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ABSTRACT

Regional and Economic integration has become an essential issue for Economic Community of West African States (ECOWAS). Despite the abundant research done on regional trade and its determinants, little has been done to examine the impact of free trade and institutional quality, particularly for ECOWAS, one of the most corrupt, less governed and politically unstable regions on the globe. The main objective of this research is to critically examine the impact of free trade and institutional quality on ECOWAS from 1985 to 2013 using gravity model of trade. Panel Unit Root were employed in order to test for stationarity of the series, Panel Cointegration was employed to test for long run relationship, Poisson Pseudo Maximum Likelihood Fixed Effect (PPML), and Dynamic Instrumental Generalized Method of Moments System and First Differenced (DGMM) were also employed to test further for long run relationship. The results indicate that ECOWAS is a regional force. High political instability and feeble governance have hindered ECOWAS trade performance over the years. Although trade openness and the old colonial and historical ties of ECOWAS have spurred regional trade inflows, financial openness has had a negative and significant impact on ECOWAS regional trade. The study suggests that ECOWAS must address the feeble institutional quality within the region; also, they need to proceed further to the next stage of integration in order to enhance trade, economic growth and development. The results highlight the fundamental significance of properly accounting for endogeneity and heterogeneity bias when trade policy effects are being evaluated.

Keywords: free trade, regional trade agreements, trade flows, ECOWAS

ABSTRAK

Integrasi serantau dan integrasi ekonomi telah menjadi satu isu penting dalam Economic Community of West African States (ECOWAS). Walaupun terdapat banyak kajian mengenai perdagangan serantau dan faktor-faktor penentunya, namun kajian-kajian lepas hanya menfokus kepada impak perdagangan bebas dan kualiti institusi, seperti ECOWAS yang berada dalam kawasan dunia yang paling korup, tidak dikawal selia serta tidak stabil dari sudut politik. Kajian ini bertujuan meneliti secara kritikal impak perdagangan bebas dan pencapaian ECOWAS dari 1983 hingga 2013. Kajian ini menggunakan model Graviti untuk Punca Unit Panel bagi menguji kepegunan siri. Kointegrasi Panel pula digunakan untuk menguji hubungan jangka masa panjang, manakala Poisson Pseudo Maximum Likelihood Fixed Effect (PPML), dan Kaedah Dynamic Instrumental Generalized Method of Moments System and First Differenced (DGMM) turut digunakan untuk menguji hubungan jangka panjang dengan lebih terperinci. Hasil kajian telah menunjukkan ECOWAS adalah satu kuasa serantau yang terus menerus mengalami pelencongan perdagangan. Keadaan ini adalah disebabkan oleh ketidakstabilan politik yang berterusan, rasuah yang tidak dapat dibendung dan kelemahan tadbir urus. Walaupun keterbukaan perdagangan dan pertalian sejarah dengan kuasa colonial telah membantu ECOWAS untuk merangsang aliran masuk perdagangan serantau, keterbukaan tersebut turut memberi kesan negatif yang signifikan terhadap perdagangan serantau ECOWAS. Kajian ini mencadangkan bahawa ECOWAS perlu menangani ketidakstabilan insitusi ini di peringat serantau selain terus berkembang ke peringkat integrasi yang seterusnya bagi meningkatkan perdagangan, serta pertumbuhan dan kemajuan ekonomi. Hasil kajian menitikberatkan kepentingan untuk mengambilkira bias yang boleh disebabkan oleh faktor endogen dan heterogen (kemajmukan) dalam menilai impak polisi perdagangan.

Kata kunci: perdagangan bebas, perjanjian perdagangan serantau, aliran perdagangan, ECOWAS

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On a final note "O Allah, Owner of Sovereignty, You give sovereignty to whom You will and You take sovereignty away from whom You will. You honour whom You will and You humble whom You will. In Your hand is [all] good. Indeed, You are over all things competent. You cause the night to enter the day, You cause the day to enter the night; You bring the living out of the dead, and You bring the dead out of the living. In addition, You give provision to whom You will without account". May Allah bless us all AMIN.

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2016

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List of Abbreviations

AEC	African Economic Community
AMU	Arab Maghreb Union
AU	African Union
ASEAN	Association of Southeast Asian Nations
COMESA	Common Market for Eastern and Southern Africa
ECOWAS	Economic Community of West African States
ECCAS	Economic Community of central African States
CEN-SAD	Community of Sahel –Saharan States
EAC	East African Community
EU	European Union
SACU	Southern African Customs Union
GDP	Gross Domestic Product
SITC	Standard International Trade Classification
RTAs	Regional Trade Arrangements

RTAs	Regional Trade Agreements
EFTA	European Free Trade Agreement
CM	Common Market
CU	Custom Union
FTA	Free Trade Area
PTA	Preferential Trade Agreements
EMU	Economic and Monetary Union
NAFTA	North American Free Trade Agreement
UNECA	United Nations Economic Commission for Africa
UNCTAD	United Nations Conference on Trade and Development
SAP	Structural Adjustment Program
WAEMU	West African Economic and Monetary Union
WAMZ	West Africa Monetary Zone
WAMI	West Africa Monetary Institute
WTO	World Trade Organisation

CHAPTER ONE
INTRODUCTION

1.1 Background

International economies have undergone a series of significant developments during the last few decades, including the formation and implementation of bilateral and regional trade agreements. A wave of trade liberalization is quickly reshaping the nature of cross-border transactions. With the re-emergence of neo-liberal philosophy in the 1980s espousing the removal of all forms of trade restrictions, most developing countries did an abrupt U-turn in their major policy thrusts to embrace neo-liberal economic development orthodoxy. In the early part of 1990s, the number of regional trade agreements increased and continued to grow. According to the World Trade Organization (WTO), regional trade agreements (RTAs) can be defined as reciprocal trade agreements among two or more partners and as of June 2014 about 585 notifications of Regional Trade Agreements (RTA) were received while 379 were in force (WTO, 2014).

This explosion of trade agreements was fuelled by several developments. The United States created the bilateral Free Trade Agreement (FTA) with Canada in 1987 and the North American Free Trade Agreement that included, Canada, Mexico and the United States in 1994, and the establishment of the European Union in 1993 helped fan the flames of free trade (Siggel, 2005). The General Agreement on Tariffs and Trade, which began in 1948, morphed into the World Trade Organization in 1995, and the number of RTAs that announced their intentions to joint increased rapidly (WTO, 2014) showing a

significant increase from the mere forty RTAs that existed in 1990 (Crawford and Laird, 2001). As these trade agreements expanded, they created what has been called a "spaghetti bowl" of RTAs with the provisions of many RTAs cutting across each other (Bhagwati, 1992).

In general, five types of integration exist: Common Market (CM), Custom Union (CU), Free Trade Area (FTA), Preferential Trade Agreements (PTA), and an Economic and Monetary Union (EMU). For more explanation, see page 34 under various category of integration in chapter two. The desire to achieve economic growth across the continent has prompted many African countries to create regional cooperation. Most African countries are landlocked areas with inadequate infrastructures, and, of the African 53 countries, 21 have less than 5 million population, 39 nations have less than 15 million population while the rest are above 50 million (Ross, 2004). The Africa continent comprises 12% to 15% the world's total population and is the second most populous continent after Asia. In Africa, five main RTAs exist including the: Common Market for Eastern and Southern Africa (COMESA), Economic Community of Central African States (CEMAC), Economic Community of West African States (ECOWAS) and Southern African Customs Union (SACU) and East African Community (EAC). Membership in these groups ranges from 15 to 24 member countries in each group.

1.1.1 An Overview of ECOWAS

ECOWAS was formed in 1975 with about 15 member countries: Mali, Niger, Nigeria, Senegal, Sierra Leone, Guinea Bissau, Liberia, Cape Verde, Togo, Burkina Faso, Cote

d'Ivoire, Ghana, Guinea, Gambia and Benin. ECOWAS region is experiencing the fastest population growth in the world. From 70 million people in 1950 to 300 million in 2010, the region represented 40% population of sub-Saharan Africa by 2014. ECOWAS population is projected to hit 430 million by 2020, with 45% of the population under the age of 15. With the current annual growth rates of 4% to 4.5% and population average annual growth rates of about 3.5%. Africa would need to grow its economy at the rate of 7% or more to be able to develop. In line with ECOWAS treaty article 3a, and 4f of 1993, the following are the selected aims and objectives guiding the regional body (ECOWAS 2003):

(a) The creation of a common market using:

i. Liberalization system of trade with the use of abolition, between member countries of common custom duties imposed on exports and imports, and also the abolition of non–tariff barriers between member countries in order to establish free trade area.

ii. Creation of mutual external tariff and a uniform policy of trade

iii. Complete removal of all obstruction to services, goods, capital between all countries and free movement of persons without any restriction, and right to reside and establish without any barrier in the region.

iv. The creation and adoption of uniform policies such as culture, social, financial and establishment of monetary union.

v. Sustenance of stability, security and peace within the region by promoting good neighborliness (ECOWAS, 1993).

After series of transformation from the first scheme of 1979 down to 1990 agreements under ECOWAS trade. ECOWAS step up to develop free trade agreement as part of their transformation agenda, which is in line with world trade organization agreement „rule of origin" in order to circulate industrial product and with free movement of goods and persons within the region (ECOWAS 2003). ECOWAS progress can be highlighted into various ways; effort to achieve free trade area leads to creation and implementation of free movement of persons and goods across the region. ECOWAS passport and free visa was implemented across the region, presently 10 out of 15 countries has fully implemented the use of ECOWAS passport and free movement.

Nevertheless, ECOWAS step up effort to curb insecurity, conflict and wars across the region. This also gave birth to Economic Community of West Africa Monitoring Group (ECOMOG) which was created in 1990 in order to restore peace, order and unity to the affected countries within the region. In this regard ECOMOG was able to restore peace and order to some war torn countries like Liberia and Sierra Leone (ECOWAS, 2007 and Magbagbeola, 2009). However, as part of effort to further improve the regional integration of ECOWAS from free trade to achieve better result. Economic and Monetary Union were also part of their strategic plan in order to step up the level of integration process. Two monetary bodies were designed as a monetary institution to carry out the function of monetary union with the aim of achieving common currency and a robust financial market.

This gave birth to West Africa Economic and Monetary union (WAEMU) in 1994 and also another body called West Africa Monetary Zone (WAMZ) were formed in 2000 to carry out similar function within ECOWAS.

WAEMU under ECOWAS consists of eight members of French speaking countries namely: Benin, Burkina Faso, Mali, Senegal, Niger, Togo, Ivory Coast and Guinea Bissau. The use of a single currency, custom union and a uniform external tariff has been achieved. West Africa Monetary Zone (WAMZ) also under ECOWAS consist of Gambia, Nigeria, Ghana, Liberia, Guinea and Sierra lone thus, they proposed to introduce a single currency with custom union by 2015. ECOWAS also created another larger body called West Africa Monetary Institute (WAMI) with the sole aim of merging WAEMU and WAMZ together with a strategic plan to produce a single currency with a unified custom union under ECOWAS as whole for the region by 2020.

Recently, new tariff was introduced which involves selected 5899 tariff lines (5899 tariff line is referred to as common external tariff CET) which is under HS-10 product lines that are covered under the new tariff system with tariff stretching between zero and 35% for the 130 tariff lines that is under the category of certain goods that will contribute to the preferment of these areas in terms of economic growth. Under this new system, 5% duty is valid for 2146 tariff lines with regards to the basic raw resources plus investment goods category, 10% for the 1373 tariff lines that qualify as intermediate products category. Whereas 20% duty is earmarked for 2165 tariff lines that fall into the group of final consumer goods. This new tariff system will help to ensure uniformity in port charges that in agreement with the basic requirements of the World Trade Organization (ECOWAS, 2013). The journey so far after thirty eight of existence, ECOWAS remain stagnant in terms of performance.

1.1.2 ECOWAS –Trade interaction (interregional and intraregional trade)

According to ECOWAS (2015), the integrated economic activities of the ECOWAS region have a combined GDP of about $734.8 billion. The group represented about 4.5% of the world population but added only 0.5% of world GDP (ECOWAS, 2012). African merchandise trade of exports and imports to the world trade grew from $251 billion in 1996 to $1,151 billion in 2011, while exports and imports totalled $582 billion and $569 billion respectively, but the total of the world‟s imports and exports from developing countries totalled $18,211 billion and $7,321 billion respectively. Table 1.1 below shows the various contributions of selected regional trading blocs across the globe and shows that ECOWAS trade performance in terms of exports and imports contribution have not progressed over the years. A comparison of ECOWAS with other regional trading blocs indicates that other area performed better both at the export and import levels from 1980 to 2015 (UNCTADstat, 2016).

Table 1.1
Shares of the World Exports and Imports of Various Regional Trading Groups across the Globe (1980–2015).

Regional Groups	**Exports**					**Imports**				
	1980	2010	2013	2014	2015	1980	2010	2013	2014	2015
APEC	34.3	47.34	47.17	47.97	50.5	35.33	48	49.47	49.4	49.9
EU	41.46	33.87	32.05	32.39	32.68	45.4	34.5	31.24	31.7	31.3
ASEAN	11.61	25.25	25.1	25.79	27.84	11.92	22.5	24.01	23.9	23.1
EFTA	2.39	2.16	2.73	2.42	2.43	2.59	1.67	2.2	1.94	2
CENSAD	3.18	1.62	1.45	1.28	0.99	2.39	1.56	1.62	1.64	1.58
MERCOUSUR	2.37	2.28	2.24	2.04	1.83	2.37	1.98	2.1	1.96	1.75
ECOWAS	1.62	0.75	0.77	0.72	0.51	1.23	0.54	0.6	0.61	0.58
COMESA	1.67	0.76	0.63	0.49	0.42	1.12	0.86	0.92	0.96	0.99
ECCAS	0.43	0.59	o.61	0.55	0.38	0.28	0.27	0.31	0.34	0.32
EAC	0.11	0.07	0.07	0.07	0.08	0.19	0.17	0.19	0.21	0.21

Notes: Source: UNCTADstat, 2016. All figures are in billions of USD. EU =European Union, APEC = Asian-Pacific Economic Cooperation, ASEAN = Association of

Southeast Asian Nations, EFTA = European Free Trade Association; CENSAD = Community of Sahel-Saharan States, MERCOUSUR = Common Market of the South, COMESA = Common Market for Eastern and Southern Africa, ECOWAS = Economic Community of West African States**,** EAC = East African Community, and ECCAS = Economic Community of Central African States**.**

Despite the rapid growth in merchandise trade, Africa remains among the main marginal players in the global trade, contributing 2.8% to the world exports and 2.5% to the world imports from 2000 to 2010. The shares of Africa and sub-Saharan African trade diminished from 1970 to 2015 (UNCTADstat, 2016). Overall, 81% of ECOWAS imports from the EU comprised manufactured products while raw materials, agricultural and fish made up 90% of the sub-region‟s exports to the European market (UNCTAD, 2013). Africa‟s share value of world trade exports remained very strong from 1980 to 2013 with annual growth of 5.2%, but this is attributed mainly to the exportation of mineral resources including crude oil. Comparatively speaking, COMESA had bigger share of intra-regional economic communities exports both as a proportion of aggregate Africa‟s exports and the globe at large compared to other regional economic communities, while the third to the last was ECOWAS.

However, looking at inter-ECOWAS trade, the EU remained the main trading partner of West Africa but the sub-region accounted for only 1.2% of the EU‟s overall trade. ECOWAS member states supplied 80% of EU cocoa imports, 15% of rubber imports and 10% of fish imports. Exports from the ECOWAS region to the EU market increased from $8.8 billion in 2002 to $14 billion in 2012 but much of this was due to the significant increase in the exports of oil and mineral products – growing from 48% of EU imports to 69% in the same period (UNCTAD, 2013).

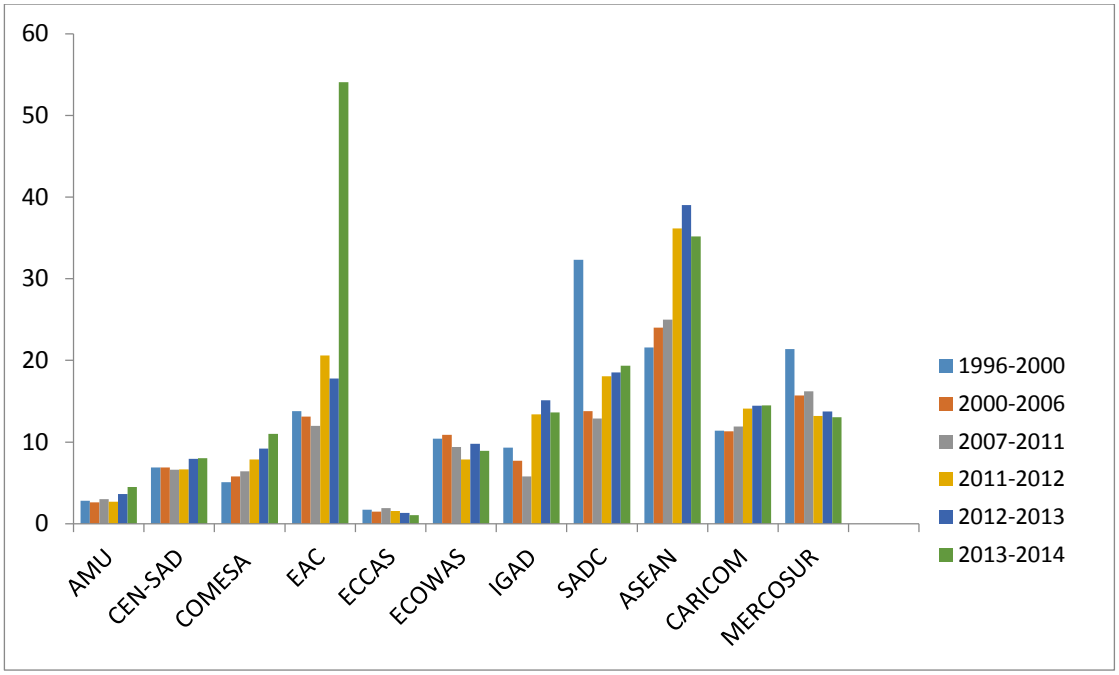


Figure 1.1

Percentage Share of intra-regional Trading groups to the world Market (1996-2015)

Source: UNCTADstat, 2016

As shown in Figure 1.1, it can be observed that ECOWAS and other RTA groups in Africa performance are relatively low when compared with other regionals bodies like EU, ASEAN, CARICOM, MERCOSUR there intra–regional export remain almost doubled whereas most of the African regional groups remain stagnant. The Africa share performance of intra-Regional Economic Communities and to the world at large under world import recorded the lowest and continues to decline between the period of 2001 and 2007 followed by EECAS joined with EAC, COMESA and ECOWAS. In summary, intra-regional trades of Africa remain lower than expected (UNECA, 2010).

However, regional integration is expected to boost economic growth and increase the level of investment in the region. The global foreign direct investment flows improved in 2011 on average, attaining $1.5 trillion despite the global economy turmoil. Year 2007 remain the highest with 27 % growth rate. A slower FDI growth rate was recorded in 2012, with a flow amounting to $1.6 trillion while for 2013 and 2014 FDI recorded $1.8 and $1.9 respectively, blocking off any significant macroeconomics impacts (WIR, 2013).

FDI inflows grew across all major economic grouping in the world in 2011, developed economy improved by 21% that amounted to $748 billion. Developing economy improved by 11% amounting to $684 billion while the transition economies increased by 21% denoted by $92 billion (WIR, 2013). However, Africa and other least developing countries continue to experience the third constant declining rate of FDI inflows as shown in Figure 1.2.

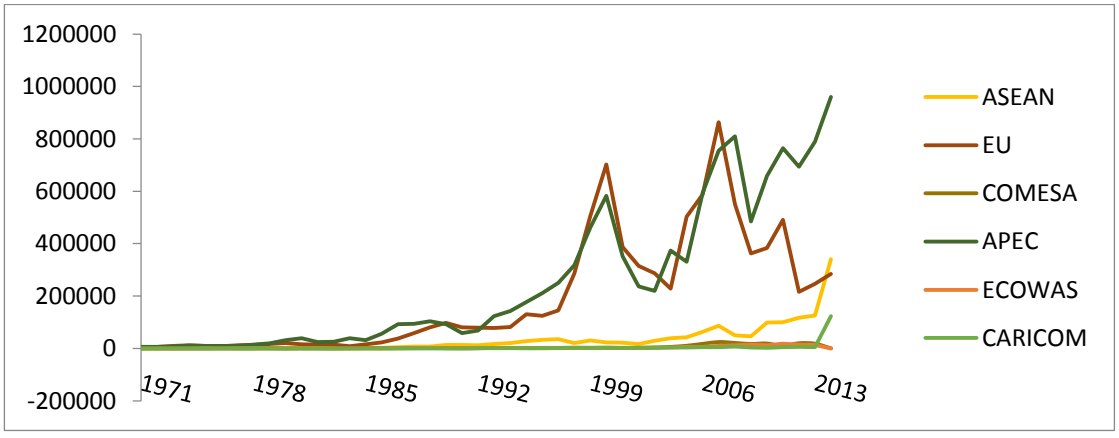


Figure 1.2
Share of Foreign Direct Investment inflow across selected regional groups (1980-2014)
Source: UNCTAD stat, 2015.

Asiedu (2004) has noted that the attraction of FDI to Nigeria remains at a mediocre level when potential needs for funds are compared with other resources. The World Investment Report (WIR) said that Nigeria‟s FDI stood at $7.03 billion, South Africa accounted for $4.572 billion, Egypt for $2.798 billion, Ghana for $3.295 billion, and Angola for -6.898 billion (WIR, 2013).

In ECOWAS, FDI inflows decreased by 14% amounting to $14.2 billion, due to the decline in FDI inflows to Nigeria. When comparing both attractiveness and potential index of FDI inflows, only Nigeria and Ghana managed to increase tremendously over the years while others remained stagnant with little or no progress (WIR, 2013). In order for any nation to achieve full integration into the world economy and to benefit from trade strategies on an outward-oriented level, institutional quality is critical. Trade can be stalled by ill-functioning institutions (Anderson, 2001), the volume of trade can be reduced by bad institutions (Anderson and Marcouiller, 2002). The quality of institutions and openness likely exhibit causality in a bidirectional way (Dollar and Kraay, 2002). As Anderson and Marcouiler (2002) indicated, a major obstacle in business world at the market level is corruption.

Indeed, corruption is among the major causes for the poor performance facing ECOWAS. Riley (1998) divided corruption in African communities into three categories: systemic, systematic and incidental. Systematic corruption involves large numbers of public officials associated with organisations involved in financial scandals while incidental corruption is a feature of life in most African countries. Incidental corruption involves junior officers, customs officers, tax officials, seaports and airports. Systemic corruption involves a corrupt system headed by corrupt leadership. This type

of corruption has large detrimental effects on the economy. According to the World Bank (2000), about two trillion dollars consumed annually was due to mismanagement and fraud, which amounted to about 5% of the world‟s total gross domestic product (GDP). The World Bank further stressed that corruption is the main obstruction to growth and development because it weakens the rule of law and reduces economic performance and growth rates. Corruption can take several different forms, namely, extortion, nepotism, bribery, fraud, peddling, influence peddling and embezzlement (Klitgaard, 1998). This point of view relates directly to events in Africa especially among ECOWAS countries in which the corruption index of the fifteen countries remain high as shown in Figure 1.3 below.

According to metrics of Transparency International, any country scoring 0 is believed to be extremely corrupt while countries scoring 10 are perceived to have a very low level of corruption. In the ECOWAS, the corruption perception index remains very high with an average of 2 points, which obviously affects economic growth and development in the region as shown in Figure 1.3.

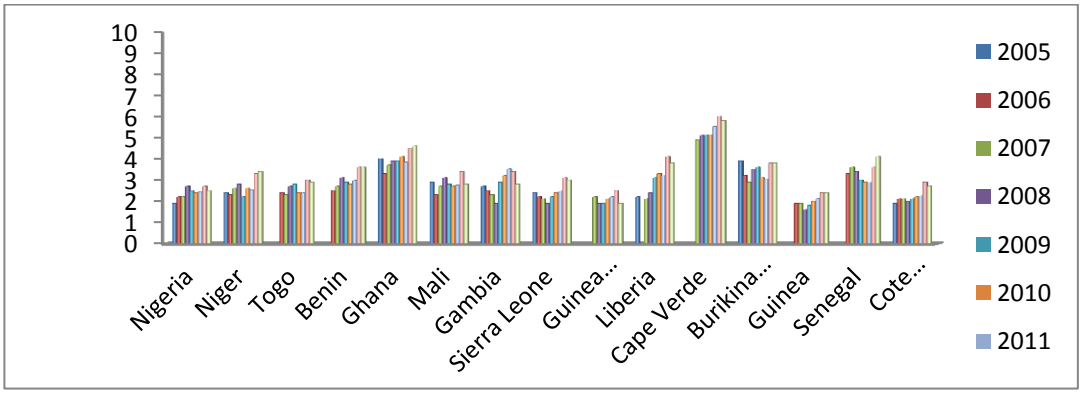


Figure 1.3
Corruption Perception Index of ECOWAS (2005-2013)
Source: CPI, 2013.

Many believe that the greatest obstacle to economic development across all of Africa is corruption (Blackburn and Forgues-Puccio, 2007). Corruption is estimated to cost the African continent around $150 billion a year, while developed countries gave in aid to sub–Sahara Africa in 2008 of around $22.5 billion (Hanson, 2009). According to Global Financial Integrity (GFI) (2012), illegal capital outflows that stemmed from corruption amounted to $5.86 trillion for the period from 2001 to 2010 for developing countries including ECOWAS countries. The report indicated that illegal financial flows for the African continent had increased to 23.8% of the total outflows for developing nations during that period.

A notable example of egregious behavior included the Director General of the Customs Service, Ousmane Guiro, in Burkina Faso, who was removed from his post and arrested for embezzling $3.8 million (AllAfrica, 2012). Also, the former President of Senegal, Abdoulaye Wade, was accused of spending $70 million instead of the $25 million initially budgeted for the African Renaissance Monument (ARM) (Ly, 2010). Such corruption has also spread to lower levels as well. The high cost of doing business in many African countries has been attributed to the fact that business men often need to bribe government officials to obtain the required licenses and get registered. Corruption is also regarded as a tax on private investment (Shleifer and Vishny, 1993; Wei, 2000) and often disrupts and discourages foreign investors mainly due to the fact that it increases the cost of doing business (Wei, 2000).

Another major challenge facing ECOWAS is political instability, which can be viewed from two perspectives (Alesina and Perotti, 1996; Alesina, Ozler, Roubini, and Swagel, 1996). Executive instability is one and is defined as frequent changes in government through either an unconstitutional or a constitutional approach. While the second form of political instability is largely associated with social unrest or violence. Political instability often presents policy makers with only the option of making macroeconomic policies on only a short-term basis or of switching policies quickly, making the economy volatile which, in turn, causes adverse consequences (Aisen and Veiga, 2013; Alesia et al., 1996). No doubt, the high corruption and poverty levels and the low human development index will hinder economic growth and development in the region.

Virtually all the countries in ECOWAS have been faced with political instability and bad governance, which has led to civil war and decades-long conflicts, and several countries among ECOWAS states continue to struggle with the internal crises. Part of the problem was derived from old cold war tensions that spiked violent, internal power struggles threatening to implode states all across Africa. As time passed, ECOWAS states began to realize the changing nature of threats to stability. It became obvious that a nexus existed among internal conflicts, sparked largely by bad governance, political crises and poor resource management. A little more than a decade after the creation of ECOWAS in 1975, civil wars erupted in Liberia (1989-2003), Sierra Leone (1991-2002), Cote d'Ivoire (2002-2010), Guinea Bissau (1998-1999), Mali (2012) and Niger (2010). Originally, these wars were confined to the borders of individual nation states, but soon they spilled across these borders, bringing with them serious regional implications both

in terms of their root causes and effects (Florquin and Berman, 2005; Zounmenou and Loua, 2011).

Since independence in the 1960s, many ECOWAS nations have not had internal peace due to a succession of military coups (Edi, 2006). Frequent changes in government have part of a series of military coups in ECOWAS nations such as Togo (1963), Ghana (1966), Mali (1968), and Nigeria (1966). Not surprisingly, 11 ECOWAS nations had military rulers in 1985 (Asante, 1986; Edi, 2006; Emeka and Wright, 1990; Mwakigagile, 2001). However, factors such as political upheaval that have adversely affected the performance of ECOWAS and must be examined. Thus, an inevitable need exists to turn the spotlight on the prevalent problems facing the ECOWAS regional group including extreme poverty, bad governance, high rates of corruption, low levels of human development, economic freedom and political instability.

1.2 Problem Statement

Global trade has been seen as panacea to achieve economic growth and the improvement of societies including the mitigation of poverty and hunger (Winters, 2004). However, Africa‟s contribution to the world trade has remained comparatively low (Bouet and Roy, 2008). From the mid-1950s to 1990, global export trade from sub-Saharan Africa (SSA) slide from 3.1 to 1.2%. Africa‟s share of the world trade declined from 6.21% in 1980 to 1.98% in 1998, with an increase to 3.58% in 2008 mostly reflecting the effect of increases in the prices of raw materials and was 3.27% in 2012 (UNCTAD). The share of African of global merchandise exports also has remained low, sliding from 3.5% in 2012 to 3.3% in 2013 (Amjadi, Reincke, and Yeasts, 1996; UNECA, 2015).

Additionally, the trade performance of emerging African economies has remained weak when compared to those of emerging Asian economies. Such problems have been ascribed to harmful African policies that have continued to contribute negatively to the low volume of intra-trade within Africa (Foroutan and Pritchett, 1993; Longo and Sekkat, 2004).

Intra-African trade stood at 10% and 12% of the African total trade while the European Union, Asian Countries and South American Countries accounted for 70%, 52% and 26% respectively (WTO, 2012). Moreover, intra-regional imports and exports of Regional Economic Communities (REC) in Africa from 2000 to 2005 accounted for only 10.8% and 8.6% of the total global trade volume, a figure viewed as being too low for adequate economic development (UNECA, 2010, 2012 and 2014).

According to UNCTADstat (2013), despite the transformation and implementation of free trade that began fully in 2003, the percentage of intra-Africa trade of ECOWAS continued to decline from 10.32% in 1995 to 6.46% in 2011 and 7.52% in 2012. Comparatively speaking, the trade volumes of other regional economic communities were higher than that of ECOWAS: 24.1% (ASEAN), 60.4% (EU), and 43.8% (NAFTA) (Velde, 2009; Rahman et al., 2006). Thus, after thirty-nine years of existence, the contribution of ECOWAS to trade remains in a declining state with little progress while other trade groups such as the EU, ASEAN, APEC and EFTA continue to experience improvement. (Table 1.1, page 8.) Exports and imports shares for ECOWAS have continued to decline based on its contribution to the world merchandise trade between 1980 and 2013 ECOWAS contributed less than 1% of world merchandise

exports between 2000 and 2013, and this figure has deteriorated further declining to less than one half of a 1% share in 2011, in line with the fall of Africa‟s entire share of world exports. The value of imports only exhibited slight changes between 2001 and 2013 (UNCTADstat, 2014). Imports grew predominantly in the developing nations of Western Africa at 8.6% and Eastern Asia at 6.2%, while they reduced the most in industrialized Oceania (-5.8%), followed by developed Asia at -5.5% (UNCTADstat, 2014).

The expectation has been that the inflow of FDI to ECOWAS should increase rapidly. However, Africa presently attracts only a moderately small portion of international FDI, and, more prominently, most FDI flows are to a few mostly big and resource-rich national economies (Anyanwu, 2012). As of 2013, data show that Africa presently accounts for around 6% of entire FDI flows to emerging nations (UNCTAD, 2013). Consequently, even when compared with other emerging nations, Africa remains a marginal player in drawing global FDI. The attraction of Africa‟s natural resources accounts for the majority of FDI inflows and for the uneven circulation of FDI in the region.

FDI inflows into ECOWAS have not really improved as expected when compared with other regional groups (.Figure 1.2, page 9) Consequently, the major obstacles impeding the trade performance of ECOWAS are poverty, institutional quality, and low level of contributions from the industrial sector and the low level of human development. Mehlum et al, (2006) indicated that institutional considerations remain essential if African countries want to enhance their trade and development. As Fosu (2011) pointed out, a unique factor concerning related to economic performance largely depends on the

institutions of the country. This is mainly because the essential forces driving the development of trade such as institutional quality, financial development, infrastructure and social environment for investment, must be encouraged in order to enhance trade and development. In this regard, poor institutions, bureaucratic deferrals and others act as inhibitors to trade (Ndomo, 2009).

Furthermore, Bannon and Collier (2003) proved that a clear link existed between high dependence on primary commodities and conflicts because the struggle to control these natural resources and illegal smuggling led to such conflicts. The ECOWAS region typically is characterized by the smuggling of resources and conflicts, most of which are internal and small rather than erupting into large-scale wars (McGowan, 2006). Since 1998, more than 35-armed groups have been operation in more than two thirds of the 15 ECOWAS states (Florquin and Berman, 2005). In addition, Easterly and Levine (1997) found that political instability encourages poor growth performance through its effects on public choices. Fosu (2003) indicated that coups d‟ětat also had adverse effects on African export growth, which was greater than their effects on GDP. Another critical problem facing ECOWAS is corruption and bad governance. According to Transparency International‟s (2012) corruption index, corruption on all levels is very high for all ECOWAS countries when compared to other areas, with the region ranking as the most corrupt region in the world. For example, Quartey (2012) reported that a recent West African trade hub survey indicated that per 100 km, 17 controls were in existence, from which, on average, $54 was collected as a bribe. He further identified bribery as a major barrier to the movement of goods, people and services across the area.

In addition, an average delay of 55 minutes per control point existed across the borders of each country within the region. Such indications of the quality of governance speak volumes about the economic development and growth. With the nonexistence of operational checks and balances, corruption has remained unrestricted over the past four or more decades in Africa. Quartey (2012) noted that about 80% ECOWAS trade goes to the European Union and the United States and comprises mainly primary products, which are transformed to finished goods and then re-exported back to the ECOWAS countries for consumption. Thus, after thirty-eight years of existence as a regional group, the performance of ECOWAS remains stagnant with little or no progress to show despite the continuous reformation and implementation of new policies including a common market, preferential trade and free trade, the main target of becoming an economic and monetary union by 2020. Hence, an urgent need exists to solve the main barriers facing growth in ECOWAS, which include improving economic performance. Otherwise, attaining the last stage of integration might not be an easy task.

Existing studies on the ECOWAS regional bloc remain very few. Foroutan and Pritchett‟s (1993) focus was on intra-Africa trade basically on sub-Saharan states and did not include institutional variables. Afio (2010) and Gbetnkom (2006) focused on the empirics of market integration and determinant of intra-ECOWAS trade flow and not on institutional quality issues. In addition, Owoye and Bissessar (2012) focused on corruption and leadership governance institutional structures in African countries and was not linked to trade. Thus, the linkage between trade and institutional quality remains an issue that requires further investigation because the existing literature concerning this matter remains very scarce.

Hence, this study aims to bridge the gap linking institutional variables and trade using the gravity method (dynamic panel) as (Bun and Klaassen, 2002; De Benedicts and Vicarelli, 2005; De Benedicts et al., 2005; Felbermayr and Kobler 2006: Constantini and Melitz, 2007; Helpman et al., 2008; Fidrmuc 2009; De Benedictis and Taghoni, 2011) have suggested. A need exists to turn the spotlight on the problems facing ECOWAS; hence, this study will contribute to the available body of literature in relationship to intra and inter-trade among fifteen countries of ECOWAS countries by including institutional variables. This study will use the gravity model of exports, imports and provide an analysis of the potential of ECOWAS trade flow to the rest of the world.

1.3 Research Questions

There is a need to turn the searchlight on the major hurdles facing ECOWAS that has been highlighted in Section 1.2 and all that accompanied it. Therefore, this study will seek to answer the following specific research questions.

1. What are the determining factors contributing to ECOWAS export flows?
2. What are the determining factors contributing to ECOWAS import flows?
3. What are the other factors contributing to ECOWAS bilateral trade flows
4. What is the impact of institutional quality on ECOWAS export flows?
5. Are there any future prospects for ECOWAS regional integration?

1.4 Objectives of the study

The general objective of this study is to examine the impact of free trade and institutional quality on the Economic Community of West African States (ECOWAS) Trading Bloc. The specific objectives are to:

1. Examine the determinant factors contributing to ECOWAS export flows;
2. Examine the determinant factors contributing to ECOWAS import flows ;
3. Examine other factors that determines bilateral trade flows within ECOWAS ;
4. Examine the impact of institutional quality on the ECOWAS export flows; and
5. Evaluate the future prospects for ECOWAS regional trade integration.

1.5 Significance of the study

The importance of this study is to keep the ongoing process of economic integration of ECOWAS regional group running. Various schemes and reforms have been implemented, yet room remains for improvement. By analyzing the determinants of the trade model using gravity models, this research will add both economic and political dimensions to the investigation with the incorporation of institutional variables to the gravity equation. Employing the gravity model with the use of panel data techniques adds a new perceptive to the ECOWAS trade literature because few studies have been carried out using the gravity model, and, by extension, using dynamic panel techniques will give a new perspective to the trade literature. This study will give policy implications and develop recommendations in terms of policy in order to improve both inter- and intra-trade flow for ECOWAS and the global trade at large. Finally, this study

will provide useful insights concerning the importance of free trade zones, institutional quality and regional integration.

1.6 Scope of Study

This study‟s focus will be on the 15 ECOWAS countries selected from West Africa: Mali, Niger, Nigeria, Senegal, Sierra Leone, Guinea Bissau, Liberia, Cape Verde, Togo, Burkina Faso, and Cote d‟Ivoire, Ghana, Guinea, Gambia and Benin for the period from 1985 to 2013. The geographical region has been chosen since it has recorded low trade over the years on both sides (export and import) compared to other regional tradings groups of the world in the past four decades.

Combine with these, are the high levels of corruption and political unsteadiness in the area as reflected by the political unrest and corruption indicators. On the export flow side (intra-trade) ECOWAS countries will be focused on while on the import flow side (inter-trade) to ECOWAS countries will comprise the following selected countries based on existing ties subsisting between the countries such as:Hong Kong, Macao, Demark, Finland, France, Germany, Greece, Italy, Japan, Netherlands, New Zealand, Portugal, United Kingdom, United States of America, and Poland.

Using cross-section of bilateral export flows between ECOWAS countries pairs totaling 6525 observations (15 x 15 x 29) and bilateral import flows of countries pairs to ECOWAS totaling 6525 (15 x15 x29) three models of gravity will be considered namely: export, import and trade. While for the institutional quality model, the data will start from 1996-2013 due to availability of institutional data.

1.7 Organisation of the Study

The thesis comprises six chapters including this one. The first chapter comprises the background of the study, the problem statement, the research questions and objectives, scope of the study, limitations, and the significance of the study. Generally, the chapter provides an overview of ECOWAS trade flow. Chapter 2 will focus on brief definitions of regional integration concepts and a review of the empirical literature of trade. Thus, this chapter covers the literature on the application of the gravity model, intra- and inter-trade of ECOWAS and other relevant literature on economic integration. Chapter 3 focuses on the methodology including gravity model; hence, the chapter will explain the methodology, the theoretical framework of the gravity model, and the theoretical justification of the gravity mode. This chapter also deals with model specification and techniques for gravity model of trade for both exports and imports. Chapter 4 analyses the data, ECOWAS trade flows with the use of gravity model of export and import. Chapter 5 is devoted to the presentation and analysis of future prospects and challenges of trade flows with interpretations. Chapter 6 concludes the study with policy implication of the findings, limitations of the study, suggestions for future research and a summary.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter comprises of two sections.The first section defines the basic concepts of regional integration and also discusses the theortical framework.The second section of this chapter reviews the empirical literatures.

2.1.1 Definitions and Types of Trade Integration

Economic integration is the gradual removal of economic boundaries between countries (Molle, 1991). According to Business dictionary (2013), it define economic integration as „‟the elimination of tariff and nontariff barriers to the flow of goods, services, and factors of production between a group of nations, or different parts of the same nation‟‟. Furthermore, Molle (2006) highlight the following points that might have impact in the process of integration such as peace and security, economic welfare, democracy and human rights.

Democracy: Integration induces democracy because it tends to encourages member nations to form regional grouping. Molle (2006) believes that member nations forming regional grouping gain economic profit through mutual participation and cooperation. This step can hinder the chances of overturning a legitimate government through illegal means.

Peace and security: Integration enhances peace and security because internal /external conflict which can easily be settled through the help of integration/grouping. Mutual grouping is the main key to proportionate and peaceful co-existence

Human right: Respect for rule of law is a vital tool for creating a peaceful society. Human right fully respected without any form of discrimination or harassment (Molle, 2006).

Institutions: „"Are the rules of the game in a society or more formally, are the humanly devised constraints that shape human interaction"". Hence, institutions are set of rule that govern the interaction between individuals in a society (North, 1990). For the purpose of this study, institutional qualities are of three categories: Government effectiveness, Regulatory quality, Rule of law, Corruption and Political instability.

Trade flows: It can be defined as the flow of goods and services from country i to country j. For the purpose of this study, trade flow represent the export, import and the total trade flow from or within ECOWAS trading pairs.

2.2 Regional Trade Agreement Definitions

Regional Trade Agreement is as an arrangement between two or more countries that is within a certain geographical location/region, in order to strike accord for the purpose of reducing or removing tariff and other major confinement among themselves in order to achieve economic growth and development.

2.2.1 Regional Trade Concept

The pros and cons of regional trade integration identified by orthodox economic theory of integration, thus the strength were identified through diversion or creation of trade and its effect originating from integration (Viner, 1950; Meade, 1955; Lipsey, 1960). Viner outlines the theoretical gains and cost of regional trade agreement into two folds.

The first type identified as static effect integration, which is mainly on welfare of the consumers and efficiency on production. The second type is dynamic effect that relates to growth rate at the long run of members of the regional group i.e. each country within a regional group.

2.2.2 Categories of Regional Trade Agreements

Regional trade integration categorisations are of different types. Preferential Trading agreement (PTA) is the basic level of integration. In this category preference were given to certain goods. For instance Australia –Papua New Guinea denote a typical example of preferential trade agreements. Another category is bilateral trade agreement under this category two country strike accord i.e. countries that are into agreement under this category abolish tariffs. This can also be regarded to as Free Trade Agreements. Under this category, countries are allowed to design a favourable policy about external tariff against countries that are not within the agreements. Gradual process of tariff reduction is a continuous process, but it does not mean that at the long run trade will become completely free from all barriers. An example of FTA is NAFTA and ECOWAS.

Custom Union represent the third category of integration where by all forms of trade barrier are abolished, while a common external trade policy is created for all member countries while non-members cannot benefit from this privileges. For instance Mercosur –Southern Cone represent a typical example. Common Market is considered to as the fourth level of integration because in this category, common market is established when all members removes all forms of trade barrier in order to allow free movement of goods and other factors. In this category, common external policies of trade were maintained.

It is also similar to Custom Union but in this category factor of production were allowed to move freely. A typical example under this category is COMESA. Economic Union is the final stage of integration because at this stage all countries under this platform designed common macroeconomic policies while movement of goods and factor of production also allowed to move freely. In this category European Union is a typical example (jovanovic, 1998).

2.3 Theoretical Framework for Gravity Models

Ricardo theory

The international trade theory bases rely on the principle of comparative advantage. David Ricardo mainly develops this principle. However, Ricardo argues that it will be beneficial if trade between two countries with different size have absolute productive advantage (cheaper/ lower price) in all goods. Assuming the following conditions are fulfilled.

Ricardian assumptions are listed below:

(a) Two countries are involved (i.e. foreign and home)

(b) Two final goods are involved (goods 1 and 2)

(c) Each of the goods uses only one input (labour) in production. Labour is assumed to be homogenous in quality.

(d) Labour is inelastically supplied in each country.

(e) Labour is assumed to be perfectly mobile within each country but remain immobile at international level.

(f) Competition existed in both factor and product market

(g) No trade barrier and no cost of transportation

(h) Technologies of the two countries remain different

(i) The constant of labour requirement per unit remain invariant under scale of production.

In summary, comparative advantage emanate from technological differences that existed between countries. It is assumed that trade brings efficiency through specialization shared between countries that is involved. In the absence of technological differences, trade differences is assumed to give rise to comparative advantage .Another argument of Ricardo is that if all countries are similar in their characteristics, economics of scale are the determinant of trade, since countries are allowed to specialize into fewer tasks.

Furthermore, looking at increasing return to scale (IRS) the trade pattern is characterized by the existence of multiple equilibria. These can also be ranked by using welfare as a medium of measurement i.e. „"bad and good"" equilibria. Supposing an economy is in a „"bad"" equilibrium, a decentralized economy may result into a failure that will prevent it to move into „"good"" equilibrium.

Contrary to the acceptance of H-O theory, the theory faces controversial test by Lenontief (1953), preposition L was at the core of any test of the H-O-S theory. Testing proposition L is no longer desirable since it can be shown that it may not hold even when the H-O-V model is true .The preposition L may fail to hold which is convincingly proved by Leamer‟s (1980) through examination of Leontief,,s original data for united states (US) using proposition R.Leamer ranked the US‟‟s proportionate net trade in capital and labour service.Hence this ranking was revealed to rely on capital abundant relative to labour, which is against Leontief type However many other international trade theories were created, Stolper-Samuelson theorem**.** This theorem state that an increase in the price of any good raises the nominal, relative and real return to the factor intensive in the production of that good then lowers the nominal, relative and real return to the other factor.

This theorem lay down the following assumptions i.e. perfect competition, constant returns, number of factor must equate number of products which means that a rise in relative price of a good will leads to an increase in the return to the factors that is involved in the production of the goods, when with other factors might reduce.

Rybczynski Theorem: State that if capital –labour ratios differ between industries then at constant commodity prices, an increase in the supply of one factor alone will cause an expansion of the good intensive in the use of that factor and an absolute reduction in the output of the other good. Generally this theory is all about targeting and strategies for the factor endowments to output in order to analyse the best way the output will respond to endowment.

However,factor price equalisation theorem state that factor prices can be determined in a unique way using commodity price .frictionless with free trade will lead to factor price

equalisation (FPE) between two countries only if they remain homogenous/identical, linear homogeneous technologies combine with factor endowments are also adequately similar. According to Samuelson (1949) argued that increasing goods will increase the likelihood of FPE. Furthermore, Heckscher-Ohlin theory faces some setback but up till date the theory remain useful in explaining how trade affect income distribution (krugman and Obstfeld,2009) .Also Leamer and Levinsohn (1995) pointed out in his work that Heckscher-Ohlin theory remain extremely significant in the development of trade theory that is in existence for more than sixty years. Another theory of international trade called Specific Factor Model (SFM) was created to show how a factor of production that is specific to a certain industry could affect the pattern of trade. Summarily it is regarded as the short factors imagination of Heckscher Ohlin theory.

However, another new trade theory was developed in the early 70‟s, which leads to a new trend in explaining international trade. Also numerous researchers has revisited the theory for modifications in various ways which include: Helpman and krugman (1985), Krugman (1979 & 1980) ,Falvey (1981), Helpman (1981) and Shaked and Sutton (1984). This theory removes the assumption of constant return to scale, then rely more on industries that has features of economic of scale. Whether increasing return or economics of scale, the theory rely on two factors i.e. strategic interaction and perfect competition .The theory goes further to explain that countries need not to trade only because of comparative advantage rather they must also consider increasing return to scale with economic of scale also.

In a similar manner, another economic theory spring up which is called „‟New Economic Geography theory‟‟‟‟ which is created to give detailed explanation on why industries bunch up within certain region and countries. In general, this theory assumed that cluttering of industries happened due to agglomeration in economics.

This theory is widely view as a theory that is more of economics of development. The new trade theories i.e. new economic geography and the new trade theory are created and derived by Paul R krugman, the winner of Nobel Prize winner of economics in the year 2008 mainly for the great contribution to the development of these two theories. Another hypothesis spring up called Vernon product cycle; these hypotheses mainly focus on institutions especially on intellectual and patenting property rights. Linder (1961) predict that the same characteristics together with homogenous demand can develop the homogenous industries. Hence, countries with the same features can trade with each other but with differentiated goods. Countries with the same trend of demand will definitely trade more compare to other countries with different features. The function of firms in international trade has been formulated to be a theory that is to examine the supply side of the host economy .the side under this theory is commonly with a feature under a set of production functions under the conditions that factor of production translated to consumption goods.

Finally the theory of multinational for a firm to serve a foreign market then it must have two ways of servicing .apart from exporting alternative ,the other alternative is to create a production plan which is multiple that can provide different service to foreign market .E.g. foreign direct investment However, issues identified with the previous basic

gravity model forced some researchers to turn their search light in order to provide a strong basis for gravity just like a model for trade. Clearly there is need to adjust some basic fundamental assumptions in order to address the previous issues raised with in the basic model. Anderson (1979) initiated the first approach to address the issues identified in the previous model. In a similar manner numerous researchers has shifted their attention to gravity model in order to have theoretically grounded gravity model, the famous one is „‟gravity with gravitas‟‟‟ called the model of Anderson and Van Wincoop (2003).

Anderson and Van Wincoop (2003) designed a gravity model based on a demand function. Consumer preferences chosen form which serve as a basis for the structure of constant for elasticity of substitution. Hence consumers must have „‟love for variety‟‟‟ preferences, which invariably signifies that consuming more of a product variety increases their utility.

Krugman (1979) form the fundamental assumptions basis for the production side. Which says that for increasing returns to scale to hold each firm must produce a single unique product variety. Going by this assumption large number of firms, fundamental interactions, and competitions vanishes then firms engage in fixed mark-up pricing. At equilibrium, the differences between marginal cost and price covers the fixed cost involved in market entry. A producer can decide to sell is goods at anywhere whether within the country or outside. In order to make this model simple, the assumption is that selling goods locally does not involves transport costs while selling goods at international level involves transport costs. Consumers can consume varieties of product from different countries across the globe. Perhaps, the prices of product produced at

international level may involves transportation cost i.e. cost of moving the goods from one country to the other. Building blocks derivation form the basis for equilibrium in which all firms, producers transact both at local and international level (international trade), then consumers responds. The basic model of gravity allows reflection of total volume of exports by each firm. Combining all firms within a country together make it possible to derive the total value of exports in a particular country, this is regarded to as dependent variable under gravity model.

To produce a gravity-like model all what we have discussed earlier must be considered and from these foundations, some macroeconomics assumptions characteristics are imposed. These identities run from the concept that in a single sector economy where the relationship of input-output system does not exist, the total sum relating to production must equate to the GDP. Aggregation using a set aside way gives room for possible derivation of „"gravity with gravitas""" model:

$$logX_{ij}^{k} = logY_{i}^{k} + logE_{j}^{k} - logY^{K} + (1-\sigma_{k})[log\tau_{ij}^{k} - log\pi_{i}^{k} - logp_{j}^{k}] \quad (2.1)$$

$$\pi_{i}^{k} = \sum_{j=1}^{c} \left\{\frac{\tau_{ij}^{k}}{p_{j}^{i}}\right\}^{1-\sigma_{k}} \frac{E_{j}^{k}}{Y^{k}} \quad (2.2)$$

$$P_{j}^{k} = \sum_{i=1}^{c} \left\{\frac{\tau_{ij}^{k}}{\pi_{j}^{i}}\right\}^{1-\sigma_{k}} \frac{Y_{j}^{k}}{Y^{k}} \quad (2.3)$$

Where:

X= Index of export over countries *i* and *j* with sector (*k*)

Y= GDP

E = Expenditure (which might not be the same on sectoral basis as GDP)

$Y^k = \sum_{i=1}^{c} Y_i^K$ (World GDP)

σ_k = Elasticity of substitution of intra- sectoral between varieties

τ_{ij}^k = Trade costs.

The most important characteristics of Anderson and Van Wincoop (2003) is the incorporation of two variables i.e.π_i^k and P_j^k

Where:

i. π_i^k = Outward multilateral resistance that captures all export from country i to country j depending on the trade cost across all potential export markets.

ii. P_j^k = inward multilateral resistance that captures that import dependency from country j to country i depending on trade costs from the potential suppliers.

Combinations of these two terms remain the key to the model and successfully correct the problem facing intuitive gravity model. In all bilateral routes, the multilateral resistance terms requires trade costs. $\frac{\partial log X_{ij}}{\partial log \tau_{ik}} \neq 0$.

The relative price change of one route can affect the trade flow of other routes. Since the previous intuitive gravity model does not include outward and inward multilateral resistance variables but they are correlated with trade cost. Even there is evidence of

classic omission of variables biasness in intuitive gravity model i.e. other variables that directly affect trade.

However, the following key points are to be taken into consideration for gathering data under theoretical gravity model. Some literatures used dependent variables as logarithm of total trade for a country i.e. the addition of imports and exports or rather they use the average of exports in both ways.

Theoretical gravity model indicated that such an approach might leads to misleading or confusing results; hence, the direction of each trade should be in a single flow (unidirectional export flows). For instance, export from Nigeria to Benin should be recorded in a single line, and export from Benin to Nigeria should be recorded in a single line too. That is for a country pair. The second observation noticed in the literature is whether trade values should be reported in real or nominal terms, there is no serious issue regarding that but at the same time we needs to take note if we are using cross sectional gravity model or time series in order to determine which one to use. As for cross –sectional no issue using trade values reported in real or nominal terms because regardless of any scaling used whether uniform or factor applied, the result will still be the same .

However, as for time series the answer is straight and clear because in line with the theory, trade flows should not be in real terms rather it should be in nominal terms. This is due to the fact that export are usually deflated under the two multilateral resistance e.g. GDP deflator or CPI (prices indices or deflating export) cannot be adequately identify the unobserved multilateral resistance, which can leads to misleading results.

Another aspect to take note is the GDP data, where it should be in nominal and not real terms.

Since they are also deflated with the multilateral resistance terms, i.e. unobserved price indices, also deflated by price index that is observable and other factors might likely leads to misleading results. Gravity model make it clear to include sectoral expenditure including output rather than GDP.

Furthermore, this is impossible to prove empirically especially when developing nation are included. Gravity model specification must include trade costs for estimation purpose i.e. trade costsτ_{ij}^{k}. In literatures, this function is specified as a terms of observable variables, which is assumed to be affecting trade costs when using log-linear specification in a simple form, hence we can generate trade costs function as:

$$log\tau_{ij}^{k} = b_1\, logdistance_{ij} + b_2\, contig + b_3\, comlang_{off} + b_4 colony + b_5 comcol \ldots\ldots (2.4)$$

Where:

Distance = Geographical distance between two countries i.e. i and j

Contig = Measures unity between countries with the same land border

$Comlang_{off}$ = Countries with the same language that is officially recognise

Colony = Countries that share the same colonial relationship

Comcol = Countries colonize by the same country.

These formulations represent a typical gravity model, which is in line with the literatures of gravity model; this particular model has been described as a significant determinant of bilateral trade. Most researchers argue to include policy related variables. Another important issue to take note is that trade cost cannot be separated from elasticity of substitution σ_k i.e. elasticity of trade cost (b term) during estimations.

Hence the two must be multiplied together, it was suggested that we need to be very careful when interpreting the estimated coefficient differences concerning different sensitivity level on various sectors under trade cost factors. For us to find the elasticity of pure trade cost, there is a need to interact cost variables with substitution of elasticity when estimating, whether using model based estimates or general assumption. According to Broder and Weinstein (2006), in application most researchers do not follow it.

The literature provides variety of grounded theoretical models such as Eaton and Kortum (2002), Chaney (2008), Helpman et al (2008) and Anderson and Wincoop (2003), all of them produce gravity like equation model based on the patterns of trade like which set of firms productivity are heterogeneous, yet existence of slight differences were noticed in the model produced, but they all maintain some basic fundamental similarities.

Therefore, researcher is allowed to choose anyone that favours a particular purpose. Anderson and Van Wincoop (2003) Gravity Model of trade highlighted the following assumptions using consumption with Gravity model:

All countries can trade with each other; consumer of a country can purchase goods from other countries. Hence, trade can be regarded as costless and consumers remain identical then maximises utility across different varieties. Assuming consumer consume different varieties (index v) in k sectors and(index by k) thus it can be written in mathematical form as :

$$U_i = \sum_{i=0}^{k}\{\int_{Dev_i^k}[x_i^k(v)]^{1\frac{1}{dx_{dv}}}\}^{1\frac{\frac{1}{1}}{\sigma_k}} \quad \text{..... (2.5)}$$

Vi = Represent different varieties consumed by country I while $x_i^k(v)$ signifies the amount of variety v consumed from sector k in country I, thus $p_i^k(V)$ represent the unit price. V symbol represent (discrete number of varieties) a subscript and integrals replaced by sums. The total sums of sectoral utilities represent the utility function, which is equally weighted.

The restriction can be removed by adding the entire sub –sector or sectoral utilities using Cobb-Douglas function of utility, while accommodating different weights. The tendency of existence of exogenous depends on the longer shares of the model. This is in line with other basic result such as: Chaney (2008) is a typical example of what alternative expression look like. Anderson and Van Wincoop (2003), Helpman et al., (2008), consider using a single sector in order to avoid cluttering up the algebra with more indices. However, putting this issue into consideration it is very important to consider disaggregation of some sectors in order to critically examine the other key implications of data that flows from the model using multi-sector circumstances.

Budget constraint of country i:

$$E_i = \sum_{k=1}^{k}\{\int_{vEV_i^K} p_i^k \ (V)x_i^k(v)dv\} \equiv \sum_{k=1}^{k} E_i^k . \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots .. \ldots\ldots\ldots .. (2.6)$$

Consumers are faced with the problem of what to choose concerning $x_i^k(v)$ in v in order to maximize equation (2.7) in relation to (2.8).The Lagrangian can be stated as follows:

$$\mathcal{L} = \sum_{k=1}^{k}\{\int_{v\in V_i^k}[x_i^k \ (v)]^{1\frac{1}{\sigma_{k d_v}}}\}^{1^{\frac{1}{\frac{1}{\sigma_k}}}} - \lambda \sum_{k=1}^{k}\left\{ \int_{v\in V_i^k} p_i^k \ (v)x_i^k(v)dv\right\} \qquad \ldots\ldots\ldots\ldots ...$$

(2.7)

Assuming first order condition concerning quantity with the aim of setting it to zero will gives:

$$\frac{\partial \mathcal{L}}{\partial x_i^k(v)} = \frac{1}{1-\frac{1}{\sigma_k}}\{\int_{v\in V_i^k}[x_i^k \ (v)]^{1\frac{1}{\sigma_{k d_v}}}\}^{1^{\frac{1}{\frac{1}{\sigma_k}}1}} \left(1-\frac{1}{\sigma_k}\right)[x_i^k(v)]^{\frac{1}{\sigma_{k-}}} \lambda p_i^k(v) = 0 \ldots\ldots\ldots\ldots \ldots\ldots\ldots .. (2.8)$$

Determine $X^K = \{\int_{v\in V_i^k}[x_i^k \ (v)]^{1\frac{1}{\sigma_{k d_v}}}\}^{1^{\frac{1}{\frac{1}{\sigma_k}}1}}$, rearrange, and regroup the terms to show:

$$\frac{[x_i^k(v)]^{\frac{1}{\sigma_k}}}{\int_{v\in V_i^k}[x_i^k \ (v)]^{1\frac{1}{\sigma_{k d_v}}}} X^k = \lambda p_i^k(v) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots .. (2.9)$$

Rearrange once again, total all kinds together in a sector, then multiply all by the prices by applying Lagrangian multiplier to solve the problem:

$$p_i^k(v)x_i^k(v) = \lambda^{-\sigma_k}[p_i^k(v)]^{1-\sigma_k}(X^k)^{\sigma_k}\left\{ \int_{v\in V_i^k}[x_i^k \ (v)\}^{1\frac{1}{\sigma_k}} d_v\right\}^{-\sigma_k} \ldots\ldots\ldots\ldots\ldots\ldots .. (2.10)$$

$$\int_{v\in V_i^k} p_i^k(v)x_i^k(v)dv \equiv E_i^k \quad \text{..... (2.11)}$$

$$\lambda^{-\sigma_k}[p_i^k(v)]^{1^{-\sigma_k}}(X^K)^{\sigma_k}\{\int_{v\in V_i^k}[x_i^k(v)]^{1\frac{1}{\sigma_k}}d_v\}^{-\sigma_k}\ \int_{v\in V_i^k}[p_i^k(v)]^{1^{-\sigma_k}}dv \text{..... (2.12)}$$

$$\lambda = \{\frac{\int_{V\in v_i^k}[p_i^k(v)]^{1-\sigma_k}dv}{E_i^k}\}^{\frac{1}{\sigma_k}} \frac{X_k}{\int_{V\in v_i^k}[x_i^k(v)]^{1-\frac{1}{\sigma_k d_v}}} \text{..... (2.13)}$$

Therefore, to obtain a demand function, substitution method needs to be applied by substituting the Lagrangian multiplier back to first order condition of equation (2.11):

$$\frac{[x_i^k(v)]^{\frac{1}{\sigma_k}}}{\int_{V\in v_i^k}[x_i^k(v)]^{1-\frac{1}{\sigma_k d_v}}}X^k = \{\frac{\int_{V\in v_i^k}[p_i^k(v)]^{1-\sigma_k}dv}{E_i^k}\}^{\frac{1}{\sigma_k}} \frac{X_k}{\int_{V\in v_i^k}[x_i^k(v)]^{1-\frac{1}{\sigma_k d_v}}}p_i^k(v) \text{..... (2.14)}$$

$$x_i^k(v) = \frac{[p_i^k(v)]^{-\sigma_k}}{\int_{V\in v_i^k}[p_i^k(v)]^{1-\sigma_k}dv}E_i^k \equiv \{\frac{p_i^k(v)}{p_i^k}\}^{-\sigma_k}\frac{E_i^k}{p_i^k} \text{..... (2.15)}$$

Where $p_i^k = \{\int_{V\in v_i^k}[p_i^k(v)]^{1-\sigma_k}dv\}^{\frac{1}{1-\sigma_k}}$ represent CES price index for sector k in country i. The problem-facing producer's in this model is how to maximize profit at minimum cost. Assuming large number of firms, strategic interaction disappears, mark-up of firm charges remain constant under the general model. In this section, equilibrium pricing equation and equilibrium demand equation formulated in the previous section will be used to generate gravity model, then each country i measure N_i^k for all active firms regarding sector also all the firms are differentiated with unique product.

To measure the aggregate of the worldwide product for each sector is $\sum_{i=1}^{c} N_i^k$ .Per unit of product produce; each firm will have to pay a certain sum of amount which is fixed f_i^k with a variable cost at a_i^k.wage rate =w_i. Therefore, a firm"s profit is specified as:

$$\pi_i^k(v) = p_i^k(v)x_i^k(v) - wa_l^k x_i^k(v) - wf_l^k \quad \text{…….. ……. ...(2.16)}$$

Under different varieties, we do not need to assume whether to use cournot (quantity) or Bertrand (price) competition. Therefore if Bertrand plays out, then first order condition hold:

$$\frac{\partial \pi_i^k(v)}{\partial p_i^k(v)} = x_i^k(v) + p_i^k(v)\frac{\partial x_i^k(v)}{\partial p_i^k(v)} - wa_i^k \frac{\partial x_i^k(v)}{\partial p_i^k(v)} = o \quad \text{…….... (2.17)}$$

To solve for prices:

$$p_i^k(v) = wa_i^k - \frac{x_i^k(v)}{\frac{\partial x_i^k(v)}{\partial p_i^k(v)}} \quad \text{…….(2.18)}$$

To adjust the expression above, explanation on partial is needed $\frac{\partial x_i^k(v)}{\partial p_i^k(v)}$, evaluation with the use of demand function of equation (3.17) is considered, taking note of large group based on assumption$\frac{\partial x_i^k}{\partial p_i^k(v)} = 0$.

Therefore, any slight change in any firm"s price (one) will not affect the general price level of the sector because many firms are in competition. In view of this, the equation can be written as:

$$\frac{\partial x_i^k(v)}{\partial p_i^k(v)} = -\sigma_k[p_i^k(v)]^{-\sigma_k-1}\{\frac{1}{p_i^k}\}^{-\sigma_k}\frac{E_i^k}{P_i^k} = -\frac{\sigma_k x_i^k(v)}{p_i^k(v)} \quad \text{..... (2.19)}$$

Using first order condition under profit maximization, we can rewrite the equation as:

$$p_i^k(v) = wa_i^k + x_i^k(v)\frac{p_i^k(v)}{\sigma_k x_i^k(v)} \quad \text{..... (2.20)}$$

If we rearrange and solved for price the equation is going to give:

$$p_i^k(v) - \frac{1}{\sigma_k}p_i^k(v) \equiv p_i^k(v)\left(1-\frac{1}{\sigma_k}\right) = wa_i^k \quad \text{..... ..... (2.21)}$$

$$p_i^k(v) = (\frac{\sigma_k}{\sigma_k-1})wa_i^k \quad \text{..... (2.22)}$$

The firm‟s marginal cost of production is on the right hand side of equation (2.24). Bracket represent the constant markup with the sector, it is assumed that the numerator must be greater than the denominator, in view of this positive wedge existing between marginal cost, price and factory firm‟s gate. It is assumed that wedge rely on elasticity of substitution of sectors which is constant to all firms under this sector.

2.3.1 Trade costs under gravity model

Furthermore, so far we have not considered international trade circumstances, the model comprises of pricing conditions and a set of demand functions for all sectors in all countries. The models explain the frictionless world in trade, where all goods produced in country i is exported to country j under zero charges. Under this assumption prices remain the same at both countries. For trade friction to be introduced, the common formulation needs to be used i.e. when firms export goods from country i to country j

then $\tau_{ij}^{k} \geq 1$ units, order for a single unit to arrive. The melting point is different way to the terminus. Producing a good at marginal cost in country i while the same good is consumed in the same country i is wa_i^k.

Hence if the same good produced by country i is consumed by country j then marginal cost is $\tau_{ij}^{k} wa_i^k$. Under this assumption, costless trade must match with $\tau_{ij}^{k} = 1$ while τ_{ij}^{k} must match additional one including ad valorem tariff rate. Therefore trade friction is linked with a particular coefficient but does not depend on the size of goods shipped. Hence iceberg costs is treated as variable cost but not fixed. Under any given two countries i.e. county i and j, iceberg trade cost means that country j rice of goods that was produced in country i is from equation (2.24) as shown above:

$$p_j^k(v) = \left(\frac{\sigma_k}{\sigma_k - 1}\right) \tau_{IJ}^{K} wa_i^k = \tau_{ij}^{k} p_i^k(v) \quad \text{..... (2.23)}$$

If we rewrite the country price index into a general form:

$$p_j^k = \{\int_{v \in V_j^k} [\tau_{ij}^{k} \, p_i^k(v)]^{1-\sigma_k} dv\}^{\frac{1}{1-\sigma_k}} \quad \text{..... (2.24)}$$

Conditions to take note, the country price index include different varieties produced and consumed by the same country.τ_{ii}^{k} This means a set to unity, in order to show the absence of likely barrier faced by internal trade.

2.3.2 Endogeneity Problem

Whether using intuitive or theoretical gravity approach to estimate we need to pay attention to the problem of endogeneity especially when policy variable are inclusive in the model. The main reason is that country integration level often determines the level of policies implemented, thus from econometrics point of view. An endogeneity variable is a type that breaches the first assumptions of OLS hence thereby leading to existence of correlation between the error term and dependent variable. To show this problem mathematically, gravity model is represented by the first equation below:

$$logX_{ij}^{k} = C + F_i^k + F_j^k + (1 - \sigma_k)\left[log\tau_{ij}^{k}\right] + e_{ij}^{k} \quad \text{..... (2.25)}$$

The second equation is represented by trade costs which is normally influenced by policy and are endogenous under trade flows:

$$log\tau_{ij}^{k} = D + G_j^k + blogX_{ij}^{k} + w_{ij}^{k} \quad \text{..... (2.26)}$$

Using substitution method:

$$logX_{ij}^{k} = C + F_i^k + F_j^k + (1 - \sigma_k)\left[D + G_i^k + G_j^k + blogX_{ij}^{k} + w_{ij}^{k}\right] + e_{ij}^{k} \quad \text{..... (2.27)}$$

Assumptions of OLS hold only if w_{ij}^{k} and e_{ij}^{k} are not correlated, which is very rare in application. Researchers are advice to exercise caution when it comes to interpretation of result, which means estimated parameters could be biased due to endogeneity.

2.3.3 Application of Gravity Models

Tinbergen (1962), Poyhonen (1963) and Pulliainen (1963) were the main researchers behind the practical application of gravity model that was widely accepted in today‟s international trade. The report became the bedrock of gravity model which leads to further modifications, recently three main approaches has been developed to suit the empirical application of gravity model to modern trade. The approaches include: the general gravity model, gravity trade under country specific and commodity grounded gravity approach.

2.3.4 The General Gravity Model of Trade

According to Bergstrand (1989) derivation of general gravity model, price index variable was added to the model which is originally part of partial equilibrium.

This stand for the assumption of small market with identical utility, and production function all over the countries included in the general equilibrium model. He further emphases that gravity model represent a reduced form of partial equilibrium model which represent a sub –system of a complete general equilibrium trade model with special references to across the countries differentiated products. Trade flow at aggregate level went through series of transformation, thus it can be composed as:

$$PX_{ij} = f(y_{i,}y_{j,}D_{ij}, A_{ij,}EFTA, EEC, E_{ij,}U_I, U_{j,}P_i, P_j) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2.28)$$

Where:

PX_{ij} = Stand for the total value of trade flow from i to j. These particular characteristics represent the extra variable of $E_{ij,}$ Ui, Uj $P_{I.}$

$E_{ij,}$= Represent the exchange rate.

U_I = The index value in unit

P= Price index

$_{ij}$ = The Subscripts $_{ij}$ represent exporting and importing countries

The key development of this gravity model is the use of differences in price indices at cross country level. To bring in the exporter‟s price index and also the importer‟s GDP deflator as a proxy for importer‟s price index, Bergstrand (1985) applied GDP deflator for exporters.

By integrating gravity model in an equation form including proportional factor endowment differences with non-homothetic tastes while basing assumption on monopolistic competition, hence Bergstrand was able to introduce another new form of gravity model in the year 1989. For application purpose gravity model under intra-industry trade, theoretical basis was furnished under non-homothetic preference ground. However, importers and exporters per capita incomes which represent procurators for proportional factor endowments of all trading nations were included in Bergstrand‟s equation. He stress further to analyze the model using Standard International Trade Classification (SITC) single figure class using multi-industry world by relying majorly

on product differentiation between firms instead of countries. Finally he stressed further that gravity equation are in line with new theories both intra and inter –industry trade.

2.3.5 Gravity Trade under Country Specific

The main objective of country specific using gravity model was to examine the trades between all countries‟ trading partners. Bergstand (1985) formulated theoretical basis for gravity model. Other studies like Gould (1996) bank on Bergstrand instruments in order to have a backup for country specific research, where key interests were on import and export with its trading partners using a specific country. Gravity model in a standard form are mostly used with population study. Using specific model for a country, the sample size of (1/N) for population size which can also be re written as N (N-1) when using standard form of gravity model. Country basis model uses N-1 as observation, while N is regarded to as number of nations involved in the study.

Hence, using gravity under specific method symbolizes only a portion of standard and full edition of gravity model, i.e. when using country specific model it involves reduced set of data compared to a standard gravity model. Area to take note is the issue of multilateral, bilateral trade or two countries specific type. The main key issue is that country specific gravity model only captures only one individual country with regards to trading partners (import and export). Bergstrand‟s theoretical basis examine the inter-trade among the total partners nations trading inside a population.

Hence this country specific type of gravity might not be correct for research that is concentrated on a country basis. It is advisable to look for more suitable theoretical

backup. Bergstrand faces limitations under this country specific type. Bergstrand (1985) used world trade equilibrium to prove theoretical basis for gravity modeling. Simply means that aggregate exports and imports using the whole world must equate each other.

Applying this, at equilibrium aggregate trade using all commodities and selected commodity must be equal. To clarify his assumption further Bergstand came up with gravity model by deriving the conduct of importers and exporters. His presumption was that exporters and importers are both on a mission to make gains which is subject to fixed/constant elasticity of transformation (CET) using immobile resources.

The main goal of the suppliers is to maximize gains at minimum cost (exporters) while the importers are faced with income constraint which inclines the level of constant /fixed elasticity of substitution (CES).

Basically our assumption is based on the fact that all output from all countries are traded at the foreign market. i.e exporters make gains from their goods sold at the international market N x (N-1) represent exporters bilateral supply while N x (N-1) represent importers bilateral (demand) which was produced at a particular period of time. N= the total number of countries involved in the goods traded (The aggregate number of N nations that was involved in the overall trade at world level) N-1 =Total number of partners trading together (i.e. A particular country j cannot trade with itself) .Bringing demand and supply equation together formed gravity model.

Bergstrand (1985) spell out conditions to be satisfied which is equilibrium necessity requirement, there is need to formulate assumption that all importing countries are involved in total exports from the exporting countries in the specified study within the

data set. Gravity model of country specific did not take care of necessity. For further clarification on this point Gloud (1994) can be sight as a typical example. An adjustment was made to Bergstrand (1985) model and was utilized to study US and its trading cooperators.

This modification was however associated with a limitation which state that all US exports constitute the entire imports between its trading cooperators under world economy. While it"s trading cooperators also engage in imports from others countries. In summary aggregate import of trade cooperators does not equate with aggregate export of US, thus, application of specific studies using gravity model under world equilibrium trade assumptions based on (Bergstrand,1985) approach was not met.

However, Gloud (1994) studies reveals the underlying limitations employ by using world trade equilibrium basis for Bergstrand approach with the theory for gravity model which failed to stand in the case of country specific model of gravity. Bergstrand approach can be utilized only when considering a study on full scale but not on country specific as it is done in the case of Gloud (1996). Bergstrand approach and theory cannot be used for country specific, hence we need to look for another suitable model and theoretical basis for country specific studies. Country specific gravity approach is only employed to further gives better explanation to the trade pattern among countries. Thursby and Thursby (1987) conducted a study using country specific by employing Linder hypothesis study on effect of exchange rate unevenness on trade flows.

The following model was used to carry out the study. X_{jt}^{i} = represent the dependent variable i denote exporting country for a particular model while j symbolizes the set of

trading cooperators (i to j) while t represent the time frame (1 to t) for the study. Observations used in the model was denoted as J x T. Sample used by Thursby and Thursby (1987) involved 17 countries and they also came up with 17 equations.

Each equation represent the export for a specific country i.e. (i=1, 2, 3, 4, 17) till (j=1, 2, 3, 4, 16) over the period of nine years with a total number of observation under each equation shows 144. Furthermore, Gould (1994) applied gravity model specific on US trade including all trading cooperators which is similar to Thursby and Thursby model, one country is the main focus in all equation considered for regression using times series combine with pooled cross- section under gravity model.

Gould‟s model used import and export as dependent variables, while as for the trade cooperators for US; no more other equation was introduced for estimation. Similarly, gravity model was given a new modification which was indicated with the use of time series combine with cross section data for specific country basis. Thus, using country specific model of international trade which incorporate income and distance as variable represent the basic model of gravity (Lung, 1998; Dhar and Panagariya, 1999; Kalirjan, 1998; Vido and Prentice, 2003; Gunawardana, 2005). Removal of barriers to trade, Tinbergen (1962) attempted to establish a model for standard measurement for international trade.

“Average " is calculated based on the model of trade that can expose the expected trade among the countries when trade barriers are in stochastic nature. If we compare the actual export with the anticipated exports, positive difference among them means that real exports are higher than expected exports. Importers give priority to countries whose

actual exports exceed its expected exports. However, real exports are lower than expected exports, which signify a negative difference.

A negative difference consists of the provinces of importers shows discrimination against exports from certain countries. The existence of negative residues in the eyes of policy decision makers who want to experience trade expansion in their trade is of utmost priority since there is a clear signal that there is room for untapped potential for companies in importing countries. This phenomenon makes the policy makers to intervene by removing trade barrier or resistance to even provide room for more negotiation.

2.4 Institutional Quality and Trade Links

Institutional quality and trade nexus is an area in literature which indicate that one of the institutional quality variable i.e. corruption impede global trade. It is possible global trade effects corruption, that is to say causal relationship runs from trade to corruption. For instance, trade barriers may lead to low trade flows and in the process encourages black market and at the long run corruption boom. Based on the early studies on corruption, they identified three main possible channels which include: price mark-up, the efficiency channel and the contract- awarding.

Under efficiency channel, the progress of the economy is affected by corruption through altering the efficiency of the economy. In an economy where cumbersome and pervasive regulations are exogenous, speed money under corruption may spur growth and

economic efficiency. In the work of Leff (1964) and Huntington (1968), they argue that bribes serves as a piece rate for the employees of the government.

They also indicated that bribes enables individuals to bypass bureaucratic delays. At such efficiency improving corruption which can also lead to an increase in global trade. Cudmore and Whalley (2003) indicated that corruption can improve welfare if queue up costs are raplaced with resource-transfering enticements. Corruption may perhaps also lead to inefficiency. Myrdal (1968) indicated that officials of government that are corrupt can create administrative delays in order to entice more bribes instead of speeding up the procedure. Kaufmann and Wei (1999) discovered that firms that is involved in paying more bribes are likely to spend more management time which incude bucreautics negotiating regulations and might likely face a higher cost of capital.

Under price markup or transaction cost channel, corruption might reduce trade or improve it, but it depends on whelther it involves theft. Shleifer and Vishny (1993) argued that corruption with theft can also be regarded to as collusive corruption (Bardhan,1997). Also government officials or its agents may levy bribes that might be lower than the official tax rate. A shipment can come into a nation at a more reduced transaction costs. The reduction in the transaction cost decreases the price mark-up which can also improves trade (the importers or exporters under bribe taking are regarded to as the winners while the principal i.e the government is the loser). In a situation of corruption with theft, the agent adds extra charge to the official duty or take some extra charge apart from the official levy as his own personal money. This additional charge represents a hidden tax which upsurges the cost of transactions and therefore it reduces international trade. Anderson and Marcouiller (1999) gave an

account of this channel in their model of predation. They argued that in the predatory states, shipments are very subjective to attacks by corrupt officials.

Customary measures must be taken in oder to defend any shipment otherwise it is regarded to as easy prey, which will be attacked with utmost certainty and might also be completely lost. Under these condition, importers and exporters will take defensive measures and corrupt officials will randomly attack. In such a setting, shipment is a game of chance. The chance of losing a particular shipment on a particular trade route decides the price mark-up and transaction costs. Under this condition, the probability consist of a shipment leaving its origin and successfully get to its destination nation. As for mark-up some proportions of the value or a part of the shipment is expected or assumed to be lost. Accordingly, we can say, increases in the level of corruption signifies an increase in the chance of loss which will result to an increase in pric mark-ups. A higher price mark- up is analogous to a hidden tax on global trade and will also tend to reduce trade among the two nations.

In ECOWAS, production costs are relatively high and at such hidden tax tends to force exports to be less competitive. Therefore, we can say that an importers or importers that are prepared to engage in corrupt activities can obtain a competitive advantage over those that are not willing or not ready to pay bribes. Corruption can improve or impede trade depending on exporting countries firms willinness to pay bribes at competitive level.

In coclusion, the discussions mainly focusing of the channels which affects global trade, indicate that the major impact of institutional quality i.e corruption and others on global

trade is an empirical issue. On this note we will extend the frontier of knowledge by looking at other institution quality variables other than corruption which includes political unrest, good governance and corruption itself mainly focusing on ECOWAS trade flows.

Finally, we will allow the data to decides whelther institutional quality (corruption, good governance and political unrest) affects cross-border trade positively or negatively under ECOWAS countries.

2.5 Empirical Review

2. 5.1 Trade Effect of Various Regional Trade Integrations

According to Rajapakse and Arunatilake (1997) discovery that getting rid of restrictive trade barrier will lead to increase in bilateral trade within South Association for Regional Cooperation (SAARC). In addition, Endoh (1999) discover that EEC AND CMEA regional trade improved during the period of 1960-1994. Peridy (2005) examine Mediterranean countries cooperation with EU and discover that Mediterranean countries export to EU increased while the Barcelona conference of 1995 sealed the deal of becoming free trade area between Mediterranean countries and EU in order to further enhance trade between the two regions. Plummer (2006) analyses the gains of ASEAN regional group and its members discover that two of the trading partners (two countries) step up their bilateral trade by 140 per cent far above the expectation.

Meanwhile, Bergstrand (1985) and Bergstrand (1989) discover a convincing result for both the EEC and EFTA for the period of 1965-1976 and the trade pact between the two

groups, preferential trading arrangement induced trade between the two groups. Rajapakse and Arunatilake (1997) detect that SAARC trade share with non –member countries and to the world in general will increase. For the period of 1960-1994, EEC member countries traded more with external regional countries.

Plummers (2006) discover that ASEAN trade improved with non-ASEAN. However, Nguyen and Ezaki (2005) investigate the economic benefit of regional integration on Vietnam using computable general equilibrium (CGE) model.

They consider about 11 countries which includes Malaysia, Indonesia, Philippines, China, Japan and other east Asia countries ,they discovers that regional integration increases the welfare level and income distribution for Vietnam. There was an increase in household consumption and income, which benefit the poor more than the rich. The removal of tariffs among regional trading members gives avenue bigger market accession, then it increases exports at all levels. Dion (2004) carried out investigation on the key parameters result of RTAs on EU towards the achievement of economic growth among its members. The researcher discovers that there is positive link between trade and growth. The differences between external trade and knowledge convergence appear to be substantial. Knowledge spill-overs have a greater effect on growth under trade. Knowledge transfer seems to have a relationship between TFP and growth.

Furthermore, Goto (2012) examine the merit, de-merit of regional trade integration agreement in East African Community (EAC), and then discover that EAC countries can proceed to start common market and currency union in the region. Das (2012) investigate the benefit of trade integration in Central Asian Republics (CARs) using

computable general equilibrium (CGE) discover that Regional Integration Agreement (RIA) in CARs is one of the most significant proportion of integration , then identify some of the sector that needs to be amended and their potentials ,hence intra industry trade benefits are identified.

Dennis (2006) carried out a research on MENA‟s trade era using RTAs and reforms of trade facilitation in order to revive MENA trade status in order to enhance more job creation, improved welfares and achieve better economic growth result.

Cheng (2005) carried out a research using 44 and 57 countries under exporting and importing to address the issue of individual and effect of regional alliance on bilateral symmetric trade flow at combine level, thus the individual and regional arrangement along trade line remain delicate. Devadason (2011) discover that China joining ASEAN regional group enhances the size of the market and export, thus the researcher hinted that there is no clear proof that import from china reduces ASEAN 5 export plan. The findings shows that China remain a key figure for export and import destination for each country within the regional group and it has not hinder the level of intra –ASEAN trade. Athukorala (2012) conducted a research on regional group on developing Asian economics (12 countries) for the period of 1985-2008 using gravity equation (standard gravity model). The projection indicated that non- oil trade will increase by 8.2% in the next three decades while share of intra –regional trade (non-oil) will also increases by 53-58% by 2030. Trade to.GDP will increase by 39.4% for 2010 and 74.4% for the next two years.

Geldi, (2012) Selected regional trading bloc of 36 Countries which includes EU 15 members, NAFTA and five members of AFTA using gravity equation which involves panel cointegratin analysis. The result shows that EU intra –union and trade creation effect is six times more than union effects, NAFTA export are diverted to MERCOSUR, as for NAFTA it shows that integration has not contributed to intra –trade union. AFTA still depend largely on extra union imports. Hur and Park (2012) selected regional blocs EC, NAFTA, CARICOM, EFTA, CACM, MERCOSUR, EC and SADC for the period of 1971-2003 using linear regression approach.

The result shows significant upward trends between growth rate and Per capita GDP within bilateral under FTA. Wu and Samsel (2012) selected Countries across the globe (45 countries) using gravity model. The result shows that countries with trade rules trade more than family based countries .Overall freer trade leads to greater welfare for a country. Jalles (2012) selected regional trading group of 21 Countries from south and South-East Asian for the period of 1980-2004 using Bayesian Model averaging (BMA).The result shows that openness of a country or a neighboring countries does not have impact on nation‟s growth and while RTA impacts remain unclear. Devadason (2011) regional trade bloc of ASEAN 5 using modified gravity model. The result indicated that China integration into ASEAN improved the size of size of key ASEAN members economy with regards to export market while import source of other ASEANS countries has not reduces intra–ASEAN trade flow. Pain and Lansbury (1996) indicated that regional trade agreements with special emphases on internal market program, it involves EC, UK, and German within the period of 1980-1992 while gravity model was also used for estimate.

2.5.2 Trade Diversion and Trade Creation

Many researchers discover the gains from regional trade practices. Viners (1950) for the first time detect the two contradictory consequences for each country‟s RTA membership. Usually a country member will gain more when trading with another member with lower cost after import tariffs are reduced or completely removed. The outcome of trade creation is to accelerate free trade zone via enhance resources allocation within the area. Moreover, trade diversion amounted to beefing up protection from resources beyond the region. The long run result depends on which one is bigger i.e. (trade diversion or trade creation), trade creation effect will leads to welfare improvement while trade diversion might lead to welfare loss.

However, Yeast (1998), Crawford and Laird (2001) notices that trade diversion in MERCOSUR, was caused due to lesser imports from non-members and afterward it changed the import style of the countries that is involved in importing. Kahouli and Maktouf (2014) determine the influence of FTAs that in the Mediterranean region which include EU-15, AMU and AGADIR then discover that there was strong presence of relationship among the trade flows and other components of FTA. Baier and Bergstrand (2007) and Kahouli and Maktouf (2013) indicated in their various studies that there is no clear link in order to distinguish whether trade agreement leads to trade diversion or trade creation. Similarly in another related studies carried out by Endoh (1999) and Garcia, Pabsdorf and Herrera (2013) discovered the influence of FTAs that was in the Latin America revealed the trade creation or diversion with special references to Japan.

According to Carrere (2006), Kahouli and Maktouf (2013) finalized that there is substantial gain in trade among Mediterranean members under regional trade agreements when compared with the rest of the world .Also Lee and Park (2007) and Kuznets Ova (2013) mentioned in their research works that FTAs will tends to reduce trade diversion hence it will leads to trade creation among members of FTAs in the East Asia region. Zidi and Dhifallah (2013) discover that there is no trade creation between EU and Tunisia thus under PTAs there was trade creation among the two trading partners, also there was presence of trade diversion of exports while there is no trade diversion of import.

According to Masahiro Endoh (1999) in their work they consider EEC, LAFTA and CMEA for the period of 1960 -1994 using gravity model, both trade creation and trade diversion dummies are statistically significant, also the effect proved to be weak in 1990s while it was noticed that each regional group is classified with different qualities. Frankel and Rose (2001) used major regional groups across the globe such as: ASEAN, CACM, PATCRA EEC/EC, FTA, EFTA, SPARTECA, US-Canada, Israel, US, and Australia using Gravity equation which includes distance language, currency, trade volume and log of bilateral trade was taken. The result shows that the effect of regional Trade agreements remains positive and statistically significant.

However, Estevadordal and Robertson (2004) carried out research on preferential tariffs on regional trade agreements NAFTA, LAIA, EU-Latin America using gravity equation which includes: log of bilateral import, distances, income, and language. The results remain statistically significant on tariff liberalization using trade between the elasticity of -0.8 to -1.7. Levy, Stein and Daude (2002) carried out research on regional trade

agreements focusing on foreign direct investment, it covers around 60 OECD including non-members between the period 1982 to 1998 and also Gravity model was used; FDI stocks increase among regional trade agreement. It improves the RTAs in the following ways. The market in existence became bigger. There was encouraging investment surrounding. There was increase in trade aspect of the GDP with regards to openness. Breton et al (1998) also carried out research on regional integration.

The research was carried out between CEEC and EU using Gravity model. The result indicated that new Act that was recently implemented boosted FDI with little or no diversion discovered. Srinivasan and Mody (1998) bilateral /regional trade integration OECD and non-member‟s for the period of 1977-92 using gravity equation. There is no proof that import improved between Japan and US. Hassan (2001) used regional trading bloc of SAARC for the period of 1996-1997 using Gravity model. The results indicated that SAARC are yet benefit from trade creation benefits. Sharma and Chua (2000) carried out similar research on regional trade using ASEAN for the period of 1980-1995 using gravity equation, the result shows that intra-ASEAN trade integration does not improve but the size of the economy increases while APEC group trade increases.

2.5.3 Intra-Regional Trade and FDI

Empirical findings prove on trade and FDI extends to various part of the world including ECOWAS, ACP, and AU. According to Frankel (1997), he discovers that regional integration improves trade by 65% for EC and more than 150% for MERCOSUR including ANDEAN. Frankel and Rose (2001) also indicated that most of all RTAs cause large effect on intra-regional trade then Soloaga and Winters (2001) extends the

previous work on the likely effect of RTAs and they discover that the effect of RTAs differs depending on the effect whether negative or positive effect (trade creation or trade diversion). These shows that despite the new era of regionalism since 1990s both the new and old blocks has not really improve intra-regional trade or strengthen further the level of intra-regional integration. Only EU and EFTA may have resulted into trade diversion and while other blocks moving toward trade creation.

Furthermore, Estevadeordal and Robertson (2004) provided a new empirical finding for Free Trade of the Americans shows that preferential tariffs have a huge effect on bilateral trade agreement. Removal and reduction of tariff will have less effect depending on the potentiality of intra-regional especially when is small. Te Velde (2006) discovers that intra-regional trade in Africa only represents a small percentage of the trade which includes production.

Levy et al (2002) addresses the effect of regional integration and FDI using 60 countries and it was discovered that regional trade and FDI tends to promote trade. There are plenty connecting links between FDI and trade. For instance bigger incorporated markets tend to achieve a better result in productivity, reduced prices and better quality. The bigger the market is incorporated the more it will pull on FDI investors which means at the long run productivity level is going achieve a positive result. In summary Regional Trade Agreements will enhance higher FDI in the region.

Furthermore, in another dimension to have an in-depth knowledge on the trade rules and FDI with regards to the trading barriers. Blomstrom and kokko (1997) and Dunning (1997) recognizes the consequences of regional trade rules combine with FDI, will only

depend on the rule in existence and the likely impact of the rules which might definitely leads to some adjustment in such rule in order to accommodate trade and FDI together. Region and countries are merged or incorporated together before integration might likely experience little or no effect. According to Blomstrom and Kokko (1997) indicated that regional integration contributes to increase in growth and greater efficiency. Also Ethier (1998) hinted that countries that are very small and poor may be motivated to form a regional trading group so that it can attract investors from outside the region.

The gain and cost involved in regional integration are commonly spread unequal between members. Jaumotte (2004) carried out an investigation using a sample size of 71 countries that fall under developing countries between 1980-99 discover that there is high rate of attraction for FDI in those regions considered. He also indicated that FDI has been shifting from non RTA countries to RTA countries. For instance Maghreb region recorded an increase in market size that improves FDI stocks which stood at 85% for Morocco, 165% for Tunisia and Algeria 62%. Te Velde and Bezemer (2006) carried out an estimation using models which include US and UK FDI real stock for the period of 1980-2000 in developing nations, and then they discover that some fellow members of the region are not significant with regards to inflow of FDI

Moreover, most importantly country membership to a specific region with required degree of freedom of trade and including real investment planning (i.e. trade preferences, foreign firms) will leads to improvement in more inflow of FDI to the regional group. Another controversial issue is the divergence and convergence that usually occur inside a region, it was discovered that inflow of extra FDI depends on the nation‟s economy size and the region. An increase in FDI can also depend on the

distance and closeness of a country with large economy or large market, at the long run this closeness might improve the FDI in the region such as: NAFTA and MERCOSUR this two group FDI has been improving, compare to ECOWAS, COMESA that is still at the early of investment planning. Pain and Lansbury (1996), Blamestorm (1998), Dunning (1997); Breton et al (1998), Levy (2002) and Jaumotte (2004) provides more evidence on the likely effect of RTAs on FDI including liberalization.

The result of studies carried out so far show that RTAs promotes FDI flows on the other hand for some region it shows mixed result, the likely effect may be the region experience combine with individual country effects under trade or investment planning. Also the mixed result might reflect the difference in terms of the size of the industrial sector of the countries in the region and the degree of openness at the level of economic integration can be of direct and indirect.

An improvement of a country can be added advantage which might be proportional to other members of the region. Pain and Lansbury (1996) indicated that regional trade agreements with special emphases on internal market program, it involves EC, UK, and German within the period of 1980-1992 while gravity model was also used for estimate. The result of FDI varies across the sectors. There was evidence that import improves FDI, the focus of UK relying on FDI from US changed direction to EC.

2.5.4 Regional Union and Development

Evidences available on the consequences of regional integration on growth remain unbalanced. According to Rodrik (1999) indicated that up till date there is unanimity on

whether regional countries were are able to export or rather does improvement in growth rate made them to export. Also in another result they indicated that regional integration contributes to growth among regional country members with special reference to European Union integration success (Henrekson et al, 1997). However, Brada and Mendez (1998) and De Melo et al (1993) discover a different result because the result shows a negative connection between regional integration and development.

In another research findings carried out on cross-country basis, the result shows that open economies tends to develop quicker and when an economy remain open combine with developed countries they tends to grow faster. Also the development level of neighboring countries does not have effect on individual country‟s development rate Countries gain more when is situated very close to an open, big and developed economy.

He further examines the importance of regional integration on growth on EU, CACM, ASEAN, UDEAC and Andean Pact toward its members. Geldi (2012) selected regional trading bloc of 36 Countries which includes EU 15 members, NAFTA and five members of AFTA using gravity equation which involves panel cointegratin analysis. The result shows that EU intra –union and trade creation effect is six times more than union effects, NAFTA export are diverted to MERCOSUR, as for NAFTA it shows that integration has not contributed to intra –trade union. AFTA still depend largely on extra union imports. Hur and Park (2012) selected regional blocs EC, NAFTA, CARICOM, EFTA, CACM, MERCOSUR, EC and SADC for the period of 1971-2003 using linear regression approach. The result shows significant upward trends between growth rate and Per capita GDP within bilateral under FTA. Wu & Samsel (2012) selected Countries across the globe (45 countries) using gravity model. The result shows that countries with

trade rules trade more than family based countries .Overall freer trade leads to greater welfare for a country. He discovers that there is no significant gains between members except EU then he suggested that developing countries with closed system tends to grow in a very slow rate when compared with open ones (Vamvakidis, 1998). Te Velde (2008) indicated that regional integration is not linked with higher growth rate at macro level especially when considering other components such as investment and trade.

Regional Integration on investment and trade remain positive while he further emphases that FDI and trade encourage growth, since regional integration inclines to enhance FDI and trade .Regional Integration will promote growth in a positive way through a continuous increase in trade combine with an increase in investment on growth.

In another similar research carried out by Schiff and Wang (2003) they both discover that there is no empirical proof to show the effect of dynamic consequences of Regional Trade Agreements (RTAs) on the likely effect on technology dispersion from non-members and members nations. They proved that NAFTA importations increases productivity level between the ranges of 5.5-7.5% in Mexico with the use of foreign imported know-how stocks, then there is no effect on extra – regional imports. This kind of effect is a great gain to the poor class because of the perpetual consequences. Education can also be of good gain through exportation from the developed partners which is going to improve the level of productivity at the long run, and then this is regarded to as extra regional. The regional integration is linked with growth as indicated by (Te Velde 2008, Schiff and Wang 2003). Also Te Velde (2008) analyses further to show maybe terminal for export counts for exporters especially at the productivity level under manufacturing sphere. At firm stage, result from South Africa, Malawi and Benin

shows that an increase in productivity level just that regional exportations are related with the same export productivity i.e. the level of export contribution to global trade. In summary, regional integration tends to improve the total growth rate through with an enhancement in investment and trade which is supported with evidence which says firms tends to produce higher productivity (Te Velde, 2008).

However, the issues of divergence or convergence of trade flow between trading members are of great importance in order to have a better understanding of various regional groups especially in Africa. For instance according to Ghura and Hadjimichael (1996) establish that there is propensity of per capita income convergence growing at a rate of 2% under the 29 Sub-Sahara African nations according to their regional grouping.

McCoskey (2002) hinted that a continuous increase in divergence usually occur between fellow members of regional bodies in Africa. Typically most studies on African regional trade discovered that most members of regional grouping prefer to trade more with non-members. Hammmouda et al, (2007), analysis of accessing the degree and rank of convergence using income for 46 countries in Africa (UMEOA, ECOWAS, CEMAC and SADC). They discover that the relationship that was in existence between income and regional integration was very small and they were able to back it up with three different grounds. They identify low level of FDI as a barrier which can further tightened up the capital aggregation. Another reason to support their stand is the sluggish growth of output rate and productivity level including production components and the final point is the low degrees of regional trade at intra level combine with sluggish component of quality including the biasness on the direction of commodity

trade flow. Various studies have provided different proof using different time frame including different methods for convergence here are the studies that proved to have it.

Holmes (2005) carried out a study on SADC over the period of study and discover that there is presence of convergence in SADC, Holmes (2005) detect there is no convergence within ECOWAS between the period of study.

Jones (2002) proved that there is convergence in ECOWAS for the period of study. In another similar manner Dufrenor and Sannon(2005) hinted that there is no element of convergence in ECOWAS, Carmignani (2006) proved that there is no convergence in COMESA within the period of 1980 -2002,there is present of limited level of convergence within UEMOA within the period of 1990-2003 (Van de Boogaerde and Tsangarides,2005).

Kihangire and Mutoti (2006) discover that there is presence of convergence with COMESA 1995-2004 and finally Aziz Wane (2004) hinted that there is convergence in UEMOA within the period of 1965-2002. Jalles (2012) selected regional trading group of 21 Countries from south and South-East Asian for the period of 1980-2004 using Bayesian Model averaging (BMA). The result shows that openness of a country or neighboring countries does not have impact on nation‟s growth and while RTA impacts remain unclear. Devadason (2011) regional trade bloc of ASEAN 5 using modified gravity model. The result indicated that China integration into ASEAN improved the size of size of key ASEAN members economy with regards to export market while import source of other ASEANS countries has not reduces intra – ASEAN trade flow. In another recent studies on ECOWAS, the empirical results indicate that a common border

and distance have had a strong effect on ECOWAS trade; also there is a negative effect of trade flow among ECOWAS members. Moreover, the level of financial and trade openness among members impedes the level of trade flows on integration (Afolabi, Abu Bakar and Azman, 2015;2016)

2.5.5 Institutional Quality and Trade

Institutions remain an important key factor in determining growth level in an economy, because institution influences the key arrangement of economic incentives in a society. Acemoglu et al, (2004) highlighted the key importance on economic outcomes such as the economic institutions in a society with the presence and perfection of markets including property rights. Generally, economic institutions are key important factor that influences economic performance in a society. Therefore, it is very essential to comprehend how institutions are determined and existing literatures on the determinants of the quality of institutions. La Porta et al, (1999) indicated that poor countries are very close to equator and generally, they have poor institutions. Similarly, Acemoglu et al, (2001) stresses that, the institutional quality variation among countries is due to their colonial experience.

Acemoglu et al, (2004) indicated that political institution and distribution of resources in the society determines economic institutions, but they can change over time in a very slow way resulting to persistence of institutions in an economy. Furthermore, to link trade with institutional quality many studies have linked trade openness and liberalisation to spill over of technology, which brings technological changes. Abidin, Bakar and Sahlan (2013) carried out research on regional trading bloc between OIC and

Malaysia for the period of 1997-2009 using gravity equation (institutional Variable). The result shows that institution and distance improves OIC –Malaysia exports. Coe and Helpman (1995) discover that development of foreign research is very important for domestic productivity while the effect is stronger when economy is open to trade. There is strong evidence that inequality and openness maintain a negative relationship, which is in line with Stolper –Samuelson theorem. Therefore we can claim that trade openness and trade liberalization affect quality of institution by changing the distribution of resources in the economy thus, bringing technological change. Trade liberalization and increased openness of an economy may spur policy choices in such a way that it is social and economic institutions are in line with that of the trading partners and readiness to obey rules and regulations lay down by international institutions as a member (Al-Marhubi, 2005).

For further clarification, World Trade Organisation (WTO) rolled out some rules for members such as non-trade discrimination, regulatory standard harmonization, copyright and patent protection and transparency likewise ECOWAS does .In other to use this policies to enhance government credibility and institutional harmonization in order to achieve better outcomes.

Opening up of an economy to numbers of new trading partners‟ increases the chances of associated risk that is unknown thus, this leads to demand, and creation of efficient and better institutions (Islam and Montenegro, 2002). Additionally, better integration into the world economy tends to leads to cultural and social changes. These changes will finally lead to institutional quality changes that will make them better which are in line with international standards (Al-Marhubi, 2005). Based on neoclassical trade theory that

upholds welfare gains attached to trade. If countries open up, then specializes in the production of various products based on relative advantage and extra trade production with other countries hence it will leads to welfare of the society, but this can be achieved when institutional framework of the country is working properly.

Rodrik (2000) also provid more useful insight link between institutional quality, trade reforms and governance structure. He stressed further to say that institutional reforms can be increased financial integration and improves macroeconomic stable, which involves establishing a sound and efficient institutions. In conclusion, trade and institutional quality nexus, we can confidently say trade openness by a country can enhance improvement in its institutional quality .It also clear that openness of trade and belonging to a regional group like ECOWAS can enhance institutional quality.

2.6 Literature Gap

There is little or limited study on ECOWAS trade flow, for this reason there is need to revisit the regional group in order to strengthen the economic cooperation both at intra and inter level of trade. A few studies investigated intra sub–Sahara Africa trade flow and its determinants. Various obstacles and challenges facing ECOWAS trade flow have not been empirically proved or discussed by many researchers and scholars. Few studies on ECOWAS trade flow includes: (Foroutan and Pritchett, 1993; Amjadi, Reincke and yeast, 1996; Longo and Sekkat, 2004; Daniel, 2006; Rahman et al, 2006; Afio, 2010). However, till date little studies have been conducted on ECOWAS trade flow both at inter and intra including major challenges facing the regional body and also by extension no study have included political/institutional variables especially on ECOWAS trade flow, to the best of my knowledge also no study has been conducted on the impact of free trade zone that was fully implemented in 2003. This research aims to contribute to the frontier of knowledge by examining ECOWAS trade flow including major challenges facing them both at intra and inter level with the use of gravity model by extension dynamic panel techniques is going to be used.

2.7 Conclusion

This chapter reexamines the subsisting literatures on the bilateral trade, intra-trade, inter-trade on ECOWAS and various regional groups at large with the use of gravity model application and other methods. This section of the study is essential because it gives better understanding and helps in variables selection that is to be considered for gravity model.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter cover model specification, justification of variables, sources of data and method of analysis that is to be used for this study.

3.2 Model Specification

This section aims to come up with a gravity model that can be used to answer the highlited objectives in Chapter one. This study will use models from Frankel (1993);Thede and Gustafson (2012); Sharma and Chua (2000); Hassan (2000, 2001) and Abidin, Bakar and Sahlan (2013) for this study. Little adjustment of this model will be made by bringing in dummy and other economic, political and institutional variables in order to answer the stated objectives.

The basic important of this country specific model is that it does not answer for volume of the total trade of the entire trading partners. Country specific model was derived from the gravity model, it is important to give the key spotlight on the former studies using g0ravity model for country specific. Various type of this specific type will be discussed ranging from simple model to comprehensive type, which is appropriate for this study.

It is assumed that exporters of countries i (origin) will trade with importers of country j (destination) using a simple model, whereby it is assumed that, there is no room for artificial trade obstruction and natural ones, while goods imported from nation i to nation j can be presented as:

$IM_j = b_j Y_j$…… (3.1)

Where b_j = Country j"s share of import as part of national expenditures,

Y_j = Aggregate income of country j

The above equation represent import from county i to country j as a share of country j aggregate income. For complete case where specialization is an issue, full exportation of production, income of country i can be derived from aggregate exports to country j which can be written as:

$Y_i = b_j \sum Y_j$ …… (3.2)

Assuming goods that are non –traded goods is represented by zero value in the equation above

$b_j = \frac{Y_i}{\sum_j Y_j}$ …… ……. (3.3)

Applying substitution method for equation (3.1) into equation (3.3), gives

$IM_j = \frac{Y_j Y_i}{\sum_j Y_j}$ …… …… (3.4)

While the denominator remain constant, equation (3.4) represent gravity model in a simple form.

Mathematical equation above can be incorporated into statistics just by including error term and then apply logarithm to the whole equation. Ordinary least square can also be used to estimate the model above. Cross section data can be used when bringing in trade relationship and trade effect in a particular period using classical model of gravity. Important information can found using cross section data over long period of time (panel methodology) compare with cross section data only.

There are various advantages attached to this method. Panel has the capability to capture applicable relationship between variables of interest over period of time. Another important feature of panel is that it can monitor unperceivable /unobservable trading partner pairs i.e. individual effect. Ordinary least square estimates exclude individual effect that causes biasness only when the individual effects are correlated to the regressors.

Hence, panel methodology is employed using empirical gravity trade model. Gravity trade model states that distance (procurator for cost of transportation), GDP or GNP, each country population, culture similarities, GDP per capita, other economic factors and other variables which are dummy speak more about the bulk of trade whether import or export between countries X_{ij} (pairs). Key variables included in the gravity model can either restrain or spur trade among countries of pairs. This can be depicted as;

$$Xij = \beta_o Y_i^{\beta 1} Y_J^{\beta 2} N_i^{\beta 3} N_j^{\beta 4} D_{ij}^{\beta 5} A_{ij}^{\beta 6} U_{ij} \text{ …….....} \quad (3.5)$$

Where:

$Y_i(Y_j)$ = GNP or GDP for country i(j).

$Ni(Nj)$ = Represent population of country i(j).

D_{ij} = Distance between countries.

A_{ij}= Dummy variables

U_{ij} = Error term

β = Parameters for the model

Applying Per capita income in lieu of population, another equation can be written as:

$$Xij = \beta_o Y_i^{\beta 1} Y_J^{\beta 2} Y_1^{\beta 3} Y_j^{\beta 4} D_{ij}^{\beta 5} A_{ij}^{\beta 6} U_{ij} \text{ ……} \quad (3.6)$$

Y_i (Y_j) represent GDP per capita income of each country i.e. from country i to j. Gravity model was formulated to be in multiplicative form, gravity model can be linearize by applying natural logarithm to all the variables included in the model. So for the purpose of this study, in year t, log in linear form can be written as:

$$IX_{ijt} = \beta_0 + \beta_1 lY_{it} + \beta_2 lY_{jt} + \beta_3 ly_{it} + \beta_4 ly_{jt} + \beta_1 lD_{iJt} + \sum \delta_h F_{ijht} + U_{ij} \text{ …....} \quad (3.7)$$

Where:

I = represent natural logs of variables.

F_{ijh} = Free trade area represented by dummy variables.

However, as indicated by Baldwin and Taglioni (2006) which stated that time-varing country dummies should be included in order to eliminate any form of biasness stemming from the „‟gold-medal error‟‟‟ i.e incorrect omission and specification of terms. Anderson and Wincoop (2003) regarded to it as multilateral trade resistance. Also, Baier and Bergstrand (2007) and Baldwin and Taglioni (2006) suggested that in order to avoid specification error, researchers must include time and country effects in order to account for time- variant multilateral price terms. Based on this submission we are going to include importers and exporters dummies in all our models under PPML while only time dummies is going to be included under the dynamic GMM.

This study will take all adjustments with regards to dynamic GMM for gravity models from De Nardis and Vicarelli (2003); Martínez, Felicitas and Horsewood (2009); Micco, Stein and Ordoñez (2003); Fernandes (2006); Kahouli and Maktouf (2015a, 2015b) and Olivero and Yotov (2012) which include incorporating time dummy into our model. The overview of dynamics in econometric model poses severe complications due to the inconsistency of estimators (Baltagi, 2001). In addition, a two-step strategy grounded approach based on instrumentation and differentiation developed by Arellano and Bond (1991).

According to the rule of thumb, number of observation must be greater than the time or years of the observations (N >T). Taking all this assumptions and modifications into consideration for gravity modelling thus, all our models indicated that our (N >T) in all our models. This indicate that we have fulfilled the basic requirement for using dynamic GMM, in all our models our N = 225 bilateral unidirectional flows. The system GMM estimator for gravity model affords recourse for simultaneity, endogeneity bias and spatial characteristics of the data (Madariaga & Poncet, 2007).

3.2.1 Import, Export and Trade Estimation Models

In order to achieve the stated objectives, four models of gravity were developed to answer the highlighted objectives in Chapter 1.

The specific objectives are to:

1. Examine the determinant factors contributing to ECOWAS export flows;

2. Examine the determinant factors contributing to ECOWAS import flows;

3. Examine other factors that determines bilateral trade flows within ECOWAS;

4. Examine the impact of institutional quality on the ECOWAS export flows; and

3.2.2 Export Model (Determinant factor and impact of free trade)

In order to answer specific objective one as stated above, export model is depicited below.

$$\text{Inexport}_{ijt} =$$

$$\alpha_1 + \beta_1 \text{InGDP}_{it} + \beta_2 \text{InGDP}_{jt} + \beta_3 \text{InPOP}_{it} + \beta_4 \text{InPOP}_{jt} + \beta_5 \text{InDGDPPC}_{ijt} +$$

$$\beta_6 \text{InSGDP}_{ijt} + \beta_7 \text{FTA}_{ijt} + \beta_8 \text{InDIST}_{ijt} + \beta_9 \text{InRER}_{ijt} + \beta_{10} \text{LANG}_{ijt} + \beta_{11} \text{ECOWAS}_{ijt} +$$

$$\beta_{12} \text{Comcol}_{ijt} + \beta_{13} \text{Contig}_{ijt} + u_{ijt} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3.8)$$

This section focuses on the trends and other factors that determine the existing trade relationship for ECOWAS countries. In order to determine and investigate the determinant factors for ECOWAS free trade, export model will be used. Gravity model used for this estimation purpose for the period from 1985 to 2013. A countries pair model of gravity was employed (15 x 15 x 28). Our data is an unbalanced panel with a maximum observation of about 6,300 observations for the gravity model of export. Since our N = 225 (number of bilateral flows) which is greater than T (time) In this regard, the first model is proposed for estimation, while the estimation techniques used are panel unit root testing, Panel Cointegration, Dynamic GMM and the Poisson pseudo-maximum likelihood estimation (PPML).

Bilateral trade flow among two or more nations is assumed to increase in proportion with regard to their sizes measured by national income ($\beta_1 \text{InGDP}_{it}$ and $\beta_2 \text{InGDP}_{jt}$). According to Laaser and Schrader (2002), they said distance represent transportation

cost thus, real geographical distance is not only measured by distance but also by virtual distances ($\beta_8 \mathrm{InDIST}_{ijt}$). In addition, we want to examine the impact of sharing common, culture and language, whether it impedes or otherwise ($\beta_{12}\mathrm{Comcol}_{ijt}, \beta_{13}\mathrm{Contig}_{ijt}$ and $\beta_{10}\mathrm{LANG}_{ijt}$). Finally, we want to examine the impact ECOWAS as a regional group on its members including free trade within ECOWAS nation thus, the behaviors of the series (positive or negative) will determine the progress of ECOWAS regional group .

3.2.3 Import Model

In order to answer objectives two (determinants of import flow and the impact of free trade), the following countries were considered based either on existing bilateral agreements between ECOWAS and these countries including existing ties based on colonial links and the world market direction. These countries were Hong Kong, Macao, Denmark, Finland, France, Germany, Greece, Italy, Japan, the Netherlands, New Zealand, Portugal, United Kingdom, the United States, and Poland. The main objective of this section was to see whether the existing colonial links between ECOWAS nations and the countries that colonized them either promote or inhibit trade ($\mathrm{ECOWAS.\,COL}_{ijt}$.) Another objective was to examine whether the bilateral agreements signed between ECOWAS and selected countries promoted trade ($\mathrm{ECOWAS.\,BTA}_{ijt}$). These two objectives highlighted above were denoted with a dummy variable. In order to achieve

the stated objectives, the following steps were undertaken in order to achieve unbiased estimation results.

Specific objective two will be answered using import model below:

$$\mathrm{InImport}_{ijt} = \beta \mathrm{InImport}_{ij,_{t-1}} + \beta_1 \mathrm{InGDP}_{it} + \beta_2 \mathrm{InGDP}_{jt} + \beta_3 \mathrm{InPOP}_{it} + \beta_4 \mathrm{InPOP}_{jt} + \beta_5 \mathrm{InDGDPPC}_{ijt} + \beta_6 \mathrm{InSGDP}_{ijt} + \beta_7 \mathrm{FTA}_{ijt} + \beta_8 \mathrm{InDIST}_{ijt} + \beta_9 \mathrm{InRER}_{ijt} + \beta_{10} \mathrm{LANG}_{ij} + \sum_r \alpha_r \mathrm{ECOWAS.COL}_{ijt} + \sum_r \theta_r \mathrm{ECOWAS.BTA}_{ijt} + u_{ijt} \ldots \quad (3.9)$$

3.2.4 Total Trade Model (Determinant factors and Free Trade)

In order to answer objective one and two, a trade model for the entire market was proposed for ECOWAS nations. In order to achieve the study"s objectives, the following steps were taken in order to achieve unbiased estimation results.

$$InImport_{ijt} = \beta InImport_{ij,_{t-1}} + \beta_1 InGDP_{it} + \beta_2 InGDP_{jt} + \beta_3 InPOP_{it} + \beta_4 InPOP_{jt} + \beta_5 InDGDPPC_{ijt} + \beta_6 InSGDP_{ijt} + \beta_7 FTA_{ijt} + \beta_8 InDIST_{ijt} + \beta_9 InRER_{ijt} + \beta_{10} LANG_{ij} + \sum_r \alpha_r ECOWAS.COL_{ijt} + \sum_r \theta_r ECOWAS.BTA_{ijt} + u_{ijt} \ldots \quad (3.10)$$

3.2.5 Export Model (Institutional quality)

This model examines the impact of institutional quality on ECOWAS trade. Looking beyond the major determinants to examine the likely impacts of institution on ECOWAS trade is imperative. The following steps were taken in order to achieve the fouth objective. Estimation technique employed was the Poisson pseudo-maximum-likelihood estimation (PPML). This method was introduced into gravity modeling to capture the zero trade matrix that usually occurs in trade (Export and Import). Santos Silva and Tenreyro (2010) designed the method to capture zero trade matrixes, which is part of the nonlinear method of estimation. At default PPML estimation techniques are semi robust against likely bias. Our focus here is mainly on three variables, namely, the corruption index, political instability, and regulatory quality.

In order to answer specific objective four-export model of gravity below is here by proposed

$$Inexport_{ijt} = \alpha_1 + \beta_1 InGDP_{it} + \beta_2 InGDP_{jt} + \beta_3 InPOP_{it} + \beta_4 InPOP_{jt} + \beta_5 InDGDPPC_{ijt} + \beta_6 InSGDP_{ijt} + \beta_7 FTA_{ijt} + \beta_8 InDIST_{ijt} + \beta_9 InRER_{ijt} + \beta_{10} InPts_{ijt} + \beta_{11} lnCorrpt_{ijt} + \beta_{12} InRegq_{ijt} + \beta_{13} LANG_{ijt} + \beta_{14} Contig_{ijt} + u_{ijt} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.11)$$

3.3 Explanation of the key variables

i. Gross Domestic Product (GDP)

We have GDPi and GDPj (origin and destination). The purpose of including aGDP into our model is to determine the level of economic development. Empirical findings on GDP remain significant and positive. This include the following studies: Frankel et al., 1995; Tinbergen, 1962; Thursby and Thursby, 1987).

However, few studies findings detected negative and statistically significant in the likes of Gleliser (1968; also cited by Oguledo and MacPhee, 1994). Thus, we expect a positive relationship GDP and the dependent variables.

ii. GDP per Capita (L$nDGDPPC$)

Per capita is used to show the level of development, while some studies use it to control the effect of GDP size between the countries involved in the model. It is assumed that country with higher development tends to experience higher per capita income. Some consumers tend to spend more on foreign goods. However, GDP per capita is not a common variable in gravity model. Few studies integrated per capita variable in order to check the level of economic development as to know the level of how GDP per capita affect trade in gravity model. Frankel and Rose (1998) removed GDP per capita when GDP as variable was used, while as for population variable (Bergstrand, 1989; Frankel and Wei, 1993; Frankel et al, 1995; Le, et al.1996). Most

of the Bergstrand"s models using GDP per capita remain significant and positive on trade flow. In conclusion, this variable will use to confirm the H-O theory which hypothesized those dissimilar per capita income countries tends to trade more with each other than countries with similar per capita income while Linder hypothesis is the opposite. Relative factor endowments can be captured with GDP per capita by taking the absolute difference that are also in log form, which are given as: $DIFFGDGPPC_{ij}^{t}$ =(ln$GDPPC_{i}^{t} - lnGDPPC_{j}^{t}$). Thus, we expect a negative relationship between GDP per capita and all the dependent variables.

iii. Similarity of the GDP (SIMGDP)

Similarity index is an indicator of the similarity size of the GDPs of countries i to j. The similarity index can be calculated by the size of each country pair, which was calculated using the following formula (Egger 2000; Dupuch 2001). Thus, we expect an abmigious relationship between similarity of the GDP and the independent variables. $SIMGDP_{ij}^{t} = \log\{1 - [GDP_{i}^{t}/(GDP_{i}^{t} + GDP_{j}^{t})]^2 + [GDP_{j}^{t}/(GDP_{i}^{t} + GDP_{j}^{t})]^2$

iv. Population

Population variable reveals a mixed finding, Authors such as: Oguledo and MacPhee (1994), Linnemann (1966), Blomqvist (1994) and Matyas et al, (1997) concluded that trading populations of countries affected trade flow negatively and remain significant. While Brada and Mendez (1983) reveal in their findings that population size is positively significant. In another related study carried out

in Asian countries. They indicated in their findings population size is negative and significant. Population represent the size of the economy, thus we expect population to be positive in our models.

v. Distance

Distance variable replaced transportation costs between trading partners. Findings reveal that distance can be negative and positive. Previous studies reveal in their findings that distance are negatively significant and it can be affected by the size of the population (Bikker, 1987; Linnemann, 1966; Sapir, 1981). Thus, we expect distance to be negative in all our models.

vi. Trade Openness and financial Openness (Topen and Fopen)

Gravity model indicated that population remains the key determinant of openness, it is assumed that countries with smaller population have the tendency to experience a higher external trade vice versa. Another key indicator of openness is the country trade liberalization policy. It is also assumed that openness is correlated with geographical location and size of countries. Less open countries is assumed to be with larger mass. It is assumed that greater liberalization enhance promotion of free trade in a region or country. The formula used is import plus export divided by GDP. The variable is expected to have a positive sign. Financial openness index popularly called Chinn-Ito index was introduce to ascertain the level of cross border financial transactions

described in the Exchange Arrangements and Exchange Restrictions (AREAER). Thus, financial openness is expected to be negative in all ouer models.

vii. Borders (Contig)

In gravity model, border is introduced as a dummy variable in order to identify countries that share the same border together, adjacent, or contiguous. Thus, we expect sharing of the common variable to be positive and significant.

viii. Culture (Comcol)

Culture under gravity model is a dummy variable, which means that it is assumed that country that shares the same culture tends to trade more. It is assumed that same culture facilitates easy flow of communication and negotiation, which helps the consumers. Thus, we expect this variable to be positive and significant.

ix. Common Language (Commonlang)

The variable common language is defined to equal 1 if both ECOWAS trading trading partners share a common language, 0 otherwise. Common language between trading partners encourages trade by reducing transaction costs. Most ECOWAS countries speaks both English and French as their official language. Thus, we expect this variable to be positive and significant.

x. ECOWAS Bilateral Trade

Bilateral trade agreement drives can spur bilateral trade flow. Using gravity model, bilateral agreement are introduced as a dummy variable. This explanatory variable comprises of a regional group or individuals, hence the overall general motive of this variable is to see the impact of trade creation or trade diversion on inter- bloc trade.The variable is expected to be negative and significant.

xi. Free Trade Agreement

This is another form of agreement under trade that is used in order to improve bilateral trade flow. Using gravity model of trade, free trade area is represented by a dummy variable (0, 1). The overall aim of introducing free trade variable is to check the impact of this agreement after implementation. Thus, we expect negative or positive relationship between the FTA and the dependent variables.

xii. Political Instability index

This is a yearly index report prepared by Amnesty international and United State Security Department since 1976, in order to show the level of instability of each country that is politically motivated. The scale ranges from 0-5 which means that any country that is highly stable over time tends record 0 or otherwise.

Generally, this variable was introduced to show the impact of instability in the region on trade flow.Thus, a negative relationship is expected.

xiii. **Real exchange rate**

Exchange rate as a variable is included as an indicator to measure the country‟s price competitiveness (Pugel, 2004). The real effective exchange rate in this research is the relative price of foreign goods in terms of domestic goods (Stockman, 1987). Thus, we expect negative or positive relationship between the real exchange rate and the dependent variables.

xiv. **Foreign direct investment**:

FDI is another important variable that influences the volume of trade. They are perceived to be interrelated (Ariff, 1998).The higher the inflow of FDI to a country, the greater the trade. Leitao (2010) and Hejazi and Safarian (2002) supported the notion that FDI and trade are complementary. Thus, we expect negative relationship between the FDI and the dependent variables.

xv. Regulatory quality

Regulatory quality can be defined as the degree of government policies in promoting or impeding market activity. Gausch and Hahn (1997) indicated that the overall consequences of regulation are generally undesirable, but it is often associated with undesirable economic consequences. Djankov et al, (2002) in his

analysis indicated that heavy regulation of entry for firm is largely associated with greater unofficial economies and larger corruption. Thus, we expect negative relationship between the regulatory quality and the dependent variables.

xvi. Corruption

Quality of institutions can also be measured by incidence of corruption in the country Corruption perception index is prepared by transparency international in order to show the level of each country corruption. (The gross abuse of public power for private benefit) in public sector can affect economic negatively due to corruption (Bardham, 1997). Corruption gives politician access to skew institutions of the government in their favors (Van den Berg, 2001). Also Tanzi and Davodi (1998), indicated in their study that extreme corruption leads to neglect of physical infrastructure that are deliberately neglected which allow corrupt officials to extract commission for investment projects. Thus, we expect negative relationship between the corruption and export.

3.4 Method of Estimation

This section explains the methods of estimation and its justifications for using it. This section further explain each steps taken for the purpose of achieving our highlighted objectives in chapter one.

3.4.1 Pesaran Panel Unit Root Test In The Presence of Cross-Sectional Dependency

Heterogeneous panels unit root testing has attracted a lot of great attention in the past decades. For instance, Maddalla and Wu (1999), Choi (2001), Levin et al.(2002), lm et al.(1995,2003), Hadiri (2000), Baltagi and Kao (2000) and Shin and Snell (2002) provided a critical review. They assumed that individual time series panel that are cross sectional in nature were independently distributed. In addition, it was recongnised that it was a restrictive based assumption, predominantly in the context of cross-country (ECOWAS region) regression. It was also assumed that de-meaning cross sectionally the series before application of unit root in panel could solve the problem partly (Im et al,, 1995).

It became quite clear that cross sectional de- meaning could not work in general especially in the case pair-wise cross section covariances of the error terms differed across the individual series.

However, in order to deal with the problem Pesaran (2007) proposed a different approach to eliminate cross-section dependence. Rather than basing the unit root tests on deviations based on the estimated factors, he augmented the standard (ADF) regressions with averages of cross- section based on lagged levels and individual series of the first differences. Standard unit root of panel will now based on simple individual averages that are cross- sectional augmented ADF statistics (represented by CADF) or appropriate transformation of the associated rejection probabilities.

The CADF of individual statistics or rejection probabilities can then be used to develop modified version of the inverse chi-squared test (P test) proposed by Maddala and Wu (1999), iverse chi-squared test (Z test) suggested by Choi (2001), t-bar test proposed by Im et al. (IPS). In addition, a truncated edition of the test can also be considered under the condition where by individual CADF statistics are suitably truncated in order to avoid undue influences of the outcomes that can be extreme, which could occur especially when T is small in the area or region of about 10-20.

For instance, for us to test for a simple dynamic panel with cross-section dependency. Since our data is panel cross- sectional dependency here are the simple transformation our data will go through under Pesran unit root: Asuming Y_{it} (export flows) represent the observation for the ith cross- section unit of time t (year) and suppose it further generated a simple dynamic linear heterogeneous panel model :

$$Y_{it} = (1 - \emptyset_i)u_i + \emptyset_i y_{i,t-1} + u_{it,}\, i = 1,,,,,,, N; t = 1 \ldots\ldots..T \ldots\ldots\ldots\ldots. (3.11)$$

Where the initial value, $y_{i0,}$ represent a given density function a finite variance and mean, and the error term, U_{it} contain a single –factor structure.

$$u_{it} = Y_i f_i + e_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots... (3.12)$$

f_i Represent the unobserved common effect and e_{it} is the individual- specific that is the idiosyncratic error. Conformtably we can merge equation 1 and 2 together to form:

$$\Delta y_{it} = \propto_i + \beta_i y_{i,t-1} + Y_i f_i + e_{it} \quad \text{..... (3.13)}$$

Where $\propto_i = (1 - \emptyset_i) u_{i,} \beta_i = -(1 - \emptyset_i) and\ \Delta y_{it} = y_{it} - y_{i,t-1}$. The unit root hypothesis of interest, $\emptyset_i = 1$, can also rewritten as: $H_0 : \beta_i = 0$ which is all together for i against the possibly heterogeneous substitutes,

$$H_1 : \beta_1 < 0, i = 1,2 \dots \dots, N_1 + 1, N_1 + 2, \dots \dots \dots N \quad \text{..... (3.14)}$$

Based on the assumption, $\frac{N_1}{N}$, individual processes fraction that are stationary, is non zero and tends to fixed value δ such that $0 < \delta \leq 1$ as $N \to \infty$. As indicated by Im et al. (2003) this requirement is compulsory in order to achieve consistency of panel unit root tests.

However, cross-section independence of ϵ_{ij} which is across the panel is one- factor models that of standard, although its cogency in overall settings might involve more than require specification of more than one factor that is common in the idiosyncratic shocks and the common factors together indicate that the composite error U_{it}, considered to serially uncorrelated. Also the common factor, f_t to follow a universal stationary process. Theoretically, this does not affect asymptotic distribution of the proposed test denoted as N and T $\to \infty$, mutually. Alternatively, we can also consider serial correlation of both ϵ_{ij} and f_t processes.

In conclusion, we will subject all our variables to pesaran (2007) panel unit root testing in the presence of cross sectional dependence since it is more superior to the panel unit root testing of the first generation. In addition, our data is panel cross-section by default. It is worthy to mention that this unit root test support unbalanced panel data.

3.4.2 Pedroni Tests for Panel Cointegration

Based on the assumptions of the conventional times series, cointegration can be define as a set of variables that are individually integrated of the order one 1(1), some linear grouping of these variables can be termed as stationary. The vector of the slope coefficients that renders this grouping stationary is regarded to as the cointegrating vector. Furthermore, in this study, we do not disscuss the issues of normalization or queries concerning the certain number of cointegrating relationships but rather we pay attention on the critical values for each cases of interest using the null hypothesis of no cointegration against cointegration.

Acording to Pedroni (1999, 1997 and 2000), he developed several tests for cointegration for panel models that can accommodate considerable heterogeneity. His approach is different from Kao and McCoskey in assuming trends for the cross-sections and in considering it as the null hypothesis that of no cointegration. One of the good features of this pedroni‟s test is the fact that it gives room for multiple regressors, and allow the cointegrating vectors to vary across different units of the panel, and gives room for heterogeneity in the errors across cross-sectional units.

Pedroni panel regression model can be denoted as:

$$Y_{i,t} = \propto_i + \delta_t + \sum_{m=1}^{M} \beta_{mi} X_{mi,t} + u_{i,t} \ldots\ldots (3.15)$$

Pedroni proposes seven different cointegration statistics that can capture the within and between effects in his panel thus his test can be categorise into two. The first four test is based on the pooling along the „within" dimension (Pooling the AR coefficients across dissimilar units of the panel for the unit- root test on the residuals).

The test statistics are given below:

The panel V statistic

$$T^2 N^{3/2} Z_{\hat{v}NT} = \frac{T^2 N^{3/2}}{\left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{it}^{2}\right)} \ldots\ldots (3.16)$$

The panel p statistic

$$T\sqrt{N} Z_{\hat{p}NT} = \frac{T\sqrt{N}\left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2}\left(\hat{e}_{it-1}^{2} \Delta \hat{e}^{2}_{it} - \lambda_i\right)\right)}{\left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{it}^{2}\right)} \ldots\ldots (3.17)$$

The panel t statistic (non-parametric)

$$Z_{tNT} = \sqrt{\sigma_{NT}^2 \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2}} \hat{e}_{it-1}^{2} \left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \left(\hat{e}_{it-1}^{2} \Delta \hat{e}_{it}^{2} - \lambda_i\right)\right) \ldots\ldots (3.18)$$

The panel t statistic (parametric)

$$Z_{tNT} = \sqrt{\sigma_{NT}^{*2} \sum_{i=1}^{N} \sum_{t=1}^{T} \acute{L}_{11i}^{-2} \breve{\imath}\mathrm{I}_{it-1}^{*2}} \left(\sum_{i=1}^{N} \sum_{t=1}^{T} \acute{L}_{11i}^{-2} (\breve{\imath}\mathrm{I}_{it-1}^{2} \Delta \breve{\imath}\mathrm{I}_{it}^{*2} - \lambda_i) \right) \ldots\ldots\ldots\ldots (3.19)$$

The second grouping involves three tests based on pooling the „between" measurement (averaging the AR coefficients for each member of the panel for the unit root test on the residual). The test is done by averaging in pieces and consequently the restraining distributions are constructed on piecewise denominator and numerator terms.

The group p statistic (parametric)

$$\sqrt[T]{N} \dot{Z}_{\acute{p}NT} = \sqrt[T]{N} \frac{\sum_{t=1}^{T} (\breve{\imath}\mathrm{I}_{it-1}^{2} \Delta \breve{\imath}\mathrm{I}_{it}^{2} - \lambda_i)}{\sum_{i=1}^{N} (\sum_{t=1}^{T} \breve{\imath}\mathrm{I}_{it-1}^{2})} \ldots\ldots\ldots\ldots (3.20)$$

The group t statistic (non-parametric)

$$\sqrt{N}\, \dot{Z}_{tNT-1} = \sqrt{N} \sum_{i=1}^{N} \left(\sqrt{\alpha_i^2 \sum_{t=1}^{T} \breve{\imath}\iota_{it-1}^{2}} \right) \sum_{t=1}^{T} (\breve{\imath}\mathrm{I}_{it-1}^{2} \Delta \breve{\imath}\mathrm{I}_{it}^{2} - \lambda_i) \ldots\ldots\ldots\ldots (3.21)$$

The group t statistic (parametric)

$$\sqrt{N}\, \dot{Z}^{*}{}_{tNT-1} = \sqrt{N} \sum_{i=1}^{N} \left(\sqrt{\acute{S}_i^{*2} \sum_{t=1}^{T} \breve{\imath}\iota_{it-1}^{*2}} \right) \sum_{t=1}^{T} (\breve{\imath}\mathrm{I}_{it-1}^{*2} \Delta \breve{\imath}\mathrm{I}_{it}^{*2}) \ldots\ldots\ldots\ldots (3.22)$$

In conclusion, Pedroni cointegration test will be used for our proposed models. It worthy to mention that theortically pedroni cointegration accommodate one or more non-

stationary variables. Finally, three of our panel cross- sectional models will be subjected to this test and pedroni cointegration version of stata 13 will be used.

3.4.3 Generalized Method of Moments (GMM)

The key important of panel data is that it gives the researchers a clearer and better understanding of adjustment which is dynamic in nature, also most relationship of economic variables are dynamic (Baltagi, 2008).

In 1991, Arellano presented the GMM. Mankiw, Romer and Weil (1992) ascertained that GMM estimation could truly cast light on a volume of well-identified complications with estimating regressions. First, the right-hand-side variables are characteristically endogenous and measured with error; subsequent variables that should be involved in the regression are not there. This will infer that least squares parameter estimates are biased, since the omitted variables are correlated with one of the regressors.

Dynamic panel data can be specified by:

$$Y_{it} = \sum_{j=l}^{p} P_j Y_{it-j} + X'_{it}\beta + \delta_i + \varepsilon_{it} \quad \text{..... (3.23)}$$

Introducing first differencing into the above equation removes the effect of individual then it can be written as:

$$\Delta Y_{it} = \sum_{j=l}^{p} P_j \Delta Y_{it-j} + \Delta X'_{it}\beta + \Delta\varepsilon_{it} \quad \text{..... .....}$$

.(3.24)

The above equation can be estimated using GMM. Dissimilar number of instruments is employed in order to have a robust GMM estimation for each period of time, with the specific period instruments matching dissimilar numbers of predetermined variables and lagged dependent at a particular period of time.

For instance numerous researchers have carried out studies on issues relating to demand that are dynamic in nature such as: cigarettes, wage, labour supply model, employment model, and growth convergence (Balestra and Nerlove (1966); Baltagi and Levin (1986); Holtz-Eakin (1988). The dynamic association is qualified with the inclusion of variables that are lagged between the regressors. Generalized method of moments was developed by Arellano and Bond (1991), which provided a more robust function that is superior to Anderson and Hsiao (1982) estimator. Furthermore Arellano and Bond (1991) indicated that extra instruments can also found only if orthogonally circumstances subsist among y_{it} which represent the lagged value while e_{it} denote disturbances. In case of any exogenous variables, we may decide to introduce period specific numbers of instruments matching values that are lagged under dependent and other variables which are predetermined.

The forthright idea of GMM is to write the regression equation as a dynamic panel data model. Taking the first-differences to remove unobserved time-invariant nation-specific effects, and then instrument the right-hand-side variables in the first-differenced equations using levels of the series lagged two periods or more, under the assumption

that the time-varying disturbances in the original levels equations are not serially correlated.

However, it is now popular that large finite sample biases can occur when instrumental variables are weak, and this difficulty carries over into the GMM estimation of dynamic panel data models. When the time series are persistent and the number of time series observations is small, the first-differenced GMM estimator behaved poorly. The reason is that, under these conditions, lagged levels of the variables are only weak instruments for subsequent first-differences.

More results that are feasible have been achieved using a system GMM estimator suggested by Arellano and Bover (1995) and Blundell and Bond (1998). The system estimator exploits an assumption about the initial conditions to obtain moment conditions that remain informative even for persistent series, and it has been shown to perform well in simulations. The necessary restrictions on the initial conditions are potentially consistent with standard growth frameworks, and appear to be both valid and highly informative in empirical application.

The solution is to estimate a system of equations in both first-differences and levels, where the instruments used in the levels equations are lagged first-differences of the series. These instruments are valid under restrictions on the initial conditions; finally, the method also considers the extension of the estimators to the cases of temporary measurement error and endogenous regressors. As an empirical matter, the validity of

these additional instruments can be tested using standard Sargan tests of over-identifying restrictions, or using difference Sargan or Hausman comparisons between the first-differenced GMM and system GMM results (Arellano and Bond, 1991).

3.4.4 First Difference GMM and System GMM

The Generalized-Method-of Moments (GMM) estimators were developed for dynamic panel models by Holtz-Eakin, Newey and Rosen (1990), Arrellano and Bond (1991) and Arrellano and Bover (1995).

While differencing eliminates the country-specific effect, it introduces a new bias; by construction the new error term, is correlated with the lagged dependent variable, under the assumptions that (a) The error term is not serially correlated, and (b) The explanatory variables, X, are weakly exogenous (i.e., the explanatory variables are assumed to be uncorrelated with future realizations of the error term), Arrellano and Bond propose the following moment conditions.

Alonso-Borrego and Arellano (1996) and Blundell and Bond (1998) show that in the case of persistent explanatory variables, lagged levels of these variables are weak instruments for the regression equation in differences. Monte Carlo experiments show that the weakness of the instruments can produce biased coefficients. To reduce the potential biases and imprecision associated with the difference estimator, they use an estimator that combines in a system the regression in differences with the regression in

levels (Arellano and Bover, 1995 and Blundell and Bond, 1998). The instruments for the regression in differences are the same as above.

The instruments for the regression in levels are the lagged differences of the corresponding variables. These are appropriate instruments under the following additional assumption: although there may be correlation between the levels of the right-hand side variables and the country-specific effect in equation (2.A), there is no correlation between the differences of these variables and the country-specific effect. Given that lagged levels are used as instruments in the regression in differences, only the most recent difference is used as an instrument in the regression in levels. Arrellano and Bond (1991) use all the differences as instruments, but the most recent economic growth literature only use the most recent difference because using additional lagged differences would result in redundant moment conditions (Arellano and Bover, 1995).

The stability of the GMM estimator depends on the validity of the assumption that the error terms do not exhibit serial correlation and on the validity of the instruments. To address these issues we use two specification tests suggested by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). The first is a Sargan test of over-identifying restrictions, which tests the overall validity of the instruments by analyzing the sample analog of the moment conditions used in the estimation process. The second test examines the hypothesis that the error term is not serially correlated. We test whether the differenced error term is second-order serially correlated (by construction, the differenced error term is probably first-order serially correlated even if

the original error term is not). Failure to reject the null hypotheses of both tests gives support to our model.

3.4.5 One Step and Two Step System GMM

Arellano and Bond (1991) propose a two-step GMM estimator. In the first step, the error terms are assumed to be independent and homoskedastic across countries and over time. In the second step, the residuals obtained in the first step are used to construct a consistent estimate of the variance-covariance matrix, thus relaxing the assumptions of independence and homoskedasticity. Technically, the two-step estimator is thus asymptotically more efficient relative to the first step estimator.

Inappropriately, Monte Carlo studies have revealed that the efficiency improvement is usually small, and that the two-step GMM estimator has the difficulty of converging to its asymptotic distribution moderately sluggishly. In finite examples, the asymptotic standard errors connected with the two-step GMM estimators can be seriously biased downwards, and thus form an unreliable guide for inference (Bond, Hoeffler, and Temple 2001). The asymptotic inference from the one-step standard errors might be more reliable especially when the number of instruments is equal to or larger than the number of cross-sectional units (Levine 2001). Windmeijer (2000) creates an extra finite sample variation that can be used to correct the standard error of the two-step estimation. The two-step estimates and their standard errors are very similar to the one-step estimates after the correction.

Therefore, we rely on inference based on the one-step estimator for all of our regressions. The software DPD (Dynamic Panel Data) has been applied throughout our regression estimation.In addition, we will estimate gravity model with the use of dynamic approach in order to exploit the inter-temporal dimension and the interindividual of the data set.This approach will solve the endogeneity problem generated existing between the endogenous variable that are retarded $EXP_{ij,t-1}$ and the error term $U_{ijt.}$

Endogeneity problem can exist through correlation among unobservable specific effect and some explanatory variables. Therefore to overcome endogeneity problem, numerous estimation techniques used in the literature have regard for first- differenced GMM Arellano and Bond 1991; Holtz-Eakin, Newey and Rosen 1988) and followed by the system GMM estimator (Blundell and Bond 1998; Arellano and Bover 1995).

According to Arellano and Bond (1991) using GMM estimator gives room for estimating difference in the model with the use of lagged values of the variables as instruments. Actually, althrough the transformation eliminate endogeneity bias related country specific effect, which is unobservable, thus this led to creation of another endogeneity bias. Furthermore, Blundell and Bond (1998) indicate that once the instrument are weak, the two-step estimator is bias especially when the sample size is small and when the variable is persistent over a period. A weak instrument generate higher variance coefficient for difference GMM estimator. In order to reduce the bias,

we will use the system GMM estimator that combines in one system regression at levels and a difference regression IBlundell and Bond 1998; Arellano and Bover 1995).

It worthy to mention that the instrument selsected for estimation of our model are not in any way correlated with country- specific effects. The system GMM estimator also account for simultaneous dynamic features of our model thus, this allow coefficient of our standard gravity variables more appropriately especially for our purpose (Blundell and Bond 1998; Arellano Bover 1995).

In order to address the issue of long time (T) and number (N) of countries involved in our estimation. For instance according to Nickell (1981), the upward bais in the lagged OLS for dependent variable causes dynamic baisness which is expected due to the positive correlation existing between the unobservable countrypair fixed effects (FEs) and the lagged dependent variable that are part of the error term. The finding indicated that size-ajusted trade controls for heteroscedasticity is not specific to our smaple. Tests with other, even sectoral-level, data sets revealed that in each case the severity of heteroscedasticity is greatly reduced if not eliminated. Once bilateral trade is adjusted by the market size of the trading partners because the main purpose of size adjustment with regard to heteroscedasticity, is to rescale the variance of the disturbances and to decrease its variability.

The straightforward answer to this endogeneity problem is to include time fixed effect for the longer period panels and first differences will eliminate bilateral fixed effects. In

our all models for estimations, the numbers of bilateral flows is more than 225(N) greater than (T) time. Theoretically, N > T which means the basic assumption for running dynamic GMM is satisfied. Finally, we will conduct sargan test of overidentifying restriction that was later replaced by the Hansen test to test for the validity of our instruments. We will also proceed further to test for autocorrelation of the second order in order to validate the hypothesis of no autocorrelation of the error term.

3.4.6 Justifications for Dynamic Panels

Dynamic panel is hardly used in gravity model history. Nevertheless two important reasons have been considered in order to put dynamic panel into consideration. Heterogeneous firms grounded by deriving gravity equation on a basis of a trade model that is micro-founded is one of the direct effects. For instance firms can enter and exit external markets as a result of direct effect which is based on selection process that is linked with productivity, acquiring mechanism, in accordance with the nature of exogenous shocks basically on the distance. Attempt are underway to empirically examine gravity model using dynamic approach (Constantini and Melitz 2007; De Benedictis and Taghoni, 2011).

The second point of view is related to empirical proposition whereby some researchers hinted that there is element of persistence which is very strong using aggregate data on trade, also on countries that traded with one another at time t-1 and incline to trade at time t (Bun and Klaassen 2002; De Benedicts and Vicarelli 2005 and Fidrmuc 2009).

The prove was further reframed by Felbermayr and Kobler (2006) and Helpman, et al. (2008) by emphasizing that the speedy growth rate of global trade from 1970 to 1997 was very large because of an increase in the volume of trade between countries that traded together earlier in 1970. However, dynamic panel offer varieties of alternatives to practitioners (Matyas and Sevestre, 2007). One of the options researched into so far is Blundell-Bond system under GMM estimator (De Benedicts and Vicarelli, 2005; De Benedicts et al, 2005).

Panel cointegration estimator, which includes dynamic OLS or OLS that is fully modified, was explored in order to control for endogeneity, which is associated with dependent variables (Fidrmuc, 2009). Nature of this kind of contribution remain explanatory of which more can still be explored in this line (De Benedictis and Tagliomi, 2011).

3.4.7 The Poisson Pseudo –Maximum Likelihood Estimator Using Gravity model

Another issue that arises when it comes to estimation under the gravity equation is the issue of log or log impasse. It is assumed that log-linearization of the error term tends to change the property of the error term. Consequnetly, this leads to inefficient estimations due to heteroscedasticity. The assumption is that if data are homoscedastic in nature, the variance of the error term should remain constant, and the anticipated value must be constant as well. If data are heteroscedastic, as it used to be with regard to trade data,

then the anticipated value of the error term is a function of the regressors. OLS is not efficient since the conditional distribution of dependent variables is altered.

This point was highlighted several times by Silva and Tenreyro (2006, 2007 and 2008). The critical point was that "the log linearization of the empirical model in the presence of heteroscedasticity leads to inconsistent estimates due to the fact the expected value of the logarithm of a random variable largely depends on higher-order moments of its distribution" (Silva and Tenreyro, 2006).

The main sources of heteroscedasticity in data are not unique. The variance of error term may differ with the regressors as well as with the dependent variables or omitted Variables. According to Silva and Tenreyro (2006), in the presence of heteroscedasticity, the Pseudo Poisson Maximum Likelihood (PPML) performs better than Ordinary Least Squares (OLS). Other challenges facing OLS is the issues of zero values omission and endogeneity. Helpman et al. (2008) proposed a theoretical approach for these zero values with the introduction of a model that uses heterogeneity of firms. Some researchers adapted PPML to predict the trade flow. Lately, Siliverstov and Schumacher (2007), Martinez-Zarzoso et al. (2007), Westerlund and Wilhelmsson (2007), Martin and Pham (2008), and Burger et al. (2009) obtained differing results when comparing the result with the alternative estimators that deal with zero values and heteroscedasticity problems.

Zeroes in trade data and heteroskedasticity, in practice Tenreyro (2006) identified two issues that can generate bias which is substantial. First, the data set of trade shows that it

unlikely that variance of n_{ij} (multiplicative stochastic term) will be several measures of distance and independent of the countries sizes. Due to the fact that the projected values of a logarithm of a random variable rest on both on mean and on higher-order moments of its distribution, the variance of error term n_{ij} rely on the regressors, violating the condition of OLS consistency. Santos Silva & Tenreyo (2006) suggest that the violation is a serious source of bais in application of gravity equation.

Secondly, based on the lagarithmic transformation, pairs of nations fr which bilateral exports recorded zero are drpoed automatically from the sample. Typically this leads to about 30% loss of the data points. This substantial sample selection is critical and problematic when considering poor or small nations. These two complications can be addressed estimating gravity equations in its multiplicative form.

The poisson estimator has extra properties for policy applied investigators using gravity models. It is consistent in the presence of fixed effects which can incorporated into our model as a dummy. This is an unusual property of nonlinear maximum likelihoood estimators, many failed to understand the propertiesincluding fixed effect. This key point is particularly significant for gravity modelling due to the fact that theory-consistent models require the inclusion of fixed effects by importer and exporter.

In conclusion, using PPML to estimate gravity models gave another dimension to gravity model of trade literatures. For the purpose of this study PPML is employed to capture the zero trade matrix presence in the export trade flows data. In essence, PPML regression result is going to be compared with other estimations in order to see whether

there is variation or not in the final regression results.Based on the Santos Silva and Tenreyro (2006) submissions, we will include importers and exporters dummy in order to include fixed effect as suggested. This will be included in all ECOWAS models of estimations.

3.4.8 Justification for using Gravity Model of International Trade

Gravity models can be used to evaluate FTAs by bringing in a binary variable into the baseline specification, specifying whether or not a pair of trading nations belongs to a free trade group. This variable, in essence, captures the change between actual flows and the counterfactual, which is the amount of trade described by variables in the baseline specification. We can estimate whether or not an FTA has had a statistically significant effect on trade flows using this variable. If it is significant and positive, we can deduce that the FTA has indeed had a positive effect on trade flows, with a magnitude relating to the size of its coefficients. This however, is an inference about the FTA‟s effect on total trade flows and not whether the statistically significant effect is due to trade creation, trade diversion, or both. To estimate these effects separately, another binary variable would need to be included. With this extended specification, the binary variable for observations where both the importing and exporting countries are members of the FTA would capture trade creation, while the second binary variable for observations where one of the trading partners is not a party to the FTA would capture trade diversion.

However, other models of international trade suffers a lot of limitations for instance, CGE analysis faces a number of problems. The data requirements for CGE analysis of FTAs are extensive, and frequently certain data items are arbitrarily picked by the modeler. Second, the model‟s results may be very sensitive to the assumptions and data used. A third problem with CGE analysis is the lack of a time dimension. A CGE analysis of an FTA will not provide results on how long it will take for economies to adjust and reach the new equilibrium. Recent work in CGE modeling has attempted to include some dynamic effects via financial markets, but it is a long way from capturing the dynamic features that are most relevant to FTAs. Fourth, it is difficult to model certain non-tariff barriers to trade, such as sanitary, phytosanitary, and technical barriers, or customs issues if these are included in an FTA. Moreover, incorporating the level of production on trade in services is challenging due to the lack of data.

Last, while some modelers have tried to endogenize productivity spillovers in CGE models which we believe to be extremely important this is an extremely complicated operation. Hence, since the focus of this study is more on free trade then gravity model of international trade is considered appropriate for this study.

3.5 Synopsis of SWOT

SWOT exploration is a technique commonly used in premeditated planning for association particularly in business companies. For this research, SWOT analysis is used to assess the imminent future projections of trade relationships between ECOWAS

member nations grounded on outcomes resulting from the indirect computable analysis and with the use of dynamic panel data technique using gravity models. The SWOT investigation includes the strengths, weaknesses, opportunities, and threats has its foundation in the 1960s. SWOT examination is a universally designed for the primary or introductory phases of managerial process for the central purpose of tactical scheduling in a variation of applications (Bartol et al., 1991). The SWOT analysis for this study is separated into two, specifically the internal and the external influences. The internal features are the strengths, which is a positive influence; and weaknesses, which is the negative one. The external features include opportunities and threats; whereby the prospects are the positive aspect while the threats are the negative impact. However, it depends on the settings or surroundings, threats can also be perceived as a positive influence and thus is converted to an opportunity. In an effort to utilize the internal strength and external prospects, and to restrain alongside with the internal flaws and also external threats, SWOT analysis is beneficial in relations to evaluating the prospects of ECOWAS regional bloc. We will stick to theoretical approach thus, which means that our categorization using SWOT will based on the empirical result.

3.6 Sample Size and Data Sources

Annual data of bilateral exports and imports of fifteen (15) ECOWAS countries will be employed over the period of 1985-2013. For this study, dependent variables for the Five models are imports and exports. Data to be used will be extracted from Directory of Trade (DOT) that is from IMF.GDP, CPI and GDP Per Capita; good governance index

will be obtained from IMF and World Bank Database. Corruption Perception Index will be obtained from http://www.transparency.org. Political instability index will obtained from http://www.politicalterrorscale.org.

3.7 Conclusion

In chapter three, model specifications with necessary adjustment were adequately discussed. Variable description and sources were also discussed. Finally, the model specification will be used to establish the relationship between the variables.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This focus of chapter will be mainly on the empirical analysis of bilateral trade within ECOWAS nations to achieve the study‟s four objectives. Furthermore, this section includes discussions of the results and interpretations of the findings.

4.2.1 Estimation of the Gravity Model: ECOWAS Intra–trade (Export)

The empirical analysis proceeds further to test for the possible existence of a relationship among the variables. Establishing a statistical relationship among the variables can be carried out in numerous ways. We will subject our model to pnael unit root testing that runs the t-test for unit roots in heterogenous panels with cross-section dependence,suggested by Pesaran (2003) and then we will proceed further to estimate our model using difference and system dynamic GMM and PPML.

4.2.2 Stationarity of the Panel Series

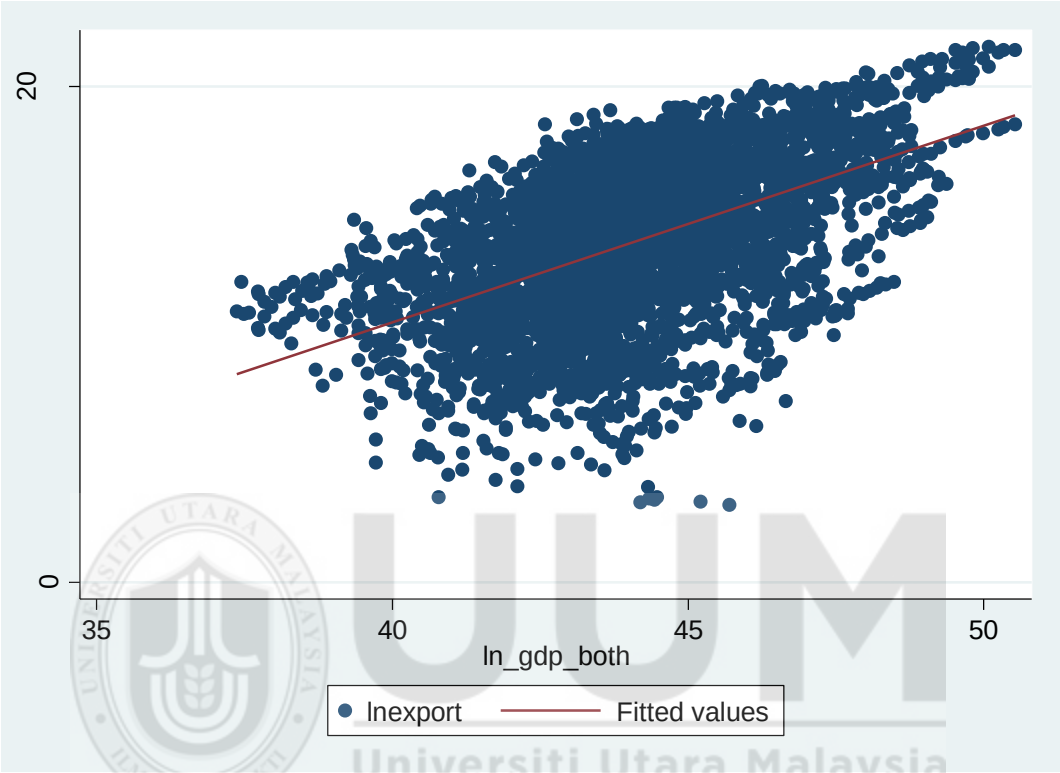
In order to test the level of integration under panel data techniques, series were subjected to Pesaran‟s panel unit root test that allow for cross sectional dependency. All series were subjected to levels and first differences testing. Table 4.1 below shows the

estimated results of the unit root testing. It shows that all the variables are stationary at I(1) except populationj (destination) which is stationary at level.

Table 4.1
Pesaran Panel Unit Root Test

No	Variables	Level	First Difference
		Statistic Z[t-bar] (constant & trend)	**Statistic Z[t-bar] (constant & trend)**
1	lnexport	0.658	-11.595***
2	Lnpopulationi	3.135	-5.495***
3	Lnpopulationj	-6.455***	-2.867***
4	LnGDPi	0.784	-11.691***
5	LnGDPj	0.434	-13.800***
6	LnGDPSimilarity	1.943	-10.540***
7	LnGDPPC differences	-0.649	-8.548***
8	Lnexchangeij	3.124	-9.125***

Note: *, **, and *** indicate significance at the 10%, 5% & 1% levels respectively. The Pesaran (2007) test is performed using the Stata "pescadf" command written by Piotr Lewandoski.



Note: Source, author"s computation.

Figure 4.1. *Scatter plot and line of best fit for export versus GDP combined (1981-2013).*

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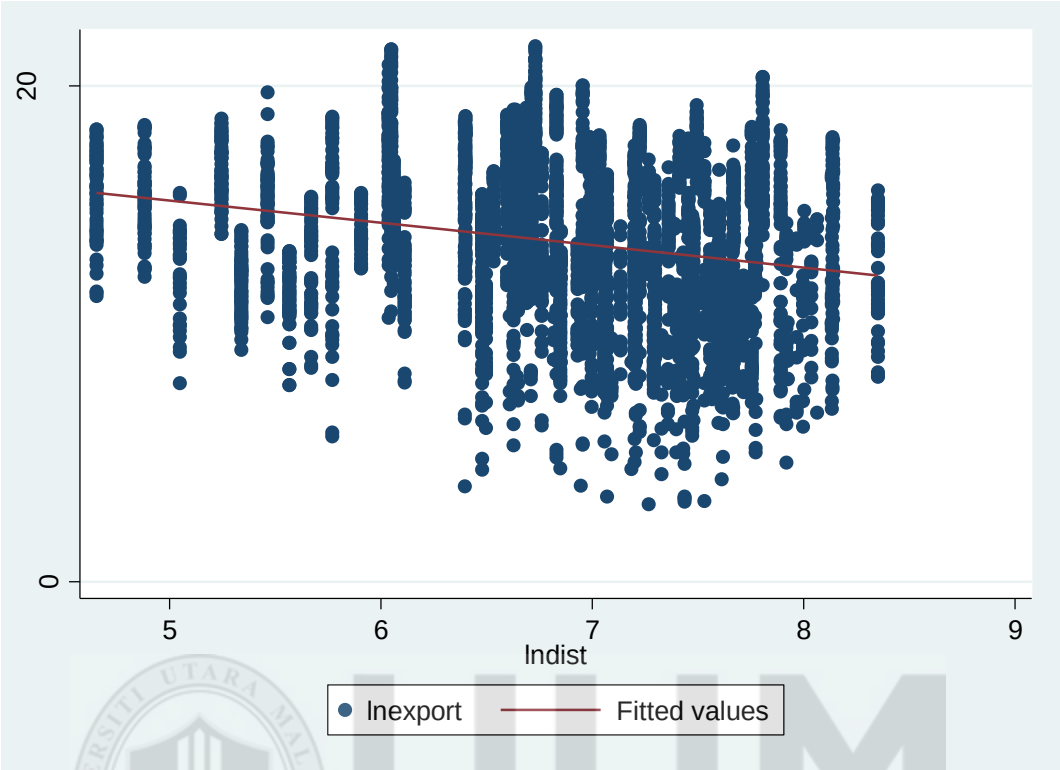
Figure 4.1 shows combined economic mass (the product of the GDPs) of importing and exporting nations in the Economic Community of West African States (ECOWAS) used as the explanatory variable. The scatter plot indicates a clear positive association between the two variables. Furthermore, the line of the best fit shows a strong upward slope. In general, the graphical evidence indicates that countries under ECOWAS integration engaged in trading activities.



Note: Source, author's computation.

Figure 4.2. *Scatter plot and line of best fit for export versus distance (1981-2013).*

The scatter plot in Figure 4.2 indicates a negative relationship. The impression can be further reinforced based on the line of best fit, which slopes downward. Thus, the graphical evidence confirms the assumption that country pairs that are far apart tend to trade less.

4.2.3 Discussion of Results (Export Model)

In order to achieve fully efficient results, three techniques were proposed. As shown in Table 4.2 Testing the validity of all the variables included in the model (constant and normal variables) is important in order to determine whether the variables included in the model can adequately explain or establish an existing relationship with the dependent variables. Discussing the diagnostic test carried out is imperative before arriving at the conclusion that the results are free from all biasness. To determine the validity of the instrumental variables, and the possibility of having autocorrelation among the error terms, tests must be carried out to examine further the validity of the instruments. This study used the Hansen test that looks for over identification restrictions, and the Arrellano-Bond estimator was used to investigate the order of autocorrelation for differentiated error terms in differenced GMM and system GMM. The results of Hansen statistical test for over identification demonstrated that that the instrumental variables were valid and thus the null hypothesis could not be rejected. The results shown in Table 4.2 below depict the differenced and system GMM estimators. The lagged coefficient of export is statistically significant at the 1% levels under differenced and system GMM correspondingly. This indicated that the coefficients representing the adjustment play important roles and also buttresses the stand that the model of export using gravity methodology can also be considered dynamically.

Table 4.2

The Dynamic Gravity Panel GMM and Poisson Pseudo-Maximum Likelihood Estimation Results (1983-2013)

	GMM (STEP ONE)		**GMM (STEP TWO)**		**PPML**		
	Coef	**T-test**	**Coef**	**T-Test**		**Coef**	**T-test**
laglnexport	0.306***	5.36	0.522***	3.44			
contig	0.285	0.37	0.622	0.89		0.893***	9.95
lnpopi	-0.517	0.78	-0.201	0.57		-0.194	0.29
lnpopj	0.087	0.12	0.600	1.42		0.499*	1.63
lnGDPi	1.647**	2.04	-0.843**	1.83		3.91***	4.68
lnGDPj	0.222	0.27	0.946**	2.10		1.22***	3.05
lnGDPSimi	0.204	0.32	-1.42***	-3.12		1.97***	4.64
lnGDPPC	0.635***	3,28	0.981***	4.91		0.164	0.98
Comcol	-0.521	-0.43	1.79*	1.57		0.519***	7.80
lnexchangeij	-0.409*	-1.79	-0.075	-0.42		0.142***	3.07
FTA	9.051*	1.82	0.546**	2.53		-2.41***	6.60
ECOWAS	4.699	1.35	1.256	0.40		0.310	1.37
lndistance	-0.621*	1.65	-0.479*	1.72		-0.0017**	2.46
lang	2.069*	1.64	-0.283	0.23		0.136**	2.17
AR2	0.626		0.642		Adj R2	0.936	
Hasen Test	1.000		0.403				
Obs	4256		obs	4383		6118	
Reset p-value						0.4684	
Time Dummies	YES			YES	Export Dummies	YES	
					Import Dummies	YES	
Joint significance Test							
Constant Variables	59.49***	0.000	68.90***	0.0000	0.00	250.10***	0.000

Note: *, **, and *** indicate significance at the 10%, 5% & 1% levels respectively.

Generally, first differenced GMM is always biased downward mainly due to the existence of autocorrelation between lagged the dependent variable and error term. In order to solve this problem, Blundell and Bond (1998) proposed the system GMM

estimator to eliminate the problem. The coefficient of lagged export representing the adjustment factor was statistically significant at 1% under differenced and system GMM. This indicated that system GMM performs better than differenced GMM because system GMM gives better results in terms of standard errors when compared with first differenced GMM. This can be interpreted as adjusted values being more accurate and that poor specification is greatly reduced under system GMM.

Based on the Hansen test results shown in Table 4.2 above for both the difference and system GMM, the test results were not statistically significant. Thus the conclusion can be made that the instrument used under Arrellano-Bond estimation for both differenced and system GMM were adequate to eliminate correlations between the error term and explanatory variables. Furthermore, Arrellano-Bond first and second order autocorrelation tests were used. The second order autocorrelation (AR2) was not statistically significant under the two estimates, which means that no autocorrelation problem exists and differentiation was accepted. Based on the results for both the constant and other explanatory variables, the test statistics were found to be statistically significant at 1% under differenced and system GMM.

For the purpose of interpretation, the dynamic models estimation results (First difference and system GMM) were interpreted together with the PPML result. Based on the results, the GDPi coefficient was positive and found to be statistically significant at 1% and 5% in all the three models (Dynamic GMM and PPML). The GDPj (destination) coefficient

was positive and significant under system GMM and PPML at the 5% and 1% significance levels respectively. The positive level of significance was in line with the theoretical prediction. GDPi is related to exporting countries, GDPi represents an indicator to measure productive capacity and can be used to as an indicator to measure the range of product varieties available for exports.While importer‟s GDP, (GDPj) represents an indicator of the capacity to import more goods.

ECOWAS exporting countries tend to engage in trading activities with bigger economies within the ECOWAS region. Bilateral trade of ECOWAS countryi increased to 1.47%, 0.843%, and 3.91% respectively in all the three models when GDPi increased by 1%. ECOWAS importing countries also engage in importation of goods from GDPi and trade tended to increase by 0.94% and 1.22% respectively. The elasticity of the GDP of importing and exporting nations is quite important for the years of the study. The results align with the expected results of gravity models, and the positive findings align with the findings of previous studies like those of Frankel and Wei (1993), Gbetnkom (2006), and Fidrmuc and Schnatz (2008).

Population was included as a variable in the model to showcase what the level of population within the region means with respect to trade. One perspective on this relationship is that the larger the population, the greater the tendency towards self-sufficiency and the less active trading will be. A larger population denotes a bigger domestic market, which, in turn tends to promote a division of labour.

Such population-related factors can result in large economics of scale, more opportunities and the desire to engage in trade with broader varieties of products. A bigger population signifies an allocation of resources that might lead to self-sufficiency with little or less reliance on global trade. Thus, population size can either improve or impede trade.

Based on the estimation results in this current study, the population variable under exporting countries was found to be positively significant under PPML at 10%. The positive coefficient of population refers to the long-term impact of the population mainly on bilateral trade. A larger population tends to reduce income per capita and thus, leads to the reduction of aggregate demands for exports. This finding aligns with previous studies (Oguledo and MacPhee, 1994; Linnemann, 1966; Blomqvist, 1994; Matyas et al., 1997).

Distance has a strong effect on the volume of trade among the 15 ECOWAS countries. The more distant one country is from another the less they trade. Increasing distance between country i and country j will lead to a decrease in exports on average by -0.62%. Thus, the closer the countries involved in trading are to each other, the more trade is. Conversely, the farther apart the countries involved in trading are, the less trade is. This result aligns with those of classical results provided by gravity models. Thus, this finding aligns with the previous studies of (Thoumi 1998; Frankel, Stein, and Wei 1995; Soloaga and Winters 2001; Breuss and Egger 1997, 1999).

The results also showed that transportation costs have great significance for small economies in ECOWAS. The GDP similarity index coefficient was statistically significant at 1% under SystemGMM and PPML. The positive and negative significant coefficient supports the fact that both relative size and economic size matters in trade. This finding indicated that the more ECOWAS countries are similar in economy and closer they are the more significant their trade relations will be.

The result confirms the development gap existing between them. This finding is in line with the findings of (Stack and Pentecost 2011: Afolabi et al., 2015, 2016). The variable common border (Contig) was found to be positive and significant only under PPML. Common border positively affects trade, which is in line with the classical results (general model) of gravity models. The expectation is that a common border should have a positive coefficient because countries selected for this study are from the same region, i.e., West Africa countries (ECOWAS) that share the same border within ECOWAS and thus will trade by 0.89% more on average more than those that do not share a common border. The findings is inline with (Afolabi et al., 2015, 2016).

The coefficient of the common language variable (Lang) for this study was positive and significant under first difference GMM and PPML models, signifying that sharing the same official language by two or more countries within ECOWAS will spur trade

between and among them. The estimates parameters for common language recorded 0.13% on average based on estimated results.

An increase in the trade of two or more countries sharing a common language within the region such as i to j by 1%, which will lead to an increase in exports by 0.13% on average. This finding is in line with (Stack and Pentecost 2011: Afolabi et al., 2015, 2016).

The common colony variable is a variable denoted by a dummy variable to showcase the impact of past colonial associations on trade within the region, and the British, France and Portugal colonized most of the countries in ECOWAS. The assumption is that countries colonized by the same country have an advantage in exchanges over countries that do not. The estimates parameters for common colony was -0.51% on average based on estimated results. A decrease in trade by two or more countries will happen within the region (i.e. i to j by 1%) that will lead to decreases in exports by -0.99% on average. This is inline with (Afolabi et al., 2015,2016)

The nominal exchange rate variable was introduced into the model, which is in line with other studies such as Carrere (2006) and Kahouli & Maktouf (2013). Surprisingly, the variable was found to be negative and statistically significant under difference gmm and PPML. Which indicte that one unit decrease in exchange rate will lead to 0.14% decrease in export. The variable measuring development gap (lnGDPPC) was positive and significant under the two dynamic estimation techniques used at the 1% significance

level with an average of 0.63%. Given its high value, the development gap within ECOWAS greatly affected the flow of exports, and also inter-industry trade among the nations within ECOWAS seemed to be dominant. This finding aligns with Kahouti and Maktouf (2014).

Examining the coefficient of regional impact is critical to have an overview on the effect of regional preference. Two dummy variables were introduced. One captured the formational impact of ECOWAS right from inception, and the second examined the impact of the free trade agreement (FTA). The coefficient of ECOWAS was not significant in all the estimates. The coefficient of FTA shows evidence of export creation effects meaning that members of ECOWAS trade more with members. However, the Poisson pseudo- maximum likelihood (PPML) contains time-varying exporter and importer fixed effects and the t-ratios reported were heteroscedasticity robust. In order to check for further adequacy of the model specifications, the Ramsey reset test (1969) was used as (Santos Silva and Tenreyro, 2006) suggested. The results indicated that none of the variables in the model in the current study provide any evidence against the null hypothesis of inadequate model specification.

The major reason why PPML was introduced was to solve the problem of the “log or not to log” dilemma in the literature and to capture zero figures present in most trade data. PPML has been assumed to be the most efficient technique to do so in the literature. Based on the results of PPML after introducing the importers and exporters dummy, all zero values were captured under the export variable because no log was applied to it,

except for missing data, making the observations in the study reach 6,118 without applying a log based on the assumptions of PPML for the dependent variable (export).

The results did not deviate much with the dynamic GMM model. Also, the FTA coefficient improved more under PPML increasing to 2.41 at the 1% significance level, and the exchange rate coefficient became more statistically significant under PPML at the 1% significance level while population become statistically significant at the 10% level with 0.499% which is on average. In conclusion, the results share similar trends.

Also comparing the coefficient among between dynamic panel approach and PPML estimates indicates the significance of controlling for heterogeneity bias, and the results are fully adjusted for potential endogeneity. The degree of variation according to the results denotes that heterogeneity is a significant part of gravity modeling. Both dynamic and PPML controls for both the simultaneity bias and omission.

4.3 Estimation of the Gravity Model: ECOWAS Inter-trade (Import)

In order to answer objectives two (determinants of trade flow and the impact of free trade), the following countries were considered based either on existing bilateral agreements between ECOWAS and these countries including existing ties based on colonial links and the world market direction. These countries were Hong Kong, Macao, Denmark, Finland, France, Germany, Greece, Italy, Japan, the Netherlands, New Zealand, Portugal, United Kingdom, the United States, and Poland. The main objective

of this section was to see whether the existing colonial links between ECOWAS nations and the countries that colonized them either promote or inhibit trade.

Another objective was to examine whether the bilateral agreements signed between ECOWAS and selected countries promoted trade. In empirical analysis, all the variables except the dummies were subjected to panel unit root testing and then to panel cointegration after establishing stationarity for all the variables. Finally, differenced GMM and system GMM were used to determine the behavior of the series. Then the data were tested for the possible existence of a long-term relationship among the variables. Establishing a statistical relationship among the variables can be carried out in numerous ways.

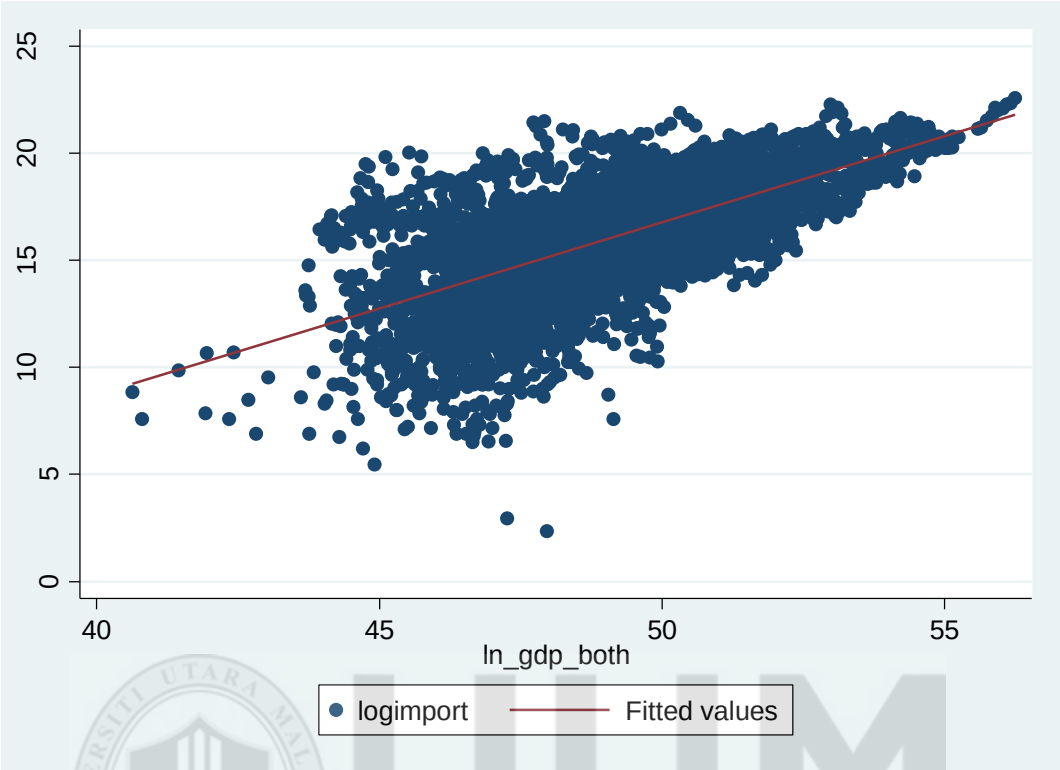
4.3.1 Stationarity of the Panel Series (Import Model)

In order to test the level of integration under panel data techniques, series were subjected to Pesaran‟s panel unit root test that allow for cross sectional dependency. All series were subjected to levels and first differences testing. Table 4.3 below shows the estimated results of the unit root testing. It shows that all the variables are stationary at I(1) except population I and j and import which are stationary at level.

Table 4.3
Panel Data Unit Root Test Summary for the Import Model

No	Variable	level Statistic Z[t-bar] (constant & trend)	First Difference Statistic Z[t-bar] (constant & trend)
1	lnImport	-5.612***	-28.517***
2	LnPopulationj	-12.512***	-7.398***
3	LnPopulationi	-4.514 ***	17.523***
4	LnGDPi	2.444	-7.809***
5	LnGDPj	0.948	-13.485***
6	LnGDPSimilarity	1.544	-16.101***
7	LnGDPPC differences	2.180	-8.158***
8	LnRERijt	-1.176	-16.864***

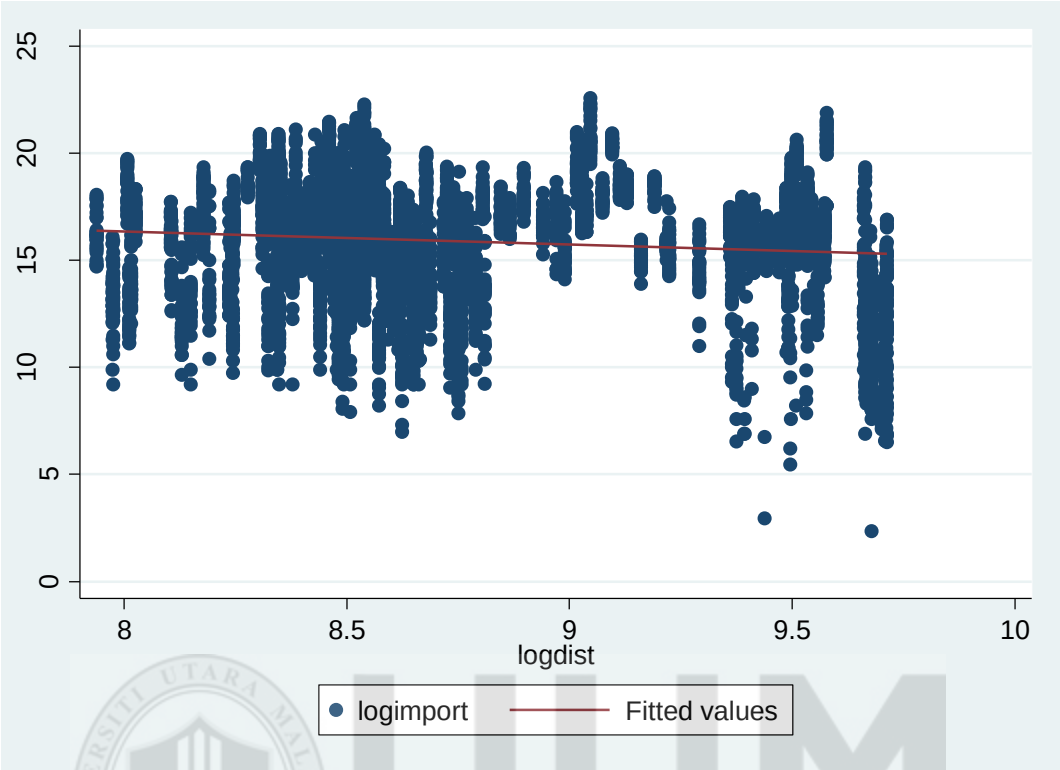
*Note: *, **, and *** indicate significance at the 10%, 5% & 1% levels respectively. The Pesaran (2007) test is performed using the Stata "pescadf" command written by Piotr Lewandoski.*



Note: Source, author"s computation.

Figure 4.3. *Scatter plot and line of best fit for import versus GDP combined (1981-2013).*

Figure 4.3 shows the combined economic mass of importing and exporting nations (the product of their GDPs) as the explanatory variable. The scatter plot shows a clear positive association between the two variables. The line of the best fit is strongly upward sloping. Thus, the graph indicates that bigger country pairs tend to trade more. Bilateral or colonial ties spur trade flow.



Note: Source, author"s computation.

Figure 4.4. *Scatter plot and line of best fit for import versus distance (1981-2013).*

The graph in Figure 4.4 above was used to investigate the relationship between import and distance, and the scatter plot indicates a negative relationship. The line of the best fit indicates a slight downward sloping thus, using gravity intuition country pairs for import indicates that countries that are far apart tend to trade less.

Testing the validity of all the variables included in the model (constant and normal variables) is important in order to determine whether the variables included in the model can adequately explain or establish an existing relationship with the dependent variables. Discussing the diagnostic test carried out is imperative before arriving at the conclusion that the results are free from all bias.

To determine the validity of the instrumental variables, and the possibility of having autocorrelation among the error terms, tests must be carried out to examine further the validity of the instruments. This study used the Hansen test that looks for over identification restrictions, and the Arrellano-Bond estimator was used to investigate the order of autocorrelation for differentiated error terms in differenced GMM and system GMM.

The results of Hansen statistical test for over identification demonstrated that that the instrumental variables were valid and thus the null hypothesis could not be rejected. Based on the Hansen test results shown in Table 4.4 above for both the difference and system GMM, the test results were not statistically significant. Thus the conclusion can be made that the instrument used under Arrellano-Bond estimation for both differenced and system GMM were adequate to eliminate correlations between the error term and explanatory variables. Furthermore, Arrellano-Bond first and second order autocorrelation tests were used. The second order autocorrelation (AR2) was not statistically significant under the two estimates, which means that no autocorrelation problem exists and differentiation was accepted. Based on the results for both the constant and other explanatory variables, the test statistics were found to be statistically significant at 1% under differenced and system GMM.

4.3.3 Discussions of Import Model Results

The results shown in Table 4.4 below show the differenced and system GMM estimators. The lagged coefficient of imports is statistically significant at the 5% and 1% levels under differenced and system GMM respectively. This indicated that the coefficients representing the adjustment play important roles and buttresses the stand that the model of trade using gravity methodology can also be considered dynamically.

Table 4.4

Dynamic Panel Data Model Using Gravity (1985-2013)
Dependent Variable: log of Import

	FD GMM		**SYS GMM**		**PPML**	
	Coefficient	**PValue**	**Coefficient**	**PValue**	**Coefficent**	**PValue**
$LnIMPORTij_{-1}$	-0.145**	0.032	-0.157***	0.000		
LnGDPSimilarity	-0.551***	0.004	-0.567***	0.000	-0.010**	0.024
LnGDPPC differences	7.97	0.673	7.80***	0.000	-0.060	0.612
LnPopulationi	7.66	0.692	7.66***	0.000	-0.065	0.605
LnPopulationj	0 .485	0.713	0.492***	0.009	-0.027***	-2.98
LnGDPi	-7.55	0.697	-7.40***	0.000	0.153	0.221
LnGDPj	0.332	0.803	0.380**	0.021	0.052***	3.97
RERijt	-0.014***	0.009	-0.011***	0.000	-0.005***	0.000
Lndistance	-1.80*	0.110	-1.79***	0.000	-0.033***	0.000
FTA	0.376	0.757	0.202	0.219	0.004	0.798
Commonlang	7.19*	0.111	7.90*	10.84	-0.001	0.769
ECO,BTA	0.758	0.803	1.37**	0.019	0.166***	10.64
ECO.COL	13.69	0.214	14.14***	0.000	0.130***	16.49
Import dummy	No		No	YES		
Export dummy	No		No	YES		
Time Dummies	Yes		Yes			
Hansen Test	0.804		0.804			
Joint significance Test						
Constant Variables	128.37***	0.000	206.42***	0.000		
Main Variables	1.500***	0.000	1.300***	0.000		

Note: The value in parenthesis represents t-statistics. *, **, and *** represent significance at the 1%, 5% and 10% levels respectively.

Generally, first differenced GMM is always biased downward mainly due to the existence of autocorrelation between lagged the dependent variable and error term. In order to solve this problem, Blundell and Bond (1998) proposed the system GMM estimator to eliminate the problem. The coefficient of lagged imports representing the adjustment factor was statistically significant at 1% under system GMM. This indicated that system GMM performs better than differenced GMM because system GMM gives better results in terms of standard errors when compared with first differenced GMM. This can be interpreted as adjusted values being more accurate and that poor specification is greatly reduced under system GMM. The Hansen test is equivalent to the Sargan test of over identifying restrictions and was robust for heteroskedasticity and autocorrelation of the first order. The test results indicated that the restrictions on the validity of identification were valid under the null hypothesis. A joint test of significance for the variables in the estimated model was tested using Wald tests of both simple and composite linear hypotheses based on the parameters of the most recently fitted model.

Constant variables equal to zero were tested separately, while the other variables were tested under the assumption that all the variables are jointly equal to one (unity). Both the constant and other variables were appropriate and valid. Special focus was given to the impact of bilateral trade agreements between ECOWAS and other countries represented in the model as (ECO.BTA) as a variable to capture the effects. Also

another variable was introduced to capture the impact of colonial link on ECOWAS imports (ECO.COL).

FTA was a variable introduced to capture the impact of free trade agreement on ECOWAS imports. Regarding ECO.BTA, the results confirmed the existence of a trade creation effect between ECOWAS and the EU. When two countries from ECOWAS and the EU participate in a Bilateral Trade Agreement (BTA), imports increase by 1.37%. The coefficient of colonial links is statistically significant at the 1% level. This implies that there is trade creation under imports. Colonial links will spur ECOWAS imports with an increase of 14.14%. In addition, the FTA variable was not statistically significant, which indicates that the free trade agreements did not have any impact on ECOWAS imports.

GDPi & GDPj can be denoted as GDP export (selected countries GDP across the globe) and import. GDPi (ECOWAS GDP countries only) was found to be negatively significant under system GMM, which indicated that with a 1% decrease in countryi‟s export ECOWAS import would decrease by 7.40%. GDP import was found to be positively significant at the 5% significance level. With a 1% increase in countryj‟s GDP, ECOWAS imports would increase by 0.38%.

Economic size or GDP measures the trading capacity for a country. Under exporting countries, GDP can be regarded to metric of productive capacity and represents the

range of product varieties, which are available for export. The population variable was statistically significant at 1% for both the importing and exporting countries. This indicates that with a 1% increase in population of both the exporting and importing countries, export supply and import supply will increase by 7.6% and 0.49% respectively.

These findings indicate that the large populous nations in this current study have a diversified production base and tend to be self-sufficient and therefore trade less (Linnemann, 1966; Brada & Mendez, 1983). Furthermore, exporter income is regarded as an indicator of export supply while importer income and population are referred to as import demand (Linnemann, 1966; Aitken, 1973). The effect of the population variable cannot be really specified in advance because the effect can be from different directions. Augier, Gasiorek, and Tong (2005) and Oguledo and Macphee (1994) support this argument, assuming that the impact on trade of demographic variables is indeterminate for both exporting and importing.

The distance variable was significant at the 5% and 1% levels respectively under differenced and system GMM. The distance between importer and exporter had a negative impact on bilateral flows of trade. Distance was included into the model to capture transportation costs, and distance was found to negatively affect the volume of bilateral flows of trade.

In line with Linnemann (1966), bilateral trade also captures the time element that can also influence the various types of goods shipped. In summary, transportation, (transaction cost) play an important role for ECOWAS trade. Increasing the distance between countryi to countryj by 1% can lead to decrease on import to ECOWAS ranging from 1.79% to 1.80%. Thus, the more distant nations are to each other, the less they tend to trade. The finding is in line with the classical results of the gravity model.

The coefficient of the GDP similarity variable was negative and significant under both estimates (difference and system GMM). The index of the similarity can be better explained by the heterogeneity of the sample in this current study. The more similar the economics of countries, the closer and the more significant trade relations will be. This finding is in line with that of Kahouli and Maktouf (2013). Looking at the income per head variable (LnGDPPC differences), the positive and significance coefficient for the variable can be seen as denoting a development gap among the countries greatly affecting the flow of imports. ECOWAS countries seem dominant when it comes to inter-industry trade. The coefficients of the common language variable were positive and significant at the 10% and 1% significance levels. When two or more countries shared the same official language, trade between them was spurred by 7.19% to 7.90%. This finding is in line with that of Kahouli and Maktouf (2013).

The exchange rate variable is included as metric to measure a country‟s price competitiveness (Pugel, 2004). In this current study, an appreciation of the real exchange rate by 1% would reduce ECOWAS imports under country j by 0.11% to

0.14%. The negative coefficient of the exchange rate variable indicates that an appreciation of real exchange from exporting countries in the sample would discourage ECOWAS imports. The variable is statistically significant at 1% under both estimates; thus, the result is in line with the hypothes

4.4 Estimation of the Gravity Model: ECOWAS Trade

In order to answer objective three, a trade model for the entire market was proposed for ECOWAS nations. In order to achieve the study‟s objectives, the following steps were taken in order to achieve unbiased estimation results. All the variables except dummy variable were subjected to panel unit root testing and then to panel cointegration after establishing stationarity for all the variables. Finally, differenced GMM and system GMM were used for further estimation. Next, the possible existence of a long-term relationship among the variables was tested for. Establishing a statistical relationship among the variables can be carried out in numerous ways

4.4.1 Stationarity of the Panel Series (Trade Model)

In order to test the level of integration under panel data techniques, series were subjected to Pesaran‟s panel unit root test that allow for cross sectional dependency. All series were subjected to levels and first differences testing. Table 4.5 below shows the

estimated results of the unit root testing. It shows that all the variables are stationary at I(1) except tade, GDPsimilarity and FDIinflow which is stationary at level.

Table 4.5
Pesaran Panel Unit Root Test

No	Variables	Level Statistic Z[t-bar] (constant & trend)	First Difference Statistic Z[t-bar] (constant & trend)
1	Lntradeijt	-4.538***	12.774***
2	LnTgdp	2.874	-9.668***
3	LnGDPSimilarity	-1.334*	-5.239***
4	LnGDPPC differences	-0.649	-8.548***
5	Lnexchangeij	3.124	-9.125***
6	lnfdiinflow	-12.601***	-14.072***
7	lntoij	2.051	-15.990***

*Note: *, **, and *** indicate significance at the 10%, 5% & 1% levels respectively. The Pesaran (2007) test is performed using the Stata "pescadf" command written by Piotr Lewandoski.*

Discussing the diagnostic tests carried out is imperative before arriving at a conclusion that the results are free from all biasness. The validity of the instrumental variables and the possibility of having autocorrelation among error terms must be tested. It is imperative to conduct some test to examine further the validity of the instruments. This study used the Hansen test of over identification restriction, and Arrellano-Bond estimator was used to investigate the order of autocorrelation for differentiated error terms in differenced GMM and system GMM. The results of Hansen statistics of over identification test that the null hypothesis cannot be rejected and that the instrumental variables were valid. Based on the Hansen test results shown in the table above for both difference and system GMM, the test results were not statistically significant. Thus, the conclusion can be made that the instruments used under Arrellano-Bond estimation for both differenced and system GMM are adequate to eliminate the correlation between the error term and explanatory variables.

Furthermore, Arrellano-Bond first and second order autocorrelation tests were used for first differenced GMM and system GMM. The second order autocorrelation (AR2) was not statistically significant under the two estimates, which means that no autocorrelation problem is present and the differentiation can be accepted. Testing the validity of all the variables included in the model (constant and normal variables) is important in order to determine whether the variables included in the model can adequately explain or establish the existence of a relationship with the dependent variables. The test statistics were found to be statistically significant at 1% under differenced and system GMM.

4.4.2 Discussions of Trade Model Results

Table 4.6 below presents both differenced and system GMM estimators. The lagged coefficient of imports is statistically significant at the 5% and 1% levels respectively under differenced and system GMM. This indicates that the coefficients representing the adjustment period play an important role and also indicates that the model of trade using the gravity methodology should be considered dynamically.

Table 4.6
Dynamic Panel Data Model Using Gravity (1985-2013)
Dependent Variable: log of Tradeijt

	Dif GMM		**SYS GMM**		**PPML**	
	Coef	**T-test**	**Coef**	**T-test**	**Coef**	**T-test**
$LnTradeij_{-1}$	-0.154**	0.026	-0.154***	0.000		
LnGDPSimilarity	3.46***	0.001	4.03***	0.000	0.120***	0.000
LnGDPPC differences	-0.028	0.940	0.025	0.782	0.001	0.763
LnTopen	0.907	0.499	.782***	0.006	-0.014	0.176
LnFopen	-0.763	0.295	-.815***	0.000	-0.005	0.601
Tgdpij	0.080***	0.000	0.086***	0.000	0.003***	0.000
RERijt	-0.022	0.739	-0.039	0.266	-0.003**	0.012
Lndistance	-2.77*	0.123	-2.69***	0.000	-0.110***	0.000
Ecowas	-1.85	0.454	-2.25	0.159	-0.221***	0.003
FTA	-2.94*	0.083	-3.21***	0.000	-0.042	0.478
Commonlang	1.29	0.466	0.504	0.245	0.097***	0.000
LnFDIinflowij	-.041	0.902	-0.043	0.319	-0.005	0.336
Contig	2.98	0.280	3.44***	0.000	0.077***	0.000
Time Dummies	Yes		Yes	YES		
Hansen Test	0.389		0.650			
AR(2)	0.390		0.261			
Joint significance Test						
Constant Variables	178.29	0.000	389.62	0.000		
Main Variables	5508.36	0.000	4184.26	0.000		

Note: The value in parenthesis represents t-statistics. *, **, and *** represent the 1%, 5% and 10% significance levels respectively.

Generally, first differenced GMM is always biased downward mainly due to the existence of autocorrelation between the lagged dependent variables and the error terms. In order to solve this problem, Blundell and Bond (1998) proposed the system GMM estimator that was used in this current study. The coefficient of lagged trade representing te adjustment factor is statistically significant at 1% under system GMM.

This indicated that system GMM performs better than differenced GMM because system GMM gives better results in terms of standard errors when compared with first differenced GMM. This can be interpreted as meaning that adjusted values are more accurate and poor specification is greatly reduced under system GMM. The Hansen test is equivalent to the Sargan test of over identifying restrictions and is robust with respect to heteroskedasticity and autocorrelation of the first order. In conclusion, the test results indicated that the restrictions on the validity of identification were valid under the null hypothesis. The joint test of significance for the variables in the estimated model used the Wald tests of both simple and composite linear hypotheses based on the parameters of the most recently fitted model. Constant variables equal to zero were tested separately, while the other variables were tested under the assumption that all the variables are jointly equal to one (unity). Both the constant and other variables were appropriate and valid. The coefficient of similarity of the GDP was positive and significant in the two estimates. These indicated that with a 1% increase in the similarity index of the GDP, ECOWAS trade would increase by 3.46% to 4.03%.

The level of importance to trade will be determined by closeness and similarity in economies. A 1% increase in GDP similarity under ECOWAS from country i to country

j would increase trade by 4.03%. The high coefficient of the variable is very common in the literature (Egger & Pfaffermayr, 2004). Topen represents trade openness of all ECOWAS countries. The coefficient was positive and significant at the 1% level under system GMM. These indicated the importance of free trade policy and trade liberalization schemes in enhancing ECOWAS trade in general.

An 1% increase in the openness of trade under ECOWAS countries would increase trade by 0.78%. This variable of interest is critical to policy makers within ECOWAS to improve trade relations among its members. Another variable of interest is financial openness (Fopen); the coefficient was negative and statistically significant at 1% level only under system GMM. Is of note that financial openness of all the countries within ECOWAS tends to hamper the flow of goods within ECOWAS, and in the long run. Interestingly, financial openness neither favored nor promoted the pro-liberal/free trade policies adopted by ECOWAS trade. A 1% decrease in financial openness of trade under ECOWAS countries would decrease trade by 0.81%. This variable of interest is equally very important for the policy makers within ECOWAS in order to improve trade relations among its members. Distance had a negative effect on the volume of trade for ECOWAS. The greater the distance between ECOWAS countries, the less they engaged in trade. An increase in the distance between countries i to j by 1% will lead to a decrease in trade by 2.69% to 2.77%.

This result is in line with the classical gravity model results. This finding also aligns with Frankel, Stein, and Wei (1995), Soloaga and Winters (2001), and Breuss and Egger (1997, 1999). The results indicate that transaction (transportation) costs are important

for ECOWAS trade. TGDPij under ECOWAS was quite important for the period. The GDP elasticity shows that a clear market affect exists on trade flow within the region. The coefficient of TGDPij had a positive sign and was also found to be statistically significant at 1%; thus, the positive sign of the coefficient is consistent with the theoretical explanation. An increase in ECOWAS bilateral trade by 0.80% to 0.86% would lead to an increase in the TGDPij by 1%. This result is in line with other findings including the following studies: Kahouli and Maktouf (2013), Kahouli and Kadhraui (2012), Kahouti and Maktouf (2014), Frankel et al., (1995), Tinbergen (1962), Aitken (1973), Poyhonen (1963), Bergstrand (1985, 1989, 1990), Aitken and Obutelewicz (1976) Christerson (1994), Thursby and Thursby (1987), and Geraci and Prewo (1977, 1982).

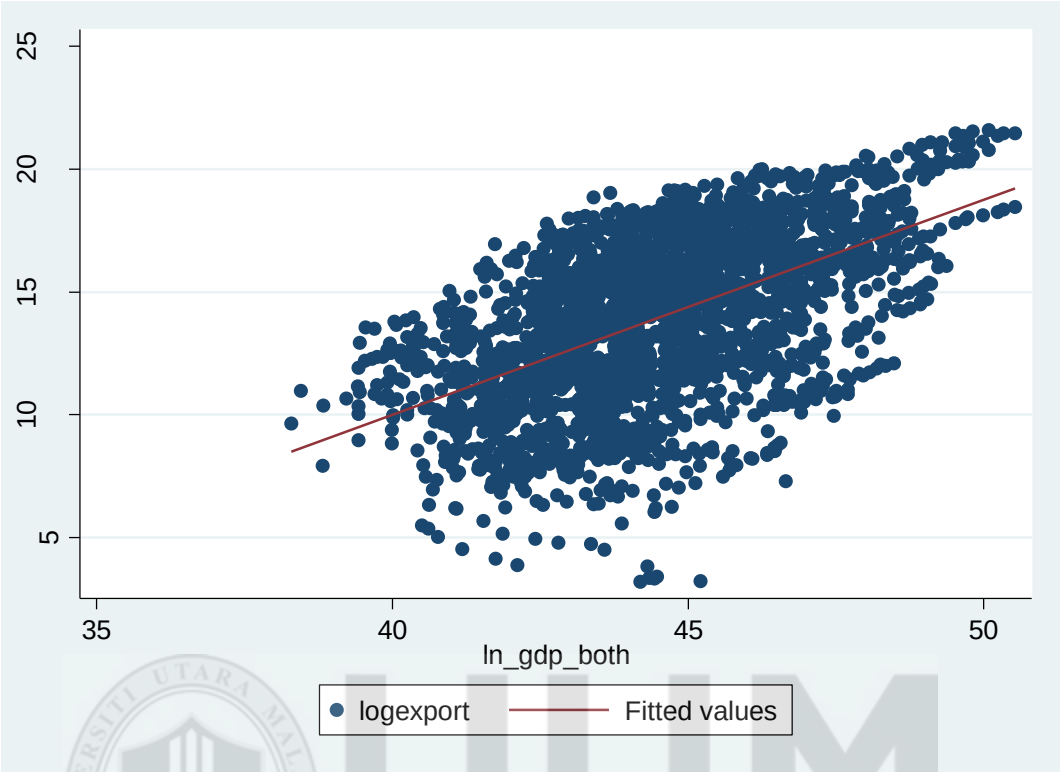
The coefficient of FTA was negative and significant under the two estimates. The variable was significant at the 10% and 1% levels and with a decrease by 2.94% to 3.21% of the total trade of ECOWAS while FTA reduced by 1%. There is trade diversion, and the finding seems logical considering the small volume of trade within the members of the countries, and most specializations and production of the countries are almost the same. The variable common border (Contig) was positive and significant under system GMM. Common border positively affects trade, which is in line with the classical results of gravity models. The common border variable should have a positive coefficient because the countries selected for this study were from the same region of West Africa. Countries that share borders within ECOWAS trade more by 3.44% than

those that do not share a common border. The higher coefficient was statistically significant at 1%, which indicates that countries sharing a border within ECOWAS tend to trade more, which eventually will increase bilateral trade relations.

4.5 Estimation of the Gravity Model: Impact of Institutional Quality on ECOWAS Trade.

This section examines the impact of institutional quality on ECOWAS trade. Looking beyond the major determinants to examine the likely impacts of institution on ECOWAS trade is imperative. Estimation technique that was employed was the Poisson pseudo-maximum-likelihood estimation (PPML).

This method was introduced into gravity modeling to capture the zero trade matrix that usually occurs in trade (Export and Import). Santos Silva and Tenreyro (2010) designed the method to capture zero trade matrixes, which is part of the nonlinear method of estimation. At default PPML estimation techniques are semi robust against likely bias. To achieve the fourth objective stated in chapter one, one models were proposed to be estimated, namely, the impact of institutional quality on ECOWAS export trade (intra-trade).



Note: Sources, author‟s computation

Figure 4.5. *Scatter plot and line of best fit for export versus GDP combined (1996-2013).*

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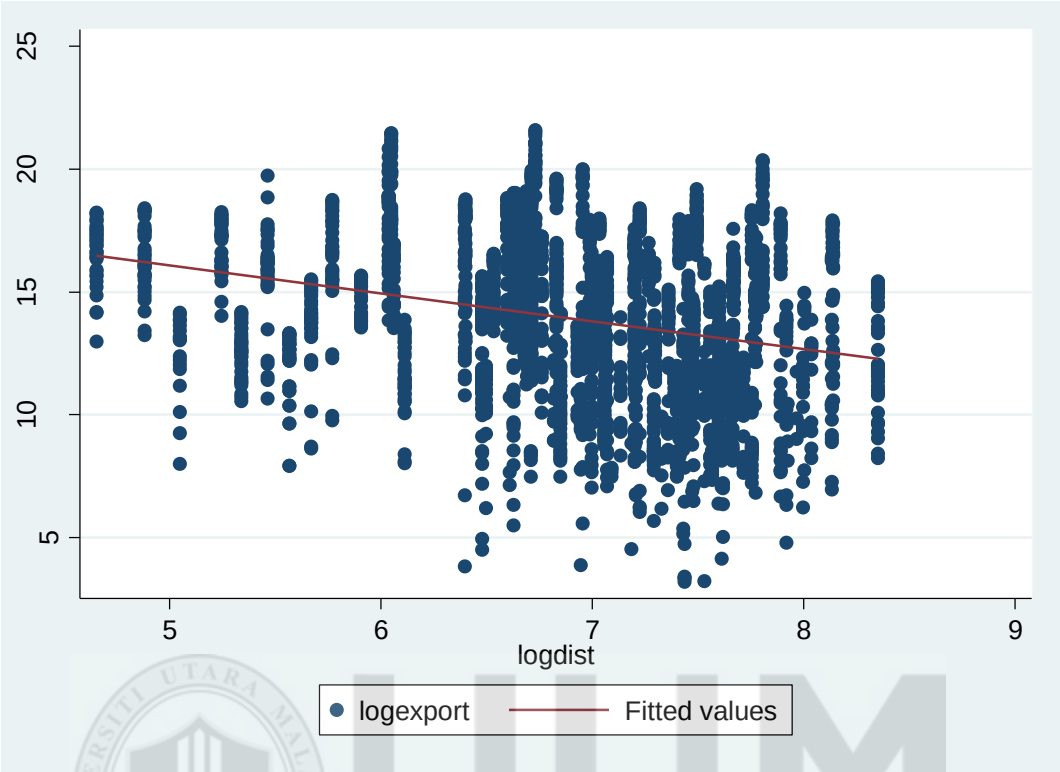
Figure 4.5 above shows that using combined economic mass of importing and exporting nations (the GDP product of ECOWAS countries) represents the explanatory variable. The scatter plot indicates a positive relationship between the two variables. Furthermore, the best line is upward sloping. The graphical evidence therefore offers further proof that larger country pairs tend to trade more



Note: Sources, author"s computation

Figure 4.6. *Scatter plot and line of best fit for export versus distance (1996-2013).*

The scatter plot in Figure 4.6 is suggestive of a negative relationship. The impression can be demonstrated further using line of best fit, which is strongly downward sloping. Thus, country pairs that far apart tend to trade less.

In addition, PPML results reported in parentheses are semi robust, which is in line with Santos Silva and Tenreyro (2010). All regressors are performed by the Poission pseudo-maximum likelihood that includes time-varying exporters, importers fixed effects as Anderson, and Van Wincoop (2003) suggested.

4.5.2 Discussions of Institutional Quality Results (Table 4.7)

Discussing the elasticity of GDP exports and imports under ECOWAS countries is important. The gravity model using export bilateral flows as a dependent variable shows that the coefficient of GDPi (exporting countries) was positive and significant at 1%. A 1% increase in GDPi of exporting countries to the other ECOWAS nations will lead to an increase of 1.23% for exports. The GDP of the importing countries within ECOWAS was also found to be negative and significant at 1% significance level. This implies that, with a 1% decrease in the GDP of importing nations within ECOWAS; importation will decrease by -1.28%. In this study, GDP represents economic size and represents what Poyhonen (1963) and Pulliainen (1963) have called the trading capacity of a country.

Exporting countries GDPs represent productive capacity and are also a metric to measure the range of product varieties available for exports. The GDP under import represent an indicator of the capacity to import goods. It is expected that the incomes of both countries within the region should positively impact bilateral trade (Linnemann, 1966; Poyhonen, 1963; Pulliainen, 1963; Tinbergen, 1962). $Population_i$ representing exporting countries was found to be positive and statistically significant at the 1% level. With a 1% increase in population, exporting ECOWAS countries tended to produce more which means ECOWAS exports will increase by 4.39%. Logically, countries with larger populations tends to have a diversified production base, which means they have the capacity to capture economics of scale in production and this gives them an edge to

trade more compared with smaller economies. This finding is in line with Brada and Mendez (1983).

Table 4.8

The Poisson Pseudo-Maximum Likelihood Estimation Results (1997-2013)
DV: Export

	PPML	
	Coef	T-test
contig	0.136***	9.80
lnpopulationi	-1.638***	6.34
lnpopulationj	1.119***	4.21
lnGDPi	1.234***	6.71
lnGDPj	-1.284***	5.16
lnGDPSimilarity	0.017	1.39
lnGDPPCdifferences	0..014	1.35
lnexchangeij	0.005***	4.70
FTA	-0.472***	4.14
LnPtsj	-0.702	2.52
Lndistance	-0.035***	4.10
commonlang	0.055***	6.43
LnCorruptj	-0.219	0.88
LnReguatoryj	-0.314*	1.75
Adj R2	0.86	

Note: *, **, and *** denote significance at the 10%, 5% and 1% levels respectively.

$Population_j$ represents the population of the importing countries within ECOWAS. The coefficient of $population_j$ was found to be negatively significant under CCR and PPML. The negative sign is consistent with previous literature such as Oguledo and MacPhee (1994), Linnemann (1966), Blomqvist (1994) and Matyas et al. (1997) who concluded that trading populations of countries affected trade flow negatively and remained significant. With a 1% decrease in $population_j$, imports will reduce by -1.63%.

Generally, the expected sign of population parameters are always unclear (Brada & Mendez, 1983).

Logically, importer income with $population_i$ is measures of potential import demand while exporter income and $population_j$ can be an indicator of exporter supply (Linnemann, 1966; Aiken, 1973). The distance variable was included in the model to capture the transaction costs. Distance was discovered to have a strong negative effect on the overall volume of trade among countries from i to j within ECOWAS by 1%, which leads to a reduction in exports by 0.035%. This finding is in line with the studies of Frankel, Stein, and Wei (1995), Soloaga and Winters (2001), Thoumi (1989a, 1989b) and Breuss and Egger (1997, 1999). Overall, these results suggest that transportation costs have great importance for most small ECOWAS economies.

The variable common border (Contig) was found to be positive and significant in all the models. Sharing a common border positively affected trade, which is in line with the classical results of gravity models. A common border is expected to have a positive coefficient because countries selected for this study were from the same region. West Africa Countries sharing the same border within ECOWAS will trade by 0.136% more than those not sharing a common border. The coefficient of the common language variable for this study was positive and significant in the two estimated results, signifying that the sharing the same official language of two or more countries within ECOWAS tends to spur trade among them. An increase of 1% of the coefficient of the common language of the countries within ECOWAS will tend to increase the export

trade within ECOWAS by 0.05% at 1% significance level. This finding is in line with Stack and Pentecost (2011). Shifting the focus to an examination of the impact of institutional quality variables incorporated into the models and seeing the behavior of the series is important. For interpretation purposes, three indices of institutional quality were incorporated into the models, namely, level of corruption, political instability, and regulatory quality. The political instability variable was found to be negative and statistically significant at the 1% level. ECOWAS exports will increase by 0.70% if one unit of improvement occurred in the political instability rating for all ECOWAS countries. This result is in line with the studies of Bannon and Collier (2003), McGowan (2006), Florquin and Berman (2005), Easterly and Levine (1997) and Fosu (2003). They discovered that political instability encourages poor growth performance through its effects on public choice, and they indicated that coups d‟état also had adverse effects on African export growth, which was greater than their effects on GDP. The regulatory quality variable was negatively significant and indicated that a one standard deviation decrease in regulatory quality would lead to a 0.31% increase in bilateral trade within the ECOWAS region. This result is in line with the previous findings of Mehlum et al., (2006) and Fosu (2011), who indicated that institutional considerations remain essential if African countries want to enhance their trade and development. The exchange rate variable coefficient was positive and significant under CCR and PPML at the 1% significance level. The positive coefficient suggests that an appreciation of real exchange rate will tend to encourage ECOWAS exports from i to j.

The estimated result, which indicates depreciation, suggests that depreciation of the real exchange rate by 1% would increase ECOWAS exports from i to j by 0.005%. Under the estimation techniques employed (PPML), the variable was negative and significant under the estimates.

The results showed that ECOWAS exports would increase in a range by 0.47% if 1 unit of improvement occurred under FTA; thus, the results show that a trade diversion exists. The proliferation of FTA has generated much criticism. One criticism is the fear of trade diversion by means of bypassing an effective non-member nation in favor of a member nation that is less efficient in production. FTA is a tool used to reduce trade barriers among the signatories and leads to an expansion of trade at the bilateral level among its members, which could also be at expense of non-members.

4.6 Conclusion

This chapter conducted an empirical investigation of trade flows on bilateral trade relations within the ECOWAS region using various estimation techniques. It was essential to discuss the magnitude of several variables, which seem high, although these higher coefficients are not abnormal in the gravity model of trade literature.

These results are in line with Sandberg, Seale, and Taylor (2006), Egger and Pfaffermayr (2004), Stack and Pentecost (2011), and Thede and Gustafson (2012).

Because all the variables were logged, the assumption was that the degree of the elasticity was unit less.

However, the panel data used for these study is unbalanced due to missing datas especially from countries like Sierra Leone, Liberia, Guinea Bissau and Mali. Export, GDP per capita and GDP were incomplete; thus, applying second generation panel test tests to unbalanced panel data can create computational problems such as the Westerlund error-correction-based panel cointegration tests. Furthermore, we could not employ cross sectional dependency test and others; thus we stick to the first generation panel unit root testing and cointegration which was in line with Hondroyiannis (2006) and Geldi (2012). In summary, regardless of whether there is cross sectional dependency or otherwise, we rely on the assumption of Phillips and Moon (1999) that there is independence in the errors across cross-sections using dynamic models.

CHPATER FIVE

EVALUATING THE FUTURE PROSPECTS AND CHALLENGES OF ECOWAS REGIONAL TRADE INTEGRATION

5.1 Introduction

This chapter evaluates the future prospect and challenges of ECOWAS trade integration. The SWOT analysis employ in this chapter comprises of the strength, weaknesses, opportunities and threats are investigated. The results from the analysis of trade determinants with the use of cross sectional panel data estimation techniques using dynamic gravity model. As for this chapter, quantitative approaches are employed. SWOT analysis in this fold will start by examining the internal strengths; internal weaknesses, external opportunities and the concluding part will be external threats assessment.

5.2 SWOT Investigation

The challenges and prospects of trade integration among ECOWAS member countries are to be examined with the use of SWOT analytical tool and majorly its findings will rely on indirect quantitative analysis using dynamic gravity model for analyzing ECOWAS trade integration among its members.

SWOT analytical tool recorded a significant performance for a country or company, by recognizing the interaction of management with both external and internal in a correct way (Rehber and Turhan, 2002). SWOT analysis also investigates the internal weaknesses and strength, threats and external opportunities (Houben et al. 1999).

5.3 Evaluating Strengths

5.3.1 Market Size

ECOWAS was founded in 1975 in order to improve welfare, growth, and development. Since then ECOWAS went through series of political /economic reform in order to strengthen their regional integration. Findings from the dynamic gravity model of trade results indicate that ECOWAS trade is largely determined by its market size (GDP) of the economies and the level of development are quite similar. This signifies the importance attached to integration because it is expected to spur growth and development. This is in line with the aim of creating ECOWAS.

5.3.2 Openness to Trade

Based on our result from dynamic gravity model, it is very imperative to discuss the level of openness to trade within ECOWAS. In addition, we can use this index or proxy to determine the level of compliance with regard to ECOWAS trade policies. We can

conclude that largely most of countries under ECOWAS open up for trade. This is also an indication that ECOWAS regional group is progressing.

5.3.3 Historical and cultural Benefit

Based on the dynamic gravity model estimation results, we discovered that all historical and cultural indicators benefit all countries within ECOWAS thus; it can also be called trade costs. Almost the countries within ECOWAS speak either English or French as the official language. Based on the result it clearly shows that since ECOWAS belong to the same regional countries, nations sharing the borders tend to trade more than countries that does not. This is also another great advantage for ECOWAS since all ECOWAS countries are mostly close together. We can conclude that historical and cultural factors spur ECOWAS regional integration.

5.4 Evaluating Weaknesses

5.4.1 Obstacle to Trade

Based on our empirical analysis results, using dynamic gravity model. It indicate that, the following impedes trade flows: financial openness, FTA and ECOWAS. One of the motives of establishing ECOWAS is to create a Free Trade Agreement between members and to integrate the regional group to the next stage of integration. Now, both ECOWAS representing the formational effect and free trade agreement continue to experience trade diversion, which means most members of ECOWAS countries largely,

depends on trade with non-members. This factor largely impedes trade flow within ECOWAS.

Up till date, a uniform tariff have not been fully implemented within ECOWAS and at such a common tariff should be a trade weapon used to improve trade among its members in order have a common front to non-members of ECOWAS. However, another critical aspect that impedes trade flow is the issue of financial openness. Based on our dynamic gravity model results, it clearly shows that financially ECOWAS market is not open and at such instances, it very clear that it will impede trade because it serves as a restrictive measures to trade flows. A mechanism in a policy form should be in place in order to remove the barrier financially in order to improve our level of integration and trade.

5.4.2 Quality of Institutions

Based on the empirical finding using dynamic gravity model. The institutional quality denoted by using regulatory quality. The two variables have a significant and considerable impact on ECOWAS trade flow within the region. It is very imperative to note that ECOWAS region is plagued with high level of corruption and feeble regulatory quality. Based on the corruption perception index , it was discovered that virtually all the countries within region remain very high thus our empirical analysis confirm the submission that high level of corruption impedes trade. Furthermore, the

feeble state of regulatory quality remains a serious issue. Based on World Bank governance rating, it shows that our regulatory quality remain feeble virtually in all the countries within ECOWAS.

Dynamic gravity model results confirm this submission that our regulatory qualities within ECOWAS remain feeble. This very issue impedes free flow of goods within ECOWAS. The practice of bribery, bureaucracy, and corruption are very visible within ECOWAS thus it serves as extra burden on good and services within ECOWAS. The systematic corruption has a strong impact on trade. This submission is in-line with Quartey (2012) discovered that the recent West African (ECOWAS) trade hub survey indicated that per 100 km, 17 controls were in existence, from which, on average, 54 dollars was collected as a bribe. He further identified this bribery problem as a major barrier to the movement of goods, people and services across the area. In addition, an average delay of 55 minutes per control point exists across the borders of each country within the region.

5.5 Evaluating Opportunities

5.5.1 Economic Diversification

Based on our empirical analysis, it shows that ECOWAS needs to strengthen further the process of integration in order to gain more from mutual integration and then foster

economic growth and development. ECOWAS needs to diversify and improve their potential in order to have an effective and strong trade relation. Furthermore, based on our results it shows that ECOWAS economies can further diversify by focusing on industrial sector in order to become an industrial hub. ECOWAS have the potential to be become industrial hub for African continent.

As part of the effort to improve ECOWAS trade, West African industrial policy was introduced to reposition the economies and strengthen in order to position ECOWAS countries

5.5.2 Trade Opportunities

Based on our empirical analysis, ECOWAS trade among its members shows a negative trend even on formational impact (FTA and ECOWAS). But if ECOWAS reposition and strengthen its policies with a robust strategy thus ECOWAS will experience trade creation and not trade diversion. Furthermore, it high time for ECOWAS to strengthen further its integration process to include common custom union and further integrate the regional group to both economic and monetary union whereby a single currency will serve as a medium of transaction within ECOWAS. This strategy will go a long way if ECOWAS want to attain and achieve a sound economic growth and development.

5.6 Evaluating Threats

5.6.1 Political instability

Based on our empirical analysis, political instability variable remain negative and significant which indicate that the political unstable or unrest largely affect flow of goods and service within ECOWAS. The political unrest largely affects almost all the countries within ECOWAS. The degree of uncertainty impedes ECOWAS regional integration. ECOWAS region is typically characterized with smuggling of resources and conflicts, most of which are internal and small instead of wars (McGowan, 2006).

Since 1998, more than 35-armed groups were in operation in more than two thirds of the 15 ECOWAS states (Florquin and Berman, 2005). In addition, Easterly and Levine (1997) found that political instability encourages poor growth performance through its effects on public choice. Fosu (2003) indicated that coups d‟ëtats also had an ad adverse effect on African export growth, which was greater than their effect on GDP. The recent menace affecting about three to four countries within ECOWAS region is BOKO HARAM

5.7 Conclusion

SWOT analysis summary.

Table 5.1: SWOT Analysis Summary

Strengths	Weaknesses
Market Size	Obstacle to Trade
Openness to Trade	Quality of Institutions
Historical and cultural Benefit	

Opportunities	Threats
Economic Diversification	Political instability
Trade opportunities	

Focusing on the strength identified, based on our empirical analysis so far will go a long way for ECOWAS in enhancing ECOWAS trade further. The main weaknesses identified so far needs an urgent attention. Barrier to trade and feeble institutional quality needs to be strengthen. In addition, the main issue that is paramount is the prevalent incidence of corruption because according to the various ranking including corruption perception index, West Africa region remain the most corrupt region in the world. Opportunities and benefits involved in regional integration is a long time achievement. Right now, Free Trade Agreement (FTA) has been implemented. ECOWAS countries are moving toward having a common custom union. All the policies under ECOWAS integration will spur the region to achieve growth and development at the long run. Furthermore, the main critical problem facing ECOWAS as a whole is the political unrest witnessed in most of the countries within ECOWAS.

The instability obstructs free flow of goods and service thereby causing insecurity within the region.

CHAPTER SIX

CONLUSION AND POLICY IMPLICATIONS

6.1 Introduction

This section comprises of summary of whole thesis, policy implications, areas for future research and finally round up this chapter with conclusion.

6.2 Summary

The main aim of this study is to analyze the impact of free trade and institutional quality on ECOWAS trading bloc. There are five objectives of the study. The first objective is to examine the determinant factors contributing to ECOWAS export flows using dynamic gravity model. The second objective is to examine the determinant factors contributing to ECOWAS import flows the third is examine other factors that determines bilateral trade flows within ECOWAS. The fourth is examine the impact of institutional quality on the ECOWAS export flows; and the fifth objective is to evaluate the future prospects of ECOWAS regional trade integration using SWOT analysis. Our conclusions drawn from this research are stated as follows:

The determinant factor of intra-trade (export) within ECOWAS was empirically examined using dynamic gravity approach within the period of 1985-2013. In this study, we employed panel unit dynamic GMM and PPML. The results indicate that there is existence of regional trading bloc. That means ECOWAS satisfies the conditions and will benefit maximally as regional group. In this study, we employed panel unit root and proceed further to examine the long run impact using dynamic Differenced GMM and system GMM. The results indicate that both bilateral agreements signed between EU and ECOWAS and colonial link stimulate or spur import into ECOWAS region.

Similarly, the impact of free trade agreement within ECOWAS was empirically examined using dynamic gravity approach. In this study, Dynamic gravity model approach used in exploring the impact of free trade agreements. The dependent variable used was exports (from exporting country to importing country within the region) while the independent variable includes gross domestic product (GDP) , populations of country i to j, similarity of the GDP, difference in per capita income, exchange rate, and dummy variables consisting of common language, common border, ECOWAS, FTA and distance. These indicate that the formational effect (ECOWAS) and free trade agreement (FTA) shows that there is trade diversion. While both historical and cultural factors spur trade flows among ECOWAS members.The determinant factor of trade model for ECOWAS was empirically examined using dynamic gravity approach within the period of 1986-2013.

In this study, we employed panel unit dynamic GMM and PPML. The results indicate that indeed there is existence of regional trading bloc at the long run. This means ECOWAS satisfies the conditions and will benefit maximally as regional group. In this study, we employed panel unit root, panel cointegration test and proceed further to examine the long run impact using dynamic Differenced GMM and system GMM. In this study, the dependent variable used was trade (import + export) while the independent variable includes total gross domestic product (GDPij), similarity of the GDP, difference in per capita income, exchange rate, trade openness, financial openness, FDIinflows and dummy variables consisting of common language, common border, ECOWAS, FTA and distance. The results show both historical, cultural and distance variables significantly improves trade among ECOWAS members, also ECOWAS members are compiling with trade policies put in place. While ECOWAS regional group is yet to financial open is market to its members.

The dynamic gravity model approach is used to examine the impact of institutional quality on ECOWAS free trading bloc. In this study, the dependent variable used was exports (from exporting country to importing country within the region) while the independent variable includes gross domestic product (GDP), populations of country i to j, similarity of the GDP, difference in per capita income, exchange rate, corruption perception index, regulatory quality index, political instability and dummy variables consisting of common language, common border, ECOWAS, FTA and distance. In

general, the result shows that political instability and regulatory quality negatively affect ECOWAS trade performance.

Finally, all findings were further analyze using SWOT (strength weaknesses, opportunities, and threat) techniques. This tool helps in identifying ECOWAS strength, area of opportunities, weaknesses, and threat. The categorization was done based on our empirical results. The empirical results also indicate that there is evidence of strong neo- colonial trade linkages existing between ECOWAS and its colonial masters (EU, UK and other selected countries for the study). Colonial linkages spur trade among ECOWAS countries and its masters.

6.3 Policy Implication

As earlier stated, the general objective of this study is to examine the impact of free trade and institutional quality on ECOWAS trade flow using gravity model. Based on our objectives, dynamic panel of estimation were employed. These results indeed confirm the existence of ECOWAS as a regional trading group. Based on our empirical findings several policy issues can also be highlighted and also policy recommendations can be developed.

ECOWAS must clearly revisit its objectives and narrow down its goals in order to have a clear focus on its pursuit. The regional bloc was launched with a very aggressive and

ambitious agenda to achieve, which was deemed unrealistic. For instance, the ECOWAS current mandates, as required to collaborate on variety of projects, which incorporate many industries i.e. reactivation and creation of more industrial free trade zone. These methods rendered a politically charged into highly visible one besides spreading the resources and the interest of the member‟s states are too thin.

Capital investment is required to improve and build infrastructure, industrial base in order to improve economy of its members, which is so important for integration. In conclusion, a more specific and robust approach concerning economic integration, perhaps certain product categories and industrial segmentations may be more appropriate.

The other very significant finding from the determinant of trade flow using ECOWAS was that ECOWAS economies needs to be financially open since ECOWAS objective is to fully achieve economic and monetary union. There is urgent need to address the issue of financial openness in order to encourage and stimulate cross border transactions for better integration. In addition, in general, ECOWAS need to encourage all its member countries to remove all trade restrictive barrier among members.

Fundamental and structural trade policy reforms must be revisited in order to achieve desirable result because tariff within ECOWAS needs to have a common front for all ECOWAS members i.e all ECOWAS nations must strictly obey the tariff code designed by the regional body.

In order to solve the issue of feeble institutional quality there is need for ECOWAS to advocate for a clean accountancy, transparency and good governance. Another crucial finding of the gravity model is the issue of political instability. It is high time ECOWAS countries address the issue of political unrest. Because it pose a serious threat in penetrating the available markets within ECOWAS region.

In addition, the issue of good governance should be addressed with a strict mechanism and policy thus, ECOWAS should come up with a policy that will serves as check and balances on all ECOWAS countries in order to have a very sound institution.

The study recommends that ECOWAS regional group should integrate further. This recommendation was further reinforced because FTA that was force is still not yielding the desire result thus, there is need to strengthen the regional group further. ECOWAS needs to move to the next stage of integration i.e. custom union, economic and monetary union. ECOWAS needs to address the issue of partial implementation of regional integration process at such it hinder the performance of ECOWAS trade. For instance, ECOWAS has not fully implemented free trade agreement and then they have started with the implementation of custom union. ECOWAS needs to fully achieve a particular stage before jumping to another stage, in order to have ensure all ECOWAS countries fully compile with the rules otherwise jumping from one integration process to another without full success will hinder ECOWAS performance.

The study recommends that ECOWAS needs to diversify its market more, remove all restrictive measures (financial and trade openness), and in general improve the level of industrialization within ECOWAS. So that the regional group can become a regional force across the globe.

ECOWAS needs to address the issue of partial implementation of regional integration process at such it hinder the performance of ECOWAS trade. For instance, ECOWAS has not fully implemented free trade agreement and then they have started with the implementation of custom union. ECOWAS needs to fully achieve a particular stage before jumping to another stage, in order to have ensure all ECOWAS countries fully compile with the rules otherwise jumping from one integration process to another without full success will hinder ECOWAS performance.

6.4 Recommendation for Future Research

Several limitations exist for this research. The main problem is lack of data or missing data. This can be seen in the cases of Liberia, Guinea, and Guinea Bissau.

1. This study recommends that further study should investigate the impact of trade and poverty within ECOWAS region.
2. Further studies should investigate the impact of infrastructure on trade flow within ECOWAS region.
3. Further studies should investigate the impact of free trade and institutional quality using Computable General Equilibrium (CGE) approach.

6.5 Conclusion

This research aimed at analyzing the impact of free trade and institutional quality on ECOWAS trading bloc. In general, the empirical analysis have provided us an important and robust results in achieving the stated objectives of this study. The results highlight the fundamental significance of properly accounting for endogeneity and heterogeneity bias when trade policy effects are being evaluated. In conclusion, this chapter summarizes the whole thesis, policy implication of the findings and recommendations/ suggestions for future research.

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