REGIONAL INTEGRATION AND TAX REVENUE:

A Case Study of the East African Community (EAC)

BY

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2012/HD06/407U

A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND GRADUATE TRAINING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A MASTER OF ARTS DEGREE IN ECONOMICS OF MAKERERE UNIVERSITY

DECEMBER 2014

DECLARATION

I, **BABYENDA Peter** hereby declare that this dissertation entitled "Regional integration and Tax Revenue; A case study of the East African Community (EAC)" is my own work and that all the sources, I have used or quoted have been acknowledged.

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CERTIFICATION

The undersigned certify that they have read this dissertation titled "Regional integration and Tax Revenue; A case study of the East African Community (EAC)" in the process of guiding the author and thereby recommend it for submission to the Directorate of Research and Graduate Training of Makerere University in the partial fulfillment of the award of the degree of Master of Arts in Economics of Makerere University.

Signed…….Date……

Dr. Joweria Teera

Signed……..Date……...

Prof. Eria Hisali

DEDICATION

To my beloved God, Sweet heart Roselyn, Parents, teachers, my sponsors including my Daughter Chloe and all my benefactors both local and international ones.

ACKNOWLEDGEMENT

During the course of this research, I have received significant help from a number of people whose input was helpful in accomplishing this work. Sincere thanks go to my supervisors by the names; Dr. J. Teera and Prof. Eria Hisali for their technical guidance towards the completion of this study. I highly recognize the contributions of all School of Economics teaching staff right away from the Dean School of Economics; Dr. Eseza Katerega and all my lecturers; Dr. Ibrahim Mukisa, Dr. John Mutenyo, Dr. Yawe Bruno, Dr. J. Teera, Dr. F. Buyinza, Dr. E. Bbaale, Dr. Tom Mwebaze and Prof. Eria Hisali and all other non teaching staff of School of Economics, Makerere University to my academic achievement. In fact without a good knowledge in economics, this research would have been very difficult for me.

Special thanks also go to the director Mandela S.S, Hoima; Mr. Lawrence Bategeka for the time and financial assistance offered to me including mentoring me as an economist. I also thank my fellow classmates for always being there for me in case of any problem. I wish to appreciate the contributions to this dissertation of all individuals though unmentioned including my mother Basemera that may God reward them abundantly.

I also extend my sincere heartfelt thanks to all those people such as Mr. Byenkya Simon my uncle, Mr. Mukonyezi Jimmy and my brothers; Mr. Muhumuza Herbert and Mr. Balijunaki Stephen who have helped me ever since I started schooling up to now given that I was an orphan who needed much help. Thanks so much, may the Almighty God reward you abundantly.

Lastly I appreciate the African Economic Research Consortium (AERC) for sponsoring me to go to Nairobi for a three month workshop where we were taught various electives in economics including Econometric theory and practice and monetary theory and practice. I must state clearly that while in Nairobi at Kenya School of Monetary Studies (KSMS), I benefited a lot in terms of economic knowledge, practice, experience, skills including applications of economic theory in the daily life situation and research writing.

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LIST OF ACRONYMS

AFDB	:	African Development Bank
ARA	:	Autonomous Revenue Authorities
ATAF	:	African Tax Administration Forum
BIEAC	:	Building an Inclusive East African Community
BOP	:	Balance of Payment
BRA	:	Burundi Revenue Authority.
CED	:	Customs and Excise Department.
CET	:	Common External Tariff.
CGE	:	General Equilibrium Model
CMA	:	Customs Management Act.
COMESA	:	Common Market for Eastern and Southern Africa.
CTH	:	Change in Tariff Heading.
CU	:	Customs Union.
DRM	:	Domestic Resource mobilization
EAC CU	:	East African Community Custom Union.
EAC	:	East African Community.
EAMU	:	East African Monetary Union

ECOWAS	:	Economic Community for Western African States
EU	:	European Union
EU	:	European Union.
FDI	:	Foreign Direct Investment
FE	:	Fixed Effects.
FTA	:	Free Trade Area.
GDP	:	Growth Domestic Product.
GMM	:	Generalized Method of Moments.
GNI	:	Global Network Initiative
GTAP	:	Global Trade Analysis Project
IID	:	Independent and Identically Distributed
IMF	:	International Monetary Fund
IPS	:	Im, Pesarian and Shin
ITR	:	Implicit Tax Rates
KAFEC	:	Korea – Africa Fund for Economist
KRA	:	Kenya Revenue Authority.
LIC	:	Low Income Countries
LLC	:	Levin, Lin and Chu

LM	:	Lagrange Multiplier
M2	:	Broad Money Supply
MECF	:	Marginal Efficiency Cost of Fund
MFN	:	Most Favoured Nations
NAFTA	:	North American Free Trade Area
NTB	:	Non-Tariff Barriers.
ODA	:	Official Development Assistance
OECD	:	Organization for Economic Cooperation and development
PAYE	:	Pay As You Earn
RE	:	Random Effects.
ROO	:	Rules of Origin.
RTA	:	Regional Trade arrangement
RWA	:	Rwanda Revenue Authority.
SACU	:	South African Customs Union
SADC	:	South African Development Community
SSA	:	Sub-Saharan Africa.
TIC	:	Tanzania Investment Centre.
TIN	:	Tax Identification Number
TJN	:	Tax Justice Network

TNA	:	Training Needs Assessment
TRA	:	Tanzania Revenue Authority.
TRIST	:	Tariff Reform Impact Simulation Model
URA	:	Uganda Revenue Authority.
VAT	:	Value Added Tax.
WDI	:	World Bank Development Indicators
WTO	:	World Trade Organization.

ABSTRACT

The implementation of EAC treaty required the formation of Custom Union as the first step of EAC regional integration process and charging a common tariff on goods from non-member states (EAC, 2012). This may have an impact on the tax revenues of the partner states as it may affect their custom revenues either positively or negatively thus this study empirically examines the relationship between the East African Community regional integration and tax revenue in the EAC partner states alongside identifying other determinants of tax revenue in EAC.

The study uses secondary time series data from 1990 to 2011 obtained over the cross section of five EAC partner countries. The data were mainly obtained from World Bank Development indicators (WDI) and supplemented with data from African Economic Outlook, and the East African Community Facts and Figures - 2012.

The study extends the tax model developed by Heller (1975) and also used by Leuthold (1991); Caballe & Panades (1997); Ghura (1998); Chen (2003) among others where the public decision maker's utility function is maximized subject to a budget constraint in order to establish the impact of EAC regional integration on partner states' tax revenue. Analytically, panel data techniques of fixed effects, random effects and the first difference GMM are used for the empirical analysis and using the Hausman's specification test, FE model is the preferable model.

The findings of the study show that the EAC regional integration has a negative impact on the tax revenues of the EAC partner states. GDP per capita, economic growth (GDP growth rate), public debt, population density and lagged tax revenue are identified as the other determinants of tax revenue in the EAC region.

Basing on these findings, the study recommends that the EAC partner states should identify tax bases that cannot be affected by the EAC regional integration since the study found out that the EAC regional integration negatively affects the EAC partner states tax revenues and yet all the EAC partner states depend on tax revenues as their major source of domestic revenues.

Keywords: Regional Integration, EAC, tax revenue, GDP growth rate, GDP per capita, Population Density, Public debt, fixed effects and Hausman specification test.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The concept of regional integration in Africa is not a recent phenomenon for instance; the Southern African Custom Union (SACU) and the East African Community (EAC) have existed since 1910 and 1919 respectively. Regional integration arrangements initially became fashionable in the 1960s, following the formation of the European Economic Community in 1957 and the European Free Trade Area in 1960 (Mengesha, 2009). Since then, a number of regional economic units have emerged in Africa and at least every country in Africa subscribes to some sort of a regional bloc (Alemayehu & Haile, 2002).

The rationale for regional integration include among others the benefits of trade creation, greater economies of scale based on profitable competition, increased investment leading to increased employment opportunities and division of labour, and improved bargaining power (Shinyekwa & Mawejje, 2013). In addition, regional integration fosters specialization and learning by doing; helps to attract foreign investments in the partner states; and enables the achievement of non-economic objectives such as promoting regional security, facilitating immigration flows and solidifying domestic economic reforms in the partner states (Houeninvo & Boko, 2007).

The ultimate goal of regional integration in East Africa is attainment of long term high economic growth and sustainable human development (Othieno & Shinyekwa, 2011). This will lead to improved standards of living of the people through increased competitiveness, value-added production, trade and investment (EAC, 2012).

The implementation of the East African Community (EAC)[1] treaty required the formation of customs union[2] as the first step of EAC regional integration process. The reduction in tariffs

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[1]The East Africa Community (EAC) was reborn on 20th November 1999 and the Treaty, establishing the EAC became effective on 7th July 2000.

[2]Customs union is a form of economic integration among member countries in which internal trade is freed among member countries and a common external tariff is levied against trade with the rest of the world. A Protocol establishing the East African Customs Union was signed in December 2004 and the implementation of the Customs Union commenced on 1st January 2005.

between Kenya and other EAC partner states was phased over time under the principle of asymmetry with a 2 percent reduction for a period of five years (Othieno & Shinyekwa, 2011). This transition arrangement came to the end in June 2010, and since then all the five EAC countries have zero tariff lines in effect. Worth noting is the fact that the tariff rates were set at zero percent between Uganda and Tanzania in 2005; and between Uganda and the other partner states; Rwanda and Burundi in July 2007 (EAC, 2012). The EAC entered into a fully fledged custom union in 2010 which came with a requirement of abolition of all tariffs on goods and services produced by member states and charging a common tariff on goods from non-member states (Othieno & Shinyekwa, 2011).

Given that the volume of intra EAC trade is large (Mclntyre, 2005), for example following the implementation of the EACCU in 2005 the value of intra-EAC trade steadily increased and more than doubled in 2011 as reflected in the share of total EAC trade which improved from 7.8 percent in 2005 to 11.4 percent in 2011 (WTO, 2012), the implementation of the EAC customs union has an implication on the custom revenues of partner states. This implication may either be positive or negative. For example, it is possible for the tax revenue of member states to increase due to increased volume of trade of goods and services within the region as a result of increased market size, economies of scale, and free movement of factors of production across member states and industrialization (ADB, 2011)[3]. However, the outcome in this case depends on the elasticity of supply and demand of the commodities traded in the region and the behavior of exchange rates in the region (Stegarescu, 2009).

On the other hand, the implementation of the EAC Custom Union may reduce the tax revenues of the partner states since it comes with the requirements of abolishing all tariffs on goods and services produced by member states and charging a common tariff on goods from non-member states. These requirements may negatively affect the custom revenues of the partner states thus leading to a reduction in their total tax revenues. For example, the proportion of customs revenue to total tax declined from 53.3% in 2007 to 52.0% in 2008 in Burundi. In Kenya, the proportion of international trade taxes to total revenue declined from 38.6% in 2007 to 37.8% in 2008. In Tanzania, the share of customs revenue to total revenue declined marginally from 44.2% in 2007

[3]African Development Bank (ADB); Lessons for Tax Policy and Administration in EAC

to 44.0% in 2008. In Uganda, the ratio of trade related taxes to total revenue increased from 50.8 percent in 2007 to 51.7% in 2008. In Rwanda, the proportion of customs revenue to total tax revenue increased from 35.2% in 2007 to 37.5% in 2008 due to general increase of imports in 2008 (EAC, 2010) hence the need to investigate the impact of the EAC regional integration on partner states' tax revenue empirically.

There are a number of empirical studies on the impact of economic integration on tax revenue such as ADB, 2011; Othieno & Shinyekwa, 2011; Petersen, 2009; Delgado, 2008; Haufler, Klemm, & Schjelderup, 2008; Mclntyre, 2005; Semkunde, 2012; Francesca, Paolo, & Antonio, 2013; Shinyekwa & Mawejje, 2013; Castro, DeRocha, & Kraus, 2004 among others. However, the results of these studies are mixed and more so, for EAC regional integration, there are very few empirical studies that have examined the relationship between the EAC regional integration and tax revenue and some of these few studies were conducted before the implementation of the EAC Custom Union hence the present study builds on these previous studies to empirically investigate the impact of EAC on partner states' tax revenues alongside identifying other determinants of tax revenue in EAC partner states.

1.2 Statement of the problem

Regional integration involves unification of economic policies between different states through the partial or full abolition of tariff and non-tariff restrictions on trade among the member states and charging a common external tariff on goods from non member states (Abdin, 2010). Custom Unions are associated with potential gains and losses on revenue and welfare (see for example Castro, DeRocha, & Kraus, 2004; Karingi, Lang, Oulmane, Sadni, & Hammouda, 2005; Mclntyre, 2005; Sangeeta, Kimbugwe, & Perdikis, 2009; Rojid & Seetanah, 2010; Semkunde, 2012; Shinyekwa & Mawejje, 2013; Malugu, 2014) and they facilitate higher trade, increased investment flows and increased competition among member states in order to improve the efficiency and competitiveness of the exports sectors in the individual countries (Mclntyre, 2005). Therefore, with the EAC regional integration, both positive and negative effects are expected on the tax revenue of the partner states as promulgated by Viner (1950) seminal work on the formation of a Custom Union. The partner states agreed to a phased out approach on tariff reduction on selected products and charging a common external tariff from non member states. However, there is little, if any, empirical evidence to demonstrate the gains or losses to tax

revenue of the partner states as a result of this trade reform. The theory on integration shows that there are trade effects, for example, trade creation and trade diversion, fiscal effects as well as impacts on the different actors like consumers, producers and governments in an economy as a result of the integration. Understanding the magnitude and direction of the effect of the EAC regional integration on tax revenue of the partner states is very important for the EAC partner states since they derive substantial amounts of tariff revenue from international trade taxes in order to meet their fiscal needs.

1.3 Purpose and the Objectives of the study

The major purpose of this study is to empirically examine the impact of EAC regional integration on tax revenue of the EAC partner states; Burundi, Kenya, Rwanda, Tanzania and Uganda.

The specific objectives of this study are:

a) To establish the relationship between the EAC regional integration and tax revenue of the member states.
b) To identify other determinants of tax revenue in the EAC partner states.

1.4 Hypotheses of the study

The hypotheses of the study are:

a) EAC regional integration has no impact on tax revenue of the partner states.
b) GDP per capita, population density, public debt, and economic growth (GDP growth rate) are negatively related to tax revenue of the EAC partner states.
c) Inflation is positively related to tax revenue of the EAC partner states.

1.5 Justification and Significance of the study

Most of the previous studies have investigated the impact of economic integration on tax revenue, public spending and economic growth using openness as a proxy variable for economic integration while others have investigated the determinants of tax revenue either in one country or a set of countries taking economic integration proxied by the degree of openness of the economy as one of the determinants of tax revenue for example see (Dioda, 2012; Chaudhry & Munir, 2010; Gupta, 2007; Gabriel, 2009; Karagoz, 2013) among others. Some of the empirical studies in the literature only examine the impact of trade liberalization during the period of the

implementation of internal tariff reduction while others were conducted before the implementation of the EAC customs union.

Different from the previous studies, the present study examines the impact of EAC regional integration on tax revenue of EAC partner states by taking into consideration both the periods before and after the revival of EAC regional integration.

The results from this study could be used to design integration oriented programs and policies; carry out tax changes that are integration oriented hence speeding the process of EAC regional integration beyond custom union to other stages such as common market, monetary union and finally a political federation. This is because one of the major limitations of the EAC regional integration process is the fear by the partner states to lose tax revenues as a result of tariff reductions (Davood, 2013).

The study is timely given the current effort to harmonize tax policies, reform tax structures and continue with the structural adjustment process in the EAC partner states in order to ease the cost of doing business, eradicate poverty, rationalize the budget, and encourage private investments. This is because harmonization of tax policies in EAC partner states will foster competitiveness, employment and further contribute to the sustainability of public finances in the community in order to promote investment, free movement of goods and services in the community.

1.6 Scope of the Study

The study is limited to the period between 1990 and 2011 due to many reasons especially the availability and completeness of data. The data set employed is larger in terms of cross-sectional observations and extends to more recent years compared to earlier studies and this period is also long enough to capture the effect of EAC regional integration on tax revenue of member states and the responsiveness of tax revenue to changes in its other determinants. Furthermore the EAC partner states have had an opportunity to devise new tax policies during this time. The study period covers both the period before and after the re-establishment of EAC. Therefore, these features of the dataset provide wider variations across countries and time hence giving better precision of the estimated coefficients leading to valid and reliable recommendations. Moreover, the study uses a cross - country, time-series data set, thereby taking the advantages of explanatory variables that vary both by unit of observation (the country) and time.

The content scope of this study is limited to examining the impact of EAC regional integration on partner states' tax revenue alongside identifying other determinants of tax revenue in EAC partner states, though the study also suggests policy recommendations based on the findings of the study and areas for further research.

The geographical scope of the study is the EAC partners states; Burundi, Kenya, Rwanda, Tanzania and Uganda. The data is mainly obtained from World Bank (2013) Development indicators and supplemented with data from African Economic outlook (2013), and the East African Community facts and figures 2012. The data is estimated using balanced panel data estimation techniques[4] with STATA as statistical analytical package. The choice of sample is also partly motivated by the need to obtain a data set where the study variables can be measured in a relatively accurate, reliable and consistent manner.

1.7 Organization of the Study

The study is organized into six chapters. Chapter one presents the introduction of the study and consists of the background of the study, problem statement, objectives of the study, hypothesis of the study, significance and justification of the study, scope of the study and the organization of the study. Chapter two describes the East African Community (EAC) and an overview of taxation in the community. In chapter three, the study reviews theoretical literature and a few studies that provide a theoretical and empirical background of the impact of regional economic integration on tax revenue and other determinants of tax revenue apart from the regional integration. Chapter four explains the methodology of the study including the theoretical framework, theoretical model, the specification of the empirical model, definition and measurement of the variables included in the empirical analysis, estimation techniques and the sources of the data used in the analysis. Chapter five comprises of the empirical findings and their discussion while chapter six presents the summary of the study, policy recommendations and areas for further research. The dissertation also contains references and appendices at the end.

[4] The static linear panel models of Fixed Effects and Random Effects and the dynamic panel model of the first difference GMM.

CHAPTER TWO

OVERVIEW OF TAXATION IN EAST AFRICAN COMMUNITY

This chapter presents a brief overview of the structure of taxation in the east African community. It provides the meaning of the East African community (EAC), the major tax reforms carried out in EAC, forms of taxes in EAC and the performance of tax revenue in the EAC partner states.

2.1 The East African Community (EAC)

The EAC is a regional integration bloc consisting of Burundi, Kenya, Rwanda, Tanzania and Uganda numbering to five member countries. The EAC is now in its second decade and Arusha, Tanzania is the home of its Secretariat. Originally founded in 1967, collapsed in 1977[5] as a result of many factors including political differences and was officially revived on 7th, July 2000. Its membership was expanded in 2007 with the joining of Burundi and Rwanda. The EAC is a potential precursor to the establishment of the EAC federation, a proposed federation of its five members into a single state. The EAC launched its own common market with a goal of common currency by 2012 (not yet met as of 2014) and a full political federation in 2015 (Buigut, 2012).

The EAC[6] sets a custom Union (CU) as the first step of integration before a common market, monetary union and lastly a political federation as a final stage of the EAC integration process. The East African Community (EAC) is focused on widening and deepening the integration process among the five partner states. The entry point of the integration process of the East African Community was the customs union which commenced in 2005. The EAC entered into a fully fledged customs union in January, 2010 and commenced the implementation of the common market in July, 2010 (EAC, 2012). However, the establishment of the EAC has led to an increase in the volume of trade among the partner states due to the free movement of goods,

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[5]The first EAC collapsed mainly due to the disagreements between Uganda and Kenya, Kenya and Tanzania mainly due to Economic and Political reasons. In this context Uganda and Tanzania contended that Kenya enjoyed all the gains using her position as the industrial hub for the common market (Shinyekwa & Mawejje, 2013).

[6]The EAC is focused on widening and deepening the integration process among the five Partner states and its entry point was the Customs Union which commenced in 2005 (EAC, 2012).

labor, capital and other factors of production across borders within the bloc (Othieno & Shinyekwa, 2011). This has attracted more investments in the region leading to more employment opportunity creation and increased industrialization in EAC partner states (Davood, 2013; Shinyekwa & Mawejje, 2013).

The EAC integration effort started with the signing of the agreement for the establishment of the permanent Tripartite Commission for East African Co-operation in 1993 by Kenya, Uganda and Tanzania. This effort by the three East African countries revived a regional bloc that had failed earlier in 1977 after ten years due to various factors such as deferring arguments related to resource allocation and sharing of the benefits (Shinyekwa & Mawejje, 2013). The EAC has since then advanced its integration agenda rapidly (Petersen, 2010). Following the collapse of the first EAC and the closure of borders in 1978, the three EAC partner states lost over sixty years of co-operation and the benefits of economies of scale (Schiff & Winters, 2004).

The objective[7] of the EAC is the development of policies and programmes, for widening and deepening cooperation among the partner states in political, economic, social and cultural fields, research and technology, defense, security, legal and judicial affairs (Davood, 2013). A key guiding principal in the achievement of this objective is people-centered and market-driven cooperation (Mclntyre, 2005). The priority of the EAC is economic cooperation, which was expected to form the basis for political cooperation in the long run (Othieno & Shinyekwa, 2011). The EAC integration process is to be carried out in a participatory manner, involving broad participation of key stakeholders, including women, the youth, the private sector and civil society (EAC, 2012).

The vision of the EAC regional integration in East Africa is to create wealth, raise standards of living of all people of East Africa and enhance the international competitiveness of the region through increased production, trade and investments (Mugisa, Onyango, & Mugoya, 2009). The EAC partner states are collectively negotiating for an Economic Partnership Agreement (EPA) with the European Union (EU) where supporting regional integration is an overarching objective (Mkenda & Hangi, 2009).

[7]The main objective of the EAC is to attain economic, social and political integration in East Africa and primarily to create trade within the region (Shinyekwa & Mawejje, 2013).

In 2005, the EAC became a CU[8] with the primary objective of creating more trade within the region and, in turn, enhancing growth. Under a CU, the EAC partner states have adopted a Common External Tariff (CET), in addition to the elimination of internal tariffs on all goods and services from member states (Othieno & Shinyekwa, 2011).

Following the implementation of the EACCU in 2005 the value of intra-EAC trade steadily increased and more than doubled from US$1.8 billion in 2005 to US$4.9 billion in 2011 as reflected in the share of total EAC trade which improved from 7.8 percent to 11.4 percent (WTO, 2012), although significant differences exist with respect to specific member states. In spite of the growth in intra-EAC trade performance there are impediments like poor infrastructural network, insufficient domestic revenues to mention but a few (Buigut, 2012). However, the share of international trade tax revenue in total government revenue stood at 20 percent in 2000 in Uganda and declined over time and stagnated at 9 percent since 2006 (Othieno & Shinyekwa, 2011) while the proportion of customs revenue to total tax declined from 53.3% in 2007 to 52.0% in 2008 in Burundi. In Kenya, the proportion of international trade taxes to total revenue declined from 38.6% in 2007 to 37.8% in 2008. In Tanzania, the share of customs revenue to total revenue declined marginally from 44.2% in 2007 to 44.0% in 2008. In Uganda, the ratio of trade related taxes to total revenue increased from 50.8 percent in 2007 to 51.7% in 2008. In Rwanda, The proportion of customs revenue to total tax revenue increased from 35.2% in 2007 to 37.5% in 2008 due to general increase of imports in 2008 (EAC, 2010).

The five partner states of the EAC are at different levels of development, with Kenya being the most advanced, having more competitive industries (Othieno & Shinyekwa, 2011). Given the unbalanced level of development, the reduction in tariffs between Kenya and other EACCU states was phased over time under the principle of asymmetry with a 2 percent reduction for a period of five years (EAC, 2012). This transition arrangement came to the end in June 2010 and since then all the EAC countries have zero tariff lines in effect. Worth noting is the fact that the tariff rates were set at zero percent between Uganda and Tanzania in 2005; and that between Uganda and the other partner states; Rwanda and Burundi in July 2007 (Othieno & Shinyekwa, 2011). Thus, the extent of the gains and/or losses given the diversity of the countries in the East African Community (EAC) remains an issue to be investigated empirically.

[8]Burundi and Rwanda joined the EAC CU in 2009.

2.2 Tax reforms in East African Community

The EAC member states have undergone various fundamental reforms in the response to need of resources to support their economic and social developments[9]. Some of the reforms include; the setting up of semi-autonomous bodies by the respective governments responsible for carrying out tax policy implementation. These bodies are charged with the responsibility of administering and collecting tax revenue for respective central governments. These bodies are; Burundi Revenue Authority (BRA) in Burundi, Kenya Revenue Authority (KRA) in Kenya, Rwanda Revenue Authority (RRA) in Rwanda, Uganda Revenue Authority in Uganda (URA) and Tanzania Revenue Authority (TRA) in Tanzania (Davood, 2013). These tax bodies together with other tax reforms that have taken place in these countries have led to an improvement in tax revenue collections in EAC sub - region (Petersen, 2010).

Other reforms that have taken place in the EAC region include; partial removal of exemptions, harmonization of the custom duties, adoption of the common external tariffs (CET) on goods and services from non-member states and the introduction of new tax forms such as Value added tax (VAT) and withholding tax among others (Othieno & Shinyekwa, 2011). These reforms have brought all supplies of goods and services under the tax net of tax authorities (Davood, 2013) hence widening tax bases in the EAC partner states.

The East African Community (EAC) prioritised the harmonisation of taxation regimes of its member states in order to promote the coordination of the taxation systems of the member states for the purposes of preventing any national tax measures that could have a negative effect on the functioning of the custom union and common market arrangements (Davood, 2013)[10].

The harmonisation of tax policies is very vital given that tax revenue is one of the major tools of raising domestic resources to finance the development programs of a country (Kaldor, 1964). A considerable level of harmonization has already been achieved regarding VAT rates as well as in the Corporate Income Taxation systems (CIT) with Tanzania reducing its VAT rate to 18%, four

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[9]More recently countries in the East African region have been involved in a number of trade initiatives, particularly regional economic integration and, in particular, the EAC and the Common Market for Eastern and Southern Africa (COMESA).

[10]Davood, H. R. (2013). The East African Community After 10 Years - Deepening Intergration.This report was published by the EAC secretariat, Arusha, Tanzania in 2013.

of the five EAC partner states have the same VAT rate. Kenya has a lower VAT standard rate of 16% and a reduced rate of 12% just on electricity and fuel. Within the EAC, there is a uniform standard corporate tax rate of 30% for residents with the exception of Burundi (35%) and only Kenya taxes non-residential companies with 37.5% (Petersen, 2010).

2.3 Forms of Taxes in the East African Community

The various forms of taxes in EAC include; Pay as You Earn (PAYE)[11] which is a form of tax collected at the source from individuals in gainful employment. It is deducted from the employee's salary by the employer who in turn remit it to the tax authority; corporation tax which is the form of income tax levied on companies; Withholding taxes are taxes deducted at the source from the following sources of income: interest, dividends, royalties, management or professional fees, commissions, pension or retirement annuity, rent, appearance or performance fees for entertaining, sporting or diverting an audience; advance tax which is a tax applicable to public service vehicles. It is not a final tax but a tax partially paid in advance before a public service vehicle or commercial vehicle is registered or licensed. Other forms of taxes in EAC include; excise duties, import duties, Value Added Tax (VAT) among others (Davood, 2013). Therefore, the EAC tax system is majorly structured into three main components namely; Value Added Tax (VAT), excise taxes and finally income and profit taxes.

2.4 Tax Revenue Performance in East African Community

The EAC partner states have been implementing various tax reforms since 1990s mostly geared towards broadening tax bases, rationalizing taxes to improve the investment climate, enhancing compliance and improving other aspects of tax revenue administration. However, domestic resource mobilization via taxation in EAC partner states is still below its potential (EAC, 2012). For example during the decade to 2006 and 2008 tax-to-GDP ratios in the EAC sub-region ranged from 12.3% to 22.1% (Davood, 2013).

The African Development Bank (AFDB) in partnership with the African Tax Administration Forum (ATAF), the EAC Secretariat and with funding from the Korea-Africa Fund for

[11]This form of tax is usually progressive in nature hence it plays a good role in reducing income inequality.

Economic Cooperation (KAFEC) undertook a study in 2011 aimed at sharing lessons of experience from Domestic Resource Mobilization (DRM) taking the EAC partner states, South Africa and South Korea as the case studies. In all these case studies, the study focused exclusively on tax revenues and key challenges to achieving greater tax revenue mobilization in these countries. These studies reveal three major challenges impeding tax revenue mobilization in the EAC; the general absence of voluntary compliance among the tax payers, weak relationships between tax policy and national development objectives and difficulties with tax administration including poor accountability by tax authorities (ADB, 2011).

In general, tax revenues have declined on account of trade liberalization in the East African Community with Burundi, Rwanda, Tanzania and Uganda relying more on indirect taxes other than direct taxes largely due to the existence of the large informal sectors which characterize these economies while Kenya on the other hand shows a relatively more balanced mix of different tax types on the account of their respective capacities to tax and abilities to tax (Davood, 2013). Davood (2013) also shows that with the exception of Kenya, the balance between income and consumption taxes in the EAC partner states remained largely constant for the period between 1998 and 2008, while the revenues from trade and excise taxes declined mainly due trade liberalization as a result of the EAC regional integration.

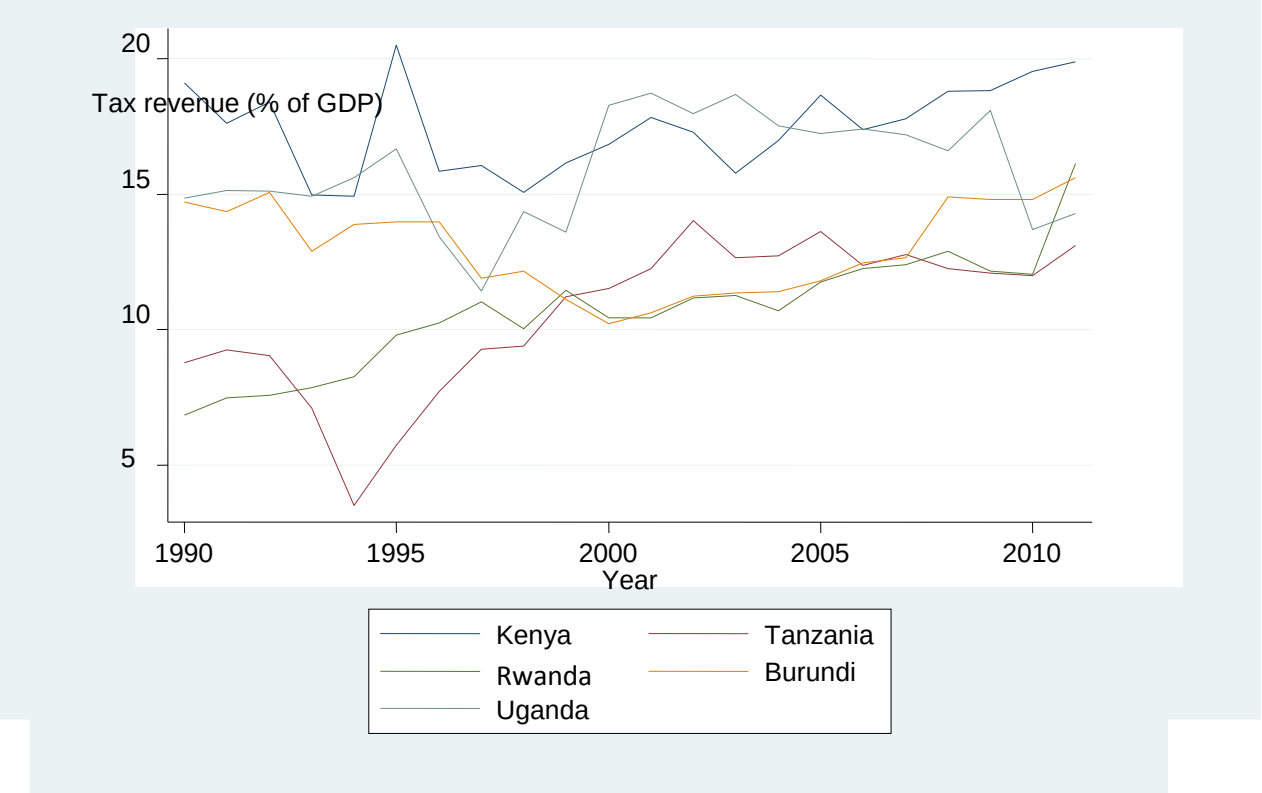
The table below provides tax revenues for EAC partner states in US dollars from 2008 to 2011. Though the figures show that tax revenues have been increasing for the partner states, it does not guarantee that the impact of EAC is positive but as seen earlier, it has affected custom revenues only but other tax forms have increased instead however, the real impact of the EAC on tax revenue of the partner states remains an empirical question to be investigated.

Table 1: Tax Revenue in Million US dollars from 2008 to 2011 for EAC partner States

Year\Country	Burundi	Kenya	Rwanda	Tanzania	Uganda
2008	200	6932	649	3352	1898
2009	227	6908	639	3355	2073
2010	295	7760	708	3696	2201
2011	350	7923	905	3944	2398
Source: EAC facts and Figures (2014)					

The trend of tax revenues in the EAC partner states has not been stable but fluctuates depending on the economic circumstances in the particular country though it shows that Kenya collects the highest tax revenue as a percentage of GDP closely followed by Tanzania. Some EAC countries experienced a deep decline in their tax revenue collections for example Tanzania in 1994 while that of Burundi has been increasing gradually over time as shown in figure 1 below.

Figure 1: Trend analysis for EAC tax revenue since 1990 to 2011



Source: World Bank (2013), African Economic Outlook and EAC Facts and Figures (2012)

CHAPTER THREE

LITERATURE REVIEW

This chapter elaborates on the theoretical and empirical link between regional integration and tax revenue from various scholars. It also identifies other significant determinants of tax revenue from the previous empirical studies with the major aim of not only contributing to the theoretical discussion, but of formalizing testable empirical implications of the literature and be able to come up with empirically tested conclusions and policy recommendations.

3.1.0 Theoretical literature

3.1.1 Concepts and Definitions

Regional integration also referred to as 'regionalism' is "any policy designed to reduce trade barriers between a subset of countries regardless of whether those countries are actually contiguous or even close to each other" (Winters, 1996). It is a process through which a group of nation states voluntarily in various degrees have access to each other's markets and establish mechanisms and techniques that minimize conflicts and maximize internal and external economic, political, social and cultural benefits of their interaction (Mengesha, 2009). Regional integration aims at abolishing discrimination between local and foreign goods, services and factors (Mengesha, 2009). Regional integration is characterized by the establishment of joint institutional mechanisms and a degree of shared sovereignty, although this may be true in theory as the practicality of it is very difficult, particularly in Africa, as it involves ceding a percentage of the country's power to take decisions (Mengesha, 2009).

Regional economic integration involves a process of eliminating trade costs to increase countries' welfare (Snorrason, 2012). Economic integration may also be defined as the unification of economic policies between different states through the partial or full abolition of tariff and non-tariff restrictions on trade taking place among them prior to their integration (Lipsey, 1987). Therefore economic integration is a move by partner states trading together to reduce or eradicate all forms of trade barriers among themselves (Salvatore, 2007). This is meant in turn to lead to lower prices for distributors and consumers with the goal of increasing the combined economic productivity of the states. The trade stimulation effects intended by means of economic integration are part of the contemporary economic theory of the Second Best;

where, in the theory, the best option is free trade, with free competition and no trade barriers whatsoever (Gastaldi & Liberati, 2009). Free trade is treated as an idealistic option, and although realized within certain developed states, economic integration has been thought of as the "second best" option for global trade where barriers to full free trade exist (Gastaldi & Liberati, 2009).

The concept of regional economic integration implies that nations of a geographic region come together in some type of partnership to promote trade and development (Steguresсu, 2009). More technically, in this arrangement, the countries agree to reduce and ultimately remove tariff and non - tariff barriers to the free flow of goods or services and factors of production among each other. In other words, regional integration is a type of arrangement in which countries agree to coordinate their trade, fiscal, and/or monetary policies. The various levels of regional integration agreements come in many shapes and sizes. They vary in income levels, in openness to trade and in the share of trade that takes place in them. The main types of regional integration are; a free trade area, a customs union, a common market, an economic union, and a political union. North Atlantic Free Trade Area (NAFTA) is an example of a free trade area, while the EAC is a classic example of a customs union[12] (Mugisa, Onyango, & Mugoya, 2009).

In the EAC, consensus has been reached on various areas which include common commodity description and coding system; common rules of origin; disputes settlement; anti-dumping regulations; subsidies and countervailing measures, regulation on free ports and common export promotion schemes (Semkunde, 2012). The EAC custom union has generally opened up business opportunities in the region by improving on the business climate through the adoption of common policies to minimize customs clearance formalities as well as enhance predictability of economic policies (Othieno & Shinyekwa, 2011).

On the other hand, tax revenue refers to income gained by governments through taxation and taxation refers to the compulsory transfer of resources from the public to the government (Musgrave & Musgrave, 1989). Taxation can be used for both efficiency and equity purposes as well as to finance the system of democracy, besides simply raising government revenue, taxation

[12]The EAC partner states also belong to other regional economic integrations such as COMESA for Uganda and Kenya and SADC for Tanzania and this may create conflicts within the EAC-Custom Union (Mclntyre, 2005).

can be used to discourage consumption of commodities yielding negative externalities, to stabilize national income as part of automatic fiscal policy and redistribute income and wealth but however taxation is not the only source of government revenue, finance is also derived from borrowing, charges for service use, the sale of capital assets and other sources (Bailey, 2002).

A tax is defined as a compulsory fee charged or levied by a government on a product, income, or activity thus a tax is classified as direct or indirect. If a tax is levied directly on personal or corporate income, then it is a direct tax therefore direct taxes are taxes directly levied on incomes, profits and wealth including income tax, national insurance contributions, corporation tax, petroleum revenue tax, inheritance tax, Pay As You Earn (PAYE) and if a tax is levied on the price of a good or services, then it is called an indirect tax hence an indirect tax is a tax levied on expenditures including Value Added Tax (VAT), custom and excise duties, local property taxes (Bailey, 2002). An indirect tax is hard to evade unlike a direct tax (Christian & Nkoro, 2012). Examples of direct taxes in EAC include; income tax, Pay as You Earn (PAYE), corporation tax and others while indirect taxes include; Value Added Taxes (VAT), excise duties, import duties and others but EAC member states rely more on indirect taxes than direct taxes since they are easy to collect and difficult to avoid and evade (Davood, 2013).

Taxes are collected by governments not only to finance their expenditure but also for purposes of stabilization, distribution and allocation for example taxes may be chosen in an attempt to stabilize the level of employment, price or BOP position; governments also try to influence the distribution of income by varying the tax structure or an objective of taxation may be to minimize externalities and perhaps encourage particular activities like savings or investment or to discourage other activities like the consumption of cigarettes (Brown & Jackson, 1990).

A Tax system is structured as regressive, proportional or progressive. A tax system is said to be regressive if the tax rate reduces with an increase in income. Such a tax rate may lead to income inequality in an economy but it is very instrumental in encouraging hard work in an economy. A tax system is said to be proportional if the tax rate is constant for all income levels in an economy. That is the tax rate does not depend on income levels. And the tax system is said to be progressive if the tax rate increases with an increase in income. This tax structure is instrumental

in reducing income inequality in an economy but may discourage hard work in an economy (Brown & Jackson, 1990).

According to Joseph E. Stiglitz (1999), there are five major principles of taxation namely; Efficiency which requires that the tax system should not be distortionary, if possible, it should be used to enhance economic efficiency; Administrative Simplicity that the tax system should have low costs of administration and compliance; Flexibility that the tax system should allow easy adaptation to changed circumstances; political responsibility that the tax system should be transparent; Fairness that the tax system should be and should be seen to be fair, treating those in similar circumstances similarly and imposing higher taxes on those who can better bear the burden of taxation.

Taxation affects the economy behaviourly by affecting decisions concerning work, savings, education and consumption including conditions concerning marriage and Divorce; financially by affecting transactions, dividends, capital gains and interest rates, encourage or discourage financial institutions; organisationally by affecting the way an economy is organised which has real effects on how resources are allocated; general equilibrium effects, the imposition of a tax alters the equilibrium of an economy like taxes on wages; announcement effects and capitalisation which are also called impact effects leading to the saying "an old tax is a good tax" (Stiglitz, 1999).

Taxes can also be distortionary, nondistortionary or corrective. A tax is distortionary if once impossed, it influences behaviour; nondistortionary if and only if there is northing an individual can do to alter his tax liability. These are also called lumpsum taxes while taxes imposed to correct market failures in an economy are called corrective taxes (Bailey, 2002).

Stiglitz (1999) explains the general framework of thinking about taxation as; Pareto efficient taxation which involves tax structures such that given the revenue raised, no one can be made better off without making somebody else worth off and choice among pareto efficient tax structures depends on values reflected in the social welfare function; Utilitarian social welfare function which involves choosing a pareto efficient tax structure that maximises the sum of utilities of individuals, marginal loss of utility per dollar of revenue raised must be the same for

all individuals in the economy; Rawlsian social welfare function, this chooses the pareto efficient tax structure that maximises the utility of the worse off individuals.

There are two main approaches to taxation; the benefit approach and the ability to pay approach (Musgrave & Musgrave, 1989). The benefit principle of taxation originates from the contract theory of the state understood by the political theorists of the 17th century such as Locke and Hobbes. Subsequently it was woven into the greatest happiness principle of the utilitarians such as Bentham. It appeared earlier in the classical economics in Adam Smith's first canon of taxation which in one sentence combines both the benefit and the ability to pay approaches. The subjects of every state ought to contribute towards the support of government as nearly as possible in proportion of their respective abilities that is in proportion to the revenue which they respectively enjoy under the protection of the state (Smith, 1904).

Application of the benefit principle involves imposing a general specific tax which depends upon preference patterns specifically income and price elasticity of demand. Benefit taxation may be found in specific instances where particular services are provided on benefit basis as a case where direct financing is made via fees, user charges, tolls or indirectly in lieu of charges as is done in taxation of gasoline and other auto-motive products for purpose of high way finance (Musgrave & Musgrave, 1989).

On the other hand, ability to pay approach emphasizes horizontal and vertical equity when determining the tax base and the tax structure (Musgrave & Musgrave, 1989). This approach calls for people with equal capacity to pay the same tax (horizontal equity) and for people with greater ability to pay more tax (vertical equity) for example if income is used as the index of ability to pay, people with same income should pay the same tax and those with higher incomes should pay more tax.

The primary function of a tax system is to raise enough revenue to finance essential expenditures on the goods and services (public goods) provided by government therefore taxation is one of the best instruments to boost the potential for public sector performance, to finance the social insurance program and for the repayment of public debt hence a country's revenue generation primarily depends upon its sufficient capacity to tax more in both economic and administrative

term (Ajaz & Ahmed, 2010). If the country is to develop, then it should collect tax revenue of amount greater than 10 to 15 percent in many developing countries (Koldor, 1963).

Therefore, taxation has profoundly beneficial effects in fostering better and accountable government (Christian & Nkoro, 2012). Governments collect taxes in order to provide an efficient and steadily expanding non revenue yielding services such as infrastructure; education, health, communication systems, power and others, employment opportunities to the citizens and essential public goods such as the maintenance of law and order irrespective of the prevailing political ideology of a particular nation (Tax Justice Network (TJN), 2005). However, the use of tax as an instrument of fiscal policy to achieve economic growth in most developing countries cannot be reliable due to dwindling level of revenue generated consequently, fine-tuning tax rates has been used to influence or achieve macroeconomic stability (Christian & Nkoro, 2012).

3.1.2 Regional Economic Integration and Tax Revenues

Whether regional integration is potentially able to affect tax revenue or not is an issue to investigate empirically even though some studies have tried to examine the impact of economic integration on tax revenue for example see (Castro, DeRocha, & Kraus, 2004; Gastaldi & Liberati, 2009; Garrett & Mitchell, 2001; Schulze & Ursprung, 1999; Shinyekwa & Mawejje, 2013) among others. The literature on tax competition suggests that capital taxation would be lower with higher international capital mobility, as capital mobility would prevent national governments from differentiating the tax burden on mobile production factors (Winner, 2005).

The classical model by Bucovetsky and Wilson (1991) showed that if capital cannot be taxed with the home tax principle that would guarantee capital export neutrality, it is optimal for a small economy to tax labor only. In an extreme version of this model, that has become popular as the race-to-the bottom hypothesis, capital mobility would cause tax revenues to disappear in the attempt of governments to create favorable conditions for investments, a feature that has led many authors to define tax competition as ‘harmful’ (Tanzi, 1995; Winner, 2005). On the other hand, efficiency hypothesis is when the governments are disciplined to use resources efficiently (Brennan & Buchanan, 1980). Both cases falls into what Stegarescu (2009) and Swank (2002) calls the capital flight hypothesis. The capital flight hypothesis in principle may lead to lower optimal tax rates on mobile factors in open rather than in closed economies (Gordon, 1998;

Razin & Sadka, 1991). On the other hand, some authors argue that citizens in countries with a large exposure to international trade (economic integration) and capital mobility try to demand compensation through public spending especially social spending to mitigate the additional risk embodied in opening markets for example unemployment (Rodrik, 1998). This possibility, usually labeled as the compensation hypothesis, is at the root of a possible corresponding increase of taxation and debt as a way to actually supply additional public spending. Even though built to explain the behavior of social spending, the compensation hypothesis may also be taken as an indirect indicator of the behavior of tax revenues especially when additional spending is not totally financed by debt (Francesca, Paolo, & Antonio, 2013). Whether this additional spending can actually be accommodated by tax increases is however controversial, as national governments experience both increasing tensions on the tax side of the public budget and complaints by market forces about what they consider unproductive public spending (Keen & Marchand, 1997). As a result of regional economic integration, some authors argue that public spending would be more oriented towards privately productive public goods for example infrastructures, training programmes, human capital and less towards transfers and social welfare expenditures (Keen & Marchand, 1997; Taylor-Gooby, 1997).

According to Schiff & Winters (2004), a well-crafted trade bloc can raise efficiency and economic welfare among its members. It is also known that Free Trade Areas (FTAs) change the prices of imports from the partner states as a result of tariff reduction (Semkunde, 2012). The effective reduction of prices changes the patterns of demand which may lead to adjustment of trade and output flows in turn affecting the amount of tax revenue realised (Schiff & Winters, 2004). This is because when countries abolish obstacles to trade, markets make it more efficient for producers to enter into countries where prices are naturally high hence facilitating consumer choice and increasing competition among producers (Viner, 1950). This is best explained by the theory of trade creation and diversion based on the conventional interpretation of Viner's (1950) seminar work on Custom Union issue.

Trade diversion occurs when a Custom Union such as the East African Custom Union (EACU) diverts trade, away from a more efficient supplier outside the EAC region, towards a less efficient supplier within the union, for example Uganda moves away from South Africa to Kenya, Tanzania, Burundi or Rwanda after the formation of a custom union. This is likely to

either reduce EAC partner states' national welfare including tax revenue or improve them despite the trade diversion. On the other hand, trade creation occurs when a Custom Union creates trade that would not have existed otherwise without the formation of the Custom Union (Othieno & Shinyekwa, 2011). In this case, as a result, supply will come from a more efficient producer of a given product. Gains occur if higher-cost domestic production is replaced by cheaper imports from one or all EAC partner states. Unlike trade diversion, in all cases, trade creation raises a country's national welfare (Othieno & Shinyekwa, 2011).

This implies that EAC partner states are likely to have both positive and negative effects on their tax revenue and it is the net impact that will determine whether this is a welfare gain or loss resulting from the EAC regional integration. The efficiency gains of a regional economic integration are determined by whether the products from partner states are in direct competition with, or complementary to each other. In this case, considerable overlap in the range of commodities produced by partner states is critical for efficiency gains. This overlap should be accompanied by production with significant differences in production costs between states, which will promote more efficient allocation of resources. This will foster intra-industrial trade of the partner states with a high potential to reap competitive gains. What is observed on the ground within the East African Community Custom Union (EACCU) is different as most of the industries are agro-based, more or less producing similar products. In such instances, it is difficult to enjoy allocative gains. Typically, partner states of a developing country FTAs have a narrow range of exports of goods and services, in this case mainly primary commodities that are exported to industrial countries (Mclntyre, 2005). Therefore, there is little scope for efficiency gains and the EACCU is unlikely to escape this phenomenon.

Empirically, Regional integration initiatives in Africa have a long history, dating back to the establishment of the South African Customs Union (SACU) in 1910 and the East African Community (EAC) in 1919. Since then a number of regional economic communities have been formed since the 1970s across the African continent. Currently there are about 10 or above regional economic groupings in Africa in that, there is no country in Africa that is not at least a member of one regional economic bloc. Some studies have been carried out to assess the performance of regional blocs in Africa using a gravity model. Among such studies are those of Foroutan & Pritchett, 1993; Haile, 2000; Ogunkola, 1994; Longo & Sekkat, 2001; Njuguna,

2000; to mention but a few. Although the results of these studies slightly vary, the general conclusion seems to be similar. They all conclude that, the regional economic integrations in Africa have been a failure in achieving their objectives of increasing intra-regional trade in particular and fostering policy coordination in general.

The study by Malugu (2014) when examining the argument that trade liberalization depresses the import duty revenue, and consequently adversely affects the total tax revenue in Tanzania shows that import duty revenue to GDP ratio is positively related to tariff rates, implying that a reduction in the tariff rates results in a significant loss of import duty revenue. The results also show that the removal of protectionist policies led to an increase in import to GDP ratio which in turn led to rising shares of import duty revenue in GDP and finally, the study recommends that Tanzania needs to strengthen the domestic tax system and raise tax revenue without increasing tax rates by reinforcing tax and customs administrations so as to maintain fiscal stability.

In Mozambique, Hamilton (2009) examined the impact of complete tariff liberalization on imports from Southern Africa Customs Union (SACU) members using the Tariff Reform Impact Simulation Tool (TRIST) model. The model projected a short-term fall in tariff revenue by 38.3 % as well as a reduction in total revenue by 13.5 %. He also used the TRIST model to hypothesize complete tariff liberalization on imports from EAC member states on Burundi where he found out that the short-term impact of this reform is projected to involve revenue losses of 8.1 % (tariff revenue) and 3.4 % (total revenue) however imports are expected to increase marginally by 0.5 %. Hamilton (2009) also investigated the impact of a COMESA FTA on Ethiopia. The results suggest that an elimination of all tariffs on goods from COMESA FTA countries results in a fall in tariff revenue by 4.8 % as well as a reduction in total revenue by approximately 2.4 %.

Karingi, Siriwardana, & Ronge (2002) analyzed the likely implications of a COMESA FTA and of a COMESA customs union using the Global Trade Analysis Project (GTAP) model and the GTAP database. The study involved five countries namely Malawi, Tanzania, Uganda, Zambia and Zimbabwe. The welfare results of the COMESA customs union showed that all member countries would benefit in terms of real incomes from the customs union with Zimbabwe's real GDP expanding by 0.79 %age points. On the trade front, the results showed that the customs

union leads to significant changes in the total volume of trade. However, the terms of trade effects of the customs union establishment indicated that only Zimbabwe loses while all the other four countries experience improvement in the short run. On the total effects on welfare of the implementation of the customs union, the results indicated that all countries will gain with Zimbabwe having a welfare gain equivalent to US$10.4 million and the authors therefore recommended that COMESA should move beyond the FTA to a customs union but this study did not however touch on the revenue implications of the customs union. The present study therefore fills the gap by empirically analyzing the revenue implications of the EAC regional integration.

Castro, DeRocha, & Kraus (2004) conducted a study on the trade and revenue impacts of the East African Community (EAC) Customs Union using a partial equilibrium model and 2002 data. The study was undertaken before the implementation of the customs union to predict how import flows and customs revenue was expected to change for Kenya, Tanzania and Uganda following the implementation of the EAC Customs Union. The study analyzed the proposed phased internal tariff where Tanzania and Uganda were to temporarily maintain tariffs on selected imports from Kenya. The results of the study suggested modest increase in regional trade flows, increase in third country imports for Kenya and Tanzania, and decline in third country imports for Uganda. They also conclude that the implementation of the Customs Union will lead to increased producer and consumer welfare for Kenya and Tanzania economies driven by the reduction in import prices but Uganda will however experience more expensive imports and the region as a whole will experience modest decline in customs revenue.

Mclntyre (2005) examined the potential trade impact of the forthcoming East African Community (EAC) customs union. The study examines the trade linkages among the member countries of the EAC and the extent to which the introduction of the EAC common external tariff will liberalize their trade regimes. To gauge the potential trade impact of the formation of the customs union, he conducted simulations for Kenya. The empirical results indicate that the customs union will have a beneficial effect on Kenya's trade but the paper does not draw any conclusions on the potential welfare impact of the customs union but however, there are transitional costs that must be addressed to minimize economic dislocation, including revenue losses as a result of the EAC CU and CET. Finally, the study stated that factors other than

enhanced trade might influence Kenyan policymakers to pursue regional integration, and these include regional cooperation in "behind the border" reforms and the provision of public goods.

DeRosa, Obwona, & Vernon (2002) noted that not all EACCU partner countries would realize net economic gains unless the CET were set appreciably below the average tariff level of Uganda, whose Most Favored Nations (MFN) tariff line was far below those of other partner states. If the CET tariffs were set above Uganda's average MFN say about 11%, the country's economic welfare and the progress of its structural reform programme, to which trade reform has been central since the early 1990s, would significantly be compromised. They concluded that alternatives like unilateral liberalization are likely to yield more economic gains for Uganda than active participation in regional integration arrangements in Africa.

The study by Hansson & Olofsdotter (2004) on the effect of integration on capital taxation in a number of OECD countries over several decades using the key features from the new economic geography theory in addition to the standard tax competition framework found out that increased integration leads to lower corporate tax rates.

The study by Mugano, Brookes, & Roux (2013) when estimating the impact of COMESA Customs Union on Zimbabwe Using a Tariff Reform Impact Simulation Tool (TRIST) reveals that Zimbabwe's imports are expected to fall by 1.2% and statutory revenue (expected revenue without exemptions) is also anticipated to decline by 1.4% if the country adopts the COMESA customs union. The adoption of COMESA customs union by Zimbabwe is expected to drive up VAT and excise duties to US$2 million and US$0.183 million, respectively hence the implementation of a COMESA customs union is expected to increase total revenue by 9.1%. The study recommends that Zimbabwe should consider improving the collection of revenue from alternative sources such as VAT, personal and company taxes and excise duty in order to cushion itself against the revenue loss impact of the COMESA CET and the Government could also consider widening the tax base by taxing the informal sector, which has been growing rapidly in the past years and should review its tax exemptions and remove unnecessary concessions.

The study by Mkenda & Hangi (2009) indicates that customs revenue will be reduced significantly as a consequence of the Economic Partnership Agreement (EPA) that is when the EAC forms an economic partnership with the European Union (EU). The study further states that

the reduction in customs revenue may result in less available funds for EAC governments to spend on their public sectors if the loss is not mitigated.

Francesca, Paolo, & Antonio (2013) addressed the issues of whether and how the degree of economic integration may affect central government tax revenues and the decentralization of the public sector. They empirically tested the direct impact of economic integration on central tax revenues using the concept of implicit tax rates (ITRs) updated to disentangle the level of taxation on mobile and immobile capital. Basing on this, they derived a country-specific measure of tax erosion which was used as a determinant of the decentralization of the public sector in an Arellano-Bond environment. They found out that an increase in economic integration generates a downward pressure on ITRs on mobile capital, which is growing at increasing rates as far as economic integration increases and that the process of tax erosion would positively contribute to the growth of public sector decentralization.

According to the EAC (2012)[13] facts and figures, in 2011, the economic performance of the entire EAC region improved greatly in terms of growth of output, trade and per capita income of the member states but the annual and underlying inflation rates were higher in all partner states in 2011 compared to the previous years. However it is not clear whether this improved economic performance is as a result of the EAC regional integration or not.

Using the WITS-SMART simulation model, Othieno & Shinyekwa (2011) provides insights on the effects of the East African Community Customs Union principle of asymmetry on Uganda with regard to trade, welfare and revenue effects since 2005. The phased tariff reduction increased trade creation and welfare effects in Uganda. They stated that, this effect will have a reflection on consumer surplus in terms of reduced prices. Their results also suggested that government shall incur a tariff revenue loss which should not be ignored given the fluctuating growth in the general trade tax revenue hence recommended that, there is need to strengthen domestic ability to mobilize revenue or seek alternative source of funding.

Francisco & María (2008) using a time series approach during the period 1965 - 2005 examined the tax policy convergence in the European Union. Their results showed little evidence on tax convergence and that the autonomy of the countries and differentiated economic structures and

[13] EAC Facts and Figures is released annually by the EAC secretariat based in Arusha, Tanzania.

politics preferences about the degree of public intervention prevail over the idea of equalization in the fiscal field in the European Union.

Haufler, Klemm, & Schjelderup (2006) in their study on economic integration and redistributive taxation using a simple model with ambiguous results stated that, the rise in foreign direct investments and the increasing activity of multinational firms expose national corporate tax bases to cross-country profit shifting, but also lead to rising profitability of the corporate sector. They also incorporated the two effects of economic integration into a simple political economy model where they showed that economic integration increases the efficiency cost of capital taxation, but also increases the redistributive benefits of the tax from the perspective of the median voter deciding on a redistributive income tax rate. Their simple model holds several implications for future empirical work on the relationship between globalization and the effective rate of capital taxation hence facilitating future research.

Baskaran & Fonseca (2013) surveyed the theoretical and empirical literature on local and international tax competition in European Union. Based on their survey, they discussed whether EU countries should harmonize tax policies in order to prevent a race to the bottom. Much of their evidence suggested that tax competition does not lead to significant reductions in tax revenues and hence concluded that tax coordination is in all likelihood unnecessary to prevent inefficiently low levels of taxation in the European Union.

Francesca & Paolo (2009) reviews the empirical literature on the impact of economic integration on the size and the composition of the public budget. From a theoretical perspective, a pessimistic view highlights that economic integration is a potential threat to the action of the public sector. An optimistic view, instead, emphasizes the beneficial effects of integration in stimulating efficiency-enhancing public policies. Despite some well established theoretical results, the empirical evidence on their topic is rather controversial. Some studies support the hypothesis that taxes and public spending may increase to compensate losses from a more open economic environment while others support the opposite idea that the public sector retrenches in reaction to increasing difficulties to tax and spend with mobile tax bases.

Mugisa, Onyango, & Mugoya (2009) conducted their study on evaluating the implementation and the impact of EAC custom union covering the three origional EAC partner states; Kenya,

Tanzania and Uganda using descriptive statistics. Their findings established that there are some uncertainties regarding the establishment of EAC regional integration and that the EAC custom union has increased the cross-border and EAC extra regional trade in all partner states.

Sangeeta, Kimbugwe, & Perdikis (2009) assessed the Welfare Effects of the East African Community Customs Union's Transition Arrangement on Uganda. They quantified these effects and demonstrated that contrally to the expressed fear that Uganda will be adverselly be affected with regard to trade, exports and industrial competiveness is not the case but instead there is more trade creation than diversion hence a positive trade effect. They revealed that, there is a notable loss of revenue and a lower welfare effect created by reduction and eventual elimination of tariffs with Kenya. Their study further demonstrated that whereas some sectors are likely to be impacted negatively, others will be impacted positively. Unfortunately their study only considers Kenya and Uganda and yet the EAC CU is made up of five member countries whose interactive effect at zero percent tariff is likely to produce different results hence the need for the present study that considers all the five EAC partner states.

The study by Shinyekwa & Mawejje (2013) on the macroeconomic and sectoral effects of the EAC regional integration on Uganda using the General Equilibrium Model (CGE) for the analysis based on the Uganda social accounting matrix found out that the aggregate impact of internal tariff reduction under conditions of unemployment and free movement of factors of production is positive with the average GDP growth improving with up to 0.3 percentage points over the period 2008 – 2021. But the reduction in tariffs has negative implications for tax collections with import duties contracting by 0.3 percentage points, with no significant gains in direct tax revenues. The study also found out that the rise in exports to EAC region leads to a decline in the trade deficit by 0.8% during the simulation period. There are also significant growth gains for agriculture, industry and services sectors with the fornmer registering growth improvements of 1.2 percentage points and the other two 0.7 percentage points. They recommended that Uganda should optimise gains within the EAC regional integration framework through tariff reduction and free movement of factors of production and that the government should address infrastructural constriants particularly energy and transport to foster growth in the manufacturing sector with in the EAC region.

The study by African Development Bank (2011) on Domestic Resource Mobilization for Poverty Reduction in East Africa summarizes the key lessons for improving tax revenue mobilization in three broad areas, including: (i) general enabling environment for tax policy and administration; (ii) tax policy and legislative frameworks' (iii) and tax administration. Their study concludes by identifying short - and longer-term priority recommendations for increasing EAC countries' tax revenue mobilization and expanding their tax bases. The short-term priorities are defined as those actions which are within the ambit of the Ministry of Finance or the Revenue Authority. The longer-term priorities are, however, those which are outside their purview and lie at a broader and/or more political level. The short-term measures include: Reviewing tax incentives and exemptions so as to eliminate the unproductive ones; Providing each tax payer with a unique tax identification number (TIN) and linking this to the taxpayer's personal ID or company registration number; Leveraging third party information from company, property, and vehicle registries to expand the tax base; and improving compliance management and enforcement by improving taxpayer services and undertaking comprehensive taxpayer risk profiling. The longer-term measures comprise: Aligning tax policies and using taxes as an instrument to achieve broad national development objectives; Ensuring managerial autonomy of the revenue authorities in accordance with existing legislation, and holding them accountable to an agreed set of performance measures; and Expanding access to financial services for facilitating tax enforcement and compliance, while managing the potential trade-off between savings mobilization and using financial information for tax administration. Simultaneous implementation of these seven recommendations is likely to have the strongest impact on enhancing tax revenue mobilization and broadening the tax base in EAC partner countries.

3.1.3 Regional Economic Integration Theory

The drive for regional integration draws its rationale from the standard trade theory, which states that free trade is superior to all other trade policies (Viner, 1950). As an extension of this basic principle, therefore, free trade among two or more countries will improve the welfare of the member countries as long as the arrangement leads to a net trade creation in the Vinerian sense. That is, though as the theory of the second best indicates, regional agreements do not guarantee an improvement in the welfare of member countries, they could do so provided trade diversion is minimal and/or trade creation tilts the balance. Historically, the customs union theory in the context of which economic integration issues are discussed was concerned with welfare gains

and losses that follow the formation of customs union. Such gains and losses may emerge from a number of sources such as (i) specialization, (ii) economies of scale, (iii) changes in terms of trade, (iv) forced changes in the efficiency owing to increased competition and (v) due to a change in the rate of economic growth (Lipsey, 1987). According to Lipsey, the theory of customs union has been almost completely confined to an investigation of the first issues, with some slight attention to the second and third issues; the fifth item not being dealt with at all, while the fourth issue is ruled out of traditional theory by the assumption that production is carried out by processes which are technically efficient.

The traditional theories of trade, which assume constant returns to scale and focus on static gains, provide a limited practical insight to regional integration policy issues, in particular in developing countries such as in Africa (Alemayehu & Haile, 2002). Until Viner's penetrating analysis in 1950, both free traders and protectionists argued in favor of trade blocs. The former saw only the benefits of free intra-bloc trade while the latter emphasized the benefits of protection from non-members' goods (Snorrason, 2012). Viner's introduction of the key concepts of trade creation and trade diversion however, demonstrated that trade blocs were not necessarily welfare improving for member states or globally, but also trade blocs might harm welfare. Viner associates trade creation with a welfare gain and trade diversion with a welfare loss. Therefore, whether or not a trade bloc is welfare increasing depends upon the relative magnitudes of trade creation and trade diversion. Trade creation is the replacement of domestic production by lower cost imports from a partner and trade diversion is the replacement of lower cost cheaper imports from the world market by more expensive imports from a partner. Viner stresses that trade creation is beneficial; since it does not affect the rest of the world, while trade diversion is harmful hence the relative strength of these two effects determines whether or not a trade bloc is welfare enhancing (Viner, 1950). However the degree of trade diversion is likely to be small where the members of the union have extensive trade with each other and a low common tariff on imports from non-member countries (Winner, 2005).

Peters (1979) identified various forms of economic integration in a sequence starting with the least restrictive set of association. The loosest form of association is represented by trade preferences or partial scope agreements and mainly focuses on liberalization of trade in specific commodities or sectors. A typical example is a Preferential Trade Agreement (PTA). With PTA

countries only agree to reduce tariffs only on some set of product categories while higher or non discriminatory tariffs still prevail on all other product categories. A free trade area is the second level and most common type of economic integration in which members remove all barriers on trade (tariffs, quotas and non - tariff barriers) among themselves but retain their independent external tariffs. A customs union is the third form of integration. It allows free trade among its members and adopts a common external tariff against countries outside the customs union. Members of a customs union harmonize their trade policies toward the rest of the world. In a common market, members move beyond a customs union, and beyond narrow integration or commodity trade reforms, to allow the free movement of labour and capital within the union.

The most advanced type of economic integration is an economic union which goes further than the common market by harmonizing or even unifying the monetary and fiscal policies of member states. A political union represents the ultimate stage of economic and political integration in which the legislative and judicial process of member states are either unified or federated under consensually agreed arrangements. Though in the theory of economic integration, a Customs Union is supposed to be the third stage of integration after a Preferential Trade Area and a Free Trade Area, the Treaty for the establishment of the East African Community provides that a Customs Union shall be the first stage in the process of economic integration and shall be followed by a Common Market, then a Monetary Union and subsequently a Political Federation.

3.1.4 Static and Dynamic Benefits of a Customs Union

Entry into a regional integration scheme can have both static effects, which are as a result of resource allocation in response to changing relative prices, and dynamic effects which results from changes in efficiency, ability to exploit economies of scale, and in level of investment and growth (Mengesha, 2009). In theory, the formation of a customs union is associated with some static welfare effects and dynamic benefits. One of the benefits is the administration savings from the elimination of customs officers, border patrols for trade among member states (Salvatore, 2007). The removal of economic barriers among member states will result in a better division of labour and consequently in an increase in production and prosperity. The elimination of trade barriers among member states are also associated with increased competition which stimulates development through efficiency and utilization of new technology.

Many countries are too small to support separately activities that are subject to large economies of scale. This might be because insufficient quantities of specialized inputs are available, or because markets are too small to absorb the sales necessary to cover costs. The formation of a customs union offers one route to overcome the disadvantages of smallness, by pooling resources or combining markets thereby forming a critical mass. The larger market brings countries into closer contact and competition with each other hence leading to high quality goods produced.

Viner (1950) takes into account only trade creation and trade diversion effects, which are considered by Cline (1978) as traditional static gains. On top of these traditional static effects, Cline (1978) provides additional non-traditional static effects from regional trade integration, which are as follows: Labour opportunity effect which occurs when an increase of output made possible by regional trade integration allows for the employment of extra labour at a wage below the minimum wage rate; economies of scale effect which occurs when firms become able to produce at their capacity, as a result of the increase of the market size made possible by the integration and foreign exchange saving effect which results when a group of countries forms an RTA, they increase imports from within the union and reduce the level of imports from outside the union, thus saving foreign exchange.

According to Mengesha (2009) there are also a variety of potential dynamic effects which may be felt more gradually but will be longer lasting and in some cases continued even when the regional integration collapses. First, there is the competition effect, brought about by freeing imports from partner countries. Second, there is the investment effect, which appears when there are new foreign and domestic investments that have not occurred in the absence of regional trade integration. Third, the larger market provides greater possibilities for the exploitation of economies of scale. Fourth, there is an effect on capital formation, possibly through various channels: reduction on barriers to diffusion, technological transfer, externalities from export growth, rising marginal product of capital and so on. Fifth, the union members acting as a group may be more able to influence the terms of trade they face. Lastly, there is structural transformation effect, which is a shift from traditional primary-products export to new industrial-products export. In contrast to the static effect of regional trade integration, the dynamic effects are presumed to continue to generate annual benefits, even after the withdrawal of a country

from the union. For instance, increased growth rate made possible by integration will have continued effects provided that it is sustained.

3.1.5 Revenue and Welfare Effects of a Customs Union

The earliest customs union theory generally believed that any economic integration that represents a movement towards free trade should be beneficial and welfare enhancing. It is believed that free trade maximizes world welfare. A customs union reduces tariffs and is therefore a movement towards free trade hence it was believed that a customs union increases world welfare. However, this belief was challenged by Viner (1950) when he showed that the net impact of a regional trade agreement on welfare is uncertain and depends on a number of economic circumstances.

Bhagwati (1971) also contributed to the discussion by arguing that the absence of substitution in consumption is not a sufficient condition for a trade-diverting customs union to be welfare-reducing. He argues that Lipsey (1987) analysis, while it excels in highlighting the consumption gain, is insufficient in its treatment of the question as to why Viner (1950) overlooked the possibility that a trade-diverting customs union may none the less be welfare-improving. He demonstrated that variability in production can also be a source of welfare gain that can exceed the welfare loss due to the diversion of trade; hence, a net gain can accrue to the home country as a result of a trade diverting union even if fixed consumption coefficients are assumed. It is generally believed in the reviewed literature that when the benefits of trade creation exceed the costs of trade diversion then there is a net welfare gain in the formation of a customs union and the reverse is true.

The revenue effect relates to the loss in government revenue that occurs when the elimination of tariffs leads to loss in customs duties charged on imported goods. The loss in customs duties means a loss in funds going to the governments' budget. A reduction in government revenue resulting from a loss in customs duties can affect a governments' ability to provide essential public services, such as education and health unless alternative funds for such losses are found (Mkenda & Hangi, 2009).

3.2.0 Empirical literature (Determinants of tax revenue)

From the empirical literature[14] there are structural, economic, political and institutional determinants of tax revenue in both developed and developing countries. The level of economic development; Trade Openness; Sector-wise Composition of GDP; Tax evasion; Inflation; Fiscal Deficits and Debt; Foreign Aid; Corruption; Population Density; Governance; The size of the Shadow Economy; Quality of Institutions and rents from natural resources have been found as significant determinants of tax revenue see for example (Teera, 2003; Chaudhry & Munir, 2010; Dioda, 2012; Eltony, 2002; Gabriel, 2009; Gupta, 2007; Karagoz, 2013; Francesca, Paolo, & Antonio, 2013; Drummond, Daal, Srivastava, & Oliveira, 2012; Hisali & Ddumba, 2013) among others. However the traditonal determinants of tax revenue are per capita GDP, the sectoral composition of output, the degree of trade openness, inflation, external debt, the ratio of foreign aid to GDP, the current account balance and foreign direct investments (Drummond, Daal, Srivastava, & Oliveira, 2012).

Tanzi (1981) finds that mining and non - mineral export share positively affect the tax ratio for sub-Saharan African countries. Focusing on the same region, Leuthold (1991) used panel data to find a positive impact from trade share, but a negative one from the share of agriculture on tax.

Using a panel of 43 sub-Saharan African countries during 1990 - 95, Stotsky & Mariam (1997) measured the determinants of the tax share in GDP and constructed a measure of tax effort. This analysis concluded that the shares of agriculture in GDP and mining in GDP are both negative and significantly related to the tax share, and that the export and import shares in GDP are both positive and significantly related to the tax share whereas per capita income is not significant.

IMF Structural adjustment programs such as trade liberalization also have some effects on the domestic exchange rates as well as fiscal structure. Agbeyegbe, Stortsky, & Woldermarian, (2004) investigated the relationship between the tax revenue, trade liberalization and changes in the exchange rate using a panel data set of 22 sub-Saharan countries. Their results suggest that trade liberalization; agricultural share, industrial share, government consumption, and terms of trade exert a positive effect on total tax revenue, while inflation exerts a negative effect. They explain the unexpected positive effect of agricultural share by the influence of exports in

[14] Empirical findings in the literature regarding tax revenue reflect the sensitivity of the results to the set of countries, period of analysis and controls (Drummond, Daal, Srivastava, & Oliveira, 2012).

providing a tax handle. On the other side, the sign of agricultural sector share turned to negative when the dependent variable is income tax revenue, while that of industrial sector's share remained the same.

Bird, Jorge, & Torgler (2004) analyzed the data on tax revenues and their determinants using a sample of 110 developing countries for 1990-1999 and had the following conclusions; per capital GDP is positively related to tax revenue but trade openness does not have a significant influence on tax revenue; demographic growth and the share of agriculture in GDP is associated with lower levels of tax revenue. Their results also suggested that the degree of inequality, the shadow economy size and the regulation of entry are negatively related with tax revenue. The indices of civil liberties and political rights, political stability, rule of law and relative absence of corruption have a positive relation with tax revenue. They also carried out some regional comparisons and found out that the lower level of tax revenue in Latin America relative to other developing countries is majorly due to the lower quality of its institutions, higher corruption, larger shadow economy and lower tax rates.

Gupta (2007) investigated revenue performance for 105 developing countries over the past 25 years. He found that several structural factors like per capita GDP, share of agriculture in GDP and trade openness are significant and strong determinants of revenue performance. He also looked at the impact of foreign aid and foreign debt on revenue mobilization. His findings suggest a strong negative and significant relationship between agriculture share and revenue performance. The results indicate that although foreign aid improves revenue performance significantly, debt does not. Among the institutional factors, he found corruption has a significantly negative effect on revenue performance. Political and economic stability are other effective factors, but only across certain specifications. On the other hand, countries that put greater emphasis on taxing income, profits and capital gains, perform better. Structural factors are found to be significant across all income groups, when the analysis is conducted over the sub-samples based on income level but foreign aid had a significant positive effect on tax revenues in low income countries but not in middle or high income countries but he found a strong negative relationship between tax revenue and corruption only for middle and low income countries. He also identified a negative relation between indirect taxes and revenue performance,

since the overall tax revenue as a share of GDP tends to be lower in the presence of a relatively high level of taxes on goods and services.

Mahdavi (2008) in his analysis of data of 43 developing countries over the period 1973-2002 found a positive correlation between tax revenue and openness of the economy, literacy rate and GDP per capital growth rate. He also concluded that an increase in foreign aid, in aging of the population, in population density and in inflation has a negative relationship with tax revenue whereas variables such as the share of agriculture on GDP, female labor force participation, economic volatility, civil liberties and political rights are statistically insignificant. He also found a positive correlation between tax revenue obtained from income, profits and capital gains and the level of political rights but the civil liberty index he used was negatively associated with value added tax, property taxes and social security revenues.

Piancastelli (2001) based on data of 75 developed and developing countries over the period 1985-1995, identified per capita GDP, the share of industry in GDP and trade openness as the most important determinants of tax revenue. In his study, the share of agriculture on GDP is negatively related to tax revenue and he stated that this finding is in line with a number of earlier studies such as Chelliah (1971) and Tanzi (1981) among others.

In another panel data study, Eltony (2002) examined the determinants of tax revenue shares and constructed an index of tax effort for the 16 Arab countries. The results suggest that the main determinants of the tax share in the GDP for the Arab countries are the per capita income, the share of agriculture in GDP and the share of mining in GDP. These variables are statistically significant and possessed the expected signs. Other variables that are also important determinants are the share of exports and imports and in only the non-oil Arab countries, the outstanding foreign debt was found significant and positively related to the tax share.

Chaudhry & Munir (2010) attempted to analyze empirically the determinants of low tax revenue in Pakistan by employing time series econometric techniques over the period 1973-2009. They investigated whether economic policies, external variables and social indicators along with elements of tax base can account for part of the variation in the tax revenue performance. Their empirical results suggest that openness, broad money, external debt, foreign aid and political stability are the significant determinants of tax efforts in Pakistan with expected signs. The

results also indicates that the determinants of low tax revenue in Pakistan are narrow tax base, more dependence on agriculture sector, foreign aid and low level of literacy rate. Finally they concluded that Pakistan economy can generate high tax to GDP ratio by boosting the openness, literacy level, political stability and broadening the tax base and by controlling income inequality, tax evasion and tax exemptions.

Okech & Mburu (2011) analyzed the responsiveness of tax revenue to changes in National income in Kenya between 1986 and 2009 and found out that Kenyan tax revenue was neither buoyant nor income-elastic despite reforms undertaken over the period since 1986. On the basis of their findings, they recommended that there is need to re-evaluate the tax policy measures that have been implemented over the years in order to make tax responsive to national income while enhancing tax collection measures.

Profeta & Scabrosetti (2010) analyzed determinants of tax revenue of 39 developing countries over the period 1990-2004, including 11 Asian, 19 Latin American and 9 recent members of EU where they identified statistical significance differences in the regional determinants of tax revenue. For instance, GDP per capita and the debt/GDP ratio were not statistically significant determinants of tax revenues in Asian economies included in the sample, but were positively statistically significant determinants for Latin American countries. But for the whole sample both indicators appear to have a positive but not always significant influence. The share of agriculture over GDP influences tax revenue negatively in Latin America but is not significant in Asia; openness of the economy has a positive impact on tax revenue in Asia and Europe, but negative in Latin America.

Ajaz & Ahmed (2010) in their study on the effects of corruption and governance on tax revenue in developing countries using a panel data set for 25 developing countries during1990 - 2005, their GMM regression results show that institutional variables have significant effect on all taxes, their findings also indicated that corruption has a negative effect on tax collection, while good governance contributes to better performance in tax collection. In the same study, it was also found out that in developing countries, tax collection depends on efficiency of government and that the voice, accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption are important factors in determining tax revenues in

developing countries and hence recommended that developing countries need to strive to reduce the opportunities of corruption in tax administration and change the incentive structure for tax officials if they are increase on their tax revenue collection.

Karagoz (2013) studied the determinants of tax revenue in Turkey and found out that tax revenues in Turkey are significantly affected by agricultural and industrial sector share in GDP, foreign debt stock, monetization rate of the economy and urbanization rate whereas the sign of the agricultural sector's share is negative as it was expected. The results also suggested that openness to foreign trade has no significance impact on tax revenues in Turkey. Most of these studies their conclusions were in line with the conclusions of the previous studies.

In the study by Botlhole (2010) on tax effort and the determinants of tax ratio in Sub-Saharan Africa over 1990-2007 by means of an interaction term to introduce the notion that the effect of resource revenues is conditional on the quality of institutions, His principal findings were that the quality of institutions and the resource revenues are strong determinants of tax ratio. The results also suggested that the structure of value-added; agriculture, service and industry shares are strong determinants of tax ratio. The study also recommended that if countries improved their quality of institutions, more tax revenue could be raised from resources.

The study by Bhushan & Samy (2012) on Aid and Taxation in Sub-Saharan Africa where the existing literature suggested a negative relationship between aid and taxation but the results are very sensitive to data quality and specification problems. They revisited the aid-taxation link using more recent data as well as a new and more detailed dataset by Keen & Mansour (2009) which allowed them to focus on revenues that require more state capacity to collect. They controlled for other determinants of taxation and found that aid had no significant impact on taxation generally or in sub-Saharan African Africa particularly. Their results are robust to different specifications and time periods, as well as threshold.

DiJohn (2008) investigated the political economy of taxation and tax reform in developing countries and argued that taxation provides one of the principle lenses in measuring state capacity, state formation and power relations in a society. He critically examined three main approaches; economic, administrative and political economy to understanding taxation. He also examined differences in tax composition across middle-income developing regions and founds

out that Latin American economies tax upper income groups much less than in East Asia and Eastern Europe and explores the political economies and explores the problem that capital flight poses for less developed countries.

Dioda (2012) examined the structural determinants of tax revenue in Latin America and the Caribbean between 1990 and 2009 using panel data econometric methodologies from 32 Latin American Countries and concluded that among the factors that exert a statistically significant influence on tax revenue are civil liberties, female labor force participation, the age composition of the population, the degree of political stability, the level of education, the population density as well as the size of the shadow economy.

Drummond, Daal, Srivastava, & Oliveira, (2012) reviewed the experiences of low-income SSA countries in mobilizing revenue in recent decades, with two broad aims; identifying empirical norms of how much and how fast countries have been able to mobilize more revenue and empirical determinants using panel estimates of revenue mobilization. They stated that mobilizing more revenue is a priority for sub-Saharan African (SSA) countries and that countries have to finance their development agendas using mobilized revenue. They further stated that weak revenue mobilization is the root cause of fiscal imbalances in several countries. Their study found out that; the frequency distribution of changes in revenue ratios for SSA low-income countries (LICs) peaks at a pace of about ½ – 2 percentage points of GDP in the short-to-medium term and at a pace of about 2–3½ percentage points of GDP over the longer term, and that almost all SSA-LICs managed to increase revenue ratios by more than 2 percentage points of GDP in the short-to-medium term, at least once in the last two decades. Their panel estimates suggested that structural factors, such as per capita GDP, share of agriculture in GDP, inflation, degree of openness, and rents received from natural resources, are important determinants of tax revenue.

Hisali & Ddumba (2013) analyzed the relationship between tax revenue and foreign aid in Uganda using a framework in which fiscal targets and actual outturns differ. Their results suggested that grants have a negative association with tax revenue but are offset by the positive association of loans that result in some modest increases in tax revenue in the long run. The coefficient on the per capita income variable suggests that the tax system is inelastic. They

recommended that Policies that reduce mutation of taxpayers and noncompliance will reduce the country's reliance on aid and its unwanted effects.

A study by Gabriel (2009) examined the determinants of tax revenue in Uganda, Kenya and Tanzania using panel data anysis covering a period between 1990 and 2007. He also predicted the tax capacity and the tax effort for each of these countries and found out that the tax effort of Kenya was greater than one while that of Uganda and Tanzania was less than one and recommended that Kenya should rationalise her expenditure in case of a budget imbalance while Uganda and Tanzania should instead redesign their tax systems. His study found out that the agricultural share in GDP, the degree of openness, the share of manufacturing sector, the size of the monetary sector, the level of inflation and the share of aid in GDP plus the share of external debt as the major determinants of tax revenue in these countries. However, this study only considered the determinants of tax revenue in only three of the EAC countries yet EAC has five member states. Therefore, different from this study, the present study on top of EAC regional integration, identifies other determinants of tax revenue in all the five EAC partner states.

3.3.0 Summary

The variety of theoretical positions do not find a synthesis on the empirical side since the empirical evidence investigating the relationship between regional economic integration and tax revenue is not abundant. On the contrary, existing empirical studies show mixed evidence on the impact of regional economic integration on tax revenues. The empirical findings are mixed because of their sensitivity to the set of countries selected and the period of analysis. Unlike South-East Asian countries, which are more competitive and integrated into the global economy, the EAC partner states and other Sub-Saharan Africa countries have great difficulty in dealing with their increasing impact of trade liberalization a proxy for regional integration on tax revenues (Malugu, 2014). For example, the economies of EAC are mainly characterized by low-income and based on subsistence agriculture, which are difficult to tax. Moreover, budgetary income of the EAC states is closely tied to international trade revenues. From this viewpoint, therefore, the EAC regional integration could create a considerable gap in revenue and might lead to a worsening of major macroeconomic imbalances hence the need to empirically investigate its impact on tax revenues of the partner states. Most studies on the impact of economic integration and or trade liberalization on tax revenue, however, are based on a large

sample of developing countries with few focuses on specific emerging economies and the number of years covered are rarely updated to very recent times where the globe has been actively involved in regional integration efforts hence their results might be severely biased by not considering the period where regional economic integration has actually developed most.

Also some of the empirical studies were conducted in single partner states say Kenya, Tanzania or Uganda with no study at all conducted in Burundi and Rwanda while others were conducted before the revival of the EAC regional integration.

Therefore in order to fill the above gaps, the present study examines the tax revenue implications of EAC regional integration as a single regional bloc from 1990 to 2011 using panel data estimation techniques since panel data is advantageous as it adds more variability in the data which helps to mitigate collinearity between the study variables (Greene, 2012) hence yielding excellent estimated results.

CHAPTER FOUR

METHODOLOGY

This chapter explains the methodology used by the study to examine the relationship between regional integration and tax revenue using a case study of the East African Community (EAC) alongside identifying other determinants of tax revenue in the EAC partner states.

4.1 The theoretical framework of the study

The framework of the theory of regional economic integration was laid down by Jacob Viner (1950) who defined the trade creation and trade diversion effects, the terms introduced for the change of interregional flow of goods caused by changes in customs tariffs due to the creation of an economic union. He considered trade flows between two states prior and after their unification, and compared them with the rest of the world. His findings became and are still the foundation of the theory of regional economic integration.

The basics of the theory were summarized by the Hungarian economist Béla Balassa in the 1960s that as a regional economic integration increases, the barriers of trade between markets diminish (Gastaldi, 2008). Balassa believed that supranational common markets, with their free movement of economic factors across national borders, naturally generate demand for further integration, not only economically via monetary unions but also politically thus economic communities naturally evolve into political unions over time.

Different types of methodologies have been employed to study the impact of regional integration on partner states' economies. Generally, most researchers have either adopted an econometric approach mainly using gravity model, elasticity approach (both before and ex-post regional integration analyses) or have conducted simulations based on computable general equilibrium (CGE) models or partial general equilibrium models. However the present study uses an econometric approach and extends the tax model developed by Heller (1975) and also used by Leuthold (1991); Caballe & Panades (1997); Ghura (1998); Chen (2003) among others where the public decision maker's utility function is maximized subject to a budget constraint in order to establish the impact of EAC regional integration on partner states' tax revenue and identify other tax revenue determinants in EAC. It applies the panel data techniques of fixed effects, random effects and the first difference Generalized Method of Moments (GMM).

The study focuses mostly on empirical studies that examine the determinants of tax revenue such as the seminal paper by Heller (1975); Leuthold (1991) and Ghura (1998) among others that examined the utility-maximizing behavior of governments where fiscal decision makers minimize a quadratic loss function subject to a budget constraint defined by revenue, borrowing and aid in order to attain revenue (tax and borrowing) and expenditure targets.

In most of the previous studies, taxable capacity is measured by regressing for a sample of countries the tax revenue to GDP ratio on explanatory variables that serve as proxies for possible tax bases and other factors that might affect a country's ability to raise tax revenues. This regression approach has been applied to samples of developing and industrialized countries (see for example Chelliah (1971); Heller (1975); Tanzi (1981, 1987 & 1992); Leuthold (1991); Ghura (1998); Eltony (2002); Gupta (2007); Gabriel (2009); Karagoz (2013); Hisali & Ddumba (2013) among others). The predicted tax ratio from such a regression is considered as a measure of taxable capacity while the regression coefficients can be interpreted as average effective rates on those bases. In the regression approach, tax effort is defined as a ratio of tax revenues to some measure of taxable capacity for instance GDP, thus assuming that the tax bases and other explanatory variables reflect only differences in taxable capacity (Tanzi,1995).

The often used tax revenue to GDP ratio (the dependent variable) is a relatively crude measure of "tax performance". From Musgrave (1969), Tanzi (1987), Gupta (2007) and others, it is noted that economic development brings about both increased demand for public expenditure and greater taxable capacity in order to meet the increased demands. However, beyond income level, several other factors contribute to tax revenue such as population density, economic structure of the economy as measured by the inflation rates and exchange rates (Stotsky & Mariam, 1997), openness to trade (economic integration), tax evasion (Teera, 2003; Teera & Hudson 2004), and ultimately, fiscal policy choice such as contractionary or expansionary fiscal policies.

Therefore on top of the EAC regional integration, the study considers the rate of inflation, the size of the external debt, population density, per capita GDP and Economic Growth (GDP growth rate) as other explanatory variables. High inflation rates are expected to reduce the real value of taxes collected thus the study expects a negative relationship between these two variables. In the case of external debt, the ability of countries to borrow and accumulate debt

may mean that they do not have to rely on taxes, especially when political cycles are short. However, governments may also resort to higher taxes in order to finance increasing debt burdens. Therefore the degree of external indebtedness of a country may affect revenue performance as well. To generate the necessary foreign exchange to service the debt, a country may choose to reduce imports. In such a scenario, import taxes will be lower. Alternatively, the country may choose to increase import tariffs or other taxes with a view of generating a primary budget surplus to service the debt. Studies such as Tanzi (1991) and Eltony (2002) found that foreign debt is positively related to resource mobilization of a country. Economic development brings about both increased demand for public expenditure and greater taxable capacity to meet the demands (Bhushan & Samy, 2012). It is also expected that those countries with higher levels of per capita income are able to draw more tax revenue since potential taxable income is higher and tax collection systems are more developed and efficient. Densely populated countries collect more taxes than the sparsely populated countries since high population density indirectly increases the tax base (Teera, 2003; Ansari, 1982; Botlhole, 2010; Karagoz, 2013).

4.2 Theoretical Model

In order to establish the impact of the EAC regional integration on tax revenue of the partner states alongside identifying other determinants of tax revenue in the EAC region, the study extends the tax model developed by Heller (1975) and also used by Leuthold (1991); Caballe & Panades (1997); Ghura (1998); Chen (2003) among others. The public decision maker's utility function is given by;

$$U = U(Y - T, G, D, (F + L)) \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (1)$$

- U_{Y-T} and $U_G > 0$,
- U_D and $U_{F+L} < 0 \; if \; D \; and \; (F + L) > 0, and$
- U_D and $U_{F+L} > 0 \; if \; D \; and \; (F + L) < 0.$

Where Y-T (GDP, Y less tax revenue, T) is the private sector's disposable income; D is net domestic government borrowing (non - tax revenue); G is the total government expenditure; and (F+L) is the net foreign financing consisting of grants (F) and loans (L) including external arrears accumulation or decumulation (net amortization). The variables D and (F+L) can either be positive or negative and thus the first derivatives of U with respect to D and (F+L) are either

negative or positive. All variables in the model are in real per capita terms. The budget constraint faced by the decision maker is given by;

$$T + (F + L) + D = G \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (2)$$

The desired tax revenue is determined by maximizing (1) subject to (2). Following Heller (1975), it is assumed that the utility function takes the quadratic form as below;

$$U = \alpha_1(Y - T - Y_S) - \frac{\alpha_2}{2}(Y - T - Y_S)^2 + \alpha_3(G - G_s) - \frac{\alpha_4}{2}(G - G_s)^2 - \alpha_5 D - \frac{\alpha_6}{2}D^2 - \alpha_7(F + L) - \alpha_8(F + L)^2 \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (3)$$

Where the $\alpha's$ are positive constants. Ys and Gs are subsistence levels of income and government expenditure respectively. Empirically a quadratic utility function is preferable to a log – linear one because the terms D and (F+L) can either be positive or negative (Ghura, 1998). However, since Ys and Gs are not observable, following Leuthold (1991), it is assumed that they are simple linear functions of income as shown below;

$$G_s = g_0 + g_1 Y \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . (4a)$$

And

$$Y_s = y_0 + y_1 Y \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . (4b)$$

Maximizing (3) with respect to T, G, and D after substituting for Gs and Ys subject to the budget constraint (2), yields the following reduced form for the desired equation for tax revenue-GDP ratio $\left(T/_Y\right)^*$ after solving the optimal equations simultaneously;

$$\left(T/_Y\right)^* = \left(\frac{\alpha + \alpha_4 g_o - \beta y_0}{\beta + \alpha_4}\right)\left(\frac{1}{Y}\right) - \left(\frac{\alpha_4}{\beta + \alpha_4}\right)\left(\frac{(F + L)}{Y}\right) + \left(\frac{\alpha_4 g_1 - \beta y_1}{\beta + \alpha_4}\right) \ldots \ldots \ldots \ldots \ldots \ldots \ldots (5)$$

Where $\alpha = (-\alpha_1 + \alpha_3 - \frac{\alpha_1\alpha_4}{\alpha_6} + \frac{\alpha_4\alpha_5}{\alpha_6})$ and $\beta = \frac{\alpha_2(\alpha_4 + \alpha_6)}{\alpha_6}$.

Variable D, the net domestic borrowing (non tax revenue) disappears during the process of solving for desired tax revenue GDP ratio. Expanding on Leuthold's (1991) applied tax model, it is assumed that the actual tax revenue GDP ratio (T/Y) is a function of the desired tax revenue

GDP ratio $\left({}^{T}/_{Y}\right)^{*}$ and the availability of certain tax bases (B) as well as the status of macroeconomic policies (M) and the degree of openness of the economy (Ghura, 1998). In this study, the degree of openness of an economy to other economies is captured by the EAC regional integration dummy variable (EAC) since it is noted in the literature that regional integration increases the degree of openness of an economy (Mclntyre, 2005). That is;

$$ {}^{T}/_{Y} = f\left\{\left({}^{T}/_{Y}\right)^{*}, B, M, EAC\right\} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6) $$

Substituting for $\left({}^{T}/_{Y}\right)^{*}$ in equation (6) yields;

$$ {}^{T}/_{Y} = f\left(\frac{1}{Y}, {}^{(F+L)}/_{Y}, B, M, EAC\right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7) $$

Since β is positive and α could either be negative or positive, the actual tax revenue GDP ratio (T/Y) is a negative function of (F+L)/Y and an uncertain function of the inverse of per capita income (1/Y). The present study will establish the relationship between per capita GDP and the tax revenue GDP ratio.

Therefore equation (7) which is the theoretical model of the study identifies per capita income (Y), foreign financing as a ratio of a GDP (${}^{(F+L)}/_{Y}$), elements of the country's tax bases (B) also known as tax handles, macroeconomic policies (M) and the degree of openness of an economy captured by the EAC regional integration as the major factors that influence tax revenue GDP ratio in the East African Community.

The elements of a country's tax bases better known as the tax handles considered in the previous empirical studies include the population size of the country, the share of agriculture in GDP, the share of oil and non-oil mining activities, trade activities (exports and imports), the share of manufacturing sector in GDP, the share of service sector in GDP, sectoral value addition among others for example see (Agbeyegbe, Stortsky, & Woldermarian, 2004; Botlhole, 2010; Eltony, 2002; Gupta, 2007; Gabriel, 2009; Karagoz, 2013) among others. The element of a country's tax base in this study is captured by the population density while the influence of macroeconomic policies on the tax revenue GDP ratio is captured by the inflation rate.

The effect of inflation rate on tax revenue can be registered mainly through three channels; first, in an inflationary environment, when actual tax payments lag the transactions to be taxed, tax obligations are lower in real terms at a time of payments (Tanzi, 1987). Second, excise duties on a number of products for example tobacco, alcohol, and gasoline may be levied at specific rates that may not necessarily be adjusted in line with inflation (Ghura, 1998). Finally, high inflation rates reduce the tax base because in order to protect the real value of their wealth, economic agents make portfolio adjustments in favor of assets that typically escape the domestic tax net such as land, livestock, jewels and foreign capital (Ghura, 1998) thus the overall effect of inflation on tax revenue is expected to be negative in this study.

With respect to external financing the theoretical model predicts a negative effect of increases in external financing on domestic tax revenue GDP ratio. In the literature, two variables are usually used to capture this effect; the ratio of foreign aid to GDP and the ratio of public stock to GDP (Ghura, 1998). However for this study, the effect of external financing is captured by the stock of external public debt as percentage of GNI.

The effect of the degree of openness of an economy on tax revenue GDP ratio is ambiguous. If a large proportion of a country's imports are price inelastic, deterioration in terms of trade owing to an increase in import prices could improve the tax base (Ghura, 1998). However, if the deterioration in terms of trade is due to a decline in export prices and the country depends on revenue from export taxes, the tax base would be expected to shrink (Eltony, 2002). In addition, the decline in income associated with a decline in terms of trade would be expected to lower the tax base (Keen & Marchand, 1997) hence the degree of openness of an economy proxied by the EAC regional integration in this study is expected to have a negative impact on tax revenue GDP ratio. However in many empirical studies, the degree of openness of an economy is measured by the ratio of the sum of exports to imports to GDP and most empirical studies have found a positive relationship while a few of them have found a negative relationship.

The literature on the determinants of tax revenue provides a set of testable hypotheses. This study focuses on those hypotheses on income, tax base, macroeconomic policies (Inflation) and EAC regional integration that are tested using the available data for EAC partner states using panel data analytical techniques.

4.3 Model Specification

From equation (7) the theoretical model above, the empirical EAC tax revenue model is specified as follows;

$$TR_{it} = \alpha + \theta EAC_{it} + X'_{it}\beta + u_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

$$i = 1,2,3,\ldots,5;\ t = 1,2,3,\ldots,T,\ u_{it} \sim iid(0,\sigma^2).$$

Where:

TR_{it} = Tax revenue expressed as a percentage of GDP in a country i at time t;

EAC_{it} = EAC regional integration dummy variable; t taking on value 1 for the year when the country i joined the EAC regional integration and zero otherwise.

X'_{it}= Set of control variables (other explanatory variables in the model apart from EAC).

θ = the coefficient of the EAC regional integration dummy variable.

β = Vector of coefficients of the set of control variables X'_{it} expected to influence tax revenue in the EAC region other than the EAC regional integration.

u_{it} = The error term which is assumed to be independent and identically distributed with mean zero and variance σ^2, that is, $u_{it} \sim iid(0,\sigma^2)$. This consists of all other variables assumed to affect EAC partner states' tax revenue but have not been included in the model.

More specifically equation (8) is presented as follows;

$$TR_{it} = \alpha + \theta EAC_{it} + \beta_1 GDP_{it} + \beta_2 lnY_{it} + \beta_3 lnPOP_{it} + \beta_4 INL_{it} + \beta_5\, PUB_{it} + u_{it} \ldots\ldots\ldots (9)$$

Where; ***GDP*** is the growth rate of GDP expressed in percentages; ***lnY*** is the natural logarithm of Per Capita GDP; ***lnPOP*** is the natural logarithm of population density; ***INL*** is the inflation rate measured by Consumer Price Indices (CPI), annual prices and ***PUB*** is the Public debt as a percentage of GNI for all the five EAC partner states; Burundi, Kenya, Rwanda, Tanzania and Uganda.

The study also estimates the dynamic panel model specified below in order to gauge the impact of previous tax revenues on the present tax revenues;

$$TR_{it} = \gamma TR_{it-1} + \theta EAC_{it} + x'_{it}\beta + u_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (10)$$

$$i = 1,2,3,\ldots,5; t = 1,2,3,\ldots,T,\ u_{it} \sim iid(0,\sigma^2).$$

Where γ is the coefficient of the lagged tax revenue for each EAC partner state, TR_{it-1}.

Equation (9) is for static panel data which is estimated using Fixed Effects model and Random Effects model before conducting a Hausman specification test to select the best model while equation (10) the dynamic panel model introduced to capture the relationship between current tax revenue and the previous tax revenue in the EAC region since bilateral agreements and trade preferences are likely to have a lag is estimated using the first difference Generalized Method of Moments (GMM) (Arellano & Bond, 1991). It is used majorly to show whether the EAC tax revenue depends on its lagged values but however this may lead to the problem of endogeneity and that is why it is estimated using first difference GMM (Greene, 2012; Verbeek, 2008).

4.4 Definition and Measurement of variables included in the Empirical Analysis

The dependent variable of the study is **Tax revenue** expressed as a percentage of GDP for all the five EAC partner states; Burundi, Kenya, Rwanda, Tanzania and Uganda for the period 1990 to 2011 totaling to 22 observations for each country. The study resorted to using tax revenue as a percentage of GDP as a dependent variable of the study after failing to obtain data on customs revenue as a share of total revenue for all the five EAC countries. The major explanatory variable of the study is the EAC regional integration which is a dummy variable taking on values 1 for EAC regional integration and 0 otherwise. The other variables are the control variables introduced in the study so as to identify the other determinants of tax revenue in the EAC region. The variables are described as follows;

EAC regional integration; this is measured as a dummy variable taking on values t = 1 for the year when the country i joined the EAC regional integration bloc and zero otherwise. Specifically for Kenya, Tanzania and Uganda, it takes on 1 for the period from 2000 to 2011 and zero for the period before 2000; for Burundi and Rwanda, it takes on 1 from the year 2007 and zero otherwise. The study determines empirically the relationship between the EAC regional integration and tax revenue in the EAC partner states. In the literature it is said that regional integration leads to loss of revenue in the short run due to the creation of custom union but in the long run it leads to higher tax revenue collected as it accelerates industrial growth, more economic activities, increased exports, increased employment opportunities hence more tax revenue generated (ADB, 2011; Castro, DeRocha, & Kraus, 2004; Karingi, Siriwardana, & Ronge, 2002; Semkunde, 2012; Shinyekwa & Mawejje, 2013). Therefore, for this study a negative relationship is expected between EAC regional integration and the tax revenue of the

member states. The EAC regional integration is the major explanatory variable of the study. Other variables included in the study are explained as below;

GDP per capita; it is measured at constant US dollars of 2005 expressed in logarithm serves as a proxy for the level of development of a country. Per capita income also serves as a good indicator of the sophistication of the economic structure. The study also tests the relationship between **GDP growth rate (Economic growth)** and tax revenue. GDP per capita and GDP growth rate control for the level of economic development and scale effects. It is assumed that higher per capita GDP indicates a higher capacity to pay taxes, as well as a greater capacity to levy and collect those taxes (Teera & Hudson, 2004; Gupta, 2007; Chelliah, 1971). This economic intuition is based on the premise that the higher the per capita GDP, the more monetized is the economy, and the better the tax administration, hence the better the overall performance of revenue collection (Agbeyegbe, Stortsky, & Woldermarian, 2004). The relationship between tax revenue and the level of development of a country has been studied in the literature. For example Tanzi, (1992) found a positive relationship between them. This is true as according to Wagner's law, the demand for public services is income elastic thus economic development is associated with an increased demand for public goods and services which should be funded by increasing tax revenue (Teera, 2003). Also Chelliah (1971) and Tanzi (1987) noted that development is associated with greater state capacity to levy and collect taxes. For this study, a positive relationship is expected between tax revenue and the two variables; Economic Growth and GDP per capita. GDP includes income earned locally that accumulates to non-residents and excludes income received from abroad by residents, since local income accruing to non-residents is typically taxed.

Public debt as a percentage of GDP; this is measured as external debt stocks expressed as a percentage of GNI. With a large debt, the government needs to raise the revenues necessary to service it leading to increased tax revenue collections (Teera, 2003). However some of the previous studies have found a negative relationship between a public debt and tax revenue while others have found a positive relationship since countries may increase taxes in order to generate a primary surplus budget to service the debt (Eltony, 2002). Therefore for the present study, a positive relationship is expected between tax revenue and public debt.

Population density; this is expected to have a positive effect on the tax revenue, mainly because a high population density leads to rising the tax base (Teera, 2003), In a thinly populated area,

administrative costs are expected to be higher in terms of total yields and therefore, less encouraging for collection of tax revenues as in such a situation, the degree of tax evasion and tax avoidance may also be relatively higher than in the densely populated area (Ansari, 1982).

Inflation; which is measured as consumer price indices expressed as a percentage of annual prices is a proxy variable for the macroeconomic policy environment of the EAC partner states. It captures the impact of macroeconomic policy on tax revenues in an economy. Tanzi (1987) explains that the combination of high inflation, a relatively long average lag in tax collection, and a low elasticity of the tax system leads to a drastic fall in real revenues when inflation occurs. For this study therefore, a negative relationship is expected.

4.5 Estimation Procedure

The empirical estimation is based on the application of the balanced panel data utilizing a sample of five EAC partner states; Burundi, Kenya, Rwanda, Tanzania and Uganda over the period 1990 - 2011 using STATA as a statistical analytical package. Panel data is advantageous as it adds more variability in the data which helps to mitigate collinearity between the study variables (Greene, 2012). The choice between the two linear panel models of the fixed effects and random effects models is empirical as the study uses the Hausman test to choose between the FE and RE models. The choice is made by running the Hausman test where the null hypothesis is that the preferred model is RE versus the alternative; the FE model, that is, the Hausman test tests the null hypothesis that random effects (u_i) and Regressors (x_{it}) are un correlated. If random effects and regressors are uncorrelated, then we estimate random effects model and if they are correlated, then the fixed effects model will be preferred. The test is such that if the Hausman statistic is smaller than its critical value then we fail to reject the null hypothesis that regressors and random effects are uncorrelated. To carry out this test, the study first runs a Fixed Effects model and saves the estimates, then runs a Random Effects model and save the estimates. After saving the estimates from both models, the test is then performed. If the results are not significant we accept the null hypothesis that the preferred model is the RE model otherwise we reject the null hypothesis and prefer the FE model (Greene, 2012; Verbeek, 2008). Since the P-Value is 0.0000, we reject the null hypothesis that the preferred model is RE and conclude that the preferred model is FE.

The study also includes a lag of tax revenue in order to determine whether tax revenue in the EAC depends on its lagged or previous values since bilateral agreements and trade preferences are likely to have a lag. It is also argued that efforts geared to increase tax revenue respond with time thus suggesting that tax revenue in the previous year impact on tax revenue in the current year thus the inclusion of lagged tax revenue as one of the predictor variables. This therefore necessitates the application of a dynamic panel model since the lagged dependent variable included as an explanatory variable may lead to the problem of endogeneity (Baltagi, 2001).

Dynamic panel models are increasingly being used in panel data estimation partly due to panel data availability and the vast array of economic theories fronting some form of partial adjustment of economic variables to an equilibrium level (Harris & Matyas, 1996). Therefore the present study estimates the dynamic model since EAC agreements are believed to have a lagged effect. Dynamic panel models are models which include lagged value(s) of the endogenous variable as explanatory variables. The study estimates a dynamic panel model in addition to the static panel data model in order to gauge the impact of previous tax revenue on current tax revenue in the EAC. This however necessitates the use of GMM[15] in order to control endogeneity that may arise due to the inclusion of the lagged dependent variable as one of the regressors (Baltagi, 2001; Greene, 2012). This estimator was suggested by Arellano & Bond (1991) and it estimates the first differences of the model there by eliminating the unobservable time-invariant country-specific effects and mitigates the possibility of the problem of unit roots hence solving the problem of panel data non-stationarity (Verbeek, 2008). The estimator also solves problems of heteroskedasticity and autocorrelation hence better results (Greene, 2012). The study uses first difference GMM as opposed to systems GMM since the study uses first differences of the series as the instruments and does not use first lagged differences of the series. Also the first difference GMM has an inbuilt automatic difference in Sargan or Hansen testing and the ability to collapse instruments thus solving the problem of too many and weak instruments (Roodman, 2009).

The EAC regional integration dummy variable in this case is an aggregated dummy variable thus the system views the dummy variable as a continuous variable and thus not eliminated both in the Fixed Effects model and in the first difference GMM Model.

[15] GMM is the generalized method of moments since it uses moments. It uses additional moments which vary with time hence improving the efficiency of the model (Hsiao, 2004).

4.6 Diagnostic tests

The study checks for multi-collinearity in the model by conducting the simple pair wise correlation test that reveals the coefficients between the explanatory variables; the results indicate that the values of the correlation coefficients between explanatory variables are lower than 0.80 hence by Studenmund (2001) who argues that below such a threshold the model does not suffer from serious problem of multicollinearity. The study also conducts a panel data unit root test to determine whether the panel data for study variables are stationary or not since panel data contains both the cross-section and the time components. When all the variables are stationary, the traditional estimation methods can be used to estimate the relationship between the variables. However if the variables are non-stationary, a test for co-integration is required. The study employs the two panel unit root tests; Levin, Lin and Chu (LLC) which assumes that the autoregressive parameters are common across countries that is, it assumes homogeneous coefficients and Im, Pesaran and Shin (IPS) which assumes heterogeneous coefficients of the study variables in order to test for panel data stationarity. The unit root tests are conducted under the null hypothesis that each serie in panel contains a unit root and the alternative that the panels are stationary. The IPS unit root test is not very strict as compared to the LLC since it allows some panels to be non stationary (Verbeek, 2008). The results from the two tests indicate that all variables are stationary that is, the null hypothesis of the presence of panel unit root is rejected and hence the cointegration tests in this case are not required to estimate the model. Therefore, the study confidently estimates the static panel model using the two traditional linear panel models of RE and FE and estimates the dynamic panel model using first difference GMM.

4.7 Data sources

The study uses secondary data mainly obtained from World Bank (2013) Development indicators and supplemented with data from African Economic Outlook (2013), and the EAC Facts and Figures (2012)[16]. The EAC regional integration is a dummy variable taking on 1 for the year when the particular country joined the EAC regional integration or 0 otherwise. The data are annual and the sample covers the period of 1990 - 2011 for the five EAC partner states; Burundi, Kenya, Rwanda, Tanzania and Uganda. A more detailed data description and sources is attached in the appendices (table 6).

[16] This report was obtained from the EAC secretariat website and it is published every year.

CHAPTER FIVE

EMPIRICAL FINDINGS

In this chapter, the data collected from different sources as outlined in the methodology sub-section 3.6 are subjected to diagnostic tests as shown below and thereafter regressions are run to determine the impact of the EAC regional integration on the tax revenue of the EAC partner states alongside identifying other determinants of tax revenue in EAC partner states. Interpretations and discussion of results are also presented in this chapter.

5.1 Data description

Tables 1 and 2 show the summary statistics and the pair wise correlation matrix respectively for the study variables with exception of the EAC since it is dummy variable. N is the total number of observations (n*T), n is the number of countries while T is the time period.

Table 2: Summary statistics

Variable		Mean	Std. Dev.	Min	Max	Observations	
Tax Revenue	overall	13.53	3.463185	3.512	20.49433	N =	110
	between		3.111767	10.56596	17.46714	n =	5
	within		2.043552	6.471729	19.01323	T =	22
GDP	overall	4.329	7.274317	-50.24807	35.22408	N =	110
	between		2.293382	1.022119	6.960965	n =	5
	within		6.976346	-51.2752	34.19695	T =	22
LnY	overall	5.665	0.422182	4.943454	6.369965	N =	110
	between		0.427553	5.097636	6.268187	n =	5
	within		0.175084	5.091433	6.063968	T =	22
LnPOP	overall	16.67	0.715044	15.53933	17.65183	N =	110
	between		0.767656	15.76804	17.35643	n =	5
	within		0.188486	16.30984	17.01429	T =	22
Public Debt	overall	71.83	40.71696	14.06461	168.007	N =	110
	between		23.58665	54.64167	106.7377	n =	5
	within		34.76671	-9.269769	151.5351	T =	22
Inflation	overall	12.29	10.32888	-2.405932	48.25672	N =	110
	between		1.819333	9.862709	14.45305	n =	5
	within		10.1987	-1.670335	48.99232	T =	22

Source: Author's Computations

The summary statistics above show that data was collected on the cross-section of five EAC partner states over the time period of 22 years (1990 - 2011) thus giving rise to 110 observations.

It also indicates that the panel[17] is strongly balanced. The summary statistics examine the overall, the between and the within descriptions of the variables. The values of the standard deviations, suggests that the variables are worth including in the regressions. In addition, there are almost no outliers since the minimum and maximum of each variable is relatively close to its mean apart from GDP growth rate. The overall minimum statistic of GDP growth rate is -50.24807 mainly due the effect of Rwanda genocide which decimated Rwanda's fragile economic base, severely impoverished the population and temporarily stalled the country's ability to attract private and external investment (World Bank, 2013). At the same time, the overall maximum of GDP growth rate is 35.22408 also experienced in Rwanda in 1996 as the economy was recovering from the effect of 1994 genocide (World Bank, 2013). The EAC regional integration was not included in the summary statistic because it is a dummy variable.

Table 3: Pair Wise Correlation Matrix

Variable	Tax Revenue	EAC	GDP	Public Debt	LnY	LnPOP	Inflation
Tax Revenue	1.0000						
GDP	-0.0331	0.182*	1.0000				
	(0.7315)	(0.0571)					
Public Debt	0.0783	-0.6237***	-0.3138***	1.0000			
	(0.4162)	(0.0000)	(0.0008)				
LnY	0.3233***	0.4263***	0.1598*	-0.5022***	1.0000		
	(0.0006)	(0.0000)	(0.0953)	(0.0000)			
LnPOP	0.1754*	0.5165***	0.1765*	-0.324***	0.7854***	1.0000	
	(0.0668)	(0.0000)	(0.0651)	(0.0006)	(0.0000)		
Inflation	-0.0982	-0.2854***	-0.2747***	0.4075***	-0.0726	-0.0508	1.0000
	(0.3075)	(0.0025)	(0.0037)	(0.0000)	(0.4510)	(0.5981)	
*P<0.1, **P<0.05, ***P<0.01.							

Source: Author's Computations

From table 2 above illustrating the pair wise correlation matrix, tax revenue is positively related to public debt, GDP per capita and population density. It is negatively correlated to GDP growth rate and inflation. However, the pair wise correlation matrix can be spurious, reflecting the effect

[17]This was established in STATA using xtset command which revealed that the panel is strongly balanced and the time period is from 1990 to 2011 totaling to 22 years over five countries giving a total of 110 observations.

of the presence of unobserved country effects, so we need investigate these relationships in a multivariate regression analysis. The study includes other control variables on top of the EAC regional integration that are considered key determinants of tax revenue in EAC partner states from the previous empirical studies on the determinants of tax revenue such as Ghura (1998); Gabriel (2009); Gupta (2007); Karagoz (2013) among others. These variables include; per-capita GDP, GDP growth rate, inflation, public debt and population density. GDP per capita and population density are expressed in the natural logarithms hence their coefficients are interpreted as elasticities.

5.2 Panel Unit root Test

The study carries out a panel unit root test using the two tests of Levin, Lin and Chu (LLC) which assumes homogeneous coefficients and the Im, Pesaran and Shin (IPS) which assumes heterogeneous coefficients of the study variables. In all the tests, the null hypothesis is that all panels contain unit roots but the alternative hypothesis for these tests is different. For LLC the alternative hypothesis is that all panels are stationary while for IPS is that some panels are stationary (Verbeek, 2008; Greene, 2012). The results from these tests are shown in table 3.

Table 4: Panel unit root test

Variable	LLC		IPS	
	Coefficient	**P-Value**	**Coefficient**	**P-Value**
Tax revenue	0.0631	0.5252	-1.8428**	0.0327
LnY	-4.4215***	0.0000	-0.4956	0.3101
GDP	-1.2817	0.1000	-4.7685***	0.0000
Public debt	-1.9343**	0.0265	-1.0662	0.1432
LnPOP	-12.7464***	0.0000	-0.0271	0.4892
Inflation	-2.0876**	0.0184	-2.4812***	0.0065
*P<0.1, **P<0.05, ***P<0.01.				
Source: Author's Computations				

The above panel unit root test results show inconsistency in the results of the two tests. Some variables which are stationary under the LLC panel unit root test are not stationary under the IPS unit root test. The inconsistency in the panel unit root test results is due to the difference in the alternative hypotheses of the two panel unit root tests used (Greene, 2012; Verbeek, 2008). The alternative hypothesis of LLC is that all panels are stationary while that of IPS is that some

panels are stationary. Therefore the two variables; tax revenue GDP ratio and GDP growth rates which are not stationary when using the LLC unit root but stationary under IPS imply that they contain some panels which are not stationary while those variables which are stationary under LLC but not stationary under IPS imply that all their panels do not contain a unit root. However there is no any theoretical justification for the use of only one panel unit root test therefore we conclude that the panel data are stationary at least by using one test as shown in table 3 above. Since the panel data are stationary, the panel data cointegration tests are not necessary in this study.

5.3 Estimation of the results

In all the three regressions, the dependent variable is the tax revenue as a percentage of GDP for all the five EAC countries while the explanatory variables are the EAC regional integration and the control variables introduced in the model such as per capita GDP, GDP growth rate, public debt, inflation and population density. GDP per capita and population density are expressed in the natural logarithms. Table 4 below shows the regression results under different specifications that is, FE, RE, first difference GMM and the Hausman specification test results. The Hausman specification test is used to select the preferred model between the FE and RE models.

The first and second columns of the table below report the Fixed and Random effects estimates respectively whereas the third column reports the dynamic model estimated by the first difference GMM which is based on the Arellano and Bond (1991) estimation procedure. In order to choose between the Fixed Effects and the Random Effects in estimating the static model, the Hausman's specification test is used. The results from the Hausman specification test indicate that the individual country-specific effects are uncorrelated with the explanatory variables since we rejected the null hypothesis that the individual country-specific effects are correlated at 1% level of confidence. This suggests that the Fixed Effects model is preferred to the Random Effects model for the static panel regression estimates. The results of the Hausman specification test are in line with the recommendations of Baltagi (2001) who recommends the use of fixed effects for a panel with fixed number of cross section observations, that is, a study that involves fixed (small) number of countries and in our case we have only five countries. Therefore, in the discussion of the findings and in the suggestions of policy recommendations, the study only considers the Fixed Effects and first difference GMM estimates.

Table 5: Estimated Results

The dependent variable in all these regressions is Tax revenue as a percentage of GDP.

Variable	Coefficient (FE)	Coefficient (RE)	Coefficient (GMM)
EAC	-1.4670235***	3.2630918***	-1.10143**
	(-3.04)	(-4.00)	(-2.31)
GDP	0.0438012**	0.00213651	0.0515712***
	(2.28)	(0.05)	(2.79)
LnY	4.6575691***	7.5529291***	2.974222***
	(4.82)	(6.23)	(2.72)
LnPOP	10.203668***	-2.7089981***	7.104389***
	(8.27)	(-3.81)	(4.36)
Public Debt	0.03386943***	0.06332818***	0.0206795***
	(5.59)	(5.94)	(3.10)
Inflation	-0.01194227	-0.07682688***	-0.0148052
	(-0.82)	(-2.57)	(-1.03)
Constant	-184.78087***	10.935528	-127.0458***
	(-9.29)	(1.43)	(-4.74)
L.tax Revenue			0.3142157***
			(3.27)
	F(6,99)= 27.09	Wald chi2(6) = 57.86	Wald chi2(7) = 172.73
	(Prob > F = 0.0000)	(Prob > chi2 = 0.0000)	(Prob > chi2 = 0.0000)
Hausman Specification test = 65.26*** (Prob>chi2 = 0.0000)			
**P<0.05 ***P<0.01.			
The t statistics for FE and the z statistics for RE and GMM are provided in the parenthesis			
Source: Author's Computations			

Asterisk (***) indicates significance at 1% while asterisk (**) indicates significance at 5%. The automatic reliability test for the validity of instruments for the difference equation indicates that they are standard and thus not weak instruments. The null hypothesis for the Hausman specification test is that the RE model is the preferred model against the alternative that the FE model is the preferred model. In this case, we reject the null hypothesis and conclude that the FE model is the preferred model. The dummy variable equals 1 for the year when the when the partner state joined the EAC and zero otherwise. Specifically for Kenya, Tanzania and Uganda,

it takes on 1 from 2000 and zero otherwise while for Burundi and Rwanda, it takes on 1 from 2007 and zero otherwise since Burundi and Rwanda joined the EAC in 2007.

The F-test from FE model which tests the significance of the country effects under the null hypothesis that all the country dummy coefficients are equal to zero (Greene, 2012) indicates that the country dummies are jointly significant since the F- test statistic is significant at 1% level of significance implying that we reject the null hypothesis that the country dummies are jointly equal to zero. This is because the calculated F- statistic is greater than the critical F-statistic, the one we read from the F-tables and hence conclude that the country dummies are jointly not equal to zero hence further confirming that the FE is an appropriate model to estimate.

5.4 Discussion of results

From the regression results, basing on the Hausman specification test, FE estimates are preferred to the RE estimates since we rejected the null hypothesis that the RE estimators are consistent, thus we adopt the FE estimator since the Hausman specification test, is significant at 1% level of significance. This implies that the study only discusses the FE estimates, however, the study discuses them alongside the first difference GMM estimates.

The major explanatory variable of the study, the EAC regional integration dummy variable is significant at 1% level of significance and its coefficient is negative which implies that the EAC integration negatively impacts on the EAC partner states' tax revenue just as earlier expected. The other control variables included in the model such as; the natural logarithm of per capita income, the natural logarithm of population, public debt as a percentage of GNI and GDP growth rate (economic growth) are all significant with the expected signs apart from inflation which is not significant even at 10% level of significance but with the expected sign. These variables are also significant with the same signs under the dynamic first difference GMM model.

The coefficient of the EAC regional integration is significant at 1% level of significance and negative as originally expected by the study basing on the previous research findings and theory. This implies that, with the EAC regional integration, the tax revenue of the EAC member countries reduces. Specifically, with EAC regional integration, the EAC partner states' tax revenue reduces by 1.4670235 percentage points. This finding is in line with the previous research findings on the impact of EAC custom union on tax revenues such as (Sangeeta,

Kimbugwe, & Perdikis, 2009; Othieno & Shinyekwa, 2011; Castro, DeRocha, & Kraus, 2004; Semkunde, 2012; Shinyekwa & Mawejje, 2013; Schiff & Winters, 2004; Keen & Marchand, 1997; Keen & Mansour, 2009; Hamilton, 2009; Malugu, 2014 among others). All these established a negative relationship between the regional integration and the partner states' tax revenue. The negative relationship could be as a result of the establishment of the customs union in 2005 which involved the complete elimination of tariffs on goods from member countries and charging a common external tariff on commodities from non member states (Shinyekwa & Mawejje, 2013; ADB, 2011) yet the intra - EAC trade is large (Mclntyre, 2005) thus leading to the loss in tax revenues of EAC partner states. This result is similar to that of the first difference GMM model since the EAC regional integration is statistically significant at 5% level of significance and negative just as in the FE model.

Economic growth as proxied by GDP growth rate is significant at 1% level of significance and positive as expected by the economic theory and other previous research studies in chapter three. In the GMM model, economic growth is also statistically significant at 1% level of significance and positive just as in the FE model. This is majorly because in order to finance development projects, there is need to increase resources hence the need for collecting more tax revenue. Also economic growth indicates a higher ability to pay taxes and a high taxable capacity in the country. The relationship between tax revenue and economic growth has been widely studied in the literature such as Chelliah, 1971; Teera, 2003; Teera & Hudson, 2004; Tanzi, 1992; Gupta, 2007; Karagoz, 2013 to mention but a few and all of them found a positive relationship between tax revenue and economic growth just as what the present study has found out. The finding implies that a unit increase in the economic growth (GDP growth rate) of the EAC partner state increases the tax revenue by 0.0579136 percentage points holding other factors constant.

The elasticity of GDP per capita is positive and significant at 1% level of significance. From the findings of the study in the FE model, the elasticity of tax revenue with respect to GDP per capita is 4.6575691 which statistically mean that a one percent increase in GDP per capita increases the EAC partner states' tax revenue by 4.6575691 percent other factors held constant. In the first difference GMM model, GDP per capita is also statistically significant at 1% level of significance and positive. This relationship is in line with economic theory and previous research finding for example see (Gupta, 2007; Stotsky & Mariam, 1997; Karagoz, 2013) and others. This

is because, a higher GDP per capita implies a higher ability to pay taxes by the citizens since the capacity to collect and pay taxes increases with the level of people's income for example see Chelliah (1971) and Gupta (2007).

The coefficient of public debt measured as a percentage of GNI is positive and significant at 1% level of significance in the FE model as well as in the first difference GMM model. Most of the previous studies have not been conclusive on this issue. However the positive relationship between tax revenue and public debt is not a surprise since an increase in public debt requires increased revenue to service the debt in terms of paying the interest on the principle and repaying back the debt. In this case, the country may choose to increase tax rates or introduce other tax sources (tax bases) or other taxes with a view to generate a primary surplus budget to service the debt hence a positive relationship. Teera (2003) also found a positive relationship between tax revenue and the public debt just as the present study. This however is in contrast to other earlier research findings which established a negative relationship between the two variables such as Eltony (2002) and Ghura (1998) found a negative relationship between tax revenue and public debt. They argued that when some countries acquire a debt, they tend to relax on tax revenue collections since now they can rely on the acquired debt to finance their budgets. This system is referred to as deficit financing (Jhingan, 2004).

The elasticity of tax revenue with respect to population is 10.203668 and is significant at 1% level of significance which implies that a one percent increase in population density leads to 10.268452 percent increase in tax revenue other factors held constant. In the first difference GMM model, the elasticity of tax revenue with respect to population is 7.104389 and significant at 1% level of significance. This finding is in line with the economic theory and other previous research studies for example Ansari (1982) and Teera, (2003) among others. This is so mainly because a high population density increases the taxable base and reduces the cost of tax collection (Teera, 2003). More so a high population density is associated with lower tax avoidance and evasion as compared to the sparsely populated areas (Ansari, 1982). On the other hand, a high population size also requires increased resources to cater for increased demand for social services such as hospitals, schools, roads and others hence necessitating increased tax revenue collections in order to provide the required amount of social services and thus a positive relationship (Dioda, 2012). This finding however contradicts the findings of other previous

studies such as Mahdavi (2008) who found a negative relationship between population density and tax revenue.

Inflation which was introduced in the model as a measure of macroeconomic stability of the EAC economies is not significant though displayed a negative sign as expected earlier by the study. This was also the same under the first difference GMM model. This means that inflation does not significantly affect tax revenue of the EAC partner states. A negative relationship between tax revenue and inflation has been widely established in the literature by the previous researchers such as Tanzi (1982) and Ghura (1998) among others. They argue that a high inflation rate in an economy reduces the real value of the tax revenue collected thus the justification of the negative relationship between inflation and tax revenue GDP ratio. However in this study, the negative relationship between tax revenue and inflation was not significant.

The results from the dynamic panel model estimated by the first difference GMM as proposed by Arellano & Bond (1991) indicate that the EAC partner states' tax revenue positively depends on its previous tax revenue collections since it is significant at 1% level of significance and the relationship is positive. This implies that, the higher the tax revenue collected in the previous period, the higher the tax revenue collected in the present period other factors remaining constant. This means that if the partner state collected high tax revenue in the previous year, it will also collect high tax revenue in the current year. This follows the earlier discussion that bilateral agreements such as regional integration agreements have lagged effects on the economies of the partner states.

CHAPTER SIX

SUMMARY AND POLICY RECOMMENDATIONS

This chapter presents the major conclusions drawn from the study and also provides policy recommendations derived from the study findings before presenting areas for further research.

6.1 Summary

The major objective of this study was to empirically analyze the impact of the East African Community (EAC) regional integration on partner states' tax revenues alongside identifying other determinants of tax revenue in the EAC. To achieve this objective, the study extended the tax model developed by Heller (1975) and also used by Leuthold (1991); Caballe & Panades (1997); Ghura (1998); Chen (2003) among others where the public decision maker's utility function is maximized subject to a budget constraint in order to establish the impact of EAC regional integration on partner states' tax revenue. Analytically, the study used Fixed Effects (FE), Random Effects (RE) and first difference GMM dynamic panel data estimations and by the use of the Hausman's specification test, the study was able to determine FE model as the most preferred model.

The findings of the study show that EAC regional integration has a negative impact on the tax revenues of the EAC partner states since it was negative and highly statistically significant both in the FE and first difference GMM models. GDP per capita, economic growth as measured by GDP growth rate, the lagged tax revenue, public debt and population density were identified as other significant determinants of tax revenue in the EAC region while inflation does not significantly influence tax revenues in the EAC region since it was not statistically significant.

6.2 Policy recommendations

Based on the major finding of the study, there is need for the EAC governments to seek for alternative sources of tax revenue which are not affected by EAC regional integration. This is because the results revealed that the EAC regional integration negatively impacts the tax revenue of the EAC partner states. There is need for alternative sources for tax revenue since the EAC regional integration is so important for the EAC countries to develop as the entire region view regional integration as their main way to development (Mclntyre, 2005). This is because the

integration will yield more benefits such as increased employment resulting from increased industrialization, market, competition and free movement of factors of production across the region (Othieno & Shinyekwa, 2011; Castro, DeRocha, & Kraus, 2004). The internal trade tax revenue growth has been fluctuating (EAC, 2012) and thus may not be sufficient to compensate for the loss hence the need to design measures to offset the loss of tariff revenue associated with EAC custom union as predicted by the study findings. This calls for strengthening the ability to domestically mobilize revenue as some of EAC partner states such as Uganda and Kenya wait for oil revenue in the near future.

In addition, there is need to broaden the tax base by identifying other tax bases that may not be affected by the integration and streamlining tax exemptions and incentives where they exist, with clear procedures, duration and a coordinating unit across the EAC partner states. The study by Mugano, Brookes, & Roux (2013) when estimating the impact of COMESA Customs Union on Zimbabwe's revenue recommended that Zimbabwe should consider improving the collection of revenue from alternative sources such as VAT, personal and company taxes and excise duty in order to cushion itself against the revenue loss impact of the COMESA Custom Union and CET and that the Government could also consider widening the tax base by taxing the informal sector, which has been growing rapidly in the past years and should review its tax exemptions and remove unnecessary concessions. Therefore EAC partner states can also do the same if they are to offset the negative impact of EAC regional integration on their tax revenue.

There is a need for the EAC governments to redesign their tax system so as to fit in the regional integration and thus increase their tax revenue collections despite the negative influence of the EAC regional integration on tax revenue. The EAC governments can widen their tax bases by introducing new taxes to items or activities that are not taxed. They can also raise tax rates where appropriate so as to mobilize more tax revenue that can help in increasing tax revenues despite the negative influence of the EAC regional integration. This is because all the EAC countries are deemed to benefit more from the EAC regional integration through increased volumes of trade due to increased size of market for its goods, increased industrialization, increased competition, and increased follow of factors of production across the partner states (Petersen, 2010) which will in turn leads to increased tax revenues.

The EAC partner states should endeavour to harmonize domestic taxes, tax laws and procedures in order to reduce distortions and smuggling as well as introducing some level of predictability in business transactions and harmonize capital threshold requirements. They should also fully harmonize individual partner state's tax policies applied to non-partner states and expedite the process of standardization of customs formalities such as harmonizing the documentation and procedures of custom tax clearances across all the EAC member states. This will ease the process of doing business in the EAC region, thereby encourage investments leading to diversification of the tax bases and increasing the taxable capacity in the EAC region leading to more tax revenue collections in the East African Community despite the EAC regional integration.

The EAC partner states' governments should strive hard to ensure that they achieve high rates economic growth. This is because economic growth from the findings of the study is directly proportional to tax revenue of the EAC partner states. This implies that an increase in a county's economic growth increases its tax base due to many economic activities which are associated with economic growth thus more tax revenue is collected with increased economic growth. This can be achieved through creating a favorable investment climate, improved infrastructure such as ensuring cheap power supply, good roads, communication network which reduces on the cost of doing business hence encouraging more economic activities in the country. These will create jobs to the people leading to increased tax revenue collections as this will improve people's ability to pay taxes. In addition economic growth increases on the income tax, value added tax and increases on exports all leading to an increase in the amount of tax revenue collected.

The EAC partner states should design measures geared at increasing on people's income and thus per capita income. This is due to the fact that, the higher the per capita income, the higher the tax revenue collected as predicted by the study findings and other earlier studies such as (Chelliah, 1971; Teera J. M., 2003; Gupta, 2007; Botlhole, 2010; Gabriel, 2009). This is because high per capita income increases the ability of citizens to pay the tax assessed on them.

There is need for the governments of the EAC partner states to maintain a stable macroeconomic environment through controlling inflation which has negative impact on tax revenue in EAC. This is because though inflation had no significant impact on tax revenue, it displayed a negative sign, and in addition inflation has other indirect effects on tax revenue such as increasing the cost

of production thus discouraging investments. Therefore controlling inflation will attract investments in the region thus leading to the creation of employment opportunities which increases people's incomes and ability to pay taxes assessed on them. This leads to higher tax revenue collections as country's taxable capacity is improved. In addition, macroeconomic stability encourages more economic activities in the country which increase on the taxable base of the country leading to high amount of tax revenue collections.

6.3 Areas for Further Research

This study has identified a number of areas which require further study. These areas include; the impact of the internal tariff reduction on economic growth in EAC partner states such as Uganda and Tanzania; the impact of the tax exemptions and remission schemes on the competitiveness of the sectors and industries for which they were intended; promotion of cross-border investments; The regulatory framework of the EAC CU; the CET and its impact on the private sector in EAC partner states; the welfare implications of the implementation of the EAC Customs Union Protocol; Training Needs Assessment (TNA) for customs staff and customs agents in as far as application of the CU is concerned which may lead to a development of a regional customs curriculum that will ensure smooth, uniform and consistent application of the CU; the relationship between tax revenue and economic growth in the EAC region; the contributions of EAC regional integration on the employment creation in the EAC region. More so, the same study can be conducted for each partner state in order to establish the impact of EAC on individual partner state's tax revenue. Another study can also be conducted specifically for custom revenue and the EAC regional integration since the present study considered total tax revenue-GDP ratio and not custom revenue.

REFERENCES

Abdin, M. J. (2010). *Regional Economic Integration: Learning from South Asia and the World.* Bangladesh : SME Foundation.

African Development Bank (ADB). (2011). *Domestic Resource Mobilisation for Poverty Reduction in East Africa:Lessons for Tax Policy and Administration.* Tunis: African Development Bank Group.

Agbeyegbe, T., Stortsky, J., & Woldermarian, A. (2004). *Trade Liberalisation, Exchange rate changes amd Tax revenue in Sub-Saharan Africa.* Washington D.C: IMF Working Paper WP/04/178.

Ahmed, Q. M., & Mohammed, S. D. (2010). Determinants of Tax Buoyancy: Emperical Evidence from Developed Countries. *European Journal of social Sciences, Vol. 13, No. 3* , 408 - 414.

Ajaz, T., & Ahmed, E. (2010). *The Effect of Corruption and Governance on Tax Revenues.* On line Publications.

Alemayehu, G., & Haile, K. (2002). *Regional Economic Integration in Africa: A Review of Problems and Prospects with a Case Study of COMESA.* On Line Publications.

Ansari, M. (1982). Determinants of Tax Ratio: A cross country analysis. *Economical and Political Weekly, 19th June* , 1035-1041.

Arellano, M., & Bond, S. (1991). Some Tests of Specification for rural Panel Data: Monte Carlo Evidence and an Application to Employment Equations, The Review of Economic Studies Vol. 58. *Journal of Econometrics* , 277 - 297.

Bailey, S. J. (2002). *Public Sector Economics: Theory, Policy and Practice, Second Edition.* London: Palgrave Macmillan.

Baltagi, B. H. (2001). *Econometric Analysis of Panel Data, Second Edition.* Singapore: John Wiley and Sons.

Baskaran, T., & Fonseca, M. L. (2013). *The economics and empirics of tax competition: a survey.* Centre for European, Governance and Economic Development Research.

Benno, T. (2003). To Evade or Not to Evade: That is the Question. *Journal of Social Economics " World Development Report, 1988", Washington DC* , 283 - 302.

Bhagwati, J. .. (1971). Trade Diverting Customs Unions and Welfare- Improvement: A Clarification. *Econ. J. 81(323)* , 580 - 587.

Bhushan, A., & Samy, Y. (2012). *Aid and Taxation: Is Sub-Saharan Africa Different?* Washington DC: The North-South Institute.

Bird, R. M., Jorge, M.-V., & Torgler, B. (2004). *Societal Institutions and Tax Effort in Developing Countries.* Georgia: Andrew Young School of Policy Studies, Georgia State University, Working Paper 04 - 06.

Botlhole, T. D. (2010). Tax Effort and The Determinants of Tax Ratio in Sub-Saharan Africa. *International Conference on Applied Economics (ICOAE),* (pp. 101 - 113).

Brown, C. V., & Jackson, P. M. (1990). *Public Sector Economics, Forth Edition.* Oxford UK and Cambridge U.S.A: Black Wall.

Bucovetsky, S., & Wilson, J. (1991). Tax Competition with Two Tax Instruments. *Regional Science and Urban Economics, 21.* , 333-350.

Buigut, S. (2012). An assessment of trade Effects of East African Community Customs Union on Member Countries. *International Journal of Economics and Finance* , 41-48.

Caballe, J., & Panades, J. (1997). Tax Evasion and Economic Growth". . *Jounl of Public Finance, 52* , 318-340.

Cameron, D. (1978). The Expansion of the Public Economy: a Comparative Analysis . *American Political Science Review, 72* , 1243-1261.

Castro, L., DeRocha, M., & Kraus, C. (2004). *Regional Trade Integration in East Africa :Africa Regional Working Paper No. 72.* Washinton D.C: World Bank.

Chaudhry, I. S., & Munir, F. (2010). Determinants of Low Tax Revenue in Pakistan. *Pakistan Journal of Social Sciences (PJSS)* , 439-452.

Chelliah, R. (1971). Trends in Taxation in Developing Countries. *IMF Staff Papers, 18* , 254-331.

Chen, B. L. (2003). Tax Evasion in a Model of Endogenous Growth. *Review of Economics Dynamics 49, no.3* , 333-349.

Christian, W. N., & Nkoro, E. (2012). Tax Revenue and Economic Development in Nigeria: a Macroeconomic Approach. *Academic Journal of Interdisciplinary Studies* , 211.

Cline, W. R. (1978). *Benefits and Costs of Economic Integration in CACM. In Cline, W. R. and Delgado, E. (eds).Economic Integration in Central America.* Washington: the Bookings institution.

Davood, H. R. (2013). *The East African Community After 10 Years - Deepening Intergration.* Arusha, Tanzania: EAC Secretariate.

Delgado, F. J. (2008). *Tax Policy Covergence in EU: An Empirical Analysis.* Oviedo, Spain: University Oviedo.

DeRosa, D. A., Obwona, M., & Vernon, O. (2002). *The New EACCU: Implications for Ugandan Trade,Industry Competitiveness, and Economic Welfare.* Kampala: Nathan Associates Inc.http://www.nathaninc.com.

DiJohn, J. (2008). Taxation, Resource Mobilisation and Productive Capacity - Building in LDCs. *The Least Developed Countries Report 2009* (p. Background Paper 5). Geneva: United Nations Conference on Trade and Development.

Dioda, L. (2012). *Structural Determinants of Tax Revenue in Latin America and the Caribbean, 1990 - 2009.* Mexico: United Nations Press.

Dreher, A. (2006). The Influence of Globalization on Taxes and Social Policy; An Empirical Analysis for OECD Countries. *European Journal of Political Economy, 22* , 179-201.

Drummond, P., Daal, W., Srivastava, N., & Oliveira, L. E. (2012). *Mobilizing Revenue in Sub-Saharan Africa: Empirical Norms and Key Determinants, IMF Working Paper WP/12/108* . Washington DC: International Monetary Fund.

EAC. (2012). *East African Community Facts and Figures - 2012.* ARUSHA, TANZANIA: East African Community Secretariat.

EAC. (2014). *East African Community Facts and Figures - 2014.* Arusha, Tanzania: East African Community Secretariat.

EAC. (2010). *Trade Report 2008.* Arusha, Tanzania: East African Community Secretariat.

Eltony, M. N. (2002). *Determinants of Tax Effort in Arab Countries.* Arab Planning Institute, Working Paper No.207.

Emran, M., & Stiglitz, J. (2005). Revenue- Increasing and Welfare- enhancing reform of taxes on export. *Journal of Public Economics* , 599-623.

Fjeldstad, O. H. (2005). *Corruption in Tax Administration: Lessons from Institutional Reforms in Uganda.* CMI Working Paper WP 2005: 10.

Fossat, P., & Bua, M. (2013). *Tax Administration Reform in the Francophone Countries of Sub-Saharan Africa.* Washington DC: International Monetary Fund.

Francesca, G., & Paolo, L. (2009). *Economic Integration and Public Policies: A Review of the Empirical Literature.* SIEP Working Paper No. 619.

Francesca, G., Paolo, L., & Antonio, S. (2013). Economic Integration, Tax Erosion and Decentralisation: An Empirical Analysis. *Modern Economy* , 14-26.

Francisco, J. D., & María, J. P. (2008). *Tax policy convergence in EU: an empirical analysis.*

Gabriel, W. (2009). *The Determinants of tax Revenue in Uganda, Kenya and Tanzania.* Kampala: Makerere University (Un publiced).

Garrett, G. (1996). *Capital Mobility, Trade, and the Domestic Politics of Economic Policy KeohaCapital Mobility, Trade, and the Domestic Politics of Economic Policy in Keohane R., Milner H. (eds), Internalization and Domestic Politics.* New York: Cambridge University Press.

Garrett, G., & Mitchell, D. (2001). Globalization, Government Spending and Taxation in theOECD . *European Journal of Political Research, 39* , 145-177.

Gastaldi, F. (2008). *Globalisation, Capital Mobility and Convergence of Effective Tax Rates* . CRISSWorking Paper, No. 32/2008.

Gastaldi, F., & Liberati, P. (2009). Economic Integration and Public Policies: a Review of the Empirical Literature,. *SIEP Working Paper 619* .

Ghai, D. (1965). *Income Elasticity of the Ugandan Tax Structure: A Desertation presented to the faculty of Graduate School of Yale University for a Ph.D Degree.* Yale: Yale University.

Ghura, D. (1998). *Tax Revenue in Sub-Saharan African Countries: Effects of Economic Policies and Corruption: WP/98/135.* Washington DC: Internationaal Monitary Fund (IMF).

Gordon, R. H. (1998). Can Capital Income Taxes Survive in Open Economies. *Journal of Finance, 47* , 1159-1180.

Greene, W. (2012). *Econometrics Analysis, 7th Edition.* New York: Macmillan Publishing Company.

Gupta, A. S. (2007). *Determinants of Tax Revenue Efforts in Developing Countries.* Washington: International Monetary Fund.

Haile, K. (2000). 'Regional Integration in Africa: A Review of the Outstanding Issues and Mechanisms to Monitor Future Progress', Paper Presented at African Knowledge Networks. *Forum Preparatory Workshop.* Addis Ababa: ECA.

Hallerberg, M., & Basinger, S. (1998). Internationalization and Changes in Tax Policy in OECD Countries: the Importance of Domestic Veto Players. *Comparative Political Studies, 31* , 321- 353.

Hamilton, A. (2009). *Discussing Existing TRIST Tools for Twelve Developing Countries: Bolivia, Burundi, Ethiopia, Jordan, Kenya, Madagascar, Malawi, Mozambique, Nigeria, Seychelles, Tanzania and Zambia.* Washington DC: World Bank.

Hansson, Å., & Olofsdotter, K. (2004). *Integration and Tax Competition: An Empirical Study for OECD Countries.* Sweden: Lund University.

Harris, M., & Matyas, L. (1996). *A Comparative Analysis of Different Estimates for Dynamic Panel Data Models, Working Paper no. 4/96.* Monash: Dept of Econometrics, Monash University.

Haufler, A., Klemm, A., & Schjelderup, G. (2006). *Economic integration and redistributive taxation: a simple model with ambiguous results.* CESifo working paper, No. 1853.

Haufler, A., Klemm, A., & Schjelderup, G. (2008). Redistributive Taxation, Multinational enterprises and economic integration. *European Journal of Political Economy* , 1-15.

Heller, P. S. (1975). A Model of Public Fiscal Behaviour in Developing Countries. *American Economic Review, Vol. 65 (3)* , 429 - 445.

Hisali, E., & Ddumba, J. S. (2013). Foreign Aid and Tax Revenue in Uganda. *Economic Modelling* , 356 - 365.

Holmgren, T., & Kasekende, L. (1999). *Aid and Reform in Uganda: Country Case Illustrations from sub Saharan Africa.*

Houeninvo, T., & Boko, S. H. (2007). *The Impact of Regional Integration on Trade and Firm Performance in West Africa: A Case Study of Benin Published, in Mina Baliamoune-Lutz, Alojzy Z.Nowak and Jeff Steagall, ed, Global Economy.* Warsaw and Jacksonville: University of Varsaw and Coggin College ofBusiness, University of North Florida.

Hsiao, C. (2004). *Analysis of Panel Data.* Cambridge: Cambridge University.

Hülsemeyer, A. (2004). *Globalization and Institutional Adjustment – Federalism as an Obstacle?* England: Ashgate Publishing Limited.

Internationa Monitory Fund (IMF). (2008). *Kenya, Uganda, and United Republic of Tanzania: Selected Issues; IMF Country Report No. 08/353.* Washington DC: International Monetary Fund.

Jhingan, M. (2004). *Money, Banking, International Trade and Public Finance.* New Delhi: Vrinda Publications.

Kaldor, N. (1964). *Will Underdeveloped Countries Learn How to Tax?. Essays on Economic Policy.* London: Gerald Duckworth and Company Limited.

Karagoz, K. (2013). Determinants of Tax Revenue: Does Sectorial Composition Matter? *Journal of Finance, Accounting and Management* , 50-63.

Karingi, S., Lang, R., Oulmane, N., Sadni, M., & Hammouda, H. (2005). *Economic and Welfare Impacts of the EU-Africa Economic Partnership Agreements, Working Paper No.10.* African Trade Policy Centre for Economic Commission for Africa.

Karingi, S., Siriwardana, M., & Ronge, E. (2002). *Implications of the COMESA Free Trade Area and Proposed Customs Union.* Regional Integration Research Network Papers.

Keen, M., & Mansour, M. (2009). *Revenue Mobilisation in Sub-Saharan Africa.* Washington DC: International Monetary Fund Working Paper WP/09/157.

Keen, M., & Marchand, M. (1997). Fiscal Competition and the Pattern of Public Spending. *Journal of Public Economics, 66* , 33-53.

Khan, H. A., & Hoshino, E. (1992). Impact of Foreign Aid on the Fiscal Behaviour of LDC Governments. *World Development, Vol. 20, No. 10* , 1481 - 1488.

Khandelwal, P. (2004). *COMESA and SADC: Prospects and Challenges for Regional Integration, Draft Working Paper* . Washington D.C.: IMF.

Koldor, N. (1963). The Role of Taxation in Economic Development. *Seminar on the Programming of Economic Development* (p. UNESCO/SS/PED/11). Paris: United Nations Educational Scientific and Cultural Organisation.

Lee, Y., & Gordon, R. H. (2004). Tax Structure and Economic Growth. *Journal of Public Economics* , Vol. 89.

Leuthold, J. H. (1991). Tax Shares in Developing Economies: A panel Study . *Journal of Development Economics, 35* , 173-185.

Leuthold, J., & N'Guessan, T. (1986). *Tax Buoyancy and Elasticity in Developing Economies: Bureau Of Economic and Business Research, Faculty Working Paper No.1272.* Illinois: Urban Champion, University of Illinois.

Lipsey, R. (1987). *The Theory of Customs Unions: A General Survey, in J.N .Bhagawati (ed.) International Trade: Selected Readings.* Cambridge: : The MIT Press.

Longo, R., & Sekkat, K. (2001). *Obstacles to Expanding Intra-African Trade OECD: Technical Paper No. 169.* Paris: OECD.

Mahdavi, S. (2008). International review of Economics and Finance, 17. *The Level and Composition of Tax Revenue in Developing Countries; Evidence from Unbalanced panel data* , 607-617.

Malugu, M. E. (2014). *The Revenue Implications of Trade Liberalization in Tanzania.* Arusha, Tanzania: Institute of Accountancy .

Mclntyre, M. A. (2005). *Trade Integration in East African Community: An Assessment for Kenya.* Washington DC: International Monetary Fund.

Mengesha, Y. N. (2009). *Trade Effects of Regional Economic Integration in Africa: The Case of SADC (Evidence from Gravity Modeling UsingDisaggregated Data).* Department of Economics, Debre Birhan University, Ethiopia: On line Publications.

Mkenda, B. K., & Hangi, M. (2009). *Revenue Implications of the EC-EAC EPA: The Case of Tanzania; BIEAC nO. 6/2009.* Geneva, Switzerland: CUTS International Geneva Resource Centre.

Moore, M. (1998). *Death Without Taxes: Democracy, State Capacity, and Aid Dependence in the forth World edited by White and M. Robinson, Towards a democratic Developmental State.* Oxford: Oxford University Press.

Mugano, G., Brookes, M., & Roux, P. L. (2013). Estimating the Impact of a COMESA Customs Union on Zimbabwe Using a Tariff Reform Impact Simulation Tool (TRIST). *African Journal of Business Management ,Vol. 7(38)* , 4000 - 4010.

Mugisa, E., Onyango, C., & Mugoya, P. (2009). *An Evaluation of the Implementation and Impact of the East African Community Customs Union.* Arusha, Tanzania: EAC Secretariate.

Muriithi, M. K., & Moyi, E. D. (2003). *Tax reforms and revenue Mobilisation in Kenya, AERC Research Paper No. 131.* Nairobi, Kenya: African Economic Research Consortium (AERC).

Musgrave, R., & Musgrave, P. B. (1989). *Public Finance in Theory and Practice.* Singapore: McGRAW-HILL INTERNATIONAL EDITIONS; Finance Series.

Mwakalobo, & Swebe, A. B. (2009). Economic Reforms in East African Countries: The Impact on Government Revenue and Public Investment . *Open Access Dissertations* , Paper 66.

Njuguna, N. (2000). *Regional Integration Experience in Eastern African Regions: Paper Presented at A Policy Workshop organized by the OECD Development Center at the Graduate Institute of International Studies, Geneva 13 October 2000).* Geneva.

Ogunkola, E. O. (1994). *An Empirical Evaluation of Trade Potential in the Economic Community of Western States.* Nairbi: AERC Research Paper.

Okech, T. C., & Mburu, P. G. (2011). Analysis of Responsiveness of Tax Revenue to Changes in National Income in Kenya between 1986 - 2009. *International Journal of Business and Social Science* , 275-287.

Ola, C. (2001). *Income Tax Law and Practice In Nigeria, 5th Edition.* Ibadan: Dalag Prints and Park.

Othieno, L., & Shinyekwa, I. (2011). *Trade, Revenue And Welfare Effects of The East African Community Customs Union Principle of Asymmentry on Uganda: An Application of Wits-Smart Simulation Model.* Kampala, Ugand: Economic Policy Research Centre (EPRC).

Ouattara, B. (2006). Foreign aid and Government Fiscal Behaviour in Developing Countries: Panel Data Evidence. *Economic Modelling, Vol.23, No. 3, May* , 506 - 514.

Peters, G. (1979). *International Trade, Investment, and Payments.* USA: Houghton Mifflin Company.

Petersen, H. G. (2010). *Tax Systems and Tax Harmonisation in the East African Community (EAC).* Berlin, Germany.: GTZ.

Piancastelli, M. (2001). *Measuring the Tax Effort of Developed and Developing Countries: Cross Country panel Data Analysis - 1985/1995.* Paris: Instituto de Pequisa Economica Aplicada (IPEA).

Profeta, P., & Scabrosetti, S. (2010). *The Political Economy of Taxation: Lessons For Developing Countries.* Edward Elgar Publishing Limited.

Quinn, D. (1997). The Correlates of Change in International Financial Regulation. *American Political Science Review, 91* , 531-552.

Rajani, E. M. (1996). *Personal Income Taxation in India: PhD Thesis.* India: Pondicherry University.

Razin, A., & Sadka, E. (1991). Efficient Investment Incentives in the Presence of Capital Flight. *Journal of International Economics, 31* , 171-181.

Rodrik, D. (1998). Why Do More Open Economies Have Bigger Governments? *Journal of Political Economy, 106* , 997-1032.

Rojid, W., & Seetanah, B. (2010). An Assessment of the impact of a COMESA Customs Union. *African Development Review, 22(2)* , 331-345.

Roodman, D. (2009). *An Introduction to Difference and Systems GMM in STATA.* Centre for Global Development.

Sachs, J., & Warner, A. (1997). Sources of Slow Growth in African Economies. *Journal of African Economies, Vol. 6* , 335 - 376.

Salvatore, D. (2007). *International Economics , 9th ed.* USA: John Wiley & Sons Inc.

Sangeeta, K., Kimbugwe, K., & Perdikis, N. (2009). ssessing the Welfare Effects of the East African Community Customs Union's Transition Arrangement on Uganda. *Journal of Economic Integration, vol 24(4)* , 685 – 708.

Schiff, M., & Winters, L. (2004). *Regional Integration and Development.* Washington DC: World Bank and Oxford University Press.

Schulze, G., & Ursprung, H. (1999). Globalization of the Economy and the Nation State , 22 . *The World Economy* , 295-352.

Semkunde, M. A. (2012). *An Assessment of the Impact of the East African Customs Union to the Performance of Tanzania's Intra-East African Trade.* Dar-es-salaam, Tanzania: On line Publications.

Shinyekwa, I., & Mawejje, J. (2013). *Macroeconomic and Sectoral Effects of the EAC regional Integration on Uganda: A Recursive Computable General Equilibrium Analysis.* Kampala, Uganda: Economic Policy Research Centre (EPRC).

Slemrod, J., & Yitzhaki, S. (1996). The Costs of Taxation and the Marginal Efficiency Cost of Funds . *IMF Staff Papers, 43* , 172-198.

Smith, A. (1904). *Wealth of Nations, Vol. 2 Edited by E. Cannan.* New York: Putnam.

Snorrason, S. (2012). *Asymmetric Economic Integration, Contributions to Economics.* Berlin Heidelberg: Springer-Verlag.

Stegurescu, D. (2009). The Effects of EConomic and Political Integration on fiscal Integration: Evidence from OECD Countries. *Canadian Journal Of Economics, Vol. 42, No.2* , 694 - 718.

Stiglitz, J. (2003). Globalization and the Economic Role of the State in the New Millennium. *Industrial and Corporate Change, 12* , 3-26.

Stiglitz, J. E. (1999). *Economics of the Public Sector, Third Edition.* New York/ London: W.W.Norton and Company.

Stotsky, J., & Mariam, A. W. (1997). *Tax Effort in Sub-Saharan Africa. Working Paper No. 107.* Washington DC: International Monrtary Fund.

Studenmund, A. (2001). *Using Econometrics – A Practical Guide* . San Franciso: CA, Addision Wesley Longman.

Swank, D. (2002). *Global Capital, Political Institutions and Policy Change in Developed Welfare States,.* Cambridge.: Cambridge University Press.

Tanzi, V. (1981). *A Statistical Evaluation of Taxation in Sub-Saharan Africa.* Washington: International Monetary Fund.

Tanzi, V. (1987). *Quantitative Characteristics of the Tax System of Developing Countries. The Theory of Taxation for Developing Countries.* New York: Oxford University Press.

Tanzi, V. (1992). *Structural Factors and Tax Revenue in Developing Countries: A Decade of Evidence, in Open Economies: Structural Adjustment and Agriculture, Edited by Ian Goldin and l. Allan Winters.* Cambridge: Cambridge University Press.

Tanzi, V. (1995). *Taxation in an Integrating World, Washington.* Washington DC: Brookings Institutions.

Tanzi, V. (2000). *Taxation in Latin America in the last Decade.* Stanford: Center for Research on Economic Development and Policy Reforms. Stanford University.

Tanzi, V., & Zee, H. o. (2000). Tax Policy For Emerging Markets: Developing Countries. *National Tax Journal* , 299-322.

Taylor-Gooby, P. (1997). In Defence of Second-Best Theory: State, Class and Capital in SocialPolicy. *Journal of Social Policy, 26* , 171-192.

Teera, J. M. (2003). *Determinants of Tax Revenue Share in Uganda.* Bath: University of Bath.

Teera, J., & Hudson, J. (2004). Tax Performance: A Comparative Study. *Journal of International Development Vol. 16, No.6* , 785 - 802.

Tax Justice Network (TJN). (2005). *Aid, Tax and Finance for Development.*

Torres-Reyna, O. (2010). *Getting started in fixed/random effects models using R.* Princeton: Princeton University, Data and Statistics Services.

Toye, J., & Moore, M. (1998). Taxation, Corruption and Reform. *European Journal of Development Research, Vol. 10* , 60 - 80.

Uganda, G. o. (1999). *The Background to the Budget 1998/99 Fiscal Year.* Kampala: Ministry of Finance, Planning and Economic Development.

Verbeek, M. (2008). *A Guide to Modern Econometrics, 3rd Edition.* Rotterdam: Erasmus University.

Viner, J. (1950). *The Customs Union Issue.* New York: Carnegie Endowment for International Peace.

Wahid, A. N. (2008). An Emperical Investigation on Nexus Between Tax Revenue and Government Spending: The case of Turkey. *International Research Journal of Finance and Economics, Vol. 16* , 46 - 51.

Wawire, N. H. (2011). *Determinants of Value Added Tax Revenue in Kenya.* Nairobi: Kenyatta University.

Winner, H. (2005). Has Tax Competition Emerged in OECD Countries? Evidence from Panel Data. *International Tax and Public Finance , 12* , 667-687.

Winters, A. (1996). *Regionalism versus Multilateralism* . Washington DC: World Bank Working Paper No.WPS, World Bank.

World Bank. (2013). *World Bank Development Indicators.* Washington DC: World Bank online Data Set.

APPENDICES

Table 6: Definition of Variables and their Sources

Variable	Definition	Source
Tax Revenue	Measured as tax revenue as a percentage of GDP for the five EAC countries.	WDI, African Economic outlook, IMF reports and EAC (2012) Facts and figures.
EAC	East African Community measured as dummy variable taking on values 1 for year during integration or zero otherwise.	Dummy variable
LnY	GDP per capita constant US dollars 2005 expressed in natural logarithms	World Bank Development Indicators
LnPOP	Total Population density expressed in natural Logarithm	World Bank Development Indicators
Inflation	Inflation, consumer prices (annual %)	World Bank Development Indicators
Public debt	the stock of external debt as a percentage of GNI	World Bank Development Indicators
GDP growth rate	A proxy for economic growth expressed as a %.	World Development Indicators

Table 7: Declaring Data as Panel Data

Panel variable	Country (strongly balanced)
Time variable	year, 1990 to 2011
Delta	1 unit

Source: Author's Computations

The above shows that the panel data is strongly balanced and that the period of study is from 1990 to 2011 giving 22 observations taken from five EAC countries; Burundi, Kenya, Rwanda, Tanzania and Uganda giving 110 observations. In econometrics, the higher the number of observations, the better the precision of the coefficients due to the higher degrees of freedom, hence why the present study uses panel data models in order o take the advantage of the increased degrees of freedom and hence the better precisions of the model coefficients.

Table 8: FE Model Results

Fixed-effects (within) regression				Number of obs	=	110
Group variable: country				Number of groups	=	5
R-sq: within = 0.6215				Obs per group: min	=	22
between = 0.0311				Avg	=	22.0
Overall = 0.0531				max	=	22
				F(6,99)	=	27.09
Corr (u_i, Xb) = -0.9222				Prob > F	=	0.0000
Tax revenue	**Coefficient**	**Std. Err.**	**t**	**P>t**	**[95% Conf. Interval]**	
EAC	-1.467024	.4827537	-3.04	0.003	-2.424912	-.5091354
GDP growth rate	.0438012	.0192021	2.28	0.025	.0057001	.0819023
Public debt	.0338694	.0060603	5.59	0.000	.0218445	.0458943
LnY	4.657569	.9664178	4.82	0.000	2.739987	6.575152
LnPOP	10.20367	1.233373	8.27	0.000	7.756389	12.65095
Inflation	-.0119423	.0145354	-0.82	0.413	-.0407836	.0168991
Constant	-184.7809	19.90092	-9.29	0.000	-224.2686	-145.2931
sigma_u 8.9983604						
sigma_e 1.3192462						
rho .97895791 (fraction of variance due to u_i)						
F test that all u_i=0: F(4, 99) = 95.49 Prob > F = 0.0000						

Source: Author's Computations

Table 9: RE Results

Random-effects GLS regression	Number of observations	=	110
Group variable: country	Number of groups	=	5
R-sq: within = 0.1412	Obs per group: min	=	22
between = 0.6961	avg	=	22
overall = 0.3597	Max	=	22
Random effects u i ~ Gaussian	Wald chi2(6)	=	57.86
Corr (u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000

Tax revenue	Coefficient	Std. Err.	z	P>z	[95 Conf.	Interval]
EAC	3.263092	.8159835	4.00	0.000	1.663794	4.86239
GDP growth rate	.0021365	.0406184	0.05	0.958	-.0774741	0.0817471
Public debt	.0633282	.0106553	5.94	0.000	.0424441	0.0842123
LnY	7.552929	1.211711	6.23	0.000	5.17802	9.927838
LnPOP	-2.708998	.7115881	-3.81	0.000	-4.103685	-1.314311
Inflation	-.0768269	.0299008	-2.57	0.010	-.1354314	-0.0182223
Constant	10.93553	7.630165	1.43	0.152	-4.01932	25.89038
sigma_u 0						
sigma_e 1.3192462						
rho 0 (fraction of variance due to u_i)						

Source: Author's Computations

Table 10: GMM Results

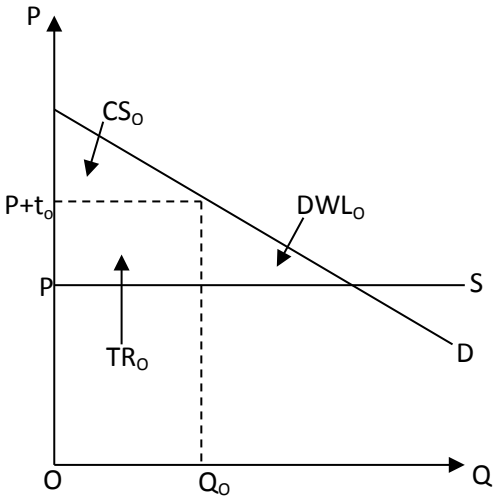
Arellano-Bond dynamic panel-data estimation		Number of observations		=		100
Group variable: country		Number of groups		=		5
Time variable: year						
Observation per group: min				=		20
Average				=		20
max				=		20
Number of instruments	= 96	Wald chi2(7)		=		170.87
Prob > chi2				=		0.0000
One-step results						
Tax revenue	**Coefficient**	**Std. Err.**	**z**	**P>z**	**[95% Conf.**	**Interval]**
Lag Tax revenue	.3142157	.0959821	3.27	0.001	.1260942	0.5023372
EAC	-1.10143	.4768241	-2.31	0.021	-2.035988	-0.1668723
GDP growth rate	.0515712	.0184703	2.79	0.005	.01537	0.0877724
Public debt	.0206795	.0066611	3.10	0.002	.007624	0.033735
LnY	2.974222	1.093174	2.72	0.007	.8316415	5.116803
LnPOP	7.104389	1.628891	4.36	0.000	3.911822	10.29696
Inflation	-.0148052	.0144325	-1.03	0.305	-.0430923	0.013482
Constant	-127.0458	26.78685	-4.74	0.000	-179.547	-74.54452

Instruments for level equation: Standard.
Source: Author's Computations

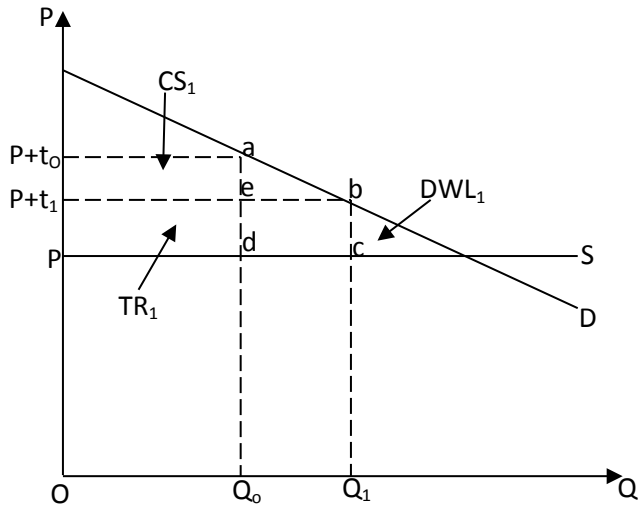
Figure 2: Graphical Presentation of a Tariff Reduction as a result of a customs union

According to IMF (2008), the first round effects of a tariff cut can be captured in a simple diagram where **P** represents the world price of an imported good, **Q** quantity, **S** a horizontal import supply curve, based on the assumption that a small importing countries (small markets) such as EAC states do not influence world prices, and **D** a downward sloping import demand curve to represent consumers response to changes in the domestic price of the imported goods.

Original Tariff



Reduced Tariff as a result of custom union



Source: IMF, 2008

The left hand side diagram highlights the initial situation before the tariff is cut from t_0 while the on the right illustrates the situation after the tariff cut. The intersection with the demand curve of $\mathbf{Q_0}$ and $\mathbf{P+t_0}$ shows quantity demanded of the imported good at the domestic price (world price (P) plus tariff (t_0)). The triangle labeled $\mathbf{CS_0}$ represents consumer surplus while the triangle $\mathbf{DWL_0}$ shows dead weight welfare loss to the economy due to the tariff reduction. $\mathbf{TR_0}$ represents initial tariff revenue. If the tariff is lowered to $\mathbf{t_1}$**,** as shown on the right hand side, the domestic price drops to $\mathbf{P+t_1}$ and quantity demanded increases to $\mathbf{Q_1}$**.** The distance $\mathbf{Q_0}$ **-** $\mathbf{Q_1}$ along the horizontal axes represents trade creation**.** Importantly, the dead weight loss to the economy has decreased to $\mathbf{DWL_1}$ and consumer surplus has increased to $\mathbf{CS_1}$ (triangle from top of demand curve to b to $\mathbf{P+t_1}$**).** Increased consumer surplus can be broken into an increase in overall welfare (triangle **abe**), and a transfer of revenue from the government to consumers equal to Δt times $\mathbf{Q_0}$ (rectangle $\mathbf{P+t_0aeP+t_1}$). The overall welfare gain to the economy is equivalent to the area **abcd**. The diagram further illustrates the fall in tax revenue as a result of tariff reduction which came as a result of the implementation of the EAC Customs Union.

2. PETER BABYENDA: ''REGIONAL INTERGRATION AND TAX REVENUE: a case Study of the East African Community (EAC)''

The implementation of EAC treaty required the formation of Custom Union as the first step of EAC regional integration process and charging a common tariff on goods from non-member states (EAC, 2012). This may have an impact on the tax revenues of the partner states as it may affect their custom revenues either positively or negatively thus this study empirically examines the relationship between the East African Community regional integration and tax revenue in the EAC partner states alongside identifying other determinants of tax revenue in EAC.

The study uses secondary time series data from 1990 to 2011 obtained over the cross section of five EAC partner countries. The data were mainly obtained from World Bank Development indicators (WDI) and supplemented with data from African Economic Outlook, and the East African Community Facts and Figures - 2012.

The study extends the tax model developed by Heller (1975) and also used by Leuthold (1991); Caballe & Panades (1997); Ghura (1998); Chen (2003) among others where the public decision maker's utility function is maximized subject to a budget constraint in order to establish the impact of EAC regional integration on partner states' tax revenue. Analytically, panel data techniques of fixed effects, random effects and the first difference GMM are used for the empirical analysis and using the Hausman's specification test, FE model is the preferable model.

The findings of the study show that the EAC regional integration has a negative impact on the tax revenues of the EAC partner states. GDP per capita, economic growth (GDP growth rate), public debt, population density and lagged tax revenue are identified as the other determinants of tax revenue in the EAC region.

Basing on these findings, the study recommends that the EAC partner states should identify tax bases that cannot be affected by the EAC regional integration since the study found out that the EAC regional integration negatively affects the EAC partner states tax revenues and yet all the EAC partner states depend on tax revenues as their major source of domestic revenues.

Keywords: Regional Integration, EAC, tax revenue, GDP growth rate, GDP per capita, Population Density, Public debt, fixed effects and Hausman specification test.