SAINT MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE OF AGRICULTURE AND DEVELOPMENT STUDIES

AGRICULTURAL TRADE AND REGIONAL INTEGRATION: THE CASE OF COMMON MARKET FOR EASTERN AND SOUTHERN AFRICA (COMESA)

BY

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ADDIS ABABA

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LIST OF ACRONYMS AND ABBRVATIONS

AATM	Africa Agriculture Trade Monitor
AfCFTA	Africa Continental Free Trade Area
AMU	Arab Maghreb Union
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AUC	Africa Union Commission
CEMAC	Central African Economic and Monetary Community
CEMES	Electronic Market Exchange System
CENSAD	Community of Sahel-Saharan States
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
COMESA	Common Market for Eastern and Southern Africa
CVTFS	Virtual Trade Facilitation System
DRC	Democratic Republic of Congo
EAC	East African Community
ECOWAS	Economic Organization of West African States
ELD	Export Led Growth
FEM	Fixed Effects Model
FTA	Free Trade Area
GDE	Growth Driven Export
GDI	Growth Driven Import
GTAP	Global Trade Analysis Project
IGAD	Inter-Governmental Authority on Development
ILD	Import Led Growth
NTM	Non-Tariff Measures
PIDA	Programs for Infrastructure Development in Africa
PTA	Preferential Trade Area
REM	Random Effects Model
RTAs	Regional Trade Agreements

SAARC	South Asian Association for Regional Cooperation
SACU	Southern African Customs Union
SADC	Southern African Development Community
SITC	Standard International Trade Classifications
SSA	Sub-Saharan Africa
WAEMU	West African Economic and Monetary Union

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ABSTRACT

Various empirical studies in the past used aggregate trade performance to assess effects of regional integration on agricultural exports. Previous studies revealed their findings by examining few selected agricultural commodities. Besides, existing evidences on the effectiveness of regional integration in promoting intra-regional agricultural trade in Africa is equally mixed. Thus, a comprehensive study that examines the effect of COMESA regional integration on agricultural trade using disaggregated data remains unexplored. This study investigates the effect of regional integration on agricultural exports for COMESA economies. The research employed an augmented gravity model of bilateral trade for the period covering 1997-2018. The empirical evidence is based on panel data analysis and random effects model estimation. The structure and flow of agricultural commodities trade in COMESA is also analyzed using a descriptive approach. Tea, coffee, spices, vegetables, animal and vegetable fats and oils, cereals, and live animals have emerged as the major exported products accounting for nearly 60 percent share of agricultural exports from COMESA countries to the world. The empirical findings show that real GDP of both exporter and importer countries is a robust predictor of agricultural export trade performance in the region. Other significant factors that positively affected intra-COMESA agricultural exports include population of importing country, common border, and common official language. The estimation results also indicate that intra-COMESA agricultural exports have inverse relation with population size of exporter country, exchange rate devaluation, and distance between bilateral trade partners. The predicted coefficient for exchange rate reveals unexpected negative sign. This result is in contrary to the widely held opinion that currency devaluation generates more exports. Also, the empirical evidences indicate that COMESA regional integration has both trade diversion and trade creation effects on agricultural trade. However, the net effect shows existence of trade diversion, which is a little higher than the trade creation coefficient. To mitigate the trade diversion effect observed in the empirical finding, the study recommends strategic interventions by undertaking full implementation of harmonizing trade policies and calling for deeper integration of COMESA. This would be crucial not only to tackle major barriers to trade but also to expand the low level of intra-regional trade in agriculture. Finally, to address the finding related to negative effects of exchange rate devaluations and to promote intra-COMESA agricultural trade, the paper suggests reduction of currency disparities among member states and adoption of common currency regime.

Keywords: *Regional integration; COMESA; free trade areas; agricultural export, gravity model; trade creation; trade diversion.*

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Over the past decades, the emergence of regional integrations has transformed the global trading system. Several regions across the world witnessed advancement in the level of regional integrations. Recent studies revealed that about 50 percent of the global trade is now carried-out under the auspices of free trade agreements enforced among member countries in various regional economic blocs (Douglas, 2016). Regional integration has been viewed as a major policy apparatus that a nation can use to ascent the ladder of industrialization and economic growth, and attain better social welfare for its peoples. This principle, beside other dynamics, has led to the rise of Regional Trade Arrangements (RTAs) all over the world in the past few decades. Some of the well-known RTAs in various continents include EU, ASEAN, NAFTA, EAC, COMESA, SADC, ECOWAS, CEMAC, WAEMU, and SACU.

There is a long history of Regional Trade Arrangements (RTAs) in Africa, dating back over forty years. Regional integration has been regarded as a tool for promoting economic growth and sustainable development and improving the living standards of the African people. African countries have enforced many different RTAs that differ in their degree of integration, going from free trade areas, to common markets, to customs unions, and finally to monetary unions (Candau et al, 2018). Demographic changes and economic growth are leading to rising demand in African markets, reinforcing the rationale for deepening economic integration across the continent, which is also important for the diversification of production and value addition in Africa. Recent efforts in the African continent give priority to broader continental integration than offered by current Regional Economic Communities (RECs). African governments are multiplying initiatives in support of greater regional integration. The African Continental Free Trade Area (AfCFTA) is a particularly important initiative worth noting here. The AfCFTA agreement aims to create the largest free trade area in the world with 1.2 billion people in 55 countries and a combined GDP of US$2.5 trillion (Bouet et al, 2019).

COMESA is one of the largest Regional Economic Communities (RECs) in Africa encompassing 21 countries as member states. This regional trading bloc was created in 1994 as a predecessor of Preferential Trade Area for Eastern and Southern Africa (PTA) to help the member states achieve maximum benefits of regional integration. The COMESA regional economic bloc works to attain sustainable economic and social development in all member states capitalizing on greater co-operation and integration in all fields of development. In the COMESA region, 16 of 21 member states are already participating in the established Free Trade Area (FTA). DRC, Eretria, Eswatini, Ethiopia, and Uganda are the five member states that have not so far joined the FTA in the COMESA. While, the COMESA FTA member countries are Burundi, Comoros, Djibouti, Kenya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Somalia, Sudan, Zambia, and Zimbabwe, Egypt, Libya, and Tunisia. The FTA offers duty-free and quota-free markets access for goods exported from COMESA member countries (Bouet et al, 2019).

There are varied discourses regarding importance of regional integrations and welfare effects of regional economic blocs like COMESA in promoting agricultural trade. Despite the huge potential of agriculture sector as a contributor to economic development, different reasons have been cited for the dismal performance of the sector in Africa. Weak regional economic integration and absence of a well-coordinated integration policy within the region were identified as the major challenges holding back the sector's potential to offer the desired economic gains (Shobande, 2019).Whilst, the importance of free trade agreements, numerous debates have also emerged regarding the welfare effects the regional free trade agreements. One of the key arguments is the presence of low-level of intra-regional trade and trade diversion from member states to non-members. Other views are based on the notion that regional integration have welfare effects through trade creation within member countries and urge for expanding regional integrations. Further claims point that free trade agreements may hurt small countries and it may benefit large countries in terms of gain on trade. Overall, past and recent findings on the effects of regional integrations on promoting intra-regional trade are mixed and inconclusive. Therefore, this empirical study investigates the effect of COMESA regional integration on agricultural exports and examines the causes of intra-regional trade in agricultural commodities.

1.2 Statement of the Problem

The agriculture sector has greater economic importance in the African continent. The sector has been widely viewed as a tool for attaining sustainable economic development and reducing poverty among many African countries. According to Sandrey (2018), the agriculture sector contributes to 32% of GDP and 60% of employment in Africa. In addition, the sector accounts for about 67% of value-added manufacturing subsector that relies on agricultural raw materials as key inputs. Researchers, policy makers and international development partners have commonly agreed that agricultural trade plays a crucial role in ensuring Africa's long-standing pursuit for sustainable growth and transformation. To achieve this goal, many African countries have been advocating to advance intra-African and intra-regional agricultural trade. This regional commitment was cognizant of the benefits of economic integrations to accelerate growth by generating more jobs for women and youth in various agro value chains, increasing the level of income, and enhancing food security and nutrition.

Numerous studies, some of which are cited below, were conducted on the effect of regional integration and economic growth across different regional economic communities. However, most of these studies focused on assessing the overall impact of regional integration on economic growth. Also, different researchers employed diverse methodologies to analyze the effects of regional integrations on trade flows and they came up with mixed results. These studies failed to consider disaggregated data for analyzing the effects of regional integration on trade. Moreover, past studies attempted to determine the impact of regional integrations on trade and economic growth by investigating only few selected agricultural commodities such as livestock products, wheat, maize and rice. However, a comprehensive study that employs disaggregated data and explores agricultural commodities trade and COMESA regional integration remains unexplored. Therefore, it is imperative to investigate the structure of agricultural commodities trade, determinants of intra-COMESA agricultural exports, and the effect of COMESA regional trade agreement on promoting agricultural exports. This could provide empirical evidences for policy action and further exploration.

For instance, Binyam (2019) analyzed the impact of live animal production and trade on economic growth of COMESA countries. The researcher used a standard panel data model to

determine the relationship between livestock and livestock products trade with economic growth in COMESA member countries. The finding of the study indicated the presence of positive correlation between COMESA FTA membership and economic growth as well as trade in livestock products. Furthermore, Albert (2012) conducted a comparative study on the effect of regional trade agreements on intra-trade in COMESA, EAC, and SADC for three selected agro products (i.e., maize, rice and wheat). The author used a Gravity model and the empirical results for COMESA region showed a positive and significant effect of the intra-regional trade. However, the study results lack conclusiveness as the analysis was based on three commodities only. On the other hand, Tessema (2014) examined the trade effects of COMESA regional trade agreements on aggregate export volume of member countries using a Gravity model. The results of the study showed that the regional economic bloc has significant trade effects on its member countries and urges for expansion in economic integrations. Likewise, Adane (2014) employed a standard Gravity model to assess the effect of regional economic integration in COMESA member states. Unlike the previous studies, the empirical finding revealed that trade diversion is more powerful than trade creation in COMESA. Besides, Fikadu (2012) examined the role of COMESA in Growth and Development of Ethiopia using a panel data with static linear model regression analysis. The results of the study unveiled that impact of trade with COMESA is insignificant but still positively related to trade induced growth.

Despite having a number of recent empirical research contributions, the effect of regional integration on agricultural trade in COMESA regional bloc at disaggregated data level has not been investigated thoroughly. One of the major gaps is that the various empirical studies conducted earlier focused on assessing the effects of regional integration on trade and economic growth by analyzing aggregate trade performance. In addition, these studies examined few agricultural commodities in order to investigate the effect of regional integration. Moreover, past studies employed Gravity Model using standard variables. However, the standard Gravity equation ignores many other variables that could have either positive or negative effect on bilateral trade, which could result in misspecification bias. Besides, available evidences on the effectiveness of regional integrations in promoting intra-regional trade in Africa is equally mixed. Thus, a comprehensive study that examines the effects of COMESA regional integration on agricultural trade using disaggregated data remains undocumented. The existence of these research gaps motivated the current study. Therefore, this study empirically investigates the

effects of COMESA regional integration on agricultural trade, analyze the causes of intra-COMESA agricultural trade, and explores the patterns and flow of intra-COMESA's agricultural[1] trade.

1.3 Objective of the Study

1.3.1 General Objective:

The general objective of the study was to analyze agricultural commodities trade in COMESA and investigate effects of COMESA regional free trade agreement on intra-regional agricultural exports.

1.3.2 Specific Objectives:

The specific objectives of the study were as follows:

- To examine the structure and direction of agricultural trade in COMESA region;
- To explore the causes of intra-COMESA agricultural trade; and
- To analyze the trade creation and/or trade diversion effects of COMESA regional free trade agreement on the region's agricultural exports.

1.4 Research Hypotheses

The research hypothesis is formulated based on the existing theoretical presentations on regional trade agreements in general and COMESA FTA in particular. The study attempted to test the following research hypothesis using the model estimation. Therefore, the study investigated the hypothesis with respect to the effect of COMESA regional trade agreement on the region's agricultural exports.

- H_0: COMESA free trade area does not have a trade creation effect on the member countries' agricultural exports.
- H_1: COMESA free trade area has a trade creation effect on the member countries' agricultural

[1]The agricultural commodities analyzed in this study are based on Standard International Trade Classification (SITC) system. The products include food and live animals (HS Code 0), beverages and tobacco (HS code 1), animal vegetable oils and fats (HS Code 4), oilseeds and oleaginous fruits (HS Code 22), and hides and skins (HS Code 21). Please refer annex 2 for details of the product groups by HS code at two digits level.

exports.

1.5 Research Questions

The research was aimed at addressing the following research questions:

1) How is the structure and flow of agricultural trade among COMESA member states?
2) What are the causes of intra-COMESA regional trade in agricultural commodities?
3) Does COMESA Free Trade Area have a trade creation or trade diversion effect on members' agricultural exports?

1.6 Significance of the Study

Intra-regional trade in COMESA, which is Africa's largest trading bloc, has revealed fluctuations over the past decade. The study provides wide-ranging and fresh insights on agricultural trade structure, determinants of agricultural exports in the region, and effects of the COMESA free trade area on expanding agricultural exports. Particularly, understanding the trade flow of agricultural commodities, effect of regional free trade arrangements on agricultural trade, and causes of intra-COMESA trade in agricultural goods in the COMESA FTA will have tremendous significance for policy makers and governments. As the COMESA region encompasses 21 member states that are predominantly agriculture-based economy, the empirical results of this study will have far-reaching implications to enhance the benefits of economic integration, to devise sound trade policy and attain desired economic progress. Generally, this study contributes to the existing literature and knowledge on regional integration and trade since many studies in the past either examined few selected agricultural products or analyzed trade at aggregate levels.

1.7 Scope and Limitations of the Study

The study analyzed the effect of COMESA regional integration on agricultural trade among COMESA member states. The research used panel data from 1997-2018, for the selected member states. The scope of agricultural products covered in the study is all agricultural commodities classified into fiver major agro-food product groups. These are food and live animals, beverages and tobacco, animal vegetable oils and fats, oilseeds and oleaginous fruits,

and hides and skins. The study could be limited since non-random sampling is used to select sample countries from members of COMESA regional market. Thus, the study may have a sampling bias although utmost precaution has been made in the sample selection to ensure major agricultural economies are not excluded in the study. Likewise, the research may have drawbacks as secondary data sources were used extensively. Similarly, the study could be limited due to lack of consistent dataset for all members of the COMESA.

1.8 Organization of the Paper

The study is structured into five major sections. The first section deals with an introductory chapter and it consists of the study background, statement of the problem, objective of the study, research questions, scope and limitation of the study, significance of the study, and organizations of the paper. Then, section two presents a review of theoretical and empirical literatures. This section presents an overview of the theories relevant to the study and empirical literatures previously conducted on similar subject. Furthermore, section three discusses the research methodology, its design, research approach and techniques, and data collection methods. Section four deliberates empirical analysis and summary of findings. Finally, the section five provides conclusions and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURES

2.1 Theoretical Literatures Review

2.1.1 Effects of Regional Integrations on Economic Growth

The regional trade agreement (RTAs) and free trade area are perceived to have welfare impacts and provide gains to the member countries. It has been assumed that an RTA would be welfare improving since tariffs, which are in general welfare reducing, would fall. However, Viner (1950) showed that RTAs would not necessarily improve welfare, since the tariff reductions occur in a world of the "second best". Thus, an RTA would be beneficial if on balance it is "trade creating" and harmful if it is "trade diverting". Trade creation occurs if the increased territorial trade because the RTA leads to the shifting of production from less efficient, high-cost producers to more efficient, low-cost producers within the union. However, if the effect of increased trade shifts production from low cost producers outside the trading bloc to high-cost producers within the bloc, this is known as "trade diversion." In general, trade creation means that a regional trade agreement generates trade that would not have existed otherwise. As a result, supply occurs from a more efficient producer of the product. In all cases, trade creation would raise a country's national welfare, while trade diversion would reduce national welfare.

Cline (1978) provided the theory of static trade gains from regional trade integration. He classifie d the static effects of RTA as labor opportunity effects, economies of scale effect and foreign exc hange saving effect. Further studies also discovered more static gains from regional trade integrat ion depending on the models used. Following the classifications of Baldwin and Venables (1995) , the models assuming perfect competition and constant returns to scale identify that trade volum e, trade cost and terms of trade as beneficial effects of regional trade integration. However, mode ls assuming imperfect competition and increasing returns to scale identified benefits from region al trade integration in the form of output, scale and variety effect. However, the welfare effects o f RTA remain an inconclusive debate as evidence of both improvement and worsening of welfare as a result of RTA has been proved by various studies in various regions.

Classical Theories of Trade:

The classical theories of trade emphasized the fact that the wealth of a nation reflected the nation's productive capacity, which in turn explained the flow of goods across nations. The assumption was that resources such as land, labor and capital were less mobile across the international boundaries, while the final products were more mobile. Smith (1776) argued that trade for the sake of accumulating gold, as advocated by the mercantilists, was foolish and only reduced the wealth of a nation as a whole. In the process of avoiding imports at all costs, a country wasted its resources producing goods it did not have advantage in their production. His theory of absolute advantage stated that two countries could benefit from trade if, due to natural or acquired endowments, they could provide each other with a product made more cheaply than they could be produced at home. This meant that the total resource cost to produce a good in one country was absolutely less than the resource cost to produce the same good in another country.

The Neoclassical Theories of Trade:

The attempt to give better explanations of international trade and its effects on income distribution within a country has led to the creation of neoclassical models of trade (Samuelson, 1948). Heckscher (1919) initiated this and Ohlin (1933), which led to the Heckscher-Ohlin (H-O) theory of trade that gave an account of trade based on factor endowments of nations and factor intensity of commodities. The other related neoclassical theories of trade are extensions developed from the H-O theorem. These theories explain trade based on relative factor endowments and factor intensity, which also failed to explain the exchange in differentiated products or products with similar factor intensity between countries with relatively similar factor endowment. The neoclassical theories of trade are best placed to analyze trade between countries with significant differences in economic structures, such as an industrial and an agricultural economies trading in industrial and agricultural products (Ouma, 2017).

The Modern Theories of Trade:

The theories of trade reviewed above do not explain all kinds of trade experienced and observed in the world today. One such kind of trade is the intra-industry trade like the agricultural trade within COMESA. This has led to emergence of new theories of trade known as the modern theories of trade. These theories emphasize the existence of imperfect market structures, product differentiation and economies of scale, and the general models based on the structure of

monopolistic competition. One such theories of trade is the gravity theory of trade. The gravity theory developed by Tinbergen (1962) originated from Newtonian physics notion and states that bilateral trade between countries depends directly on the masses of the countries and indirectly on the distance between the countries. The original gravity model has since been augmented with several other factors that are deemed to accelerate or resist trade flows between countries (Anderson and Wincoop, 2003; and Vinaye, 2009).

2.1.2 Overview of Regional Integrations in Africa

Regional integration efforts in Africa dated back to the early years of independence of many African countries from colonialism. Regional integration has been viewed as a tool for promoting economic growth and sustainable development and improving the living standards of the African people. Regional Economic Communities (RECs) are believed to be among the key players of regional integration (UNECA, 2010). While regional integration processes in Africa provide important economic opportunities for African countries, some of these processes face significant obstacles to their progress. Although these opportunities and challenges are not unique to Africa, they typically arise in complex environments, so stakeholders and policy-makers can benefit greatly from analyses of the specific actors and factors that affect how and why regional integration and regional cooperation take place (Woolfrey, 2016).

Despite a thriving regional integration in Africa, economic development in the continent has not met expectations. A number of African countries are attempting to enhance their regional groupings, but figures on intra-African trade remain lower than projected. This is largely caused by the slow implementation of regional integration agreements designed to eliminate tariff and non-tariff barriers, even though a number of trade agreements have been signed among member states. Countries that have managed to intensify their connections with the global economy through trade and investment have grown more rapidly over a sustained period and have consequently experienced larger reductions in poverty. Poor infrastructure development, maintenance and connectivity, conflicts and security issues among the regions and the presence of trade barriers are also cited as reasons for low-level intra-regional trade. There is need to develop linkages among African regions in order to improve the movement of goods and services (UNECA, 2010).

Africa encompasses several RTAs, which are also known as regional economic communities (RECs). The membership of these RECs overlaps, making the tasks of harmonizing and coordinating policies and regulations within the RECs more complex (Bouet et al, 2019). At present, the African continent has around 14 overlapping regional economic communities (UNCTAD, 2016). Every country in the continent is at least a member of one REC. Out of the 14 regional economic communities; the African Union Commission (AUC) recognizes eight of them as building blocks of the African Economic Community. These eight regional trading blocs are COMESA, CEN-SAD, EAC, ECCAS, ECOWAS, IGAD, SADC and AMU. With the exception of IGAD, AMU and CEN-SAD, all the eight RECs have launched Free Tarde Areas (FTAs). Nevertheless, some member States have not yet joined the FTA, which has serious implications for intra-REC trade flows. Despite the fact that there exist many regional economic communities with overlapping membership in the continent and interests and political commitment of African leaders and policy makers towards regional integration, intra-regional trade in goods and services lags behind other developing regions of Asia and Latin America (UNCTAD, 2016).

Intra-Regional Trade and Agriculture in Africa

Agricultural trade has the potential of transforming livelihoods in agricultural dependent economies since it presents opportunity for farmers to export their produce, thereby providing incomes and boosting agricultural production. It also affects households' access to adequate food through its impact on commodity prices, access to markets for producers and labor entitlements (Ouma, 2017). Low level of intra-regional trade in is also observed in agricultural commodities in which most African countries heavily rely on for foreign exchange earnings and employment. The low intra-African trade share is the result of poor integration and lower GDP levels in African economies. Non-tariff measures (NTMs) are the main obstacle to improving Africa's trade integration, with administrative barriers playing an important role. Strengthening regional integration in Africa can bring considerable economic benefits but will require ambitious reforms such as addressing the issue of non-tariff barriers by harmonizing the rules of origin, standards, and product norms across different RECs (Bouet et al, 2019).

Due to the importance of the agriculture sector, it is seen as an instrument for sustainable development and poverty reduction in many African countries. However, as noted earlier intra-African agricultural trade is very low; in 2016, only 20.7% of total intra-African exports were agricultural products. Intra-African agricultural exports account for only 26% of Africa's global agricultural exports, most notably South Africa both as destination market and source country. Removing South Africa reveals even lower levels of intra-African agricultural trade. A limited number of products are traded among countries mostly located within the same geographical area. Intra-African agricultural trade is concentrated within the Southern African Development Community (SADC). Not only are the two main exporters within SADC, the top nine destination countries for African agricultural commodities are SADC member states. Intra-SADC agricultural trade represents almost half (47%) of the total, and again South Africa dominates. Therefore, the role of agricultural sector in economic development and welfare improvement in regional blocs like COMESA states and other developing countries cannot be over emphasized.

2.1.3 COMESA: Background, Success and Challenges

COMESA was created in 1994 to replace the Preferential Trade Area for Eastern and Southern Africa (PTA). Today, COMESA is the largest trading bloc in Africa with 21 member states. COMESA is based on the concept of multi-speed development by which two or more member states can agree to accelerate the implementation of specific provisions of the Treaty while allowing others to join in later on a reciprocal basis. In the COMESA region, 16 of 21 member states are already participating in the established Free Trade Area (FTA). DRC, Eretria, Eswatini, Ethiopia, and Uganda are the five member states that have not so far joined the FTA in the COMESA. While, the COMESA FTA member countries are Burundi, Comoros, Djibouti, Kenya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Somalia, Sudan, Zambia, and Zimbabwe, Egypt, Libya, and Tunisia. COMESA embodies the following principal elements:

- A full Free Trade Area (FTA) involving trade liberalization under which there is free movement of goods and services produced within the common market and removal of all non-tariff barriers.
- A customs union involving zero tariffs on all products originating in the common market, and the adoption of a common external tariff on imports from non-COMESA countries.

- Free movement of capital, finance, and a common investment procedure to create a more favorable environment for foreign direct investment, cross-border investment, and domestic investment.
- A payments union and eventual establishment of a COMESA monetary union.
- Free movement of persons and common visa arrangements, including the right of establishment and (eventually) the right of settlement.

COMESA Successes:

The regional trading bloc has achieved the following since its inception in 1994:

- Increasing the number of member states from 19 to 21, when Somalia and Tunisia joined the COMESA regional bloc in 2018.
- Establishment of the institutions that support regional integration across member states, such as the COMESA Court of Justice; COMESA Business Council; and Regional Investment Agency.
- Sixteen member states participate in a FTA established in 2000.
- In 2008, COMESA agreed to an expanded free trade zone including members of the other African trade blocs, the EAC, and the SADC to form an African free trade zone.
- In 2009, COMESA launched the customs union, which was in the process of being implemented.
- Launch of new trade facilitation instruments that are creating a borderless economy, resulting in drastic reductions in the cost of doing business: COMESA Virtual Trade Facilitation System (CVTFS) and the online trading system known as the COMESA Electronic Market Exchange System (CEMES).
- The Yellow Card scheme, providing regional third-party motor insurance cover, which is a success story for COMESA market integration. More than 200 insurance companies are involved and over 200,000 interstate motorists use the Yellow Card.
- Launch of a digital FTA, the first of its kind in Africa.

COMESA Challenges:

Although COMESA has amassed a number of achievements, the following challenges seem to be working against regional integration efforts:

- Overlapping membership of various countries is limiting full attention and commitment to COMESA aims. This has also led to some former member states (such as Tanzania) pulling out of COMESA for failing to cut ties with other blocs.
- Free movement of people between member states remains a challenge, if not impossible, as member states are too slow to ratify protocols already in place that should allow the free movement of people. Only four member states have signed the protocol of free movement of people (Burundi, Rwanda, Kenya, and Zimbabwe). This is due to the issue of reciprocity, where one country relaxes its visa rules but their nationals do not enjoy similar treatment in the corresponding member states.
- The level of investments in infrastructure and energy to enhance social and economic integration through interconnectivity has been low (Bouet et al, 2019).

2.2 Empirical Literatures Review

The empirical literatures review provides insights on what has been done so far in the areas of regional trade agreements, agricultural trade and economic growth. This section also discusses empirical studies on the trade effects the COMESA Free Trade Area (FTA).

In Africa, the available evidence on the effectiveness of RTAs in promoting intra-African trade is equally mixed. Shobande (2019) investigated the effect of economic integration on agricultural export performance in West African economies using the gravity model of bilateral trade on the annual time series data covering 1970 to 2016. The author found that economic integration, as measured by trade openness, is a remarkably strong predictor of export performance in the region. Also, examines the effect of geographical distance measured by effective nominal exchange rates and found that it has a negative effect on agricultural export performance.

Bakari and Mabrouki (2018) investigated the influence of agricultural export on economic growth between 1982 and 2016 for North African countries, using the static gravity model. Their

empirical results showed that agricultural policy has significant impact on agricultural investment and trade openness policies in the region. Equally, Uysal and Mohamoud (2018) analyzed the impact on export performances of seven East African countries, using data from World Development Indicators between 1990 and 2014 and suggested the need to replace agricultural exports with industrial export, improve infrastructural facility, the quality of human capital and the need for policies to attract international investors. In contrary, a group of studies challenged this view contending that there seems to be a negative relationship between economic integration potential and export performance. This group of studies claimed that negative effect on welfare and domestic policy as well as survival of domestic firms are observed empirically (Ahmed and Uddin 2009; Panagariya 2003; Baldwin 2006).

Candau et al. (2018) found that RTAs have provided significant trade creation without trade diversion. They found that ECOWAS, SADC and COMESA have successfully fostered trade, only the WAEMU and to a lesser extent the CEMAC have been disappointing by bringing trade diversion without creation. They also assessed the impact of past agreements, and found that the current RTAs have a most significant impact on trade than previous ones.

Ouma (2017) examined the causes of intra-regional trade in agricultural goods among EAC countries using a gravity model. The empirical results indicated the causes of the intra-EAC agricultural exports vary across the EAC member states. Overall, the study revealed the intra-EAC agricultural exports depended on various factors, including GDP of exporter, GDP of the importer, exchange rate, distance between the economic centers, language similarities, adjacency, and population of the exporter.

Potelwa et al. (2017) assessed the factors influencing South Africa's agricultural export to its cardinal destination between 2001 and 2014. The authors employed a gravity model to investigate trade flow that has been validated as a suitable tool to determine export growth. Their results indicated that import on gross domestic product caused an increase in agricultural export. The authors further stressed that distance and political instability have no influence on the growth of agricultural export to its partners

Nin-pratt et al (2009) estimated using a combining partial equilibrium analysis with bilateral trade data at the four-digit Standard International Trade Classification (SITC) level for 193

agricultural industries in 14 Southern African countries, to assess the potential impacts of a free trade agreement (FTA) on the agricultural sector of Southern African countries. Their results indicated that the overall welfare effects of an FTA would be positive but small in most countries, suggesting that the largest benefits would go to countries with a regional comparative advantage for agriculture, while still being inefficient producers of regionally traded commodities.

Vinaye (2009) studied the intra-SADC's agricultural trade using panel data set of 68 exporting and 222 importing countries (both SADC members and non-member trading partners) for the period 2000-2007. Vinaye computed several trade indices and estimated the gravity equation using Pseudo Poisson Maximum Likelihood (PPML) technique. The study revealed limited trade complementarity among SADC economies, which implied low potential for intra-regional agricultural trade.

Interestingly, varied reasons have been put forward for the poor performance of the agricultural trade in Africa despite its huge potential as a contributor to economic development. Poor regional economic integration and non-existence of a coordinated integration policy within the region top the list of challenges that continue to limit the potential of the sector to yield expected results (Shobande, 2019).

2.2.1 Regional Integration and Export Performance

The effect of regional integration on export promotion has been hotly debated in academia. The main concerns have been the drivers of regional integration, its static and dynamic consequences on the theory of custom unions (Fuchs and Klann 2013; Qureshi 2013). A number of studies have investigated the effects of trade liberalization on export growth in developing countries with inconclusive results. Some studies have identified positive effects of trade liberalization on export performance (Hoque and Yusop 2012), while others confirmed an insignificant or even negative relationship (Greenaway et al., 1999).

Furthermore, there are studies on economic integration that support the result that economic integration has the potential to guarantee economic growth and enhance welfare through the export channel. For instance, Coyle et al. (1998) used a modified version of the global trade

analysis project (GTAP) model to analyze the role of divergent forces underlying the compositional changes in the world of agricultural and food markets in the last fifteen years. The study isolated the supply and demand factors as well as change in transport cost and policy changes. The authors reported that transport cost and related factors are important determinants in explaining the shift in global trade.

Paas (2000) used gravity model approach to analyze trade between Estonia and its main trading partners. The gravity equation estimated included variables such as exports and imports (dependent variables), GDP, distance between the capitals and several dummies for various regions/groups or trading areas. Estimating export and import equations separately, Paas found that the independent variables explained more than 70% of the variation in the dependent variables in both gravity equations. The GDP coefficients were positive and the distance coefficient was negative as expected. The coefficients signs of some dummies did not correspond to expectations, but all were found to be statistically significant. The results seemed to support the notion that the existing trade relations between Estonia and Baltic Sea region (one of the trade areas) countries were most favorable for developing Estonian foreign trade. That is, it tended to trade more with partners with high GDP, closer geographically, and belonging to the trade area.

Trivic and Klimczak (2015) analyzed the determinants of intra-regional trade in the Western Balkans. The objective of the study was to identify factors that have an influence on bilateral trade among the Western Balkan countries for the period from 1995 to 2012. The study variables included geographical, economic or political factors. It included factors constituting cultural, communicational and historical types of the so-called “distance” between countries. In order to assess their influence on trade values, an augmented version of the gravity model was employed. The study estimated the augmented gravity model as pooled data by OLS, as a random effects model and as a fixed effects model with an additional estimation of time-invariant variables. The results showed the strongest influence on trade values were exhibited by variables representing ease of a direct communication and similarity of religious structures. Different types of distance (communicational, cultural and historical) had significant effect on the intra-regional trade. In addition, war and one-year-post-war effect showed a strong and statistically important influence.

Thus, the study concluded that non-economic factors in the region of the Western Balkans play the most important role in determining trade values between countries.

Saxena et al (2015) evaluated the structure and flow of trade among SAARC member countries. The findings of the study indicated that a unidirectional causality has been observed between gross domestic product (GDP) and agricultural exports, where agricultural exports cause GDP and not vice versa. This result implies that growth in agricultural exports has contributed to the overall and agricultural growth. Hoque and Yusop (2012) estimated an autoregressive distributed lag model (ARDL) bond testing approach for Bangladesh between 1972 and 2005. Their study assessed the impacts of trade liberalization on export performance and reported that exports are mostly stimulated by GDP growth in Bangladesh.

Ahmed and Uddin (2009) investigated the causal nexus between export, import, remittance and GDP growth for Bangladesh using annual data from 1976 to 2005 and reported limited support in favor of the export-led growth hypothesis for Bangladesh as exports, imports and remittance caused GDP growth only in the short run. The causal nexus was therefore unidirectional.

In West Africa, the route to achieve successful RTAs has generated hot debate since the establishment of Economic Community of West African States (ECOWAS). For instance, Olayiwola and Ola-David (2013) examined the interaction between economic integration and trade facilitation in ECOWAS and how regional blocs had performed in promoting export. The objective of their study was achieved using descriptive statistics of annual data covering the period 1995 to 2009. Evidence from their study revealed that sustained growth could be achieved with export growth in the region.

Comparably, Bhattacharyya and Banerjee (2006) applied the gravity model to a panel consisting of India's yearly bilateral trade data with all its trading partners in the second half of the twentieth century. The study confirmed that the core gravity model can explain around 43% of the fluctuations in India's direction of trade in the second half of the twentieth century and that India's trade responds less than proportionally to size and more than proportionally to distance.

Other studies with consistent results that have applied the gravity model include, but are not limited to, Rahman and Dutta (2012) as well as Narayan and Nguyen (2016). Limited information, methodological issues and contrasting results among some of the studies reviewed

under this study further justify the need to assess the effects of COMESA regional integration on agricultural export performance in the region.

2.2.2 Trade Effects of COMESA Free Trade Area

Binyam (2019) analyzed the impact of live animal production and trade on economic growth of COMESA countries. The researcher used a standard panel data model to determine the relationship between livestock and livestock products trade with economic growth in COMESA member countries. The finding of the study indicated there is positive correlation between COMESA FTA membership and economic growth as well as live animal and products trade.

Elbushsra et al. (2011) investigated the role of COMESA in promoting intra-regional agricultural trade between Sudan and COMESA member states. The author employed a multi-market model with Armington non-linear specification. The empirical results revealed that through improving competiveness of agro products, Sudan could further exploit the market potential to expand agricultural exports to other COMESA member countries.

Tessema (2014) examined the trade effects of COMESA regional trade agreements on export volume of member countries using a gravity model. The results of the study showed that the regional economic bloc has significant trade effects on its member countries and urges for expansion in economic integrations.

Adane (2014) employed a standard Gravity Model to assess the impact of regional economic integration in COMESA member states. Unlike the previous studies, the empirical finding revealed that trade diversion is more powerful than trade creation in COMESA. The author cited possible constraints for the dismal trade performance. These constraints include lack of real political commitment, overlapping membership, policy harmonization, lack of competition policy, and poor private sector participation among member states. Albert (2012) conducted a comparative study on the impacts of regional trade agreements on intra-trade in COMESA, EAC, and SADC for three selected agro products (i.e., maize, rice and wheat). The author used a gravity model and the empirical results for COMESA region showed a positive and significant effect of the intra-regional trade.

Fikadu (2012) examined the role of COMESA in Growth and Development of Ethiopia using a panel data with static linear model regression analysis. The results of the study unveiled that effect of trade with COMESA is insignificant but still positively related to trade induced growth. Douglas (2016) analyzed the trade effects of COMESA expansion in member states using descriptive evidence and a series of regression analysis. The results of the study showed COMESA appears to be more trade creating than trade diverting implying that, expanding its coverage toward non-member countries might lead to welfare gain.

Daniel (2006) investigated the determinant of intra-COMESA regional trade by employing a gravity trade model. The empirical results show that the traditional explanatory variables of the gravity model are the significant determinants of trade flows in the COMESA region. This implies that belonging to this preferential arrangement fosters trade.

Table 1: Empirical Literatures Summary

Author(s)	Data and Tools	Major Results	Limitations/Gaps
Binyam (2019)	Using standard panel data to determine the relationship between live animals and livestock products trade with economic growth in COMESA member countries.	Results show that COMESA FTA has a positive effect on economic growth in the region. Besides, the FTA also promotes export trade in live animals and livestock products.	The results failed to indicate directional relationships between economic growth and livestock trade. It did not show whether it is a uni-directional or bi-directional relationships. In addition, the study did not address the sizeable amount of informal trade happening in livestock and livestock products in the region.
Shobande (2019)	The researcher applied a Gravity model to examine the effect of economic integration on agricultural export performance in West Africa using time series data covering 1970 to 2016.	The results indicate that economic integration significantly predicts export performance in the region.	The author measured economic integration using trade openness ratio. To achieve this, nominal exchange rate was also used as a proxy for geographical distance. However, as many empirical studies confirmed, actual distance (in KMs) between economies could have better explanatory power. Furthermore, the trade openness variable is misleading as tariff and non-tariff barriers and economy size would influence the variable, too.
Adane (2014)	Using panel data analysis, the author applied a standard Gravity model to determine the trade effects of COMESA.	The empirical evidences reveal that COMESA's trade diversion effect is more dominant than its trade creation effect.	The study employed standard variables in the Gravity model. However, the standard gravity equation tends to ignore many other variables that could have either positive or negative impact on bilateral trade, which could result in misspecification bias.
Douglas (2016)	Using annual data and trade flow analysis, the author investigated whether COMESA led to trade creation among founding countries and trade diversions toward non-member countries.	The results confirmed that COMESA has a trade creation effect among founding members without causing trade diversion toward non-member countries.	The study considered a limited number of COMESA member countries. Moreover, analysis of the trade effect has been done without any regard to non-member countries. Therefore, the result suffers from sampling bias.
Albert (2012)	A comparative analysis using Gravity model to examine the effects of regional integrations on selected agricultural products in COMESA, SADC and ECOWAS.	The empirical results showed regional trade agreements have positive and significant effect on promoting intra-regional trade.	The analysis and results were based on three agricultural products namely maize, rice and wheat. However, this is difficult to draw conclusions for the entire agricultural sector by considering few selected agricultural products.

Source: from empirical literatures reviewed

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Description of the Study Area

COMESA is one of the eight regional economic communities recognized by the African Union, established to promote regional integration among the groupings for the gradual establishment of an African Economic Community. The Vision of COMESA is "to have a fully integrated internationally competitive regional economic community with high standards of living for its entire people, ready to merge into the African Economic Community". COMESA comprises 21 countries as member states. The COMESA regional economic bloc enjoys an aggregate population of about 568 million and combined GDP of over 770 billion US dollars. Table 2 below presents a summary of COMESA member countries' demography and size of economy.

Table 2: COMESA Countries' Demography and Size of Economy (in 2018)

S/N	Country	Population (Millions, People)	GDP (Million US $, Constant 2010)	GDP per Capita (US $)	% Share in GDP, Value Added*		
					Agriculture	Industry	Service
1	Burundi	11.2	2,355.8	210.8	48.4	19.4	51.2
2	Comoros	0.8	1,166.4	1,401.4	51.3	13.6	54.1
3	Congo DR	84.1	35,202.6	418.7	24.3	52.4	42.3
4	Djibouti	1.0	1,684.9	1,757.0	4.0	26.4	88.6
5	Egypt	98.4	286,148.6	2,907.3	13.6	42.3	63.0
6	Eritrea	3.5	5,933.0	1,718.3	11.3	15.4	92.3
7	Eswatini	1.1	5,424.1	4,773.6	11.6	44.5	62.9
8	Ethiopia	109.2	62,291.4	570.3	46.4	23.8	48.7
9	Kenya	51.4	61,781.2	1,202.1	40.3	22.5	56.2
10	Libya	6.7	50,334.7	7,536.8	1.2	89.3	28.5
11	Madagascar	26.3	12,871.1	490.1	30.8	22.0	66.2
12	Malawi	18.1	9,375.6	516.8	36.6	18.3	64.1
13	Mauritius	1.3	13,385.2	10,562.9	4.1	25.1	89.8
14	Rwanda	12.3	10,143.2	824.5	37.4	21.2	60.4
15	Seychelles	0.1	1,392.0	14,336.1	3.0	17.0	98.9
16	Somalia	15.0	4,721.0	314.6	71.6	8.8	38.6
17	Sudan	41.8	77,568.0	1,855.6	37.9	24.6	56.5
18	Tunisia	11.6	50,899.1	4,401.1	12.4	32.1	74.6
19	Uganda	42.7	30,336.9	710.0	31.3	26.3	61.4
20	Zambia	17.4	29,018.2	1,672.4	8.0	42.9	68.1
21	Zimbabwe	14.4	19,093.3	1,322.4	13.8	29.5	75.7
	TOTAL	**568.3**	**771,126**	**1,356.9**	**22.4**	**38.9**	**57.7**

Source: World Bank, WDI, COMSTAT

* Data covers for 2019

Agricultural Exports: major agricultural exports from COMESA to the world include tea, coffee, and spices; sugar; edible vegetables; animal or vegetable fats and oils; cereals; and live animals.

Agricultural Imports: major agricultural imports from the world to COMESA countries include edible oils; cereals; sugar; animal or vegetable fats and oils; and animal feed. Major exports and imports of COMESA by product group are summarized as follows:

- ***Food and Live Animal Products:***
  - Major Exports: tea, coffee, spice (vanilla), oranges, tunas, and live sheep.
  - Major Imports: wheat, maize, sugar, rice, frozen meat, animal feed.
- ***Animal and Vegetables' Fats and Oils:***
  - Major Exports: virgin olive oil, corn oil, soybean oil, and other vegetables fats and fractions.
  - Major Imports: palm oil, soybean oil, sunflower oil, and other vegetable fats and oils.
- ***Beverages and Tobacco Products:***
  - Major Exports: tobacco, smoking tobacco, cigarettes, mineral waters, beer, spirits and distilled alcoholic beverages
  - Major Imports: cigarettes, tobacco, whisky, beer, wine, spirits, and distilled alcoholic beverages.

3.2 Research Design

The study employed a quantitative research design, which primarily used an econometric analysis. A panel data is used to investigate the causes of intra-COMESA agricultural trade and the effect of COMESA FTA on the region's agriculture trade. In addition, a descriptive statistics and trend analysis is conducted to examine the patterns and flow of agricultural commodities trade.

3.3 Data Types and Sources

The study used secondary data gathered from various international institutions. Panel data for bilateral trade in agricultural commodities is sourced from the UNCOMTRADE and COMSTAT databases. The panel data covered the period 1997 to 2018 for selected COMESA countries. Exporters and importers' real GDP, population, real exchange rate is obtained from IMF, and the

World Bank, World Development Indicators (WDI) databases. While, data for bilateral distance, common official language, and common border (adjacency) is derived from CEPII database.

Selection of COMESA Countries for the Purpose of the Study:

The selection followed a non-random sampling based on a set of factors such as trade data availability, geographical location, and size of economy. Thus, seven countries namely Burundi, Ethiopia, Egypt, Eswatini, Kenya, Rwanda, and Sudan were selected for the analysis based on the following criteria.

- *Trade data availability*: COMESA members with a consistent annual trade data for the entire period of study were considered.
- *Geographical Location*: the member countries were selected to reflect the geographical location of all COMESA members. Thus, the selected member countries were purposively drawn from eastern, southern, and northern parts of the continent.
- *Size of economy*: the selected COMESA countries were drawn to reflect large, medium and small sized economic status. This indirectly also considered performance of agricultural exports.

3.4 Data Analysis

The study used both descriptive and inferential econometric analyses to investigate the effect of COMESA regional trade area on agricultural exports of member states. For the econometric analysis, the model is transformed into a log-linear form to estimate the regression equation. Using the log-linear model, one can easily comprehend the slope coefficient, which measures the elasticity of the dependent variable with respect to the independent variable.

3.5 Methodological Review

This section reviews and discusses the gravity model, which is the most relevant and extensively applied empirical model to analyze the effects of free trade agreements on bilateral trade flows.

Gravity Model:

Following the specification of Newton's universal law of gravitation in physics, the Gravity model utilizes the gravitational force concept as a research instrument to address various investigation purposes in economics and political sciences. It has been applied to study the

determinants of bilateral trade volumes and performs well in assessing other bilateral flows, namely capital flows, aid flows or migration flows. It has been used to assess the effects of market access, trade resistance and the effects of regional trade agreements on bilateral trade (Shobande, 2019).

As one of the most commonly used analytical frameworks, the Gravity model has been applied in a large number of empirical studies. In order to investigate the effects of economic policies and some other issues including institutional, cultural, historical or geographical factors on trade, economists have also experimented with various variables and indicators in gravity models, such as colonial links, landlocked countries, common currency, common border and common language. Among them, one of the key issues is to analyze the specific effects of trade policies by introducing dummy variables, namely FTA_{ij}, to indicate the existence of a regional trade agreement between country i and j. This methodology can be extended to estimate trade creation and trade diversion and thus makes an important contribution to the regionalism debate.

Hence, the gravity model has been used extensively to explain bilateral trade flows. It allows researchers to test whether various factors such as the presence of a regional agreement or preferential trade arrangements have a statistically significant impact on trade flows. The basic empirical model for trade between two countries (i and j) takes the form of equation 1. Goods supplied at origin i are attracted to destination j according to the economic weights of the two countries as measured by GDP (Y_i and Y_j), but the potential flow is reduced by the distance between them D_{ij}. A simple form of the gravity equation is:

$$T_{ij} = \frac{G\, Y_i^{B1} Y_j^{B2} Z_{ij}^{B3}}{D_{ij}^{B4}} \quad \text{..... [1]}$$

Where T_{ij} is the trade flow from Ito j and Y is the respective economic mass of the importing and exporting countries (as measured by GDP). An alternative for the economic mass that is often used in gravity models is per capita GDP and some analysts have included both GDP and GDP per capita. D_{ij} is the physical distance between country i and j, and Z_{ij} represents other characteristics affecting bilateral trade such as common language, common border, colonial ties, regional trade agreements, or trade barriers. G is a constant intercept (Shobande, 2019).

The rationale behind the gravity model is that trade is associated with economic size, measured as GDP, and is inhibited by distance (which increases transportation costs, as well as other transaction costs). Specifically, a high level of income in the exporting country indicates a high level of production, which increases the availability of products from export. While a high level of income in the importing country suggests higher demand and therefore, higher imports. The model is widely used in empirical studies to investigate the trade effects of regional trade agreements (Nega, 2015). Therefore, the gravity model is employed in this paper to address the research objectives

3.6 Model Specification and Estimation

3.6.1 Gravity Model

The research used augmented gravity model to assess the effect of the COMESA FTA on agricultural commodity exports. The standard gravity equation tends to ignore many other variables that could have either positive or negative impact on trade volumes between the trading partners, which results to misspecification bias (Vinaye, 2009). To address this problem, the standard approach has been to specify an augmented gravity model by addition of relevant variables to the traditional model, most of which are inspired by theory and motivated by various testable hypotheses (Vinaye, 2009).Based on trade theories and reviews of literatures, the augmented gravity model used in this study takes the following form:

$EXP_{ij} = f(GDP_i, GDP_j, POPi, POP_j, EXRT_{ij}, DIS_{ij}, CL_{ij}, AD_{ij})$…… [2]

Wecan rewrite the model equation using a log-linear form:

$$\ln EXP_{ijt} = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 \ln(GDP_{it}) + \boldsymbol{\beta}_2 \ln(GDP_{jt}) + \boldsymbol{\beta}_3 \ln(POP_{it}) + \boldsymbol{\beta}_4 \ln(POP_{jt}) + \boldsymbol{\beta}_5 \ln(EXRT_{ijt}) + \boldsymbol{\beta}_6 \ln(DIS_{ij}) + \boldsymbol{\beta}_7 \ln(CL_{ij}) + \boldsymbol{\beta}_8 \ln(AD_{ij}) + \boldsymbol{\beta}_9 \ln(\text{COMESA-one}_{ij}) + \boldsymbol{\beta}_{10} \ln(\text{COMESA-both}_{ij}) + \varepsilon_{ij}$$ ……..…….[3]; where:

i= represents the exporter country; j represents the importer country; and t represents the year;

EXP_{ijt}= represents the value of bilateral agricultural export from country i to country j in year t;

GDP_{it}= is the GDP level of the exporter country in year t;

GDP_{jt} = is the GDP level of the importer country in year t;

$EXRT_{ijt}$ = is the real exchange rate between the exporting country and that of the importing country;

POP_i= is the population level of the exporter country in year t;

POP_j= is the population level of the importer country in year t;

DIS_{ij}= is the distance between the exporter and importer;

CLA_{ij}= is a dummy for common language (taking value of 1 for common language, and 0 otherwise);

AD_{ij}= is a dummy representing adjacency between any pair of trading partners (taking value of 1 for common border, and 0 otherwise); and

ε_{ijt} = is an error term.

3.6.2 Definition and Measurement of Variables

Based on theoretical and empirical literatures, major variables explaining bilateral trade flow between trading partners are selected. The variable definition, measurement, and justification for use in the empirical analysis is discussed below.

- **Agricultural Exports (EXP):** is the value of the total annual exports of agricultural products of the exporting country to the trade partner. It is measured as the annual agricultural export values reported in UN COMTRADE database in constant 2000 US dollars.
- The variable shows the ability of a nation to produce and distribute agricultural goods that can compete in the international market. It has the potential to achieve income growth and improve welfare. In this study, *EXP* is the dependent variable.
- **Real Gross Domestic Product (GDP):** is the annual real GPD of a country measured in constant 2010 US dollars. GDP_i is the real GDP of the exporting country, while GDP_j is the real GDP of the importing country.
- The variable indicates economic strength of a country. Thus, GDP positively influences performance of agricultural exports due to the impact of higher income on imports of country.
- **Population (POP)** is the total number of people in a country, measured as the annual estimates in millions. POPi is the population of the exporting country while POPj is the population of the importing country.
- This variable is important to show the size of market of each country, which is a prominent

factor positively influencing exports. The bigger the market, the more it trades.

- **Exchange Rate (EXRT)** is the real exchange rate between the currency of the exporting country and that of the importing country. It is measured as the ratio of the real value of the exporter's currency in US dollars to the real value of the importer's currency in US dollars. That is***:*** $EXRT_{ij} = ER_j/ER_i$; where, ER_j is the real exchange rate of country j (importer) to the US dollar and ER_i is the real exchange rate of country i (exporter) to the US dollar.

- An increase in the exchange rate implies depreciation of the exporter's currency in terms of the importer's currency. This leads to more exportation as exports become relatively cheaper to foreigners. Exchange rate is expected to have a positive sign.

- **Distance (DIS)** is the geographical distance between the capital cities of two trading partners, which is a proxy for transport, transaction, information and search costs. It is measured in kilometers.

- The variable shows geographical proximity. It is used to measure trading costs between the exporter and importer countries, where longer distances are associated with higher trading costs. Therefore, distance is expected to have a negative sign.

- **Common official Language (CLA)** is a dummy representing common official language between trading partners. It takes the value of one (1) for common language, and zero (0) otherwise.

- Countries that share a common language may trade more with each other based on relative proximity and cultural resemblance. Existence of a common language between the exporter and the importer is expected to have positive influence on the exports.

- **Adjacency (AD)** is a dummy representing common border between trading partners. It takes the value of one (1) for common border, and zero (0) otherwise.

- Countries are expected to trade more with their close neighbors with whom they share common border since common border is likely to reduce transaction costs. Thus, adjacency is anticipated to have a positive influence on exports.

- **COMESA-both** is a dummy variable, which is unitary if both i and j belong to the COMESA regional trade agreement and zero otherwise (degree of trade creation effects).

- **COMESA-one** is a dummy variable, which is unitary (1) if i belongs to COMESA regional trade agreement and j does not or vice versa, and zero otherwise (degree of trade diversion effects).

- The dummy variables, *COMESA-both*$_{ij}$ and *COMESA-one*$_{ij}$, capture the total intra-regional and extra-regional trade bias, respectively. A positive and significant coefficients indicates that member countries have switched to trade to members rather than non-members. This case is interpreted as trade creation, the case where member countries preferring to trade with members rather than non-members. In contrary, if the parameters become negative and significant, it indicates that member countries prefer to trade with the rest of the world (ROW) rather than to members, the case of trade diversion.

Table 3: Summary of Variables, Definition and Expected Association

S/N	Variables	Variable Description	Expected Association (Sign)
1	Agricultural Exports (EXP_{ijt})	- The annual value of agricultural exports from country i to country j in year t (in US $). o Agricultural commodities in this study are grouped into four major product groups based on SITC system. These include food and live animals, beverages and tobacco, animal vegetable oils and fats, and hides and skins.	- Dependent Variable
2	Gross Domestic Product (GDP_{ij})	- The annual real GDP of a country measured in constant 2010 US dollars.	- Independent variable - Positive association with agricultural exports.
3	Population (POP_{ij})	- Total number of people in a country, measured as the annual estimates in millions.	- Independent variable - Positive association with agricultural exports.
4	Exchange Rate ($EXRT_{ij}$)	- The real exchange rate between the currency of the exporting country and that of the importing country.	- Independent variable - Positive association with agricultural exports.
5	Distance (DIS_{ij})	- The geographical distance between the capital cities of two trading partners measured in kilometers	- Independent variable - Negative correlation with agricultural exports.
6	Common Official Language (CLA_{ij})	- A dummy representing common official language between trading partners (taking value of 1 for common language, and 0 otherwise)	- Independent variable - Positive association with agricultural exports.
7	Adjacency (ADJ_{ij})	- A dummy denoting common border between any pair of trading partners (taking value of 1 for common border, and 0 otherwise)	- Independent variable - Positive association with agricultural exports.
8	COMESA-one$_{ij}$	- A dummy variable representing COMESA membership. It takes value of 1 if i belongs to COMESA FTA and j does not or vice versa, and zero otherwise.	- Independent variable - Negative association with agricultural exports.
9	COMESA-both$_{ij}$	- A dummy variable representing COMESA membership, takes value of 1 if both i and j belong to the COMESA FTA and zero otherwise.	- Independent variable - Positive association with agricultural exports.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Descriptive Analysis

4.1.1 Socio-Economic and Agricultural Indicators

COMESA regional trading area consists of 21 member countries that vary considerably in terms of population size, geographical area and size of economy. COMESA countries have a combined total population of nearly 570 million people and a combined GDP of US $770 billion. According to the World Bank data (2018), Egypt, Ethiopia, and Kenya are by far the leading economies among the COMESA member states. Egypt is the largest economy in the regional bloc with about 100 million people and a real GDP of about US $286 billion. In contrast, Eswatini (formerly Swaziland) is one of the smallest nation in the trading bloc with a real GDP of US $5.4 billion and population size of 1.1 million. However, Eswatini's GDP per capita is the highest among COMESA members as well as from selected seven countries included in this study. Ethiopia is the second largest economy in terms of real GDP (US $62.3 billion) among the COMESA states. However, the nation ranked sixth in terms of GDP per capita (US $772) among the seven countries analyzed in this paper.

Table 4 and 5 summarizes major socio-economic and agricultural indicators for seven countries selected for the study. In terms agriculture value added, Egypt is the largest economy with the highest value-added in agriculture (GDP) of about US $37.0 billion, followed by Sudan (US $21.1 billion) and Ethiopia (US $19.6 billion). A further scrutiny on agricultural indicators for the selected countries show that the leading economies in terms of agriculture value added measured as a percentage of GDP are Burundi (48.4%), Ethiopia (46.4%), and Kenya (40.3%). Eswatini not only accounts for highest GDP per capita but also has highest agriculture value-added per worker (at constant 2010 US $). The total employment in agriculture is the highest in Burundi, followed by Rwanda and Ethiopia.

Table 4: Socio-Economic Indicators for Selected COMESA Countries, in 2018

Country	Population, total (millions)	Real GDP (constant 2010, billion US$)	GDP per capita (current US$)	Exchange rate (Local Currency Unit per US$)
Burundi	11.2	2.4	272	1,881.60
Egypt	98.4	286.2	2,549	15.99
Eswatini	1.1	5.4	4,146	14.06
Ethiopia	109.2	62.3	772	31.80
Kenya	51.4	61.8	1,711	101.34
Rwanda	12.3	10.1	773	922.52
Sudan	41.8	77.6	977	47.50

Source: World Bank, WDI database

Table 5: Agricultural Indicators for Selected COMESA Countries, in 2018

Country	Agriculture, value-added (constant 2010 million US$)	Agriculture, value-added, (% of GDP)	Agriculture, value-added per worker (constant 2010 US$)	Employment in agriculture (% of total employment)
Burundi	806.1	48.4	184.9	91.96
Egypt	37,053.8	13.6	5,371.0	24.87
Eswatini	521.3	11.6	13,836.6	13.04
Ethiopia	19,618.3	46.4	581.0	66.20
Kenya	13,779.3	40.3	1,288.9	57.45
Rwanda	2,458.9	37.4	602.0	66.59
Sudan	21,054.2	37.9	4,777.4	43.14

Source: World Bank, WDI database

4.1.2 Agricultural Trade Performance of COMESA

Figure 1 depicts the percentage share of agricultural trade in GDP for the selected COMESA countries. This ratio is one of the frequently used indicators in international trade to measure trade openness among different economies. According to OECD (2011), tariff and non-tariff barriers to trade, size of economy and distance among trading partners may affect the trade openness ratio. Importantly, a low ratio does not necessarily imply prevalence of barriers to trade in a particular economy. Over the past decade, Eswatini has the highest trade to GDP ratio among the COMESA countries under study. While, the annual average ratio for Sudan is found to be the lowest. This pattern again attests the fact that Eswatin's relatively small sized economy and Sudan's trade embargo that has stricken the nation for decades could have created a diversion in either total trade or GDP, which could possible affect the ratio. Overall, Figure 1 shows trends of the agricultural trade-GDP ratio, which also depicts the volatility trends in agricultural trade.

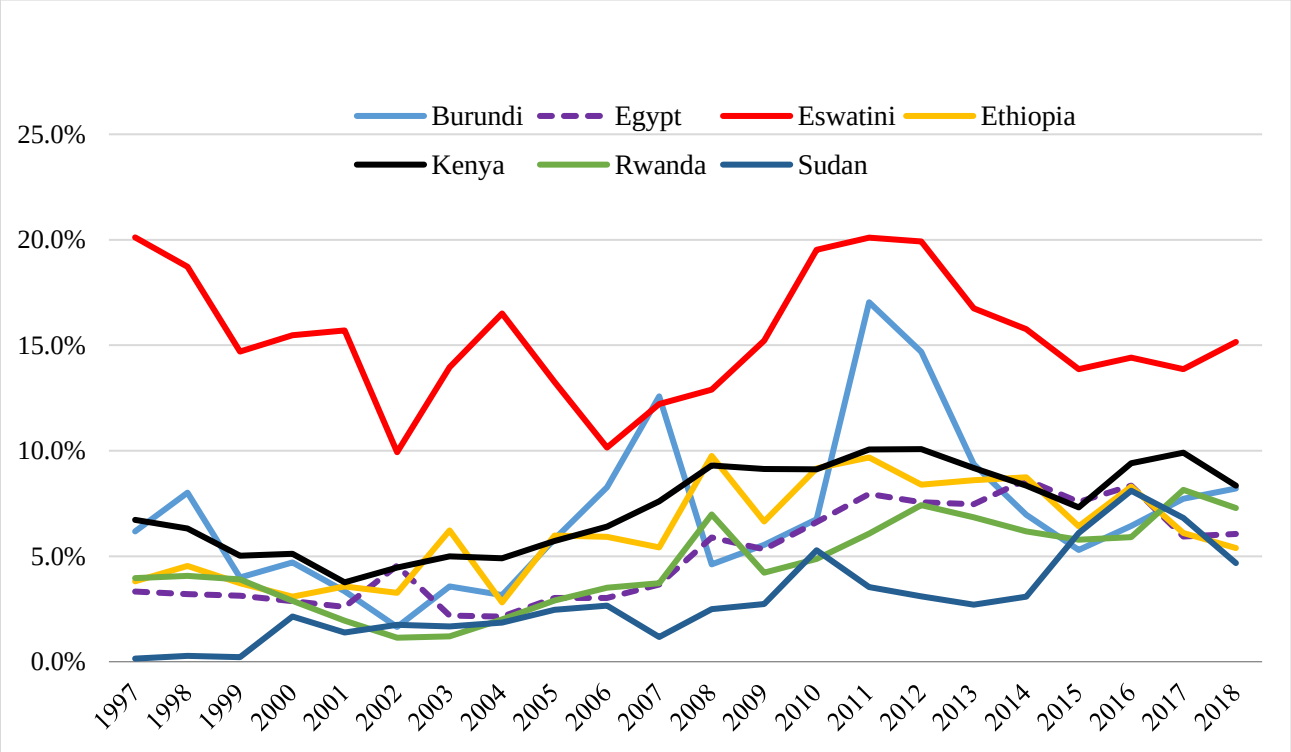

Figure 1. Percentage share of total agricultural trade in GDP in COMESA Countries

Source: Computed by author, data from WDI and COMSTAT

Table 6 presents performance of selected COMESA countries' and all member states' total trade and with a dichotomy of agricultural trade situation. The table summarizes total export-import trade and analyses the state of agricultural trade in the regional trading bloc. During 2018, COMESA member states exported and imported total merchandise goods valued at US $110.7 billion and $196.1 billion, respectively. In the same period, these member states registered total agricultural exports and imports worth of US $49.7 billion. Among the COMESA economies, Egypt accounted for the lion's share in world total trade as well as world agricultural commodities trade. The proportion of agricultural commodities trade in the total trade indicates the relative predominance of the economic sector across the member countries. At aggregate level, the agricultural trade embraces 21 percent share in the overall trade from the COMESA region. A further investigation shows that agricultural commodity exports contributed to 17 percent of the total merchandize exports recorded from all COMESA member states. This share varied between 89 percent for Ethiopia and 16 percent for Egypt among the countries selected in the study. For other countries like Kenya and Sudan, the agricultural commodities export sector accounts for about half of the total trade from both these countries.

Table 6: COMESA Countries' Total Trade Vs Agricultural Trade with the World (In 2018, values in million US$)

Country	Total Exports	Total Imports	Total Trade	Ag Exports	Ag Imports	Total Ag Trade	Share of Ag Exports from Total
Burundi	122	793	915	71	123	194	58%
Egypt	27,759	72,478	100,237	4,426	12,888	17,314	16%
Eswatini	1,827	1,823	3,650	475	347	822	26%
Ethiopia	1,279	14,897	16,176	1,134	2,227	3,361	89%
Kenya	5,345	17,375	22,720	2,736	2,418	5,154	51%
Rwanda	740	2,626	3,366	245	494	739	33%
Sudan	3,545	8,851	12,396	1,731	1,899	3,630	49%
Sub-Total	40,617	118,843	159,460	10,818	20,396	31,214	27%
COMESA Total	110,680	196,145	306,825	18,490	31,213	49,703	17%
Share of Selected Countries in COMESA Total	**37%**	**61%**	**52%**	**59%**	**65%**	**63%**	

Source: COMSTAT

Also, if we quantity the trade deficits, COMESA members overall had a total trade deficits of US $80 billion by the end of 2018. Out of this total trade deficit, agricultural commodities trade alone accounted for nearly US $13 billion. The analysis of total and agricultural trade of COMESA economies show that COMESA as a whole as well as all the COMESA countries are net importers as far as the total trade is concerned. However, COMESA is a net exporter in case of agricultural trade. The three biggest economies of the COMESA Free Trade Area— Egypt, Kenya, and Sudan — have relatively contributed to this trade development, as these countries together account for about half of the share of agricultural exports from COMESA. Egypt is the leading economy contributing the highest share to the total trade as well as agricultural trade in COMESA, followed by Kenya and Sudan. Please see Table 7 for details on share of aggregate trade and agricultural trade for each COMESA country.

Table 7: Share of Selected Countries in Total Trade vs Agricultural Trade (In 2018)

Country	Total Exports	Total Imports	Total Trade	Ag Exports	Ag Imports	Total Ag Trade
Burundi	0.1%	0.4%	0.3%	0.4%	0.4%	0.4%
Egypt	25.1%	37.0%	32.7%	23.9%	41.3%	34.8%
Eswatini	1.7%	0.9%	1.2%	2.6%	1.1%	1.7%
Ethiopia	1.2%	7.6%	5.3%	6.1%	7.1%	6.8%
Kenya	4.8%	8.9%	7.4%	14.8%	7.7%	10.4%
Rwanda	0.7%	1.3%	1.1%	1.3%	1.6%	1.5%
Sudan	3.2%	4.5%	4.0%	9.4%	6.1%	7.3%
Sub-Total	36.7%	60.6%	52.0%	58.5%	65.3%	62.8%
COMESA Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: COMSTAT

4.1.3 Intra-COMESA Agricultural Trade Pattern

In analyzing the effect of regional trading blocs like COMESA, it is highly imperative to examine the level and pattern of intra-regional trade performed within the economic bloc. As the main interest of this paper is agricultural trade, the status of agricultural commodities trade in COMESA is further investigated. Table 8 provides a summary of intra-COMESA agricultural trade vis-à-vis total agricultural trade with world partners. From the table, one can discern that between the periods2015-2018, COMESA agricultural trade (with world partners) registered a

total trade deficit US $16.6 billion. However, during the same period, the intra-COMESA agricultural trade revealed a surplus of US $89.0 million. Furthermore, the annual average share of intra-COMESA agricultural exports in total export trade was 19%. This figure ranged from as little as two percent in Eswatini to as high as 45 percent in Rwanda. Similarly, the share of intra-COMESA agricultural imports from the total COMESA import trade stood at 9%.

As Table 8 below shows, when trade with world partners is considered, COMESA member states are net importers of agricultural commodities. On the other hand, when intra-COMESA agricultural trade is considered, COMESA countries are net exporters. If we further examine, we can observe that COMESA agricultural trade with the rest of the world has grown faster than intra-regional trade within the COMESA economic bloc. COMESA total agricultural exports to the world increased to US $18.8 billion during 2015-2018 from US $4.6 billion in 2000-2002. Over these periods, the total agricultural exports to the world has more than quadrupled. A further analysis reveal that intra-COMESA agricultural exports grew up to US $3.3 billion from US $810 million. Overall, the below results indicate that COMESA countries trade more with the rest of the world than within the member states in the regional bloc.

Table 8: COMESA Agricultural Trade Indicators (Annual Average Value in Million US$)

Description/Year	2000-2002	2003-2005	2006-2008	2009-2011	2012-2014	2015-2018
Total Ag Exports to World	4,629	6,146	9,595	14,712	17,897	18,865
Total Ag Imports from World	8,821	9,473	16,738	25,784	34,310	35,442
BoT- Total Ag Trade -World	(4,192)	(3,328)	(7,144)	(11,072)	(16,413)	(16,577)
Intra-COMESA Ag Exports	772	945	1,826	3,113	3,477	3,403
Intra-COMESA Ag Imports	810	865	1,610	2,817	3,708	3,314
BoT- Intra-COMESA Ag Trade	(38)	79	216	296	(231)	89
Share of Intra-COMESA Ag Exports	13%	17%	15%	19%	21%	19%
Share of Intra-COMESA Ag Imports	6%	9%	9%	10%	11%	11%

Source: COMSTAT

During the study period (1997-2018), agricultural exports from COMESA economies to the world increased from US $5.5 billion to US $18.5 billion. A similar increase was also witnessed

on agricultural imports of COMESA, which has increased from US $7.8 billion to US $31.2 billion. Figure 2 portrays annual trends of COMESA agricultural trade with world partners.

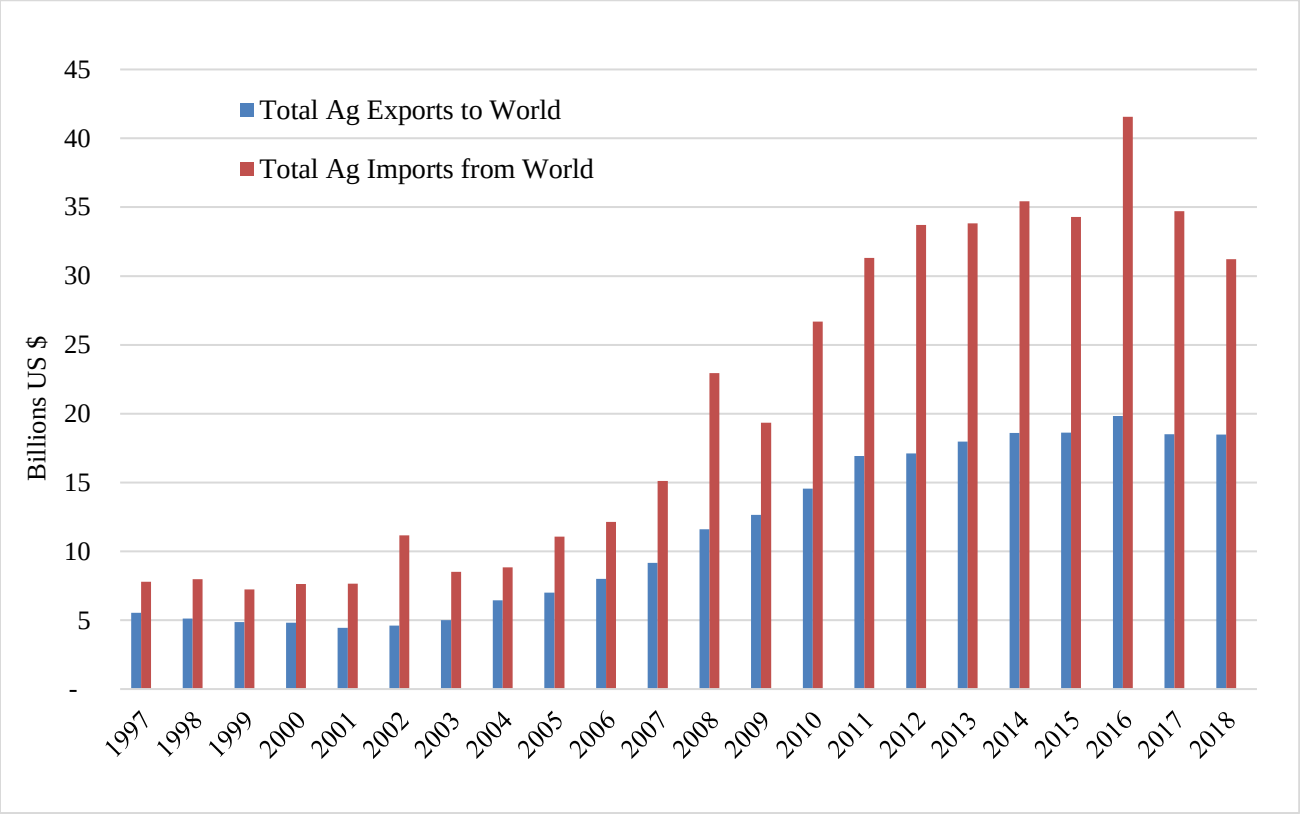

Figure 2: Trends of COMESA Agricultural Trade with World

Source: Own graph, data from COMSTAT

Over the last two decades, COMESA has implemented various initiatives such as harmonizing the trade policy regimes to advance better regional integration by liberalizing economies of member states. However, the regional bloc's performance in terms of intraregional trade lags behind other similar regional trading areas. The share of intra-COMESA agricultural trade is also much lower for COMESA countries as compared to the proportion of intra-COMESA total trade. Please see figure 3 and figure 4 for details on the patterns and trends of intra-COMESA agricultural trade.

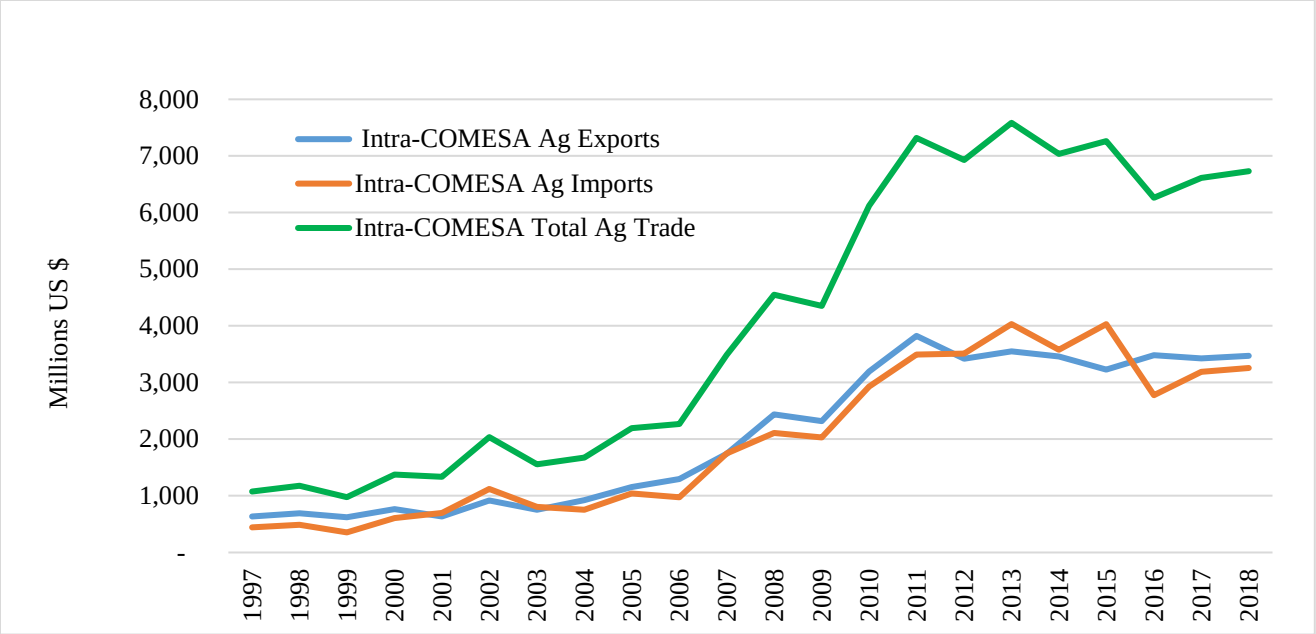

Figure 3: Trends of Intra-COMESA Agricultural Trade: 1997-2018

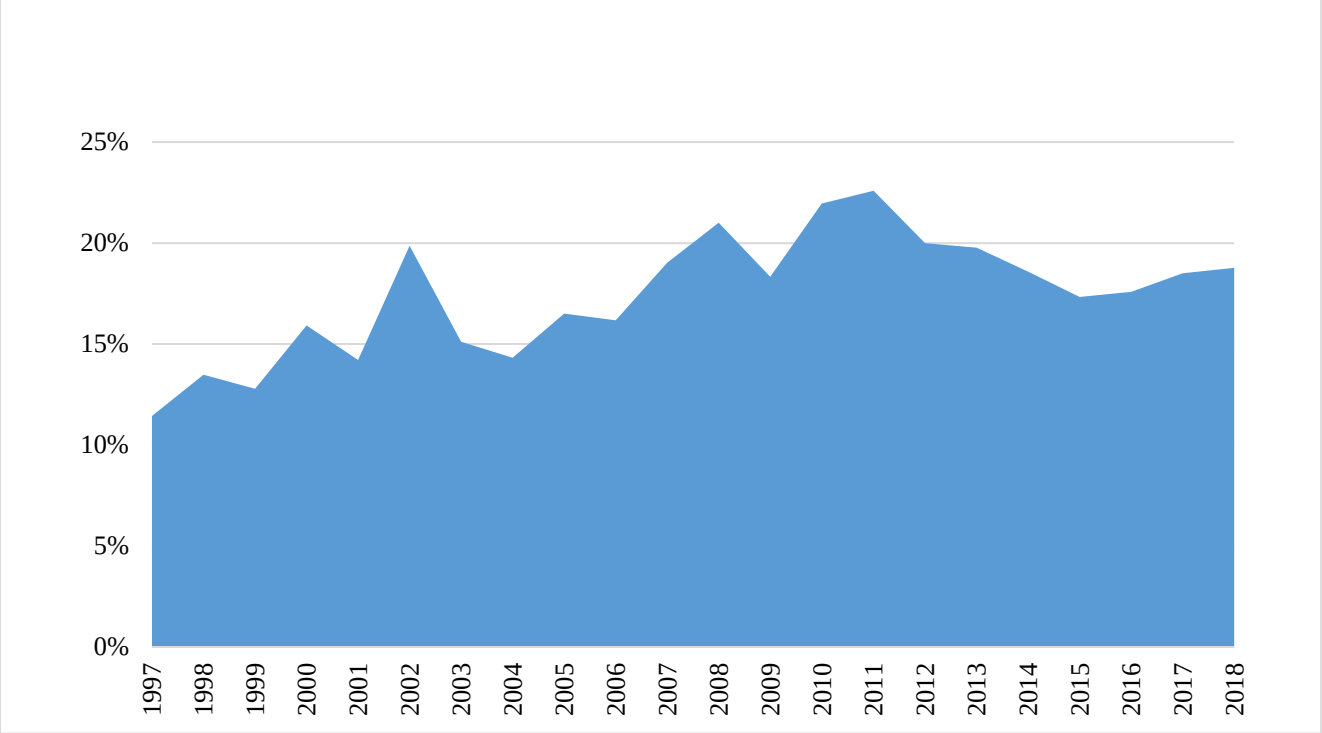

Figure 4: Percentage Share of Intra-COMESA Agricultural Exports

Source: Author's computation, data from COMSTAT

Having presented the overall agricultural trade performance of COMESA economies, this section highlights agricultural trade structure by divulging into composition of exports and imports by type of agricultural commodities. The agricultural trade performance of COMESA and selected individual member countries is examined using Standard International Trade Classification (SITC) system. Based on this classification, five major agricultural commodities group (agro-food products) are analyzed and discussed. These include food and live animals, beverages and tobacco, animal vegetable oils and fats, oilseeds and oleaginous fruits, and hides and skins. Egypt, Ethiopia, and Eswatini export 15%, 13%, and 3% of their total agricultural products within COMESA, and these countries export the remaining proportion to countries outside the trading bloc. On the other hand, Rwanda, Burundi, and Sudan have relatively higher share of intra-regional trade standing at 67%, 38%, and 33%, respectively. Table9 illustrates the major agricultural commodities traded from COMESA to the world.

Table 9: COMESA Agricultural Trade with World Partners by Product Group (Values in million US$)

SITC Code	Items	Exports to the World		Imports from the World	
		2010	2018	2010	2018
	Total Agricultural Exports and Imports (in US$)	15,680	18,490	26,692	31,213
0	Food and live animals	11,474	14,282	20,830	24,785
1	Beverages and tobacco	1,651	1,990	1,410	1,278
4	Animal and veg. oils & fats	736	1,114	3,412	3,335
21	Hides and skins	6.76	2	0.37	2
22	Oilseeds & oleaginous fruits	1,812	1,102	1,040	1,812
	Percentage Growth (2010-2018)		18%		17%

Source: COMSTAT

Coffee, tea, and spices, sugar, edible vegetables, animal or vegetable fats and oils, and cereals are the major agro-food exports from COMESA to the world. The major trading partners for agricultural exports of COMESA countries are EU, USA, Saudi Arabia, Pakistan, UAE, and China. Please refer table 10 and 11 as well as from annex 3 to 10for details of COMESA agricultural trade by product groups and country.

Table 10: COMESA Exports of Food and Live Animal Products to the World (in 2018)

Commodities by SITC Code	Value (US $)	% Share	Cumulative Share
0 - Food and live animals Exports Total	**14,282,302,167**	**100.0%**	**-**
07414 - Tea	1,610,279,198	11.3%	11.3%
07111 - Coffee, not roasted, not decaffeinated	960,962,873	6.7%	18.0%
07521 - Vanilla	887,075,378	6.2%	24.2%
05711 - Oranges, fresh/dried	652,479,731	4.6%	28.8%
03713 - Tunas	542,684,505	3.8%	32.6%
06111 - Cane sugar, raw, in solid form	536,227,883	3.8%	36.3%
00121 - Sheep, live	498,598,209	3.5%	39.8%
06129 - Other beet/cane sugar in solid form	383,874,216	2.7%	42.5%
05423 - Beans, other than broad beans & horse beans	362,206,472	2.5%	45.1%
05796 - Dates, fresh/dried	333,454,885	2.3%	47.4%
0019 - Live animals, n.e.s.	272,388,440	1.9%	49.3%
05751 - Grapes, fresh	221,719,520	1.6%	50.8%
0541 - Potatoes, fresh/chilled (not incl sweet potatoes)	212,138,881	1.5%	52.3%
05469 - Other vegetables & mixtures of vegetables	203,187,764	1.4%	53.8%
07524 - Cloves (whole fruit, cloves & stems)	197,195,976	1.4%	55.1%
0461 - Flour of wheat/of meslin	188,201,748	1.3%	56.5%
05459 - Other vegetables, fresh/chilled	180,496,514	1.3%	57.7%
0242 - Processed cheese, not grated/powdered	180,494,065	1.3%	59.0%
05797 - Avocados, guavas, mangoes &mangosteens	177,140,468	1.2%	60.2%
05896 - Fruits/edible parts of plants, prepared/preserved	169,389,971	1.2%	61.4%
09899 - Food prep. other than headings 098.91 - 098.94	152,999,797	1.1%	62.5%
05779 - Edible nuts (excluding mixtures), fresh/dried, n.e.s.	135,112,587	0.9%	63.4%
05451 - Onions & shallots, fresh/chilled	134,563,885	0.9%	64.4%
0441 - Maize seed	134,231,991	0.9%	65.3%
0733 - Other food preparations containing cocoa	132,000,338	0.9%	66.2%
01213 - Meat of goats, fresh, chilled/frozen	124,643,985	0.9%	67.1%
05679 - Vegetables prepared/preserved	118,380,267	0.8%	67.9%
05457 - Leguminous vegetables, fresh/chilled	118,173,497	0.8%	68.8%
05831 - Strawberries, uncooked/cooked	116,161,294	0.8%	69.6%
04842 - Sweet biscuits, waffles & wafers	115,825,785	0.8%	70.4%
08199 - Preparations of a kind used for animal food, n.e.s.	115,546,159	0.8%	71.2%
0483 - Macaroni, spaghetti & similar products (pasta)	109,805,432	0.8%	72.0%
0721 - Cocoa beans, whole/broken, raw/roasted	108,458,209	0.8%	72.7%
03721 - Crustaceans, prepared/preserved, n.e.s.	105,525,278	0.7%	73.5%
08131 - Oilcake & other solid residues from soya beans	101,865,014	0.7%	74.2%
Others	3,688,811,955	25.8%	100.0%

Source: COMSTAT

Table 11: COMESA Imports of Food and Live Animal Products from the World (in 2018)

Commodities by SITC Code	Value (US $)	% Share	Cumulative Share
0 - Food and live animals Imports Total	**24,785,397,546**	**100.0%**	**-**
0411 - Durum wheat, unmilled	3,533,717,036	14.3%	14.3%
0449 - Other maize, unmilled	2,090,262,783	8.4%	22.7%
06129 - Other beet/cane sugar in solid form,	1,648,619,027	6.7%	29.3%
0412 - Other wheat (incl spelt) &meslin, unmilled	1,480,586,130	6.0%	35.3%
04231 - Rice, semi-milled/wholly milled	1,155,491,422	4.7%	40.0%
01122 - Meat of bovine animals, frozen, boneless	1,090,907,422	4.4%	44.4%
09899 - Food prep other than headings 098.91 - 098.94	593,670,461	2.4%	46.8%
08131 - Oilcake & other solid residues of oil from soya	459,351,049	1.9%	48.6%
03428 - Other fish, frozen (excluding livers & roes)	457,538,662	1.8%	50.5%
08199 - Preparations of a kind used for animal food, n.e.s.	442,354,186	1.8%	52.3%
06111 - Cane sugar, raw, in solid form	423,105,077	1.7%	54.0%
03423 - Tunas, skipjack/stripe-bellied bonito,	387,798,002	1.6%	55.5%
07414 - Other black tea (fermented) & partly fermented	387,023,595	1.6%	57.1%
01252 - Edible offal of bovine animals, frozen	383,455,633	1.5%	58.6%
02221 - Milk, concentrated/sweetened	311,109,633	1.3%	59.9%
03713 - Tunas, skipjack & Atlantic bonito (Sarda spp.)	302,511,853	1.2%	61.1%
05425 - Broad beans & horse beans	300,977,366	1.2%	62.3%
04232 - Broken rice	285,269,057	1.2%	63.5%
0430 - Barley, unmilled	285,212,634	1.2%	64.6%
0574 - Apples, fresh	275,671,269	1.1%	65.7%
07111 - Coffee, not roasted, not decaffeinated	262,347,413	1.1%	66.8%
09893 - Food preparations for infant use	247,053,569	1.0%	67.8%
02222 - Milk & cream, concentrated/sweetened	244,839,007	1.0%	68.8%
0453 - Grain sorghum, unmilled	244,276,765	1.0%	69.8%
0461 - Flour of wheat/of meslin	238,155,099	1.0%	70.7%
0230 - Butter & other fats & oils derived from milk	228,933,444	0.9%	71.7%
03426 - Mackerel (scombrids), frozen	220,449,108	0.9%	72.5%
00119 - Bovine animals, live	209,637,841	0.8%	73.4%
05424 - Lentils, dried, shelled, whether/not skinned/split	173,745,680	0.7%	74.1%
09894 - Malt extract; food preparations of flour, meal	167,241,225	0.7%	74.8%
03721 - Crustaceans, prepared/preserved, n.e.s.	162,585,788	0.7%	75.4%
0482 - Malt, whether/not roasted (including malt flour)	156,591,563	0.6%	76.1%
02499 - Other cheese	154,316,178	0.6%	76.7%
0483 - Macaroni, spaghetti & similar products (pasta)	150,117,150	0.6%	77.3%
Others	5,630,475,420	22.7%	100.0%

Source: COMSTAT

4.2 Emperical Framework

4.2.1 Regression Model

The study employed the following model as described in the earlier chapter.

$$\ln EXP_{ijt} = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 \ln(GDP_{it}) + \boldsymbol{\beta}_2 \ln(GDP_{jt}) + \boldsymbol{\beta}_3 \ln(POP_{it}) + \boldsymbol{\beta}_4 \ln(POP_{jt}) + \boldsymbol{\beta}_5 \ln(EXRT_{ijt}) + \boldsymbol{\beta}_6 \ln(DIS_{ij}) + \boldsymbol{\beta}_7 \ln(CL_{ij}) + \boldsymbol{\beta}_8 \ln(AD_{ij}) + \boldsymbol{\beta}_9 \ln(\text{COMESA-one}_{ij}) + \boldsymbol{\beta}_{10} \ln(\text{COMESA-both}_{ij}) + \varepsilon_{ij} \quad [2]$$

The above regression model was employed in order to address the objectives of the study stated in the introductory chapter. Using a panel data for the period covering 1997-2018, the research attempted to analyze causes of intra-COMESA agricultural trade, and effects of COMESA free trade area in agricultural trade in the COMESA region. The dependent variable is agricultural exports from COMESA member countries with respect to bilateral trading partners. Quantitative explanatory variables in the model include GDP, population, exchange rates, and distance between the trading partners. Other categorical explanatory variables estimated in the model are common official language and common border or adjacency. Furthermore, additional dummy variables (COMESA-one$_{ij}$ and COMESA-both$_{ij}$) that represent status of membership in COMESA free trade area are included in the above equation to measure the effects of COMESA regional trade agreement.

4.2.2 Model Estimation

The study attempted to apply two conventional model estimation techniques for analyzing panel data. The panel data models examine fixed and/or random effects of group of time. Hence, our data should have individual effects or time effects. In order to examine the presence of individual effects and/or time effects, it is required to perform either fixed effects or random effects test.

Fixed Effects Model (FEM): is used whenever there is an interest in analyzing the impact of variables that vary over time. It explores the relationship between predictor and outcome variables within an entity (country, person, company, etc.). When using FEM we assume that something within the individual may influence or bias the predictor or outcome variables and we need to control for this. This is the rationale behind the assumption of the correlation between entity's error term and predictor variables. FEM removes the effect of those time-invariant characteristics from the predictor variables so we can assess the predictors' net effect.

Random Effects Model (REM): the rationale behind random effects model is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model. The crucial distinction between fixed and random effects is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastic or not (Greene, 2003).

The Hausman Diagnostic Test: the Hausman Test is applied in order to decide between Fixed Effects model or Random Effects model estimation. The Hausman method tests the null hypothesis of no difference in coefficients estimated by the two distinct methods against its alternative hypothesis. The results of the Hausman test is presented as follow.

Table 12: The Hausman Specification Test

	------Coefficients------			
	(b)	**(B)**	**(b-B)**	**sqrt(diag(V_b-V_B))**
	fixed	**random**	**Difference**	**S.E.**
lnGDPi	2.051724	1.926214	0.12551	0.1648591
lnGDPj	1.478759	0.997326	0.481433	0.1225749
lnPOPi	-0.3225999	-0.46747	0.144865	0.4285961
lnPOPj	0.5801956	0.107138	0.473057	0.213507
lnEXRTij	0.0541935	-0.14625	0.200446	0.0418825
lnDISij	-4.696747	-1.14927	-3.547475	3.551007
1.CLAij	-4.53373	0.604309	-5.138038	4.878254

b = consistent under Ho and Ha; obtained from xtreg

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

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 578.53

Prob>chi2 = 0.0000

The result of the Hausman test suggests not to reject the Fixed Effects since its probability is 0.0000. However, since the Fixed Effects model estimation dropped our key variables of interest

(COMESA-one$_{ij}$ and COMESA-both$_{ij}$), the study applied the Random Effects model. The application of this model is in line with the work of Adane (2014) and Tessema (2014).

4.2.3 Model Estimation Results

This section presents the estimation results of the regression model (Random Effect) employed in the study. The regression results are obtained by running bilateral trade datasets for the standard gravity variables using STATA 15.0. Annex 1 provides detailed results such as number of observations, coefficient values for the predictor variables, standard errors for each coefficient, R^2, "P" values for each coefficient, confidence intervals and other relevant information.

From the model estimation, we can observe that the model is in a linear-log form and bilateral agricultural exports (EXP_{ij}) is the dependent variable. While GDP of exporter (GDP_i), GDP of importer (GDP_j), population of exporter (POP_i), population of importer (POP_j), exchange rates between importer and exporter countries ($EXRT_{ij}$), and bilateral distance (DIS_{ij}) are independent variables and their respective coefficient values are interpreted in terms of elasticity or percentage changes. On the hand, the other explanatory variables entered in a dummy form are adjacency (AD_{ij}), common official language (CLA_{ij}), and COMESA membership (COMESA-one$_{ij}$ and COMESA-both$_{ij}$). Interpretations for these dummy variables are in terms of level of trade.

The statistical significance and sign of these coefficients or estimated parameters reveals how these variables affect agricultural commodity trade between bilateral trading partners. If a coefficient is statistically significant and if it is positive, the variable it represents has a strong direct relationship with agricultural trade between the economies. If a statistically significant coefficient is negative, the variable it represents has a strong inverse relationship with the bilateral trade, which may impede trade. If a coefficient is statistically insignificant, it shows that the factor it represents has a trivial impact on the bilateral trade.

When we begin our interpretations of the standard bilateral trade variables in the model, we can attest that all predictor variables, except population of importing country (POP_j), are found to

have a statistically significant effect on agricultural export trade. As the "p" values are less than one percent (0.000), the explanatory variables are significant at 1% significance level.

Real GDP: First, the coefficients or parameter estimates of real GDP of exporter (GDP_i) and real GDP of importer (GDP_j) are 1.926214 and 0.9973263, respectively. Both the estimated real GDP coefficients have the expected positive sign, which implies the size of exporter's economy and importer's economy directly affects the size of agricultural commodity exports from COMESA countries. In fact, in our case, the effect of real GDP of the exporting country is higher than that of the import trade partner. All other things held constant, on average, one percent increase in real GDP of exporting country would result in US $1.926increase in value of agricultural trade between the exporting country and its trading partner and vice versa. Likewise, one percent increase in real GDP of importing economy would result in US $0.997 rise in value of export trade flows between exporting country and its trading partner and vice versa.

Population size: Second, the parameter estimates of population size are found to have the expected signs. Here, the coefficients for exporter country (POP_i) and importer country (POP_j) are -0.4674651 and 0.1071382, respectively. The negative sign for the exporting country implies that higher population size unfavorably affects agricultural exports by diverting into domestic market. On average, one percent increase in population size could result in a US $0.467 decrease in the value of agricultural export trade between COMESA countries and vice versa. There are mixed evidences regarding this finding. Population of the exporting country can have uncertain effect on the country's exports. It may provide more labor force leading to more output, hence, more exports. However, it can also provide a ready market for the agricultural products at home, hence, leading to fewer exports (Vinaye (2009).

Whereas, the coefficient for the importing country is positive but it is found to be statistically insignificant (with a "P" value of 0.255). This could mean that the higher the population size of importer countries, the higher the demand for imported agricultural commodities, all other factors being constant. This empirical result is interesting to discern that in economies with a relatively higher population size, agricultural exports are undesirably affected as exports could be diverted into domestic markets. This is evident in COMESA member countries like Ethiopia where major agricultural exports (such as coffee and oilseeds) fetch a higher price in local

markets due to larger domestic demand that creates incentives for diversion of these agro-commodities to domestic consumption.

Real exchange rate: Third, value of real exchange rate between the trading partners would play a significant role in determining the value of agricultural exports in the COMESA region. In this study, real exchange rate is denoted by the ratio of the value of the exporter's currency to importers' currency in US dollars. Therefore, an increase in the exchange rate indicates devaluation of the exporter's currency relative to the importer's currency. This is believed to generate more export trade as agricultural exports could be relatively inexpensive to foreign trading partners. Hence, exchange rate was expected to have a positive sign. Nevertheless, the estimation results show the exchange rate ($EXRT_{ij}$) has an unexpected negative sign (-0.1462526), which is significant at one percent level. This finding may entail further study across individual member states of COMESA.

For member countries like Ethiopia, the above empirical result confirms the ground fact where Ethiopia's currency devaluation could not generate more exports. Following a series of exchange rate devaluations in Ethiopia, its annual exports were in fact sliding down year-on-year over that last five years. Researchers such as Geda (2017) have strongly argued that devaluation does not induce export growth in Ethiopia. The researcher claimed that the fundamental problem for Ethiopia's exports is not a "rise in price" but binding constraints related to "production, supply, and exporting." In any case, the outcome of the estimated coefficient in our empirical finding suggest that, on average, one percent devaluation in exchange rate between the exporting and importing countries could result in a US $0.146 decrease in the value agricultural exports from the COMESA states.

Distance: Fourth, distance between exporting and importing economies play a significant role in influencing bilateral agricultural trade between them. Distance between the capital cities was used as proxy variable to represent costs of trading between the exporter and importer. In most cases, the longer the distances between the trading partners, the higher trading costs. As expected the parameter estimate for the distance variable (DIS_{ij}) is negative (-1.149272) and it is statistically significant at one percent level. The result again suggest that, one percent increase in the distance between the capital cities of the trading partners will on average decrease the value of agricultural exports from the COMESA region by US $1.149, ceteris paribus.

Adjacency (AD_{ij}): Fifth, the other important explanatory variable is adjacency (AD_{ij}) or common border. It is generally true that economies are expected to have more trade with their neighbors, which share a common border. This could result in lower transaction costs. Therefore, adjacency is expected to have a positive sign. The regression results show that coefficient of adjacency (i.e., 2.14318) is highly significant at one percent level. Hence, having common border between COMESA trading partners could result in an increase in the value of agricultural exports by US $2.143.

Common official language: Sixth, the other dummy variable estimated in the model is common official language (CLA_{ij}). This factor indicates the presence of socio-cultural bonds that could enhance bilateral trade between economies. Presence of a common official language between trading partners is expected to have a positive influence on exports. The estimated coefficient (0.6043086) shows that common official language has positive effects on the intra-COMESA agricultural exports. The coefficient is significant at five percent level. Therefore, the empirical result suggests that COMESA member countries that share common official language could witness an increase in value of agricultural exports by US $0.604.

Trade Creation vs Trade Diversion: Finally, the results of dummy variables COMESA-$both_{ij}$ and COMESA-one_{ij} would enable us to investigate the effects of COMESA regional trade agreement on the region's agricultural exports. In other words, these variables of interest would help us understand whether the COMESA regional free trade agreements enhance agricultural exports within member states (i.e., trade creation) or diversion of trade from members to non-members. The estimated model captured agricultural exports of selected COMESA member countries destined to trading partners. The regression estimation result of COMESA-$both_{ij}$ dummy variable has the expected positive sign with a coefficient value of 1.465459, which is highly significant at one percent level. This suggests that the COMESA regional trade area is influential in creating intra-COMESA agricultural trade by 333% more within the regional members than trading with the rest of the world. This further implies that COMESA membership boosts agricultural exports and attests that the trading bloc has a trade creation[2] effect. On the other hand, the estimation result for COMESA-one_{ij} shows the expected negative sign with a coefficient value of -1.493254. The estimation points that the result is highly significant at one

[2] The trade creation level is computed as [(exp1.1465459 -1)*100 =333%]

percent level. In addition, it indicates the presence of trade diversion[3] from COMESA members to non-members by 345%. This would mean that the COMESA free trade area does not play a significant role in generating extra-COMESA trade. This is evident as the result shows the COMESA free trade area expands trade between members and non-members more than trade within members (i.e., intra-COMESA).

[3] The trade diversion level is computed as [(exp1.493254-1)*100 =345%]

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In view of the paramount importance of agriculture and agricultural exports to developing economies, the study examined agricultural commodities trade and regional integration in COMESA. First, the study assessed the structure and flow of agricultural trade in COMESA regional trading bloc. Second, the research empirically investigated the causes of agricultural trade among the COMESA member countries. Lastly, the paper analyzed the effect of COMESA regional free trade agreement on promoting agricultural exports to member countries.

With regard to the first objective, the study analyzed the structure and direction of agricultural trade in COMESA. Over the study periods, agricultural exports from COMESA economies to the world increased from US $5.5 billion to US $18.5 billion. The proportion intra-COMESA trade from total COEMSA trade also increased from 8% to 18%. This is mainly explained by the launch of a customs union in 2009. A similar increase was also witnessed on agricultural imports of COMESA, which has increased from US $7.8 billion to US $31.2 billion. The study revealed that COMESA member states are net importers when both total merchandise trade and agricultural commodities trade are considered. Also, COMESA members overall had a total trade deficits of US $80 billion by the end of 2018. Out of this total trade deficit, agricultural commodities trade alone accounted for nearly US $13 billion. Egypt, Kenya, and Sudan have relatively contributed to this trade development, as these countries together account for about half of the total agricultural exports from COMESA. In general, we can conclude that intra-COMESA trade in agriculture remains small, although it showed upward growth pattern. During the study period, the annual average share of intra-COMESA agricultural exports in total export trade was 18%. Most of this intra-trade in agriculture happens largely between states that share a common border. Despite various initiatives launched to advance regional integrations, performance of COMESA, intra-regional trade in agriculture lags behind other similar regional trading areas in Sub-Sahara Africa. The share of intra-COMESA agricultural trade is also much lower compared to the proportion of total trade within the region.

In order to answer the second objective, the study explored the determinants of agricultural trade among the COMESA member countries using an augmented gravity model to estimate the predictor variables. The empirical findings of study pointed that intra-COMESA agricultural exports were positively influenced by real GDP of exporter and importer countries, population size of importer country, adjacency (common border), and common official language. However, intra-COMESA agricultural exports were found to have an inverse relation with population size of exporter country, exchange rate devaluation, and distance between bilateral trade partners. The results are statistically significant at one percent significance level. Interestingly, the estimation results for exchange rate showed unexpected negative sign. Devaluation of exchange rate is thought to generate more exports since agricultural goods could be relatively cheaper to foreign trading partners. Hence, this finding deviates from the widely held view and it may entail further study by type of agricultural products and across COMESA member states.

Lastly, the third objective of the study was to assess the effect of COMESA regional free trade agreement on the region's agricultural exports. The empirical study investigated key interest variables related to COMESA membership. The empirical findings indicate that COMESA regional integration has both trade diversion and trade creation effects. The trade creation effect in agricultural commodities is expected as the COMESA regional trade agreement has enabled its members of the free trade area to obtain duty free access and removal of tariff barriers. Nevertheless, the trade diversion effect on agricultural exports is found to be a little higher than its trade creation effect. Thus, the net effect shows some degree of diversion of agricultural trade from members to non-members. Based on the empirical findings, it can be concluded that COMESA regional integration has not been instrumental in expanding agricultural exports from the selected countries during the study period. Additionally, it can be said that COMESA as a regional trading bloc has not utilized its full capacity to enhance intra-COMESA agricultural trade. This could be because of trade policies put in place by individual member countries, differences in implementation stages and economy size of member states.

5.2 Recommendations

The empirical study assessed the relationship between agricultural export performance and COMESA regional integration. The study examined the patterns of intra-COMESA agricultural trade and the drivers.

- The study revealed existence of low level of intra-COMESA trade in agriculture goods and a net effect of trade diversion. This suggests that, as COMESA has not been using its full potential, there is a need for the COMESA regional free trade agreement to build much deeper regional integration to expand intra-COMESA trade in agricultural commodities. This could be well fostered through the following measures:
    - There needs to be more progress in coordinating trade policies within the COMESA trading bloc to ensure full implementation. Particularly, member states should fully implement all signed treaties and commitments related to harmonizing trade policies such as customs, tariffs, exchange rates, taxes, etc.
    - Member countries have to remove protectionist policies such as non-tariff trade barriers and lengthy customs procedures that impede intra-regional trade.
    - COMESA has to encourage all the five member countries that have not yet joined the Free Trade Area (FTA) to be full members by joining the COMESA FTA.
- The empirical evidence showed that the relationship between agricultural exports and real GDP of COMESA trading partners is positive and significant. Therefore, the study recommends that COMESA member countries should expand agricultural productions and exports to increase aggregate GDP.
- The empirical finding related to bilateral distance, which is a proxy of transportation, information, and search costs is found to have significant effect of decreasing intra-COMESA agricultural exports from all member states. This suggests that COMESA states need to enhance investments in transportation and communication infrastructures in order to reduce bottlenecks related to trading costs.
- Adjacency or common border is found to have a significant effect of increasing agricultural exports within the COMESA region. Hence, COMESA countries should fully liberalize their borders with member states to expand intra-regional trade in agriculture.
- The study indicated that currency devaluation does not induce agricultural export growth in COMESA member countries. Thus, the COMESA regional market should implement measures that could reduce exchange rate disparities among the member countries. The proposed implementation of currency convertibility and adoption of a common currency, which lags behind schedule, would help minimize the observed negative effects of exchange rate, reduce transaction costs, and boost intra-regional trade.

Areas of Further Studies: Future studies may concentrate on individual agro-food products to determine the drivers of agricultural exports and regional integration. Further studies may also be conducted to assess the effects of regional integration on agricultural exports by analyzing data for individual member countries. This is in view of the fact that effects of regional integration on agricultural trade could significantly vary across member countries at different levels of development or size of economy. It may also be of particular interest to analyze effects of non-agricultural trade in COMESA. There could be a need to investigate whether the COMESA regional trade agreement played any role in expanding non-agricultural trade in the region.

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Annexes

Annex 1: Descriptive Statistics, Estimation Results, and Post Estimation Tests

Annex 1.1: Summary of Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
EXPij	4,840	2.60e+07	6.14e+07	2	8.27e+08
GDPi	4,840	7.88e+10	8.21e+10	1.42e+09	2.86e+11
GDPj	4,840	1.20e+12	2.63e+12	6.14e+08	1.79e+13
POPi	4,840	5.19e+07	3.06e+07	963416	1.09e+08
POPj	4,840	8.95e+07	2.38e+08	78357	1.43e+09
EXRTij	4,840	48.51696	267.8372	.0002126	4274.203
DISij	4,840	4918.1	3380.596	150.5023	16471.37

Annex 1.2: Regression Result for Fixed Effect Model

```
Fixed-effects (within) regression               Number of obs      =     4,840
Group variable: id                              Number of groups   =       220

R-sq:                                           Obs per group:
within  = 0.4551                                         min =        22
between = 0.6903                                         avg =        22.0
overall = 0.6536                                         max =        22

F(7,4613)      = 362.91
corr(u_i, Xb) = -0.9168                         Prob> F = 0.0000
------------------------------------------------------------------------------
lnEXPij |   Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
lnGDPi |   2.051724     .18743    10.95   0.000     1.684271    2.419176
lnGDPj |   1.478759   .1448728    10.21   0.000     1.194739    1.762779
lnPOPi |  -.3225999   .4494754    -0.72   0.473    -1.203787     .558587
lnPOPj |   .5801956   .2333318     2.49   0.013     .1227536    1.037638
lnEXRTij |  .0541935   .0532684     1.02   0.309    -.0502381    .1586252
lnDISij |  -4.696747   3.554641    -1.32   0.186    -11.66554     2.27205
1.ADij |   0 (omitted)
1.CLAij |   -4.53373   4.884651    -0.93   0.353    -14.10998    5.042523
1.COMESAoneij |  0  (omitted)
1.COMESAbothij | 0  (omitted)
_cons |-37.63405    31.0691    -1.21   0.226    -98.54435    23.27625
---------------+--------------------------------------------------------------
```

```
sigma_u|  4.847251
sigma_e|  1.4541235
rho | .91743659   (fraction of variance due to u_i)
------------------------------------------------------------------------------F
test that all u_i=0: F(219, 4613) = 34.54                 Prob> F = 0.0000
```

Annex 1.3: Estimation Result using Random Effect Model

```
Random-effects GLS regression                   Number of obs= 4,840
Group variable: id                              Number of groups = 220

R-sq:                                           Obs per group:
within  = 0.4483         min =  22
between = 0.7495         avg =  22.0
overall = 0.6813         max =  22

Wald chi2(9)    = 2018.15
corr(u_i, X)    = 0 (assumed)       Prob> chi2 = 0.0000

------------------------------------------------------------------------------------------------------------------
lnEXPij |  Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------------------------------------------

lnGDPi |   1.926214   .0891711    21.60   0.000     1.751442    2.100986
lnGDPj |   .9973263   .0772239    12.91   0.000     .8459703    1.148682
lnPOPi |  -.4674651   .1354015    -3.45   0.001    -.7328471   -.2020832
lnPOPj |   .1071382   .0941196     1.14   0.255    -.0773328    .2916092
lnEXRTij|  -.1462526   .0329147    -4.44   0.000    -.2107643    -.081741
lnDISij |  -1.149272   .1606976    -7.15   0.000    -1.464234   -.8343105
1.ADij |    2.14318    .479469     4.47   0.000     1.203438    3.082922
1.CLAij |  .6043086   .2499104     2.42   0.016     .1144933    1.094124
1.COMESAoneij |-1.493254    .407309    -6.61   0.000    -3.491565   -1.894943
1.COMESAbothij |1.465459     .315814     5.43   0.000     1.237536    2.996845
         _cons |-40.24144   2.077185   -19.37  0.000    -44.31265   -36.17023
--------------+---------------------------------------------------------------
sigma_u| 1.5851877
sigma_e| 1.4541235
rho |  .54304295   (fraction of variance due to u_i)
------------------------------------------------------------------------------------------------------------------
```

Source: Author's regression result using STATA 15.0

Annex 1.4: Correlation matrix of coefficients of xtreg model

e(V)	lnGDPi	lnGDPj	lnPOPi	lnPOPj	lnEXRTij	lnDISij
lnGDPi	1.0000					
lnGDPj	-0.0566	1.0000				
lnPOPi	-0.8432	-0.2472	1.0000			
lnPOPj	-0.0164	-0.4715	-0.1269	1.0000		
lnEXRTij	0.2132	-0.1730	-0.0173	-0.0313	1.0000	
lnDISij	-0.0167	0.0032	0.0259	0.0012	0.0522	1.0000

Annex 2: List of Trading Partners under Study

S/N	Trading Partner	S/N	Trading Partner	S/N	Trading Partner	S/N	Trading Partner
1	Afghanistan	23	Finland	45	Libya	67	Seychelles
2	Albania	24	France	46	Malawi	68	Singapore
3	Algeria	25	Germany	47	Malaysia	69	Slovenia
4	Argentina	26	Ghana	48	Malta	70	Somalia
5	Australia	27	Greece	49	Mauritius	71	South Africa
6	Azerbaijan	28	Guinea	50	Morocco	72	Spain
7	Bahrain	29	Hong Kong	51	Mozambique	73	Sri Lanka
8	Belgium	30	Hungary	52	Namibia	74	Sudan
9	Brazil	31	India	53	Netherlands	75	Sweden
10	Bulgaria	32	Indonesia	54	New Zealand	76	Switzerland
11	Burundi	33	Iran	55	Nigeria	77	Tanzania
12	Canada	34	Iraq	56	Norway	78	Tunisia
13	Chad	35	Ireland	57	Oman	79	Turkey
14	China	36	Israel	58	Pakistan	80	Uganda
15	Comoros	37	Italy	59	Poland	81	Ukraine
16	Congo DR	38	Japan	60	Portugal	82	UAE
17	Cote D'Ivoire	39	Jordan	61	Qatar	83	UK
18	Croatia	40	Kazakhstan	62	Thailand	84	USA
19	Denmark	41	Kenya	63	Romania	85	Yemen
20	Djibouti	42	Korea	64	Russian Fed.	86	Zambia
21	Egypt	43	Kuwait	65	Rwanda		
22	Ethiopia	44	Lebanon	66	Saudi Arabia		

Annex 3: COMESA Exports of Animal and Vegetable Fats & Oils Products to the World (in 2018)

Commodities by SITC Code	Value (US $)	% Share	Cumulative Share
Animal and Vegetable Fats & Oils Exports Total	**1,114,474,734**	**100.0%**	-
42141 - Virgin olive oil	760,541,181	68.2%	68.2%
43122 - Vegetable fats & oils & their fractions, hydrogenate	42,202,995	3.8%	72.0%
42169 - Maize (corn) oil, refined, & its fractions	39,764,928	3.6%	75.6%
4229 - Other fixed vegetable fats, crude, refined/fractionated	37,199,138	3.3%	78.9%
42119 - Soya bean oil, refined, & its fractions	35,503,696	3.2%	82.1%
42149 - Oils & their fractions obtained solely from olives	33,519,402	3.0%	85.1%
42142 - Other olive oil & its fractions	31,055,378	2.8%	87.9%
41112 - Fats & oils & their fractions, of fish, other than liver oils	24,451,564	2.2%	90.1%
42229 - Palm oil, refined, & its fractions	20,581,238	1.8%	92.0%
42159 - Sunflower seed/safflower oil, refined, & fractions	20,002,399	1.8%	93.8%
42151 - Sunflower seed/safflower oil, crude	18,119,489	1.6%	95.4%
42221 - Palm oil, crude	17,347,774	1.6%	96.9%
42131 - Groundnut oil, crude	11,217,051	1.0%	97.9%
42111 - Soya bean oil, crude, whether/not degummed	5,248,594	0.5%	98.4%
4311 - Fats & oils & their fractions, animal/vegetable	5,137,732	0.5%	98.9%
43142 - Beeswax, other insect waxes & spermaceti	4,229,882	0.4%	99.3%
42161 - Maize (corn) oil, crude	2,188,110	0.2%	99.4%
4112 - Lard; other pig fat & poultry fat, rendered	1,227,725	0.1%	99.6%
41111 - Fish liver oils & their fractions	1,210,532	0.1%	99.7%
42211 - Linseed oil, crude	974,580	0.1%	99.8%
42129 - Cotton seed oil, refined, & its fractions	869,151	0.1%	99.8%
41135 - Wool grease & fatty substances	375,238	0.0%	99.9%
43121 - Animal fats & oils & their fractions	236,948	0.0%	99.9%
4218 - Sesame (Sesamum) oil & its fractions	219,443	0.0%	99.9%
42249 - Palm kernel/babassu oil, refined, & fractions thereof	182,594	0.0%	99.9%
42121 - Cotton seed oil, crude, whether/not gossypol removed	151,829	0.0%	99.9%
42241 - Palm kernel/babassu oil, crude	132,105	0.0%	99.9%
Others	584,037	0.1%	100.0%

Source: COMSTAT

Annex 4: COMESA Imports of Animal and Vegetable Fats & Oils Products from the World (in 2018)

Commodities by SITC Code	Value (US $)	% Share	Cumulative Share
Animal and Vegetable Fats & Oils Imports Total	**3,335,202,343**	**100.0%**	**-**
42229 - Palm oil, refined, & its fractions	1,480,179,465	44.4%	44.4%
42221 - Palm oil, crude	718,046,365	21.5%	65.9%
42111 - Soya bean oil, crude, whether/not degummed	275,825,572	8.3%	74.2%
42151 - Sunflower seed/safflower oil, crude	189,007,411	5.7%	79.8%
43122 - Vegetable fats & oils, their fractions, hydrogenate	168,838,157	5.1%	84.9%
42159 - Sunflower seed/safflower oil, refined, & fractions	112,754,285	3.4%	88.3%
42249 - Palm kernel/babassu oil, refined, & fractions	73,424,491	2.2%	90.5%
42161 - Maize (corn) oil, crude	66,758,744	2.0%	92.5%
42169 - Maize (corn) oil, refined, & its fractions	53,597,432	1.6%	94.1%
42119 - Soya bean oil, refined, & its fractions	33,538,445	1.0%	95.1%
4229 - Other fixed veg. fats, crude, refined/fractionated	30,347,833	0.9%	96.0%
42241 - Palm kernel/babassu oil, crude	26,029,870	0.8%	96.8%
42142 - Other olive oil & its fractions	16,333,705	0.5%	97.3%
42239 - Coconut (copra) oil, refined, & its fractions	13,891,097	0.4%	97.7%
42141 - Virgin olive oil	13,352,071	0.4%	98.1%
42149 - Oils & their fractions from olives	10,366,335	0.3%	98.4%
4311 - Fats & oils & their fractions, animal/vegetable	8,872,336	0.3%	98.7%
42129 - Cotton seed oil, refined, & its fractions	6,487,696	0.2%	98.9%
41133 - Lard stearin, lard oil, oleostearin, oleo & tallow oil	6,295,085	0.2%	99.1%
41132 - Fats of bovine animals, sheep/goats, raw/rendered	4,239,999	0.1%	99.2%
42171 - Rape, colza/mustard oil, crude	3,912,855	0.1%	99.3%
42231 - Coconut (copra) oil, crude	3,868,847	0.1%	99.4%
42121 - Cotton seed oil, crude	3,443,799	0.1%	99.5%
4225 - Castor oil & its fractions	2,333,863	0.1%	99.6%
43121 - Animal fats & oils & their fractions, hydrogenated	2,292,821	0.1%	99.7%
42179 - Rape, colza/mustard oil, refined, & fractions	2,185,841	0.1%	99.7%
41112 - Fats & oils & their fractions, of fish	1,856,636	0.1%	99.8%
Others	7,121,287	0.2%	100.0%

Source: COMSTAT

Annex 5: COMESA Exports of Beverage and Tobacco Products to the World (in 2018)

Commodities by SITC Code	Value (US $)	% Share	Cumulative Share
Beverage & Tobacco Exports Total	**1,989,680,979**	**100.0%**	**-**
1212 - Tobacco, wholly/partly stemmed/stripped	1,398,806,889	70.3%	70.3%
12232 - Smoking tobacco, whether/not containing tobacco substitutes in any proportion.	129,332,611	6.5%	76.8%
1222 - Cigarettes containing tobacco	125,011,884	6.3%	83.1%
11102 - Waters (incl mineral waters & aerated waters)	112,407,766	5.6%	88.7%
1211 - Tobacco, not stemmed/stripped	83,544,766	4.2%	92.9%
1123 - Beer made from malt (incl ale, stout & porter)	35,260,993	1.8%	94.7%
12231 - Cigars, cheroots, cigarillos & cigarettes, of tobacco substitutes	19,811,917	1.0%	95.7%
12239 - Manufactured tobacco, extracts & essences, n.e.s.	18,822,337	0.9%	96.6%
11249 - Spirits & distilled alcoholic beverages, n.e.s.	18,360,956	0.9%	97.6%
1213 - Tobacco refuse	12,864,958	0.6%	98.2%
11241 - Whisky	11,124,007	0.6%	98.8%
11244 - Rum &tafia	10,740,755	0.5%	99.3%
11101 - Waters, including natural/artificial mineral waters & aerated waters	3,813,900	0.2%	99.5%
11217 - Wine of fresh grapes (other than sparkling wine)	3,520,676	0.2%	99.7%
11245 - Gin &geneva	2,329,156	0.1%	99.8%
1122 - Fermented beverages, n.e.s	1,544,699	0.1%	99.9%
1221 - Cigars, cheroots & cigarillos, containing tobacco	796,782	0.0%	99.9%
11215 - Sparkling wine	750,787	0.0%	100.0%
11242 - Spirits obtained by distilling grape wine	729,927	0.0%	100.0%
11213 - Vermouth & other wines of fresh grapes	68,160	0.0%	100.0%
11211 - Grape must in fermentation	37,055	0.0%	100.0%

Source: COMSTAT

Annex 6: COMESA Imports of Beverage and Tobacco Products from the World(in 2018)

Commodities by SITC Code	Value (US $)	% Share	Cumulative Share
Beverage & Tobacco Imports Total	**1,278,179,166**	100.0%	-
1222 - Cigarettes containing tobacco	416,726,689	32.6%	32.6%
1211 - Tobacco, not stemmed/stripped	197,398,165	15.4%	48.0%
11102 - Waters (incl mineral waters & aerated waters)	157,721,065	12.3%	60.4%
1212 - Tobacco, wholly/partly stemmed/stripped	97,802,003	7.7%	68.0%
11241 - Whisky	69,989,907	5.5%	73.5%
1123 - Beer made from malt (including ale, stout & porter)	67,676,971	5.3%	78.8%
11217 - Wine of fresh grapes	65,303,006	5.1%	83.9%
11249 - Spirits & distilled alcoholic beverages, n.e.s.	58,304,009	4.6%	88.5%
12239 - Manufactured tobacco, extracts & essences, n.e.s.	43,323,050	3.4%	91.9%
12232 - Smoking tobacco, whether/not containing tobacco substitutes in any proportion.	18,561,137	1.5%	93.3%
12231 - Cigars, cheroots, cigarillos & cigarettes, of tobacco substitutes	15,199,209	1.2%	94.5%
11215 - Sparkling wine	14,684,537	1.1%	95.7%
1122 - Fermented beverages, n.e.s.	13,876,313	1.1%	96.7%
1213 - Tobacco refuse	12,872,266	1.0%	97.8%
11101 - Waters, including natural/artificial mineral waters	9,804,926	0.8%	98.5%
11242 - Spirits obtained by distilling grape wine/grape marc	6,705,668	0.5%	99.0%
11245 - Gin &geneva	5,481,616	0.4%	99.5%
1221 - Cigars, cheroots & cigarillos, containing tobacco	2,641,121	0.2%	99.7%
11244 - Rum &tafia	2,118,803	0.2%	99.8%
11213 - Vermouth & other wines of fresh grapes	1,791,453	0.1%	100.0%
11211 - Grape must in fermentation	197,251	0.0%	100.0%

Source: COMSTAT

Annex 7: COMESA Agricultural Trade With World Partners in 2018 (Value in US $)

S/N	Country	Agricultural Exports	Agricultural Imports	Total Trade	% Share in Total Trade
1	Burundi	70,607,625	122,954,595	193,562,220	0.4%
2	Comoros	62,124,724	61,052,102	123,176,826	0.2%
3	Congo DR	80,117,414	659,094,702	739,212,116	1.5%
4	Djibouti	1,982,127	192,140,295	194,122,421	0.4%
5	Egypt	4,425,582,587	12,887,999,479	17,313,582,066	34.8%
6	Eritrea	2,264,019	119,507,509	121,771,527	0.2%
7	Eswatini	475,288,870	346,644,724	821,933,594	1.7%
8	Ethiopia	1,133,658,643	2,226,757,675	3,360,416,318	6.8%
9	Kenya	2,736,024,810	2,417,917,502	5,153,942,312	10.4%
10	Libya	16,487,756	2,323,256,416	2,339,744,171	4.7%
11	Madagascar	1,178,499,569	562,907,380	1,741,406,949	3.5%
12	Malawi	714,514,391	249,495,377	964,009,768	1.9%
13	Mauritius	526,194,954	1,172,796,941	1,698,991,895	3.4%
14	Rwanda	245,438,788	493,864,636	739,303,424	1.5%
15	Seychelles	408,575,827	337,566,254	746,142,081	1.5%
16	Somalia	89,549,142	676,828,902	766,378,043	1.5%
17	Sudan	1,731,110,358	1,899,470,310	3,630,580,668	7.3%
18	Tunisia	2,030,160,979	2,300,916,827	4,331,077,807	8.7%
19	Uganda	984,815,357	925,216,542	1,910,031,899	3.8%
20	Zambia	543,753,011	499,137,802	1,042,890,813	2.1%
21	Zimbabwe	1,033,040,485	737,790,273	1,770,830,758	3.6%
	Grand Total	**18,489,791,435**	**31,213,316,242**	**49,703,107,677**	**100.0%**

Source: COMSTAT

Annex 8: Intra-COMESA Agricultural Trade in 2018 (Value in US $)

S/N	Country	Agricultural Export	Agricultural Import	Total Trade	% Share in Total Trade
1	Burundi	27,136,794	39,572,975	66,709,769	1.0%
2	Comoros	974,244	12,918,858	13,893,103	0.2%
3	Congo DR	1,333,423	67,182,715	68,516,138	1.0%
4	Djibouti	1,766	76,985,551	76,987,317	1.1%
5	Egypt	550,865,952	473,036,987	1,023,902,939	15.2%
6	Eritrea	1,784,389	86,052,079	87,836,468	1.3%
7	Eswatini	14,170,270	1,585,603	15,755,873	0.2%
8	Ethiopia	142,833,230	94,626,859	237,460,089	3.5%
9	Kenya	545,382,413	642,307,978	1,187,690,391	17.6%
10	Libya	1,439,997	518,560,295	520,000,292	7.7%
11	Madagascar	78,023,570	15,575,346	93,598,916	1.4%
12	Malawi	135,549,814	57,123,097	192,672,911	2.9%
13	Mauritius	55,653,016	169,023,540	224,676,556	3.3%
14	Rwanda	164,023,243	169,620,980	333,644,223	5.0%
15	Seychelles	20,825,653	23,952,391	44,778,044	0.7%
16	Somalia	1,235,068	205,283,994	206,519,062	3.1%
17	Sudan	568,974,834	171,621,104	740,595,938	11.0%
18	Tunisia	263,417,549	70,401,648	333,819,197	5.0%
19	Uganda	480,923,314	176,795,255	657,718,569	9.8%
20	Zambia	370,885,250	35,821,950	406,707,200	6.0%
21	Zimbabwe	46,887,792	150,210,246	197,098,037	2.9%
	Grand Total	**3,472,321,582**	**3,258,259,451**	**6,730,581,033**	**100.0%**

Source: COMSTAT

Annex 9: Intra vs Extra-COMESA Agricultural Exports from Selected Countries in 2018

Items	Burundi		Egypt		Ethiopia		Kenya	
	World	COMESA	World	COMESA	World	COMESA	World	COMESA
Total Agricultural Exports (in US$)	70,607,625	27,136,794	4,425,582,587	550,865,952	1,133,658,643	142,833,230	2,736,024,810	545,381,750
Food and live animals	63,479,191	20,259,104	4,157,129,763	479,301,301	808,205,014	135,905,449	2,503,032,340	396,154,132
Beverages and tobacco	6,939,778	6,869,706	130,630,426	26,794,530	2,253,595	438,981	178,904,820	117,205,487
Animal and veg. oils & fats	187,861	7,983	111,200,106	43,634,592	2,408,948	325,280	49,549,397	32,003,097
Oilseeds & oleaginous fruits	-	-	-	-	4,537	-	664	
Hides and skins	794	-	26,622,293	1,135,529	320,786,550	6,163,520	4,537,589	19,034
Share of Intra-COMESA Ag Exports		38%		12%		13%		20%

Items	Rwanda		Sudan		Eswatini	
	World	COMESA	World	COMESA	World	COMESA
Total Agricultural Exports (in US$)	245,438,788	163,389,725	1,731,110,358	568,974,834	475,288,870	14,170,270
Food and live animals	244,551,532	163,284,384	1,040,556,884	338,015,505	466,647,337	14,170,270
Beverages and tobacco	95,557	77,441	207,776	69,702	8,479,501	-
Animal and vegetable oils & fats	134,076	3,797	11,390,378	334,396	79,308	-
Oilseeds and oleaginous fruits	633,518	-	503	-	-	-
Hides and skins	24,104	24,104	678,954,817	230,555,231	82,725	-
Share of Intra-COMESA Ag Exports		67%		33%		3%

Source: COMSTAT

Annex 10: Composition of Intra vs Extra-COMESA Agricultural Imports in 2018

Commodities	Burundi		Egypt		Ethiopia		Kenya	
	World	COMESA	World	COMESA	World	COMESA	World	COMESA
Total Agricultural Imports (in US$)	122,954,595	39,572,975	12,887,999,479	473,036,987	2,226,757,675	94,626,859	2,417,917,502	642,307,978
Food and live animals	102,457,036	30,368,717	10,245,214,146	385,636,956	1,583,919,074	86,876,607	1,710,741,993	586,733,863
Beverages and tobacco	7,514,397	3,899,377	234,887,339	23,202,048	41,659,250	2,944,113	134,664,989	45,828,645
Animal and veg. oils & fats	12,836,434	5,294,646	920,296,971	196,455	600,145,898	4,710,854	566,618,218	6,471,797
Oilseeds and oleaginous fruits	-	-	231,292	197,782	826,437	-	548,823	548,823
Hides and skins	146,729	10,235	1,487,369,731	63,803,746	207,015	95,285	5,343,479	2,724,851
% Share of Intra-COMESA Ag Imports		32%		4%		4%		27%

Commodities	Rwanda		Sudan		Eswatini	
	World	COMESA	World	COMESA	World	COMESA
Total Agricultural Imports (in US$)	493,864,636	169,620,980	1,899,470,310	171,621,104	346,644,724	1,585,603
Food and live animals	364,934,166	130,025,565	1,756,380,101	147,415,430	289,941,751	1,585,278
Beverages and tobacco	28,515,597	14,554,241	25,980,144	23,811,391	48,066,623	325
Animal and vegetable oils & fats	99,512,470	24,256,690	113,054,339	393,410	8,511,916	-
Oilseeds and oleaginous fruits	300	6	773	673	155	-
Hides and skins	902,102	784,479	4,054,953	200	124,278	-
% Share of Intra-COMESA Ag Imports		34%		9%		0%

Source: COMSTAT

DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of PaulosAsrat (Ph.D.). All sources of materials used for the thesis have been appropriately acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

Abdurahman Mohammed Hussien _____

Name Signature

Saint Mary's University, Addis Ababa, Ethiopia, June 2020

ENDORSEMENT

This thesis has been submitted to Saint Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

PaulosAsrat (Ph.D.) _____
Advisor Signature