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The COMESA Customs Union: A Quantitative Assessment

by

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Abstract

The member countries of the Common Market for Eastern and Southern Africa (COMESA) have agreed to launch a customs union by December 2008. We provide a quantitative assessment of the likely impacts of the formation of a COMESA customs union, specifically of having free trade among COMESA countries while imposing a common external tariff (CET) against third countries. Along with the MIRAGE CGE model, we use an expanded version of the GTAP Data Base that provides more regional disaggregation in Africa. Alternative COMESA customs union scenarios are designed at the detailed HS6 level, combining information on current applied protection from the 2004 MAcMap data base and the COMESA Tariff Nomenclature. Adoption of the COMESA CET will result in significant liberalization for most COMESA countries but some countries will have to increase protection. We find that the customs union will result in expansion of trade and will be beneficial for some but will result in negative real income for most COMESA countries. The results are diverse due to the heterogeneity of the COMESA economies in terms of their economic structure and trade and protection patterns.

JEL Classification: F11, F13, F15

Keywords: COMESA, customs union, trade liberalization

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The COMESA Customs Union: A Quantitative Assessment

1. Introduction

In response to the slow progress of multilateral liberalization, the number of preferential trade arrangements (PTAs) of various types has sharply increased since the early 1990s as countries decide to pursue potential economic growth benefits from trade liberalization within regional trading agreements or bilateral free trade areas. Regional integration efforts in are not new in Africa, however several of the agreements have seen a revitalization since the early 1990s. As part of this renewed momentum, the Common Market for Eastern and Southern Africa (COMESA) has scheduled the launching of a COMESA customs union by December 2008.

The present-day COMESA began as the Preferential Trade Area for Eastern and Southern Africa (PTA) signed in 1982. A new treaty established COMESA in December 1994. Trade liberalization and economic integration are key aspects of the COMESA Treaty. Currently, 13 of the 19 member countries of COMESA are signatories to the free trade area (FTA) which was launched in 2000. The launching of a customs union was initially planned for December 2004. However, this has been delayed due to lack of agreement among member countries on details of the agreement, particularly on the levels of common external protection.

This study provides a quantitative assessment of the potential impacts of a COMESA customs union, particularly of having intra-COMESA trade liberalization and of imposing a Common External Tariff (CET) against third countries. It capitalizes on a version of the Global Trade Analysis Project (GTAP) data base which has considerable disaggregation of the East and Southern Africa region and on the MIRAGE model, a computable general equilibrium model designed for trade policy analysis. Our assessment of the impacts of a COMESA customs union involves tariff scenarios which are designed at the 6-digit level of the Harmonized System (HS6), combining information from the 2004 MAcMap-HS6 v.2 data base and the COMESA Tariff Nomenclature (CTN). The latter specifies products according to the four-band classification where scheduled CET rates are 0% for raw materials and capital goods, 10% for intermediate products and 25% for final and finished goods.

Although the focus of our analysis is on the potential impacts of the COMESA customs union on intra-regional trade, on trade with third countries, and on real income impacts on COMESA countries, we first discuss the implications of the COMESA CET on protection patterns in the region. COMESA is characterized by great heterogeneity in terms of economic characteristics, trade patterns, and protection patterns of the member countries. The common features though are the high degree of dependence on third countries for trade, low intra-regional trade, and generally higher average protection compared to the rest of the world. Despite the latter, there are a few COMESA countries that may have to raise their

average protection levels under the CET. The simulation results show how trade patterns will likely be affected by the CET rates and provide insights on the potential impacts on the sectors and countries in the region.

The second section of the paper provides an overview of the COMESA economies, including trade and protection patterns, and a brief discussion about regional integration the East and Southern Africa (ESA) region. Specific information on the COMESA customs union is provided in the third section. The description of the quantitative model, data, and scenarios considered in the study is provided in the fourth section. The results are discussed in the fifth section and conclusions are provided in the final section.

2. The COMESA Economies

This section of the paper first provides an overview of the economic characteristics of the COMESA countries, followed by separate sub-sections on trade patterns and protection patterns in COMESA.

2.1 Economic Characteristics

There is great heterogeneity amongst the 19 countries of COMESA in terms of land area, economic size and performance, and dependence on trade. Table 1 provides a summary of these economic characteristics. The countries in COMESA range in physical area from the very small island nations of Seychelles, Mauritius, and Comoros to the large countries of Sudan, Democratic Republic of Congo, and Libya. In terms of economic classification, the region includes 12 least developed countries, of which 6 are land-locked, and seven middle-income countries. Regional per capita GDP (PPP) varies widely, ranging from US$593 in Burundi to US$14329 in Seychelles in 2005 (see Table 1).

Economic performance in terms of average GDP growth from 2001 to 2005 shows negative growth rates for Seychelles and Zimbabwe over the period, while countries such as Ethiopia, Libya, Rwanda, Sudan, and Uganda grew by more than an average of 5 percent annually over the period. While some countries in the region, such as Djibouti, Mauritius, Seychelles, Swaziland, and Zimbabwe rely rather heavily on trade, trade constitutes a much smaller part of the economies of Burundi, Comoros, Rwanda, Uganda, and Zambia.

The relative importance of the sectors of the economy also varies widely between the COMESA countries. The shares of agriculture, industry and services to 2005 GDP in the COMESA countries are given in Figure 1. Agriculture is still the dominant sector, with agricultural value-added constituting more than 40 percent of GDP in countries like Comoros, D. R. Congo, Ethiopia and Rwanda. Conversely,

agriculture is less than 10 percent of GDP in Djibouti, Mauritius, and Seychelles where services, including tourism, make up around 70 percent of GDP. The services sector is also significant, comprising more than 50 percent of GDP in Eritrea, Kenya, Madagascar, and Egypt. Industry, which variously includes the mining sector, textiles and apparel, and the oil and petroleum sectors, still accounts for more than a quarter of GDP in D.R. Congo, Egypt, Mauritius, Seychelles, Sudan, Swaziland, Uganda, and Zambia.

Table 1. Economic Characteristics of COMESA Countries

Country	Land Area ('000 sq km)	GDP per capita, PPP (constant 2000 $), 2005	GDP growth rates 2001-05 average	Economic Classifi-cation	Trade, % of GDP, 2005
Burundi	25.68	622	2.20	L-LDC	44.80
Comoros	2.23	1773	2.79	SIDS, LDC	47.20
Congo, Dem. Rep.	2267.05	635	4.04	LDC	70.89
Djibouti	23.18	1937	2.98	LDC	90.04
Egypt, Arab Rep.	995.45	3858	3.79	MIC	63.18
Eritrea	101.00	986	3.67	LDC	64.51
Ethiopia	1000.00	938	5.17	L-LDC	55.45
Kenya	569.14	1103	3.60	MIC	62.28
Libya	1759.54	n.a.	5.01	MIC	n.a.
Madagascar	581.54	821	2.60	LDC	65.98
Malawi	94.08	593	2.73	L-LDC	79.81
Mauritius	2.03	11312	4.15	MIC	117.43
Rwanda	24.67	1073	5.40	L-LDC	41.54
Seychelles	0.46	14329	-2.30	MIC	230.70
Sudan	2376.00	1853	6.26	LDC	46.02
Swaziland	17.20	4292	2.20	MIC	183.72
Uganda	197.10	1293	5.61	L-LDC	40.29
Zambia	743.39	910	4.79	L-LDC	41.63
Zimbabwe	386.85	1813	-5.56	MIC	95.74

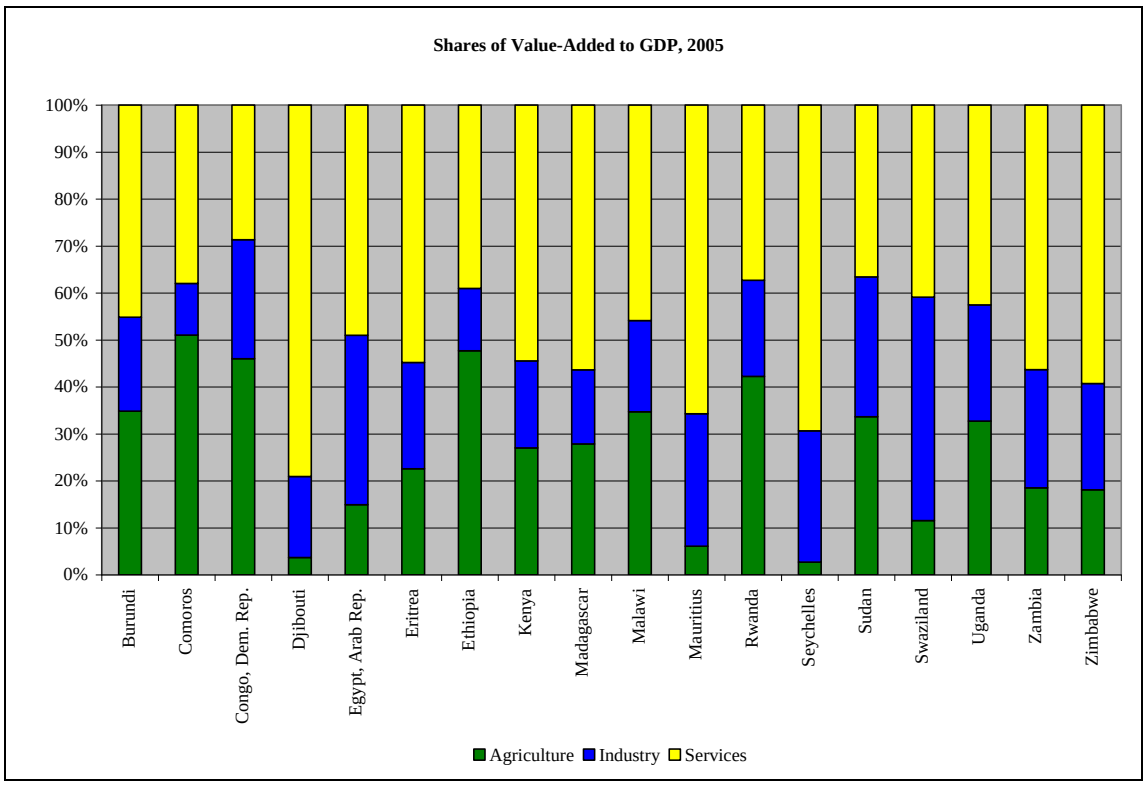
Source: World Development Indicators

2.2 COMESA Trade Patterns

Despite the differences in the economic characteristics of the COMESA economies, there are some strong similarities between them when it comes to trade and protection patterns. One similarity is that all COMESA member countries are mostly dependent on third countries for trade. Studies have shown that intra-regional trade in COMESA is rather weak and has grown very slowly over time (Geda and Kibret 2002). Figure 2 shows that intra-COMESA trade accounts for less than 10 percent of total

exports of most COMESA countries. The exception is Kenya and Uganda, with 13 and 15 percent of total exports, respectively, going to other COMESA countries.

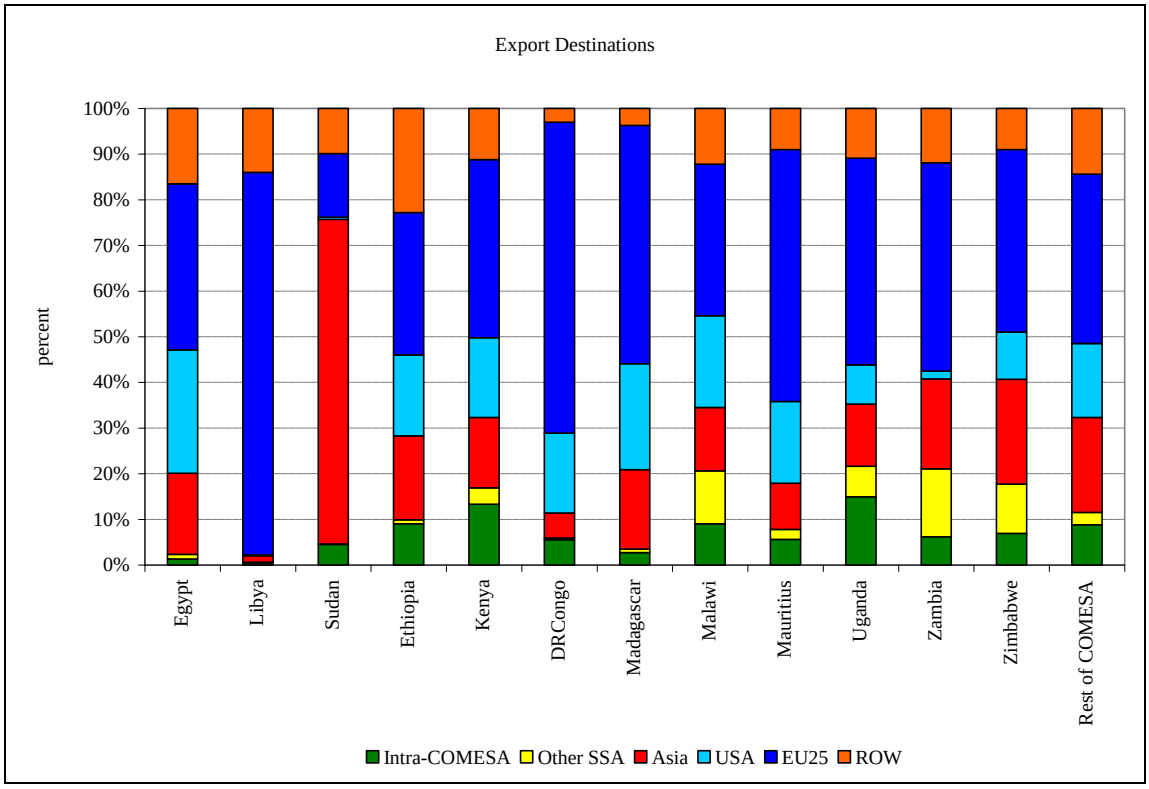
Figure 1. Shares of Value-Added to GDP in COMESA countries, 2005



Source: World Development Indicators

Figure 2 also shows that the European Union (EU25) is a major export destination for most COMESA member countries. The EU25 is most important for Libya with 84 percent of exports going to the EU25. Similarly, D.R. Congo, Madagascar, Mauritius, Uganda, Zambia and Zimbabwe, send more than 40 percent of their exports to the EU25. Another major export destination, to which Egypt, D. R. Congo, and Madagascar each sends more than 20 percent of their exports, is the United States. Asia also figures importantly as an export destination, with Sudan sending 70 percent of her exports to the region. Trade with other countries in Sub-Saharan Africa is also rather small for most of COMESA, but comprises 15 percent of trade for Zambia, 12 percent for Malawi and 10 percent for Zimbabwe, all of whom are also members of the Southern African Development Community (SADC).

Figure 2. Shares of COMESA Exports, by Destination Region, 2001

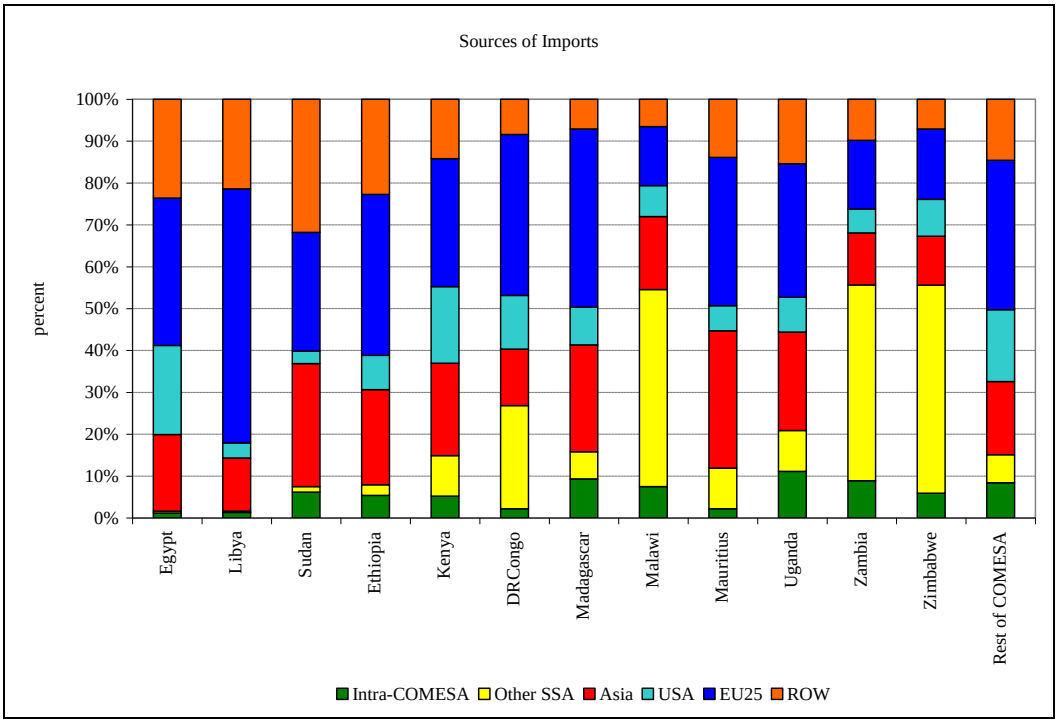


Source: GTAP Africa Data Base

On the import side, as shown in Figure 3, there is greater reliance on other countries in Sub-Saharan Africa, which includes South Africa. Zimbabwe, Malawi, and Zambia source more than 45 percent of their imports from Other SSA, followed by D.R. Congo at 25 percent. The EU25 is an important source of imports for Libya (60 percent), Madagascar (42 percent) and Egypt, Ethiopia, Kenya, D. R. Congo, Mauritius, Uganda, and the Rest of COMESA with each sourcing about a third of their imports from the EU25.

COMESA is a small player in world trade. Table 2 shows the shares of trade with COMESA to the total trade of each region. On the export side, exports to the aggregate COMESA region constitute less than one percent of total imports of such large economies as China, Japan, Rest of East Asia, Southeast Asia, the United States, Latin America, European Union, and Rest of Europe. Even for the neighboring countries of Mozambique, Tanzania, and South Africa, COMESA is also not very important as an export destination, accounting for at most 8 percent of the total exports of these countries. Similarly, COMESA accounts for a very small proportion as an import source of the large economies. COMESA registers its largest share in the import bill of the neighboring economy of Tanzania (5.3 percent).

Figure 3. Shares of COMESA Imports, by Source Region, 2001



Source: GTAP Africa Data Base

Table 2. Shares of COMESA Trade to Total Trade (in percent)

Regions	Exports to COMESA as share of total exports	Imports from COMESA as share of total imports
Oceania	1.10	0.20
China	0.50	0.40
Japan	0.30	0.40
Rest of East Asia	0.30	0.20
Southeast Asia	0.50	0.30
South Asia	1.80	1.70
USA	0.80	0.50
Rest of North America	0.20	0.10
Latin America	0.60	0.20
EU-25	0.60	0.70
Rest of Europe	0.60	0.40
Middle East North Africa	1.30	1.00
COMESA	4.00	3.40
Tanzania	6.50	5.30
Mozambique	7.90	2.50
South Africa	6.90	1.80
Rest of SACU	2.00	1.50
Rest of Sub-Saharan Africa	0.20	0.50

Source: GTAP Africa Data Base

Aside from dependence on third countries for both exports and imports, but at the same time accounting for very small shares in the partner countries' trade profile, another similarity regarding the trade patterns in COMESA is with the product composition of trade. The COMESA countries export mainly unprocessed agricultural and mineral products and import manufactured goods from their trading partners. The issue of non-complementarity of the trade structure in COMESA has often been cited as an obstacle to expansion of intra-regional trade (Geda and Kibret, 2002).

2.3 Protection Patterns

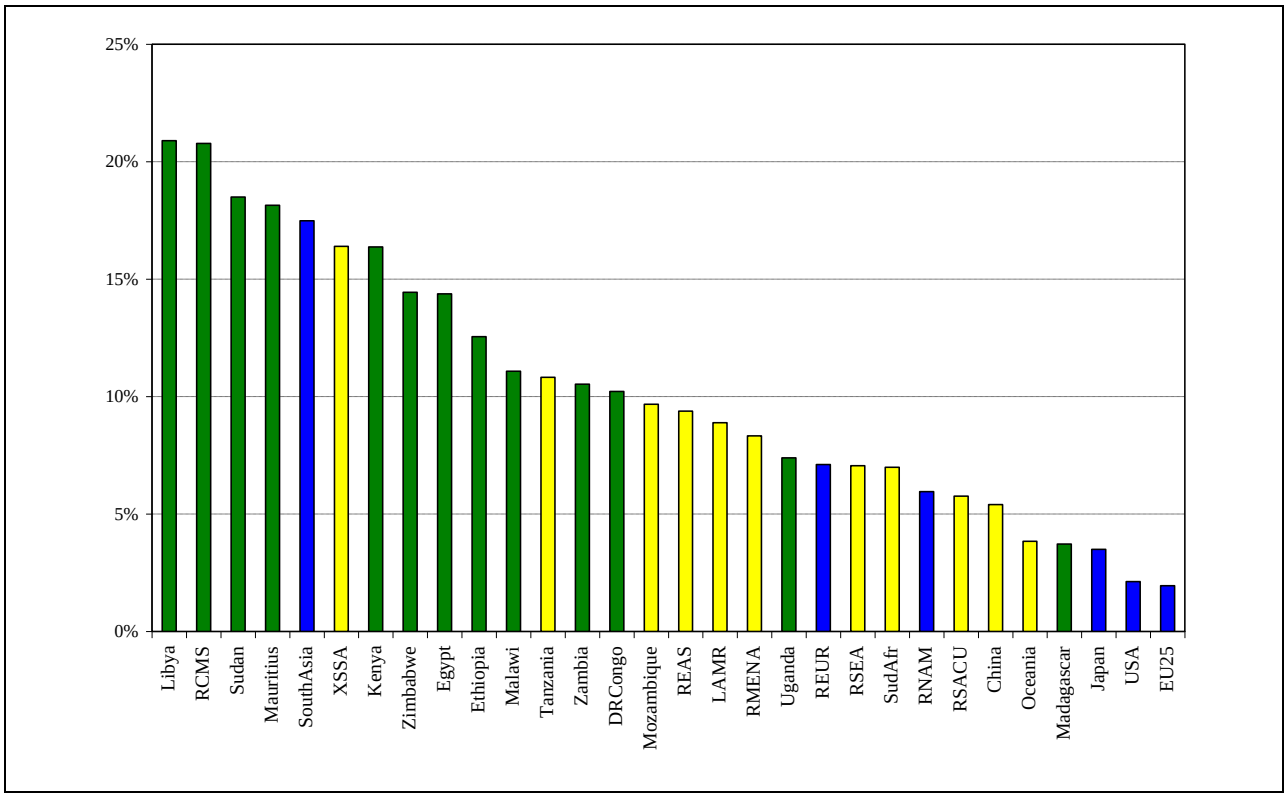
The patterns of protection reflect heterogeneity in trade restrictiveness between countries and also between sectors within a country in the COMESA region. Average tariffs[2] in the COMESA countries are relatively high, at 16 percent, compared to the 4 percent average tariff in the non-COMESA regions. As shown in figure 4, average tariffs for Libya and the Rest of COMESA (RCMS) are greater than 20 percent. Sudan and Mauritius follow closely at around 18 percent. South Asia is the non-COMESA region that has the highest tariffs in our aggregation of countries. At the lower end of the spectrum for COMESA are Uganda with average tariffs of 7.4 percent, Rest of SACU (includes Swaziland) at 5.8 percent, and Madagascar at 3.7 percent. The high income countries of Japan, United States and the European Union are all at the tail end of the graph with average tariffs of 3 percent and below.

The average level of protection across all sectors in an economy (Figure 4), hides the significant differences in protection levels afforded to different commodities within a country. For space reasons, we do not provide that level of detail as well. However, Figure 5 shows the differences in average protection between the aggregate food and agricultural sector ('Agri-food') and aggregate industry sector ('Non-Agr') in each country. In most economies, the agricultural sector enjoys greater protection than the industrial sector for reasons of food security and employment. Also, the manufacturing sector has seen reductions in protection through successive rounds of multilateral negotiations while agriculture has been brought under the discipline of the WTO only under the Uruguay Round. Agricultural protectionism still remains high and is still a contentious issue in the current Doha Round. This pattern of higher protection in agriculture is true for most countries in COMESA where the average tariff for Agri-food is 31 percent while that for non-agriculture is 14 percent. However, as shown in Figure 5, Libya and Rest of COMESA impose slightly higher average tariffs in non-agriculture. For Libya, this includes the 65 percent average tariffs in the oil and gas sectors. Egypt, Kenya, Sudan, Mauritius, Zimbabwe, Ethiopia, Malawi and D. R.

[2] The term 'tariffs' as used in this paper pertains to the *ad valorem* equivalent of *ad valorem* tariffs, specific tariffs and tariff rate quotas as derived from the MAcMap HS6 database. More information about the MAcMap database is available in Section IV and in Bouët *et al.* (2008).

Congo have average tariffs of 10 per cent or more in manufacturing. The high average tariff of 62 percent in agri-food in Egypt is due largely to the 810 percent average tariff on imports of beverages and tobacco.

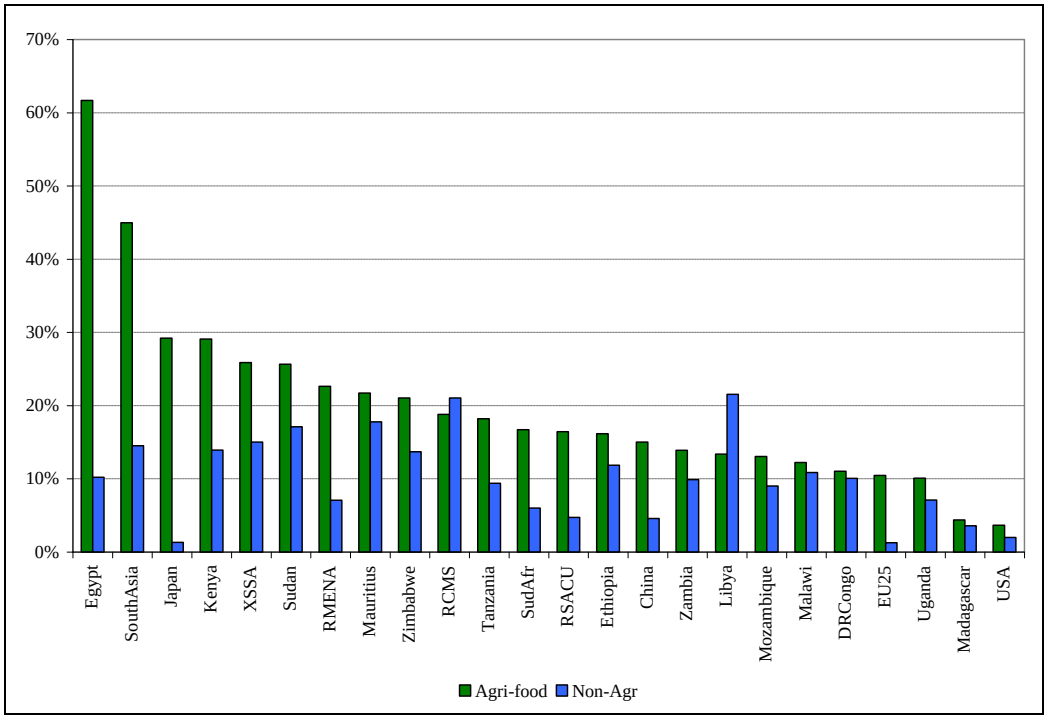
Figure 4. Average Tariffs by Region, 2008



Source: Authors' calculations from 2004 MAcMap database

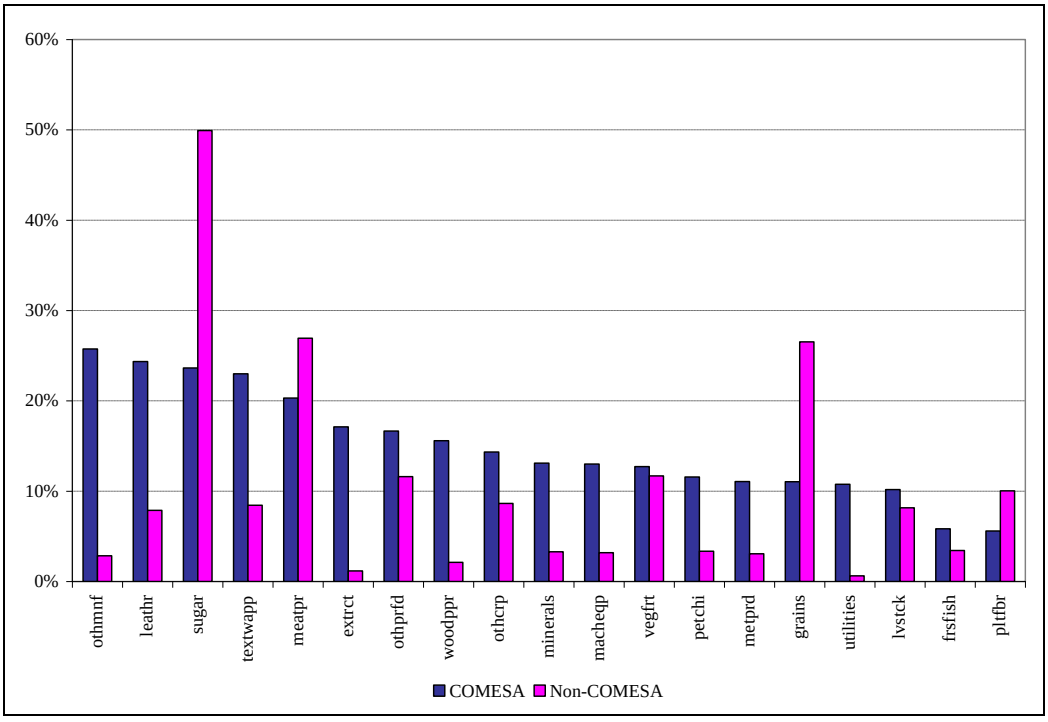
We turn now to sectoral tariff averages and a comparison between COMESA and non-COMESA countries. In showing the average tariffs by sector in Figure 6, the high average COMESA tariffs of 250 percent on beverages and tobacco were excluded so as not to distort the scale for average tariffs by sector. For non-COMESA countries, tariffs on beverages and tobacco are, on average only 14 percent. Non-COMESA countries register higher average tariffs on sugar at 50 percent (due to high tariffs in EU25 and Japan), meat products at 27 percent (due to high tariffs in Rest of Europe), grains at 26 percent (due to high tariffs in Japan and South Korea), and plant-based fibers at 10 percent (due to high tariffs in China). For all other products, COMESA countries have higher average tariffs than countries outside the region. Other manufactured products, leather products, sugar, textiles and wearing apparel and meat products have average tariffs of 20 percent and higher.

Figure 5. Average Tariffs, Agriculture vs. Non-Agriculture, Selected Regions, 2008



Source: Authors' calculations from 2004 MAcMap database

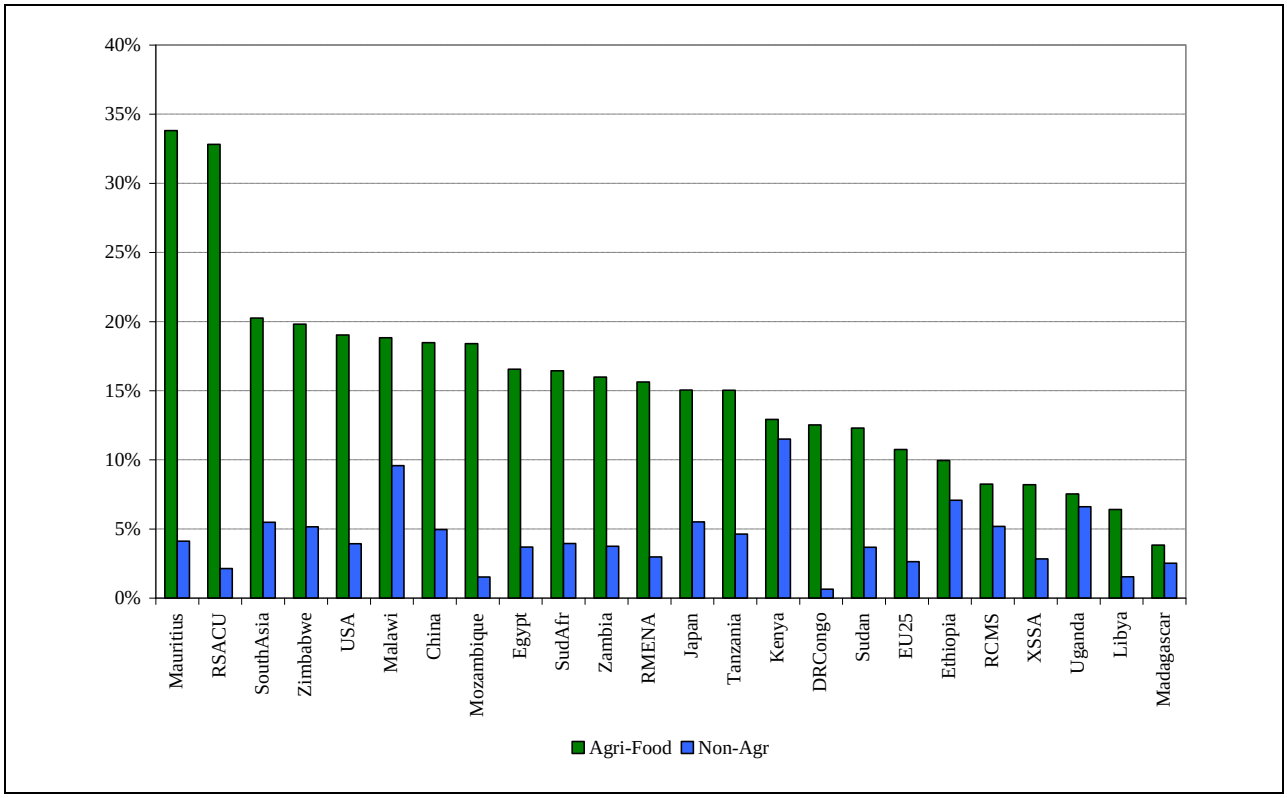
Figure 6. Average Tariffs by Sector, COMESA and Non-COMESA, 2008



Source: Authors' calculations from 2004 MAcMap database

As exporters to other countries, the average tariffs faced by COMESA countries depend on the shares of their trade with and the height of the tariffs in their export destinations. On average, the region faces 15% and 4% average tariffs on agricultural and non-agricultural exports, respectively. Figure 7 shows that the island country of Mauritius which trades mostly (95%) with non-COMESA countries, faces 34% average tariffs on its agricultural exports to the European Union, Japan and the Rest of East Asia. On the other hand, the similarly high average tariffs faced by the Rest of SACU on its agricultural exports are due not only to the high barriers in Japan and South Asia but also to high barriers to agriculture in the COMESA countries of Egypt and Libya. Zimbabwe, Malawi, Egypt and Zambia face greater than 15 percent average tariffs on their agricultural exports. Kenya and Malawi face the highest barriers to non-agricultural exports, with average tariffs of around 10 percent, due largely to exports to the Rest of Sub-Saharan Africa, a region that has relatively high tariffs. With a large proportion of its agricultural exports going to developed countries, Madagascar faces the lowest average agricultural barriers to its trade. Similarly, D. R. Congo faces the lowest barriers to its exports of non-agricultural products due largely to its exports of other manufactured products to the EU25 and USA.

Figure 7. Average Tariffs Faced by Exporters, Agriculture and Non-Agriculture, Selected Regions, 2008



Source: Authors' calculations from 2004 MAcMap database

Figures 4 – 7 have illustrated the heterogeneity in protection patterns among COMESA countries in terms of total average protection, in terms of the relative protection COMESA countries apply to agriculture and non-agriculture, and the protection that they face on their agricultural and non-agricultural exports. Comparing across sectors, COMESA imposes higher average tariffs on most but not all products, relative to non-COMESA countries. These differences in protection structure will have implications on the impact of the common external tariff under the COMESA customs union as some countries will have to lower their average level of protection while others might have to raise it to adopt the CET rates. Since revenues from trade are a significant source of government revenue for many COMESA countries, the protection patterns will have different implications on tariff revenue and real income.

3. Towards a COMESA Customs Union

We first provide a brief background on regional integration in the ESA region and follow this with background information on the scheduled formation of a COMESA customs union. This section also provides a brief review of some of the empirical literature related to trade integration in the ESA region.

3.1 Regional Integration in ESA

Aside from COMESA, there are three other major regional integration groups in the East and Southern Africa region. The South African Customs Union (SACU) is the oldest customs union in the world, dating back to its establishment in 1910 and subsequent reformulation in 1969 and again in 2002. South Africa is the dominant member of SACU, and together with Botswana, Lesotho, Namibia, and Swaziland imposes a CET against third countries and maintains a tariff revenue-sharing pool. The Eastern African Community (EAC) originally consisted of Kenya, Tanzania, and Uganda until Rwanda and Burundi formally joined in July 2007. The EAC Treaty was entered into force in July 2000 and the EAC customs union was established in January 2005. The Southern African Development Community (SADC) was originally established as the Southern African Development Coordination Conference (SADCC) in 1981, was transformed to SADC in 1992 and amended in 2001. The 14-member group plans to implement a free trade area (FTA) in 2008 and establish a customs union by 2010.

Simultaneous membership of countries in more than one regional group is prevalent in Africa. The members of the regional economic communities (RECs) in ESA are listed in Table 3. Overlapping membership is seen as a hindrance to regional integration since they increase the financial burden and stretch the administrative and technical capacities of member countries. The necessity of resolving overlapping membership issues has been brought to the fore more recently under the negotiations on Economic Partnership Agreements (EPA) between the European Union and RECs in Africa wherein a country should belong to only one REC to gain access to the European Development Fund.

While it is possible for a country to be a member of a customs union and a different FTA group at the same time, a country cannot be a member of more than one customs union since it cannot concurrently apply two different CET rates. With the launching of a COMESA Customs union in 2008, the membership of Swaziland in either SACU or COMESA should be resolved. The overlap between COMESA and EAC, wherein Tanzania is the only member of EAC that is not a member of COMESA, should also be addressed. The largest overlap is between COMESA and SADC with eight COMESA members also belonging to SADC. With SADC planning to launch an FTA in 2008 and a customs union in 2010, the idea of imposing a CET against all non-COMESA countries will not logistically be possible, especially when rules of origin issues are considered.

Table 3. Membership in Key Trade Arrangements in Eastern and Southern Africa

ESA Countries	COMESA	COMESA FTA	EAC	SACU	SADC
Angola					*
Botswana				*	*
Burundi	*	*	*		
Comoros	*	*			
DR Congo	*				*
Djibouti	*	*			
Egypt	*	*			
Eritrea	*				
Ethiopia	*				
Kenya	*	*	*		
Lesotho				*	*
Libya	*	*			
Madagascar	*	*			*
Malawi	*	*			*
Mauritius	*	*			*
Mozambique					*
Namibia				*	*
Rwanda	*	*	*		
Seychelles	*				*
South Africa				*	*
Sudan	*	*			
Swaziland	*			*	*
Tanzania			*		*
Uganda	*		*		
Zambia	*	*			*
Zimbabwe	*	*			*

3.2 COMESA Customs Union

At the Tenth Summit of COMESA held in Kigali, Rwanda in June 2005, the council of ministers of COMESA agreed to launch the customs union in December 2008. This is after COMESA missed an earlier deadline to establish the customs union in 2004 due to lack of agreement among members regarding the level of common external tariffs. The precursor of COMESA is the Preferential Trade Area for Eastern and Southern Africa (PTA) established in 1981. The treaty that transformed the PTA into COMESA was signed in 1993 and ratified in 1994.

A free trade area is the first step in achieving COMESA's goal of establishing a fully integrated, regional economic community. Nine member countries (Djibouti, Egypt, Kenya, Madagascar, Malawi, Mauritius, Sudan, Zambia, and Zimbabwe) entered into a COMESA Free Trade Area in 2000. Burundi and Rwanda joined in the FTA in 2004 and Libya and Comoros joined in 2006, bringing the total number of countries to 13. Six of the 19 member countries have not yet joined the FTA (D.R. Congo, Eritrea, Ethiopia, Seychelles, Swaziland, and Uganda).

Aside from the customs union, under which a Common External Tariff will be imposed in all COMESA countries for goods and services imported from non-COMESA countries, COMESA also plans to have free movement of capital and investment under a common investment area, gradual establishment of a payment union and eventually a common monetary union, and adoption of common visa arrangements leading to the free movement of persons.

Aside from the CET on imports from non-COMESA countries, the customs union also includes free circulation of goods and complete elimination of barriers to intra-regional trade, elimination of rules or origin, common products nomenclature, common valuation system, a regional trade policy and a customs union administrative structure.

COMESA has adopted a four-band CET structure with rates of zero percent for raw materials, zero percent for capital goods, ten per cent for intermediate goods, and 25 percent for final goods, with a provision for flexibility on policy space. Article 47 of the COMESA Treaty stipulates that "the member states agree to the gradual establishment of a Common External Tariff in respect of all goods imported into the member states from third countries within a period of ten years from the entry into force of this Treaty and in accordance with a schedule to be adopted by the Council." (COMESA, 2007).

One issue that has to be address before the launch of the customs union is that of membership. At the Twenty Third Meeting of the Council of Ministers of COMESA in May 2007, the council decided that non-FTA members should prepare individual road maps for accession to the FTA before December 2008. However, the report from the same meeting documents the council decision from 2005, regarding implementation of the customs union: "member states should work towards attaining a Customs Union by

December 2008 but, in the event that some member States are not ready to implement the Customs Union in December, those that are ready should proceed with implementation." (COMESA, 2007).

A more critical problem related to COMESA membership is that of the overlapping membership to different RECs in the region. The report from the May 2007 meeting indicates that the Secretariats of COMESA, EAC and SADC "have agreed to harmonise their CETs so as to resolve the question of overlapping membership and strengthen the development of the African Economic Community. The Secretariats also resolved to explore options of trading arrangements that would obtain among the three RECs in the future." (COMESA, 2007).

Lastly, one important aspect of the customs union that is pertinent to take into account in our quantitative assessment, is the issue of sensitive products. The COMESA council of ministers has agreed to allow member states to "protect sensitive products for some time with an inbuilt agenda for review aimed at reducing the list in the medium to long term. This should give member states the necessary policy space to determine tariffs and other policies for a select list of products." (COMESA, 2007).

Recognizing some of the issues relevant to the establishment of the COMESA customs union, we assess the potential impacts of the COMESA customs union under one central scenario (see section 4.4) but also explore the implications of different assumption about sensitive products, limited membership, and broader integration.

3.3 Previous Studies

Previous quantitative studies that have looked at the impacts of regional integration amongst countries within Eastern and Southern Africa can be classified into two general types. Econometric studies, employing gravity equations, have generally looked at the determinants of trade patterns in the region. A second category of studies employ partial or general equilibrium models to provide ex-ante assessment of the impacts a free trade area or a customs union.

Using trade data from 1980 to 1997 in a gravity model exercise, Geda and Kibret (2002) found that although most of the standard gravity model variables exhibit the theoretically expected signs, the proxy for regional integration arrangements failed to positively affect intra-regional trade in COMESA. They concluded that intra-COMESA trade is not significantly different from trade with non-member countries. Mayda and Steinberg (2006), using detailed import and tariff data at the HS6 level for over 1000 commodities, found that Uganda's imports from member countries between 1994 and 2003 has not been considerably increased by the preferential tariff liberalization under COMESA.

Roningen and de Rosa (2003), focusing on Zambia, used a partial equilibrium model to assess the economic impacts of various membership options under the EPA negotiations for Zambia. The study does not include analysis of the impacts of the COMESA customs union. The authors concluded that Zambia is

better off in an FTA with COMESA than that with SADC. Kaluwa et al. (2005) used a partial equilibrium model to assess the impact of alternative COMESA CET specifications on Malawi. The authors suggest that Malawi would benefit more from zero rather than 10 percent CET rates for intermediate goods since this is important in Malawi's trade with South Africa.

Karingi *et al.* (2002) analyzed the impacts of a COMESA FTA and of a COMESA customs union. Using the GTAP general equilibrium model and the GTAP 5 data base (which allows for separate treatment of only 5 COMESA countries), the authors found that there are positive gains for all regions under free trade and that outcomes under a customs union are even more preferable.

4. Methodology: Model and Data

Trade policy changes, such as the formation of a customs union, will result in changes in the relative prices of imported and domestic goods. Production factors will be reallocated from one sector to another in response to the price changes that arise from the removal of trade distortions. Changes in production, consumption, and trade patterns in one country will potentially have impacts on its trading partners. The various impacts of tariff changes on the sectors in the local economy and on other regions can best be captured by a computable general equilibrium (CGE) that takes inter-sectoral and inter-regional linkages into account. In this section, we provide a brief description of the CGE model and the underlying global data base and detailed protection data that are used in the study.

4.1 The MIRAGE Model

The MIRAGE (Modelling International Relationships in Applied General Equilibrium) model is a multi-sector, multi-region economic model that is ideal for trade policy analysis[3]. The model is a relatively standard, neo-classical model which assumes constant returns to scale and perfect competition in the agricultural sectors and allows for the assumption of imperfect competition in industry and services. The model has a sequential dynamic recursive set-up solved in a sequence of static equilibria linked by population and labor force growth, capital accumulation and productivity. The trade policy scenarios are compared to a baseline growth scenario.

The production function assumes perfect complementarity between value-added and intermediate consumption. On the value-added side, production makes use of five factors: land, skilled and unskilled labor, capital and natural resources. Skilled labor and capital are perfectly mobile across sectors, but land is specific and imperfectly mobile in primary agriculture and natural resources are specific to the extractive sectors. The structure of value-added takes into account the relative complementarity between

[3] The MIRAGE model, developed at the *Centre d'Etudes Prospectives et d'Informations Internationales* (CEPII) in Paris, is fully documented in Bchir *et al.* (2002), available at the CEPII website (www.cepii.fr).

skilled labor and capital. The two factors are thus bundled together with a lower elasticity if substitution, while a higher substitutability is assumed between this bundle and other factors.

Full employment is assumed for all factors except for land. The supply of land is endogenous and depends on the land supply elasticity of the country and on the real rate of remuneration. Skilled labor is perfectly mobile across sectors. Unskilled labor is imperfectly mobile between agricultural and non-agricultural sectors according to a CET function. Growth rates of labor supply are set exogenously. The supply of capital is modified each year by depreciation and investment. Installed capital is sector-specific but new capital is allocated amongst sectors according to an investment function that depends on the rates of return and the sector stock of capital.

The sectoral composition of the intermediate consumption aggregate stems from a CES function. For each sector of origin, the nesting is the same as for final consumption, meaning that the sector bundle has the same structure for final and intermediate consumption.

On the demand side, the model assumes that each region has a representative agent whose utility function is intra-temporal and allocates a fixed share of regional income to savings and uses the rest to purchase final consumption. Below the first-tier Cobb-Douglas function, the preferences for final consumption across sectors are represented by a LES-CES function. The model assumes that products from developed and developing countries belong to two different quality ranges and the substitutability between products from the same quality range is stronger than between those from different quality ranges. Additionally, within a given quality range, there is less substitutability between domestic products and foreign products than between foreign products from different origins.

The model's macroeconomic closure assumes endogenous real exchange rates while maintaining fixed trade balance, equal to the initial value for each region.

4.2 Global Data and Aggregation

The MIRAGE model relies on the Global Trade Analysis Project (GTAP) data base for multi-sectoral, multi-region data. The GTAP data base is built from a combination of regional input-output tables adjusted to match international datasets on macroeconomic aggregates, bilateral merchandise and services trade, protection, and energy[4]. The GTAP 6.2 database provides detailed economic information for 96 regions and 57 sectors, representing global economic activity for a particular reference year – 2001. The GTAP 6.2 database incorporates data from input-output tables for only seven COMESA countries (Egypt, Madagascar, Malawi, Mauritius, Uganda, Zambia, and Zimbabwe). For this study we rely on the

[4] The GTAP 6 Data Base, developed at the Center for Global Trade Analysis at Purdue University, is fully documented in Dimaranan (2006). More information is available at the GTAP website (www.gtap.org).

GTAP Africa Data Base, a special version of the GTAP 6.2 data base which provides greater disaggregation of countries in the African continent[5].

The geographic classification used in the study disaggregates the global economy into 30 regions which highlight the COMESA member countries and their major trading partners. As shown in Table 4, we separately identify 5 developed regions (North) and 25 developing regions (South). Twelve of the 19 COMESA countries are separately identified. Swaziland is included in the Rest of SACU region and the remaining COMESA countries are aggregated in a Rest of COMESA region.

Table 4. Regional Aggregation

	Regions	Description	North/ South		Regions	Description	North/ South
1	Oceania	Oceania	North	16	Ethiopia	Ethiopia[a]	South
2	China	China	South	17	Kenya	Kenya[a]	South
3	Japan	Japan	North	18	DRCongo	Congo Democratic Republic of[a]	South
4	REAS	Rest of East Asia	South	19	Madagascar	Madagascar	South
5	RSEA	Rest of Southeast Asia	South	20	Malawi	Malawi	South
6	SouthAsia	South Asia	South	21	Mauritius	Mauritius	South
7	USA	United States	North	22	Uganda	Uganda	South
8	RNAM	Rest of North America	North	23	Zambia	Zambia	South
9	LAMR	Latin America	South	24	Zimbabwe	Zimbabwe	South
10	EU25	European Union 25	North	25	RCMS	Rest of COMESA[b]	South
11	REUR	Rest of Europe	South	26	Tanzania	Tanzania	South
12	RMENA	Rest of Middle East	South	27	Mozambique	Mozambique	South
13	Egypt	Egypt	South	28	SudAfr	South Africa	South
14	Libya	Libyan Arab Jamahiriya[a]	South	29	RSACU	Rest of South African CU[c]	South
15	Sudan	Sudan[a]	South	30	XSSA	Rest of Sub-Saharan Africa	South

Notes: [a] newly-introduced region using available domestic data from an African country with similar economic characteristics; [b] includes Burundi, Comoros, Djibouti, Eritrea, Rwanda, Seychelles, and Somalia; [c] includes Botswana, Lesotho, Namibia, and Swaziland.

The sectoral classification given in Table 5 emphasizes the sectors that are important for COMESA trade. Out of 24 sectors, nine are food and agricultural sectors, ten are manufacturing sectors, and the rest are services sectors. The last column shows the agricultural/non-agricultural sector distinction

[5] In the preliminary version of the GTAP Africa Data Base used in this study, the regional input-output data for selected African countries not available in the standard GTAP 6 data base were generated from the available domestic databases of similar countries in the region. These input-output tables were adjusted to match external data on macroeconomic aggregates, trade, and protection for the specific new country. Use of this data base enables us to specify a clearer depiction of country membership in COMESA in our study.

which is the basis for the imperfect mobility of unskilled labor in the model. The broader sectoral classification is also used in the presentation of some aggregated results in the paper.

4.3 Common External Tariff and Sensitive Products

Although the GTAP data base includes tariff information from the MAcMap data base, the tariff data is available at the GTAP region and sector aggregation (and for the 2001 reference year). In this study, we rely instead on the detailed protection information from the latest version (v.2) of the MAcMap-HS6 database which provides a consistent, ad-valorem equivalent measure of ad-valorem tariffs, specific tariffs, and tariff rate quotas on a bilateralized basis, accounting for all preferential agreements for 2004 for 170 importing countries and 209 exporters, for more than 5,000 product lines (at the six-digit level of the 1996 Harmonized System) (Bouet *et al.* 2008).

Table 5. Sectoral Aggregation

Sectors		Description	Category
1	Grains	Cereal grains nec	Agriculture
2	VegFrt	Vegetables, fruit, nuts, and oilseeds	Agriculture
3	Sugar	Cane and beet, and sugar	Agriculture
4	PltFbr	Plant-based fibers	Agriculture
5	OthCrp	Crops nec	Agriculture
6	Lvstck	Livestock Animal products nec	Agriculture
7	MeatPr	Meat products	Agriculture
8	OthPrfd	Other processed food prods	Agriculture
9	BevTob	Beverages and tobacco products	Agriculture
10	FrsFish	Forestry and Fishery	Non-Agriculture
11	Extrct	Coal, Oil and Gas	Non-Agriculture
12	Minerals	Raw and Processed Minerals nec	Non-Agriculture
13	TextWapp	Textiles and Wearing Apparel	Non-Agriculture
14	Leathr	Leather products	Non-Agriculture
15	Woodppr	Wood and paper products	Non-Agriculture
16	PetChi	Petroleum products; Chemicals, Rubber, Plastics	Non-Agriculture
17	MetPrd	Ferrous metals	Non-Agriculture
18	MchEqp	Machinery and equipment nec	Non-Agriculture
19	OthMnf	Manufactures nec	Non-Agriculture
20	Utilities	Utilities	Non-Agriculture
21	Cnstrc	Construction	Non-Agriculture
22	TrdTrn	Trade and Transport	Non-Agriculture
23	PrivSvcs	Private and Financial Services	Non-Agriculture
24	Pubsvcs	Public Administration, Defense, Health, Education	Non-Agriculture

We use the MAcMap-HS6 v.2 database to define the tariff scenarios for the COMESA customs union. We start by mapping the official COMESA Tariff Nomenclature (CTN), specified at the HS6 2002 classification, with the HS6 1996 classification that is used in the 2004 MAcMap-HS6 v.2 database. The

agreed-upon CET rates for four categories of commodities - raw materials, capital goods, intermediate products and final goods – are provided by product line in the CTN. The design of the tariff scenarios, reflecting the changes in tariffs from initial levels to the CET rates, is implemented at the HS6 tariff line level for each country before the database is aggregated to the region and sector aggregation in the study.

Under most trade agreements, member countries specify a list of sensitive products that are excluded from the sectors that will be liberalized. Countries often argue for excluding key products from liberalization for reasons of national interests such as tariff revenue considerations, infant industries, economic importance of a sector and health, political and/or cultural importance of a sector. The framework of the COMESA customs union will also allow for exclusion of sensitive products. However, at the time of writing, no official list of sensitive products for each member country is available.

To determine the sensitive products for each COMESA country for our simulations, we adopt a procedure developed by Jean, Laborde and Martin (2005) that determines sensitive products to reflect the political economy of trade policy. We calculate an index that increases with the price change that will arise from the policy reform, as obtained directly from the difference between the initial and the final (CET) tariff rates, and which also increases with the level of imports of each commodity. This procedure has been adopted in several studies on the assessment of the potential impacts of the Doha Development Agenda (e.g. Bouët *et al.*, 2007).

We allow for two different assumptions regarding the number of sensitive products excluded from the CET rates – 2 percent or 5 percent. Using the 1996 HS6, these are equal to 102 and 254 tariff lines, respectively. This procedure captures wheat, corn, and sugar, which are widely-regarded as sensitive products in some COMESA countries such as Kenya. Table 6 provides a list of the most common tariff lines which are selected as sensitive products for 8 or more COMESA countries after applying our formulaic criteria and picking the top two percent of tariff lines.

What will be the implications of the CET on average tariffs under the customs union in the COMESA countries? In Figure 8, for each region, the initial average 2008 tariffs are shown as the first bar and the second and third bars show average tariffs when the CET rates are adopted but with two percent (CET-2%) and five percent (CET-5%), respectively, of the tariff lines designated as sensitive products. On average, the COMESA countries will have to lower their tariffs from 16 percent to 8 percent to conform to the CET rates. The average tariff rates in all COMESA regions will be less than 10 percent under CET-2% but will range from 8 to 15 percent, averaging 14 percent, when more product lines are exempted from the COMESA CET under CET-5%.

Comparing the initial average tariffs with CET-2% average tariffs, Libya will make the largest cuts in tariffs of 64 percent in going from average tariffs of 21 percent to 7.5 under the CET rates. The Rest of COMESA, Mauritius, Sudan, Zimbabwe, Kenya and Egypt will also make average tariff cuts of

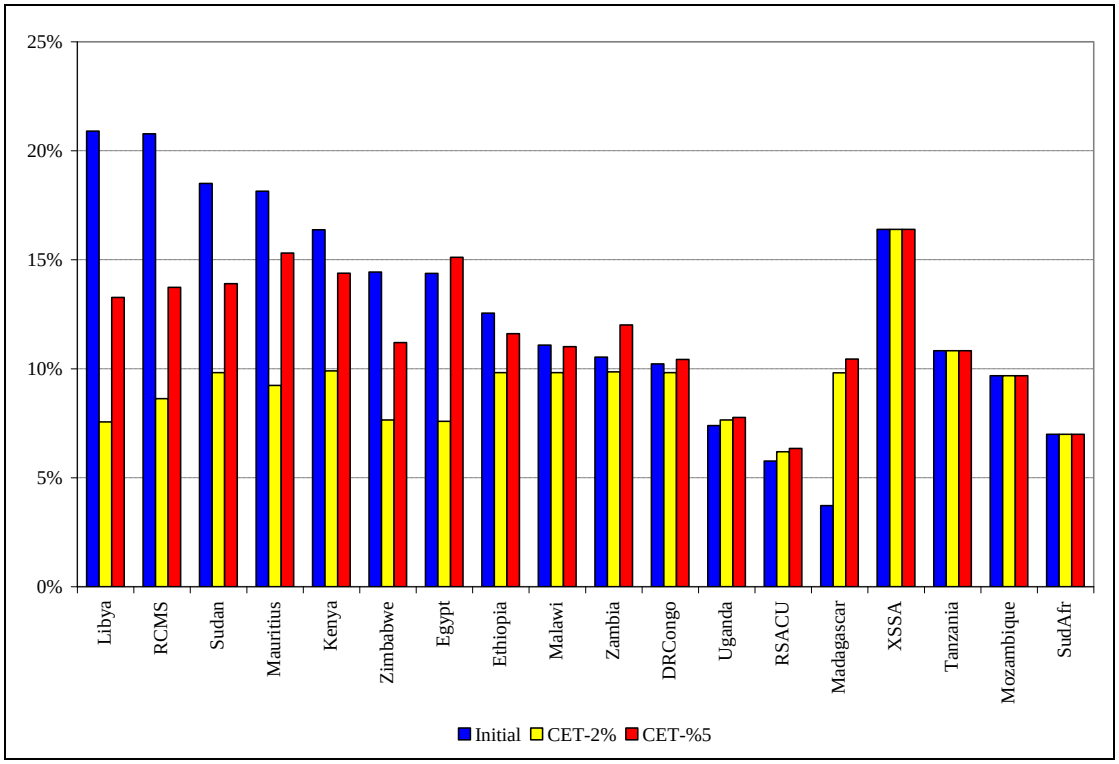
40 percent or more to move from the 2008 tariffs to CET-2% rates. Madagascar, on the other hand, with initial average tariffs of 3.7 percent, will have to increase its tariffs for various product lines, thus resulting in average tariffs of 9.8 percent under CET-2%. This is also true to a lesser extent for Uganda and Rest of SACU (includes Swaziland) where the average COMESA CET-2% tariffs rates are slightly higher than average 2008 tariff rates.

Table 6: HS6 lines identified as Sensitive Products by 8 or more COMESA countries

HS6	Number	Tariff Line Description
20714	9	Frozen Cuts And Edible offal of Fowls of The Species Gallus Domesticus
70310	9	onions and shallots, fresh or chilled
71310	13	Peas dried, shelled, whether or not skinned or split
71331	8	Beans of the species Vigna mungo Hepper or Vigna radiata
71333	12	Kidney beans & white pea beans
71339	10	Other Beans
71340	9	Lentils
71390	9	Leguminous vegetables dried, shelled, whether or not skinned or split,
80810	11	Apples, fresh
100110	8	Durum wheat
100190	13	Wheat nes and meslin
100590	14	Maize (corn) nes
100640	8	Rice, broken
110100	12	Wheat or meslin flour
110313	8	Maize (corn) groats and meal
120100	9	Soya beans
150790	10	Soya-bean oil and its fractions, refined but not chemically modified
151190	9	Palm oil and its fractions refined but not chemically modified
151620	9	Veg fats & oils & fractions hydrogenated
170111	8	Raw sugar, cane
170199	9	Refined sugar, in solid form, nes
190190	10	Malt, other
240110	8	Tobacco, unmanufactured, not stemmed or stripped
240120	10	Tobacco, unmanufactured, partly or wholly stemmed or stripped
250100	13	Salt (including table salt & denatured salt) pure sodium chloride & sea
250590	9	Natural sands nes, exc metal bearing sand of Chapter 26
251710	9	Pebbles, gravel, broken or crushed stone used for aggregates etc
252010	8	Gypsum; anhydrite
252329	10	Portland cement nes
271000	9	Petroleum oils & oils obtained from bituminous minerals, o/than crude
392321	9	Sacks and bags (including cones) of polymers of ethylene
401110	9	Pneumatic tire new of rubber f motor car including station wagons & racg
401120	9	Pneumatic tires new of rubber for buses or lorries
630900	10	Worn clothing and other worn articles
690890	14	Tiles, cubes and sim nes, glazed ceramics
870120	8	Road tractors for semi-trailers (truck tractors)
870322	8	Automobiles w reciprocating piston engine displacing > 1000 cc to 1500 cc
870423	15	Diesel powered trucks with a GVW exceeding twenty tonnes

When more product lines are excluded from the CET (CET-5%), the average tariffs in all COMESA regions will be higher than those under CET-2%. Libya, Rest of COMESA, Sudan, and Zimbabwe will still make sizeable cuts of greater than 20 percent from their average 2008 tariffs. Mauritius and Kenya will cut their tariffs by 15 and 12 percent, respectively. The exclusion of 5 percent of the tariff lines will result in raising average protection above their average 2008 rates for Egypt, Zambia, D.R. Congo (aside from Uganda, Madagascar and Swaziland). When most of the highly-protected products are excluded from the trade-liberalizing effect of the CET in these countries, the remaining products that will be adjusted to the CET rates include those for which protection rates are currently less than the CET and for which tariff rates will have to rise.

Figure 8. Average Tariffs in Africa, Initial and CET Rates with Sensitive Products Exemption



Source: Authors' calculations from 2004 MAcMap Database

4.4 Customs Union Scenarios

We consider four scenarios in our analysis of the potential impacts of a COMESA customs union. For all scenarios, we start with the GTAP Africa Data Base which is benchmarked to a 2001 reference year. A pre-experiment simulation is conducted to adjust the data base to take account of the key trade reforms that take place in the global economy from 2001 to 2008, namely:

- Inclusion of bilateral tariffs in 2004 from the MAcMap-HS6 v.2 data base. As mentioned in the previous section, the MApMap data base takes into account the preferential and free trade arrangements that exist in 2004. The bilateral tariff data reflect COMESA FTA membership through that date.
- Adjustment of the tariff data to reflect countries that joined the COMESA FTA after 2004. This includes Libya which joined the COMESA FTA in 2006.[6]
- We assume that COMESA member countries that are not yet FTA members will join the FTA in 2008. With this assumption, the tariffs of the D. R. Congo, Eritrea, Ethiopia, Seychelles, Swaziland, and Uganda, against imports from other COMESA members are eliminated. This allows us to focus our analysis solely on the impacts of the customs union across all scenarios.
- Elimination of quotas on textile and clothing exports to North America and Europe under the Agreement on Textiles in Clothing, in 2005.

We assume that the COMESA customs union will be launched as scheduled by the end of 2008 and tariff adjustments towards the common external tariff will happen over a period of ten years commencing in 2009 and ending in 2018. Tariffs will be reduced linearly over the period. We evaluate the results for each scenario for the year 2023, after a period of 15 years from the start of the customs union. The tariff data needed to reflect the liberalization and country membership assumptions in our four scenarios were all prepared at the highly disaggregated MAcMap-HS6 tariff line before they were aggregated to the sectoral and regional aggregation used in the study.

Each of the COMESA customs union scenarios are simulated against a baseline scenario where the global economy is assumed to grow without the trade reforms specified the scenario. Thus, we capture the impacts of alternative specifications of the COMESA customs union by 2023, taking into account the structural changes that have occurred with growth in the global economy. The COMESA customs union scenarios that we considered are the following:

CET-2% : COMESA forms a customs union and ALL COMESA member countries impose the CET rates against ALL non-COMESA members. TWO percent of each COMESA countries' tariff lines at the HS6 1996 classification are considered as sensitive products and are thus exempted from adopting the CET.

[6] Comoros also joined COMESA in 2006, however Comoros is not covered in the MAcMap HS6 data base. In our regional aggregation, Comoros is grouped with Burundi, Djibouti, Eritrea, Rwanda, Seychelles, and Somalia in the Rest of COMESA region.

CET-5% : COMESA forms a customs union and ALL COMESA member countries impose the CET rates against ALL non-COMESA members. This time FIVE percent of each COMESA countries' HS6 1996 tariff lines are considered as sensitive products and are exempted from adopting the CET[7].

CU-Less : Only a subset of the COMESA countries forms a customs union and imposes the CET rates (with 5% treated as sensitive products). As part of our pre-experiment simulation, we assumed that the D. R. Congo, Eritrea, Ethiopia, Seychelles, Swaziland, and Uganda join the COMESA FTA by the end of 2008. In this simulation, we assume that although they joined the COMESA FTA, these six countries will NOT adopt the COMESA CET rates.

CU-Plus : COMESA forms a customs union but also has an FTA in place with other countries in East and Southern Africa. We acknowledge the overlapping membership in the ESA region, where some members of COMESA are also members of other customs unions (SACU and EAC) or FTAs (SADC) and as such may not raise CET rates against these non-COMESA countries. To simplify the scenario, we assume that Tanzania (as the only member of the Eastern Africa Community that is not a COMESA member) will have the same CET rates as COMESA, thus effectively becoming a COMESA member country. On the other hand, Swaziland, does not adopt the COMESA CET rates since she already belongs to SACU. The COMESA member countries will impose CET rates against other non-COMESA members but has free trade with Tanzania, South Africa, Mozambique, and other members of SADC.

5. Results and Discussion

This section begins with the trade impacts of the COMESA custom union, first comparing the first two scenarios, CET-2% and CET-5%, to provide insights on the importance of assumptions on sensitive products. We then compare the trade impacts of the last three scenarios, CET-5%, CU-Less and CU-Plus, to assess the impacts of three alternative membership assumptions on the COMESA region, in all of which we assume that 5 percent of each COMESA countries' tariff lines are exempt from the CET. We follow the trade results with a comparison of the production, tariff revenue, and real income impacts under all four scenarios.

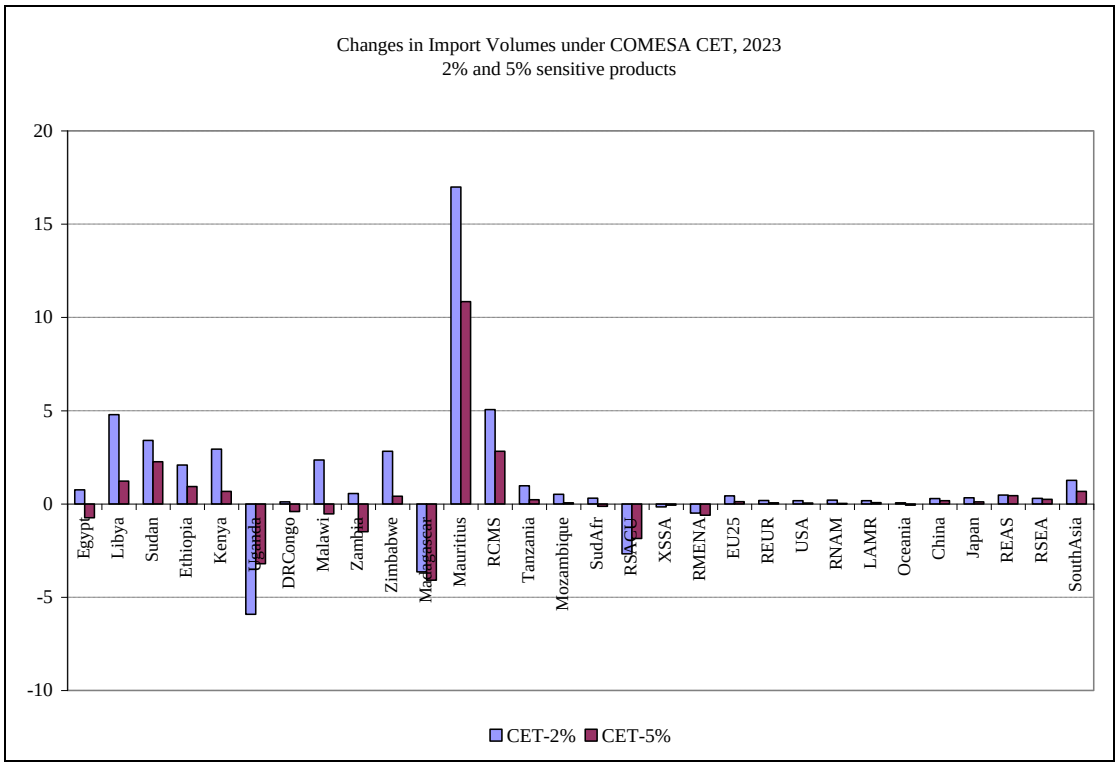
5.1 Trade Impacts and Sensitive Products

The impacts on regional import volume of the COMESA customs union are shown in Figure 9. The first bar for each region indicates the percentage changes in import volumes in 2023 resulting from the COMESA CET in the case when 2% of tariff lines are treated as sensitive products and the second bar

[7] The assumption of 5 percent of tariff lines is closer to the figures proposed for the number of sensitive products that is still being debated in the Doha negotiations at this time.

shows import volumes when 5% of the tariff lines are treated as sensitive products. In general, the COMESA countries that will reduce their tariffs to the CET rates will have an expansion of imports. The countries that have high initial average tariffs are the ones that will be able to expand their imports most. Mauritius will make large cut in tariffs and will expand its imports by more than 15 percent. Libya and the Rest of COMESA region will also expand their imports by five percent after making greater than 40 percent cuts in their average tariffs towards the CET-2% rates. Conversely, imports will decline for Uganda and Madagascar since these countries will have to raise their tariffs to the CET rates. The COMESA customs union will have rather small aggregate impacts on imports of other economies (less than 1 percent increase in import volume). In this simulation, imports by the Rest of SACU (includes Swaziland) will decline when the COMESA CET are also raised against the other SACU members.

Figure 9. Changes in Import Volumes by Region, COMESA customs union, 2023 (percent)



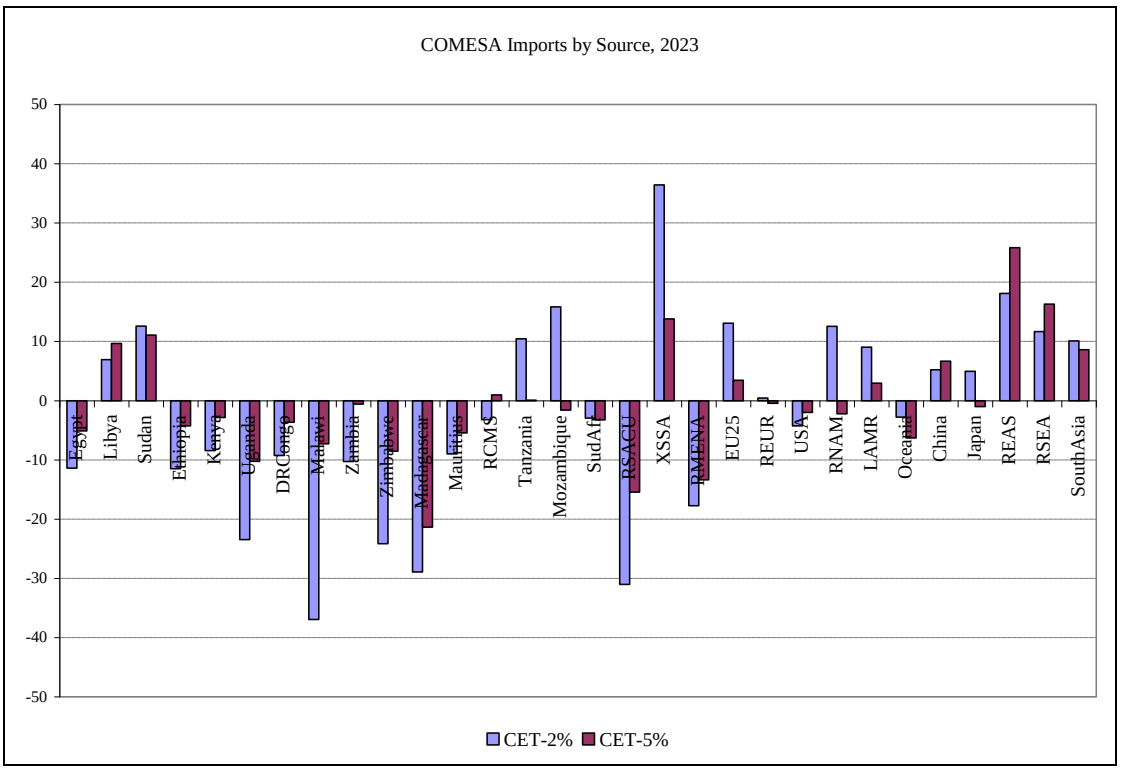
Source: Authors' calculations from MIRAGE model

When the number of sensitive products is increased from 2 percent to 5 percent of tariff lines, the general impact is a smaller increase in the import volumes as protection is reduced for a lesser number of products in each COMESA country. This is the case for Mauritius, at 10 percent instead of 15 percent increase in imports, as well as for Libya, Sudan and Kenya. This is also true for Uganda where the decline in imports resulting from raising tariffs to the CET rates would be less in the case where 5 percent of the

tariff lines are excluded. In the case of Egypt, D.R. Congo, Malawi, Zambia, and Madagascar, since exclusion of 5 percent of tariff lines results in increased average protection that is even higher than the initial average tariffs, the CET-5% will result in a decline in imports in these countries.

Which countries will benefit from increased imports of the COMESA region under the customs union? Figure 10 presents the percentage changes in imports of the aggregate COMESA region by source region of imports. From among the COMESA members, the COMESA region as an aggregate will expand its imports only from Libya and Sudan. This is mostly in the form of manufactured commodities. COMESA's aggregate imports from other individual COMESA country will decline while imports from non-COMESA countries will increase as COMESA lowers its tariffs against third countries under CET-2%. COMESA's imports from the Rest of Sub-Saharan Africa will expand by more than 35 percent, and by more than 10 percent from Tanzania, Mozambique, EU25, Rest of North America, Rest of East Asia, Southeast Asia, and South Asia. Under the COMESA CET, aside from the general reduction of tariffs against third countries, raw materials and capital goods in particular will be fully liberalized. Trade creation will occur as COMESA opens its borders to lower priced imports of raw materials and capital good from third countries.

Figure 10. Changes in COMESA Import Volumes by Source, COMESA, 2023 (percent)



Source: Authors' calculations from MIRAGE model

Under CET-5%, as COMESA reduces the number of products that are effectively liberalized or for which protection is reduced under the CET, imports from third countries will generally not expand as much as under CET-2%. However, for some countries such as China, Rest of East Asia, and Southeast Asia, COMESA imports under the CET-5% increase by more than in CET-2%. Since the COMESA countries each have a different set of sensitive products, a much more detailed look at the region and commodity detail of these imports is warranted. One explanation that can be offered for this is that the reduction in imports of some commodities due to greater restriction of product lines under CET-5% allows for an increase in imports of the completely liberalized products. The decline in imports from other COMESA countries under CET-5% will also not be as much as in CET-2%.

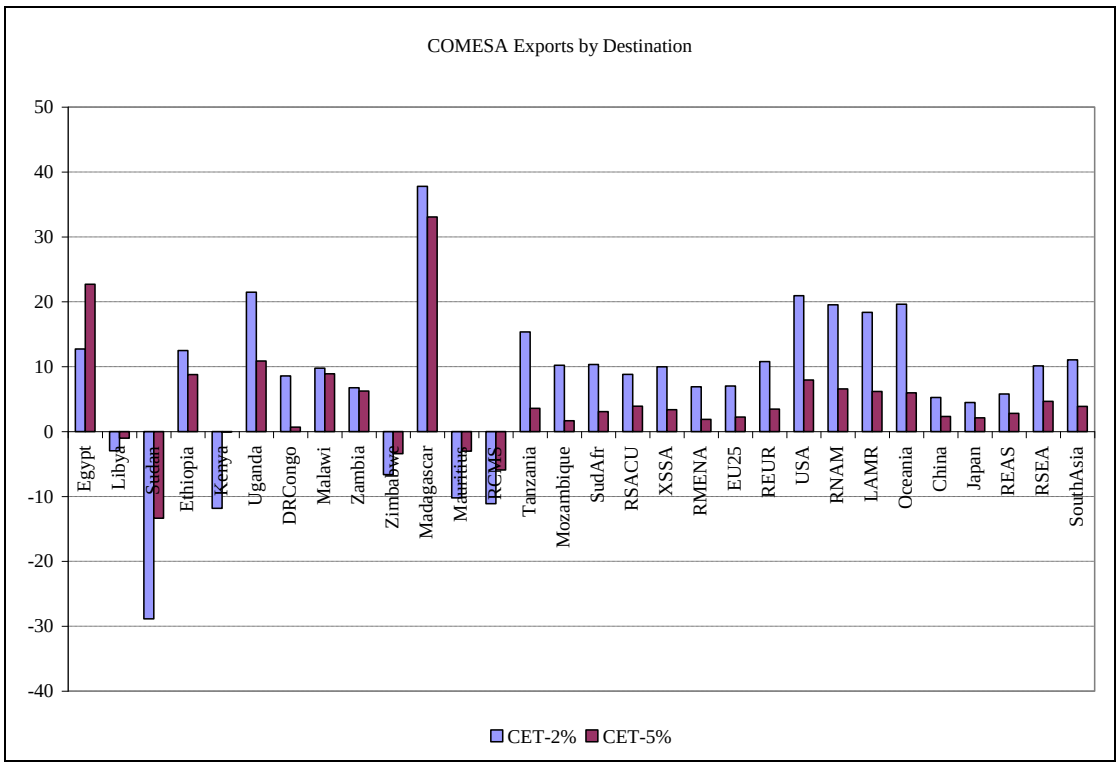
With the model's closure assumption of a fixed regional trade balance, the increases in imports in each region are met with increases in its exports. When a COMESA country fully liberalizes its markets to imports of raw materials and capital goods and also reduces protection of intermediate products and finished goods, it allows for cheaper imports not only of goods for final consumption but also of intermediate inputs used in production. Lower production costs leads to increased production, increased competitiveness, and increased exports. In which markets will COMESA's exports expand? Figure 11 presents the percentage changes in exports of the aggregate COMESA region by destination of exports.

As shown in Figure 11, COMESA products become attractive to all third country markets under the COMESA CET and COMESA's aggregate exports to these markets will expand. Focusing on the first set of bars showing results from CET-2%, the magnitude of export expansion to third countries will be highest at around 20 percent for exports to the United States and the Rest of North America, Latin America and Oceania. This is followed by a second set of countries for which COMESA exports will expand by around 10 percent (Tanzania, Mozambique, South Africa, Rest of Sub-Saharan Africa, Southeast Asia and South Asia). For individual COMESA countries as destinations of exports from the aggregate COMESA, we see a wide variation in impacts. The largest increases are in COMESA's exports to Madagascar at 45 percent, followed by exports to Uganda at 20 percent. Recall that Madagascar and Uganda are the two countries which will have to raise their tariffs, on average, to conform to the CET rates. Trade diversion occurs as these countries' imports from COMESA under the customs union expand while imports from third countries become hampered by their now higher tariffs under the CET. Conversely, exports of COMESA to the member countries which have high initial tariffs (e.g. Sudan, Mauritius, Rest of COMESA) will decline as these countries import more from third countries at their much lower average tariffs.

Under CET-5%, there is less expansion of COMESA exports to third countries as a smaller number of products are liberalized thus dampening the impact of generally cheaper imports on production and exports. A similar dampening of impacts will come about for exports to COMESA members

countries. The only exception is for exports to Egypt wherein COMESA exports will expand by more under CET-5% compared to CET-2%. The explanation for this again relates to the average initial versus CET-5% tariffs for Egypt. For most COMESA countries (except Mauritius and Uganda), the CET-2% will result in significant liberalization, and the CET-5% will still result in some liberalization (with average CET-% tariffs still less than the initial tariffs). For Egypt however, CET-5% tariffs result in increased average protection as products are excluded from the CET. With increased average protection against third countries, Egypt imports more from within COMESA.

Figure 11. Changes in COMESA Export Volumes, by Destination, COMESA, 2023 (percent)



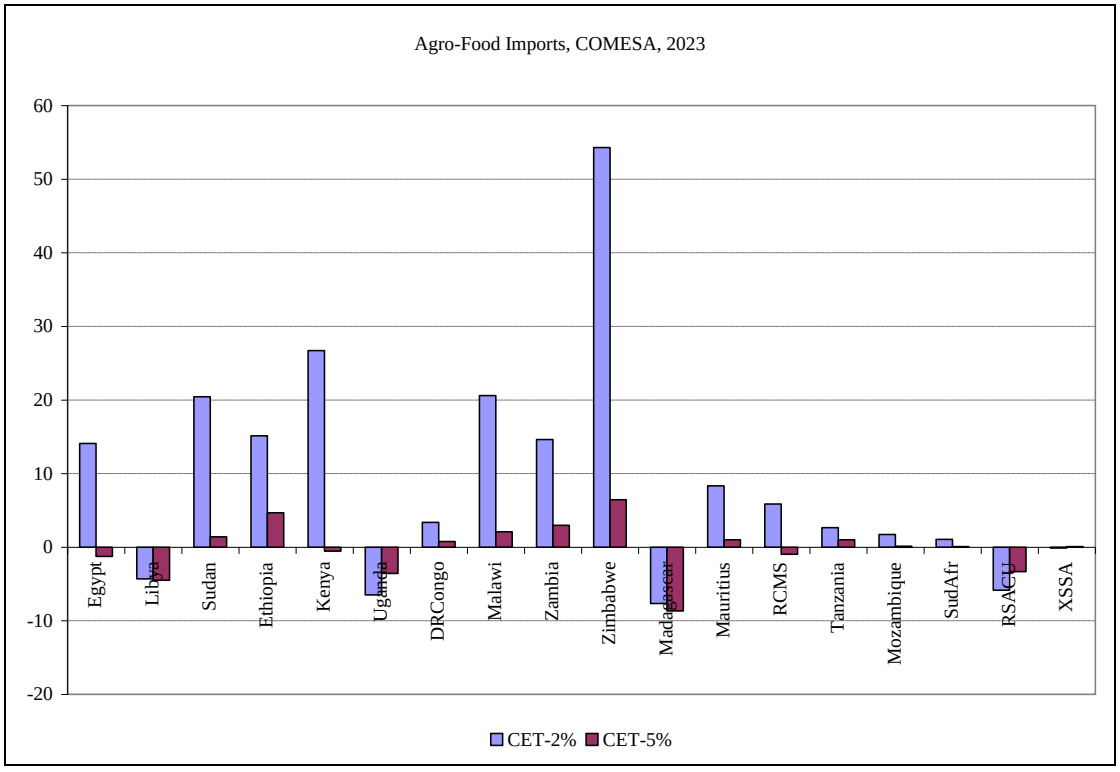
Source: Authors' calculations from MIRAGE model

The product group which enjoys the highest level of protection in Egypt is beverages and tobacco with an average tariff of greater than 800%. This category of products, which we classify as an Agri-Food commodity, covers a large number of tariff lines. As was shown in Figure 5, the average tariffs for Agri-Food commodities are significantly higher than that for Non-Agricultural commodities (except in Libya and the Rest of COMESA region). Depending on the extent of trade liberalization that will occur for Agri-Food commodities under the COMESA CET, taking into account as well the exclusion of sensitive products, a different story may come out when we focus only on Agri-Food and not on total COMESA

imports (as shown in Figure 9). The impact of the COMESA customs union on Agri-Food imports are shown in Figure 12.

Under CET-2%, except for Libya, the qualitative impact of increased COMESA imports under the customs union is also true when we focus only on Agri-Food imports. However, the magnitude of the rise in food and agricultural imports are much larger those reported in Figure 9 as greater liberalization occurs for food and agricultural products. Zimbabwe's imports of Agri-Food will shoot up by more than 50% compared to the modest 3% average increase in imports of all commodities. Kenya, Malawi, and Sudan also increase imports of Agri-Food by around 20%. Similar to the case for total imports, imports of Agri-Food by Uganda and Madagascar also decline since these countries have to raise their tariffs to comply with the CET rates. For Libya, unlike the case for total imports, Agri-Food imports decline under the customs union since its lower average tariffs on Agri-Food (compared to non-agricultural tariffs) will have to be raised to the CET rates.

Figure 12. Imports of Agro-Food Products, COMESA, 2023



Source: Authors' Calculations from MIRAGE model

The results for CET-5% are generally consistent with the observation from Figure 9 that the increased total imports under CET-2% are dampened by the lesser degree of liberalization under CET-

5%. However, the interesting outcome of increased average protection under CET-5% relative to the initial protection is now true for less number of countries – Egypt, Kenya and Rest of COMESA. This indicates that for these countries, Agri-Food imports decline under CET-5% as the most highly protected agricultural sectors are exempted from the CET treatment and the tariff rates of the remaining agricultural commodities rise up to the CET rates. This reversal happens less in the case of Agri-Food imports compared to total imports, and from that it can be deduced that the CET-5% will still result in significant liberalization in agricultural but tends to result in more cases of protection reversal in the manufacturing sectors.

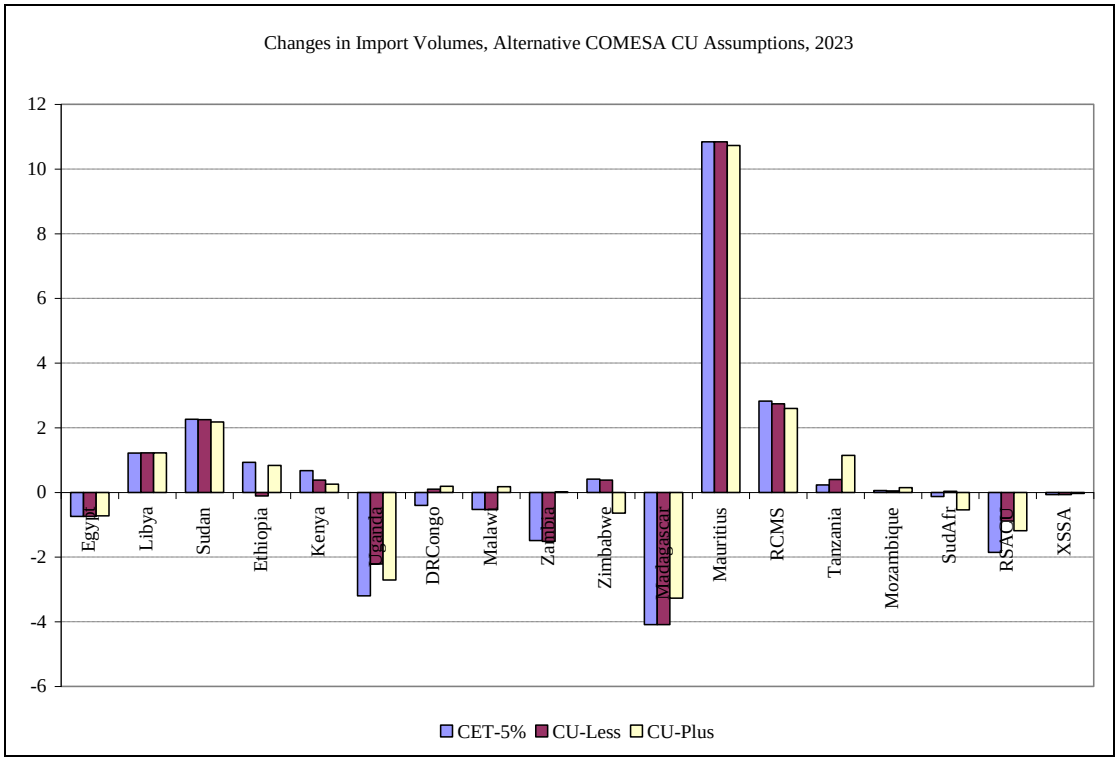
5.2 Trade Impacts and COMESA Membership

Our discussion of the impacts of alternative assumptions regarding COMESA customs union membership begins with the impacts on trade shown in Figure 13 where we compare the 19-member COMESA customs union (CET-5%), 13 members only (CU-Less) and the CU-Plus scenario where we assume that COMESA (plus Tanzania, minus Swaziland) imposes the COMESA CET against third countries except those in SADC for which they have an FTA.

Under the CU-Less scenario, where D.R. Congo, Eritrea, Ethiopia, Seychelles, Swaziland, and Uganda do not adopt the CET rates at all, it is important to emphasize first that the change in import volumes of most COMESA members will not be very different from the CET-5% results. For the countries where import changes will be slightly different, the difference between the CET-5% results are tiny with at most a one percentage point difference. The imports of Ethiopia and Rest of COMESA (includes Eritrea and Seychelles) fall relative to CET-5% since these countries will not liberalize against third countries. For Uganda, D.R. Congo, and the Rest of SACU (includes Swaziland), imports under CU-Less actually rise (fall less) relative to CET-5% since these countries will have to raise their average tariffs against third countries to adopt CET-5% rates.

Turning now to the CU-Plus scenario and comparing the results to CET-5%, the inclusion of Tanzania in the customs union and not raising the CET rates against the other SADC member countries has more significant impacts for many COMESA countries compared to CU-Less. The imports of Malawi, D.R. Congo, Tanzania, Uganda, Zambia, Madagascar, Mozambique, and Rest of SACU will rise (or fall less) compared to the CET-5% results as trade with other SADC countries are opened up. The largest difference will be for Zambia, where the CU-Plus scenario will not result in a 1.5% fall in imports.

Figure 13: Changes in Import Volumes, 2023



Source: Authors' calculations using MIRAGE model

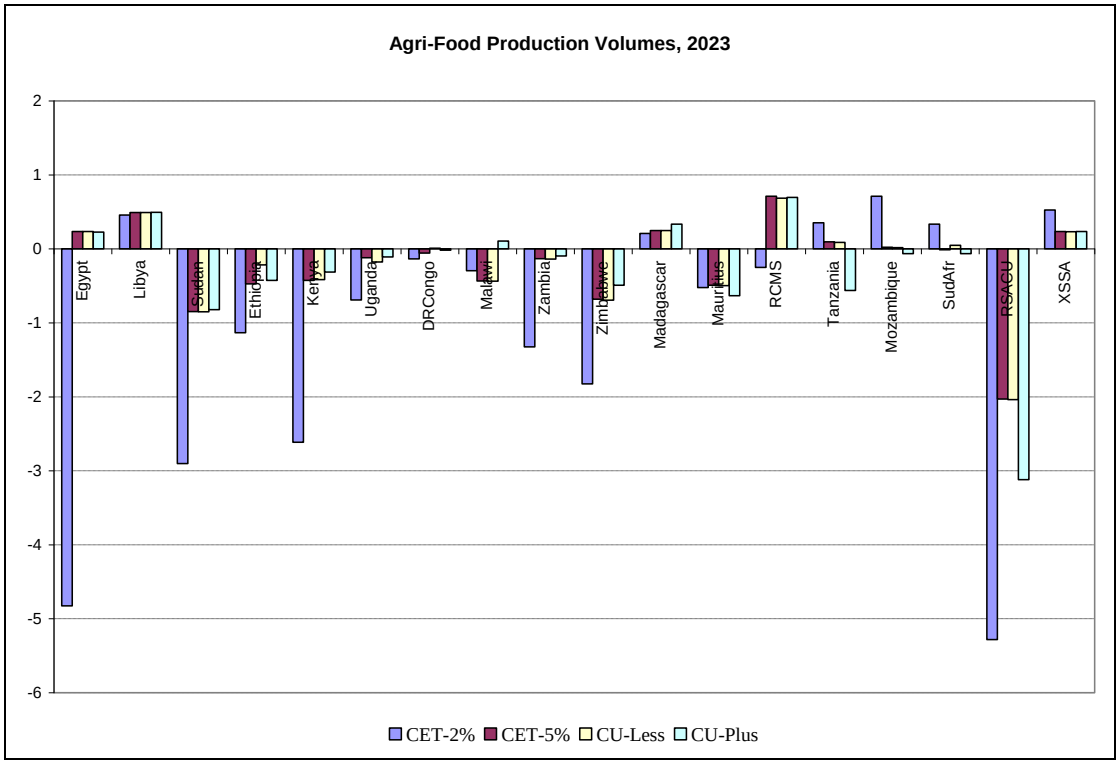
5.3 Production Impacts

The impacts of the COMESA customs union on production of food and agricultural products closely reflect the impacts on imports. As countries open up their markets for cheaper food imports, domestic production of food declines and the resources are freed up for production of industrial or services commodities. As shown in Figure 14, the CET-2% scenario results in sharper declines in food production in Egypt, Sudan, Kenya, Zambia and Zimbabwe and Rest of SACU as these countries liberalize under the CET with only 2% sensitive products. In Egypt, the sizeable 4.8 percent decline in Agri-Food production includes a 47 percent fall in production of beverages and tobacco, and a 12 and 3 percent decline in production of 'other crops' and 'meat products,' respectively. In Sudan, a decline in production of all agricultural products contribute to the 2.9 percent drop in aggregate agricultural production, in favor of increased production of leather products, machinery and equipment and the extractive sectors. Grains and sugar production fall by 16 and 17 percent, respectively, in Kenya contributing to the 2.6 percent decline in Agri-Food production.

The fall in production is much less (or even reversed) under CET-5% when less liberalization and thus less imports of food and agricultural products take place. For Egypt, the increase in average protection under CET-5% which results in reduced agricultural imports (Figure 12), results in increased

agricultural production. For Kenya, with most grains and sugar excluded from liberalization under CET-5%, the fall in agricultural production comes from plant-based fibers which is fully liberalized (from a low 3% to zero tariffs) under CET-5%. The inclusion of the other SADC countries in the CU-Plus scenario results in a decline in food production in Tanzania as it liberalizes under the COMESA CET. Similarly, there is a decline in food production in Mozambique, South Africa and Rest of SACU, relative to CET-5% as these countries increase their trade with COMESA.

Figure 14. Changes in Production Volumes of Agro-Food Products, 2023

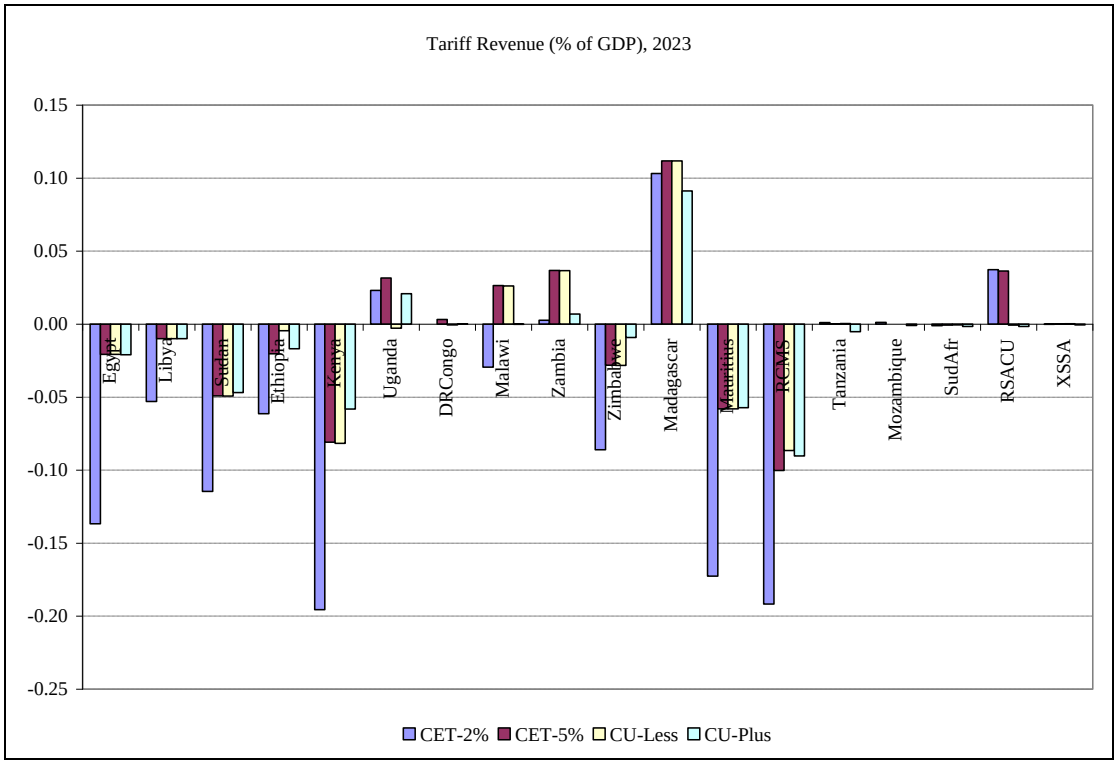


Source: Authors' calculations using MIRAGE model

5.4 Tariff Revenue

The tariff cuts that have to be done by most COMESA countries to adopt the CET rates will result in tariff revenue shortfalls for most countries. The tariff revenue impacts of the COMESA customs union, as percentage of regional GDP, are reported in Figure 15. Although adjusted by the size of the economy, the declines in tariff revenue are deepest under CET-2% for countries that will make relatively large tariff cuts such as Egypt, Sudan, Kenya, Mauritius, and Rest of COMESA. Conversely, the countries that will have to raise their tariffs to the CET rates, such as Uganda, Madagascar and Swaziland (in the Rest of SACU) will have an increase in tariff revenue under CET-2%.

Figure 15. Tariff Revenue Impacts of COMESA Customs Union, 2023



Source: Authors' calculations using MIRAGE model

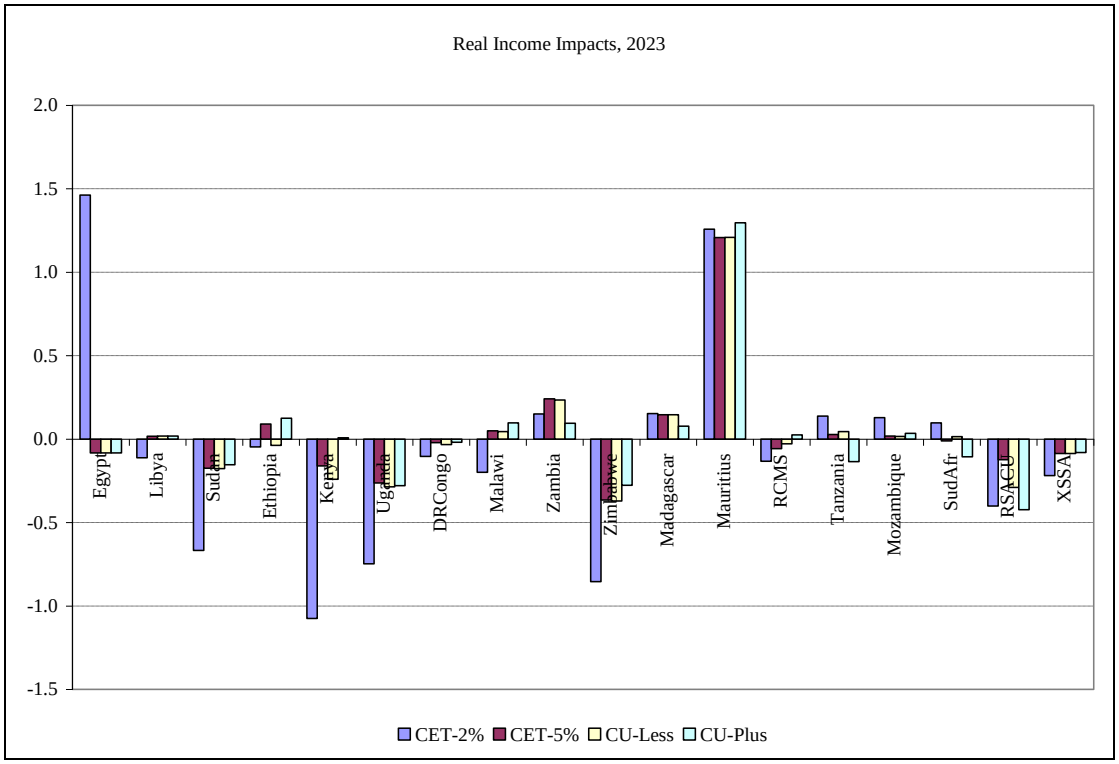
With tariffs not being cut for more products, the tariff revenue shortfalls are less pronounced under CET-5%. A reversal of the decline may actually come about, as in Malawi, as some of the tariffs are raised to meet the CET rates for some non-sensitive products. The tariff revenue impacts for CU-Less and CU-Plus are again very similar to the CET-5% case for most COMESA countries, except for the countries that are directly involved in these scenarios. As Figure 15 indicates, there are small tariff revenue implications for Ethiopia, Uganda, and D.R. Congo, and Swaziland (under Rest of SACU) under CU-Less since these countries do not adopt the CET rates. A smaller amount of tariff revenue gains relative to CET-5% is reflected under CU-Plus for Uganda, D.R. Congo, Malawi, Zambia, Madagascar, and Swaziland (under Rest of SACU) as SADC is removed from the set of external countries on which the CET rates are imposed.

5.5 Real Income Effects

What will the changes in protection with its impact on trade, production, resource allocation, relative prices, and tariff revenues, imply about real income in each region? As shown in Figure 16, the potential real income impacts of the COMESA customs union will vary by region, and by scenario within

each region. The customs union, under the CET-2% assumption, will result in real income gains for Egypt for almost 1.5 percent. This comes about largely from the positive allocative efficiency impacts of the reduction (or elimination) of some very high tariffs in Egypt, despite the exemption of 2 percent of tariff lines. The positive allocative efficiency impacts of trade liberalization also dominate resulting in a 1.2% increase in real income for Mauritius, as large cuts are made on high tariffs. Smaller, but positive real income effects come about for Zambia (mostly from allocative efficiency gains) and Madagascar (from the positive terms of trade impacts of significantly raising tariffs to the CET rates). Real income falls by about 1 percent in Kenya and by greater than 0.5% in Sudan, Uganda, and Zimbabwe. For these countries the negative terms of trade effect of tariff reduction dominate over the positive gains from resource allocation. Very small, negative real income impacts accrue to Libya, Ethiopia, D.R. Congo, and the Rest of COMESA under CET-2%.

Figure 16. Real Income Impacts of COMESA Customs Union, 2023



Source: Authors' calculations using MIRAGE model

When more products are exempted from the CET, the positive real income effects of the customs union are wiped out and even slightly reversed in Egypt as protection is raised for some products under the CET. For Mauritius, on the other hand, the exclusion of more products from the CET will still result

in positive, albeit, slightly smaller real income impacts from allocative efficiency gains. The negative real income effects brought about by terms of trade losses and foregone tariff revenue are more subdued under CET-5% for Sudan, Kenya, Uganda, and Zimbabwe.

Turning to the CU-Less scenario, our results show very small, negative real income impacts for Ethiopia, D. R. Congo and Uganda if these countries do not liberalized and adopt the CET rates under the customs union. The positive impacts of allocative efficiency is not realized in Ethiopia, compared to CET-5%, and the terms of trade losses are slightly larger in D. R. Congo and Uganda in this case where they do not raise the average tariffs, again compared to CET-5%. Not joining the COMESA CU may also not be beneficial for Eritrea and Seychelles (in Rest of COMESA) and Swaziland. Since these countries will not have to make drastic tariffs cuts in joining the customs union, there are very small differences in the real income impacts for these countries whether they join or not. The impacts on other COMESA countries are also negligible.

The results for the CU-Plus scenario generally indicate positive real income effects for COMESA relative to the CET-5% scenario. There are slightly higher positive (less negative) impacts for Sudan, Ethiopia, Kenya, Malawi, Zambia, Mauritius, Rest of COMESA, and Mozambique as slightly higher allocative efficiency gains come about from free trade with the SADC countries. Conversely, negative impacts on real income come about for Tanzania. By effectively including Tanzania as a member of the COMESA customs union, the CU-Plus scenario results in negative real income impacts for Tanzania due largely to the negative terms of trade effects of Tanzania's liberalization under the CET. For South Africa and the Rest of SACU, the real income impacts fall more than in the CET-5% scenario are terms of trade losses accrue as their preferences are eroded under a larger ESA free trade area.

6. Summary and Conclusions

This study provides a quantitative assessment of the likely impacts of the formation of a COMESA customs union using the MIRAGE CGE model and the preliminary GTAP Africa Data Base. We design alternative COMESA customs union scenarios at the detailed HS6 level, combining information on current applied protection from the 2004 MAcMap data base and the COMESA Tariff Nomenclature.

The patterns of trade and protection in COMESA have obvious implications on our results. Intra-regional trade in COMESA is rather low and the member countries rely heavily on third countries as sources of imports and as export destinations. With a few exceptions (Uganda, Madagascar), average protection in COMESA is relatively higher than in non-COMESA countries and agriculture is more heavily protected than industry, again with a few exceptions (Libya, Rest of COMESA). Average

protection in most sectors is relatively much higher in COMESA than in non-COMESA countries (except for sugar, meat products, grains and plant-based fibers).

Adoption of the CET rates of zero percent for raw materials and capital goods, 10 percent for intermediate products, and 25 percent for finished goods will require large tariff cuts for countries with high average protection such as Libya, Sudan, Mauritius, Egypt, and Rest of COMESA. Conversely, some countries with low average protection, such as Madagascar and Uganda, will have to raise their average tariffs to the CET rates.

We examine four scenarios to compare the impacts of the customs union under two alternative specifications of sensitive products, and the impacts of three alternative membership assumptions on the COMESA region. Under the first scenario (CET-2%) where we allow for 2 percent of tariff lines to be treated as sensitive products and excluded from the CET, the trade liberalization under the COMESA customs union will result in increased imports for most COMESA members countries (except for Uganda and Mauritius). The imports of agricultural and food commodities increase more than that for non-agriculture as agriculture will liberalize more. Trade creation takes place as the imports from third countries increase and intra-COMESA imports fall. With the model's fixed trade balance assumption, increased COMESA imports also result in higher COMESA exports. Impacts on production follow closely from the impacts of liberalization, with production of food and agricultural products falling as cheaper imports are allowed in the COMESA countries. Tariff revenues fall steeply for most COMESA countries. Although overall impacts on real income are mixed, it is negative for most COMESA countries due largely to the negative terms of trade impacts wiping out the positive allocative efficiency impacts of trade liberalization. However, for some countries, especially Egypt and Mauritius, where rather large tariff cuts will be made under the customs union, the beneficial allocative efficiency effects are large and dominant, thereby creating positive impacts on real income.

Our results indicate that *the specification of sensitive products critically influences the outcome of the COMESA customs union for each country*. In our rather stylized analysis, we identified sensitive products at the tariff line level, taking into account the tariff cuts that the CET will entail, as well the level of imports of the product. While treating the top 2 percent of the products in each region as sensitive products results in a significant degree of liberalization of the heavily protected sectors in these countries, the assumption of 5 percent as sensitive products (CET-5%) sharply reduces the degree of liberalization for most countries, and even results in increased average protection for some countries (Egypt, D.R. Congo, Zambia, Swaziland, aside from Uganda and Madagascar).

With 5 percent of tariff lines treated as sensitive products, the increase in imports predicted under CET-2% is dampened and even reversed for the countries that raise their average tariffs when more products are exempted from the CET. For most countries in COMESA, the reduced liberalization under

CET-5% results in lower allocative efficiency gains compared to CET-2%, but also reduces terms of trade losses. *CET-5% results in smaller real income impacts for most but not all countries in COMESA.* Following the reversals in average protection for some countries, some reversals in the real income impacts occur when the two scenarios are compared. Egypt's large real income gains under CET-2% become real income losses in CET-5%. However, for Mauritius, exemption of more products from the CET still results in significant liberalization which translates to relatively large positive real income effects.

The impacts of not joining the customs union, under our assumption that all COMESA countries are already part of the FTA by 2008, will slightly reduce imports of Ethiopia and slightly increase (or lessen the fall) in imports of D.R. Congo and Uganda as these countries avoid raising their average tariffs under the CET. Our results show that the real income effects of taking part in the customs union, although small and negative, are not very different from the real income effects of their joining the customs. *Since these countries will not have to liberalize as much as the other COMESA countries when they join the customs union, the impacts of adopting the CET are rather small* (under CET with 5 percent sensitive products assumption).

Finally, the CU-Plus scenario results in increased trade for a number of COMESA countries as the CET is not imposed on the SADC countries. Tanzania, counted as adopting the COMESA CET, will liberalize and increase its imports. The greater degree of liberalization afforded by excluding SADC from the set of third countries covered by the CET generally results in higher real income gains for the COMESA countries. *A larger regional grouping, here modeled as a COMESA customs union with free trade with the SADC countries, will generally be more beneficial to COMESA countries.*

Overall, the COMESA customs union will hurt some members in terms of loss revenue and large terms of trade losses but it will also be beneficial for some member countries as larger positive allocative efficiency effects dominate. The results are diverse due to the heterogeneity of the COMESA economies in terms of their economic structure and trade and protection patterns. It is important to stress that the results of our study are largely influenced by our scenario design, the underlying data and model, and our assumptions regarding the COMESA customs union. Our simulation results are useful for providing indications about the potential impacts of the customs union for one COMESA countries compared to another but not the detailed implications within each COMESA. Our quantitative results are based on the tariff changes that will occur with the adoption of the CET and do not take into account other non-readily quantifiable aspects of the customs union which could potentially provide greater benefits to the countries involved. These include the potentially beneficial impacts of harmonization of policies and elimination of non-tariff barriers within the region. We also do not consider the potential impacts of other trade-related

initiatives that concern the region such as the Economic Partnership Agreement with the European Union and the Doha Development Agenda.

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