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African Continental Free Trade Area: the potential revenue, trade and welfare effects for the East African Community

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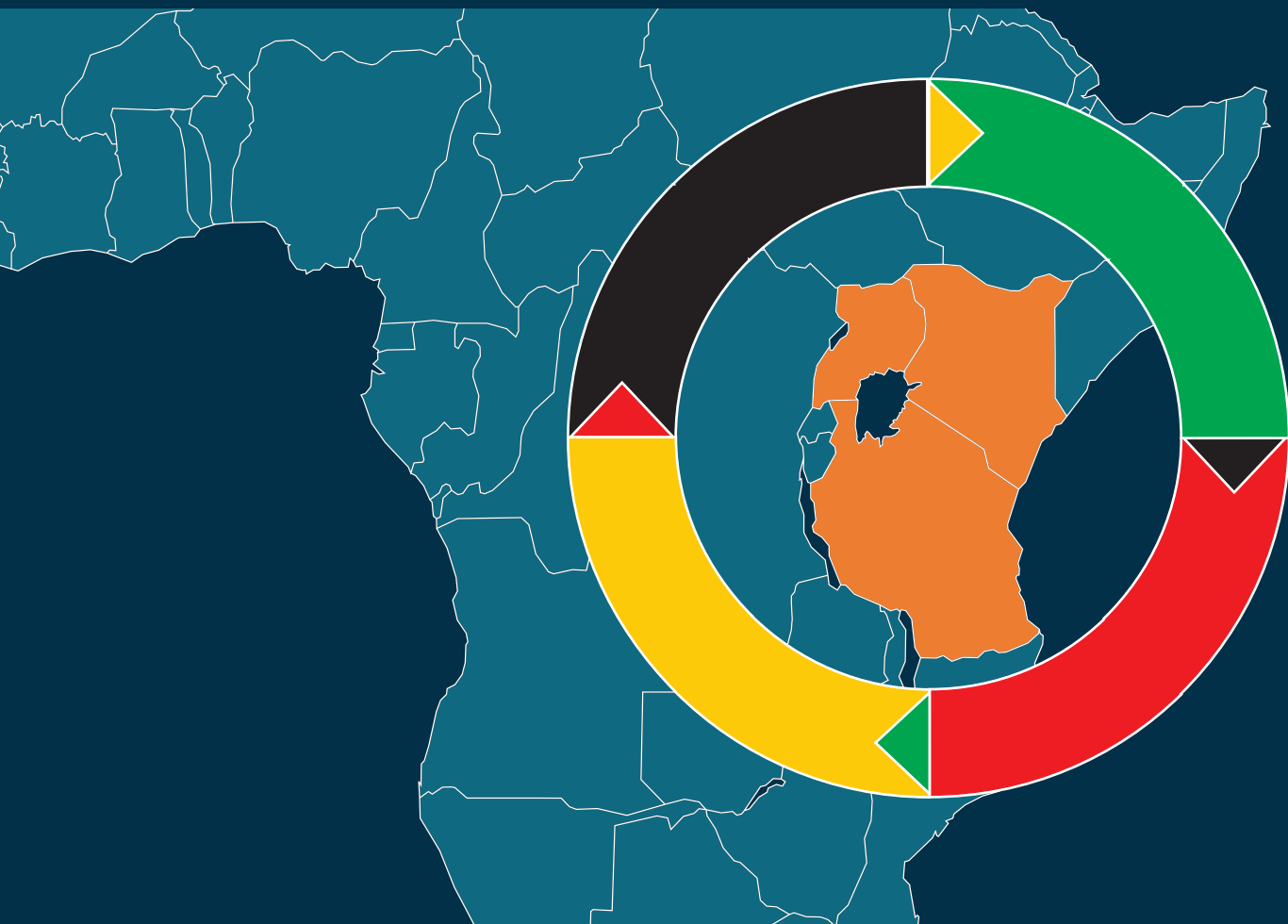
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AFRICAN CONTINENTAL FREE TRADE AREA: THE POTENTIAL REVENUE, TRADE AND WELFARE EFFECTS FOR THE EAST AFRICAN COMMUNITY



Isaac M.B. Shinyekwa, Enock N.W. Bulime, Aida K. Nattabi

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Isaac M.B. Shinyekwa, Enock N.W. Bulime,
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ABSTRACT

The African Continental Free Trade Area (AfCFTA) was launched in 2018 and ratified in 2019. This study examines the likely effects of implementing the AfCFTA on the East African Community (EAC). Specifically, the study estimates the revenue, trade and welfare effects of trade liberalization under the AfCFTA and also identifies the sectors within the EAC that will react with either defensive or offensive strategies due to the continental agreement. Two analytical approaches are adopted by the study. First, a trend analysis of the EAC export and imports based on the COMTRADE and TRAINS databases is undertaken to identify the dominant sectors and partners. Second, the World Integrated Trade Solution simulation (WITS) -SMART analytical framework is used to examine the possible impacts of the different trade policy changes. Given that the EAC member states mainly export agricultural commodities and products and minerals, these are not likely to be readily imported by the rest of Africa. Indeed, between 2001 and 2018, the African continent heavily relied on external markets for exports and imports. Therefore, signing the AfCFTA agreement is a necessary but not a sufficient condition to increase EAC trade with the rest of Africa. Results for the trade effects paint a mixed picture among the EAC Partner States. First, all the EAC states are projected to incur tariff revenue losses, although this varies in absolute amounts and proportions. Second, whereas Uganda and Burundi experience positive welfare effects, Kenya, Tanzania and Rwanda experience negative welfare effects. The policy implications for the EAC and Africa as a whole arising from the analysis include: a need to build capacity for production; pursue product diversification and sophistication; innovate and attract investments; adopt high international products standards; improve competitiveness and target industrialization as a must.

Key words: AfCFTA, Product, CET, Welfare, Trade, Revenue, Intra-EAC,

1.0 BACKGROUND

In March 2018, 44 African countries launched a common market for Africa—the African Continental Free Trade Area (AfCFTA). The trade agreement was ratified in 2019 and it targets 55 Member States (MS) of the African Union (AU)—with a combined gross domestic product (GDP) of more than US\$3.4 trillion. The United Nations Economic Commission for Africa estimates that the AfCFTA has the potential both to boost intra-African trade by 52.3 % by 2022 by eliminating import duties (90 %) and to double this trade if non-tariff barriers are also reduced (UNECA, 2018). It is anticipated that AfCFTA will among others: create a single continental market for goods and services with free movement of business persons and investments and thus pave the way for the establishment of the Continental Customs Union (CU). It will also expand intra African trade through better harmonization and coordination of trade liberalization and facilitation regimes and instruments across Regional Economic Communities (RECs). Related, it will resolve the challenges of multiple and overlapping memberships in RECs and expedite the regional and continental integration processes. Finally, the agreement is expected to enhance the competitiveness at the enterprise level through exploiting opportunities for scale production, continental market access and better reallocation of resources.

Trade integration has the potential to accelerate economic growth in African countries. It can allow African countries to specialize in the production of goods and services for which they have a comparative advantage and to exploit economies of scale, thereby improving productivity and growth. Furthermore, it has the potential to foster structural transformation by spreading knowledge and technology and spurring the development of new products (IMF, 2016). As such, the AfCFTA offers a chance for Africa to boost intra-continental trade and also attract foreign direct investment and facilitate the development of regional supply chains, which have been key engines of economic transformation in other regions. The AfCFTA is also

expected to enhance competitiveness at the industry and enterprise level through exploitation of opportunities for scale production, continental market access and better reallocation of resources. The four freedoms of trade integration i.e. movement of goods, services, capital and persons are likely to play a significant role in triggering continental growth. With liberalization, access to a larger market for African products and services will be created thereby encouraging trade and investment. This in turn is expected to tackle the prevalent unemployment problem in the continent and to provide a wide range and variety of quality products and services at competitively lower prices.

While trade supports growth, it may also entail costs, and its benefits may not be evenly distributed across and within countries. The envisaged economic prosperity may not materialise unless some current challenges are addressed. On top of this list is the potential loss of tax revenue which is estimated by the United Nations Conference on Trade and Development (UNCTAD) to be USD 4.1 billion in the short run. Furthermore, the AfCFTA will increase the level of competition due to deregulation and this will benefit bigger African economies at the cost of smaller states—due to relative production capacities. In addition, liberalization of the domestic labour markets will also expose nationals to competition from foreign cheap labour. Also increased capital mobility may encourage out-sourcing that cost jobs. Some of these challenges may be addressed through: (i) scheduled special and differential treatment for smaller African economies to allow them to do gradual incremental deregulation and to adjust structurally; and (ii) fair negotiations on harmonization of investment policies, competition, transparency of government procurement and trade facilitation. At the same time, African countries will have to design new economic development policies and restructure their economies to make them more effective and responsive to the agreement.

For the East African Community (EAC), the justification

to liberalize trade with the Rest of African (RoA) is to increase intra-African trade, enable free movement of persons, attract foreign investments and reap the mutual benefits thereof. This is anticipated to arise from the creation of a single continental market for goods and services, with free movement of business persons and investments; and expansion of intra-African trade through better harmonization and coordination of trade liberalization and facilitation and instruments across the RECs and Africa in general. The AfCFTA is also expected to enhance competitiveness at the industry and enterprise level through exploitation of opportunities for scale production, continental market access and better reallocation of resources. Therefore, the spirit behind the policy is to unlock the continental potential for the mutual benefit.

1.2 Study objectives

Against the above background, this study examines the potential impact of the AfCFTA on the East Africa Community (EAC) trade with the rest of Africa. Specifically, the study undertakes to:

- i. Determine which sectors in the EAC are likely to take on either an offensive or defensive strategy in the AfCFTA¹;
- ii. Analyze the likely effects of the AfCFTA on EAC partner state trade (through either trade creation or diversion);
- iii. Estimate the likely welfare gains and losses as a result of tariff liberalization; and
- iv. Estimate the likely revenue loss by the EAC partner states (PS) states resulting from tariff liberalization.

The rest of the study is organised as follows. The next section provides a review of the theoretical and empirical literature on regional integration. The estimation methods are described in section 3. The main results of the study are in section 4 while section 5 provides the conclusions and policy implications of the study.

¹ An offensive strategy refers to taking up a leadership role in changing the 'rules' of competition and thereby accelerating integration within EAC while continuing to expand on the African continent. Alternatively, a defensive strategy amounts to diverting resources from other areas to become more inward-looking within EAC.

2.0 LITERATURE REVIEW

Ricardo's (1817) theory on the principle of comparative advantage posits that a country can benefit from free trade even if it has (or does not have) an absolute productivity advantage in producing every good. He argued that countries should specialise in the production of commodities where a country has a comparative advantage. Later, Heckscher (1919) and Ohlin (1933) show that a nation is better off exporting a commodity whose production requires the intensive use of the nation's relatively abundant and cheap factor of production) and importing a commodity whose production requires the intensive use of the nation's relatively scarce and expensive factor of production.

Present day analysis of economic integration is based on Viner's (1950) framework for understanding the effects of creating a customs union (CU) on the members and non-members.² According to Viner, the trade creating effect is larger when the members have a net benefit while a trade diverting effect is predominant when the members suffer a net loss. Trade creation is associated with a shift in domestic consumption from a high cost domestic producer to a lower cost producing partner due to tariff reduction or removal. On the other hand, with trade diversion, consumption shifts from a low cost producer (non-union member) to a higher cost partner because of the tariff reduction or removal on the exports of the union members. In addition, trade diversion is also associated with a reduction in government revenues with more costs of trade diversion if the governments have to charge a distorting tax to cover up for the revenue loss. Also, Corden (1972) shows that there are cost reduction and trade suppression effects of trade creation and diversion on the economy. He attributed the cost reduction effects to increased production because trade creation enables firms to access existing economies of scale and lower output costs. On the other hand, the trade suppression effect occurs when scale economies facilitate reductions in non-member country exports to member countries.

² A free trade area is the form of economic integration where all barriers are removed on trade among members, but each nation retains its barriers to trade with non-members. On the other hand, a Customs Union eliminates tariffs or other barriers on trade among members and also harmonizes trade policies (such as the setting of common tariff rates) toward the rest of the world.

On the other hand, Meade (1955) shows that the earlier analysis of the effects of trade integration ignored the consumption effects associated with the increase in welfare. He shows that a CU tends to increase welfare by encouraging trade between the member countries. In contrast, it tends to lower welfare by discouraging the already distorted trade with non-members. Later studies e.g. Lipsey (1970) show that regional integration agreements are more beneficial in the case of tariff reduction than when tariffs are eliminated. Secondly, more welfare benefits are realised when the initial tariff on the union member is higher than the tariff on the non-union member.

Other studies e.g. Balassa (1961), Thorbecke (1963) and Kreinin (1964) investigated the dynamic effects of integration due to increased investment and technological progress. These studies focus on how economic integration influences the rate of economic growth. Brada and Mendez (1988) suggested that unlike the static gains from integration, whose theoretical treatment is well established, the dynamic effects of integration are generally presented as a series of separate and often unrelated phenomena, not easily captured by a single model. Studies by Bhagwati and Panagariya (1996), Schiff (1996), Derosa (1998), Baldwin (1995) and Venebles (2003) study the effects of a country's size on its membership in a preferential trade agreement while Krugman (1991), Jacquemin and Sapir (1991) and Summers (1991) explore the geographic proximity (natural trading partner hypothesis) as an incentive for participation in preferential trade agreements.

Cramon-Taubadel *et al.*, (2010) argue that trade creation is more likely when the countries forming a Free Trade Area (FTA) have different comparative advantages. In contrast, trade diversion is more likely when the countries forming a FTA are 'too' similar in terms of comparative advantages. Balassa (1962) shows that there is a possibility of trade deflection in a FTA. With trade deflection, a FTA member country imports a commodity via another FTA member country provided that the price differential exceeds the necessary transportation charges and that the rules of

origin do not exclude that possibility. However, trade deflection is not possible under a CU since member countries have the same common external tariff. Shibata (1967) also incorporated the rules of origin concept in the study of FTAs. He based his analysis on the assumptions of perfect competition, with partners importing identical products and producing domestically perfect substitutes of the identical product. He shows that the differential treatment of the identical product according to its origin may create an artificial price differentiation between the area-origin product and the non-area-origin product.

Abrego *et al.*, (2019) use a multi-country, multi-sector general equilibrium model to estimate the welfare effects of the AfCFTA for 45 African countries. The study makes simulations involving the full elimination of import tariffs and a tariff-equivalent reduction in non-tariff barriers (NTBs) by 35 %. Under a perfect competition scenario, the results show that welfare improves by 0.05 % with tariff elimination and by 1.7 % with a reduction in NTBs for all the countries. Furthermore, welfare increases by 2.1 % for all the countries for simulations involving both tariff elimination and reduction in NTBs. Guei *et al.*, (2017) examine the revenue, welfare and trade effects of European Union Free Trade Agreement on South Africa. Applying the WITS-SMART model on 2012 data, they find that the agreement would result in a total trade effect of U.S\$ 1.035 billion, a revenue of U.S\$ 562 million and a consumer surplus of US\$ 134 million.

Punt and Sandrey (2016) use 2014 data to estimate the likely trade effects on Zambia joining a FTA with South Africa. Unlike previous studies, they use an Excel spreadsheet to simulate the likely effects of reducing tariffs by 80 % and eliminating tariffs on all imports from South Africa. In addition, they use a more realistic export supply elasticity of 10 as opposed to the infinite export supply elasticity used in most studies. While excluding products of high import value, they find that the total trade effect for an 80 % tariff reduction is USD 460 million compared to the USD 572 million when all tariffs are eliminated. However, the revenue loss (with the elimination of all tariffs) is much greater than when

on 80 % of tariffs are removed.

Chauvin *et al.*, (2016) examine the likely effects of the Continental Free Trade Agreement (CFTA) on trade, growth and welfare in Burkina Faso, Cameroon, Cote d'Ivoire, Ethiopia, Madagascar and Nigeria by considering four incremental liberalisation scenarios.³ They find that the trade, growth and welfare effects for each African country are contingent on the modalities of trade liberalisation with greater gains coming from the reduction of Non-Tariff Measures in goods and on the improvement of trade facilitation conditions. Further still, they indicate that the CFTA would lead to asymmetric changes in trade patterns among African countries and within countries across sectors with unequal changes being partially explained by the current disparities in tariffs across countries. They also show that the short-run impacts of the CFTA are generally very small (with some economic costs) while the long-run impacts are largely positive (such as achievement of higher GDP growth). The study indicates that the welfare gains for each country are greater with more intra-Africa integration. The short-run impacts of the CFTA are generally very small while the long-run impacts are positive but with heterogeneity in the welfare effects in a given country and across countries.

Villa *et al.*, (2012) use disaggregated trade data for 2010 to measure the effects of the preferential trade agreement between Canada and Columbia. The study adopts a partial equilibrium model based on the proposed tariff schedules. For Canada, the results show trade creation of USD 9.2 million and trade diversion of USD 6.5 million while for Columbia, the trade created is USD 114 million and trade diversion effect is USD 70 million. Calderón and Poggio (2010) examine the effects of trade on growth among the Central America-Dominican Republic FTA countries. They apply the generalized method of moments on a panel data of 136 countries covering a period from 1960–2010. They find that trade has a strong and positive impact on growth especially in countries with higher levels of education

and innovation, deeper financial markets, a stronger institutional framework, more developed infrastructure networks, a high level of integration with world capital markets and less stringent economic regulations. Mevel and Karingi (2012) use the MIRAGE Computable General Equilibrium model to examine the impact of the AfCFTA on African countries. The study finds that the creation of the AfCFTA would stimulate Africa's exports to the world by 4.0 % (worth USD 25.3 billion) and increase intra African trade by 52.3 % (worth USD 34.6 billion).

The reviewed literature indicates that the theoretical underpinnings of economic integration have been evolving as one theory seeks to fill what is missing and strengthen the previous theories. The reviewed studies also indicate that several empirical methodologies have been used to study the effects of economic integration on member and non-member countries. These include the Computable General Equilibrium (CGE) model, partial Equilibrium model, World Integrated Trade Solution simulation WITS-SMART model as well as the Excel based microsimulation. Several studies have examined the potential effects of the AfCFTA on participating countries. However, no study has examined the likely effects of the AfCFTA on the regional trading blocs (more specifically the EAC). In addition, most studies, apart from Punt and Sandrey (2016) do not use the specific commodity tariff rates. Therefore, this study examines the potential effects of the AfCFTA on the EAC countries using the proposed tariff rates by Kenya.

3.0 METHODOLOGY

3.1 Analytical approaches

This section describes the analytical framework of the single market partial equilibrium simulation tool (SMART) model following from the work of Jammes & Olarreaga (2005). The SMART model is a partial equilibrium (PE) model built on the core postulation of the Armington assumption, which assumes that imports from different countries are imperfect substitutes. It is

³ The first scenario assumes the elimination of tariffs on primary and agricultural goods. The second scenario assumes elimination of tariffs on primary, agricultural and manufactured goods. The third scenario adds a 50 % reduction in Non-Tariff Measures on goods between African countries to the second scenario of intra-Africa tariff elimination on goods. The fourth scenario considers a 30% reduction in transaction costs associated with time.

inbuilt in the World Integrated Trade Solution (WITS) software. The SMART is a very useful analytical tool in that it simulates the likely economic effects of the various policy alternatives. First, it can be used to analyse the impact of a domestic trade reform—it provides insights into the distribution of the potential gains and losses from any contemplated policy changes. Thus, it can be useful in predicting any adjustment costs associated with reform implementation. Second, it also provides an analytical framework for the impact of foreign trade liberalisation. For example, when preparing for trade negotiations, market access analyses help to identify the sensitive sectors where negotiation efforts should be focused (WITS, 2011).⁴ The SMART model simulates the possible impact of a given trade policy intervention or reforms (tariff changes) for a single market on key variables including: trade flows (exports, imports and trade effects), tariff revenue variations, economic welfare effects and other measures (Othieno and Shinyekwa 2011).

The SMART being a PE model, has several advantages and disadvantages that ought to be borne in mind while conducting the analysis. The advantage of the market access analysis is that, it permits analysis at a fairly disaggregated level – which is the basis for tariff negotiations. The trade policy reform effect can be directly seen at a given product level for example, at HS 6 digit commodity classification such as “brown rice” which is not the case with the general equilibrium model. That is why Milner *et al.* (2005) noted that despite the shortcomings of a PE framework, it remains more suitable than the general equilibrium model. However, on the contrary, PE models may miss important interactions and feedback between various markets. In particular, the PE approach tends to neglect the important inter-sectoral input/output linkages that are a basis of general equilibrium analysis. It also excludes the existing constraints that apply to the various factors of production and their movement across sectors. The PE analysis does not account for the economic interactions between the various markets in a given economy (WITS, 2011). Notwithstanding

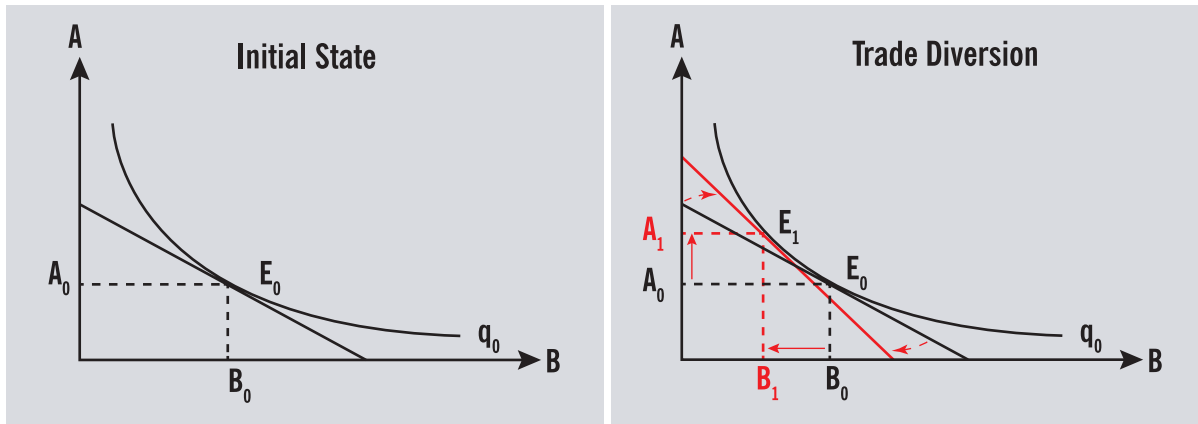
such weaknesses the model is the best for analyzing detailed effects of any tariff policy reforms and that is why it the choice model for this analysis.

The SMART model incorporates three kinds of elasticities

- i. *Supply elasticities*, which are deemed to be infinite (=99). This means that an increase in demand for a given product due to tariff liberalization will always be matched by the producers and exporters of that good, without any impact on the price of the good. This assumption is however unrealistic given that reduction in the AU tariffs many not necessarily be accompanied by increased supply and therefore exports by the EAC. On the other hand, an infinite supply elasticity assumes that the AU MS will be able to supply products automatically to the EAC. We instead use supply elasticities (10) that recognize production and supply side constraints to be more exact. This implies that lowering and removing tariffs may not automatically lead to increased supply which is a more realistic assumption.
- ii. *Import substitution elasticities* record the rate of substitution between two goods from different origins. The Armington assumption is incorporated in SMART, meaning that similar goods from different countries are imperfectly substitutable. In SMART, the import substitution elasticity is considered to be 1.5 for each good. This assumption is close to the real world and therefore it was used without alteration.
- iii. *Import demand elasticity* measures the demand response to a shift in import price. In SMART, the import demand elasticity varies at the HS-6 level and is based on a survey by Stern (1976) in “Price elasticities in International Trade”.

Another important assumption made by the model is that of perfect competition, which means for example that tariff cuts are fully reflected in the prices paid by consumers.

4 Manual Version 2.01

Figure 1 Trade diversion effect

Source: WITS SMART User Manual (WITS, 2011)

3.1.1 Scenario definition and simulation

Analysing the impact of full liberalisation in a PE framework allows policy makers to distinguish the products and sectors where the impact is greatest and make offers accordingly. Identifying the products for which the impact of liberalisation is greatest may help the EAC to define their most “sensitive products”, as well as determine the likely trade to be created, welfare and revenue effects to understand the mechanism under which the PS can deal with the would be effects. The negotiating position for the EAC in the ongoing AfCFTA negotiations is yet to be determined by the PS. It is these consensual positions on EAC regional tariff offers that we will use to estimate the effects. We have used the offers proposed by Kenya for the analysis given that the offers by the rest of the EAC PS are incomplete.

3.2 Simulation

The study uses the Excel based simulation proposed by Punt and Sandrey (2016) to determine the revenue, trade and welfare effects to the EAC countries (except South Sudan) participating in the AfCFTA.⁵ The study

uses the tariff rates proposed by Kenya on the different products for all the EAC countries. For the base tariffs, each country uses the most recent Most Favoured Nation (MFN) tariffs.

3.2.1 Trade diversion

Trade diversion occurs when members belonging to a preferential trade area substitute imports previously sourced from non-members for those from members belonging to the preferential trade area. In this study, with trade diversion, the EAC countries would substitute exports from the rest of the world (without Africa) for exports from other African Countries. Figure 1 describes the trade diversion effect. Granting preferential tariff reduction to partner A (African countries) reduces the relative price compared with partner B (rest of the world). The consumption of the composite good remains unchanged but the relative price line gets steeper. This leads to a new equilibrium (E_1) where imports from partner A increase (from A_0 to A_1) while the imports from partner B symmetrically decrease (from B_0 to B_1).

Following Jammes and Olarreaga (2005), trade diversion under the assumption of elastic supply can be expressed as:

$$TD_{i,k} = \frac{m_{i,\neq k} * m_{i,k} * \frac{dt_{i,k}}{(1+t_{i,k})} * \sigma_{i,k,\neq k} \left[\frac{(m_{i,k} + m_{i,\neq k})\mu_{i,k}}{(m_{i,k} + m_{i,\neq k})\mu_{i,k} - m_{i,\neq k}} \right]}{m_{i,\neq k} + m_{i,k} + m_{i,\neq k} * \frac{dt_{i,k}}{(1+t_{i,k})} * \sigma_{i,k,\neq k} \left[\frac{(m_{i,k} + m_{i,\neq k})\mu_{i,k}}{(m_{i,k} + m_{i,\neq k})\mu_{i,k} - m_{i,\neq k}} \right]} \quad (1)$$

⁵ The detailed excel files of the results per product at Harmonised System Code 6 are too lengthy to be produced in this paper, especially when you consider the five EAC countries. These results can be obtained from the primary contact ishinjekwa@epcug.org, if interested.

Where $TD_{i,k}$ is the trade diversion of product (i) which is the value of EAC countries imports of product (i) that were previously imported from the rest of the world ($\neq k$) that are now imported from African countries (k); $m_{i,k}$ is the initial import value of product (i) by EAC countries from African countries (k); $m_{i,\neq k}$ is the initial import value of product (i) by EAC countries from the rest of the world ($\neq k$); $dt_{i,k}$ is the change in tariff rate of product (i) imported by EAC countries from African countries (k); $t_{i,k}$ is the initial tariff rate of product (i) imported by EAC countries from African countries (k); $\sigma_{i,k,\neq k}$ is the elasticity of substitution with respect to relative prices of the same product from different sources of supply and $\mu_{i,k}$ is the elasticity of export supply by African countries (k) with respect to export price of product (i).

3.2.2 Trade creation

Trade creation occurs when tariff reduction increases trade between the members belonging to a preferential trade area. In this study, with trade creation, the EAC countries trade with other African countries would increase. Figure 2 describes the trade creation effect. Reducing tariffs on imports from partner A (African countries) lowers the domestic price of the commodity coming from A, which is associated with an increase in the imports represented by a shift to a higher composite quantity curve q_1 . For the same expenditure level, consumers can now import more of the variety coming from A (A_1 to A_2). The increase in imports from African economies due to the tariff reduction is balanced by a

the decrease in imports from the rest of the world. For exporting countries, the total trade effect is made of trade diversion and trade creation. In SMART, beneficiaries of the tariff reduction enjoy both positive diversion effect (A_0 to A_1) and positive creation effect (A_1 to A_2) while all other partners will suffer from negative diversion effect (B_0 to B_1) and no trade creation.

Under the assumption of elastic supply, trade creation is estimated as;

$$TC_{i,k} = \varepsilon_{i,k} * m_{i,k} * \frac{dt_{i,k}}{(1 + t_{i,k})} * \left(\frac{1}{1 - \varepsilon_{i,k} / \mu_{i,k}} \right) \quad (2)$$

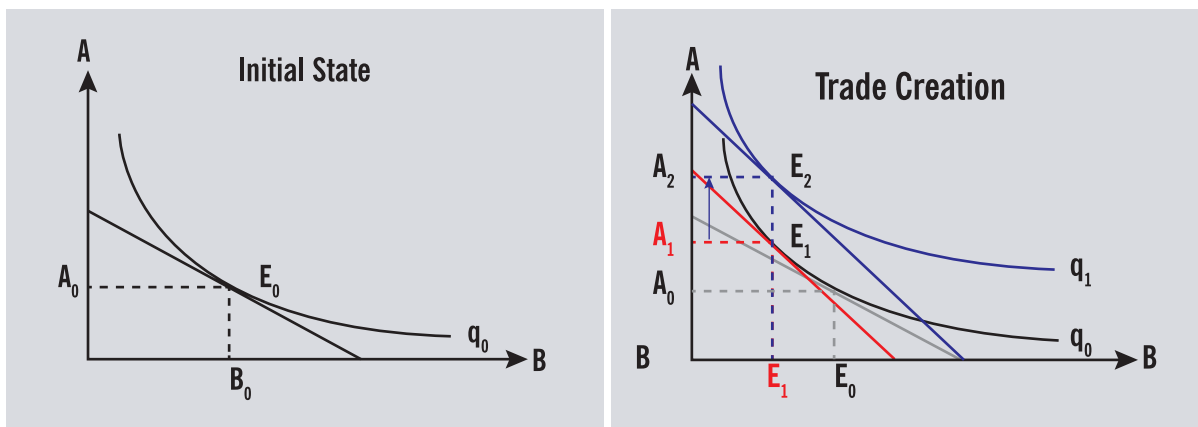
Where $TC_{i,k}$ is the trade created from product (i) which is the value of new imports of product (i) imported by EAC countries from African countries (k) and $\varepsilon_{i,k}$ is the elasticity of import demand with respect to domestic price.

3.2.3 Price effect

The price effect reflects a rise in the world price for the product whose demand increases following the tariff reduction (also known as the terms of trade effect). In other words, it is the additional import value of imports by EAC countries from African countries because of the increased world price. In line with Punt and Sandrey (2016), under the assumption of elastic export supply, the change in world price can be expressed as:

$$dp_{i,k}^w = \frac{TC_{i,k} + TD_{i,k}}{\mu_{i,k}} \quad (3)$$

Figure 2 Trade creation effect



Source: WITS SMART User Manual (WITS, 2011)

Where $dp_{i,k}^w$ is the change in world price (price received by the exporter) of product (i) exported by African countries (k). In the Excel spreadsheet simulation, only the partner country's price effect is reported and it represents the additional import value of imports by EAC countries from Africa due to the increase in the prices in the rest of the world.

3.2.4 Total trade effect

The total trade effect is obtained by summing up the trade creation effects, trade diversion effects and the price effect. Following Punt and Sandrey (2016), the total trade effect is expressed as:

$$TT_{i,k} = TC_{i,k} + TD_{i,k} + dp_{i,k}^w \quad (4)$$

Where $TT_{i,k}$ is the total trade effect from product (i) imported by EAC countries from African countries (k). The Excel spreadsheet simulation reports only the effects for the preference receiving countries, which in this case are the African countries (k).

3.2.5 Tariff revenue effect

The tariff revenue effect is the difference between the value of the tariff revenue from imports from African countries before the AfCFTA and after. However, the Excel spreadsheet simulation provides an under estimate of the total negative tariff revenue on the EAC countries. This is because the trade diversion effect is not included in the tariff revenue calculation yet it significantly reduces the tariff revenue to EAC countries even further. Figure 3 below shows the reduction in the

initial tariff (t_0) to the new tariff (t_1). The right hand panel shows that when the tariff decreases from t_0 to t_1 , the consumer surplus (CS) increases, tariff revenue (TR) reduces, deadweight loss (DWL) decreases and welfare (W) increases.

The change in revenue ($dR_{i,k}$) is calculated as the new tariff revenue (TR_1) less the initial tariff revenue (TR_0), where the tariff revenue in each instance is calculated as the relevant quantity imported (Q) multiplied by the relevant tariff rate (t):

$$dR_{i,k} = TR_1 - TR_0 \quad (5)$$

$$dR_{i,k} = Q_1 * t_1 - Q_0 * t_0 \quad (6)$$

In the Excel spreadsheet simulation, the loss in tariff revenue for the EAC countries from imports from African countries (only) is estimated as the new import value (initial trade plus total trade effect) multiplied by the new tariff (initial tariff plus change in tariff) less the initial import value multiplied by the initial tariff, as follows:

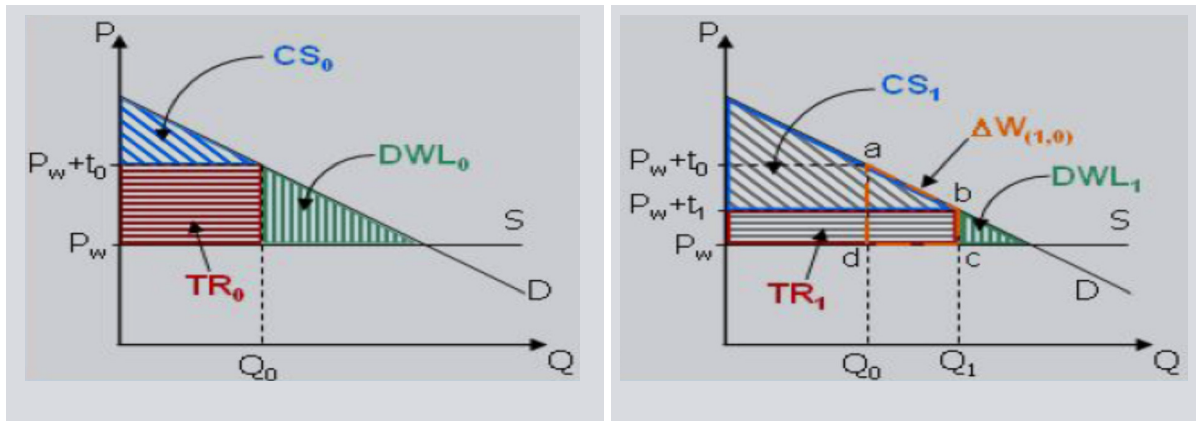
$$dR_{i,k} = (m_{i,k} + TT_{i,k}) * (t_{i,k} + dt_{i,k}) - (m_{i,k} * t_{i,k}) \quad (7)$$

Where $dR_{i,k}$ is the change in tariff revenue to EAC countries from product (i) imported by EAC countries from African countries (k).

3.2.6 Welfare effect

According to WITS (2011), a change in welfare ($\Delta W_{(1,0)}$ in Figure 3) for the importing country's economy com-

Figure 3 Change in consumer surplus, tariff revenue, deadweight loss and welfare



Source: WITS SMART User Manual (WITS, 2011)

prises of two effects. The first effect is the additional tariff revenue because of the increase in imports (rectangle part of $\Delta W_{(1,0)}$) and the second effect is the additional consumer surplus as a result of the increase in imports (triangle part of $\Delta W_{(1,0)}$). Note that the increase in imports in this study is calculated as the total trade effect. The formula for obtaining the welfare effect is expressed as:

$$dW_{i,k} = [TT_{i,k} * (t_{i,k} + dt_{i,k})] + [0.5 * TT_{i,k} * dt_{i,k}] \quad (8)$$

Where $dW_{i,k}$ is the change in welfare as a result of product (i) imported by EAC countries from African countries (k). In the Excel spreadsheet simulation, the change in welfare is because of trade with only the African countries.

3.3 Data used

Trade data: The study uses data obtained from Trade Map database of the International Trade Centre (ITC). The data was downloaded from the ITC website to Excel. The most recent data (2018) for each EAC country was selected and downloaded with the HS level at the tariff line.

Elasticities: The study assumes that the tariff rate changes only affect the prices of the imported commodities. Since the tariffs are calculated on an *ad valorem* basis, the elasticities are defined in terms of tariff rate changes in relation to changes in trade values, rather than price changes in relation to quantity changes. This study uses three different elasticities including the import demand elasticity, the substitution elasticity and the export supply elasticity.

A *substitution elasticity* ($\sigma_{i,k,\neq k}$) of -1.5 for all products is assumed for the simulation. This implies that for every 1% decrease in the price of imports (i.e. the import tariff) from the African countries relative to the import price from the rest of the world, the quantity of imports from the partner country will increase by 1.5%. This elasticity is used in the calculation of trade diversion. The *import demand elasticity* ($\varepsilon_{i,k}$) of -1.5 for all products is assumed for the simulation. This implies that for every 1% decrease in the tariff on the import

price relative to the domestic (EAC countries) price of a product, the quantity of the product's imports by EAC countries from African countries will increase by 1.5%. The elasticity is used in the calculation of trade creation. The *export supply elasticity* ($\mu_{i,k}$) of 10 for all products is assumed for the simulation. This implies that for every 1% increase in the export price of a product, the quantity of exports of the product by a particular country will increase by 10%. This tariff is more realistic than the one proposed by Laird and Yeats (1986) and WITS (2011) of infinitely elastic elasticity. This elasticity is used in the calculations of trade diversion and the trade creation under the assumption of elastic export supply.

Tariff rates: For the pre-AfCFTA, import tariff rates imposed by EAC countries, the most recent MFN rates for each country were used. For the post-AfCFTA rates, the study uses the new tariff rates proposed by Kenya given that the rest of the EAC PS did not have complete lists of offers. Table 1 gives a summary of the tariff rates,

Table 1 Categorization of products and the proposed tariff lines

Category	0%	10%	25%	35%	50%	60%	100 % or \$ 460/ MT whichever is higher	25% or \$200/ MT whichever is higher	35% or USD 0.40/kg whichever is higher	75% or \$345/ MT whichever is higher	Grand Total	Share (%)
A	2,128	1,155	1,892					20			5,195	91.3
B		4	380					14			398	7.0
C			24	13	18	16	9	5	6	4	95	1.7
Total	2,128	1,159	2,296	13	18	16	9	39	6	4	5,688	100

A: Non-Sensitive Products to liberalised first B: Sensitive products to be liberalisation starting the 6th year after commencement of tariff rate dismantling
C: Excluded products from liberalisation to be reviewed after every 5 years

Proposed tariff	Number of tariff lines	Proportion
0	2,120	37.9
10	1,026	18.3
25	1,718	30.7
30	618	11.1
35	6	0.1
50	4	0.1
60	87	1.6
100 % or \$ 460/MT whichever is higher	1	0.0
100% or USD1.84 per kg whichever is higher..	6	0.1
35% or USD 0.2/kg whichever is higher	6	0.1
Total	5,592	100

4.0 FINDINGS

The presentation and discussion of results is divided into two sections: Section 4.1 present trends in exports and imports of the entire EAC region illustrating the regional contribution to trade with the RoA in comparison to the Rest of the World (RoW) underlining the importance of the type and characteristic of products traded. Section 4.2 presents and discusses the revenue, trade and welfare effects of the implementation of the AfCFTA proposed liberalization tariff lines on EAC partner states.

4.1.1 Average import trade value

Table 2 summarizes the average import value of each EAC Partner State from the RoW for the top 20 products. These products account for 77 to 86 % of imports suggesting that they form the largest proportion of the import bills. Mineral fuels and oils account for the largest share of total imports ranging from 11 to 29 %. These are followed by machinery, vehicles, electrical machinery, pharmaceuticals, iron and steel, plastics, cereals among others. It is worth noting that these large

share imports are unlikely to be satisfactorily produced and supplied by the RoA to the EAC. The RoA does not have the competitive edge in the production of these products hence upon AfCFTA implementation, a trade diversion from the RoW to the RoA. This will potentially result in a loss of welfare arising from the inability to competitively supply the aforementioned products. Therefore, the continent has to build capacity in the production of these products and overcome supply side constraints. However, because this cannot be done in medium term, African countries need to develop long term strategies to achieve this.

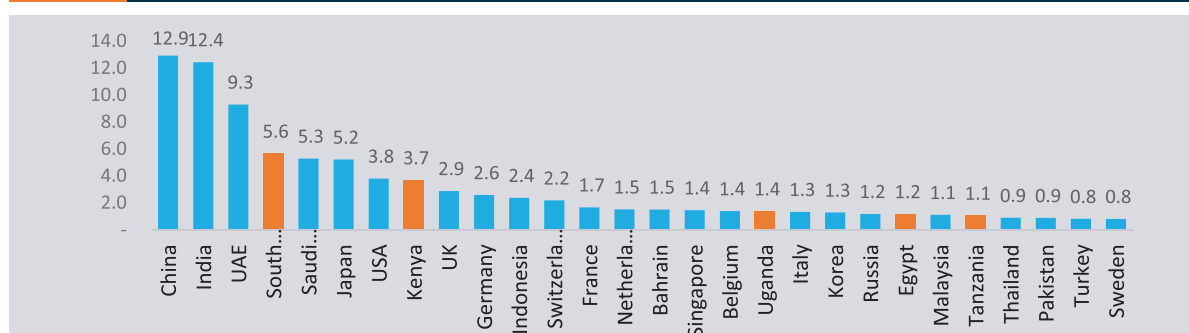
Table 2 Average import trade value and proportion of EAC PS between 2001 - 2018 US\$ (000)

Code	Product label	Uganda	Kenya	Rwanda	Burundi	Tanzania
	Total value (USD)	4,053,658	11,165,062	1,369,006	503,198	7,302,184
		Percentage share of total value				
27	Mineral fuels, mineral oils and products of their distillation;	19.9	21.6	11.7	18.2	29.6
84	Machinery, mechanical appliances,	8.8	10.1	8.8	6.5	10.6
87	Vehicles other than railway or tramway rolling stock	8.8	7.7	7.7	9.3	9.2
85	Electrical machinery and equipment and parts thereof;	8.2	7.5	10.5	6.7	6.7
30	Pharmaceutical products	5.1	3.0	4.4	7.2	2.8
72	Iron and steel	4.9	4.3	4.0	4.4	3.6
39	Plastics and articles thereof	4.3	4.2	2.9	2.0	4.3
10	Cereals	4.1	4.2	4.7	4.0	3.2
15	Animal or vegetable fats and oils and their cleavage	4.0	3.6	3.7	1.4	2.9
25	Salt; sulphur; earths and stone, lime and cement	2.4	0.6	3.8	3.8	0.8
48	Paper and paperboard; articles of paper pulp, of paper or of	2.2	2.2	1.7	1.8	1.2
63	Other made-up textile articles; sets; worn clothing and worn	2.0	1.1	2.7	2.2	1.0
17	Sugars and sugar confectionery	1.9	1.4	2.9	1.6	1.2
38	Miscellaneous chemical products	1.7	1.8	1.3	0.9	1.4
90	Optical, photographic, cinematographic, measuring, checking, precision, medical	1.7	1.4	2.3	1.7	1.3
73	Articles of iron or steel	1.4	1.9	3.1	2.0	2.7
40	Rubber and articles thereof	1.3	1.3	1.0	1.3	1.8
33	Essential oils and resinoids; perfumery, cosmetic or toilet	1.2	0.8	0.8	0.9	0.8
22	Beverages, spirits and vinegar	1.0	0.4	0.8	1.3	0.5
29	Organic chemicals	1.0	1.0	0.4	0.3	0.8
	Subtotal	100	100	100	100	100
	Average top 20 products as a proportion of total imports	86	80	80	77	86

Data source: Trade Map (ITC)

To further illustrate this point, Figure 4 details the leading sources of average imports for the period 2001 to 2018. Asia is the leading source, followed by Europe and a few African countries. Among the top three, China is the leading source of imports followed by India and the Arab Emirates. South Africa is the only African country outside the EAC that is among the top 4 leading import sources. The other African countries are all EAC Partner States except Egypt. Overall, the results

suggest that looking to the RoA for the major import products destined to the EAC is farfetched in the short run and medium term. Without conscious strategies and requisite investments at the continental level, the EAC region will continue to import from outside Africa rendering the AfCFTA ineffective and redundant. Therefore signing agreements to liberalize trade is a necessary but not sufficient condition to increase intra-African trade.

Figure 4 Leading sources of EAC average imports (%) from 2001 - 2018

Data source: Trade Map (ITC)

4.1.2 Average export value

Table 3 provides a summary of the average export value of each EAC partner state to the RoW for the top 32 products. These products account for 81 to 93 % of exports. Coffee, tea, mate and spices are the leading export earners for Uganda, Kenya, Rwanda and Burundi with ranges from 22 to 38 %. On the other hand, Tanzania's leading export products are natural or cultured pearls, precious or semi-precious stones, precious metals and they account for 32 % of the total export value. The overall exports for the EAC

region are commodities including but not limited to: cut flowers, tobacco, salt, plastics, iron and steel, animal or vegetable oils, sugar, beverages, pharmaceuticals, fish, edible oils and citrus mineral fuels. The results suggest that the EAC region mainly exports agricultural commodities or products and mineral ores, which are not likely to be readily imported by the RoA. One of the factors explaining the limited intra-African trade is the continental inability to diversify and the production of similar commodities which are unlikely to be readily demanded by neighbouring states.

Table 3 Average export trade value and proportion of EAC Partner States between 2001 -2018

		Uganda	Kenya	Rwanda	Burundi	Tanzania
	Total Value for all products US (000)	1,700,000	4,500,000	389,393	135,167	3,300,000
Code	Product label	Percentage share of total value				
9	Coffee, tea, maté and spices	22.2	24.2	24.3	38.2	5.3
6	Live trees and other plants; bulbs, roots and the like; cut flowers and	2.6	9.7	0.1	0.1	0.9
27	Mineral fuels, mineral oils and products of their distillation; bituminous	6.0	7.8	12.5	1.0	1.5
7	Edible vegetables and certain roots	2.1	4.8	1.1	0.1	3.2
24	Tobacco & manufactured tobacco	3.6	2.8	0.0	1.8	5.0
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	3.2	2.7	0.9	0.0	1.0
62	Articles of apparel and clothing accessories, not knitted or crocheted	0.1	2.7	0.1	0.0	0.2
39	Plastics and articles thereof	1.0	2.6	0.3	1.0	1.0
72	Iron and steel	3.2	2.5	0.8	1.0	0.7
20	Preparations of vegetables, fruit, nuts or	0.2	2.3	0.1	0.0	0.2
15	Animal or vegetable fats and oils and their cleavage products; prepared edible	3.2	2.1	2.0	0.1	1.7
28	Inorganic chemicals; organic or inorganic compounds of precious metals,	0.2	2.1	0.0	0.1	0.2
61	Articles of apparel and clothing accessories, knitted or crocheted	0.1	1.8	0.1	0.0	0.3
30	Pharmaceutical products	0.5	1.8	0.1	0.1	0.1
8	Edible fruit & nuts; peel of citrus fruit or	0.2	1.7	0.1	0.3	4.9
34	Soap, organic surface-active agents,	1.3	1.7	0.4	1.8	0.5
84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	2.1	1.4	1.2	1.0	1.5
85	Electrical machinery and equipment and parts thereof; sound recorders and	3.1	1.4	1.1	0.9	1.6
87	Vehicles other than railway or tramway rolling stock, and parts and	2.3	1.3	2.7	4.1	0.4
48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	0.7	1.2	0.3	0.1	0.8
17	Sugars and sugar confectionery	3.1	1.2	0.5	0.8	0.5
22	Beverages, spirits and vinegar	1.7	1.1	1.5	2.1	0.3
41	Raw hides and skins and leather	1.8	1.1	1.6	1.7	0.3
73	Articles of iron or steel	1.5	1.1	0.2	0.2	0.4
26	Ores, slag and ash	0.4	1.0	25.2	3.5	10.6
3	Fish and crustaceans, molluscs and other aquatic invertebrates	7.2	1.0	0.2	0.1	4.9
49	Printed books, newspapers, pictures and other products of the printing	0.4	1.0	0.0	0.0	0.0
71	Natural or cultured pearls, precious or semi-precious stones, precious metals,	6.3	0.9	8.0	33.0	32.6
76	Aluminium and articles thereof	0.1	0.9	0.1	0.2	0.1
63	Other made-up textile articles;	0.6	0.8	1.0	0.2	1.6
	Subtotal	100	100	100	100	100
	Average top 32 products as a- proportion of total exports	80.6	88.6	86.7	93.4	82.2

Data source: Trade Map (ITC)

Figure 5 details the leading destinations of EAC exports from 2001 to 2018 and Africa commands a fair share. However, when Intra-EAC exports are excluded, EAC export trade with the RoA significantly diminishes. This suggests that the EAC region is starting from a point of significant intra-regional exports and therefore has to significantly increase production and competitiveness to penetrate destinations in the RoA. The next region is Europe with Netherlands, UK, Switzerland, Germany, Italy, France and Spain being the leading destination. Asia which is the third region includes: India, the leading destinations, followed by Pakistan, China, Hong Kong and Japan. Overall, the results suggest that looking to the RoA as an export destination is promising, especially with light manufactured products, although this may take a long term strategy to be fully realised.

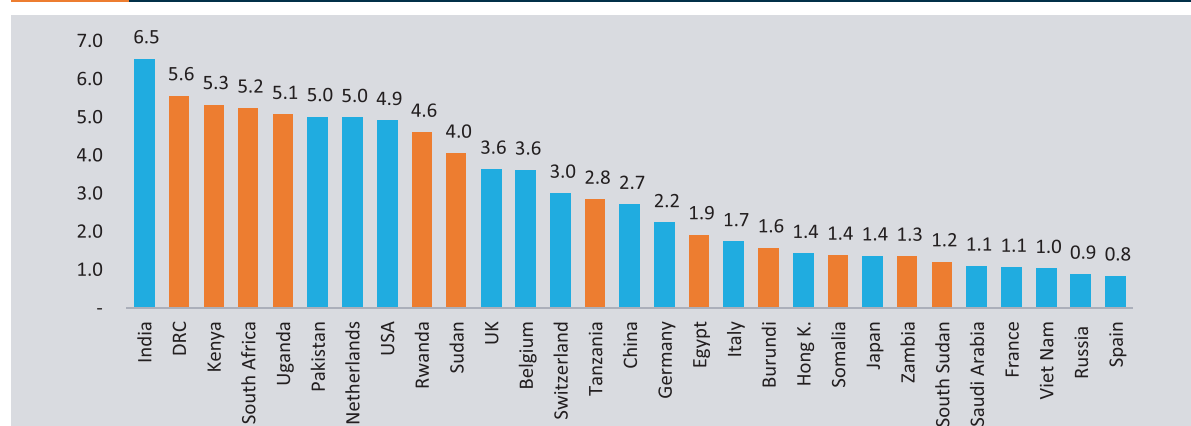
4.1.3 Comparison of African average exports and imports

To gain further insights into the potential and main characteristic of the products traded between the EAC and the RoA, we summarize the average African exports to and imports from different destinations. Table 4 gives a summary of the average export and import products which suggests that the continent is

largely an exporter of mineral fuels which constitute over 50 %. The likely importers are outside the African continent. These products are followed by the following: natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad, ores, slag and ash, vehicles, electrical machinery, iron and steel, copper, machinery, cocoa and cocoa preparations, edible fruit and nuts; peel of citrus fruit or melons among others.

On the other hand, the leading imports are: mineral fuels, mineral oils and products; machinery, mechanical appliances, nuclear reactors, boilers and parts thereof; Vehicles other than railway or tramway rolling stock, and parts and accessories thereof; electrical machinery and equipment and parts thereof; sound recorders and reproducers; cereals; pharmaceutical products; iron and steel; plastics and articles thereof among others. These largely require heavy manufacturing which is a major limitation on the African continent. The results further suggest that significant trade among African countries is still hampered by the limited technological advance. There is a heavy reliance on regions and countries outside the continent for these products which will make it difficult to trade among themselves.

Figure 5 Leading destinations of EAC average exports (%) from 2001 2018



Data source: Trade Map (ITC)

Table 4 Comparison of African exports and imports in value (US\$ 000) and % -2001 and 2018

		Average export	Average imports
	Total value (US\$ 000)	370,000,000	388,555,492
		Percentage share of total value	
Code	Product label		
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	51.1	15.0
71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	7.8	0.7
26	Ores, slag and ash	3.4	0.4
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	2.4	8.5
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, TV.	2.3	8.2
72	Iron and steel	2.1	3.2
74	Copper and articles thereof	1.9	0.6
84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	1.8	12.3
62	Articles of apparel and clothing accessories, not knitted or crocheted	1.6	0.7
18	Cocoa and cocoa preparations	1.6	0.2
8	Edible fruit and nuts; peel of citrus fruit or melons	1.4	0.3
28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals,	1.1	0.9
76	Aluminium and articles thereof	1.0	0.7
3	Fish and crustaceans, molluscs and other aquatic invertebrates	1.0	0.8
31	Fertilisers	0.9	0.8
9	Coffee, tea, maté and spices	0.9	0.4
61	Articles of apparel and clothing accessories, knitted or crocheted	0.8	0.4
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	0.8	1.1
39	Plastics and articles thereof	0.8	3.4
89	Ships, boats and floating structures	0.8	1.3
44	Wood and articles of wood; wood charcoal	0.7	0.9
40	Rubber and articles thereof	0.7	1.3
52	Cotton	0.6	0.8
7	Edible vegetables and certain roots and tubers	0.6	0.4
24	Tobacco and manufactured tobacco substitutes	0.6	0.5
73	Articles of iron or steel	0.6	3.1
17	Sugars and sugar confectionery	0.5	1.1
29	Organic chemicals	0.5	1.2
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal ...	0.5	0.4
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal ...	0.5	1.5
22	Beverages, spirits and vinegar	0.4	0.5
33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	0.4	0.7
48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	0.4	1.4
16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates	0.4	0.2
38	Miscellaneous chemical products	0.4	1.3
41	Raw hides and skins (other than furskins) and leather	0.3	0.1
94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; ...	0.3	0.9
20	Preparations of vegetables, fruit, nuts or other parts of plants	0.3	0.3
64	Footwear, gaiters and the like; parts of such articles	0.3	0.5
10	Cereals	0.3	4.2
88	Aircraft, spacecraft, and parts thereof	0.3	1.0
75	Nickel and articles thereof	0.3	0.1

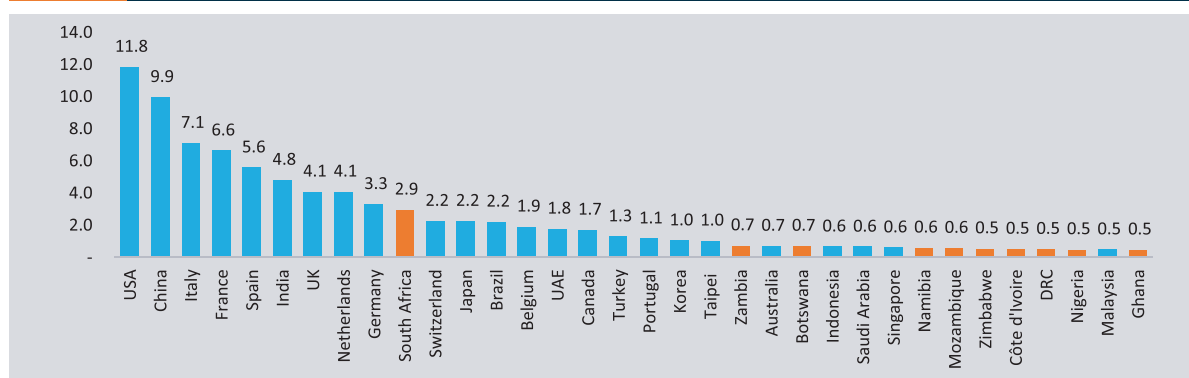
81	Other base metals; cermets; articles thereof	0.3	0.0
63	Other made-up textile articles; sets; worn clothing and worn textile articles; rags	0.3	0.5
90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	0.3	1.6
99	Commodities not elsewhere specified	0.3	2.1
6	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage	0.2	0.0
1	Live animals	0.2	0.2
34	Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial ...	0.2	0.5
4	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere ...	0.2	1.0
21	Miscellaneous edible preparations	0.2	0.5
49	Printed books, newspapers, pictures and other products of the printing industry; manuscripts,	0.2	0.4
30	Pharmaceutical products	0.2	2.5
47	Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or ...	0.2	0.1
23	Residues and waste from the food industries; prepared animal fodder	0.2	0.6
19	Preparations of cereals, flour, starch or milk; pastrycooks' products	0.1	0.6
70	Glass and glassware	0.1	0.4
2	Meat and edible meat offal	0.1	0.8
69	Ceramic products	0.1	0.6
11	Products of the milling industry; malt; starches; inulin; wheat gluten	0.1	0.4
32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring ...	0.1	0.5
68	Articles of stone, plaster, cement, asbestos, mica or similar materials	0.1	0.3
79	Zinc and articles thereof	0.1	0.1
13	Lac; gums, resins and other vegetable saps and extracts	0.1	0.0
82	Tools, implements, cutlery, spoons and forks, of base metal; parts thereof of base metal	0.1	0.4
86	Railway or tramway locomotives, rolling stock and parts thereof; railway or tramway track fixt	0.1	0.3
96	Miscellaneous manufactured articles	0.1	0.3
57	Carpets and other textile floor coverings	0.1	0.1
	Sub Total	100	100

Data source: Trade Map (ITC)

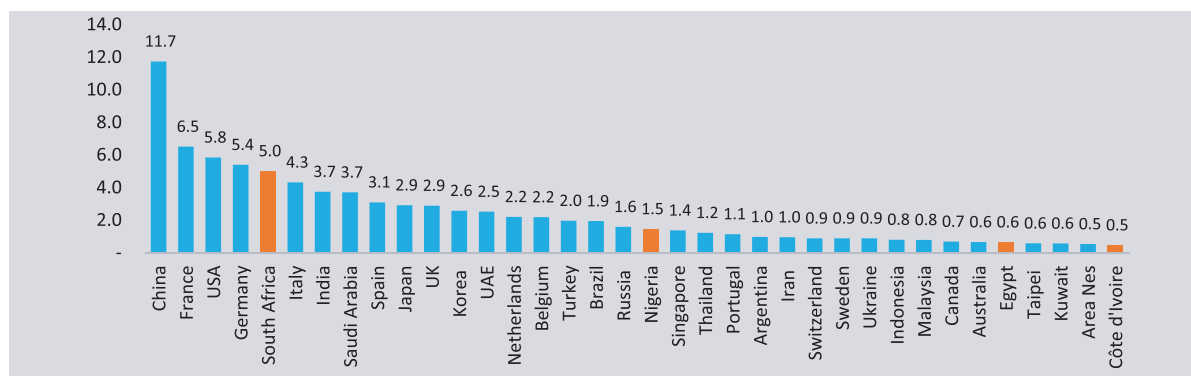
Figure 6 further illustrates the limited state of export trade among African countries by considering the top 34 export destinations. The figure shows that the bulk of the continent's exports are destined for the USA, Europe and Asia which account for over 75 % of Africa's export Trade. Within Africa, South Africa accounts for

the highest proportion, which is an average of 3%. The other African countries include: Zambia, Botswana, Namibia, Mozambique, Zimbabwe, DRC, Nigeria and Ghana and they together constitute about 5 %. This indicates that about 8 % of the top 34 African export destinations are African countries.

Figure 6 African export destinations (%) average 2001-2018



Data source: Trade Map (ITC)

Figure 7 African import sources (%) average 2001-2018

Data source: Trade Map (ITC)

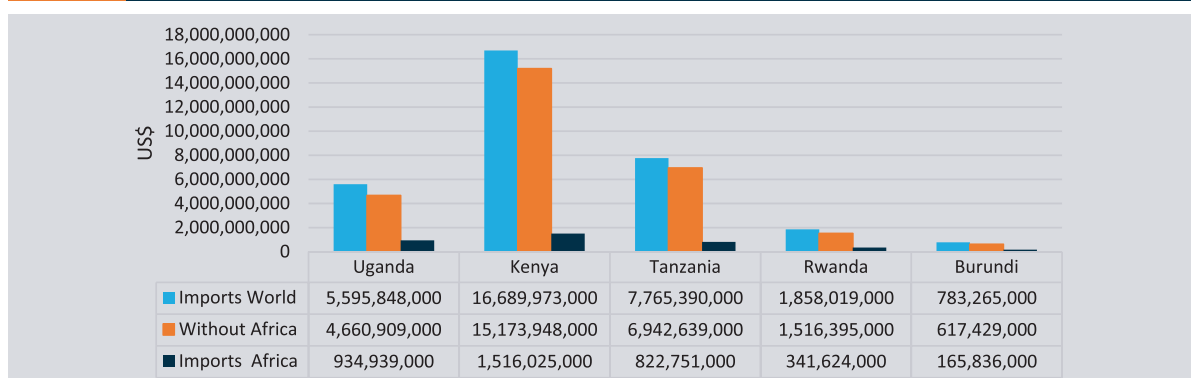
On the other hand, Africa's imports are mainly sourced from non-African countries as demonstrated in Figure 7. Furthermore, only four African countries (South Africa, Nigeria, Egypt and Ivory Coast) are among the top 36 sources for the continent's imports and they account for a dismal figure of 8 %. The bulk of the imports, about 80 %, were sourced from the Asian and European countries and the USA.

The results from the analysis above demonstrate that Africa's imports and exports are mainly dominated by non-African economies. This implies that between 2001 and 2018, the African continent heavily relied on external markets for exports and sources for imports. This is the starting point for efforts to increase intra-African imports and exports. The nature and characteristics of the products suggest that the continent exports largely commodities, (mineral ores and natural pearls) and imports sophisticated high and intensive technology products. Given such a scenario,

the EAC is not likely to automatically increase trade with the RoA after signing and ratifying the AfCFTA, rather strategic measures to improve the quality of products produced by the region should be taken into account. This implies that in addition to trade facilitation, reduction and elimination of tariff and Non-tariff barriers, other measures should consciously and judiciously be implemented to boost intra-African trade. Innovation, the attraction of investments into the region and the continent, and adoption of high international products standards could be among the strategies that to be pursued.

4.2 Revenue, trade and welfare effects of the EAC liberalizing trade with the AfCFTA

This section presents the main results of the paper delving into the revenue, trade and welfare effects of the EAC liberalizing trade with the RoA. The data used for the Excel based WITS analysis was extracted from the Trade Map database for 2018 which was the latest

Figure 8 EAC Partner States import trade in 2018 US\$

Data source: Trade Map (ITC)

year. Figure 8 gives the value of import trade for each of the EAC Partner States sourced from Africa and outside Africa and both are combined to give an understanding of the current value of trade and the patterns thereof. There are basically two observations from the analysis. In 2018, Kenya was the largest importer within the EAC followed by Tanzania, Uganda, Rwanda and finally Burundi. Imports from Africa are extremely small for all the countries in comparison to imports from the RoW suggesting that the EAC heavily relies on the RoW and less on RoA. This implies that for the EAC, the implementation of the AfCFTA starts at a point when there is very limited trade with the continent.

4.2.1 Tariff Revenue effects

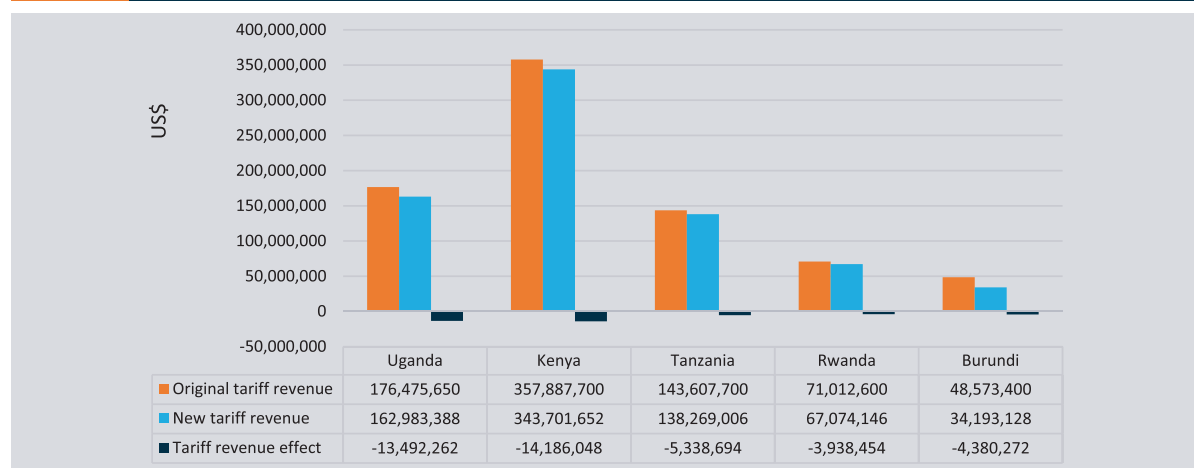
The tariff revenue effect is measured as the difference between the value of tariff revenue before the implementation of the agreement and thereafter. In this case, this is the total revenue impact on the EAC PS trading with the RoA before liberalization and thereafter. In the event that the tariff reduction is substantive, the major loss would be from the RoA given that tariff revenue from existing trade is reduced. Tariff revenue is also lost from other trading partners outside Africa due to trade diversion. Figure 9 provides a summary of the tariff revenue effect for each of the EAC PS which reveals losses across all of them. In absolute amounts, Kenya incurs the largest tariff revenue loss of US\$ 14.2 million followed by Uganda with US\$13.5 million, Tanzania US\$5.3 million, Burundi US\$ 4.3million and fi-

nally Rwanda US\$ 3.9 million. In terms of proportional losses of the tariff revenue, Burundi incurs the largest proportion of 30 %, followed by Uganda with 7.6 %, Rwanda 5.5 %, Kenya 4 % and Tanzania 3.7 %. The overall result is that EAC PS incur losses but at varying levels and proportions depending on the quantities involved.

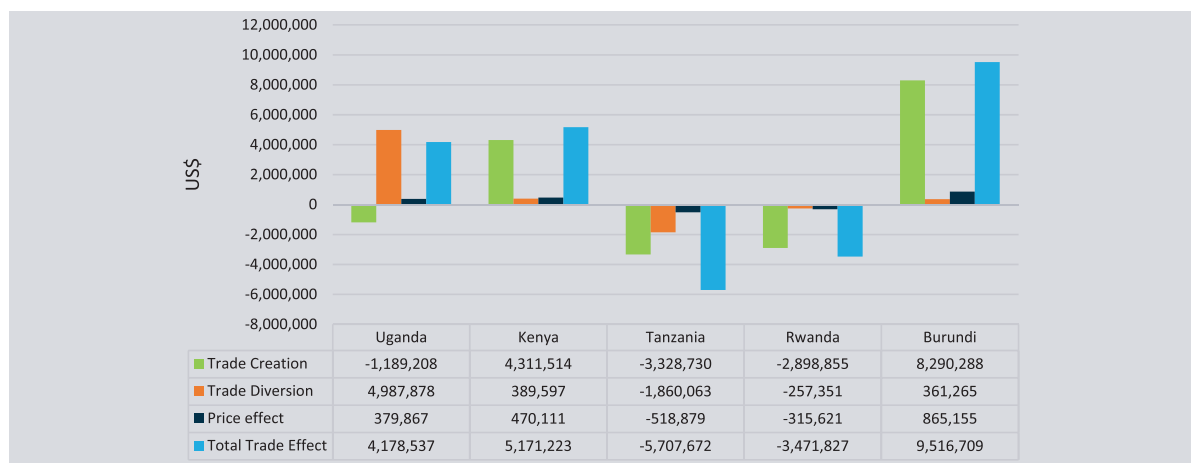
4.2.2 Trade effects

The trade effect is obtained by adding the trade creation and trade diversion effects. Figure 10 gives a summary of these effects which suggests a mixed effect among the EAC partner states. Regarding trade creation, Kenya will create a total of US\$4.3 million and Burundi up to a tune of US\$8.3 million. On the other hand Uganda, Tanzania and Rwanda will not create any trade. Consequently, these countries will significantly lose as a result of liberalizing trade in the short run. For Uganda this will be accompanied by a significant trade diversion of a value of US\$4.9 million which further disadvantages the country because this will come at a cost of more expensive imports. Kenya will experience a very small trade diversion of about US\$0.4 million which can be internalized by the high value of trade created. Rwanda and Tanzania on the other are likely to experience a negative trade diversion. The overall trade effect is positive for Uganda largely arising from trade diversion to a tune of US\$4.2 million. Note that trade diversion is not necessarily the best thing to happen as it comes with higher costs of imported products

Figure 9 Revenue effects



Data source: Trade Map (ITC)

Figure 10 Trade effects

Data source: Trade Map (ITC)

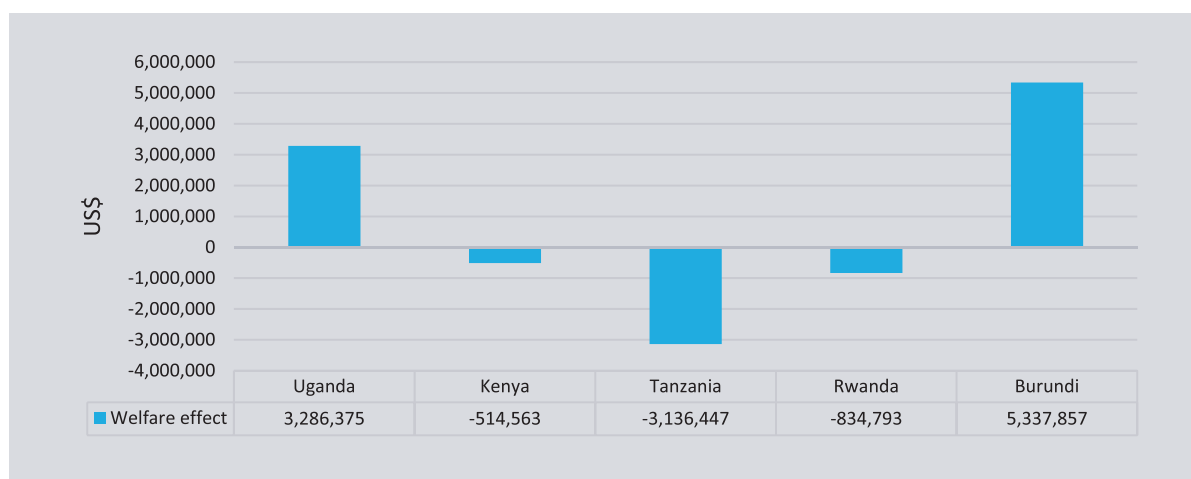
and hence welfare losses to consumers. Therefore, the analysis suggests that Uganda does not benefit much from liberalizing trade under the AfCFTA in the short run. Burundi significantly benefits from trade liberalization given that its total trade effect is US\$9.7 million which is largely accounted for by trade creation than trade diversion, followed by Kenya with US\$5.2 million.

Therefore, the consumers in Burundi and Kenya do not experience significant welfare losses given that trade creation is far larger than trade diversion. This analysis suggests that Burundi will be the leading beneficiary of the liberalization among the EAC Partner States. Tanzania has the largest negative trade effect of US\$5.7 million suggesting that it loses more than

other EAC Partner States following trade liberalization with the RoA. This is followed by Rwanda with a trade effect loss of US\$3.5 million.

4.2.3 Welfare effects

The welfare change for the EAC PS which are the importing economies arises from the additional revenue as a result of the increase in imports and the additional consumer surplus as a result of the increase in imports. Particularly in the excel spreadsheet simulations, the change in welfare is a result of the liberalization of trade with the RoA. Results in Figure 11 suggest that whereas Uganda and Burundi experience a positive welfare effect, Kenya, Tanzania and Rwanda experience negative welfare effect. Specially, Burun-

Figure 11 Welfare effects

Data source: Trade Map (ITC)

di's positive effect is US\$5.3 million and Uganda's is US\$3.3 million. Tanzania has the largest welfare loss of US\$3.1 million, followed by Rwanda with US\$ 0.83 million and Kenya with US 0.5 million.

There are a number of products which experienced trade creation, trade diversion, welfare effects and revenue effects for all the analysed five EAC countries. These are extremely usefully for designing policies to respond to especially the negative or/and likely effects. For convenience the presentation, only makes a selection of 20 products and this is down by indicators and country as summarised in Appendix tables A1 to A20.

5.0 CONCLUSIONS AND POLICY IMPLICATIONS

The paper aims at estimating and establishing the likely effects of the AfCFTA on the EAC economies. Specifically it sought to establish the trade, welfare and revenue effects of liberalising under the AfCFTA and to determine the defensive and offensive sectors. This is premised on the rationale that this process will enhance the ability of the EAC PS to negotiate based on empirical evidence.

The average import value of EAC PS from the RoW for the top 20 products accounts for an average of over 80 % of imports. The products include; mineral fuels and oils which account for the largest proportion ranging from 12 to 30 %. Others include: machinery, vehicles, electrical machinery, pharmaceuticals, iron and steel, plastics, cereals among others. Thus, the RoA will not satisfactorily supply these to EAC Partner States in the short run. Therefore, the RoA does not have the competitive edge in the production of some of these products hence trade diversion from the RoW to the RoA. In conclusion, signing the agreements and liberalizing is a necessary but not sufficient condition to increase intra-African trade. The overall exports for the EAC region are commodities including but not limited to: coffee, semi-precious stones, cut flowers, tobacco, salt, plastics, iron and steel, animal or vegetable oils,

sugar, beverages, pharmaceuticals, fish, edible oils, citrus mineral fuels. Therefore, the EAC region mainly exports agricultural commodities and mineral ores which are not likely to be readily imported by the RoA. The leading destinations for the EAC Partner States exports is a mix of regions with Africa taking a fair share and intra-EAC exports taking the largest proportion.

Between 2001 and 2018 the African continent relied heavily on external markets for exports and sources for imports. The nature and characteristics of the products suggest that the continent exports largely commodities and mineral ores and imports sophisticated high and intensive technology products. Significant trade among African countries is still hampered by the limited technological advancement among many other factors.

Although all the EAC PS incur tariff revenue losses, they vary in absolute amounts and proportions. Kenya incurs the largest tariff revenue loss followed by Uganda, Tanzania, Burundi and finally Rwanda. In terms of proportional losses of the tariff revenue, Burundi incurs the largest proportion of 30 %, followed by Uganda with 7.6 %, Rwanda 5.5 %, Kenya 4 % and Tanzania 3.7 %. Results for the trade effects suggest a mixed effect among the EAC partner states. Whereas Burundi and Kenya are likely to experience positive trade effects largely arising from trade creation, Tanzania and Rwanda will experience negative trade effects. Uganda's positive trade effect is explained by trade diversion which has implications on the welfare of the citizens. Regarding the welfare effect, whereas Uganda and Burundi experience positive welfare effects, Kenya, Tanzania and Rwanda experience negative welfare effects. The consumers in Uganda and Burundi are more likely to relatively experience positive welfare effect compared to the others. Notable is that Tanzania has the largest welfare loss.

There are policy implications that arise from the results and these include:

- The EAC and the continent has to build capacity in the production of these products which are largely imported from outside the African continent and overcome supply side constraints

which should be a long term strategy embedded in the continental frameworks and strategies .

- To increase EAC exports to the RoA, the region should pursue product diversification and sophistication with a view of replacing what is currently imported from outside the continent.
- In addition to trade facilitation, reduction and elimination of tariff and Non-tariff barriers, other measures should consciously and judiciously be implemented to boost intra-African trade. These may include innovation, the attraction of investments into the region and the continent, and adoption of high international products standards, diversification and sophistication among others.
- To mitigate the negative effects of trade diversion, that is high cost of imports and hence welfare losses, the EAC and Africa at large should target increasing competitiveness by significantly lowering the unit costs of production.
- To get Africa to trade with itself, the continent should implement industrialization as a must in order to reduce the low value commodity haemorrhage which fetch less revenue. This will also reduce the high import bill from the RoW.

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APPENDIX A

Table A1: Top twenty commodities on which trade is created for Uganda (US\$ 000)

HS	HS Description	Trade Creation
17019990	Refined sugar, in solid form, nes: .	7,820.2
33021000	Mixtures of odoriferous substances for the food or drink industries	2,766.4
10061000	Rice in the husk (paddy or rough)	1,731.9
10063000	Rice, semi-milled or wholly milled, whether or not polished or glazed	1,663.6
48025600	Uncoated paper and paperboard, of a kind used for writing,	738.8
39201090	Plates, sheets, film, foil and strip, of non-cellular plastics	619.2
73066100	Tubes and pipes and hollow profiles, welded, of square	472.7
10064000	Rice, broken	234.6
73063000	Tubes, pipe & hollow profiles, iron or steel, welded, of circular cross section, nes	140.9
73064000	Tube, pipe & hollow profile, stainless steel, welded, of circular cross section, nes	86.6
19011000	Prep of cereals, flour, starch/milk for infant use, put up for retail sale	32.1
40169300	Gaskets, washers and other seals of vulcanised rubber	25.4
84439900	Parts and accessories of printers, copying machines and	22.1
39052100	Vinyl acetate copolymers in aqueous solution	21.2
20091900	Orange juice, unfermented, whether or not containing	21.1
17023000	Glucose & glucose syrup not containing fructose in dry state	17.1
84314900	Parts of cranes, work-trucks, shovels, and other construction machinery	13.0
20097900	Apple juice, unfermented, brix value > 20 at 20°C,	12.8
84433900	Printers, copying machines and facsimile machines,	10.6
19019090	Malt extract & food prep of ch 19 < 10% cocoa: .	8.9
11081200	Maize (corn) starch	7.2
21069020	Food preparations nes: .	4.4
54021900	High-tenacity filament yarn of nylon or other	3.6
54024800	Filament yarn of polypropylene, incl. monofilament of <	3.0

Table A2: Top twenty commodities on which trade is diverted for Uganda (US\$ 000)

HS	HS Description	Trade Diversion
17019990	Refined sugar, in solid form, nes: .	6,420.2
33021000	Mixtures of odoriferous substances for the food or drink industries	1,686.8
10063000	Rice, semi-milled or wholly milled, whether or not polished or glazed	1,302.3
10064000	Rice, broken	283.3
48025600	Uncoated paper and paperboard, of a kind used for writing,	274.2
39201090	Plates, sheets, film, foil and strip, of non-cellular plastics,	199.7
73064000	Tube, pipe & hollow profile, stainless steel, welded, of circular cross section, nes	56.4
19011000	Prep of cereals, flour, starch/milk for infant use, put up for retail sale	36.6
84439900	Parts and accessories of printers, copying machines	27.0
40169300	Gaskets, washers and other seals of vulcanised rubber	25.7
73063000	Tubes, pipe & hollow profiles, iron or steel, welded, of circular cross section	25.0
20091900	Orange juice, unfermented, whether or not containing	22.0
17023000	Glucose & glucose syrup not containing fructose in dry state	18.8
84314900	Parts of cranes, work-trucks, shovels, and other construction machinery	16.1
84433900	Printers, copying machines and facsimile machines,	11.7
11081200	Maize (corn) starch	8.3
19019090	Malt extract & food prep of ch 19 < 10% cocoa: .	5.4
21069020	Food preparations nes: .	4.3
20097900	Apple juice, unfermented, brix value > 20 at 20°C,	3.9
96121000	Typewriter or similar ribbons, prepared for giving impressions	2.6
39052100	Vinyl acetate copolymers in aqueous solution	2.6

HS	HS Description	Trade Diversion
10061000	Rice in the husk (paddy or rough)	2.6
87113090	Motorcycles with reciprocating piston engine displacement >	2.3
39051200	Polyvinyl acetate, in aqueous dispersion	1.6
38089129	Insecticides (excl. goods of subheading 3808.50)	1.4

Table A3: Top twenty commodities on which revenue is generated for Uganda (US\$ 000)

HS	HS Description	Revenue effect
25232900	Portland cement nes	776.7
25010000	Salt (including table salt & denatured salt) pure sodium chloride & sea	771.2
72104900	Flat rolled prod, i/nas, plated or coated with zinc, >/=600mm wide, nes	748.1
72107000	Flat rolled prod, i/nas, painted, varnished or plastic coated, >/=600mm	640.0
63049110	Furnishing articles nes, of textile materials, knitted or crocheted: .	517.6
72106100	Flat rolled i/nas, coated alum-zinc alloy, w >600mm	322.7
87042190	Diesel powered trucks with a gvw not exceeding five tonnes: .	304.4
15171000	Margarine, excluding liquid margarine	278.8
87164090	Trailers and semi-trailers nes: .	276.6
87021099	Diesel powered buses with a seating capacity of > nine persons: .	165.9
15119040	Palm oil and its fractions refined but not chemically modified: .	127.7
72085400	Hot roll iron/steel, not coil >600mm x <3mm	115.9
21019000	Swine meat cured, nes	79.9
63053300	Sacks, bags, packing, of strip plastic material	75.7
48051900	Fluting paper, uncoated, in rolls of a width > 36 cm or in square or	72.8
87168000	Wheelbarrows, hand-carts, rickshaws and other hand propelled s	61.5
87163190	Tanker trailers and semi-trailers: .	46.6
87012090	Road tractors for semi-trailers (truck tractors): .	41.1
72085200	Hot roll iron/steel, not coil >600mm x 4.75-10mm	36.8
87161090	Trailers for housing or camping: .	33.4
20329000	Swine cuts, frozen nes	30.6
15119030	Palm oil and its fractions refined but not chemically modified: .	28.6
72142000	Bars & rods, i/nas, hr, hd or he, cntg indent, ribs, etc, prod dur rp/tar, nes	27.6

Table A4: Top twenty commodities on which welfare is experienced for Uganda (US\$ 000)

HS	HS Description	Welfare effect
17019990	Refined sugar, in solid form, nes: .	7,832.2
10063000	Rice, semi-milled or wholly milled, whether or not polished or glazed	1,794.4
10061000	Rice in the husk (paddy or rough)	1,049.3
10064000	Rice, broken	313.3
33021000	Mixtures of odoriferous substances for the food or drink industries	244.9
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or	195.0
39201090	Plates, sheets, film, foil and strip, of non-cellular plastics, not	157.6
73066100	Tubes and pipes and hollow profiles, welded, of square or rectangular	65.1
73063000	Tubes, pipe & hollow profiles, iron or steel, welded, of circ cross sect, nes	22.8
73064000	Tube, pipe & hollow profile, stainless steel, welded, of circ cross sect, nes	19.7
19011000	Prep of cereals, flour, starch/milk f infant use, put up f retail sale	9.4
20091900	Orange juice, unfermented, whether or not containing added sugar	8.3
20097900	Apple juice, unfermented, brix value > 20 at 20°C, whether or not	3.2
40169300	Gaskets, washers and other seals of vulcanised rubber	2.8
84439900	Parts and accessories of printers, copying machines and facsimile	2.7
17023000	Glucose & glucose syrup nt cntg fruct/cntg in dry state	2.0
19019090	Malt extract & food prep of ch 19 < 10% cocoa: .	2.0
84314900	Parts of cranes, work-trucks, shovels, and other construction machinery	1.6

HS	HS Description	Welfare effect
39052100	Vinyl acetate copolymers in aqueous solution	1.3
84433900	Printers, copying machines and facsimile machines,	1.2
96121000	Typewriter or similar ribbons, prepared for giving impressions	0.9
11081200	Maize (corn) starch	0.9
87113090	Motorcycles with reciprocating piston engine displacg	0.6

Table A5: Top twenty commodities on which trade is created for Burundi (US\$ 000)

HS	HS Description	Trade Creation
17019990	Cane or beet sugar and chemically pure sucrose, in solid form: Other :	9387.4
33021000	Mixtures of odoriferous substances and mixtures (including alcoholic	498.0
19011000	Malt extract; food preparations of flour, groats, meal, starch or malt	425.7
10062000	Rice: Husked (brown) rice	409.0
73066100	Other tubes, pipes and hollow profiles (for example, open seam or	388.2
21069020	Food preparations not elsewhere specified or included: Other:	144.3
73063000	Other tubes, pipes and hollow profiles (for example, open seam or	31.3
19019090	Malt extract; food preparations of flour, groats, meal, starch or malt	30.8
39201090	Other plates, sheets, film, foil and strip, of plastics, non-cellular and not	21.1
42021900	Trunks, suit-cases, vanity-cases, executive-cases, brief-cases, school	2.3
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or	1.7
11081200	Starches; inulin: Starches : Maize (corn) starch	1.2
84314900	Parts suitable for use solely or principally with the machinery of	0.7
20091900	Fruit juices (including grape must) and vegetable juices, unfermented	0.6
20093900	Fruit juices (including grape must) and vegetable juices, unfermented	0.6
20097900	Fruit juices (including grape must) and vegetable juices, unfermented	0.6
38089119	Insecticides, rodenticides, fungicides, herbicides, anti- sprouting	0.4
38089121	Insecticides, rodenticides, fungicides, herbicides, anti- sprouting	0.4
39269010	Other articles of plastics and articles of other materials of headings	0.4
10061000	Rice: Rice in the husk (paddy or rough)	0.3

Table A6: Top twenty commodities on which trade is diverted for Burundi (US\$ 000)

HS	HS Description	Trade Diversion
17019990	Cane or beet sugar and chemically pure sucrose, in solid form: Other :	547.7
10062000	Rice: Husked (brown) rice	478.4
19011000	Malt extract; food preparations of flour, groats, meal, starch or malt	170.3
73066100	Other tubes, pipes and hollow profiles (for example, open seam or	71.5
21069020	Food preparations not elsewhere specified or included: Other:	27.6
33021000	Mixtures of odoriferous substances and mixtures (including alcoholic	24.2
19019090	Malt extract; food preparations of flour, groats, meal, starch or malt	6.5
39201090	Other plates, sheets, film, foil and strip, of plastics, non-cellular and not	5.4
42021900	Trunks, suit-cases, vanity-cases, executive-cases, brief-cases, school	3.0
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or	2.1
11081200	Starches; inulin: Starches : Maize (corn) starch	1.2
73063000	Other tubes, pipes and hollow profiles (for example, open seam or	0.9
84314900	Parts suitable for use solely or principally with the machinery of	0.9
20097900	Fruit juices (including grape must) and vegetable juices, unfermented	0.5
20091900	Fruit juices (including grape must) and vegetable juices, unfermented	0.5
38089119	Insecticides, rodenticides, fungicides, herbicides, anti- sprouting	0.5
39269010	Other articles of plastics and articles of other materials of headings	0.4
20093900	Fruit juices (including grape must) and vegetable juices, unfermented	0.4
84433900	Printing machinery used for printing by means of plates, cylinders and	0.3
72111900	Flat-rolled products of iron or non-alloy steel, of a width of less than 600	0.3

Table A7: Top twenty commodities on which revenue is generated for Burundi (US\$ 000)

HS	HS Description	Revenue
63049110	Other furnishing articles, excluding those of heading 94.04: Other :	658.0
25232900	Portland cement, aluminous cement, slag cement, supersulphate cement	365.4
25010000	Salt (including table salt and denatured salt) and pure sodium chloride,	104.5
72085400	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or	66.7
72107000	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or	64.2
15119090	Palm oil and its fractions, whether or not refined, but not chemically	31.9
73069000	Other tubes, pipes and hollow profiles (for example, open seam or	27.1
72106100	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or	23.0
15119010	Palm oil and its fractions, whether or not refined, but not chemically	22.7
72104100	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or	17.2
63053300	Sacks and bags, of a kind used for the packing of goods: Of man-made	16.0
72089000	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or	15.2
39059100	Polymers of vinyl acetate or of other vinyl esters, in primary forms;	12.8
63062200	Tarpaulins, awnings and sunblinds; tents; sails for boats, sailboards or	12.0
72099000	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or	10.9
15180000	Animal or vegetable fats and oils and their fractions, boiled, oxidised,	10.6
94037000	Other furniture and parts thereof: Furniture of plastics	9.3
87163190	Trailers and semi-trailers; other vehicles, not mechanically propelled;	8.4
87164090	Trailers and semi-trailers; other vehicles, not mechanically propelled;	7.8
72139900	Bars and rods, hot-rolled, in irregularly wound coils, of iron or non-alloy	7.7

Table A8: Top twenty commodities on which welfare is experienced for Burundi (US\$ 000)

HS	HS Description	Welfare effect
17019990	Cane or beet sugar and chemically pure sucrose, in solid form: Other :	5464.3
10062000	Rice: Husked (brown) rice	536.9
19011000	Malt extract; food preparations of flour, groats, meal, starch or malt	82.0
73066100	Other tubes, pipes and hollow profiles (for example, open seam or	63.2
33021000	Mixtures of odoriferous substances and mixtures (including alcoholic	28.7
21069020	Food preparations not elsewhere specified or included: Other:	9.5
19019090	Malt extract; food preparations of flour, groats, meal, starch or malt	5.1
39201090	Other plates, sheets, film, foil and strip, of plastics, non-cellular and not	5.1
73063000	Other tubes, pipes and hollow profiles (for example, open seam or	4.4
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or	0.7
42021900	Trunks, suit-cases, vanity-cases, executive-cases, brief-cases, school	0.7
20097900	Fruit juices (including grape must) and vegetable juices, unfermented	0.2
20091900	Fruit juices (including grape must) and vegetable juices, unfermented	0.2
20093900	Fruit juices (including grape must) and vegetable juices, unfermented	0.2
10061000	Rice: Rice in the husk (paddy or rough)	0.2
11081200	Starches; inulin: Starches : Maize (corn) starch	0.1
84314900	Parts suitable for use solely or principally with the machinery of	0.1
38089119	Insecticides, rodenticides, fungicides, herbicides, anti- sprouting	0.0
39269010	Other articles of plastics and articles of other materials of headings	0.0
84433900	Printing machinery used for printing by means of plates, cylinders and	0.0

Table A9: Top twenty commodities on which trade is created for Rwanda (US\$ 000)

HS	HS Description	Trade Creation
17019990	Other sugar, not containing added flavouring or colouring matter	2282.6
73066100	Tubes/pipes of square or rectangular cross-section	673.6
10063000	Semi-milled or wholly milled rice, whether or not polished or glazed	476.4
48025600	Other paper weighing $\geq 40\text{g/m}^2$ but $\leq 435297\text{mm}$	400.1
19019090	Other food preparations of flour nes.. (excl malt extract)	151.0
73066900	Tubes/pipes of other non-circular cross-section	91.3
10064000	Broken rice	79.9
33021000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, with	65.6
73063000	Other tubes..., welded, of circular cross-section, of iron or non-alloy	53.2
73065000	Other tubes..., welded, of circular cross-section, of other alloy steel	52.2
72111900	Other flat/hotrolled iron/nonalloy steel,width $< 600\text{mm}$,	46.1
39052100	Vinyl acetate copolymers in aqueous dispersion	28.2
39201090	Other plates, sheets, film, foil and strip.... of polymers of ethylene	26.1
84314900	Other parts of machinery of 84.26, 84.29 and 84.30	23.1
19011000	Preparations for infant use, put up for retail sale	16.4
38089119	Other insecticides containing bromomethane (methyl bromide); containing	15.7
84439900	Other parts and accessories of printers, copying machines ,etc..	13.8
39051200	Poly(vinyl acetate) in aqueous dispersion	12.9
20093900	Other single fruit juices(excl grapefruit and orange) unfermented	5.0
73064000	Other tubes..., welded, of circular cross-section, of stainless steel	3.4

Table A10: Top twenty commodities on which trade is diverted for Rwanda (US\$ 000)

HS	HS Description	Trade Diversion
17019990	Other sugar, not containing added flavouring or colouring matter	2536.7
10063000	Semi-milled or wholly milled rice, whether or not polished or glazed	499.3
73066100	Tubes/pipes of square or rectangular cross-section	387.3
48025600	Other paper weighing $\geq 40\text{g/m}^2$ but $\leq 435297\text{mm}$	268.0
19019090	Other food preparations of flour nes.. (excl malt extract)	109.6
10064000	Broken rice	98.9
73066900	Tubes/pipes of other non-circular cross-section	49.7
33021000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, with	48.6
73063000	Other tubes..., welded, of circular cross-section, of iron or non-alloy	36.5
73065000	Other tubes..., welded, of circular cross-section, of other alloy steel	35.1
72111900	Other flat/hotrolled iron/nonalloy steel,width $< 600\text{mm}$,	26.1
84314900	Other parts of machinery of 84.26, 84.29 and 84.30	25.3
19011000	Preparations for infant use, put up for retail sale	19.2
39201090	Other plates, sheets, film, foil and strip.... of polymers of ethylene	18.4
84439900	Other parts and accessories of printers, copying machines ,etc..	16.4
39052100	Vinyl acetate copolymers in aqueous dispersion	16.1
38089119	Other insecticides containing bromomethane (methyl bromide); containing	11.8
73064000	Other tubes..., welded, of circular cross-section, of stainless steel	4.0
20093900	Other single fruit juices(excl grapefruit and orange) unfermented	3.5
40169300	Gaskets, washers and other seals	2.3

Table A11: Top twenty commodities on which revenue is generated for Rwanda (US\$ 000)

HS	HS Description	Revenue effect
25010000	Salt (including table salt and denatured salt) and pure sodium	245.8
25232900	Other portland cement	237.2
15119030	Palm olein, rbd	180.1
72106100	Rolled iron/steel,width > = 600mm,plated or coated with	127.8
73069000	Tubes/pipes of any section	52.4
72107000	Rolled iron/steel,width > = 600mm painted, vanished or coated	48.9
15119010	Palm olein, fractions	44.7
63062900	Tents of other textile materials	42.4
63053300	Sacks and bags,for packing goods,of polyethylene/polypropylene	38.1
72089000	Other (flat/hotrolled iron/steel,width > = 600mm nes inc.furthr wo	37.5
72142000	Iron/steel bars & rods,hotrolled,twisted/with deformtns from	37.4
72149900	Other iron/steel bars and rods, hot-rolled, hot-drawn or hot extruded	35.5
76151000	Table, kitchen or other household articles and parts thereof, and pot scourers	32.7
72104900	Flat-rolled iron/steel, width > = 600mm, otherwise plated	30.8
73082000	Towers and lattice masts	24.4
72085400	Flat/hot-rolled iron/steel,not in coils, width > = 600mm,	24.2
15171000	Margarine, excluding liquid margarine, put up for retail sale	22.1
73089099	Structures & parts of structures,i/s (ex prefab bldgs of headg no.9406) : other (20.1
72162200	Angles ...with t sections of iron/steel, hot-rolled...,	17.6
94037000	Furniture of plastics	10.9

Table A 12: Top twenty commodities on which welfare is experienced for Rwanda (US\$ 000)

HS	HS Description	Welfare effect
17019990	Other sugar, not containing added flavouring or colouring matter	2650.6
10063000	Semi-milled or wholly milled rice, whether or not polished or glazed	590.3
73066100	Tubes/pipes of square or rectangular cross-section	145.9
48025600	Other paper weighing > = 40g/m ² but < = 435297mm	128.6
10064000	Broken rice	108.1
19019090	Other food preparations of flour nes.. (excl malt extract)	35.8
73066900	Tubes/pipes of other non-circular cross-section	19.4
73063000	Other tubes..., welded, of circular cross-section, of iron or non-alloy	12.3
73065000	Other tubes..., welded, of circular cross-section, of other alloy steel	12.0
39201090	Other plates, sheets, film, foil and strip.... of polymers of ethylene	8.6
33021000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, with	6.3
19011000	Preparations for infant use, put up for retail sale	4.9
72111900	Other flat/hotrolled iron/nonalloy steel,width < 600mm,	4.0
84314900	Other parts of machinery of 84.26, 84.29 and 84.30	2.7
39052100	Vinyl acetate copolymers in aqueous dispersion	2.4
84439900	Other parts and accessories of printers, copying machines ,etc..	1.7
20093900	Other single fruit juices(excl grapefruit and orange) unfermented	1.6
38089119	Other insecticides containing bromomethane (methyl bromide); containing b	1.5
10062000	Husked or brown rice	1.2
73064000	Other tubes..., welded, of circular cross-section, of stainless steel	1.0

Table A13: Top twenty commodities on which trade is created for Kenya (US\$ 000)

HS	HS Description	Trade Creation
33021000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, with	8,459
17019990	Cane or beet sugar and chemically pure sucrose, in solid form (excl. cane and	4,936
73063000	Tubes, pipes and hollow profiles, welded, of circular cross-section, of iron or	378.3
39052100	Vinyl acetate copolymers, in aqueous dispersion	207.5
10064000	Broken rice	161.9
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or other	157.8
17023000	Glucose in solid form and glucose syrup, not containing added flavouring or	86.0
19019090	Malt extract; food preparations of flour, groats, meal, starch or malt extract, not	77.2
39051200	Polyvinyl acetate", in aqueous dispersion"	60.8
72111900	Flat-rolled products of iron or non-alloy steel, of a width < 600 mm, simply	51.8
21069020	Food preparations, n.e.s.: Preparations of a kind used in manufacturing of	51.6
10063000	Semi-milled or wholly milled rice, whether or not polished or glazed	49.5
84439900	Parts and accessories of printers, copying machines and facsimile machines,	39.1
19011000	Food preparations for infant use, put up for retail sale, of flour, groats, meal,	36.8
84314900	Parts of machinery of heading 8426, 8429 and 8430, n.e.s.	35.2
40169300	Gaskets, washers and other seals, of vulcanised rubber (excl. hard rubber and	33.7
39201090	Plates, sheets, film, foil and strip, of non-cellular polymers of ethylene, not	30.1
42021900	Trunks, suitcases, vanity cases, executive-cases, briefcases, school satchels and	20.3
11081200	Maize starch	18.7
48043100	Unbleached kraft paper and paperboard, uncoated, in rolls of a width > 36 cm	18.5

Table A14: Top twenty commodities on which trade is diverted for Kenya (US\$ 000)

HS	HS Description	Trade Diversion
17019990	Cane or beet sugar and chemically pure sucrose, in solid form (excl. cane and beet	3,738.9
33021000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, with a	2,101.5
10064000	Broken rice	196.0
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or other graphic	181.1
73063000	Tubes, pipes and hollow profiles, welded, of circular cross-section, of iron or non-	106.9
17023000	Glucose in solid form and glucose syrup, not containing added flavouring or	102.5
19019090	Malt extract; food preparations of flour, groats, meal, starch or malt extract, not	97.8
39052100	Vinyl acetate copolymers, in aqueous dispersion	92.8
10063000	Semi-milled or wholly milled rice, whether or not polished or glazed	63.2
21069020	Food preparations, n.e.s.: Preparations of a kind used in manufacturing of beverages	56.7
84439900	Parts and accessories of printers, copying machines and facsimile machines, n.e.s.	47.9
19011000	Food preparations for infant use, put up for retail sale, of flour, groats, meal, starch or	44.5
84314900	Parts of machinery of heading 8426, 8429 and 8430, n.e.s.	44.0
72111900	Flat-rolled products of iron or non-alloy steel, of a width < 600 mm, simply hot-	41.7
39051200	Polyvinyl acetate", in aqueous dispersion"	40.7
40169300	Gaskets, washers and other seals, of vulcanised rubber (excl. hard rubber and those of	40.3
39201090	Plates, sheets, film, foil and strip, of non-cellular polymers of ethylene, not	34.1
42021900	Trunks, suitcases, vanity cases, executive-cases, briefcases, school satchels and	25.6
11081200	Maize starch	23.4
48043100	Unbleached kraft paper and paperboard, uncoated, in rolls of a width > 36 cm or in	22.4

Table A15: Top twenty commodities on which revenue is generated for Kenya (US\$ 000)

HS	HS Description	Revenue effect
87033290	Motor cars and other motor vehicles principally designed for the transport of ...	515.4
87042190	Motor vehicles for the transport of goods, with compression-ignition internal	336.5
4079000	Other birds' eggs	280.9
63053300	Sacks and bags, for the packing of goods, of polyethylene or polypropylene strip or	253.2
87033390	Motor cars and other motor vehicles principally designed for the transport of ...	162.1
72104900	Flat-rolled products of iron or non-alloy steel, of a width of \geq 600 mm, hot-rolled or	130.6
72091700	Flat-rolled products of iron or non-alloy steel, of a width of \geq 600 mm, in coils,	98.4
72092700	Flat-rolled products of iron or non-alloy steel, of a width of \geq 600 mm, not in coils,	97.6
72162100	L sections of iron or non-alloy steel, not further worked than hot-rolled, hot-drawn or	78.2
87162090	Self-loading or self-unloading trailers and semi-trailers for agricultural purposes:	76.3
73231000	Iron or steel wool; pot scourers and scouring or polishing pads, gloves and the like, of	73.8
87041090	Dumpers for off-highway use: Other	71.2
72107000	Flat products of iron or non-alloy steel, of a width of \geq 600 mm, hot-rolled or cold-	60.9
63049110	Articles for interior furnishing, knitted or crocheted (excl. blankets and travelling	57.4
72123000	Flat-rolled products of iron or non-alloy steel, of a width of $<$ 600 mm, hot-rolled or	52.7
87083000	Brakes and servo-brakes and their parts, for tractors, motor vehicles for the transport	49.8
61091000	T-shirts, singlets and other vests of cotton, knitted or crocheted	44.8
87012090	Road tractors for semi-trailers: Other	43.6
72165000	Sections of iron or non-alloy steel, not further worked than hot-rolled, hot-drawn or	40.4
25232100	White portland cement, whether or not artificially coloured	36.4

Table A16: Top twenty commodities on which welfare is experienced for Kenya (US\$ 000)

HS	HS Description	Welfare effect
17019990	Cane or beet sugar and chemically pure sucrose, in solid form (excl. cane and beet	4,771
33021000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, with a	580.8
10064000	Broken rice	216.5
10063000	Semi-milled or wholly milled rice, whether or not polished or glazed	68.2
73063000	Tubes, pipes and hollow profiles, welded, of circular cross-section, of iron or non-	66.7
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or other graphic	65.2
19019090	Malt extract; food preparations of flour, groats, meal, starch or malt extract, not	24.1
39052100	Vinyl acetate copolymers, in aqueous dispersion	16.5
39201090	Plates, sheets, film, foil and strip, of non-cellular polymers of ethylene, not	12.3
19011000	Food preparations for infant use, put up for retail sale, of flour, groats, meal, starch or	11.2
17023000	Glucose in solid form and glucose syrup, not containing added flavouring or	10.4
48043100	Unbleached kraft paper and paperboard, uncoated, in rolls of a width $>$ 36 cm or in	7.9
42021900	Trunks, suitcases, vanity cases, executive-cases, briefcases, school satchels and	6.3
21069020	Food preparations, n.e.s.: Preparations of a kind used in manufacturing of beverages	6.0
39051200	Polyvinyl acetate", in aqueous dispersion"	5.6
72111900	Flat-rolled products of iron or non-alloy steel, of a width $<$ 600 mm, simply hot-	5.1
84439900	Parts and accessories of printers, copying machines and facsimile machines, n.e.s.	4.8
84314900	Parts of machinery of heading 8426, 8429 and 8430, n.e.s.	4.4
40169300	Gaskets, washers and other seals, of vulcanised rubber (excl. hard rubber and those of	4.1
48044100	Unbleached kraft paper and paperboard, uncoated, in rolls of a width $>$ 36 cm or in	3.1

Table A17: Top twenty commodities on which trade is created for Tanzania (US\$ 000)

HS	HS Description	Trade Creation
33021000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, with a	3,617.3
17019990	Cane or beet sugar and chemically pure sucrose, in solid form (excl. cane and beet	1,645.4
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or other graphic	1,228.2
84314900	Parts of machinery of heading 8426, 8429 and 8430, n.e.s.	749.6
19019090	Malt extract; food preparations of flour, groats, meal, starch or malt extract, not	354.8
39201090	Plates, sheets, film, foil and strip, of non-cellular polymers of ethylene, not	300.2
19011000	Food preparations for infant use, put up for retail sale, of flour, groats, meal, starch or	159.1
73063000	Tubes, pipes and hollow profiles, welded, of circular cross-section, of iron or non-	115.0
73066100	Tubes and pipes and hollow profiles, welded, of square or rectangular cross-section,	103.6
20097900	Apple juice, unfermented, Brix value > 20 at 20 °C, whether or not containing added	86.4
85238090	Media for the recording of sound or of other phenomena, whether or not recorded,	75.4
40169300	Gaskets, washers and other seals, of vulcanised rubber (excl. hard rubber and those of	49.9
84439900	Parts and accessories of printers, copying machines and facsimile machines, n.e.s.	28.6
20091900	Orange juice, unfermented, whether or not containing added sugar or other	27.1
57011000	Carpets and other textile floor coverings, of wool or fine animal hair, knotted,	20.9
21069020	Food preparations, n.e.s.: Preparations of a kind used in manufacturing of beverages	19.7
84433900	Machines which only perform one of the functions of printing, copying or facsimile	15.5
96121000	Typewriter or similar ribbons, inked or otherwise prepared for giving impressions,	9.2
42021900	Trunks, suitcases, vanity cases, executive-cases, briefcases, school satchels and	8.1
73064000	Tubes, pipes and hollow profiles, welded, of circular cross-section, of stainless steel (8.1

Table A18: Top twenty commodities on which trade is diverted for Tanzania (US\$ 000)

HS	HS Description	Trade Diversion
33021000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, with a	2,033.6
17019990	Cane or beet sugar and chemically pure sucrose, in solid form (excl. cane and beet	1,922.5
84314900	Parts of machinery of heading 8426, 8429 and 8430, n.e.s.	807.3
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or other graphic	492.7
19019090	Malt extract; food preparations of flour, groats, meal, starch or malt extract, not	301.9
39201090	Plates, sheets, film, foil and strip, of non-cellular polymers of ethylene, not	202.3
19011000	Food preparations for infant use, put up for retail sale, of flour, groats, meal, starch or	151.9
73063000	Tubes, pipes and hollow profiles, welded, of circular cross-section, of iron or non-	80.2
73066100	Tubes and pipes and hollow profiles, welded, of square or rectangular cross-section,	76.8
40169300	Gaskets, washers and other seals, of vulcanised rubber (excl. hard rubber and those of	57.2
84439900	Parts and accessories of printers, copying machines and facsimile machines, n.e.s.	33.5
85238090	Media for the recording of sound or of other phenomena, whether or not recorded,	20.9
21069020	Food preparations, n.e.s.: Preparations of a kind used in manufacturing of beverages	19.6
84433900	Machines which only perform one of the functions of printing, copying or facsimile	15.9
57011000	Carpets and other textile floor coverings, of wool or fine animal hair, knotted,	10.6
96121000	Typewriter or similar ribbons, inked or otherwise prepared for giving impressions,	10.5
73064000	Tubes, pipes and hollow profiles, welded, of circular cross-section, of stainless steel	10.1
42021900	Trunks, suitcases, vanity cases, executive-cases, briefcases, school satchels and	9.8
17023000	Glucose in solid form and glucose syrup, not containing added flavouring or	4.0
20091900	Orange juice, unfermented, whether or not containing added sugar or other	3.7

Table A19: Top twenty commodities on which revenue is generated for Tanzania (US\$ 000)

HS	HS Description	Revenue effect
72107000	Flat products of iron or non-alloy steel, of a width of ≥ 600 mm, hot-rolled or cold-	443.6
87012090	Road tractors for semi-trailers: Other	347.6
25010000	Salts, incl. table salt and denatured salt, and pure sodium chloride, whether or not in	288.9
87042190	Motor vehicles for the transport of goods, with compression-ignition internal	257.7
87163190	Tanker trailers and tanker semi-trailers, not designed for running on rails: Other	257.2
20220000	Frozen bovine cuts, with bone in (excl. carcasses and half-carcasses)	208.3
15171000	Margarine (excl. liquid)	179.9
87042390	Motor vehicles for the transport of goods, with compression-ignition internal	93.6
73182200	Washers of iron or steel (excl. spring washers and other lock washers)	88.8
20329000	Frozen meat of swine (excl. carcasses and half-carcasses, and hams, shoulders and cuts	83.2
76151000	Table, kitchen or other household articles and parts thereof, and pot scourers and	74.8
72165000	Sections of iron or non-alloy steel, not further worked than hot-rolled, hot-drawn or	71.8
94069090	Other: Prefabricated buildings.	70.2
72106100	Flat-rolled products of iron or non-alloy steel, of a width of ≥ 600 mm, hot-rolled or	69.9
76061100	Plates, sheets and strip, of non-alloy aluminium, of a thickness of > 0.2 mm, square	65.9
48051900	Fluting paper, uncoated, in rolls of a width > 36 cm or in square or rectangular sheets	55.6
73199000	Knitting needles, bodkins, crochet hooks, embroidery stilettes and similar articles, of	49.2
73089099	Structures & parts of structures, i/s (ex prefab bldgs of headg no. 9406):	46.7
21019000	Meat of swine, salted, in brine, dried or smoked (excl. hams, shoulders and cuts	41.0
62143000	Shawls, scarves, mufflers, mantillas, veils and similar articles of synthetic fibres	37.2

Table A20: Top twenty commodities on which welfare is experienced for Tanzania (US\$ 000)

HS	HS Description	Welfare effect
17019990	Cane or beet sugar and chemically pure sucrose, in solid form (excl. cane and beet	1,962.4
48025600	Uncoated paper and paperboard, of a kind used for writing, printing or other graphic	331.3
33021000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, with a	310.8
39201090	Plates, sheets, film, foil and strip, of non-cellular polymers of ethylene, not	96.7
19019090	Malt extract; food preparations of flour, groats, meal, starch or malt extract, not	90.3
84314900	Parts of machinery of heading 8426, 8429 and 8430, n.e.s.	85.6
19011000	Food preparations for infant use, put up for retail sale, of flour, groats, meal, starch or	42.8
73063000	Tubes, pipes and hollow profiles, welded, of circular cross-section, of iron or non-	26.8
73066100	Tubes and pipes and hollow profiles, welded, of square or rectangular cross-section,	24.8
20097900	Apple juice, unfermented, Brix value > 20 at 20°C , whether or not containing added	17.3
85238090	Media for the recording of sound or of other phenomena, whether or not recorded,	13.2
20091900	Orange juice, unfermented, whether or not containing added sugar or other	5.9
40169300	Gaskets, washers and other seals, of vulcanised rubber (excl. hard rubber and those of	5.9
57011000	Carpets and other textile floor coverings, of wool or fine animal hair, knotted,	4.3
10064000	Broken rice	4.1
96121000	Typewriter or similar ribbons, inked or otherwise prepared for giving impressions,	3.8
84439900	Parts and accessories of printers, copying machines and facsimile machines, n.e.s.	3.4
73064000	Tubes, pipes and hollow profiles, welded, of circular cross-section, of stainless steel (2.5
42021900	Trunks, suitcases, vanity cases, executive-cases, briefcases, school satchels and	2.5
21069020	Food preparations, n.e.s.: Preparations of a kind used in manufacturing of beverages	2.2

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