EFFECT OF EAST AFRICAN COMMUNITY-COMMON EXTERNAL TARIFF FOR SELECTED AGRO-FOOD SENSITIVE PRODUCTS ON BURUNDI'S TRADE, WELFARE AND TARIFF REVENUE

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ABSTRACT

The effects of the customs union are ambiguous and depend on different factors. The theoretical ambiguities raise a need for empirical studies to generate information for a particular case. This study looks on the effect of EAC-CET for selected agro-food sensitive products of Burundi's trade, welfare and tariff revenue using the partial equilibrium model; specifically, the SMART model at HS-6 level. The analysis makes use of trade data of 2010-2016 from WITS database, and the EAC-CET schedule was obtained from EAC-CET document version 2017. The study defined 2 tariff scenarios. The first is a CET on selected sensitive products imported by Burundi from the rest of the world, and the second scenario assessed the variation of CET in tariff revenue. Results indicate that the implementation of EAC-CET led to a decrease of imports from the rest of the world, which created losses in a trade estimated to be 6 124 and 3 3782 (thousands US$) in rice and wheat, respectively. This also led to a diversion of imports of rice and wheat to its EAC partners estimated to be 1 626 and 831 (thousands US$), respectively. Further results indicate that gains of tariff revenue for the Burundian government due to high tariff on rice and wheat, are respectively estimated to be 9 277 and 6 627 (thousands US$), but Burundi would gain extra 231 and 363 (thousands US$) and these losses are due to the variation of CET. In terms of welfare, Burundi loses in terms of consumption of rice and wheat 1 258 and 6 051 (thousands US$) but gains in maize. The study recommends removal of rice and wheat among sensitive products and suggests that the addition and removal of products in the list of sensitive should be based on their welfare implications and needs of local consumers.

Keywords: Sensitive Products, CET, Trade, Welfare, Tariff Revenue, Smart model.

DECLARATION

I, Saidi Bizoza, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

_____ _____

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The above declaration is confirmed by:

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(Supervisor)

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DEDICATION

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LIST OF ABBREVIATION AND SYMBOLS

ATPSM	Agriculture Trade Policy Simulation Models
BRB	Banque de la République du Burundi
CET	Common External Tariff
CGE	Computable General Equilibrium Models
CMA	Customs Management Act
COMESA	Common Market of Eastern and Southern Africa
CU	Customs Union
DTIS	Diagnostic Trade Integration Study
EAC	East African Community
et al.	and others
GATT	General Agreement on Trade and Tariff
GSIM	Global Simulation model
IEA	Institute of Economic Affairs
KEPSA	Kenya Private Sector Alliance
MFN	Most Favored Nations
OAG	Observatoire des Actions Gouvernementales
RCA	Revealed Comparative Advantage
ROW	Rest of the World
RTA	Regional Trade Agreements
SMART	Single Market Partial Equilibrium Simulation Tool
TRAINS	Trade Analysis and Information System
TRIST	Trade Reform Impact Simulation Tool
UNCTAD	United Nations Conference on Trade and Development
US	United States

USD	United States Dollars
USDA	United State Agency for International Development
WITS	World Integration Trade Solution
WTO	World Trade Organization
$	Dollar

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Burundi joined the East African Community (EAC) and Common External Tariff (CET) in 2007 and 2009 respectively (Shepherd *et al*., 2017). In 2010, Country members agreed to remove internal tariffs based on the principle of asymmetry and set a three-band Common External Tariff (CET): 0% for raw materials, capital goods, agricultural inputs, certain medicines and certain medical equipment; 10% for intermediate goods and other essential industrial inputs; and 25% for finished products (EAC, 2012).

A list of sensitive products has been approved by partner states. The products have been qualified so, based on the potentiality for domestic production and cross-border trade, as such, these products were given extra protection higher than the maximum for non-sensitive products (KEPSA, 2010). The classification of sensitive products does not have any standard criteria of selection and this gives freedom to country members to negotiate and set a list of sensitive products (Hammouda, 2007). In EAC, decisions are oftentimes made politically without a prior in-depth analysis of economic and poverty implications (Bünder, 2018).

In reality, the EAC is a net importer of the sensitive products (Kabanda, 2014); in 2012, sixty five per cent of EAC demand for sensitive products was met by imports from the rest of the world (Karingi *et al.*, 2016). This was the major cause of the instability of the CET because, the high tariff which is applied to sensitive product and insufficient supply of these products within the EAC forced the member states to review most of the time the rate of CET using the duty remission schemes or stay in application scheme, which made

it unstable and unpredictable for investors (KEPSA, 2010).

Agro-food products are among the classified sensitive products list. Trade of agro-food products is very complex at any stage of cooperation than any other sector and varies across agreements (Aksoy, 2004). Comparing trade-in agro-foods and non-agro-food sectors, it can be noted that even if negotiations at Regional Trade Agreements (RTAs) caused a general reduction of existing tariffs on industrial products, tariffs on agro-food are remain relatively high, thus resulting on distortion in trade (Makochekanwa, 2010; 2012). In EAC, the nature of trade for all EAC partner states except Kenya remains dominated by agricultural product (Kabanda, 2014), which means that the EAC trade is not dispensed for aforementioned problems and the complexity can be more serious given the instability of the CET.

Given this complexity of implementation of CET, some studies took interest in analysing its effect. Stahl (2005) found that with the implementation of EAC-CET, prices of sensitive products are expected to increase and noted a very likely trade diversion. A study by US foreign Agriculture service in Nairobi (USDA, 2010b) found that implementation of CET has been responsible for high domestic prices of rice noted a decline of imports from the rest of the world (RoW). Frazer (2012) found that the adoption of CET by Rwanda will lead to an increase of prices of agricultural products majority of which are classified as sensitive products and noted that poor households are disproportionately affected by the high tariff. He suggested the removal of these products in the list of sensitive products and the same results have been found by Kabanda (2014).

However, these studies found that the implementation of CET led to an increase in the level of prices of sensitive products, but most didn’t go further and show what should be

the effect of this increase in prices due to implementation of CET on country members and lacked categorically information about Burundi.

1.2 Problem Statement and Justification

Burundi is an agro-food deficit country depending on the imports to fulfil the gap between the demand and supply of these products (DTIS, 2012). Maize, wheat and rice are among these agro-foods products imported by Burundi and classified as sensitive products.

Before its integration in EAC, the import of these products in Burundi in a period of 2000-2006 was 55.06% from outside the actual EAC members and 44.93% from EAC members (computed from World Bank database WITS). Before Burundi adopted CET, the import taxes for these products were on average 40% for maize, wheat and rice, while after implementation of CET it was 50%, 60%, and 75% respectively which could go even beyond that (Vitale *et al*., 2011), and also, prior to the implementation of CET, the imports contributed about 71.2% of trades and 13% in tax revenue (BRB, 2012).

Obviously, this has different implications given that the level of prices will have to change due to the changes in tariff rate, which have consumer welfare implication. But also the level of tariff revenue and trade has to change because the broad goal of tariff rate is to regulate trade and raise public revenue. Due to this, some studies have been interested in assessing this implication; the closest to the present study was done by Geourjon and Laporte (2008) and Shinyekwa (2016).

Geourjon and Laporte (2008) found that the tariff revenue will increase but also the price of some sensitive products like maize and rice will increase at a rate between 150 and

250%, once Burundi decide to join the EAC-CET. However this study was an ex-ante analysis trying to predict the effect of Burundi joining CET on its tariff revenue, but it didn't show how this will affect the level of trade and consumer welfare and was quite silent about the implication of the increase of the price of these products.

Ex-post results can be found in the work of Shinyekwa *et al*. (2016) who found that Burundi has experienced revenue losses and the product which experienced most losses is sugar, but also, a disproportionate distribution of gains from welfare, trade and tariff revenue between country members was noted, with poor performance in Burundi.

However, this study was done for all EAC country members and the whole list of sensitive product, as results, it doesn't provide country-specific policy implication based on observed results while the effect of CET depends on prior applied tariff structure and the later depends on the policy of a country which varies from one county to another; secondly, a list of sensitive products is a mixture of agricultural and non-agricultural products a specific analysis of either of the two categories may give more insight and make specific improvements instead of the whole list of sensitive products; thirdly the differences in terms of gain, maybe due to the differences in stages of development and endowments in terms of production; fourthly, it provides contrasting finding with the study of Geourjon and Laporte (2008) in terms of tariff revenue, one cannot rely only on either of the two studies, but there is a need of conducting other studies in order to give more clarification.

Generally, none of the reviewed studies was able to determine the level of change on the trade of agro-food products and tariff revenue that could be attributed to the implementation of CET at the individual country level. Hence, this study aims at filling

this gap. Specifically, it is based on Burundi as a deficit country depending on the import of these products and facing a high tariff on import of these products due to the implementation of CET.

1.3 Objectives of the Study

1.3.1 General objective

The general objective of this study is to assess the effect of variation of EAC-CET for selected sensitive agro-food product on the trade, welfare, and revenue of Burundi.

I.3.2 Specific objectives

(i) To examine the effect of the implementation of EAC CET on Trade of selected agro-food products in Burundi.

(ii) To examine implication of implementation and variation of EAC CET on tariff revenue in Burundi.

(iii)To examine the welfare implication of implementation EAC CET in Burundi.

I.4 Hypotheses

H_1: The implementation of EAC CET has no divert effect to the EAC States.

H_2: The implementation and variation of EAC CET has no effect on tariff Revenue.

H_3: The implementation of EAC CET has no effect on welfare.

1.5 Organization of the Dissertation

The importance of assessing the effect of EAC-CET at individual country level for the agro-food product is discussed in chapter one. The rest of the study is structured as follows: chapter two presents theories, in this Chapter, different issues have been discussed. The chapter is divided into two parts; theoretical review where the background

of EAC-CU is described and the key concepts of this work which are variation of CET and sensitive products; but also the theory underpinning this study is explained where the theory of customs union is explained and its effect on trade and welfare are detailed. The second part of this chapter deals with the empirical review, where different studies that assessed the impact of CET on sensitive products were reviewed, ending with the justification of undertaking this study, but also studies that used partial equilibrium models in assessing agricultural trade policies were reviewed, ending with conclusion of the choice of the model to be used in this study.

Chapter three presents the methodology used in this study. It presents first theoretically the model and core assumptions in which it is based. Secondly, the theoretical framework is explained in this chapter. The third section of this chapter is the derivation and specification of the model where the formulas used are derived and explained in details. The fourth section presents data used in this study and their sources and the last section of this chapter presents a scenario used to make simulations.

Chapter four shows the presentation and discussion of results, it's divided into three parts and each part representing a specific objective.

The last chapter of this study presents the conclusions and policy recommendations of this study.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 The East African Community Customs Union

The history of the EAC began since the colonial times when it was treated by the British leaders as one block or region. The first tries of creating EAC was done after the independences of EAC countries in 1967. Ten years later, due to ideological and structural problems, the unification of EAC Countries failed. Kenya, Tanzania and Uganda are the founding members of the re-established EAC created in 1999. The EAC CU has been proven in accordance with Article 5 (2) of the EAC Treaty. The purpose of establishing the central unit of the EAC was to strengthen and regulate trade between member countries. The Customs Union Protocol, signed in March 2004, gives for the gradual formation of a customs union over a transitional period of five years from January 2005 (EAC, 2004).

The CU Protocol comprises four pillars (elements) namely: Internal Tariff elimination, Non-Tariff Barriers (NTBs) Elimination; Common External Trade Policy; and Sensitive Products, which are essential for the realization of greater intra and extra-EAC CU trade. Burundi joined the EAC in 2007 and the Customs Union Protocol was officially launched in 2009 (EAC, 2012).

2.1.2 East African Community Common External Tariff (EAC-CET)

The presence of a common external tariff is the only distinction between a customs union and a free trade area. In a free trade union, member countries maintain their own tariff regimes while in a customs union, member countries have a common external tariff (Clausing, 2000).

In EAC-CU, this is among the key tools of the EAC Customs Union Protocol. EAC CET is a pertinent annexe of EAC Customs Union Protocol as it gives the picture of the tariff structure between the EAC Partner States and the rest of the world with regard to import duty charged on imported products into the Community (EAC, 2016).

The EAC-CET is structured under three-band (CET) - 0% for raw materials, capital goods, agricultural inputs, certain medicines and certain medical equipment etc; 10% for intermediate goods and other essential industrial inputs; and 25% for finished products. As part of the EAC Customs Union (CU) agreement, 31 agricultural tariff lines are designated as EAC sensitive products. The CET on import of these products is largely higher than the 25%, which is the highest rate for non-sensitive products. In addition, In Article 37(1) of the Protocol, it is said that each Partner State will keep honouring its obligations vis-a-vis to multilateral and other organizations to which the Partner States is a member.

2.1.3 Sensitive products

Products are said to be sensitive in terms of trade policy, if an internal or external initiation of trade liberalization may have a negative effect on production or trade of considered products (Mudungwe, 2010). Sensitive goods are items of particular interest to individual countries or regional blocs that are excluded from the full application of the negotiated tariff (Calpe *et al*., 2005). In fact, a list of sensitive products is pertinent given that it can be used to protect different national interest but it is criticized of missing an organized framework that can guide a common quantitative approach; instead, choices are grounded by various subjective assumptions resulting to a large number of sensitive products without any empirical evidence (Mudungwe, 2010; Shinyekwa, 2016). At the end of the day, the country loses welfare, and with inadequate productive capacities, there is more to lose than to gain.

For this reason, some efforts to develop criteria as a reference for the decision to add or remove such sensitive products in the list during the creation of the customs union can be found in the literature. Kharel (2010) introduced four criteria that may help to decide the addition or removal from the list of sensitive product. The study was based on the trade relationship between Nepal and the South Asian Free Trade Area. He used the Revealed Comparative Advantage index in the period of three years. Once the index is greater than one for the period of study, it shows that at least one country has a comparative advantage and that product can be added in the list of sensitive product. Mudungwe (2010); proposed some benchmarks, they include a range of indicators covering most of the key elements of the economy: production, fiscal factors, food security, trade, interconnections in the supply chain and well-being, Moazzem *et al.* (2013) suggested that the size of sensitive lists should be based on their competitiveness, commercial potential and the extent of revenue generated by the products.

In the EAC, the decision to add products in the list of sensitive is reproached for being influenced by political interests without deep preliminary analysis of its implication in other aspects such as economic and poverty (Bünder, 2018). However, efforts have been made and a full review is underway to define criteria for selection of these products according to the needs of the region in general, but it is nevertheless necessary to carry out a country assessment, due to the fact that each country has to suggest products that may be considered in the list of sensitive. Empirical cases can serve as evidence or guide of the decision of inclusion of these products in the list of sensitive, or it can even support the guideline for inclusion or exclusion of sensitive products. Hence this study will contribute in the case of Burundi.

2.1.4 The Common External Tariff and related trade effects

A customs union gives a protection system or coverage against future increases in trade restriction. The protection system works successfully if members do not unilaterally return to the trade policy regime when the customs union is created (IEA-Kenya, 2009).

In EAC, in order to make flexibility, Country members are allowed to consult or use their former trade policies, by using exemption regimes in section 114 of EAC Customs Management Act (CMA) or duty remission scheme in section 140. In the stays of application scheme, for instance, one country member can request to the council of Ministers, a temporary application of new CET. The merit of the two schemes is that they allow accommodating domestic political and economic interests which otherwise could have worked against or even prevented the pursuit of EAC integration (KEPSA, 2010).

By the use of the remission scheme, a member country can follow for a rate that is unique or less than the current CET. Once granted by the Council of Ministers, the partner State has a derogation allowing it to follow an exclusive rate. The waiver is normally approved for a limited term. The official notification of a waiver is published in June of each year; a request for an annual extension can be made. Imported goods at a reduced rate below the exemption and then re-exported to different EAC member States are problematic for the import duty applicable in the importing country. This may be the CET rate or if the importers have their own account, the predominant burden of the country.

Initially, the stays of application and remission regimes were expected to facilitate the implementation of the CET and remain at some pre-CET levels during a transition period. However, it has become common to use these schemes to derogate from the CET for other reasons (Bunder, 2018).

This led to the instability of CET. Since its introduction, the EAC's CET has been increasingly changing due to request of derogations in a wide range (Kitenga, 2012). It creates also unpredictability, distorts the value chain planning of producers within the bloc, and create uncertainties for third parties with trade and investment interests in the EAC (Karingi *et al.*, 2016).

An example can be given of Kenya, where to keep its tea market access to Pakistan was the major reason for Kenya to request for duty remission on rice imported from Pakistan. Thus Kenya had to apply 35% duty to rice from Pakistan while Tanzania and Uganda were proposing that the CET should be kept at 75%. The latter position was largely driven by the desire to expand rice production capacity while the former view was influenced by market access terms for tea and rice between Kenya and Pakistan (Vitale, 2011).

In 2005, Uganda had requested acceptance of the CET exemption for certain raw materials, the request was based on the fact that the implementation of the CET caused the increase of tariffs lines on these raw materials in relation to the previous rates of these products. Finally, twenty tariff lines were granted in 2006, and Uganda and the Partner States wishing to benefit from this decision was free to import these items duty-free in accordance with Section 140 (CMA) on the remission of rights (IEA-Kenya, 2009).

The above instances exhibit how the reconciliation of quite number sectarian profits can weaken the smooth and expected functioning of a customs union. The outcomes can be considered as a simple trade or adjustment of the tariff rate; however, the penalties can lead to a distortion of the alternate flows and customs revenues of the member countries.

2.1.5 Theoretical framework

The present work is based on the theory of customs union. This theory is divided into two approaches, namely the trade diversion creation (DC) approach and terms of trade (TT)

approach. The two approaches differ in the models employed, assumptions made, and questions which are answered (Riezman, 2016).

The DC approach does commonly partial equilibrium analysis. This approach tries mainly to address the following question: When does a customs union improve world welfare? This question is answered through the analysis of the effect of the customs union on trade, by comparing its trade creation versus the trade diversion effects.

The DC approach was founded by Jacob Viner in 1950, in his work "Customs union issues". The concept of trade creation and trade diversion was introduced by Viner (1950) in his analysis, and they later became crucial instruments for a better understanding of customs union' analysis and effects. It was generally thought that the customs union raises the level of welfare of country members as customs union drive to free trade at least within a regional bloc; Viner was the first to prove that the belief is not always true. Based on this, Viner defined trade creation as a movement in consumption from more costly local products to less costly products from a country member; in other words, trade creation happens when local producers of a product in a member country are substituted by producers of the same product from another member country within the customs union because of changes in import tariff policies, and trade diversion as movement in consumption from less costly non-member country to more costly products from a country member. Using the partial equilibrium analytical framework (Viner-Lipsey-Meade approach), the net effect of a CU is determined by the way products from the Rest of the World (ROW) are taxed or restricted and the conditions in which the CU was created. Some pre-integration factors may possibly affect the outcomes of a customs union, such as level of tariff, the structure of demand and supply, and so on (Gandolf, 1987).

The terms of trade TT approach pioneered by Vanek in 1965 and improved by different Authors (Negishi, 1969; Kemp, 1969; Petith, 1977). The TT approach uses general equilibrium analysis. The TT approach tries to answer the following questions: Why do customs unions form? Under what conditions will two countries form a customs union? What happens to the welfare of each country when a customs union forms? Will customs unions lead to free trade? The TT approach tries to answer these questions by checking the impact of a customs union on prices and, thus, the terms of trade.

The present study is assessing the changes on import tariff due to implementation of CET on selected sectors, not the whole economy, but also the effect of trade is decomposed in trade creation and trade diversion in order to check if the changes in import tariff diverted trade to EAC members. Based on the partial assessment of changes in tariff on the selected sector and on trade, the DC approach fits well this study than the TT approach can do, hence the DC approach is preferred.

2.1.6 Methods for the analysis of trade, welfare and revenue effects

Many methods have been used since to assess trade, welfare and revenue effects due to changes in tariff policies, but three of these methods are common in empirical studies. These methods are grouped into three groups:

1. Econometrics models,
2. Computable general equilibrium models,
3. Partial Equilibrium models

2.1.6.1 Econometrics Models

These models have been empirically used in estimating effects of international trade and more particularly, gravity model. The gravity model is the major econometric model used

in analysing effects of international trade and it has been more appreciated due to its effectiveness in forecasting trade flows. Moreover, this model is appreciated due to its data requirement which is usually available (Samuel, 2009). However, this model has been criticized for lacking a base of theoretical foundation on traditional international trade (Li, 2004). It is also criticized of contradicting Ricardian model as well as the Heckscher-Ohlin model, which are very important models in international trade (Piermartini, 2005).

2.1.6.2 Computable General Equilibrium Models (CGE)

The conception of Computable General Equilibrium models takes its foundation on general equilibrium theory. These models provide results that are theoretically consistent. In international trade, CGE models are mostly used to simulate possible changes that may come after implementation of a specific policy or to evaluate trade policy choices. The CGE analysis is done basically through the comparative analysis of the pre and post situation of the implementation of a given policy, and this facilitates the evaluation of different scenarios (Li, 2004).

Even though these models are highly appreciated, they present also some weaknesses. The most common are missing or inconsistency of data which poses a lot of problems (Li, 2004; piermartini, 2005), but also the requirement of highly detailed or aggregate data. Due to the aforementioned problems, it has been suggested that it is important to do some systematic proof of CGEs simulations by doing an ex-post assessment, in order to increase the confidence of the analytical findings (Piermartini *et al.*, 2005).

2.1.6.3 Partial Equilibrium Models

The partial equilibrium models are static models. These models can be employed in ex-ante and ex-post evaluation studies, they can also be used to predict or simulate the effects

of trade policy changes in cases of regional integrations or trade liberalization. These models fit well when a study is isolating the effect of a certain policy change in a specific sector which is the main difference to General Equilibrium models. The derivation of partial equilibrium models is based on the theory of trade creation and diversion as developed by Jacob Viner. However, the Partial equilibrium models and CGE models are suffering from same critics but partial equilibrium models are appreciated because of its less data requirement complications, and its simplicity in use and construction (Thommy *et al.*, 2013).

Generally, the three commonly used methods for the analysis of trade agreements and trade liberalization has been presented and their weaknesses. This study wants to isolate the effect of changes in import tariff on some selected sectors. Based on the methodologies presented above, the partial equilibrium model is the chosen methodology for this study.

2.2 Empirical Review

2.2.1 Review of studies on CET and sensitive products

The Common external tariff (CET) on sensitive products and its trade effect, maybe a recent phenomenon in EAC but it can be due to the fact that the customs union also in EAC is a recent one but there is an important number of studies that have been done in EAC and in another regional bloc with regards to this subject. What follows reviews selected literature on these topics so as to get a sense for the types of problems being discussed and analysed.

Gourjeon *et al.* (2008) used SYDONIA simulated the impact of Burundi joining the EAC-Customs union on its fiscal revenue. The study found that Burundi will lose 1.3 billion of Burundian francs in terms of tariff revenue due to the elimination of tariff and non-tariff

barriers on imports from EAC country members, but it would have gained 2 billion of Burundian francs due to the implementation of CET, and 0.4 billion would be due to the extension of list of sensitive products. It was noted that the CET on some sensitive products will lead to an increase in local prices like maize, rice and milk at a rate between 150 and 250% but it will also have a negative impact on poverty.

Shinyekwa *et al*. (2016) assessed the effect of EAC-CET sensitive list on the performance of domestic industries, welfare, and trade and tariff revenue on EAC country members. This study used the WITS/Smart model. They found a significant increase in intra-EAC exports with Kenya dominating and poor performance in Burundi and Rwanda.it was noted also that the demand for sensitive products exceeds the intra-EAC exports which prove the dependency on imports of these products from the Rest of the World some gain from Trade and welfare was noted in the case of Burundi. Despite this, a disproportionate distribution of these gains was noted too with Kenya leading as the main beneficiary.

Stahl (2005) was analysing the tariff liberalization impacts of the EAC Customs Union in perspective, he found that the CET is likely going to increase prices for final consumers and for producers depending on the imported products as inputs, mostly in Uganda. He also noted some interesting points on the role of tariff protection to sensitive products before and after the entry into force of the CU. He found that trade is expected to divert and noted that high tariff on import of sensitive products may lead to negative social results. This study used the WITS/Smart model.

The USDA (2010a) report assessed the commodity and trade issues specifically it was addressing the EAC rice imports tariff and food security. It reported that food security in the East African Community (EAC) would not likely be achieved through implementation of EAC-CET qualified to be protectionist tariff policies. It was noted that, since the

implementation of 75% ad valorem tariff, the EAC rice prices increased and this increase degraded food security in the region because potential consumers could no longer afford to buy it; but also EAC per capita rice consumption has fallen. It was also noted a decline in imports of rice from non-members.

Frazer (2012) analysed the effect of Rwanda joining the common external tariff and found that the implementation of East African community common external tariff will lead to an increase in tariff generally and it will particularly lead to an increase in prices of agriculture products majority of which are classified as sensitive products, and are consumed by poor household, and noted that poor households are disproportionately affected by high tariff on sensitive items list. He suggested removal of these products from the sensitive list.

Kabanda (2014) was analysing effect of EAC-CU for agricultural trade and focus was on maize, rice, wheat and sugar and found that all these products should be removed from the list of sensitive commodities for the region, because they contribute relatively little in EAC imports and the relatively higher tariffs on their import makes them relatively more expensive in the region and divert trade for wheat and rice. The study used gravity model

Kumar *et al.* (2014) analysed the impact of sensitive product list under SAFTA and found that the effectiveness of SAFTA is mainly hindered by a high number of sensitive products.

A positive effect on consumer surplus and trade flow was noted too but with a negative effect on tariff revenue. The study recommended the removal of some sensitive products from the list. This study used the WITS/Smart model

Dimaranan *et al.* (2008) found that trade liberalization will be created for the majority of COMESA members with an increase in import restriction for some countries due to adoption of COMESA-CET. Findings show also that there will be a very likely trade expansion but the benefit from this expansion is not similar to country members. Again, findings vary and this is said to be explained by heterogeneity in the economic status of country members based on their structure and trade protection patterns. The study used MIRAGE CGE model.

The review of selected literature shows contrasting effects of implementation of CET on sensitive products but a common thing is that either in EAC or out of EAC, this led to an increase in terms of prices of the selected sensitive products due to high protection that they are given while other study shows that the benefit of trade from CET is uneven due to the heterogeneity of economies structure of country members and protection patterns.

The EAC is also composed of countries which are in different stages of development which means that the likely uneven benefit of trade due to CET is possible. To conduct studies like these for individual countries will be beneficial to a country like Burundi as a very small country in EAC in terms of development, economy, and landlocked, by providing empirical effects, policymakers may decide which one to suggest as sensitive and which one may not due to their welfare and tariff revenue effect.

2.2.2 Empirical Review of Studies that used Partial Equilibrium

Different authors have explained the effect of trade policies on welfare and revenue using partial equilibrium methods. The partial equilibrium methods in policy analysis are composed basically of four different models, SMART, GSIM, TRIST and ATPSM the basic difference in these models is the assumptions behind their use. Based on this, studies have been reviewed based on the choice of the model and variable used.

Vanzetti (2006) used the Agriculture Trade Policy Simulation Model (ATPSM) to simulate the likely outcome of Vietnam joining the WTO. The choice of this model by the author was explained by its ability in assessing the policy changes driven by domestic support, export subsidies and domestic prices which in turns affect import and exports. From the results, he concluded that an increase in tariff revenue is expected. The variables used to determine the revenue was quotas, expenditure on export subsidies and domestic support.

MUGANO *et al.* (2014) used Trade Reform Impact Simulation Tool (TRIST) to estimate the effect of a COMESA customs union on imports and revenue of Zimbabwe and Hamilton (2009) used the same model to analyse the revenue impact of trade reform in Burundi. The choice of the model for both Authors was explained by its ability to projecting the impact of tariff reforms on total fiscal revenue. The results show that the total revenue is expected to increase by 9.1% and the imports will fall by 1.2% for Zimbabwe and total revenue was projected to fall by 9%. The variables used to estimate total revenue were tariff revenue (include VAT and excises) and imports.

Do (2013) used Global Simulation model ('GSIM') to assess the impact of cotton trade liberalization (complete removal of tariff and subsidies). The choice of the model by the author was explained by the ability of the model in analysing global simulations i.e. tariff changes can be for one country or more than one, at once. The results indicate that with the complete removal of all tariffs and subsidies, consumer welfare is expected to be negative and global trade is expected to decline. Among variables used in simulating sensitive parameters, there is demand expenditure share, export quantity share and subsidies.

Oluwusi (2016) used Single Market Tool (SMART) model to make an ex-ante assessment of the effect of ECOWAS-CET on EPA between ECOWAS and EU on trade, welfare and tariff revenue, the focus was on Nigeria in ECOWAS countries, the same model has been used by Khorana *et al*. (2009) to do an ex-post evaluation and quantification of trade and welfare effects for Uganda under the transitional arrangement between EAC members. The choice of the model by both authors was explained by the fact that it accounts for changes in tariff and the fact that it concerned with an importing country with its exporting partners. The variables used in estimating welfare, trade and revenue were tariff rate, imports values and elasticities (demand, supply and substitution).

Based on the models used by studies reviewed and the variable used in analysing sensitive parameters (Trade, Welfare and Tariff revenue), SMART model is the best model that analysed and explained clearly the effect of trade by decomposing it into trade creation and trade diversion, but also explained in a clear manner the welfare and tariff revenue effect derived from changes in import tariffs. This study has adopted to use the single market tool (SMART). Following are some selected studies were done using WITS-SMART model and their findings.

Mugano *et al.* (2013) assessed the impact of a South African Development Community (SADC) Customs Union on Zimbabwe and they used WITS-SMART Model for the study. The results show that trade expansion can be expected, and it was estimated to be US$ 39 million and consumer welfare to be US$ 7 million, but lost in revenue would also be expected and it was estimated to be US$ 42 million.

Dayal *et al*. (2008) analysed the revenue and welfare implications of SAFTA by partial equilibrium analysis using also WITS-SMART model. The result shows that revenue

losses can be expected to all SAFTA members, but with positive trade and welfare effect for all SAFTA members.

Abdelmalki *et al*. (2007) used WITS-SMART Simulation Model to analyse the free trade agreement between the United States and Morocco. The results show a drop in tariff on the side of Morocco due to the FTA; on the other side, the FTA led to a rise in import from the USA which increased consumer welfare through the reduction of price.

Karingi *et al*. (2005) assessed the impact of Economic Partnership Agreements between the EU and Africa used the WITS-SMART model. They found that the partnership will lead to a decrease of the process of industrialisation in African countries through a trade agreement and very likely trade diversion from the world to EU countries which increased commercial benefits to EU countries from the partnership.

Othieno *et al.* (2011) were assessing the welfare effects of EAC CU based on the principle of asymmetry and used WITS-SMART model. They found that the government will face losses in tariff revenue which should not be overlooked, because, the progression of tariff revenue in general, was also unstable. The study recommended that there is a necessity of thinking about different sources of funding.

Kaluwa and Kambewa (2009) used the SMART model to evaluate the likely impact of the COMESACET on Malawi. The results of the analysis indicate that currently, Malawi trades mainly with South Africa and generally with countries outside the COMESA region. The COMESA CET is expected to result in reduced consumer welfare and competitiveness for Malawi's producers who rely heavily on imported inputs.

From the above-reviewed literature, it is clear from findings of selected reviewed studies that the effect of a common external tariff of the customs union on trade, consumer welfare and tariff revenue is ambiguous and the rate of change varies between countries. This shows that conclusions cannot be generally done on the basis of theory alone, because the variation of the effect between countries may be explained by the stage of development of a country or its endowment in terms of production, which explain the degree of dependency on imports. This, therefore, implies that the question of whether a customs union is welfare-improving or not is essentially an empirical question based on a specific country level and the WITS-SMART model has shown to be a useful tool in evaluating in the impact of tariff policy changes on trade, consumer welfare and tariff revenue.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 SMART Model

The present research used the Single Market Partial Equilibrium Simulation Tool (SMART) included in the World Integration Trade Solution (WITS) software introduced by the World Bank and the United Nations Conference on Trade and Development (UNCTAD) in the 80's (Lang, 2006). Smart as all other partial equilibrium model, only accounts for the effect of tariff negotiations on a specific product that is affected without considering the impact on the rest of products (Thomy *et al*., 2013). The SMART model focuses on the selected importing market and all of its exporting partners; it also simulates the response of imports and other variables to changes in the tariff rate. it fits well when one needs to estimate trade creation, trade diversion, price and total trade (a sum of trade creation, trade diversion, and price effect); revenue and welfare (consumer surplus) effects.

The SMART model integrates three types of elasticities. (i) Supply elasticities are assumed to be infinite (=99), which means that a rise in demand for a given good will always be matched by the producers and exporters of that good without disturbing the price of the good. This assumption reflects the reality when the importer is a small market and the exporter consists of large economies (Rest of the World). (ii) Import substitution elasticities provide the rate of substitution between two goods with different origins. The Armington assumption is incorporated in the SMART model, meaning that same goods from different countries are imperfectly substitutable. In SMART, the import substitution elasticity is measured to be 1.5 for each good. (iii) Import demand elasticity measures the demand response to a change in import (WITS, 2011).

3.2 SMART Model Theoretical Framework

Trade effects

SMART gives the results of any trade policy shock on some variables. In particular, it gives the effects on trade flows (i.e., imports coming from various sources). It also provides details about trade effects results into trade creation and trade diversion effects. The graphic (Fig. 1) below, shows the trade diversion and trade creation effects. Let assume A and B are two partner countries which the reflected market imports good g from. Consumed composite quantity q0 is imported from A and B. Let assume again that the quantity respectively imported from A (A_0) and B (B_0) is given by E_0, the intersection between q_0 and the line depicting the relative price between the two varieties (Fig. 1) (WITS, 2011).

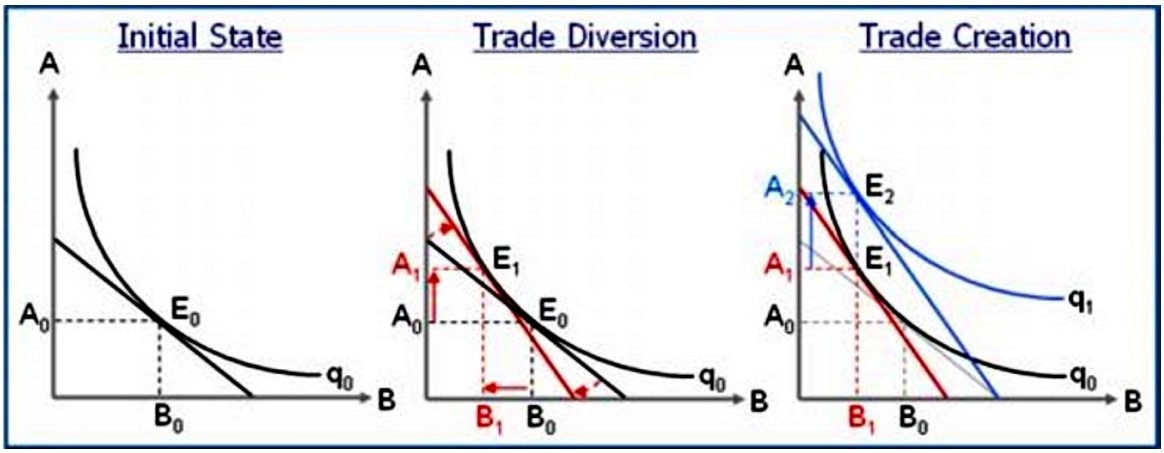


Figure 1: Trade Diversion and Trade Creation Effects
Source: WITS SMART User Manual (WITS, 2011)

3.2.1 Theoretic discussion on trade creation effect

With reference to figure 1, trade creation happens if the variations in price of goods from country A leads to an increase in the composite quantity curve q1 showing a greater import of the variety coming from country A (A1 to A2) by consumers at a permanent level of spending. Country A will have positive effect on both trade creation and trade diversion indicated by (A1 to A2) and (A0 to A1) respectively; while, trade diversion in

Country B will be negatively affected as indicated by (B0 to B1), with no effect on trade creation. The increase in imports for the new partner country is explained by the changes in tariff on product g from country (WITS, 2011).

3.2.2 Theoretic Discussion on Trade Diversion

Based on Figure 1, trade diversion occurs when country A incur reduction in tariff thus change the comparative prices of traded products compared to country B.

As result, goods from country A will be more consumed (A0 to A1) while imports coming from country B faces reduction (B0 to B1) at a new equilibrium (E1).

3.2.3 Effects on Tariff Revenue, Consumer Surplus and Welfare

Using SMART model, it's possible to estimate the effect of changing trade policy on consumer surplus, tariff revenue, and welfare. The variation of tariff revenue on a given import flow is simply calculated as the final ad-valorem tariff times the final import value minus the initial ad-valorem tariff multiplied by the initial import value. The graphics below illustrates the link between tariff revenue, consumer surplus and welfare changes. It depicts the market for a given imported good with D and S the demand and supply curves (export supply elasticity is infinite) (Fig. 2).

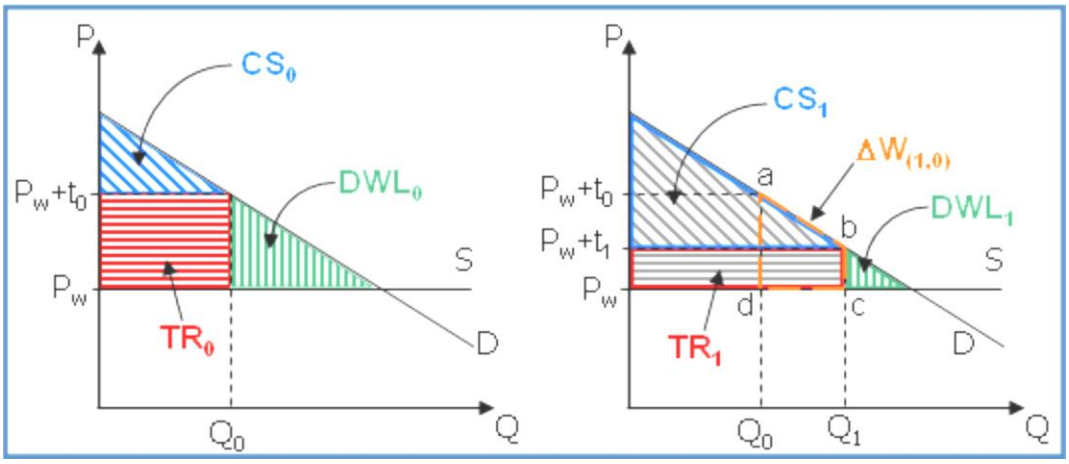


Figure 2: Change in Consumer Surplus, Tariff Revenue, Deadweight Loss and Welfare

Source: WITS SMART User Manual (WITS, 2011)

3.2.3.1 Tariff revenue effect

From Figure 2, a drop from t_0 to t_1 can be seen; t_0 and t_1 are initial and new tariff respectively. The same figure shows an increase in consumer surplus, variation in tariff revenue, a drop in deadweight loss and an increase in consumer welfare, when tariff drop from t_0 to t_1. According to WITS document, "the change in tariff revenue comprises of two contrasting effects" (WITS, 2011). Losses in tariff revenue are equal to a transfer from the government to consumers Q0*(t0-t1). Gains in tariff revenue due to increased imports is equal to (Q1-Q0)*t1.

Where: CS = consumer surplus, TR = tariff revenue, DWL = deadweight loss, Q0 = initial quantity, Q1 = new quantity, t0 = initial tariff and t1 = new tariff.

3.2.3.2 Welfare effect

The reduction in t tariff from t_0 to t_1 is beneficial to the economy of an importing country and this is said to be changes in welfare. The gains create two positive effects. The first one is the extra tariff revenue because of increase in imports (rectangle area of ΔW (1, 0)) while the second one is the extra consumer surplus because of increase in imports (triangle area of ΔW (1, 0)) (Punt *et al.*, 2015).

3.3 Derivation and Specification of SMART Model

The derivation of the SMART model is based on work by Laird and Yeat (1986), who derived clearly the equation that can be used to estimate various trade policy changes. The derivation begins with a basic trade model composed of basic import demand and export supply functions and an equilibrating identity (Karagu, 2012).

The consumer behaviour is the main driver of analysis of the effects of trade diversion, trade creation and tariff revenue. This can be specified from formulation of the model,

which was adopted by Laird and Yeat (1986). The import demand function for importing country is represented by Equation (1), below

$M_{ijk} = F(Y_{i,}P_{ij}, P_{ik})$ …….(1)

Where;

M = Imports

Y = National Income

P = Price

j = Importing country in this case Burundi

I = Commodities imported

k = Preference beneficiary country in this case ROW. The export supply function of preference beneficiary country is simplified as

$X_{ijk} = F(P_{ijk})$ …….....(2)

Where X_{ijk}= Exports of commodity *i*by country *k* to country *j*.

Exports of preference beneficiary countries and import to importing country give the standard partial equilibrium equation in (3). This partial equilibrium equation is obtained by equating Equation the first two equations to give Equation (3); in which, exports are assumed to be equal to imports, if we assume a preferential trade area without taxes, *i.e.* the domestic price of the commodity in the importing country is equal to the price in the exporting country. However, this is not always the case since in most cases commodities have an extra portion in the form of import taxes plus transport and insurance charges

$M_{ijk} = X_{ijk}$ ……..…(3)

In the importing Country, the domestic price of the commodity from the rest of the world's j^{th} market will be equal to the rest of the world's k^{th} export price plus transactions

cost like transport, insurance, and other charges. This price would vary by an amount equivalent to the *ad valorem* incidence of any tariff, as in Eq. (4).

$$\boldsymbol{P_{ijk} = P_{ikj}(1 + t_{ijk})} \quad \text{.....(4)}$$

Where $\boldsymbol{t_{ijk}}$= Tariff rate

Trade Creation

The trade creation effect is defined as the raise in demand in the importing country which in this case is Burundi for the products i from the rest of the world due to changes in price provoked by changes in tariff lines of the concerned commodity. Then, from Eq. (1) to (4), it is feasible to write the formula for trade creation, by deriving the total differential of the domestic price with respect to tariffs and foreign price.

$$dP_{ijk} = P_{ikj}dt_{ijk} + \left(1 + t_{ijk}\right)dP_{ikj} \quad \text{.....(5)}$$

Equations (4) and (5) are then substituted into the elasticity of import demand equation *i.e.* Equation (6) to get Equation (7)

$$\frac{\Delta M_{ijk}}{M_{ijk}} = \alpha_i \frac{\Delta P_{ijk}}{\mathrm{P}_{ijk}} \quad \text{.....(6)}$$

$$\frac{\Delta M_{ijk}}{M_{ijk}} = \alpha_i \left[\frac{dt_{ijk}}{\left(1+t_{ijk}\right)} + \frac{dP_{ijk}}{P_{ijk}}\right] \quad \text{.....(7)}$$

Where

$\boldsymbol{\alpha_i}$ is the elasticity of import demand with respect to domestic price,

The identity Equation (3) is used to derive the expression for the elasticity of export supply Equation (8) below

$$\frac{dM_{ijk}}{M_{ijk}} = \frac{dX_{ijk}}{X_{ijk}} \text{ ……………………………………………………………………………(8)}$$

Taking the right-hand side of the equation and differentiating it with respect to world prices we get Equation (9)

$$\frac{dP_{ikj}}{P_{ikj}} = \frac{1}{\gamma_i} * \frac{dM_{ijk}}{M_{ijk}} \text{ ………………………………………………………………(9)}$$

In Equation (9)

γ_i is the elasticity of import demand for commodity *i* In the importing country from the relevant trading partner. Substituting Equation (7) into Equation (6) allows the estimation of the trade creation effects to give Equation (8). From Equation (3), Equation (8) is equivalent to exporting country *k*'s growth of exports of commodity *I* to country *j*

$$TC_{ijk} = M_{ijk}\alpha_i \frac{\mathrm{dt}_{ijk}}{(1+\mathrm{t}_{ijk})*[(1-\alpha_i/\gamma_i)]} \text{ ……………………………………………………(10)}$$

Where TC_{ijk}= Trade creation.

The expression TC_{ijk} represents the sum of trade created over i commodities affected by tariff change. M_{ijk} Represents the imports demand of the given commodity *i*. In this, case trade creation will depend on the level of imports, the import demand elasticity and the relative tariff change.

Where; it can be noted that, the denominator on the right-hand side of Eq. (8) can be ignored, once the elasticity of export supply with respect to the world price is infinite. Then Equation (8) can be simplified to give Equation (11):

$$TC_{ijk} = \quad M_{ijk}\alpha_i \frac{(1+t^1{}_{ijk})-(1+t^0{}_{ijk})}{(1+t^0{}_{ijk})} \text{ ………………………………………………(11)}$$

Where $TC_{ijk}$the sum of trade is created in thousands of dollars over *i* commodities affected by tariff change and$\alpha_i$is the elasticity of import demand for commodity *i* in the importing country from the trading partner. M_{ijk} is the value of import demand of the commodity i in thousands of USD. $t^0{}_{ijk}$And $t^1{}_{ijk}$ represent tariff rates for commodity *i* at the initial and end periods respectively.

Trade creation then depends on the level of imports, the import demand elasticity and the relative tariff change. If $TC_{ijk}$is increasing substantially then there is trade creation.

Trade Diversion Effects

Refers to the obligation of importers to alternate goods from one source, with goods from another source; due to a change in the import price of supplies from one source, but not from the other source. In this case, two sources will be considered, the rest of the world and EAC as exporters to Burundi.

$$\boldsymbol{\sigma_M} = \frac{\frac{\Delta\left(\frac{\sum_k M_{ijk}}{\sum_K M_{ijK}}\right)}{\frac{\sum_k M_{ijk}}{\sum_K M_{ijK}}}}{\frac{\Delta\left(\frac{\sum_k P_{ijk}}{\sum_K P_{ijK}}\right)}{\frac{\sum_k P_{ijk}}{\sum_K P_{ijK}}}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(12)$$

Where $\boldsymbol{\sigma_M}$is the elasticity of substitution with respect tothe relative prices of the same product from another sources, Whereas k denotes imports from one (group) of foreign supplier(s), K denotes imports from another (group) of foreign supplier(s), and the summation is only across the country group k or K but not across product groups (i) nor across imports (j).

Equation (10) can be expanded and through substitutions and rearrangements to obtain Equation (11) which is expressed as trade diversion below.

$$TD_{ijk} = \frac{M_{ijk}}{\sum_k M_{ijk}} \frac{\sum_k M_{ijk} \sum_K M_{ijK} \frac{\Delta\left(\frac{P_{ijk}}{P_{ijK}}\right)}{\frac{P_{ijk}}{P_{ijK}}} \sigma_M}{\sum_k M_{ijk} + \sum_K M_{ijK} + \sum_k M_{ijk} \frac{\Delta\left(\frac{P_{ijk}}{P_{ijK}}\right)}{\frac{P_{ijk}}{P_{ijK}}} \sigma_M} \quad \text{.....(13)}$$

Where TD_{ijk} are the trade diversion effects.

Where;

TD_{ijk}= Trade diversion on commodity imported from country *k* into country *j*

M_{ijK}= Value of imports from the EAC countries in thousands of USD

M_{ijk}= Value of imports from the rest of the world in thousands of USD

σ_M = Substitution elasticity.

Total Trade Effect

The total trade effect is the sum of trade creation effect and trade diversion effect. The results can be added up per groups of suppliers, either for specific products or across product groups.

TE = TC + TD

Revenue Effect

The tariff revenue can be obtained as the product of the tariff rate and the value of imports. Eq. (13) can be used to estimate the revenue effect of importing country. If not, the percentage increase in revenue is equal to the sum of percentage increase in imports and in prices. This can be shown by starting from Eq. (14), taking the total differential of revenue with respect to import price and the value of the obtained imports into Eq. (15):

$$Rikj = Xikj.Pikj \quad (14)$$

$$dRijk = Pijk.dMijk + Mijk.dRijk \quad (15)$$

Dividing the variable on the left-hand side (LHS) of Eq. (15) with the LHS variable of Eq. (14) and the right-hand side (RHS) of Eq. (15) with the RHS of Eq. (14), we get

$$\frac{dRijk}{Rijk} = \frac{(Pijk.dijk+Mijk.dPijk)}{(Pijk.Mijk)} \quad (16)$$

Simplifying Eq. (16) and substituting from Eq. (10) yields Eq. (17).

$$\frac{dRijk}{Rijk} = \frac{dMijk}{Mijk} + \frac{dPijk}{Pijk} \quad (17)$$

In other words, equation (17) can be written as

$$\frac{dRijk}{Rijk} = \left[\frac{dtijk}{(1+tijk)}\right].Em + \left[\frac{(1+Ex)}{(ExEm)}\right] \quad (18)$$

Welfare effect

This welfare gain can also be thought of as an increase in consumer surplus, as expressed in Eq. :

$$W_{ijk} = 0.5(dt_{ijk}\ dM_{ijk}) \quad (19)$$

The coefficient 0.5 captures the average ad valorem incidence of the tariff barriers before and after their changes. The elasticity of export supply is assumed to be infinite in Eq. (19). If the elasticity of export supply is not infinity; then, the supply price is greater than before. The new domestic price of imports does not drop to the full degree of the tariff change, and import growth is less than before, when the export supply is infinitely elastic. Welfare can be calculated using Eq. (19) but it will be interpreted as a mixture of consumer surplus and producer surplus.

3.4 Data Sources

The WITS software puts together various trade flows. It consists of three major trade databases: the United Nations Commodity Trade Statistics (UN COMTRADE), the UNCTAD Trade Analysis and Information System (TRAINS) and the World Trade Organization (WTO) integrated database or Consolidated Tariff Schedule (CTS) database. This study only requires trade flows, tariffs and elasticities; all of which are contained in the WITS software.

3.4.1 Trade Data

Data from UNCTAD Trade Analysis and Information System (TRAINS) database was used for the analysis and this database is among WITS database as explained in the introduction. The time-series data with Burundi as an importer and the Rest of the World (R.o.W) as exporter was downloaded from TRAINS database in a period of 2010-2016, with the HS level that gives most details/disaggregation.

This is important because selected product cluster at tariff lines, hence HS combined was selected for a maximum level of trade detail in this study.

3.4.2 Elasticities

The 3 types of elasticities; export supply elasticities, import demand elasticities and substitution elasticities can be obtained directly from the SMART-WITS. The elasticity of import demand used by the SMART model is specific to each product notwithstanding the partner. The default values of this elasticity are the same for all but differ per product. The SMART model incorporates elasticities with default values which can be substituted with estimated elasticities. The SMART model assumes a default value of 1.5 for the substitution elasticity and 99 for export supply elasticity for all products. Default elasticity values were however used in this study.

3.4.3 Tariff Rates

For the pre-Common External Tariff (CET) import rates imposed by Burundi, the Most Favoured Nations (MFN) rates contained in Market access Map database were used at digit 6 HS level. The post-CET tariffs, the MFN from Trains database were used, and for scheduled tariff, the EAC-CET document was used version 2017.

3.4.4 Scenario

The aim of this study is to assess the effect of EAC-CET on Burundi's Trade, welfare and revenue. Two scenarios have been used to assess this effect.

1. Help to evaluate what Burundi is going through by deciding to join EAC-CET despite its effect on some import tariff. This scenario examine what Burundi is losing (gaining) in terms of total trade, consumer welfare and revenue by comparing the situation before CET and After, then the tariff before (MFN) adoption (the year 2008 was taken as reference) were used in a period of 2010-2016 (post-CET period) and has been compared with the actually applied tariffs for each year.
2. The second scenario examines the distacortion that is created by the variation of CET due to the use of « Stays of application/exemption regime ». This scenario compares the actually applied tariff with the scheduled ones. This scenario is very important because by joining the CET small country loses in terms of consumer welfare but they believe to compensate it in tariff revenue but due to this fluctuation of CET, this scenario help to show how Burundi is affected in terms of tariff revenue.

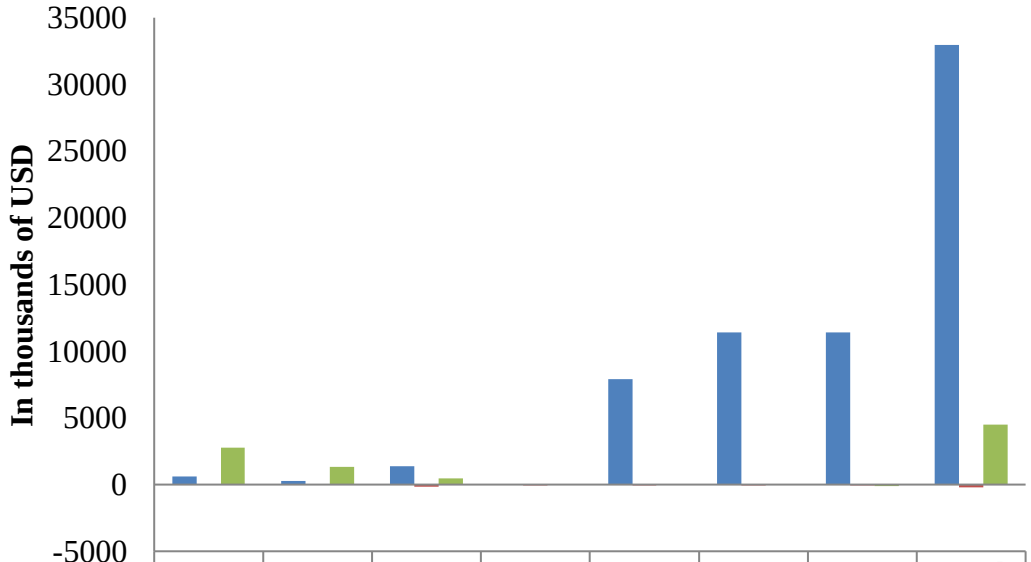
CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Effect of Implementation of EAC-CET on Trade

4.1.1 General changes on trade

The impacts of the implementation of CET on overall changes of import of Burundi for selected agro-food sensitive products from the rest of the world is presenting in figure 3. The data used for changes is the difference between the trade before and after for each year and each product. The description was done using the 1st Scenario. The results show that generally, Burundi's imports on selected sensitive agro-food products from the rest of the world would increase considerably in wheat and rice with the average 32 949.15 and 4 517.482 thousands of USD respectively and -232.072 for maize on the period of 2010-2016, which means that Burundi would gain on its rice and wheat imports for the rest of the world if these products would not be classified as sensitive *i.e* Burundi has foregone 4 517.482 and 32 949.15 thousands of USD from the import of rice and wheat respectively by adopting the CET, but also it would have lost in terms of imports of maize by adopting CET in favour of its pre-CET tariff.



	2010	2011	2012	2013	2014	2015	2016	Total
Wheat	618.2	248.29	1392.4	0	7916	11387	11387	32949
Maize	7.808	7.808	-164.5	-41.56	-41.56	-0.024	-0.024	-232.1
Rice	2788.7	1340.7	469.48	31.944	0	0	-113.4	4517.5

Figure 3: Changes in imports due to CET

From the above graph, it's clear that wheat and rice has been the most affected product by the changes in tariff policy.

Given trade is bilateral; these changes did not affect only importers. From figure 4, we can see that the changes in tariff have affected even the exporter's behaviour. Exporters have been grouped into two groups, from EAC and from the rest of the world. The graph shows that the changes in tariff led to an increase in imports from EAC and reduction in imports from the rest of the World. The most affected sector was wheat from the rest of the world. Comparing changes in exports behaviour to Burundi from EAC and the rest of the world, it's clear that even though EAC has increased its export to Burundi, changes were not much.

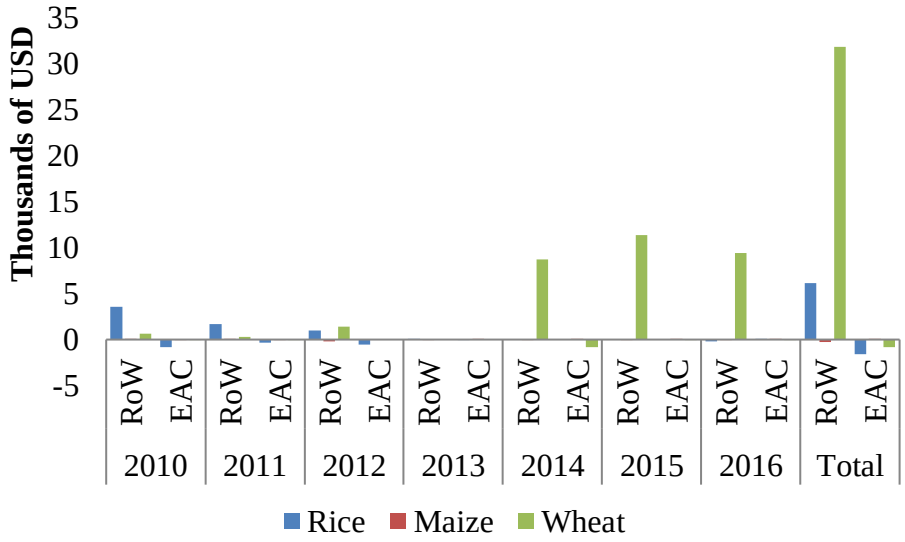


Figure 4: Changes in export due to CET

4.1.2 Changes on Burundi's trade with its partner due to EAC-CET

The first specific objective of this study is to examine the effect of the implementation of EAC-CET for the selected agro-food sensitive products on trade.

The reason for this specific objective is to see how the increase in import tariff of Rice, wheat and maize due to the implementation of CET, affected Burundi' trade with its partner. In terms of trade, Burundi is dealing with its EAC country members but also with the rest of the world. Due to this, the effect on trade has been looked on two sides, first how the trade between Burundi and the rest of the world has changed due to EAC-CET; and secondly, how the trade of Burundi with its EAC partners changed due to CET.

4.1.2.1 Changes on Burundi 'trade with the Rest of the world due to CET

Total changes in Burundi's imports from the rest of the world are decomposed into two parts including trade creation and trade diversion. Using simulations results from the WITS/SMART model, table 1 shows the trade creation, trade diversion and total trade effects of the adoption of the EAC CET on Burundi (Table 1). The results presented are aggregated results from 2010-2016 for each product.

Table 1: Changes in Burundi 'trade with the Rest of the World due to CET

	1st Scenario(in 1000 USD)			2nd Scenario(in 1000 USD)		
	TCE	**TDE**	**TT**	**TC**	**TD**	**TT**
Rice	4497.483	1626.245	6123.728	-4900	-792.9	-5690.14
Wheat	32949	831.97	33781.97	-2476.9	-262.996	-1094.56
Maize	-232.3	-32.52	-264.8	-8509.69	-17.258	-8527.22

The above simulation results have been obtained based on the two scenarios. Starting with the first scenario, the evaluation was done based on the comparison between the application of Pre-CET tariff in a period of 2010-2016, with the applied CET in the same period and then evaluate by comparing the results. For pre-CET, a tariff applied for these products in 2008 was used as a reference. The second scenario compares the applied tariff with the EAC scheduled tariff in order to show what would be the full effect. From the results, we can see that in the first scenario two of the selected product has a positive trade creation and diversion with trade creation exceeding trade diversion effect but with negative trade creation and diversion effect for the case of maize, with the respective estimated value of 6 123.728, 33 781.97 and -264.8 thousands of USD for rice, wheat and maize, in terms of trade with the rest of the world.

But what does the above results in Table 1 means in this case? Based on the first scenario, the above results mean that by adopting the common external tariff of East African Community, Burundi is losing in trade, and the losses are estimated to be totally equal 6 123.728 and 33 781.97 thousands of USD in its trade with the rest of the world; but it is gaining in trade of maize with the rest of the world the and gains are estimated to be 264.8 thousands of USD. Comparing with results from scenario 2 this shows that the losses would be more serious if Burundi would have fully implemented the CET as it was scheduled because the losses would be estimated to 6 123.728 plus 5 690 thousands of USD for rice and it would be estimated to 1 094.56 thousands of USD extra for the case of wheat.

In details, trade would be created between Burundi and the Rest of the World, the created trade is estimated to be on average 4 497.483 thousands of USD, 32949 thousands of USD and 1 626.245 thousands of USD 831.97 thousands of USD, Table 1 is the estimation of trade that would be diverted respectively in rice and wheat, once these products would not be classified as sensitive, or once Burundi would not join the EAC-CET.

Table 2: The most partners of Burundi in rice, wheat and maize from the analysis were found to be

Rice	Wheat	Maize
Japan	USA	Belgium
China	Russia	Zambia
Italy	Canada	DRC

From above, it's clear that Burundi trade more with the rest of the world than it does with its EAC partners, moreover, most of its partner is out of Africa. This show that the higher the external tariff the more restrictive import will be.

4.1.2.2 Changes on Burundi 'trade with the EAC due to CET

Table 3 presents results from WITS-SMART model results. From the results, zero trade has been created and trade diversion is negatively affected except the case of maize, which explains the negative sign of total trade because the total trade is given by the sum of trade creation and trade diversion.

Table 3: Changes in Burundi 'trade with the EAC due to CET

	1st Scenario(in 1000 USD)		
	TCE	TDE	TT
Rice	0	-1626.245	-1626.245
Wheat	0	-831.97	-831.97
Maize	0	32.52	32.52

In case of EAC, by adopting the EAC-CET, for the 1st scenario, the negative sign on the value of total trade means that Burundi has diverted its trade for the selected agro-food products to its EAC partners, and this is consistent with the studies of Hamilton (2009) and Shinyekwa (2014). Table 3 shows that the diversion is estimated to be -1 626.245 and -831.97 thousands of USD respectively for rice and wheat respectively. This is good in this case, but very suspicious because many studies (Karingi, 2012; Kabanda, 2014) has confirmed the insufficient supply of this product within the EAC region, which means that the diversion of import of these products to the EAC members with insufficient producers, maybe due to the fact of re-exportation. A similar situation has been noted by Khorana *et al.* (2014) when he was assessing the effect of Uganda reducing the import tariff on some products to Kenya, as a result, Kenya increased the export of some products which are not even originated from Kenya to Uganda. Due to lack of data in WITS for this case of re-exportation, only the trend of import of these products from the rest of the world to EAC Countries that have increased their export to Burundi, and then their export to Burundi was analysed and below is the figure 5 and 6, in a period of 2010-2016.

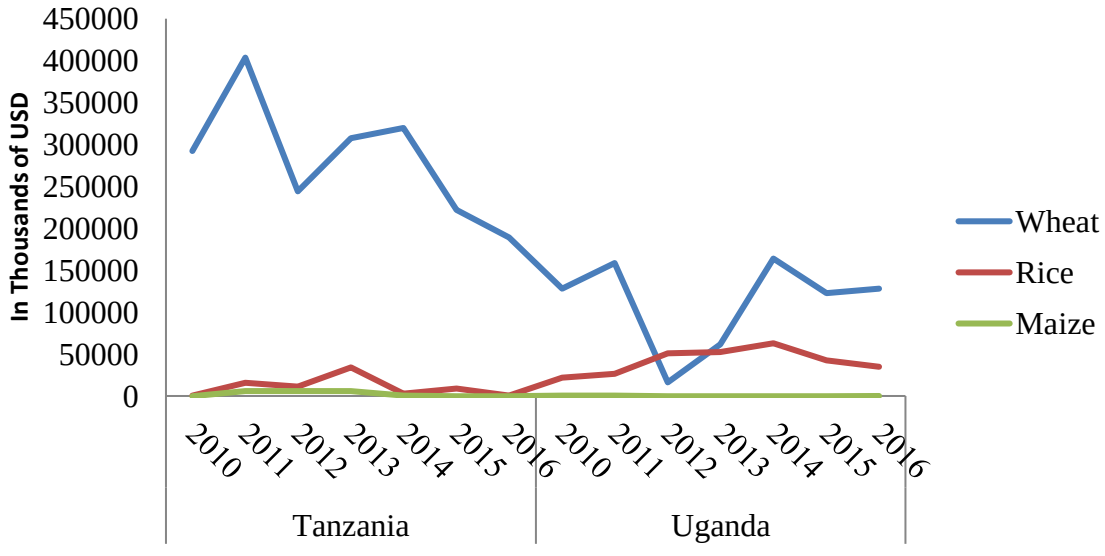


Figure 5: Import of the selected product from RoW to Uganda and Tanzania

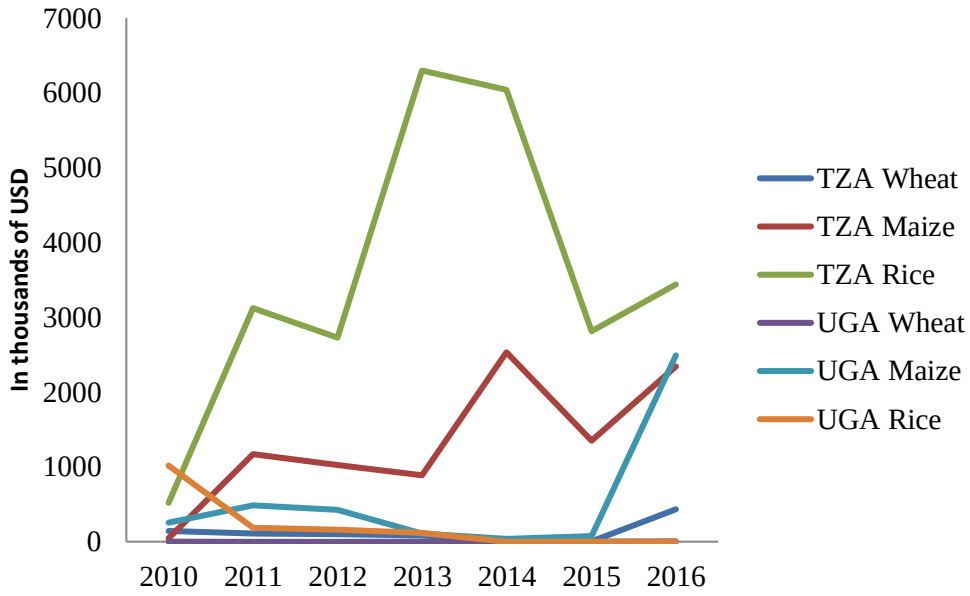


Figure 6: Import of selected products in BDI from UGA and TZA

From the above graphs one can doubt that the diversion of Burundi' trade to Uganda and Tanzania in terms of import of rice, and the diversion of Burundi' trade to Tanzania in terms of wheat that is due to re-exportation given that the same exporters to Burundi were importers from the rest of the world of the same products from the same period of time.

But still this was an arrangement to get an understanding of the diversion of trade of Burundi to form their EAC partners which are also criticized to be deficit countries in terms of production of these products, the true picture would be given by the data of re-exportation for the two countries. The results prove that a diversion of trade to EAC member states even if it is insignificant compared to losses that implementation and variation of EAC CET created in trade with non-members. From this, I reject the null hypothesis which stated that: *The implementation of EAC CET has no divert effect to the EAC States.*

Table 4: The most sensitive sectors are

Country	HS	Description	Gains
Tanzania	1006.10.00	Rice in the husk (paddy or rough)	-4.201
	1006.20.00	Husked (brown) rice	-178.068
	1006.30.00	Semi-milled or wholly milled rice, whether or not polished or glazed	-111.126
	1006.40.00	Broken rice	-3.906
Uganda	1006.20.00	Husked (brown) rice	-733.956
	1006.30.00	Semi-milled or wholly milled rice, whether or not polished or glazed	-541.299

The harmonised system (HS) provides details of each product up to six levels. From table 4, it's clear that the most sensitive among the six levels of rice, is the level two which represents husked rice. Burundi imports more of this category of rice from Uganda than Tanzania, but import more of paddy rice from Tanzania compared to Uganda which are the two exporters of rice to Burundi among its EAC partners.

Country	HS	Gains
	Maize	
Tanzania	1005.9	-11.137
Uganda	1005.9	-8.682
Zambia	1005.9	-50.122
	Wheat	
Tanzania	1001.99	-795.043

4.2 Effect of Implementation of EAC-CET on Tariff revenue

The second objective of this study was to examine the effect of implementation and variation of EAC-CET on Burundi's tariff revenue.

The analysis of this effect was done two times, first by using the 1st Scenario in order to show how the tariff revenue was affected in the period of study, by the increase in import tariff rate due to the adoption of CET, secondly to analyse how Burundi is affected in terms of tariff revenue, due to the variation in CET tariff, and this was estimated by using the 2nd Scenario. As it has been said in the statement of the problem, the increase in tariff does not always go one-for-one with the increase in tariff revenue (Pritchett *et al.*, 1993), but also, in theory, there are two contrasting forces that create doubt as to how the changes in tariffs affect revenue.

First, the reduction in the tariff rate results in the drop in tariff revenue. Secondly, as the prices of the goods drop due to the decline in tariffs, there is a tendency for imports to increase, increasing the tariff revenue (Mugano, 2014). Which means an increase in tariff will lead to an increase in tariff revenue at first, but it will also increase the prices of concerned goods and then affect negatively the level of imports. Burundi is among the EAC countries that have to transform their national tariff structures in order to conform to the EAC-CET rates. To know how a country is affected by changes in tariff policies is very important given that, with the adoption of CET, countries are substituting their tariff policies with the common one.

Table 5: Implementation of EAC-CET on Tariff revenue

		1st Scenario	**2nd Scenario**
HS	PRODUCT	REVENUE(in thousands of USD)	REVENUE(in thousands of USD)
1006	RICE	-9277.1	2317.417
100590	MAIZE	134.374	262.406
100199	WHEAT	--6627.32	362.641

Table 5 shows the revenue implications of EAC-CET on Burundi. The WITS/SMART simulations results reveal that Burundi is gaining total tariff revenue of US$ 9 277.1 thousands and US$ 6 627.32 thousands from imports of rice and wheat respectively from the rest of the world, by adopting EAC-CET. In other words, the results from SMART-model reveals that Burundi would register losses in terms of tariff revenue for the imports from the rest of the World if it would have not joined the EAC-CET, but it would have increased its tariff revenue in terms of import of maize even if the gain is insignificant. These results are consistent with the report of OAG (observatory of governmental actions) in 2009 which shows that Burundi will gain in terms of tariff revenue on import of rice, and wheat; but also the study of Gourjeon (2008) which pointed out that Burundi will increase its tariff revenue but also prices of some goods like rice will have to increase.

Comparing the results from scenario 1 and 2, one can see that if EAC-CET would be fully implemented, Burundi would have gain more. The results from the simulation of SMART model using scenario 2, show that if the scheduled EAC-CET would be fully applied instead of the actually applied tariffs, Burundi would have gained in terms of import tariff on rice and wheat extra equal respectively to 2 317.417 and 362.641 thousands of US dollars. In other words, the above results from SMART model show that the variation of CET due to the Stays in application/exemption regime, Burundi is losing in terms of expectations on import tariff revenue on rice, wheat and maize equal to 2 317.417, 362.641 and 262.406 thousands of US dollars respectively.

This is very important for a country like Burundi gave its dependency on imports, these countries tend to forego the consumer’s welfare and expect to compensate it with the tariff revenue. This is manifested by the fact that most governments before they decide to join regional integrations, their first concern is to check the impact in terms of tariff revenue

which is the case in Burundi where the rare governmental reports which were done before the implementation was based on changes in tariffs revenue. This is confirmed by the study of Geourjon and Laporte (2008) supported by the government just to see what will be the impact of Burundi joining the EAC-CET in terms of tariff revenue and also the report of O.A.G which is the Observatory governmental actions. So such variation of CET due to the Stays in application/exemption regime is creating losses in terms of tariff revenue on the side of Burundi. The results prove that the variation of EAC CET created losses in tariff revenue of Burundi. These results provide enough evidence to reject the second null hypotheses which stated that: *The implementation and variation of CET has no effect on tariff Revenue.*

Table 6: The most sensitive sector

HS	Description	Gains
1006.10.00	Rice in the husk (paddy or rough)	0.69
1006.20.00	Husked (brown) rice	-4926.7
1006.30.00	Semi-milled or wholly milled rice, whether or not polished or glazed	-4111.41
1006.40.00	Broken rice	-105.918

4.3 Effect of Implementation of EAC-CET on Consumer Welfare Effect

The third objective of this study is to examine the effect variation of EAC-CET on consumer welfare.

The welfare effect occurs from the gains or losses that consumers in the importing country get from the changes in domestic prices after changes in tariffs. One of the main arguments in favour of free trade is that consumers will benefit from lower prices, whether or not this will occur depends on the degree of trade creation against trade diversion (Mugano, 2014). But with the customs union, the changes in tariff are not influenced by Free-Trade only, but also the CET, which mostly has a negative impact on consumer

welfare while the former has a positive one. As we have seen in tariff revenue and trade effect, one can predict how the consumer surplus is expected to change.

Table 7 presents the simulation results from SMART model, and the results suggest that by deciding to adopt the CET, Burundi is losing in terms of consumer welfare on rice and wheat, the losses are estimated to be equal to US$ 1 258.175 thousands and US$ 6051.287thousands respectively on the import of rice and wheat and gain a very insignificant amount in terms of maize estimated to be US$ 4.689 thousands in other words, this means that Burundian households would be in a position to increase their rice and wheat consumption, and hence their welfare would also increase, once Burundi wouldn't join the East African Community-Common External tariff, and these results are consistent with the findings from a study of World Bank (2003) evaluating the full implementation of COMESA-CET on Burundi and found that the increase in protection on import affect the level of consumer welfare and is not on favour of poor people products despite the negative impact that this would have on government revenue and some producers. Based on the results obtained, I reject the third null hypothesis which stated that: "*The implementation of CET has no effect on consumer welfare"*.

Table 7: Implementation of EAC-CET on Consumer Welfare Effect

HS	Product	Consumer Surplus
1006	Rice	1258.175
100590	Maize	-4.689
100199	Wheat	6051.287

Based on the results obtained, I reject the third null hypothesis which stated that: "*The implementation of CET has no effect on consumer welfare"*.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

By creating a list of sensitive product, the East African Community Customs Union aimed at increasing the supply of these products within the EAC region, and hence they have been given an import tariff more than 25%. But the selection of these products has been criticizing of not having standard criteria (Hamouda, 2010), and also the EAC has been reported to be a net importer of sensitive products (Kabanda, 2014), while in EAC, the selection of sensitive products has been criticized of being affected by vested interest groups with political influence, without a prior in-depth analysis of economic and poverty implications (Bünder, 2018). It's in this purpose that some studies (Kabanda, 2014; Frazer, 2012; Shinyekwa *et al.,* 2016) took interest in analysing the effect of giving high protection on these products. Some of these studies were interested in the whole list of sensitive products, as consequences, the policy implication was drawn for whole EAC countries while country members are differently endowed in terms of production; and other studies just shown that the high protection given to this sensitive product will have an effect on prices of agriculture products but didn't go further to show what will be the implication of this increase in prices.

This study took interest from there and examined really the effect of the protection given to some agri-food products classified as sensitive on Burundi, as a deficit country depending on their import and facing a high tariff on import of these products due to the implementation of CET.

Generally, this study wanted to assess the effect of EAC-CET on Burundi Trade, welfare, and tariff revenue.

- The first specific objective of this study was to examine the effect of an increase in import tariff on the trade of wheat, maize and rice due to the implementation of CET in Burundi. The trade effect has been divided into two effect trade creation and diversion effect, based on the results of Smart model, it is estimated that Burundi is losing in terms of trade with the rest of the World on rice and wheat the value of losses is estimated to be 6 123.728 thousands of USD and 33 781.97 thousands of USD respectively for rice and wheat, even though it has gained in trade of Maize and the estimated gains are 264.8 thousands of USD which is insignificant compared to losses in trade of rice and wheat, but also Burundi has diverted its trade to EAC country members, with the more diversion of its trade on rice and wheat to Tanzania and Uganda.

- The second specific objective was to examine the effect of this increase in tariff revenue, based on the results from Smart model, prove that the implementation of CET by Burundi led to gains in terms of tariff revenue for trade of wheat and rice US$9143.33 million and US$ 6627.29 million on imports respectively, with the import tariff of EAC-CET and losses equal to US$ 238.068 million in import of maize from the rest of the world. But Burundi is also losing in terms of expectations of import tariff revenue on rice and wheat equals to 2 317.417, and 362.641 thousands of US dollars respectively, due to the variation of CET

- The last specific objective of this study was to analyse the effect of the increase in import tariff of rice, maize and wheat on consumer' welfare. The results

from the smart model show that it is estimated that Burundi is losing in terms of consumer's consumer welfare on rice and wheat, the losses are estimated to be equal to US$ 1254.787 thousands and US$ 6051.01 thousand respectively on the import of rice and wheat and gain in terms of maize US$4.952 thousand.

5.2 Recommendations

Based on the observed results, some recommendation can be drawn in order to improve policies.

To Burundi:

1. Based on the results of the first and third specific objective, which show that the implementation of CET led to losses of trade and affected negatively the consumer welfare of Burundi, this study will recommend that the rate of import tariff on rice and wheat should be reduced or these products should be removed from the list of sensitive.
2. Based on the negative implication on consumer welfare due to the implementation of CET on sensitive products, this study recommends that the inclusion of products in the list of sensitive should be based on the need of local consumer.

To East African Community:

1. The results of the second specific objective show that despite the losses on trade and welfare, Burundi gained in tariff revenue but the gain was not optimal due to the instability of CET. This study recommends that strategies of developing criteria of inclusion or exclusion of products mostly agriculture in the list of sensitive should be established in order to reduce the use SAS or DRS which are the main source of its instability and this should lean on empirical cases.

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APPENDICES

Appendix 1: Detailed data

1. Trade effect

	2010			2011			2012			2013			2014			2015			2016			Total		
	TCE	TDE	TT	TCE	TDE	TT	TCE	TDE	TT	TCE	TDE	TT	TCE	TDE	TT	TCE	TDE	TT	TCE	TDE	TT	TCE	TDE	TT
Rice	2788.703	795.208	3583.911	1340.723	357.312	1698.035	449.482	541.3	990.782	31.945	9.379	41.324	0	0	0	0	0	0	-113.37	-76.954	-190.324	4497.483	1626.245	6123.728
Wheat	618.196	27.424	645.62	248.285	11.027	259.312	1392.432	0	1392.432	0	0	0	-41.555	-25.061	-66.616	11387.11	0.627	11387.737	11387.11	0.629	11387.739	24991.578	14.646	25006.224
Maize	7.808	8.93	16.738	7.808	8.93	16.738	-164.53	0	-164.53	-41.555	-25.061	-66.616	7916.015	792.261	8708.276	-0.24	-0.23	-0.47	-0.024	-0.023	-0.047	7725.282	784.807	8510.089

2. Revenue effect

	Revenue Effect							Total
	2010	2011	2012	2013	2014	2015	2016	Total
Rice	-5726.95	-2024.44	0.125	-78.841	0	0	107.342	-7722.76
Wheat	-110.686	-39.022	-282.859	0	-1568.45	-2313.15	-2313.15	-6627.32
Maize	-6.872	-6.872	-1554.23	24.018	24.018	0.013	0.013	-1519.91

3. Welfare effect

	Welfare							
	2010	2011	2012	2013	2014	2015	2016	Total
Wheat	74.99	17.686	278.486	0	1126.027	2277.049	2277.049	6051.287
Maize	0.074	0.074	-4.113	-0.362	-0.362	0	0	-4.689
Rice	936.166	197.23	120.936	5.052	0	0	-1.209	1258.175

4. Import of the selected sensitive products to Burundi from Tanzania and Uganda 2010-2016

	TZA			UGA		
	Wheat	**Maize**	**Rice**	**Wheat**	**Maize**	**Rice**
2010	146.357	45.079	519.489	0	253.267	1017.137
2011	109.3455	1169.559	3119.278	0.69502	484.664	185.6661
2012	95.67729	1023.364	2729.368	0.608143	424.081	162.4579
2013	80.168	887.843	6300.726	0	112.616	119.744
2014	7.328	2532.414	6038.598	0	36.542	0.057
2015	3.07	1351.565	2811.225	0	74.798	0.02
2016	432.818	2346.646	3435.54	4.257	2491.344	0.247

5. Import of the selected sensitive products to Tanzania from the Rest of the world

	Tanzania						
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Wheat	291938.1	403575.7	244001.4	307093.1	319322.9	222019.3	189026.2
Rice	474.918	15750.76	11448.05	33708.9	2971.485	8904.031	718.218
Maize	25.574	5883.258	5883.258	5870.616	238.969	30.03	69.487

6. Import of the selected sensitive products to Uganda from the Rest of the world

	Uganda						
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Wheat	127954.1	158412.7	16241.03	61557.96	164117.7	122803.6	127802.4
Rice	21780.84	26130.61	51007.56	52120.24	62871.49	42377.24	35101.22
Maize	818.454	830.507	14.804	14.295	13.035	5.927	4.579

7. Changes in export behaviour due to CET

	2010		2011		2012		2013		2014		2015		2016		Total	
	RoW	**EAC**	**RoW**	**EAC**	**RoW**	**EAC**	**RoW**	**EAC**	**RoW**	**EAC**	**RoW**	**EAC**	**RoW**	**EAC**	**RoW**	**EAC**
Rice	3583.913	-795.208	1698.035	-357.311	1010.782	-541.3	41.324	-9.379	0	0	0	0	-205.57	92.199	6128.484	-1611
Maize	16.739	-8.931	16.739	-8.931	-164.53	0	-66.616	25.062	-66.616	25.061	-0.047	0.024	-0.047	0.024	-264.38	32.309
Wheat	645.62	-27.424	259.312	-11.027	1392.432	0	0	0	8708.276	-792.261	11387.74	-0.63	9411.043	-0.63	31804.42	-831.972