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September 2009

A Quantitative Assessment of the COMESA Customs Union

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**Regional Strategic Analysis and Knowledge
Support System
(ReSAKSS)**

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ABBREVIATIONS AND ACRONYMS

BACI	Base pour l'Analyse du Commerce International (International Trade Data base at the Product Level)
CET	Common External Tariff
COMESA	Common Market for Eastern and Southern Africa
CTN	COMESA tariff nomenclature
ESA	East and Southern Africa
FTA	free-trade area
GDP	gross domestic product
GTAP	Global Trade Analysis Project
MIRAGE	Modeling International Relationships in Applied General Equilibrium
MFN	Most Favoured Nations
PPP	purchasing power parity
PTA	preferential trade area
RCA	revealed comparative advantage
SADC	Southern African Development Community

ABSTRACT

The member countries of the Common Market for Eastern and Southern Africa (COMESA) had agreed to launch a customs union by December 2008 under which a common external tariff (CET) would have been imposed on all goods and services imported from outside COMESA. Even though the creation of the COMESA customs union was not achieved, it could have been a decisive step towards bolstering economic growth and alleviating poverty in the region. Notwithstanding the failure to create a COMESA customs union, the welfare impacts of customs union are ambiguous. In addition, the welfare impacts of the customs union on the individual COMESA member countries are not well understood. It is therefore important to undertake studies that generate information on the welfare impacts of the imposition of a CET within the COMESA region.

This study provides a quantitative assessment of the potential impacts of the formation of a COMESA customs union, specifically of having free trade among COMESA countries while imposing a common external tariff against imports from outside COMESA. The study uses an expanded version of the Global Trade Analysis Project (GTAP) database and capitalizes on the Modeling International Relationships in Applied General Equilibrium (MIRAGE) Computable General Equilibrium (CGE) model for analysis. Two different assumptions are made regarding the number of sensitive products excluded from the CET rates—2 percent or 5 percent. The simulation exercise involved 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. The alternative COMESA customs union scenarios are designed at the detailed Harmonized System at the six digit level (HS6), combining information on the current applied protection from the 2004 MACMap data base and the COMESA Tariff Nomenclature.

In general, intraregional trade is rather low and member countries rely heavily on third countries for trade while the protection levels are high. Thus, the adoption of the COMESA CET will result in significant liberalization for most COMESA countries but some countries will have to increase protection. Under the first scenario (CET-2 percent) where 2 percent of tariff lines are treated as sensitive products and excluded from the CET, the formation of the COMESA customs union will result in increased imports for most members countries (except for Uganda and Mauritius) from non-COMESA countries. When 5 percent of the tariff lines are treated as sensitive products, the increase in imports predicted under the CET-2 percent scenario is dampened. The impacts on production follow closely from the impacts on trade liberalization with agricultural production falling as cheaper imports are allowed into COMESA. Subsequently, tariff revenues fall steeply and the overall real income impacts are negative for most COMESA countries due largely to the negative terms of trade that wipe out the positive allocative efficiency impacts of liberalization.

Contrary to the expectations, our findings reveal that the proposed COMESA customs union will not be beneficial to a majority of the member countries. These 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 and that would need to be satisfied before the COMESA customs union becomes welfare improving for member countries. These aspects include the harmonization of customs procedures, the elimination of nontariff barriers to trade, infrastructural improvements, diversification of production, and measures to include more cross-border transactions under recorded (formal) trade among others.

SECTION 1: INTRODUCTION

The Common Market for Eastern and Southern Africa (COMESA) is one of the four major regional integration entities within Sub-Saharan Africa. It began as the Preferential Trade Area (PTA) for Eastern and Southern Africa signed in 1982. A new treaty established COMESA in December 1994. Today, COMESA consists of 19 member countries: Burundi, the Democratic Republic of Congo (DR Congo), Comoros, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, and Zimbabwe. Currently, 13 of the 19 COMESA member countries are signatories to the free-trade area (FTA) which was launched in 2000¹. The launching of a customs union initially planned for 2004 has been delayed due to lack of consensus among member states on details of the agreement, particularly on the levels of common external protection.

One of the major objectives of COMESA was to launch a customs union by December 2008 under which a common external tariff (CET) would be imposed in all COMESA countries for goods and services imported from non-COMESA countries. The COMESA Tariff Nomenclature (CTN) adopts a four-band classification where scheduled CET rates are 0 percent for raw materials and capital goods, 10 percent for intermediate products, and 25 percent for final and finished goods. The creation of a COMESA customs union could be a decisive step towards bolstering economic growth and alleviating poverty in the region. However, the welfare impacts of customs union are ambiguous. As first stated by Viner (1950), preferential trade liberalization can either result in the replacement of inefficient, high-cost domestic production with low-cost imports from member countries (i.e., trade creation) or in the substitution of efficient, low-cost imports from nonmember countries with less efficient imports from member countries (i.e., trade diversion).

Given the theoretical ambiguities, there is need for empirical studies that generate information on implications of the CET. 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 CET against third countries. It capitalizes on a version of the Global Trade Analysis Project (GTAP) database which has considerable disaggregation of the East and Southern Africa region and on the Modeling International Relationships in Applied General Equilibrium (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 six-digit level of the Harmonized System (HS6), combining information from the 2004 MAcMap-HS6 v.2 database and the CTN.

Although the focus of this analysis is on the potential impacts of the COMESA customs union on trade, production, tariff revenues, and on real incomes, we first discuss the implications of the CET on the economic structure, trade, and protection patterns in the region. The rest of the report is organized as follows. Section 2 provides an overview of the COMESA economies, including trade, protection patterns, infrastructure, and the revealed comparative advantages. This is followed by a review of the empirical studies previously undertaken in the region in Section 3. Section 4 provides a description of the quantitative model, data, and the scenarios considered in the study. Finally, the results are discussed in the Section 5 and conclusions along with policy recommendations are drawn in Section 6.

¹ Countries which have not yet joined the FTA are: DR Congo, Eritrea, Ethiopia, Seychelles, Swaziland, and Uganda

SECTION 2: TRADE INDICATORS FOR COMESA MEMBER STATES

This section of the report provides an overview of the economic characteristics of the COMESA economies and analysis the agricultural trade and protection indicators.

Economic Characteristics of the COMESA Economies

There is great heterogeneity amongst the 19 COMESA member countries in terms of land area, economic size and performance, and dependence on trade. Table 1 provides a summary of these economic characteristics. In terms of physical area, COMESA countries range from three of the four smallest countries in Africa (the island nations of Seychelles, Mauritius, and Comoros) to three of the four largest (Sudan, DR Congo, and Libya) (Table 1). In addition, COMESA includes three of the four most populated African countries (Egypt, Ethiopia, DR Congo), and the least populated one (Seychelles). In terms of economic classification, the region includes 12 least developed countries, 6 of which are landlocked, and 7 of which are middle-income countries. Furthermore, regional per capita gross domestic product (GDP) in purchasing power parity (PPP) in 2005 varied widely, ranging from US\$593 in Malawi to US\$14,329 in Seychelles (Table 1).

Table 1: Economic characteristics of the COMESA countries, 2005

Country	Land area (’000 km ²)	GDP per capita (US\$), PPP in 2005 (2000 =100)	GDP growth rates 2001–2005, average	Economic classification	Trade, % of GDP, 2005
Burundi	25.68	622	2.20	L-LDC	44.80
Comoros	2.23	1,773	2.79	SIDS, LDC	47.20
DR Congo	2,267.05	635	4.04	LDC	70.89
Djibouti	23.18	1,937	2.98	LDC	90.04
Egypt	995.45	3,858	3.79	MIC	63.18
Eritrea	101.00	986	3.67	LDC	64.51
Ethiopia	1,000.00	938	5.17	L-LDC	55.45
Kenya	569.14	1,103	3.60	MIC	62.28
Libya	1,759.54	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	11,312	4.15	MIC	117.43
Rwanda	24.67	1073	5.40	L-LDC	41.54
Seychelles	0.46	14,329	-2.30	MIC	230.70
Sudan	2,376.00	1,853	6.26	LDC	46.02
Swaziland	17.20	4,292	2.20	MIC	183.72
Uganda	197.10	1,293	5.61	L-LDC	40.29
Zambia	743.39	910	4.79	L-LDC	41.63
Zimbabwe	386.85	1,813	-5.56	MIC	95.74

Source: World Bank, 2006.; LDC for least developed countries; L-LDC for low least developed countries; MIC for middle income countries; SIDS for small island developing state.

Economic performance in terms of the 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. Agriculture is still the dominant sector, with agricultural value-added constituting more than 40 percent of GDP in countries like Comoros, DR 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 DR Congo, Egypt, Mauritius, Seychelles, Sudan, Swaziland, Uganda, and Zambia.

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 patterns. All COMESA member countries are mostly dependent on third countries for trade. According to Geda and Kibret (2002), intraregional trade in COMESA is rather weak and has grown very slowly over time. Over the 1980–1998 periods, intra-COMESA trade remained in the vicinity of 6 percent of total trade of COMESA countries. In addition to its low level, it was dominated by a few members. In general, Kenya, Mauritius, Zambia, Zimbabwe, and Tanzania were exceptionally active in intra-COMESA trade. On the other hand, extra-COMESA trade remained fairly stable at about 90 percent throughout this period. These trends in COMESA trade seemed to be quite stable over the entire period.

A closer examination of the COMESA data reveals that the COMESA countries export mainly unprocessed agricultural and mineral products and import manufactured goods. In 2001, intra-COMESA trade accounted for less than 10 percent of total exports of most COMESA countries. The exceptions were Kenya and Uganda, with 13 and 15 percent of total exports respectively going to each other or to other COMESA countries.² Trade with other countries in Sub-Saharan Africa in 2001 was 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 which are also members of the Southern African Development Community (SADC). The weak intraregional trade flows and lack of progress overtime warrants further exploration.

However, the European Union (E.U.), the United States (U.S.), and Asia are important export destinations for COMESA. The E.U. absorbs 84 percent of Libya's total exports and over 40 percent of the total exports for DR Congo, Madagascar, Mauritius, Uganda, Zambia, and Zimbabwe. The United States absorbs more than 20 percent of the total exports for Egypt, DR Congo, and Madagascar, whereas Asia absorbs over 70 percent of Sudan's total exports. On the import side, there is greater reliance on other countries in Sub-Saharan Africa, especially South Africa. Zimbabwe, Malawi, and Zambia source more than 45 percent of their imports from other countries in Sub-Saharan Africa, followed by DR Congo at 25 percent. The E.U. is an important source of imports for Libya (60 percent) and Madagascar (42 percent). Egypt, Ethiopia, Kenya, DR Congo, Mauritius, Uganda, and the rest of COMESA, each also source about a third of their imports from the E.U.

In terms of world trade, COMESA is a small player. Exports to the aggregate COMESA region constitute less than 1 percent of total exports of such large economies as China, Japan, South-East Asia, United States, Latin America, E.U., and the rest of Europe. Even for the neighboring countries of Mozambique, Tanzania, and South Africa, COMESA is 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). All these features of COMESA member states

² Detailed figures on regional trade patterns are available upon request from the authors.

play an important role in terms of the potential impacts of the implementation of a common external tariff by COMESA.

A useful trade indicator for COMESA is the concordance between the export structure and world demand (Table 2, third column). The lower the value of this indicator for a country, the better its export structure matches world demand. Data for the 19 COMESA countries shows that these countries' exports do not match world demand. The value of this indicator is higher than 0.5 for all COMESA countries. By comparison the indicator is 0.47 for India, 0.43 for Brazil, 0.38 for China, and less than 0.25 for Organization for Economic Cooperation and Development countries (not shown in the table).

The product concentration of exports is another important trade indicator for developing countries. Countries with a high concentration of exports in a few products are vulnerable to sector-specific shocks. Table 2 (column four) reveals a sectoral export diversification value of 1.1 for Libya which makes it the least diversified country in COMESA and a value of 11.9 for Kenya, making it the most diversified. When compared with other countries in the world, Africa's exports are much less diversified than those of Asian countries, and even less than those of the United States, Europe, and the Asia Pacific countries.

One indicator related to export structure which shows a more positive feature of COMESA trade is diversification of markets. Like product diversification, diversification of markets is an important issue for developing countries. Having exports concentrated on few partners increases the vulnerability to shocks. The value of the indicator ranges from 1.7 for Rwanda to 20 for Uganda (Table 2, column five). In general, African countries are not so badly diversified in terms of export destination. The simple mean of this indicator for African countries is 8.14 which is comparable to the Asian average (9.23), greater than the American average (6.91), and the Pacific (4.77). Only the European average is much higher (12.6). But once again, this average conceals a very contrasting picture as Egypt, Kenya, Malawi, Uganda, and Zambia have well diversified destination of their exports while they are quite concentrated in the case of Comoros, Rwanda, and Sudan.

With regard to agricultural trade, COMESA member states reveal an extraordinary diversity of situations. The ratio of agricultural exports to total exports ranges from 0.1 percent for Libya to 85 percent for Ethiopia (Table 2). Among the 19 COMESA countries, there are five countries for which agricultural export accounts for more than half of their total exports (Comoros, Djibouti, Ethiopia, Malawi, and Uganda) with three countries for which agricultural exports represent more than 80 percent of total merchandise exports (Comoros, Ethiopia, and Malawi). On the other hand, the share of agricultural exports represents less than 10 percent of total merchandise exports for DR Congo, Libya, Seychelles, and Sudan. Indeed, for Libya, which is highly specialized in oil exports, more than 90 percent of its exports are concentrated in oil.

Table 2 (second column) also provides the agrifood balance indicators for the 19 COMESA countries. A positive value of the indicator would imply that a country is a net food-exporter while a negative value signifies a net food-importer. Out of the 19 COMESA member states, 11 are net food importers, while 8 are net food exporters. The indicator takes on high negative values for Comoros, Djibouti, Eritrea, and Seychelles, highlighting countries that are strongly dependent on the rest of the world for food supply. On the other hand, Malawi and Zimbabwe, and to a lesser extent Kenya, Zambia, Madagascar, and Uganda, are big net exporters of agricultural and food commodities. If increased trade liberalization leads to a rise in world food prices,

it would penalize net food-importers. On the contrary, net food-exporters could benefit from such liberalization.

Table 2: Trade indicators for COMESA countries, 2004

Country	Share of agricultural exports in total exports (%)	Agrifood balance on GDP (*1,000,000)	Concordance between export structure and world demand	Sectoral export diversification	Geographic export diversification
Angola	0.1	-50.2	0.83	1.0	3.1
Burundi	38.3	-14.8	0.87	2.5	5.0
Comoros	81.6	-86.0	0.83	1.9	4.2
DR Congo	2.2	-28.1	0.83	3.2	3.4
Djibouti	64.2	-175.5	0.76	4.9	3.8
Egypt	12.9	-33.2	0.57	6.6	19.4
Eritrea	34.5	-87.9	0.50	9.1	11.6
Ethiopia	84.8	31.1	0.88	3.5	12.9
Kenya	47.8	57.0	0.60	11.9	17.2
Libya	0.1	-34.1	0.81	1.1	4.9
Madagascar	28.1	49.4	0.84	7.5	4.2
Malawi	83.2	163.6	0.88	3.1	15.0
Mauritius	21.2	5.4	0.75	6.0	6.2
Rwanda	12.6	-2.7	0.79	1.7	1.7
Seychelles	3.6	-81.6	0.72	4.1	8.1
Sudan	9.9	-0.6	0.82	1.3	2.4
Uganda	61.4	37.6	0.78	8.3	20.3
Zambia	18.5	45.5	0.88	3.3	16.7
Zimbabwe	43.9	118.4	0.75	10.9	11.2

Source: Base pour l'Analyse du Commerce International (BACI) and authors' calculation

Revealed Comparative Advantage

An additional trade indicator that identifies the comparative advantages of COMESA is the revealed comparative advantage (RCA)³. In agriculture, COMESA countries have comparative advantages in sugar and sugar confectionary, coffee, tea, maté, and spices, vegetables, vegetable plaiting materials, and other vegetable extracts. On the other hand, in industry, most COMESA countries have comparative advantage in salt, sulphur; earth and stone; plastering mat; lime and cement and cotton.

Infrastructure

In a recent study, Bora et al. (2007) explore the role of telecommunications and transportation in explaining Africa's participation in world trade. The authors find that the 19 COMESA countries lack vital infrastructures for trade and development. The only exception is Seychelles for telecommunications, Burundi and Rwanda for roads, and Mauritius for both infrastructures. The authors conclude that the low level of both infrastructures in Africa explains the poor performance of these countries in terms of international trade. Indeed, the impact of infrastructure on trade is complementary and there is obviously a network effect in the effect of telecommunication on trade.

Protection and Access to Foreign Markets

Protection and market access indicators also show diverse situations within the COMESA countries. The COMESA member countries have adopted many discriminatory trade regimes, and some instruments of protection, like specific import duties or tariff rate quotas are not uniformly applied across products and partners.

³ RCA scores for different commodities are available from the authors on request

Table 3: Protection applied and faced by COMESA countries, 2001

Country	Average protection applied on imports (%)	Average protection faced by exports (%)
Angola	na	0.9
Burundi	na	2.9
Comoros	na	1.0
Congo (Democratic Republic)	na	0.3
Djibouti	na	12.3
Egypt	28.8	5.6
Eritrea	6.4	4.0
Ethiopia	14.4	8.3
Kenya	18.6	13.0
Libyan Arab Jamahiriya	21.1	1.1
Madagascar	4.4	4.1
Malawi	11.4	20.2
Mauritius	18.4	15.8
Rwanda	7.4	4.6
Seychelles	28.2	3.5
Sudan	19.5	4.5
Uganda	8.1	7.1
Zambia	11.8	5.0
Zimbabwe	15.8	14.5

Source: MAcMAP 2001

Average tariffs in the COMESA countries are relatively high, at 16 percent, compared to 4 percent in the non-COMESA regions (Table 3). Considering that the average protection in the world was 5.6 percent in 2001 (Bouet et al. 2007), African and COMESA countries, in particular, appear very protectionist. Only Madagascar adopted an average protection below the world average. On the other hand, Kenya, Sudan, Mauritius, and especially, Egypt and Seychelles implemented very restrictive tariffs (Table 3). Since trade revenues are an important source of government revenue for many COMESA countries, the protection patterns will have different implications on tariff revenue and real income

The source of the data for the indicators in Table 3 is the MAcMap database⁴ which is based on a bilateral measurement of protection in 2001: for each product defined at the HS6 level it measures protection applied by each country on this product coming from each partner. The protection is measured as a three-dimensional issue (reporter/partner/product). This allows calculation of the protection applied by each country on its imports and the average duty faced by each country on its exports throughout the world. The second variable is less usual in the economic literature. It reveals how world protectionism positively or negatively affects a country's exports.

In terms of access to foreign markets, there is diversity among African countries. This is also true for COMESA since countries like Burundi, Comoros, DR Congo, Libya, but also Eritrea, Madagascar, Rwanda, Sudan, and Zambia to a lesser extent face

⁴ Ad valorem, specific and mixed tariffs, and tariff rate quotas, are combined into an equivalent ad valorem tariff in the MAcMap database. This is the case for each tariff level: bound, most favoured nation (MFN), and applied tariff. These sets of information are given on a bilateral basis between 163 importer countries, 208 exporter countries and at the 6-digit level of the Harmonized System (HS6; 5111 products). In this study we base our computations at the most detailed level of the MAcMap-HS6 database and we use the applied tariffs which take into account all regional agreements and preferential schemes. Tariffs are aggregated using the methodology of MAcMap-HS6 reference groups which is preferred to the trade weighted methodology that always correlates low import flows and high tariffs for each product–importer–exporter relationship. Reference groups of countries are constituted by crossing two criteria: PPP GDP per capita and trade openness. Then, for each product–importer–exporter relationship the total imports of the reference group of the importer are utilized and normalized considering the size of the importer country. These reference-group weighted trade shares are the weights used in aggregating the applied ad valorem equivalent tariffs.

low average duties on their exports, while products coming from Djibouti, Kenya, Mauritius, Zimbabwe, and especially, Malawi are greatly penalized by foreign import duties. Bora et al. (2007) show that while the first subset of countries are specialized in commodities little taxed throughout the world (what they call a positive composition effect), but also benefit from preferential schemes; the second group are specialized in agricultural commodities which are frequently highly taxed (meat, milk, sugar, cereals) and that are only partially compensated by these preferences.

In conclusion, COMESA is characterized by great heterogeneity in terms of land area, economic size and performance, diversification of export markets, the ratio of agricultural exports in total exports, agrifood balances, access to foreign markets and dependence on trade. All these features of COMESA member states play an important role in terms of the potential impacts of the implementation of a common external tariff by COMESA. The differences would have varying implications on the welfare impacts of the COMESA customs union.

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 that might elicit similar welfare impacts for some COMESA states. The common features include a high degree of dependence on third countries for trade, low intraregional trade, similar product composition of trade, a poor match between their export structures and world demand, high external tariffs, a lack of vital infrastructure for trade and development and generally higher average protection, which portend negative trade impacts.

SECTION 3: AN OVERVIEW OF THE THEORETICAL AND EMPIRICAL ISSUES

The impetus for regional integration draws its rationale from the standard trade theory, which states that free trade is superior to all other trade policies. As an extension of this basic principle, free trade among two or more countries will improve the welfare of the member countries as long as the arrangement leads to a net trade creation in the Vinerian sense. That is, although as the theory of the second best indicates, regional agreements do not guarantee an improvement in the welfare of member countries, they could do so provided trade diversion is minimal and/or trade-creation tilts the balance. Historically, the customs union theory was concerned with welfare gains and losses that follow the formation of customs union. Such gains and losses may emerge from a number of sources such as (i) specialization, (ii) economies of scale, (iii) changes in terms of trade, (iv) forced changes in efficiency owing to increased competition and (v) changes in the rate of economic growth (Lipsey 1987).

According to Lipsey, the theory of customs union has been almost completely confined to an investigation of (i), with some slight attention to (ii) and (iii); with (v) not being dealt with at all, while (iv) has been ruled out of traditional theory by the assumption that production is carried out by processes which are technically efficient. This initial theory of customs union now consists in three interrelated, yet distinct, sets of analytical approaches: the *Viner-Lipsey-Mead approach* (Viner 1950; Lipsey 1987; and Mead 1955), the *Kemp-Wan approach* (Kemp and Wan 1976) and the *Cooper-Massell-Bhagwati approach* (Cooper and Massell 1965; and Bhagwati 1968). The major point to note here is that one needs to emphasize (v) above (changes in the rate of economic growth) in the context of developing states. However, none of the existing theories emphasized this point.

While the basic principles of the traditional theories of trade provide us with some general insight to regional integration policy issues, they fall short of serving as practical guides in the African context. Two general types of economic models have typically been used to analyze the welfare impacts of regional integration efforts: *ex-ante* simulation studies and *ex-post* econometric analyses such as the gravity model. Both approaches comprise of a system of mathematical equations, but differ in how values are assigned to the parameters. Each of these modeling approaches has its own strengths and weaknesses. Thus, it is rather pointless to argue that either model is the superior modeling approach since the literature indicates that each approach is suitable under different circumstances. The bottom line is to use the approach that is best suited to the research questions at hand.

Several studies have used the gravity model to assess the performance of regional trading blocks in Africa. Among such studies are those of Foroutan and Pritchett (1993), Ogunkola (1994), Elbadawi (1997), Lyakurwa (1997), Longo and Sekkat (2000), and Geda and Kibret (2002). Though the results of these studies slightly vary, the general conclusion seems to be similar. They all conclude that the experience of regional integration in Africa has been a failure in achieving its objectives of increasing intraregional trade in particular and fostering policy coordination in general. These econometric results are also corroborated by simple descriptive intraregional trade statistics. Except some improvements in a few regions, the growth of Africa's intraregional trade has been either small, stagnant, or declining in recent years compared to 1970. Similarly, intraregional, interregional and the intra-African trade in general are very low.

Depose et al. (2002) analyzed the potential impacts of the new EAC on trade, industry, competitiveness, and economic welfare using a quantitative model of East African trade based on simple Vinerian customs union theory. The authors used 1999 data derived from the international trade and protection statics. The simulation results indicated that Uganda's economic welfare would be significantly compromised if the new customs union establishes the CET substantially above the current tariff level in Uganda, as presently planned. Kenya and Tanzania, however, would benefit because their current trade regimes are much more protectionist than Uganda's. Overall, the quantitative analysis revealed that concerted unilateral trade liberalization by the three East African trading partners dependably yielded economic benefits for all three countries, because it unequivocally reduced protection on a Most Favoured Nation (MFN) basis.

Karingi et al. (2002) analyzed the likely implications of a COMESA FTA and of a COMESA customs union. Using the GTAP model and the GTAP 5 database (which allows for separate treatment of only five COMESA countries), the authors found that there were positive economic gains for all regions from free trade. In addition, the welfare results of the COMESA customs union showed that all member countries would benefit in terms of real incomes from the customs union. The authors therefore concluded that COMESA seemed better off with a customs union. While the FTA gave positive welfare gains, the customs union was more preferable. The authors recommended that COMESA should move beyond the FTA to a customs union but the 2004 date set for the launching of the CET was seen to be too soon.

Mayda and Steinberg (2006), estimated the impact of COMESA on Uganda's imports between 1994 and 2003 using detailed import and tariff data at the HS6 level for over 1,000 commodities. Based on a difference-in-difference estimation strategy, the authors found that Uganda's imports from member countries had not been considerably increased by the preferential tariff liberalization under COMESA. In other words, consumers in Uganda have been reluctant on average across sectors to switch the origin of their imports to COMESA countries and thus there was no evidence of trade diversion. The authors conclude that although COMESA's preferential tariff liberalization had not considerably increased Uganda's trade with member countries, these small effects were likely to be associated with trade creation.

Another two studies have used partial equilibrium models to analyze the impacts of COMESA on individual countries. Roningen and de Rosa (2003) assessed the impacts of various membership options under the EU-EPA negotiations for Zambia. The authors concluded that Zambia was better off in an FTA with COMESA than that with SADC. On the other hand, Kaluwa et al. (2005) used a partial equilibrium model to assess the impact of alternative COMESA CET specifications on Malawi. The authors suggested that Malawi would benefit more from 0 percent rather than 10 percent CET rates for intermediate goods since this was important in Malawi's trade with South Africa.

The foregoing literature review demonstrates the range of empirical approaches that have been applied in analyzing the effects of COMESA. Though the results of the studies slightly vary, the general conclusion seems to be similar. The studies find that the COMESA customs union has failed to increase intraregional trade but conclude that the customs union could be beneficial to the region. However, none of the reviewed studies explored the welfare impacts of the customs union on each of the 19 individual COMESA member countries as intended under this study.

SECTION 4: THE ANALYTICAL MODEL

This study uses the MIRAGE (Modeling International Relationships in Applied General Equilibrium) model, which is a multisector, multiregion economic model ideal for trade policy analysis⁵. It is a relatively standard, neo-classical model which assumes constant returns to scale and perfect competition in the agricultural sectors⁶ 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 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.

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 nonagricultural sectors according to a CES 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 intratemporal 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.

⁵ 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).

⁶ Perfect competition, as typically assumed for the agricultural sectors in neo-classical CGE models, is also accommodated for data and computational reasons. It allows us to provide the relatively detailed regional and sectoral aggregation that is relevant for the study of a large preferential trade area such as COMESA. Assuming imperfect competition and increasing returns to scale require additional data (e.g. number of firms in the sector, mark-ups) that are not available in a standard CGE database. It is also demanding in terms of additional model equations and model calibration. Because of computational constraints, the assumption of imperfect competition will come at the expense of detailed regional and sectoral aggregation.

The MIRAGE model relies on the Global Trade Analysis Project (GTAP) database for multisectoral, multiregional data. The GTAP database 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 energy⁷. 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 GTAP Africa database, a special version of the GTAP 6.2 database which provides greater disaggregation of countries in the African continent⁸.

Data on tariffs come 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 in 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). The MAcMap-HS6 v.2 database is used to define the tariff scenarios for the COMESA customs union. First, the official COMESA Tariff Nomenclature (CTN), specified at the HS6 2002 classification, is mapped 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.

The analysis of the potential impacts of a COMESA customs union is carried out through four scenarios. For all scenarios, the simulation exercise begins with the GTAP Africa database which is benchmarked to a 2001 reference year. A pre-experiment simulation is conducted to adjust the database to take account of the key trade reforms that take place in the global economy from 2001 to 2008, namely: i) preferential and free trade arrangements that exist in 2004; ii) adjustment of the tariff data to reflect countries that joined the COMESA FTA after 2004 (Libya)⁹; iii) elimination of quotas on textile and clothing exports to North America and Europe under the Agreement on Textiles in Clothing, in 2005; iv) adjustment of the tariff data to reflect assumption that COMESA member countries that are not yet FTA members will join the FTA in 2008; thereby focusing analysis only on the potential impacts for the customs union.

The analysis assumes that the COMESA customs union will be launched as scheduled by the end of 2008 and tariff adjustments towards the common external

⁷ The GTAP 6 database, 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).

⁸ In the preliminary version of the GTAP Africa database used in this study, the regional input-output data for selected African countries not available in the standard GTAP 6 database 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 preliminary data base enables us to specify a clearer depiction of country membership in COMESA in our study.

⁹ Comoros also joined COMESA in 2006; however Comoros is not covered in the MAcMap HS6 database. In our regional aggregation, Comoros is grouped with Burundi, Djibouti, Eritrea, Rwanda, Seychelles, and Somalia in the Rest of COMESA region.

tariff will happen over a period of 10 years commencing in 2009 and ending in 2018. Tariffs are to be reduced linearly over the period. The results for each scenario are evaluated 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 the four scenarios were all prepared at the highly disaggregated MAcMap-HS6 tariff line before they were aggregated to the sectoral and regional aggregation¹⁰ 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 in the scenario. This allows the study to 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 considered in the analysis are the following:

CET-2 percent: 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 the CET.

CET-5 percent is the same as the first one, only this time five percent of each COMESA countries' HS6 1996 tariff lines are considered as sensitive products and are exempted from the CET¹¹.

CU-Less: Only a subset of the COMESA countries forms a customs union and imposes the CET rates (with 5 percent treated as sensitive products). As part of the pre-experiment simulation, it is assumed that DR Congo, Eritrea, Ethiopia, Seychelles, Swaziland, and Uganda join the COMESA FTA by the end of 2008. In this simulation, it is assumed 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 (ESA). The overlapping membership in the ESA region are taken into account, 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, for Tanzania (as the only member of the Eastern Africa Community that is not a COMESA member) it is assumed that it 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.

The model's macroeconomic closure assumes endogenous real exchange rates while maintaining fixed trade balance, equal to the initial value for each region. The results of the simulation of the four scenarios are presented in the next section.

¹⁰ The regional and sectoral aggregations are given in tables 1 and 2 in the Annex.

¹¹ The assumption of 5 percent of tariff lines is close to the 4-6 percent figure proposed for the number of sensitive products that is still being debated in the Doha negotiations at this time.

SECTION 5: RESULTS AND DISCUSSIONS

This section presents the trade and welfare impacts of the COMESA customs union. It begins with a comparative presentation of the results of the first two scenarios, CET-2 percent and CET-5 percent, to provide insights on the importance of assumptions on sensitive products. This is followed by a discussion of the impacts of the last two scenarios CU-Less and CU-Plus, to assess the impacts of three alternative membership assumptions on the COMESA region, assuming that 5 percent of each COMESA countries' tariff lines are exempt from the CET. Finally, the trade results are followed by a discussion of the impacts of the COMESA customs union on production, tariff revenue, and real income under all four scenarios.

Trade Impacts and Sensitive Products

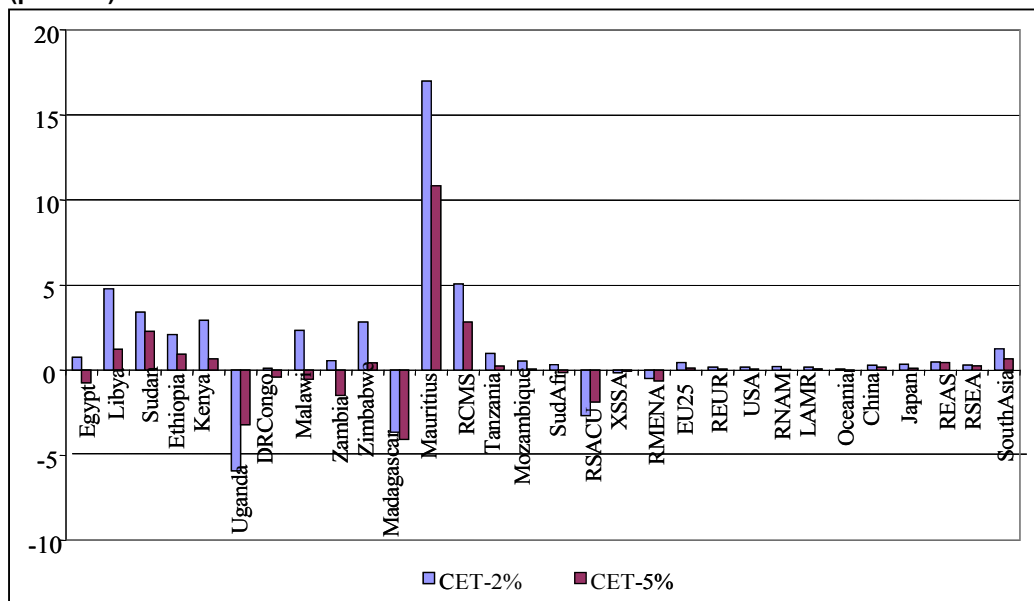
The impacts of the COMESA customs union on regional import volumes are shown in Figure 1. The first bar for each region indicates the percentage changes in import volumes in 2023 resulting from the COMESA CET in the case when 2 percent of tariff lines are treated as sensitive products and the second bar shows import volumes when 5 percent 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 huge cuts in tariffs and will expand its imports by more than 15 percent. Libya and the rest of the COMESA region will also expand their imports by 5 percent after making greater than 40 percent cuts in their average tariffs towards the CET rates. Conversely, imports will decline for Uganda and Madagascar since these countries will have to raise their tariffs to the CET rates.

When the number of sensitive products increased from 2 percent to 5 percent, 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, DR 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 percent will result in a decline in imports in these countries.

A closer examination of the import sources reveals that most COMESA countries do not benefit from the import surge. The aggregate COMESA region will expand its imports only from Libya and Sudan in the form of petroleum products. COMESA's aggregate imports from other individual COMESA countries will decline while imports from non-COMESA countries will increase as COMESA lowers its tariffs against third countries under CET-2 percent. 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, E.U., 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 countries¹².

¹² Detailed figures are available upon request from the authors

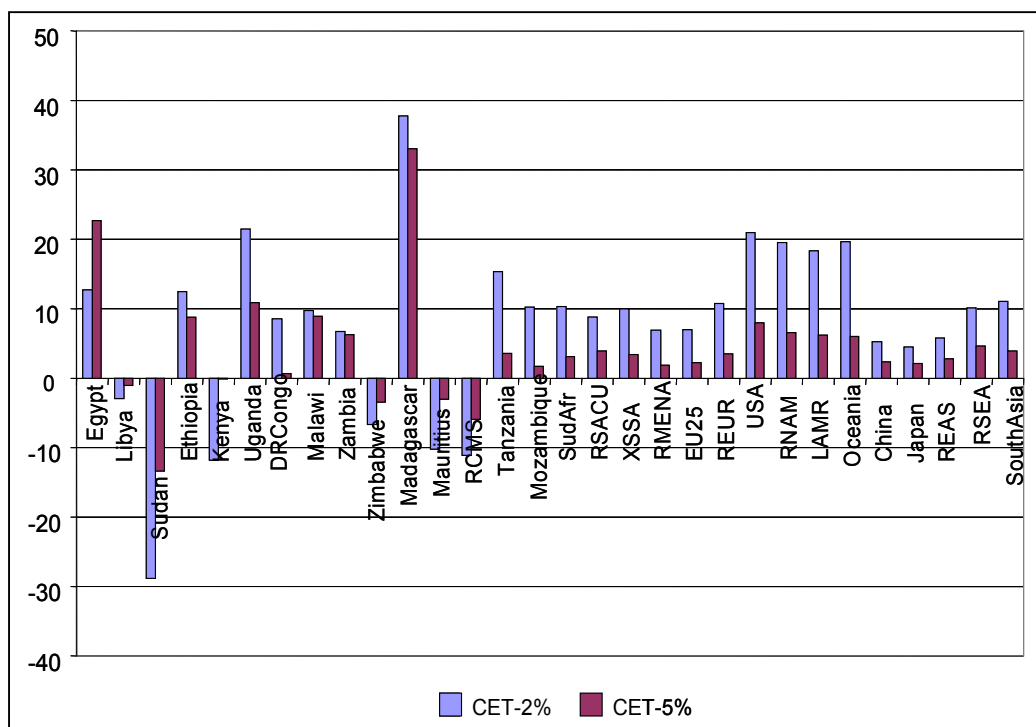
Figure 1: Changes in Import Volumes by Region, COMESA customs union, 2023 (percent)



Under CET-5 percent, 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 percent. However, for some countries such as China, East Asia, and Southeast Asia, COMESA imports under the CET-5 percent increase by more than in CET-2 percent. 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 percent allows for an increase in imports of the completely liberalized products. The decline in imports from other COMESA countries under CET-5 percent will also not be as much as in CET-2 percent.

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. Thus, COMESA products become attractive to all third country markets under the COMESA CET and COMESA's aggregate exports to these markets will expand. Figure 2 presents the percentage changes in exports of the aggregate COMESA region by destination of exports. At CET-2 percent, 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. These include Tanzania, Mozambique, South Africa, rest of Sub-Saharan Africa, Southeast Asia, and South Asia.

Figure 2: Changes in COMESA export volumes, by destination, COMESA, 2023 (percent)



Source: Authors' calculations from MIRAGE model

For individual COMESA countries as destinations of exports from the aggregate COMESA, there is 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 such as Sudan, Mauritius, and rest of COMESA will decline as these countries import more from third countries at their much lower average tariffs.

Under the CET-5 percent scenario, 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 percent compared to CET-2 percent. The explanation for this again relates to the average initial versus CET-5 percent tariffs for Egypt. For most COMESA countries (except Mauritius and Uganda), the CET-2 percent will result in significant liberalization, and the CET-5 percent will still result in some liberalization (with average CET-5 percent tariffs still less than the initial tariffs). For Egypt however, CET-5 percent 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.

The product group which enjoys the highest level of protection in Egypt is beverages and tobacco with an average tariff above 800 percent. This category of products, which is classified as an agrifood commodity, covers a large number of tariff lines. The average tariffs for agrifood commodities are significantly higher than that for nonagricultural commodities (except in Libya and the rest of COMESA region). Depending on the extent of trade liberalization that will occur for agrifood commodities under the COMESA CET and taking into account as well the exclusion of sensitive products, a different story may come out when focusing only on agrifood and not on total COMESA imports (as shown in Figure 1)¹³.

Under CET-2 percent, except for Libya, the qualitative impact of increased COMESA imports under the customs union is also true when focusing only on agrifood imports. However, the magnitude of the rise in food and agricultural imports are much larger those reported in Figure 1 as greater liberalization occurs for food and agricultural products. Zimbabwe's imports of agrifood will shoot up by more than 50 percent compared to the modest 3 percent average increase in imports of all commodities. Kenya, Malawi, and Sudan also increase imports of agrifood by around 20 percent. Similar to the case for total imports, imports of agrifood 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, agrifood imports decline under the customs union since its lower average tariffs on agrifood (compared to nonagricultural tariffs) will have to be raised to the CET rates.

The results for CET-5 percent are generally consistent with the observation from Figure 1 that the increased total imports under CET-2 percent are dampened by the lesser degree of liberalization under CET-5 percent. However, the interesting outcome of increased average protection under CET-5 percent 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, agrifood imports decline under CET-5 percent 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 agrifood imports compared to total imports, and from that it can be deduced that the CET-5 percent will still result in significant liberalization in agriculture but tends to result in more cases of protection reversal in the manufacturing sectors.

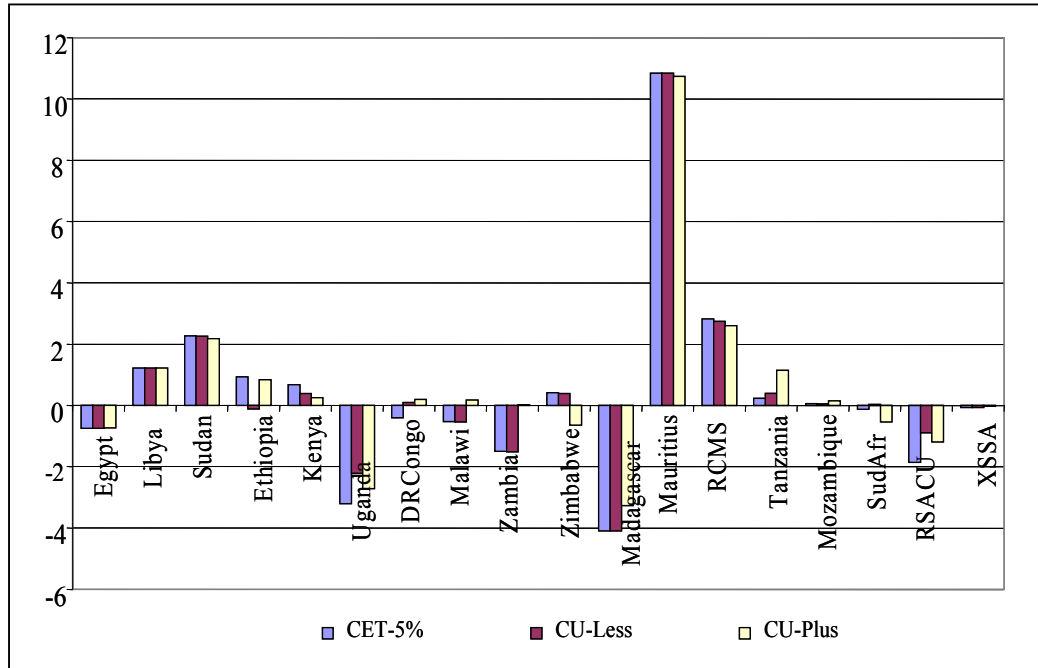
Trade Impacts and COMESA Membership

The discussion of the impacts of alternative assumptions regarding COMESA customs union membership begins with a presentation of the impacts on trade. Figure 3 compares the 19-member COMESA customs union (CET-5 percent), 13 members only (CU-Less) and the CU-Plus scenario which assumes 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 DR 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 percent results. For the countries where import changes will vary, the difference between the CET-5 percent results are tiny with at most a one percentage point difference.

¹³ Detailed figures are available upon request from the authors

The imports of Ethiopia and rest of COMESA (includes Eritrea and Seychelles) fall relative to CET-5 percent since these countries will not liberalize against third countries. For Uganda, DR Congo, and the rest of SACU (includes Swaziland), imports under CU-Less actually rise (fall less) relative to CET-5 percent since these countries have to raise their tariffs against third countries to adopt CET-5 percent rates.

Figure 3: Changes in import volumes, 2023



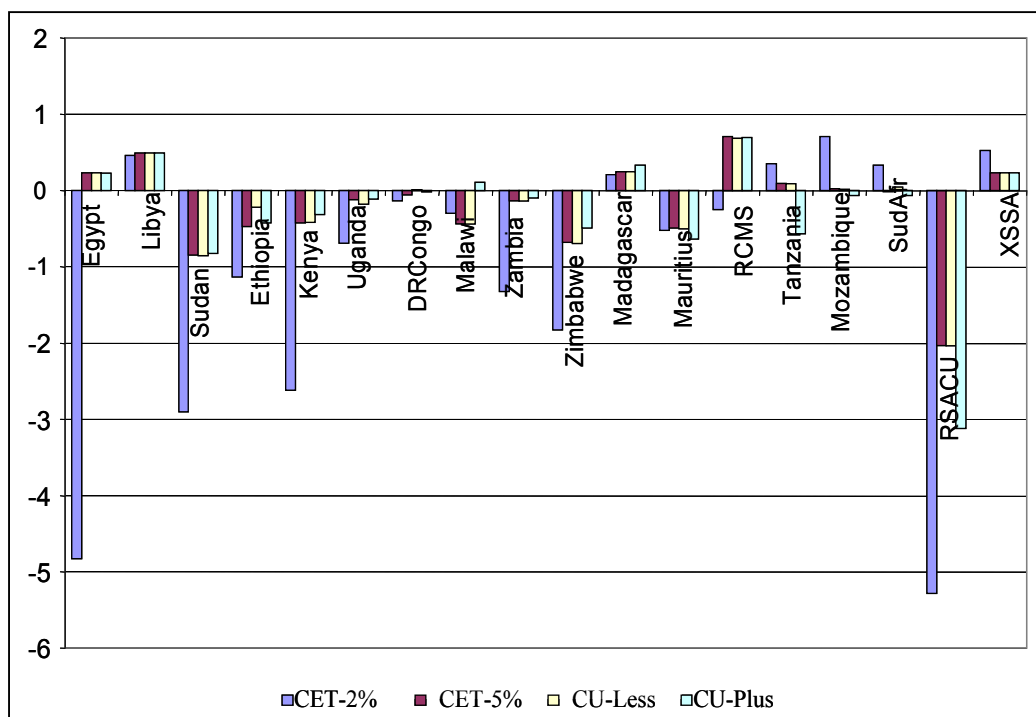
Source: Authors' calculations using MIRAGE model

Turning now to the CU-Plus scenario and comparing the results to CET-5 percent, the inclusion of Tanzania in the customs union and not raising the CET rates against the other SADC member countries has more significant impacts of many COMESA countries compared to CU-Less. The imports of Malawi, DR Congo, Tanzania, Uganda, Zambia, Madagascar, Mozambique, and rest of SACU will rise (or fall less) compared to the CET-5 percent 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 percent fall in imports.

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. The CET-2 percent scenario results in sharper declines in food production in Egypt, Sudan, Kenya, Zambia, Zimbabwe, and rest of SACU, as these countries liberalize under the CET-2 percent (Figure 4). In Egypt, the 4.8 percent decline in agrifood 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 contributes to the 2.9 percent drop in aggregate agricultural production. Grains and sugar production fall by 16 and 17 percent, respectively in Kenya, contributing to a 2.6 percent decline in agrifood production.

Figure 4: Changes in production volumes of agrofood products, 2023



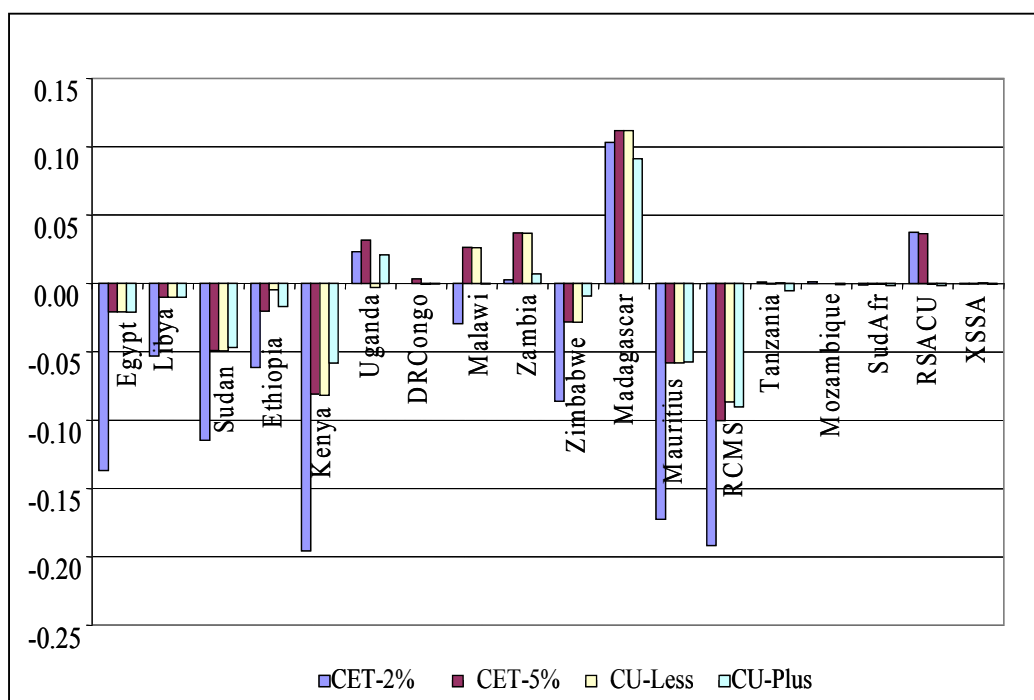
Source: Authors' calculations using MIRAGE model

The fall in production is much less (or even reversed) under CET-5 percent when less liberalization and thus less imports of food and agricultural products take place. For Egypt, the increase in average protection under CET-5 percent, which results in reduced agricultural imports, results in increased agricultural production. For Kenya, with most grains and sugar excluded from liberalization under CET-5 percent, the fall in agricultural production comes from plant-based fibers, which is fully liberalized (from a low 3 percent to zero tariffs) under CET-5 percent. 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 percent as these countries increase their trade with COMESA.

Tariff Revenue

The tariff cuts that have to be implemented by most COMESA countries to conform to the CET rates will result in tariff revenue shortfalls for most countries. The tariff revenue impacts of the COMESA customs union, as a percentage of regional GDP, are reported in Figure 5. Although adjusted by the size of the economy, the declines in tariff revenue are deepest under CET-2 percent 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 percent.

Figure 5: Tariff revenue impacts of COMESA customs union, 2023 (percent of GDP)



Source: Authors' calculations using MIRAGE model

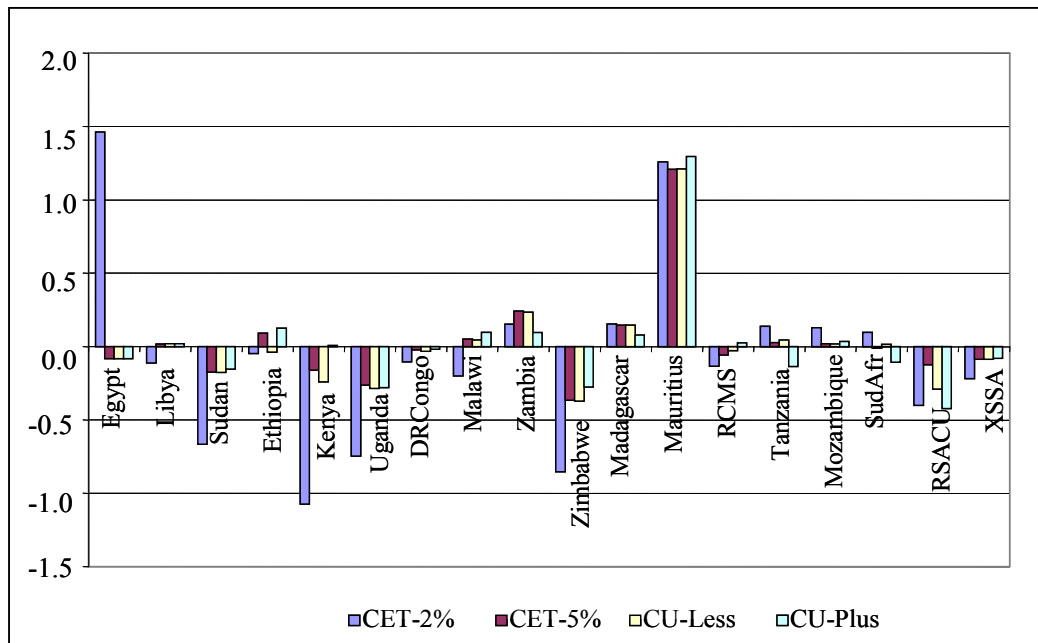
With tariffs not being cut for more products, the tariff revenue shortfalls are less pronounced under CET-5 percent. A reversal of the decline may actually come about, as in Malawi, as some of the tariffs are raised to meet the CET rates for some nonsensitive products. The tariff revenue impacts for CU-Less and CU-Plus are again very similar to the CET-5 percent case for most COMESA countries, except for the countries that are directly involved in these scenarios. As Figure 5 indicates, there are small tariff revenue implications for Ethiopia, Uganda, and DR 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 percent is reflected under CU-Plus for Uganda, DR 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.

Real Income Effects

The changes in protection with its subsequent impacts on trade, production, resource allocation, relative prices, and tariff revenues, would also imply changes in real incomes in the region. As shown in Figure 6, the potential real income impacts of the COMESA customs union will vary by region, and by scenario within each region. Real incomes increase for a few COMESA countries but decline for most COMESA member countries. On the one hand, the customs union, under the CET-2 percent assumption, will result in real income gains in the range of 0.1 to for 1.5 percent Egypt, Mauritius, Zambia and Madagascar (Figure6). These positive real income gains comes about largely from the positive allocative efficiency impacts of the reduction (or elimination) of some very high tariffs and in other cases from the positive terms of trade impacts of significantly raising tariffs to the CET rates.

On the other hand, real income falls by between 0.5 and 1.1 percent in Kenya, Sudan, Uganda, and Zimbabwe. For these countries the negative terms of trade effect of tariff reduction dominate over the positive gains from resource allocation. In addition, very small, negative real income impacts accrue to Libya, Ethiopia, DR Congo, and the rest of COMESA under CET-2 percent. Overall, the CET-2 percent scenario results 0.2 percent real income loss for the entire COMESA region. When more products are exempted from the CET, the positive real income effects of the customs union are wiped out, while the negative real income effects brought about by terms of trade losses and foregone tariff revenue are more subdued under CET-5 percent.

Figure 6: Income impacts of COMESA customs union, 2023



Source: Authors' calculations using MIRAGE model

Turning to the CU-Less scenario, the results show very small, negative real income impacts for Ethiopia, DR Congo, and Uganda if these countries do not liberalize and adopt the CET rates under the customs union. The positive impacts of allocative efficiency is not realized in Ethiopia, compared to CET-5 percent, and the terms of trade losses are slightly larger in DR Congo and Uganda in this case where they do not raise the average tariffs, again compared to CET-5 percent. Not joining the COMESA customs union may also not be beneficial for Eritrea and Seychelles (in the rest of COMESA) and Swaziland. Since these countries will not have to make drastic tariff 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 results for the CU-Plus scenario generally indicate positive real income effects for Sudan, Ethiopia, Kenya, Malawi, Zambia, Mauritius, rest of COMESA, and Mozambique relative to the CET-5 percent scenario. 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 the rest of SACU, the real income impacts fall more than in the CET-5 percent scenario.

When the percentage changes in real income reported in Figure 6 are expressed in values terms (Table 4), the results indicate that, the COMESA region as a whole will experience real income losses from all scenarios. This is primarily due to the real income loss for Sudan which is small in percentage terms but results in a relatively large negative value when applied to the country's large base income. The CET-2 percent scenario leads to the greatest negative results (-\$8.140bn) mainly reflecting the losses of the larger economies of Sudan (-\$7.080bn) and Libya (-\$2.342bn). Under this scenario, however, Egypt gains most of the benefits (+\$1.602bn). The remaining scenarios lead to relatively similar results, but with much lower losses than the CET-2 percent scenario. Under CET-5 percent losses are lower (-\$1.555bn decrease in real income for COMESA) as compared to CET-2 percent, due to the exclusion of more sensitive products. Egypt, the main beneficiary under the CET-2 percent scenario, experiences a real income loss under this scenario as average tariffs actually increase. Finally, the values of real income are slightly higher for most COMESA countries under the larger free trade area assumed in the CU-Plus scenario.

Table 4: Real income variations by 2023 (US\$ billion and percent)

Scenario	CET-2%		CET-5%		CU-Less		CU-Plus	
	\$bn	%	\$bn	%	\$bn	%	\$bn	%
Country								
Congo DR	-0.010	-0.1	-0.002	0.0	-0.003	0.0	-0.002	0.0
Egypt	1.602	1.5	-0.091	-0.1	-0.091	-0.1	-0.090	-0.1
Ethiopia	-0.007	0.0	0.014	0.1	-0.006	0.0	0.020	0.1
Kenya	-0.233	-1.1	-0.035	-0.2	-0.052	-0.2	0.002	0.0
Libya	-2.342	-0.1	0.369	0.0	0.375	0.0	0.383	0.0
Madagascar	0.008	0.2	0.007	0.1	0.007	0.1	0.004	0.1
Malawi	-0.006	-0.2	0.001	0.0	0.001	0.0	0.003	0.1
Mauritius	0.233	1.3	0.223	1.2	0.223	1.2	0.238	1.3
RCOMESA	-0.023	-0.1	-0.010	-0.1	-0.005	0.0	0.004	0.0
RSACU	-0.068	-0.4	-0.021	-0.1	-0.049	-0.3	-0.073	-0.4
Sudan	-7.080	-0.7	-1.849	-0.2	-1.880	-0.2	-1.628	-0.2
Uganda	-0.122	-0.7	-0.043	-0.3	-0.047	-0.3	-0.046	-0.3
Zambia	0.009	0.2	0.015	0.2	0.015	-0.2	0.006	0.1
Zimbabwe	-0.100	0.9	-0.043	-0.4	-0.044	-0.4	-0.031	-0.3
Total COMESA	-8.140	-0.2	-1.463	0.0	-1.555	0.0	-1.210	0.0

Source: Authors' calculations using MIRAGE model

Conclusions

This study provides a quantitative assessment of the potential impacts of the formation of a COMESA customs union, specifically of having free trade among COMESA countries while imposing a common external tariff against third countries. The study uses an expanded version of the GTAP database and capitalizes on the MIRAGE CGE model for analysis. The quantitative assessment of the potential impacts of the COMESA customs union involved 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. The alternative COMESA customs union scenarios are designed at the detailed HS6 level, combining information on current applied protection from the 2004 MAcMap database and the COMESA Tariff Nomenclature.

Overall, COMESA is characterized by great diversity in terms of land area, economic size and performance, diversification of export markets, the ratio of agricultural exports in total exports, agrifood balances, access to foreign markets and dependence on trade. All these features of COMESA member states play an important role in terms of the potential impacts of the implementation of a common external tariff (CET) by COMESA. The differences would have varying implications on the welfare impacts of the COMESA customs union. 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 that might elicit similar welfare impacts for some COMESA states. The common features include a high degree of dependence on third countries for trade, low intraregional trade, similar product composition of trade, a poor match between their export structures and world demand, high external tariffs, a lack of vital infrastructure for trade and development and generally higher average protection, which portend negative trade impacts.

Within COMESA, intraregional trade is rather weak and has grown very slowly over time. Over the 1980–2001 periods, intra-COMESA trade remained in the vicinity of 6 percent of total trade. Similarly, the growth of COMESA's intraregional trade has been either small, stagnant or declining in recent years compared to 1970. On the other hand, extra-COMESA trade remained fairly stable at about 90 percent throughout this period. Clearly, COMESA member countries are extremely dependent on third countries for trade. The weak intraregional trade flows and lack of progress may explain the failure of COMESA in improving regional welfare. Thus, governments within the COMESA region should be encouraged to institute policy reforms that can increase the flow of intra-COMESA trade.

One of the most salient features of the COMESA countries is that they could be characterized as producing, exporting, and importing goods that could be categorized as substitutes, and not complements, at least in the short run. Indeed, the 19 COMESA countries export nearly similar unprocessed agricultural and mineral products and import manufactured goods from one dominant trading partner, the EU. These trade patterns show the noncomplementary nature of the intra-COMESA trade. This noncomplementarity of the trade structure in COMESA is an obstacle to the expansion of intraregional trade in COMESA. To increase intra-COMESA trade, there is need for diversification of both agricultural and industrial production based on the competitive advantages that exist across the 19 COMESA member countries.

The adoption of the COMESA CET would result in significant liberalization for most COMESA countries but some countries will have to increase protection. Under the first scenario where 2 percent of tariff lines are treated as sensitive products and excluded from the CET, the creation of the customs union will result in increased

imports for most COMESA members countries (except for Mauritius and Uganda). Trade creation takes place as the imports from third countries increase and intra-COMESA imports fall. The imports of agricultural and food commodities increase more than those for nonagricultural commodities as agriculture will liberalize more. The impacts on production follow closely from the impacts on trade liberalization with agricultural production falling as cheaper imports are allowed into the COMESA countries. Subsequently, tariff revenues fall steeply and the overall real income impact for the entire COMESA region is negative due largely to the negative terms of trade impacts that wipe out the positive allocative efficiency impacts of liberalization.

The specification of sensitive products critically influences the outcome of the COMESA customs union for each country. 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 treatment of 5 percent as sensitive products (CET-5 percent) sharply reduces the degree of liberalization for most countries, and even results in increased average protection for some countries (Egypt, DR Congo, Swaziland and Zambia, aside from Madagascar and Uganda). In addition, when 5 percent of the tariff lines are treated as sensitive products, the increase in imports predicted under CET-2 percent is dampened and even reversed for the countries that raise their average tariffs.

The impacts of not joining the customs union, under the 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 DR 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 the CET with 5 percent sensitive products assumption).

Finally, the CU-Plus scenario result in increased trade for a number of COMESA countries as the CET is not imposed on 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. 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. 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.

Overall, the creation of the COMESA customs union will hurt some members in terms of tariff revenue and real income losses but it will also be beneficial for some countries. When more products are exempted from the CET, the positive real income effects of the customs union are wiped out, while the negative real income effects brought about by terms of trade losses and foregone tariff revenue are more subdued under CET-5 percent. Contrary to the expectations, our findings reveal that the proposed COMESA customs union will not be beneficial to a majority of the member countries.

These 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 and that would need to be addressed before the COMESA

customs union becomes welfare improving for member countries. These aspects include the harmonization of customs procedures and incentive packages for investment, the elimination of nontariff barriers, infrastructural improvements, diversification of production and measures to increase formal trade among others. The next section presents some of the policy aspects that will need to be sequenced for the COMESA customs union to be beneficial to the entire region.

SECTION 6: POLICY IMPLICATIONS

Overall, four major policy recommendations can be drawn from the findings of this study. These policy recommendations are summarized below.

Given that intra-COMESA trade is rather low and weak, the appropriate policy interventions that can be adopted to increase intra-COMESA trade include the harmonization of customs procedures and incentive packages for investment, elimination of nontariff barriers to trade and infrastructural improvements.

Given that the COMESA member countries exhibit noncomplementarity in production and trade, the choice policy intervention to address the complementarity in trade should be hinged on the diversification of production based on the competitive advantages that exist.

Given the expected decline in domestic food production with the formation of the COMESA customs union, the appropriate policy response to stem the decline in food production should be based on measures that increase agricultural competitiveness. These are broad and could include improvements in incentive structures, institution, and infrastructure.

Finally, given that the COMESA customs union will hurt some members in terms of tariff revenue and real income losses but it will also be beneficial for some countries, this study recommends the formation of a larger regional trading block. A larger regional trading bloc integrating COMESA with SADC would generally be more beneficial to COMESA.

ANNEXES

Annex 1: Aggregation Tables

Table 1. 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	DR Congo	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	South Asia	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	E.U.	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.

Table 2: 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	Nonagriculture
11	Extrct	Coal, Oil and Gas	Nonagriculture
12	Minerals	Raw and Processed Minerals nec	Nonagriculture
13	TextWapp	Textiles and Wearing Apparel	Nonagriculture
14	Leathr	Leather products	Nonagriculture
15	Woodppr	Wood and paper products	Nonagriculture
16	PetChi	Petroleum products; Chemicals, Rubber, Plastics	Nonagriculture
17	MetPrd	Ferrous metals	Nonagriculture
18	MchEqp	Machinery and equipment nec	Nonagriculture
19	OthMnf	Manufactures nec	Nonagriculture
20	Utilities	Utilities	Nonagriculture
21	Cnstrc	Construction	Nonagriculture
22	TrdTrn	Trade and Transport	Nonagriculture
23	PrivSvcs	Private and Financial Services	Nonagriculture
24	Pubsvcs	Public Administration, Defense, Health, Education	Nonagriculture

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