KSH 3,000

EFFECTS OF EAST AFRICAN COMMUNITY CUSTOMS UNION ON TRADE AND ECONOMIC GROWTH IN KENYA

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DECLARATION

This research project is my original work and has not been submitted for award of a degree in any other university.

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DEDICATION

I dedicate this project to the Almighty God, who is the source of all knowledge and wisdom. I also dedicate it to my wife Joan and daughter Eunice.

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It is with great gratitude that I take this opportunity to thank the Almighty God for granting me wisdom, strength and good health that made it possible to successfully go through my studies especially in the writing of this research project. I am highly grateful to my supervisors Dr. Perez Onono and Dr. Steve Makori for their selflessness and valuable contribution by way of critique, time, guidance as well as supervision and constant provision of necessary information regarding the study.

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ABBREVIATIONS AND ACRONYMS

ARCH	Autoregressive Conditional Heteroskedasticity
CET	Common External Tariffs
COMESA	Common Market for Eastern and Southern Africa
COMTRADE	Commodity Trade Statistics Database of the United Nations
CU	Customs Union
CUSUM	Cumulative Sum
EAC	East African Community
EACCU	East African Community Customs Union
FDI	Foreign Direct Investment
FTA	Free Trade Area
GATT	General Agreement on Trade and Tariffs
GDP	Gross Domestic Product
GNP	Gross National Product
IMF	International Monetary Fund
MPK	Marginal Product of Capital
NAFTA	North American Free Trade Area
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
RESET	Regression Specification Error Test
ROW	Rest of the World

RTA	Regional Trade Area
SADC	Southern Africa Development Community
SMART	Software for Market Analysis and Restrictions on Trade
WITS	World Integrated Trade Solution
UN	United Nations
UNECA	United Nations Economic Commission for Africa
VECM	Vector Error Correction Model
WTO	World Trade Organization

OPERATIONAL DEFINATION OF TERMS

Volume of trade:	Value of Imports plus exports
Customs union:	Arrangements in regional organization where member countries engage in free trade and impose a common tariff on imports from other non-member countries

ABSTRACT

During the 1990's the world experienced a new wave of regional integration agreements (RIAs) that reached unprecedented proportions. The increasing importance of regional integration agreements and in particular their extraordinary expansions during the 1990's are among the most salient developments of the international trading system and its believed to be a vehicle for the promotion of trade and economic growth. The main driver for increasing number of Regional Integrations Agreements on the African sub-continent is the need to increase regional co-operation by creating a unified economic bloc and building blocs for stronger integration between member countries that will eventually lead to the creation of an African Economic Community. The East Africa Community was resurrected in 1999 which was transformed to a custom union in the year 2005. One of the objectives of the custom union was aimed at improving trade between the member states. To facilitate this, transitional arrangements have been put in place to liberalize inter and intra-regional trade among the partner states. The objectives of this study were to determine the trade effect of the EAC custom union and to analyze the effect of intra-EAC trade on economic growth in Kenya. Time series data for the years 2000 to 2013 was used for analysis. The coefficient of the EAC dummy used to measure the effect of custom union was found to be statistically significant and positive. This finding shows that after the formation of the custom union, the volume of trade in Kenya has increased proportionately by 0.9083 percent. For the effect of the custom union on Kenya intra-EAC trade, the EAC dummy coefficient was also found to be positive and statistically significant. This means that after the formation of the custom union, the GDP of Kenya has proportionately increased by 0.6214 percent. The study revealed that the formation of the EAC Custom Union has had positive effect on trade and economic growth in Kenya. The findings also show that after the formation of the custom union, increase in the volume of trade for Kenya has been realized. Therefore the formation of the EAC customs union is an important step in the process of deepening regional integration among the member states.

CHAPTER ONE

INTRODUCTION

1.1 Background

Regional integration arrangements (RIAs) constitute an increasingly significant feature of the world trade system. Africa and in particular East Africa is not an exception to this phenomenon. According to Organization for Economic Co-operation and Development (OECD), more than half of the total world trade occurs through regional trade agreements. World trade under RIAs grew from 43 percent to 60 percent between 2001 and 2005 (OECD, 2005). World Bank (2000) points out that most countries in the world are members of at least one RIA and at least one third of world trade is covered by RIA provisions. As at June 2014, the cumulative number of Regional Trade Agreements (RTAs) as reported by the General Agreements on Trade and Tariffs (GATT) and World Trade Organization (WTO) was 595. The common feature of all the RTAs is that they are reciprocal trade agreements between two or more partners (World Trade Organization, 2014).

Schiff and Winter (2003) argued that a well-crafted trade agreement can raise efficiency and economic welfare among its members. Free Trade Areas (FTAs) reduce prices of imports from partner states as a result of reduction or phasing off tariffs (Semkunde, 2012). The effective reduction of price changes the patterns of demand which leads to adjustment of trade and output flows, achieved through varying consumer choice and increasing competition among producers. Further when barriers are dropped, markets enlarge giving more efficient producer's entry into countries where prices are

artificially high as a result of duties and other trade barriers (Shinyekwa and Mawejje, 2013).

Viner (1950) found out that regional trade agreements could be either beneficial or harmful to the participating countries. This is because the preferential nature of this trade generates both trade creation and trade diversion effects. Trade creation occurs when two countries within a customs union begin to trade with each other thus higher priced domestic output is replaced by lower priced imports which increases the welfare of member countries, whereas trade diversion occurs when the establishment of a free trade zone pushes the country to change suppliers to the less competitive member countries. After the formation of a custom union, a country switches its purchases from the lower–price to a higher–price country causing a negative efficiency effect (Kwentua, 1988).

African countries have been pursuing regional integration to overcome the fundamental development constraints that are a characteristic of their economies (ADB, 2000). These characteristics include countries of small economic size; low-value primary export products and basic minerals produced; and dependence on imports of intermediate and final goods (African Development Bank, 2000). The main driver for increasing number of RIAs in Africa was the need to increase regional cooperation by creating a unified economic bloc (Kwaku, 1995). The African countries also envisage that RIAs will be the building blocs for stronger integration between countries that will eventually lead to the creation of an African Economic Community (WTO, 2005; UNECA, 2004). According to Kasekende & Ng'eno (2000) and Mistry (2000), regional integration is

expected to increase intra-regional trade which will spur economic growth and development through economies of scale.

East African Community member countries have taken radical steps towards mainstreaming trade into their national development strategies. Kenya's trade policy has evolved through various distinct orientations: Import Substitution Policies in 1960s to 1980s; trade liberalization through Structural Adjustment Policies (SAPs) of 1980s; and Export Oriented Policies of the 1990s, which led to the creation of the Export Processing Zones (EPZs). Kenya's trade regime is guided by market-driven principles of liberalization under the WTO which came into effect in the year 1995. The broad objectives of the Kenya's trade policy include; promotion and expansion of Kenya's exports of goods and services; and development of an efficient and competitive domestic market. The policy also covers e-commerce which is prioritized in the Kenya's *Vision 2030* which seeks to mainstream e-trade within the overall economy (Republic of Kenya, 2009).

Trade plays a significant role in Kenya's economic growth and development through its linkages with all the economic sectors by creating markets through which goods and services get to the consumer. Trade liberalization strategies and programmes to sustain economic growth within the tenets of *Vision 2030*. This included promotion of trade both wholesale and retail, manufacturing, agriculture, financial services, Information and Communications Technology (ICT) and business process outsourcing implementation through the five year medium term plans (MTPs) (Republic of Kenya, 2012).

Kenya's international trade strategies, aimed at ensuring that Kenyan business enterprises especially the Micro, Small and Medium Enterprises (MSMEs) get the necessary support to be competitive and achieve their full potential where greater emphasis was placed on export-driven growth in line with *Vision 2030* (Republic of Kenya, 2009). For the desired growth to be attained and sustained in Kenya there has to be more trading both in the regional and international markets. Kenya must first intensify its regional trade levels while concomitantly exploiting the world market.

The establishment of the EAC custom union is therefore believed to play an important role in the economic growth of Kenya through trade integration. Trade plays an important role in the country's economic growth and development through its linkages with all the sectors of the economy. Trade is one of the pillar anchored in the *Kenya vision 2030* strategies to support the manufacturing and service industries by creating markets through which goods and services get to the consumer thus providing a channel through which trade occurs leading to economic growth.

The increased efforts in the regional economic integration have resulted in the establishment of the EAC, Common Market for Eastern and Southern Africa (COMESA) and the Inter-governmental Authority on Development (IGAD) (WTO, 2005). The deepening and expansion of regional integration and bilateral trade agreements has widened the scope of trade opportunities for Kenyan businesses (Republic of Kenya, 2009). The Kenya government has been working through the ministry of East African Affairs, Commerce and Tourism to promote trade in the EAC region as one of the strategies towards attaining the 10 percent economic growth rate.

1.2 Evolution of the East African Community

Regional co-operation in East Africa dates back to around 100 years. In 1917, Kenya and Uganda formed the first Customs Union, which was joined by the then Tanganyika in 1927 (East Africa Community, 1975). The first attempt towards the formation of East African Community between Kenya, Tanzania and Uganda started in 1967. The objective of the EAC treaty was to strengthen the ties between the members through a common market, a common customs tariff and development of a range of public services like railways, airways, ports and harbors so as to achieve a balanced economic growth within the region (East Africa Community, 1975).

The regional bloc offered a large foreign direct investments with many multinationals being established in the region and corporations that cut across borders of the community (Ng'ang'a, 2006). Problems started creeping in, mainly due to the fact that the union was politically-driven and some of the key decisions depended on the whims of the leaders at that time (Buigut, 2012). The EAC custom union collapsed in 1977 as the three countries could not agree on a number of important economic and political issues (Ng'ang'a, 2006). Kenya demanded more seats than Uganda and Tanzania in key decision-making organs. Difference in the economic systems that is: socialism in Tanzania in the form of *'ujamaa'*, capitalism in Kenya and Uganda practicing both capitalism and socialism (Hazlewood, 1975 and Rothchild, 1968).

In 1993 the three countries undertook a renewed attempt through regional integration by forming the Permanent Tripartite Commission for East African Co-operation. The objective was to accelerate economic growth and development of the Partner States

through attainment of free movement of goods, persons and labour, the rights of establishment and residence and the free movement of services and capital (Ng'ang'a, 2006). Further the countries sought to promote common understanding and cooperation among the nationals for economic and social development and to enhance research and technological advancement to accelerate economic and social development (Ogalo, 2012). The establishment of the 'new' East African Community was signed in November 1999 by Kenya, Uganda and Tanzania and entered into force in July 2000. In June 2007, the Republics of Burundi and Rwanda signed Treaties of Accession to the EAC (East African Community, 2010).

The East African Customs Union Protocol was signed on March, 2004 and it came into effect in the year 2005. The primary objective of the custom union was to enhance trade within the region and in turn, accelerate the economic growth. Under the Custom Union, partner states are expected to adopt a common external tariff and elimination of internal tariffs (Othieno and Shinyekwa, 2011). The EAC custom protocol anticipated that Kenya would pay duty on its goods entering Uganda and Tanzania until 2010 (EAC, 2005). Goods from Uganda and Tanzania were to enter Kenya duty free until January 2010. A harmonized three band CET structure which consists of 0 percent duty on raw materials, 10 percent duty on intermediate goods and 25 percent duty on finished goods was to apply to other countries supplying the EAC member countries with goods. This was aimed at increasing trade flows between partner states in the large market created and to reduce imports from non-partner states. Ultimately, with

increased trade, the economies of the partner states was expected to improve significantly (East African Community, 2005)

The EAC member countries view the formation of the East African Community Customs Union (EACCU) as a way forward for the enhancement of intra-regional trade relations and increased production activities. The East African Community focused on the key areas of free movement of production factors including people, products, knowledge, capital and cooperation in political matters (EAC, 2010). The success of the EAC was ultimately dependent on its ability to promote intra-regional trade through lowering of tariffs and removal of non-tariff barriers (McIntyre, 2005). Within this framework partner countries also resolved to establish amongst themselves a customs union, a common market, a monetary union and a political federation to strengthen, regulate and enhance an accelerated harmonious, equitable and sustained economic development (EAC, 2007).

1.3 Trade Patterns in the EAC Custom Union

The East African Community region's total trade volume has increased substantially as a proportion of the overall world total trade over the last three decades. The major trading partners of the EAC member countries are the European Union, Japan, China, India, United Arab Emirates (UAE) and Saudi Arabia (Ng'ang'a, 2006). The volume of intra-trade in the East African Community customs union has been on an increase especially after the inception of the custom union in 2005 as shown in Figure1.1

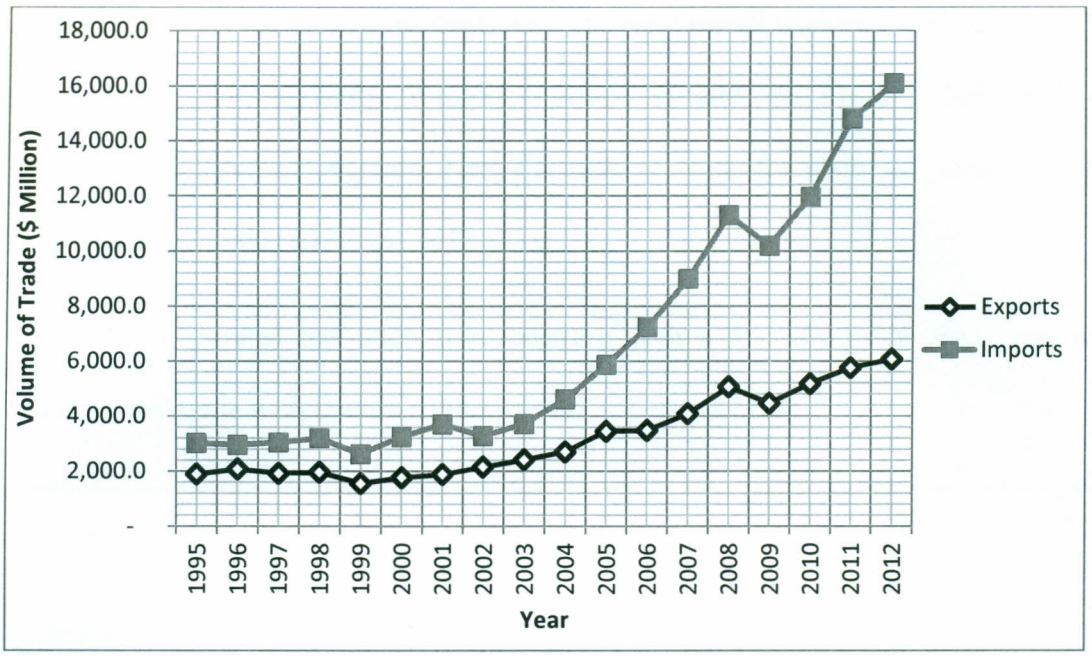

Figure 1. 1: The value of Intra-EAC trade in the region
Source of data: EAC (2013)

Figure 1.1 shows that the volume of intra-EAC trade has been on the increase over the period 1995-2012. It has gradually increased between 1995 and 2002 but picked thereafter to reach an all time high in 2012. The sharp increase in the intra-EAC may be attributed to the revival of the community in 1999. The EAC exports increased from $5.9 billion in 2005 to $11.1 billion in 2010, whereas the imports increased from $11.5 billion to $25.9 billion during the same period (EAC, 2013). The regions volume of trade declined in the year 2007/2008 by approximately 5 percent (EAC, 2009).

The EAC region is a major destination for Kenya's exports. In 2010, the EAC region accounted for 53 percent of Kenya's total exports to the rest of Africa and 24 percent of its total exports to the world. In the same year, Uganda was Kenya's leading export destination absorbing 12.7 percent of total exports, while Tanzania and Rwanda came in

fourth (8 percent) and tenth (2 percent) respectively. Overall, Kenya's trade value in the region has grown markedly from $1.2 billion in 2008 to $1.52 billion in 2010 representing 27 percent increase. Kenya's trade accounts for about 45 percent of the total intra-EAC trade (KIPPRA, 2012).

Figure 1.2 illustrates the trade flow between Kenya and the other EAC member countries and trade with the rest of the world.

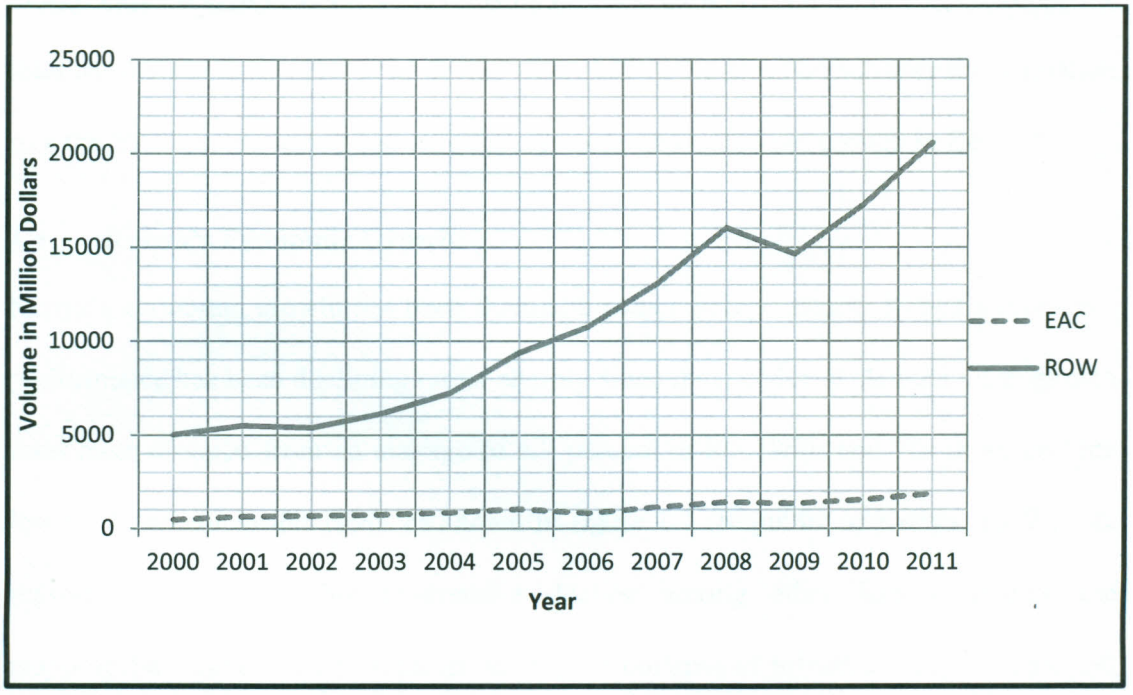

Figure 1. 2: Kenya's Trade with the EAC member countries and the Rest of the World
Source of data: Kenya National Bureau of Statistics (2013)

Figure 1.2 shows that trade between Kenya and the rest of the world (ROW) has been on an increasing trend compared to trade between the EAC member countries even after the formation of the EAC custom union. The value of trade between Kenya and ROW

increased from $5 billion to $20 billion between the years 2000 and 2012. During the same period, volume of intra-EAC trade increased from $ 0.46 billion to $ 1.8 billion (Republic of Kenya, 2012). Trade among the EAC partner states grew from $1.81 billion in 2004 to $3.54 billion by the end of 2009, representing an increase of 96 percent.

This growth can be attributed to among other factors, the establishment of the customs union. However, intra-EAC trade remains low and currently stands at 13 percent of the total trade volume (Muluvi *et al*, 2012) which raises the question whether the formation of a the EAC custom union has an effect on trade and economic growth in Kenya?

1.4 Kenya's Economic Growth

Kenya's economic growth has been fluctuating since independence. Kenya's economic performance has been declining rather sharply since independence. Annual GDP growth rates have dropped from an average of 6.7 percent in the 1960s and 70s to an all-time low of 2 percent in the 1990s as shown in figure 1.3 (Republic of Kenya, 2012). The reasons that explain this progressive decline among other factors include the inappropriate choice of development strategies; collapse of infrastructure; unstable and conflicting macro-economic environment an overheated/uncertain institutional and political environment; decline in regional markets especially after the collapse of the East African Community and poorly managed policy transition (KIPPRA, 2014)

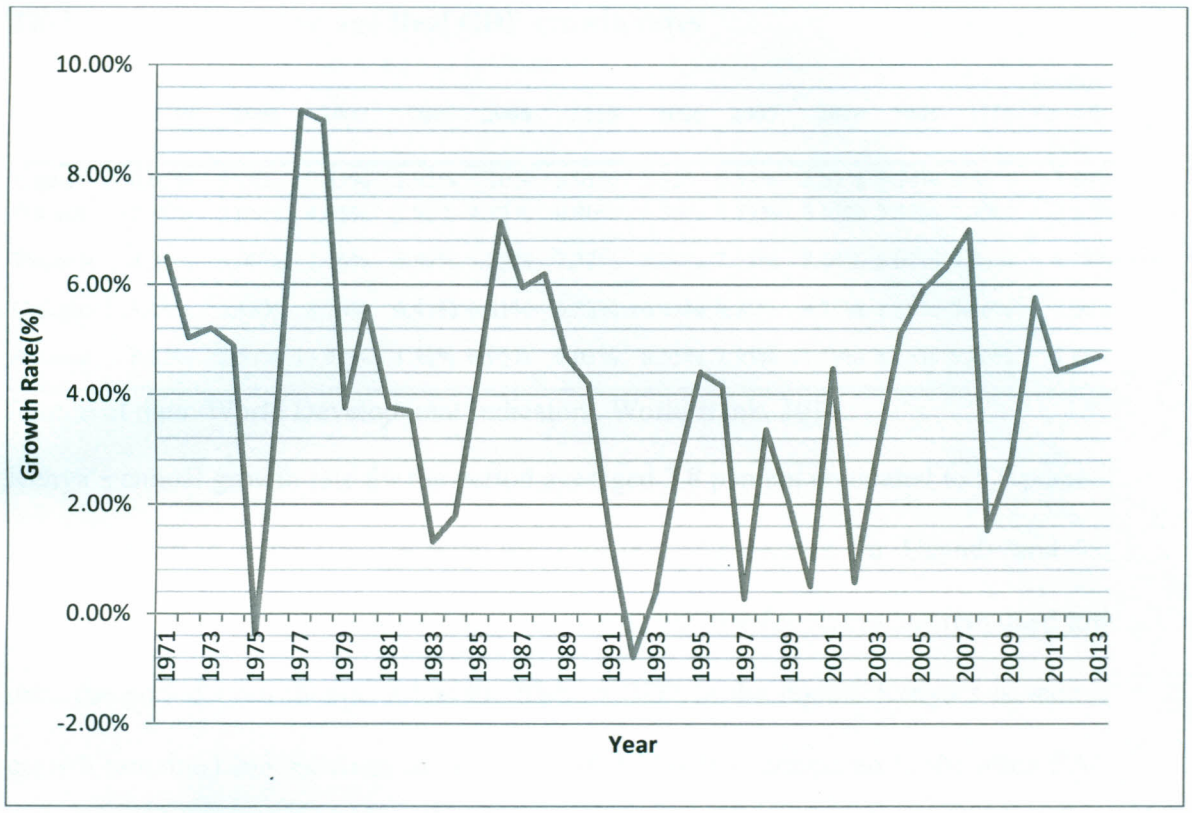

Figure 1. 3: Economic growth patterns in Kenya for period 1971-2013
Source of data: United Nations Statistics Division- National Accounts, 2013

During the initial years after independence, the country achieved high economic growth which later declined (Government of Kenya, 2010). In the year 2000, the IMF and World Bank offered loans to Kenya to prevent a severe economic crisis with GDP growth falling to 0.5 percent (Government of Kenya, 2010). Between the year 2000 and 2010 other than in 2005, Kenya recorded lower annual economic growth than the average for sub-Saharan Africa and compared to its member countries in the East African Community as illustrated in Table 1.1.

Table 1. 1: EAC Average Real GDP growth rates

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average Growth Rate
Kenya	0.60%	3.78%	0.55%	2.93%	5.10%	5.91%	6.33%	6.99%	1.53%	2.74%	5.80%	3.84%
Burundi	-0.86%	2.06%	4.45%	-1.22%	4.83%	0.90%	5.38%	4.79%	5.05%	3.47%	3.79%	2.97%
Tanzania	4.93%	6.00%	7.16%	6.89%	7.83%	7.37%	6.74%	7.15%	7.44%	6.02%	7.04%	6.78%
Uganda	3.14%	5.18%	8.73%	6.47%	6.81%	6.33%	10.78%	8.41%	8.71%	7.25%	5.86%	7.06%
Rwanda	8.32%	8.67%	13.51%	1.45%	6.95%	9.03%	8.55%	7.63%	11.19%	6.25%	6.26%	7.98%

Source of data: World Development Indicators, World Bank, 2014.

Kenya's annual growth rate for the period averaged 3.8 percent compared to 6.0 percent for Sub-Saharan Africa, 6.8 percent for Tanzania, 7.2 percent for Uganda and 7.2 percent for Rwanda. Other than Burundi, the economic rate for Kenya has remained low over the period even though it has the highest GDP in the region. Kenya's economic growth remained low between the period 2000 to 2010 as compared to the other EAC member countries which raises the question whether the formation of the Custom Union has a positive or negative effect?

One of the main objectives of the EAC custom union is the promotion of trade among the member countries but Kenya still trades more with the rest of the world compared to the EAC member countries. The volume of intra-trade between the members of the EAC custom union has been lower than the volume of trade between Kenya and the ROW. This raises the question whether the formation of the EAC custom union has an effect to Kenya's patterns of trade and economic growth?

1.5 Statement of the Problem

Regional trade arrangements are becoming an increasingly popular vehicle for the promotion and creation of trade and enhancing economic growth. The economic growth of Kenya has been fluctuating since independence. Kenya's average GDP growth rate has remained lower than the expected 10 percent envisioned in the *Kenya vision 2030.* The Kenya government has been working through the ministry of East African Affairs, Commerce and Tourism to promote trade in the EAC region as one of the strategies towards attaining the 10 percent economic growth rate.

Various studies on regional integrations have confirmed that trade has either a positive or negative effect on the economy of its member countries. Vamvakidis (1998) found out that rapid economic growth of developing countries opened their markets to free international trade which has stimulated empirical and theoretical literature on the effects of trade on economic growth. Kasekende and Ngeno (2000) found out that regional integrations increased intra-regional trade which in turn led to economic growth and development through economies of scale. McIntyre (2005) further confirmed that the EAC member countries had a potential benefit from trade through lowering of the common external tariffs and forming a regional integration.

Otinga (2009) further found out that the EAC custom union had a positive effect on Kenya's overall trade. Nga'ng'a (2006) found out that RTAs had a trade diversion effects between the EAC member countries, trade between the EAC and the rest of the world had reduced. Buigut (2012) further found out that individual countries in the EAC

custom union had disproportionate impacts on its exports and import trade but the effect of EAC on individual country was not empirically estimated.

There is need therefore to study the effect of EACCU on individual country member's trade as several studies have pointed that RIAs has an effect to member countries. This study therefore estimated the trade effect of the EAC custom union on trade in Kenya and the effect of Kenya's intra EAC trade on its economic growth.

1.6 Research Questions

The study sought to answer the following questions:

i. What is the effect of East African Community Customs Union on trade in Kenya?

ii. What is the effect of Kenya's intra EAC trade on its economic growth?

1.7 Objective of the Study

The general objective of this study is to analyze the effects of East African Community Customs Union on trade and economic growth in Kenya. The specific objectives are:

i. To determine the effect of East African Community Customs Union on trade in Kenya.

ii. To analyze the effect of Kenya's intra trade on its economic growth.

1.8 Significance of the Study

The study will provide empirical information to policy makers for development of trade towards the achievement of the *Kenya vision 2030*. This study will be useful to the

Ministry of East African Affairs, Commerce and Tourism as a source of information for making sound decisions on economic integration. The study will also contribute to the existing literature to other researchers on the development of trade in the East African Community region. It will also stimulate further research on the effects of EAC Custom Union on trade and Economic growth in Kenya. The study will further add knowledge to the academicians by contributing to the existing knowledge in the area of regional economic integration in general and the significance of EACCU in particular.

1.9 Scope and Limitation of the Study

This study focused on the EAC member countries to carry out its objectives. Quarterly time series data for the year 2000-2013 from different sources was used in the data analysis. The GDPs data from all the EAC member countries, volume of trade in Kenya among other variables was used in the study. The period under study captures the years before (2000 to 2004) and after the formation of the custom union (2005 to 2013).

The data for the secondary enrollment and labour participation rate was only recorded once per year in Kenya, therefore for the purpose of data analysis in this study the value was taken as a single value for all quarters.

1.10 Organization of this Study

This research project is organized in five chapters. Chapter one presents the background information about RTAs, the East African Community, overview of trade patterns of the members' states, statement of the problem and objectives of the study. Theoretical literature and the empirical literature review of previous studies are presented in

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a summary of literature review to guide analysis of regional integration; it also presents theoretical literature on regional trade and economic growth. Empirical studies conducted by other researchers with regard to RTAs to determine the trade effects and economic growth due to formation of RTAs and an overview of the literature is also presented at this chapter.

2.2 Theoretical Literature

There are various theories which explain the benefits of a custom union in different regional economic integrations. The theoretical models presented in the following sections have been reviewed and examined and used to address the objectives of this study.

2.2.1 Comparative Advantage Theory

This theory was postulated by David Ricardo (1816). The theory is also known as the classical theory of international trade or the comparative cost theory. According to the theory, a country tends to specialize in the production and export of those commodities in which it has a maximum comparative cost advantage. Similarly a country will import that good which is having relatively less comparative cost advantage (Lipsey, 1960). A country will export the good that uses its abundant factor intensively i.e. under free trade, the capital abundant country is expected to produce relatively more of the capital intensive good than the other country (Feenstra, 2001).

Due to the unrealistic assumptions of the comparative advantage theory, Eli Heckscher (1919) and Bertil Ohlin (1933) came up with the Hecksher-Ohlin theory to address this. The Heckscher-Ohlin model assumes that the countries have identical technologies; different factor endowments, identical and homothetic tastes, free trade, but not free factor movements. According to the model, countries will export products that utilize their abundant factor endowments and import products that utilize the countries' scarce factor endowments. A capital-abundant country will therefore export products from its' capital-intensive industries to labour abundant countries and the labour-abundant countries by importing capital-intensive goods will in return export labour-intensive products to the capital-abundant countries.

The H-O theorem thus demonstrates that even if technology between two countries is the same, they can still engage in trade and have mutual benefits, (Feenstra, 2001). Allocative efficiency is a complementary force and can be achieved by countries specializing according to their comparative advantage (Dollar, 1992).

Trade generates a static improvement in output, but it does not induce any additional economic growth. In other words, openness improves the allocative efficiency of the economy. According to the Ricardian model, as trade becomes more open, the country specializes in the production of the good in which it has a comparative labour-productivity advantage; this product is exported (Dollar, 1992). In the Heckscher–Ohlin model, the country exports the good which uses its abundant factor more intensively. As the economy opens, there is a shift in resources toward the sectors that draw upon the abundant factor and the value of total production increases. An increase in total output,

following a movement from autarky to free trade, can be also found in some models of economies of scale with monopolistic competition (Krugman, 1979).

This study will borrow the assumptions of no barriers to trade, no transport cost, different factor endowments, identical and homothetic tastes from the theory of Comparative advantage and the Heckscher-Ohlin theorem to estimate the trade effects of the EAC custom union on trade in Kenya and the effects of Kenya's intra EAC trade on its economic growth.

2.2.2 The gravity Model.

Gravity modeling has experienced a rising popularity over the years and is a commonly used method of modeling trade flows in international economics today. Its origin goes back to the law of universal gravitation in physics which was developed by Isaac Newton in 1687. The law of universal gravitation describes the gravitational force between two masses in relation to the distance that lies between these two masses (Newton, 1687).

The model is based on Newton's Law of Gravity. It predicts that the flow of people, ideas or commodities between two locations is positively related to their size and negatively related to the distance (Gosh and Yamarik, 2004). According to Tinbergen (1962) and Poyhonen (1963), the model is specified in equation 2.1:

$$trade_{ij} = A\frac{(GDP_iGDP_j)^{b_1}}{(distance_{ij})^{b_2}} \qquad (2.1)$$

Where $trade_{ij}$ is the bilateral trade flows between country i and j, *GDPi* and *GDPj* are Gross Domestic Products (GDP) for country i and j respectively. $Distance_{ij}$ measures the bilateral distance between the two countries and A is a constant of proportionality. Based on the Newton's Law of gravity, the equation predicts that the volume of trade between two economies should increase with their size (proxied by real GDP) and decrease with transaction costs measured by the bilateral distance (Gosh and Yamarik, 2004).

The gravity equation was first applied to international trade flows by Tinbergen (1962). The study followed the following relationship:

$$X_{ij} = A\frac{Y_i^{\alpha}Y_j^{\beta}}{D_{ij}^{\gamma}} \tag{2.2}$$

Where Y_i and Y_j are the respective GDPs for importing and exporting countries, D_{ij} is the distance and A is a constant. The value of (α) refers to the elasticity of the exporting country's GDP, (β) is the elasticity of the importing country's GDP and (γ) is the elasticity of distance corresponding to the universal gravitation equation.

The gravity model is an important empirical tool to help us understand trade and other economic flows in the world economy and have been used as a baseline model for estimating the impact of a variety of policy issues. These include regional trading groups, currency unions, political blocs, patent rights and trade distortions (Anderson and Wincoop, 2003). Based on its strengths and applicability in understanding trade flows, this study used its theoretical foundations and include other factors other than

GDP that affect bilateral trade flows to estimate the trade effect of the EAC custom union to Kenya.

2.2.3 The Solow Growth Model

The Solow model also known as the Solow-Swan model was developed by Robert Solow (Solow, 1956) and T. W. Swan (Swan, 1956). The model focuses on four variables: Output (Y), Capital (K), Labour (L) and Knowledge or the effectiveness of labour (A) and follows the properties of the Cobb-Douglas production function (Romer, 1996)

$$Y_t = F(K_t A_t L_t) \tag{2.3}$$

The model states that at any one time, the economy has some amounts of capital, labour and effectiveness of labour combined to produce output (Y). The model assumes that the function has a constant return to scale in production regardless of its starting point; the economy converges to a balanced growth path where each variable in the model is growing at a constant rate. The model also assumes that the long run growth of output per worker depends only on technological progress whereas short run growth results from either technological progress or capital accumulation (Romer, 1996). The model also assumes savings and investment decisions are exogenous.

Other growth theories and empirical studies have pointed to several different sources of growth including the economies of scale. Starting from the neoclassical models of exogenous growth, factor accumulation (capital or skilled labor) has been recognized as a fundamental source of growth (Krugman, 1993). Endogenous growth theories stress

that technological progress and knowledge transmission over time and across countries can have lasting effects on growth. The market size can be an additional source of growth if increasing returns to scale are present thus, policies aiming to increase the size of the market through trade openness or regional integration may be found to have positive effects on growth (Ades and Glaeser, 1999).

According to the early growth models, such as the Harrods–Domar model (Harrod, 1939; Domar, 1946), where capital is the sole factor of production, trade liberalization has positive growth effects. However, in neoclassical growth models for closed economies, the steady rate of growth of output is completely exogenous and it is equal to the rate of growth of the input that grows exogenously at the steady state in addition to the equally exogenous rate of technological progress (Solow, 1956).

This study used the assumptions of continuous time, single good produced with constant factors of production and a production function, with physical capital, K, labor, L and knowledge or technology, A from the Solow growth model to analyze the effect of Kenya's intra trade in the EAC Custom Union on its economic growth.

2.3 Empirical Literature

Henrekson *et al.* (1997) tested the growth effects of European integration in both the European Community (EC) and the European Free Trade Agreement (EFTA). Using the gravity model, the study found out that growth rate had increased between 0.6 to 0.8 percent by EC/EFTA membership.

Rehman (2003) used panel data estimation techniques and the generalized gravity model to analyze the trade of Bangladesh with its major partners. The results showed that Bangladesh's trade was positively determined by the size of economies, per capita gross national product (GNP) differential of the countries involved and openness of the trading countries.

Gosh and Yamarik, (2004) used extreme bound analysis to test the robustness of the trade creation hypothesis. Extreme bound analysis provides a more rigorous test of specification uncertainty than traditional econometric theory by incorporating prior information and using systematic approach to testing the fragility of coefficient estimates. Using least squares regression, where all weight was attached to the sampling distribution, it was found that most RTAs are trade creating. The findings imply that the trade creation effects of RTAs represent prior beliefs much more than sample information. The findings, however, were premised on what is called a diffuse or non-informative prior where all variables are considered free. Yet, as the name suggest, a non-informative prior does not control for the prior beliefs of the researcher.

McIntyre (2005) used simulation analysis to gauge the potential trade impact of the East African Community customs union in Kenya. The study examined the trade linkages among the member countries of the EAC and the extent to which the introduction of the EAC common external tariff liberalized their trade regimes. The World Integrated Trade Solution Software-Software for Market Analysis and Restrictions on Trade (WITS-SMART) was used to assess the effects of specific changes in tariffs or other

trade taxes on trade flows, revenue, prices and measures of welfare at a given point in time.

The results showed that the EAC Common External Tariff and the lowering of tariffs had a potential positive impact on trade largely from trade creation. Lower tariffs result in lower import prices and increased flows of cheaper imports that improve consumer welfare. The study proved that being a member of the EAC has an effect on a countries economy on welfare, trade or economic growth. However, the study did not draw any conclusions on the potential welfare impact of the customs union. The findings did not explain the effects of EAC custom union on trade and economic growth in Kenya. Simulation method of data analysis is a poor approach since it does not use real values, thus the results from McIntyre (2005) may not be correct.

Ng'ang'a (2006) examined the effects of the establishment of regional trade agreements (RTAs) among developing nations on trade, welfare and production activities with a focus on the "new" East African Community (EAC) formed between Kenya, Uganda and Tanzania. The essential idea of the study was to identify the effect of the RTA on the direction, volume and composition of trade between the members of the EAC and non-members. The study reviewed trends in regional trade flows and the extent to which regional integration has affected trade patterns and productive activities. Using a gravity model augmented with several sets of dummy variables, the study estimated the effect of the EAC-Regional Trade Agreement on trade and welfare on members and non-members.

The findings showed that intra-bloc trade was on average 18 times higher than what would be expected in the absence of the agreement. However, this trend does not seem to be influenced by the official lowering of trade barriers with the formation of the EAC. Model results also showed that a decline in bloc exports to the rest of the world suggesting that the bloc has trade diverting tendencies. The study concluded that EAC did not experience a change in its intra bloc trade and appears to have reduced the overall trade with the world.

Rehman *et al.* (2006) applied the augmented gravity model to identify trade creation and trade diversion effects originating from the South Asian Association for Regional Corporation (SAARC), South Asian Preferential Trading Agreement (SAPTA) and the members of the Regional Trade Agreement (RTA). The study adopted the panel data approach with country pair-specific and year-specific fixed effects; it noted the expected signs for all the gravity variables and dummies. The study found out a significant intra-bloc export creation effect in SAPTA, but there was evidence of a net export diversion effect as well. The findings showed that Bangladesh, India and Pakistan gained from joining the RTA.

Haddoud *et al* (2006) carried out a study on the impact of Regional Trade Agreements on Northern African countries foreign trade and economic welfare, evidenced from Algeria and the European Union Association Agreement over a ten year period (2000-2009). The study used both the ex-ante and ex-post analysis, where the previous was based on observations of trade movements and trade indicator calculations whereas the latter was based on both the Lloyd and McLaren model and qualitative evaluation using

a Vinerian Approach; computes the changes in trade volume, terms of trade and economic welfare due to the formation of the agreement. The findings showed that the agreement had positively influenced Algerian trade and led to trade creation in most of the sectors especially the import industries. Moreover, the Algerian economic welfare increased after the implementation of the association agreement.

Otinga (2009) investigated the impact of international trade on Kenya's economic growth by examining the role of exports vis-a-vis other components of the GDP over a span of twenty two years. The effect of imports on economic growth was also examined. The study adopted a linear model to examine the impact of both public and private investment, government expenditure, foreign aid, imports and exports to the GDP. The findings showed that growth in real exports does cause real GDP growth. Moreover, it was found out that Government expenditure and foreign aid were positively correlated with the GDP and statistically significant; the results of the study are supportive of the export led growth strategy which postulates that exports lead to economic growth. The study concluded that government should ensure export enhancing policies are strengthened with a view of promoting and sustaining Kenya's economic growth. Consequently, the basket of imports should be reviewed in order to realize the full benefits of international trade.

Othieno and Shinyekwa (2011) used the World Integrated Trade Solution Software-Software for Market Analysis and Restrictions on Trade (WITS-SMART) simulation to study the effects of the phased out tariff reduction on Uganda in terms of trade, welfare and revenue for the period before and after 2005. The study employed the SMART

model because of its strength in analyzing the tariff effect of a single market on disaggregated product lines. The analysis captured the trend of tariff reduction since the inception of the EACCU between Uganda and the rest of the EAC partner states whose products enjoyed zero tariffs. The results indicated that Uganda government would incur a tariff revenue loss which need not be ignored given the fluctuating growth in the general trade tax revenue. The study also showed that there was a significant increase of traded goods of the selected products during the same period mainly due to reduction of tariffs. Based on the findings from the study, some questions become eminent; does being a member of the EACCU have an effect on its trade or not?

Buigut (2012) used a modified gravity model to estimate the trade effects of the East African Community (EAC) customs union on individual member countries. Free Trade Areas countries tend to share similar economic characteristics that enhance net economic welfare and trade among themselves. The study was carried on bilateral import data for seventy trading partners for the EAC bloc in the period 1996 to 2009. The findings showed that the customs union had generated disproportionate impacts on intra block exports and imports for individual member countries. Kenya, Uganda and Rwanda had seen a significant increase in their intra EAC exports, while Kenya and Tanzania had seen a significant increase in their intra EAC imports. Based on these findings, there is evidence that the effects of the EAC custom union is significant and needs to be investigated from Kenyan perspective. Due to data unavailability, the analysis was limited to the year 1996 and 2009 and hence captured only the five year transition period (2005-2009). Noting that internal tariffs were not completely removed

till the end of the analysis period, the results provided in their findings could have possibly not captured the full effects of the customs union and most likely understated it. The study did not further capture individual country effects of the custom union.

Mjema *et al*, (2012) analyzed the determinants of trade flows between Kenya and Tanzania. The gravity model was deployed for this purpose due to its strengths and widespread acceptability to estimate the effects of the EAC custom union for the period 1999 to 2010. The model examined the determinants (mainly GDP, size of population, distance and other socio-economic factors) that could influence the flow of trade between Tanzania and Kenya. The economic size of a country (GDP) and geographical distance were the two basic factors determining the bilateral trade flow which was adopted in the model for this study. The findings suggests that Tanzania trade can be characterized as a country which depends more on exporting of quantity-based standardized products that are sensitive to the overall market size instead of exporting quality-based high value-added products that are sensitive to the trading partners' income levels and the geographical distance.

Shinyekwa and Mawejje (2013) examined factors that determine Uganda's trade flows and compared the impact and performance of the different trade blocs on Uganda's trade patterns and flows. The objective of the study was to determine whether Uganda's trade is getting more integrated in the East African Community region or is it still dominated by other trading blocs, namely the European Union (EU), Asia and Common Market for Eastern and Southern Africa (COMESA). The study used gravity model to analyze data extracted from COMTRADE for the period 2001 – 2009. The findings

show that there was a strong relationship between belonging to a trading bloc and trade flows. The Uganda's import and export trade flows have adjusted to the gravitational forces of the EAC custom union during the process of the integration.

2.4 Overview of Literature

The H-O theorem demonstrates that even if technology between two countries is the same, they can still engage in trade and have mutual benefits (Feenstra, 2001) thus from the EAC member countries they are assumed to still be able to trade though they have similar technology. The gravity model predicts that the volume of trade between two economies increase with their size proxied by GDP and decrease with its transaction costs measured by the bilateral distance. The gravity model is an empirical tool to help us to understand trade and other economic flows in the world economy. The model has been used in estimating the effect of various economic policy issues, RTAs and currency unions. The study borrowed some of its theoretical foundations in to carry out its objectives.

The theory of the Solow growth model states that at any one time, the economy has some amounts of capital, labour and effectiveness of labour combined to produce output (Romer, 1996). The theoretical foundations of these theories were used in the study to address its research questions.

From the literature review, all studies have explained the effects of RTAs in member countries. McIntyre (2005) and Othieno and Shinyekwa (2011) have both used simulation analysis; which does not use real figures thus the results obtained may be

erroneous and cannot be used to make conclusions and policy recommendations. Shinyekwa and Mawejje (2013) used the gravity model to compare the effects of different trading blocs in Uganda; based on the finding, belonging to RTAs has a strong relationship to trade flows. Buigut (2012) using the panel data to estimate the trade effects in each member country of the EAC custom union confirmed that there was an effect in trade on the member countries.

Gosh and Yamarik (2004) provided a strong theoretical foundation of the gravity model which was borrowed in this study to analyze the effect of the EACCU. Mjema *et al,* (2012) examined the determinants of trade using the gravity model between Tanzania and Kenya. The study also gave more strengths and theoretical foundations of the gravity model; because the model has worked well in other similar situations, it seems versatile to be applied in the Kenyan situation to estimate the effects of the EAC custom union on trade and economic growth. Ng'ang'a (2006) examined the effects of the establishment of RTAs among developing nations and found out that intra-bloc trade has improved, this study has extended the period of study to year 2013 to cover the period after the formation of the custom union.

Otinga (2009) found out that international trade has a positive effect on economic growth in Kenya; the study was done using descriptive method and recommended policies on promoting trade, its findings were used as point of reference in this study. Rehman *et al.* (2006) found out that members of the SAARC gained after joining the RTA. Based on these findings the study borrowed the theoretical foundations of the

gravity model and check out whether same effects replicate in the EAC member countries after the formation of the EACCU.

From all the aforementioned studies, there is confirmed evidence that belonging to RTAs has an effect on trade patterns of member countries as well as its economic growth. There is however lack of evidence concerning a study on the trade effects of the East African Community Customs Union and intra-EAC trade on economic growth in Kenya.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the methodology to be used in the study. It describes the data types and sources and a specified model to be used in the study to determine the effects of East African Community Customs Union on trade and to analyze the effects of the customs union on economic growth in Kenya. It also provides sources of data and method of analysis to be used.

3.2 Research Design

The study sought to analyze the effect of the intra-EAC trade on trade and economic growth in Kenya. Time series data and non-experimental research design was adopted in this study. Regression analysis was used to capture causal relationship between variables and to measure the effect of intra-EAC trade and the formation of the custom union.

3.3 Theoretical Framework

The methodology of the study was based on the theories of gravity model and the Solow growth models to address the objectives of the study. To estimate the effect of East African Community Customs Union on trade in Kenya, the study used the gravity model. The gravity model states that the volume of trade can be estimated as an increasing function of the national incomes of trading partners and a decreasing function of the distance between them (Ng'ang'a, 2006).

Its origin goes back to the law of universal gravitation in physics which was developed by Newton (1687). The law of universal gravitation describes the gravitational force between two masses in relation to the distance that lies between these two masses (Newton, 1687). The Newton's gravity model theory states that the flow of people, ideas or commodities between two locations is positively related to their size and negatively related to the square of distance (Gosh and Yamarik, 2004).

$$trade_{ij} = A\frac{(GDP_iGDP_j)^{b_1}}{(distance_{ij})^{b_2}} \quad (3.1)$$

Where $trade_{ij}$ is the bilateral trade flows between country i and j, GDP_i and GDP_j are Gross Domestic Products (GDP) for country i and j respectively, $distance_{ij}$ measures the bilateral distance between the two countries and A is a constant of proportionality. Based on the Newton's Law of gravity, the equation predicts that the volume of trade between two economies should increase with their size (proxied by real GDP) and decrease with transaction costs measured by the bilateral distance (Gosh and Yamarik, 2004). Bergen (1962) and Poyhonen (1963) also pioneered the use of the gravity concept in economic relationships.

The Solow growth model theoretical foundation was used to analyze the effect of Kenya's intra-EAC trade on its economic growth. The model concludes that output is a function of labour, capital and knowledge. The model also assumes that an economy will always work itself to a steady state where each variable in the model will grow at a constant rate and it follows the properties of the Cobb-Douglas production function (Romer, 2006) as shown in equation 3.2.

$$Y = f\ (K, L, A) \tag{3.2}$$

Where Y is the output, K, L & A is the level of capital, Labour and effective of labour or knowledge respectively. The model also assumes that countries that are below their steady state level of the GDP per-capita should grow faster and countries that are above the steady state level of GDP should grow slower so as to approach the steady state (Feenstra, 2001).

3.4 Empirical Model

This study adopted and extended the model by Mjema *et al.* (2012) in log-linear form and included other variables that affect bilateral trade flows to determine and analyze trade effects in Kenya from the creation of the EAC Customs Union. The stochastic form of the equation as shown in 3.3 was used to address objective one of the study.

$$lnTD_{ij} = \beta_0 + \beta_1 lnY_K + \beta_2 lnY_B + \beta_3 lnY_U + \beta_4 lnY_T + \beta_5 lnY_R + \beta_6 lnEAC_{ij} + \mu_{ij} \tag{3.3}$$

Where TD_{ij} is the volume of trade between Kenya and the EAC member states, Y_K, is the GDP for Kenya, Y_B, Y_U, Y_T & Y_R are the GDPs for Burundi, Uganda, Tanzania and Rwanda respectively. An EAC dummy variable is introduced to capture the two periods before and after the formation of the custom union. EAC_{ij} variable takes the value zero when the period is the year 2000 to 2004; period before the custom union and one when the year is 2005 to 2013; the period after which the custom union came into effect, the ε_{ij} represent the error term. The dummy variables are usually introduced to take into

account other factors that affect bilateral trade, to avoid perfect collinearity and also to capture the time fixed effect (Buigut, 2012).

To answer the second objective, the study used the model developed by Seetenah (2008) and extended it to include other factors that affect the formation of the EACCU in its log-linear form as follows:

$$lnY_t = \alpha_0 + \alpha_1 lnEDU + \alpha_2 lnLAB + \alpha_3 lnTRADE + \alpha_4 lnXMGDP + \alpha_5 lnEAC + \mu_{ij} \quad (3.4)$$

Where Y_t is the GDP at time t for Kenya measured in real gross values, α_0 is the constant term, α_1, α_2, and α_3 represent the elasticity of output relative to education (EDU), labour (LAB), *XMGDP* represents the ratio of export plus import to GDP and volume of trade (TRADE) to EAC member states and the μ_{ij} represent the error term. The value of XMGDP measures the openness and the dummy EAC captures time effects of the formation of the EACCU.

3.5 Description and Measurement of Variables

a) Trade, T

This is the total value of imports and exports within Kenya to the member countries in the custom union measured by the reported values in US dollars.

b) Gross Domestic Product, GDP

GDP_i is the quarterly gross domestic product for Kenya and GDP_j is the individual gross domestic product of the other EAC member countries at a given time measured in country statistical data in US dollars.

c) East African Community, EAC

This is a dummy variable which takes the value of one if the period is between 2005 and 2013 and zero when the period is between 2000 and 2004.

d) Education, *EDUC*

This is the level of gross enrolment in secondary school. This is measured as the total enrollment in secondary education, regardless of age.

e) Exports plus Import to GDP ratio, *XMGDP*

This is the ratio of exports plus imports to GDP for Kenya measured in by the reported values in US dollars in time t.

f) Labour, *LAB*

This is the labour force and it is measured by the labour participation rate. This comprises the proportion of the population aged 15- 64 who are assumed to be economically active.

3.6 Data Types and Sources

The study used quarterly time series data for the period 2000 to 2013. The data was drawn from different sources and compiled to suit the analysis. Trade flow data was extracted from the Commodity Trade Statistics (COMTRADE), UN data, World Integrated Trade Solutions (WITS), Organization for Economic Corporation and Development (OECD) and World Trade Organization (WTO) databases. The Kenya's Economic surveys from the Kenya National Bureau of Statistics and the Central bank of the EAC partner states data was also used.

3.7 Time Series Properties

Various diagnostic tests were performed to check the reliability of the model and the series used.

a) Test for Stationarity

Testing for stationarity is a necessary step to check if one is modeling empirically meaningful relationships. If the variables have different trend processes, they cannot have a long run relationship and thus one cannot model for a long run relationship. Therefore for forecasting, nonstationary time series may be of little practical value. This study used the Augmented Dickey-Fuller (ADF), Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and Phillips-Peron unit roots test to check for stationarity of the series used.

b) Test for cointergration

The study also tested for cointegration between the variables used to determine whether there is long run relationship. The Johansen test for Cointegration was used to test for this property.

c) Test for autocorrelation

Durbin Watson and Breusch-Godfrey LM test was used to test for presence of autocorrelation. For the Breusch-Godfrey LM test, the null hypothesis of serial correlation (autocorrelation) was tested at 5 per cent level of significance. A probability value which is less than 5 percent leads to the rejection of the null hypothesis and accepting the alternative of no serial correlation. For Durbin-Watson statistic, an estimate of 2.00 means that residuals are not auto correlated.

d) Other Tests

The study also conducted other necessary tests such as Normality Tests of the series and for heteroskedasticity of the stochastic term. According to Greene (2002), presence of heteroskedasticity affects the standard errors and not the coefficients. Ramsey Regression Specification Error Test (RESET) and the Cumulative Sum (CUSUM) test were also done on the model of estimate. Adjusted R^2 and F statistics will also be utilized to evaluate parsimony, stability and reliability of each model (Wooldridge, 2003)

3.8 Data Analysis

To achieve the objectives of this study, quarterly time series data was obtained for the period 2000 to 2013 from various sources including Kenya National Bureau of statistics (KNBS), East African Community (*statistical abstracts)*, World Bank and the International Labour Organization data bases which was edited and sorted for completeness and accuracy.

The data collected included: Gross domestic product for Kenya, Burundi, Uganda, Tanzania and Rwanda represented as GDP_K, GDP_B, GDP_U, GDP_T and GDP_R respectively; secondary school enrolment rate in Kenya *(EDU)*; Labour participation rate in Kenya *(LAB)*; volume of trade between Kenya and other EAC member countries *(TRADE, Y_TD)*; ratio of trade volume to GDP in Kenya *(XMGDP)*. The EAC as a dummy variable was used in the study to estimate the time effect of the custom union. Logarithm form of the data was used in the study. The basic data used are presented in appendix I

To answer objective one, equation 3.3 from chapter three was estimated. The elasticity of EAC dummy was found to be statistically significant and was greater than zero. The finding shows that after the formation of the custom union, the volume of trade traded in the region has increased proportionately by 0.9083 percent.

To answer objective two, equation 3.4 form chapter three was estimated. The elasticity of EAC dummy was found to be positive and statistically significant. This means after the formation of the EAC custom union, the GDP for Kenya has increased by 0.6214 percent implying that the more the economy is open to international trade, the higher will be its economic growth rate.

CHAPTER FOUR

EMPIRICAL FINDINGS

4.1 Introduction

This chapter presents the empirical results of the study. Data descriptions, diagnostic tests for all variables and the regression residuals test. The estimation results are also discussed in this chapter.

4.2 Time Series Properties

4.2.1 Stationarity Test

Testing for stationarity is a necessary step to check if the study is modeling empirically meaningful relationships. When variables have different trend processes, they cannot have a long run relationship and it may not be possible to be modeled. Therefore forecasting non-stationary time series may be of little practical value. For the purpose of this study, all variables were tested for the presence of unit root. This study used the Augmented Dickey-Fuller (ADF), Philips-Perron Tests and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) to check for stationarity of the series used as presented in Table A.6 in Appendix I.

LnTRADE, lnGDPU, lnGDPT, lnGDPR, lnGDPK, lnEDU, lnTRADE and *lnXMGDP* were found to be stationary at first difference; the series are therefore said to be integrated of order one I (1). *LnGDP* and *lnLAB* was found to be stationary at level; the series are therefore said to be integrated of order zero I (0) and *lnGDPB* was found to be stationary at lag two. The stationary series was estimated to answer the objectives of this study.

4.3 Diagnostic Tests

For the purpose of this study, two equations were estimated as shown in equations 3.3 and 3.4 in chapter three. In order to determine the effect of EACCU, equation 3.3 was estimated. To determine the effect of intra-EAC trade on economic growth in Kenya equation 3.4 was estimated. The dummy of the regional integration takes the value one in the years 2005 to 2013 and zero in the years 2000 to 2004. The Ordinary Least Square approach was used to estimate the equations.

Before reporting the regression results, various tests were carried out to ascertain the reliability of the model used. The serial correlation tests, Heteroskedasticity tests, RESET and the stability tests were carried out in the model. Adjusted R-squared and F-statistics were utilized to evaluate parsimony, stability and reliability of the model used (Wooldridge, 2003).

4.3.1 Serial Correlation test results

The presence of multicollinearity may cause the Ordinary Least Squares (OLS) estimators and their standard errors to be sensitive to small changes in the data. It may also results to t-statistic of one or more coefficients to be statistically insignificant though the overall measure of fit (R-squared) is high (Gujarati, 2007). For the purpose of this study Breusch-Godfrey LM test was used to test for this property. A probability value of less than 5 percent leads to the acceptance of the null hypothesis of presence serial correlation and rejecting the alternative of no serial correlation.

4.3.3 Stability Test

The test is used to test whether the model estimated is stable or not. The CUSUM test is based on the cumulative sum of the recursive residuals; this option plots the cumulative sum together with the 5% critical lines. The test finds parameter instability if the cumulative sum goes outside the area between the two critical lines (Brown *et al*, 1975).

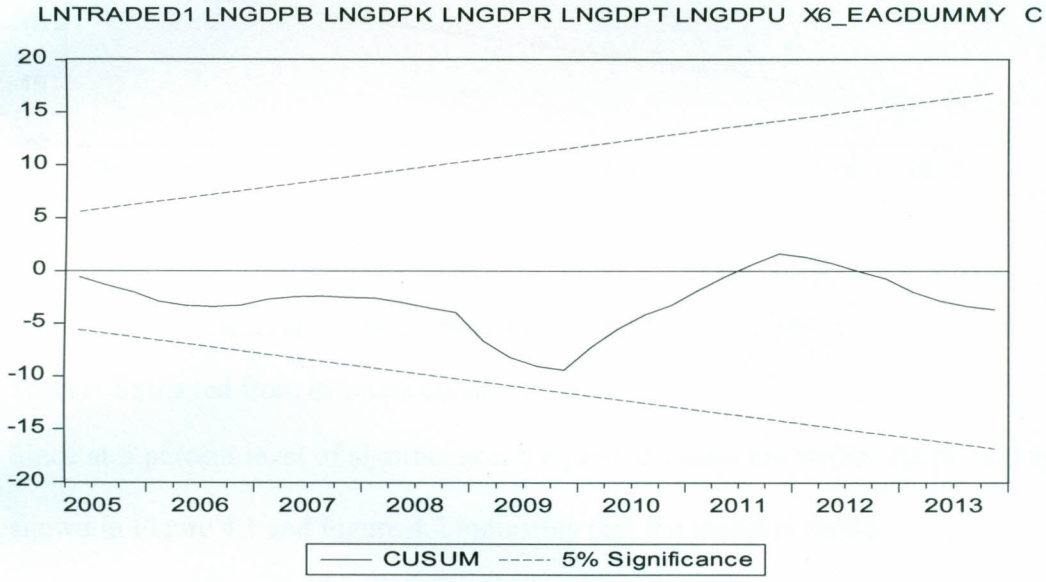

Figure 4. 1: Cumulative Sum Plots for Model I

Source: Extracted from estimate equation

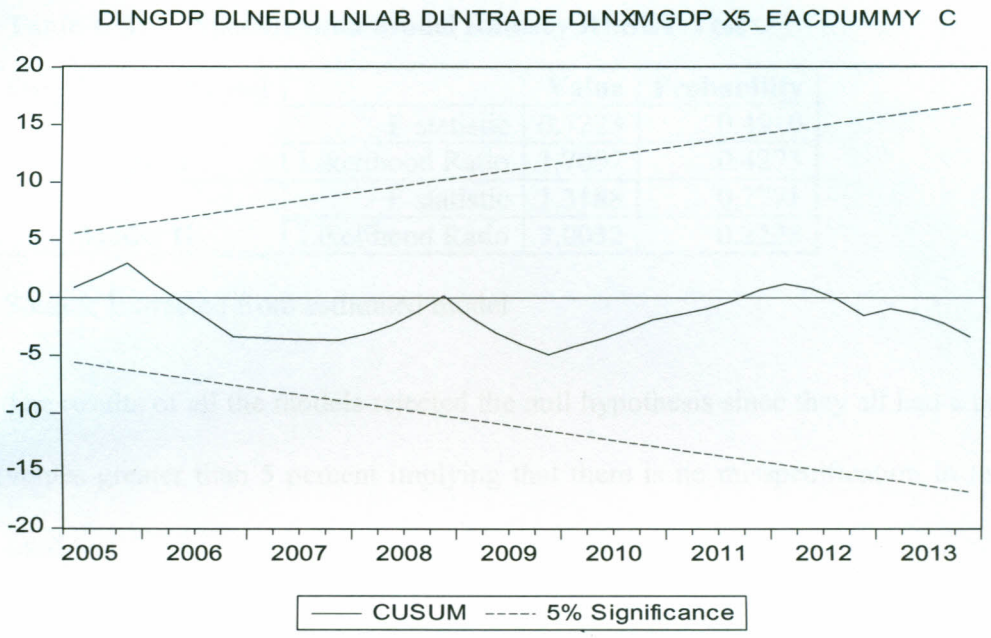

Figure 4. 2: Cumulative Sum Plots for Model I

Source: Extracted from estimate equation

Since at 5 percent level of significance, the plotted values are within the plotted area as shown in Figure 4.1 and Figure 4.2 indicating that the model is stable.

4.3.4 Omitted Variables Test

Regression Specification Error Test (RESET), was used to test for omitted variables, incorrect functional form of the model and correlation between the independent variables and the error term. The null hypothesis states that there is no misspecification in the model. A small probability value of less than 5% of the test leads to the rejection of the null hypothesis.

Table 4. 3: Specification Model Ramsey RESET Test

Specification Model		Value	Probability
Model I	F-statistic	0.7223	0.4910
	Likelihood Ratio	1.7007	0.4273
Model II	F-statistic	1.3188	0.2771
	Likelihood Ratio	3.0032	0.2228

Source: Extracted from estimated model

The results of all the models rejected the null hypothesis since they all had a probability values greater than 5 percent implying that there is no misspecification in the models used.

4.4 Empirical Results

4.4.1: Effect of East African Community Customs Union on trade in Kenya

In order to determine the effect of EACCU on trade in Kenya for the period 2000 to 2013, equation 3.3 from chapter three was estimated. The variables in the model are: volume of trade *(Y_TD)* as the dependent variable; the Gross Domestic Products (GDPs) for EAC member countries represented by *GDPK*, GDP_B, GDP_U, GDP_T and GDP_R for Kenya, Burundi, Uganda, Tanzania and Rwanda respectively as the independent variables. The dummy of the regional integration takes the value one in the years 2005 to 2013 and zero in the years 2000-2004. The Ordinary Least Square approach is used to estimate the equation.

Table 4. 4: Regression results for the effect of East African Community Customs Union on trade in Kenya

Dependent variable: Log TRADE			
Independent Variable	**Coefficient**	**Z**	**P-Statistic**
First difference Log of GDP_B	-3.0915**	-2.59	0.010
First difference Log of GDP_U	2.3705**	2.46	0.014
First difference Log of GDP_T	10.8159**	-7.94	0.000
First difference Log of GDP_R	5.7140**	3.16	0.002
First difference Log of GDP_K	2.1476***	2.31	0.049
EACDUMMY	0.9083**	2.83	0.005
Constant	0.0039**	0.80	0.430
Adjusted R-squared	0.551172	F-statistic	4.991077
Durbin-Watson statistic	2.241661	Probability(F-statistic)	0.000031

The asterisk shows the level of significance: (**) 5% (***) 1%

Source: Extracted Estimated output response equation

The value of adjusted R square is 0.5512 which shows that 55 percent of the variations are explained within the model and the remaining 45 percent of the volume of trade variations is explained by exogenous variables. The probability of F-statistic is 0.00003; therefore the null hypothesis that the coefficients are equal to zero is rejected. The Durbin Watson Statistic (2.2) shows that the variables do not suffer from serial correlation.

The coefficient of GDP for Uganda was positive and statistically significant. This means that with every one percentage change in the economic growth of Uganda, the volume trade in Kenya will increase proportionately by 2.3705 percent. These findings are consistent with Othieno and Shinyekwa (2011) which found out that Uganda was Kenya's leading export destination absorbing 12.7 percent of total exports.

The coefficient of the GDP of Burundi was found to be statistically significant and had a negative sign which means with every one percentage change in the growth rate of Burundi, the volume of trade in Kenya will reduce by 3.0915 percent.

The coefficient for the GDP of Tanzania had a positive sign and it was statistically significant. This means that with every one percentage change in economic growth for Tanzania, the volume of trade in Kenya will increase proportionately by 10.8159 percent. These findings are consistent with Mjema *et al* (2012) which found out that trade between Kenya and Tanzania had improved.

The coefficient for the GDP of Rwanda was statistically significant and had a positive sign. This means that with every one percentage change in economic growth of Rwanda, the volume of trade in Kenya will increase proportionately by 5.7140 percent. The findings were consistent with Buigut, (2012) which found out that the volume of trade between Kenya and Rwanda had improved.

The coefficient for the GDP of Kenya was statistically significant and positive at 1% level of significance. This means that with every one percentage increase in GDP for Kenya, its volume of trade will increase proportionately by 2.1476 percent. These findings are consistent with Otinga (2009) which found out that the GDP and Trade are positively correlated.

The coefficient of the EAC dummy variable was found to be positive and statistically significant showing that after the formation of the Custom Union in the year 2005, volume of trade in Kenya has increased proportionately by 0.9083 percent. The findings

were consistent with Buigut (2012) which found out that volume of trade in Kenya increased due to the formation of the EAC Custom Union. Othieno and Shinyekwa (2011) also found out that to realize more trade in the region effective elimination of non-tariff barriers was necessary to promote trade in the region.

4.4.2: Effect of Kenya's intra EAC trade on its economic growth

To determine the effect of intra-EAC trade on economic growth in Kenya for the year 2000 to 2013, equation 3.4 from chapter three was estimated and the findings are presented in Table 4.7.The variables used in the estimation are: Gross Domestic Product (*GDP*) for Kenya as the dependent variable and *EDU, LAB, TRADE, XMGDP* and EAC_{dummy} as the independent variables.

Table 4. 5: Regression results for the effect of Kenya's intra EAC trade on its economic growth

Dependent variable: Log GDP			
Independent Variable	**Coefficient**	**Z**	**P-Statistic**
Log of EDU	2.1724**	-6.53	0.000
Log of LAB	11.9048**	2.42	0.016
Log of XMGDP	1.2238***	2.02	0.049
Log of TRADE	0.9961**	25.64	0.000
EACDUMMY	0.6214**	2.67	0.008
Constant	1.4657**	-2.62	0.043
Adjusted R-squared 0.651841	F-statistic		7.954066
Durbin-Watson statistic 2.057281	Probability(F-statistic)		0.000000

The asterisk shows the level of significance: (**) 5% (***) 1%

Source: Extracted Estimated output response equation

The value of adjusted R squared is 0.6518 which indicating that 65 percent of the variations are explained within the model and the remaining 35 percent of the GDP

variations is explained by the exogenous variables. The Durbin Watson statistic (2.1) shows that there is no serial correlation between variables in the model. The probability of F-Statistic is 0.0000, which leads to rejection of the null hypothesis that the coefficients are not jointly equal to zero.

The coefficient of secondary enrollment rate was positive and was found to be statistically significant. This means that with a one percentage change in secondary enrollment rate, the level of GDP will increase by 2.1724 percent. The findings are consistent with Stevens, (2003) which found out that education is anchored to economic growth of any economy. Endogenous growth theory postulates that countries which invest heavily in human capital formation enjoy higher economic growth (Romer, 1996).

The coefficient of labour participation rate had a positive sign and was statistically significant. This means that with every one percentage change in human capital, the output of GDP will increase proportionately by 11.9048 percent. The findings are consistent with Pissarides, (2005) which concluded in its study that human capital and economic growth enhances growth.

The coefficient of the ratio of exports plus imports to GDP (*XMGDP)* had positive sign and was statistically significant at 1% level of significance. This means that with every one percentage change in openness to trade, the volume of GDP will increase proportionately by 1.2238 percent. The findings are consistent with Kasekende and Ng'eno (2000) in their study found out that that regional integration will increase intra-

regional trade which will spur economic growth and development through economies of scale.

The coefficient of trade had positive sign and was statistically significant. This means that with every one percentage increase of volume of trade, the GDP for Kenya increased proportionately by 0.9961 percent. The findings are consistent with Otinga (2009) in its findings found out that growth in real exports has a positive correlation with growth in GDP.

The coefficient of EAC dummy was found to be positive and was statistically significant. This means that after the formation of the EAC custom union, GDP for Kenya has increased proportionately by 0.6214 percent. The findings are consistent with Kwaku (1995) which concluded that belonging to a RTA is beneficial to member country which will spur economic growth through creation of a unified economic bloc.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Introduction

This chapter presents the summary of the study, conclusions and gives policy implication drawn from the study. It also suggests the area for further research.

5.2 Summary

The study examined the relationship between RTAs and trade. The main objective of this study was to determine the trade effects of the EAC custom union and to analyze the effect of intra-EAC trade on economic growth in Kenya. The theories of the Gravity model and the Solow growth model were also used. Time series data for the period 2000 to 2013 and non-experimental research design was adopted in the study. Ordinary Least Squares (OLS) estimation technique also was used to estimate the models under study.

To determine the effect of EACCU on trade in Kenya, the linear model approach was used in which the volume of trade *(Y_TD)* was the dependent variable; the Gross Domestic Products (GDPs) for EAC member countries represented by *GDPK, GDP_B, GDP_U, GDP_T* and *GDP_R* for Kenya, Burundi, Uganda, Tanzania and Rwanda respectively and the EAC dummy as the independent variables. The dummy for the regional integration takes the value one in the years 2005 to 2013 and zero in the years 2000 to 2004. The finding shows that after the formation of the custom union, the

volume of trade in Kenya improved thus concluding that the EACCU is important in the promotion of trade.

To determine the effect of intra-EAC trade on economic growth in Kenya, a linear model was used in which the GDP for Kenya was the dependent variable. The explanatory variables used were: secondary enrollment rate, labour participation rate, volume of trade in Kenya, the imports plus exports to GDP ratio and the EAC dummy. Time series data for the period 2000 to 2013 was estimated using the Ordinary Least Squares (OLS) approach. Estimation result shows that the formation of the custom union had a positive effect on the volume of GDP for Kenya. The volume of intra-EAC trade for Kenya had also increased.

5.3 Conclusion

The study revealed that the formation of the EAC custom union has a positive effect towards trade and economic growth in Kenya. The findings also show that after the formation of the custom union, the volume of intra-EAC trade in Kenya has increased and has led to improvement in economic growth. The study therefore concludes that the intra-EAC trade in Kenya has led to increase in economic growth.

The findings also found out that after the formation of the custom union, trade in Kenya has improved significantly. The study therefore concludes that EAC customs union is an important step in trade development and a process of deepening regional integration among the EAC member countries

5.4 Policy Implications

On the basis of the findings of this study, Kenya government through the Ministry of East African Affairs, Commerce and Tourism needs to strengthen its economic partnership with the EAC member countries and increase its trade volume in the region. Based on the findings, it's expected that after the formation of the custom union, trade between Kenya and the member countries has improved significantly and led to economic growth through economies of scale.

The Kenya government should therefore continue to play its key roles in the promotion of the EAC objectives trade being one of them. The government through the Ministry of Industrialization should promote its local manufacturing sector and put more resources in the small and medium enterprises to increase its output thus creating goods for export.

5.5 Suggestion for further Research

The study has confirmed that there is positive effect of the EAC Custom union on trade and the intra-EAC trade has led to economic growth in Kenya. Further research can also be done on the effect of trade tariffs on trade in Kenya after the formation of the EAC Custom Union.

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APPENDIX I:

Basic Data

Table A. 1: GDP of EAC Member countries (Million USD)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Kenya	12705	12985	13147	14904	16095	18738	22504	27237	30465	30716	32440	34313	40264	44101
Burundi	870	877	825	784	915	1117	1273	1356	1612	1740	2027	2356	2472	2718
Tanzania	10186	10384	10806	11659	12825	14142	14331	16825	20715	21368	22915	23874	28248	33225
Uganda	6193	5840	6179	6337	7940	9014	9943	12293	14239	14824	16031	15493	20032	21483
Rwanda	1735	1675	1677	1845	2089	2581	3110	3708	4674	5208	5625	6407	7133	7452

Source of data: International Monetary Fund, World Economic Outlook Database, 2014

Table A. 2: XMGDP Ratio

YEAR	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDPK	12705	12985	13147	14904	16095	18738	22504	27237	30465	30716	32440	34313	40264	44101
X+M	5016	5571	5424	6123	7309	9312	10714	13069	13346	14651	17127	20573	22388	22243
X+M/GDP	0.39	0.43	0.41	0.41	0.45	0.50	0.48	0.48	0.54	0.48	0.53	0.60	0.56	0.50

Source of data: EAC, Facts and figures, 2014

Table A. 3: Secondary Enrolment rate

YEAR	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Secondary enrolment rate	24.85	25.75	25.90	19.90	29.10	29.30	32.00	38.00	42.50	45.00	47.80	48.80	49.30	56.20

Source of data: EAC (*Statistical abstracts)*, 2014

Table A. 4: Labour force participation Rate

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Labour force participation rate	68.2	67.5	66.8	66.2	65.6	65.1	65.3	65.6	65.9	66.2	66.5	66.8	67.1	67.8

Source of data: International Labour Organization, Key Indicators of the Labour Market database, 2014

Table A. 5: Intra-EAC trade for Kenya (USD Million)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Volume of Trade	5016	5571	5423	6123	7309	9312	10714	13069	16346	14651	14127	20573	22387	22243

Source of data: Central Bank of Kenya, 2014

Table A. 6: Stationarity test

Variable	Difference	Augmented-Dickey Fuller (ADF) Test		Philips-Perron Tests		Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Test	
		t* statistic	5% sig. level	t* statistic	5% sig. level	t* statistic	5% sig. level
LnTRADE	Level	-0.8895	-2.9166	-0.9096	-2.916	0.8942	0.4630
	D1	-2.7856	-2.9166	-2.8247	-2.917	0.1411*	0.4630
LnGDPU	Level	0.9236	-2.9166	-1.0011	-2.916	0.9233	0.4630
	D1	-4.7537*	-2.9166	-4.7381*	-2.917	0.1106*	0.4630
LnGDPT	Level	-0.5039	-2.9166	0.6701	-2.916	0.8587	0.4630
	D1	-3.0402*	-2.9212	-3.4389*	-2.917	0.3756*	0.4630
LnGDPR	Level	-1.1629	-2.9166	0.5547	-2.916	0.8804	0.4630
	D1	-1.6566	-2.9166	-1.6566	-2.917	0.3088*	0.4630
LnGDPK	Level	-0.3457	-2.9166	0.3308	-2.916	0.8931	0.4630
	D1	-2.1202	-2.9166	-2.2628	-2.917	0.1581*	0.4630
LnGDPB	Level	-0.1640	-2.9166	2.0534	-2.917	0.8546	0.4630
	D1	-2.6224	-2.9166	-2.628	-2.917	0.491	0.4630
	D1 lag (2)	-3.0095*	-2.9188	-2.6265	-2.917	0.7933	0.4639
LnEDU	Level	-0.5015	-2.9166	-0.4804	-2.916	0.8588	0.4630
	D1	-5.3610*	-2.9177	-7.555*	-2.917	0.0764*	0.4630
LnGDP	Level	-0.5831	-2.9166	0.5616	-2.916	0.0764*	0.4630
LnLAB	Level	-1.1249	-2.9200	-1.3443	-2.916	0.2296*	0.4630
LnTRADE	Level	-0.8894	-2.9166	-0.9097	-2.916	0.8942	0.4630
	D1	-2.6197	-2.9166	-2.8247	-2.917	0.1411*	0.4630
LnXMGDP	Level	-1.2926	-2.9166	-2.2116	-2.916	0.8363	0.4630
	D1	-2.1947	-2.9166	-2.9015	-2.917	0.2121*	0.4630

Source: Authors composition

Table A. 7: Cointegration tests for series TRADE, EDU, LAB, XMGDP and EACdummy

Max Rank	Eigen Value	Trace Statistic	5% percent critical value
0	-	137.2258	94.15
1	0.72005	68.4769*	68.52
2	0.32993	46.8571	47.21
3	0.28430	28.7942	29.68
4	0.25004	13.2568	15.41
5	0.17633	2.7817	3.76
6	0.05021	-	-

Table A. 8: Cointegration test for series TRADE, GDP_K, GDP_B, GDP_U, GDP_T, GDP_R, EACdummy

Max Rank	Eigen Value	Trace Statistic	5% percent critical value
0	-	168.2823	124.24
1	0.65319	111.0974	94.15
2	0.56631	65.9845*	68.52
3	0.36758	41.2415	47.21
4	0.31352	20.9281	29.68
5	0.20614	8.4622	15,41
6	0.14496	0.0051	3.76
7	0.00010	-	-