

Impacts of FTA within Eastern and Southern Africa Countries and Unilateral Tariff Elimination by other Regions

1. Introduction

The concept of free trade dated back to 1776 when Adam Smith wrote *The Wealth of Nations*. *The Wealth of Nations* put forth the doctrine of economic freedom and Smith argued for economic liberalism that is, free enterprise within a country and free trade among countries. Though *The Wealth of Nations* was a point of departure for current free trade, as compared to the age of the doctrine; however, free trade development had been gradual and been pursuing a series of discourses because of governments intervention and other factors in many ways that happened to distort the concept of free trade. Then it has moved in silent discourses.

In the mid second half of the 19th century Ricardo inspired a new model on how free trade should spur economic growth and development in participating country through the thread of inquiry called as comparative advantage which Adam Smith referred as absolute advantage. Since the births of these theories there have been enormous sharp critiques especially from the academia among those who supported the free trade theory and those who opposed it; and still the debates continue. As a result of those discourses, overwhelmingly many free trade enthusiasts have emerged holding the doctrine of free trade orthodoxy that in their thought has been considered as one of the most interesting notions among economic theories. Not because it has proven to be right at all stages in all times but rather it reflects the prevailing notions among developed nations through history, and still it is, although slightly rejuvenated the general theory through bilateral, multilateral and some how most favored nations approach.

Trade theorists have also tried to explain why nations trade and how they benefit from it largely under assumptions of static conditions which hold all domestic factors of production (land, other natural resources, labor, and capital) in fixed supply. That is a country will gain most by exporting commodities that it produces using its abundant factors of production most intensively, while importing those goods whose production would require relatively more of the scarcer factors of production. Then, they found that the theory of comparative advantage is rich in its implications on the gains from trade. In view of this, comparative advantage would have been beneficial for African farmers but the history of free trade in Africa has not been viable since inception attributed to the fact that developed countries had, in fact, often they were pioneers and frequently the most ardent users of interventionist trade and industrial policy measures in their early stages of devel-

opment (Chang, 2002). The intervention still persists to continue especially in the agriculture sector.

Therefore, debunking the myth of free trade from the historical perspective demonstrates that there is an urgent need to thoroughly re-think on its key conventional wisdom and more broadly on globalization from developing countries perspective. Because the conviction in free trade that the proponents of globalization possess comes from the belief that economic theory has irrefutably established the superiority of free trade on the basis of comparative advantage; even though there are some formal models which show free trade may not be the best. It is also whispered that for Africans trade-induced economic change agriculture is viable approach in the modern thoughts. Because it could cast a shadow on several sector economies either by altering the means of production or consumption patterns.

On the other hand, academic literature on agricultural market reform in Africa ranks among the most divided within the field of economic development (FAO, 2003). These divergent views on African agricultural market have contributed for the markets not properly function based on the merits. Whilst some scholars find that market reform and trade liberalization has generally supported agricultural growth and food security in Africa. The notion seems to have a connection with the conventional thought that poor countries are believed to be trapped in a vicious circle of poverty where low income leads to low saving and insufficient resources for investments. Thus, free trade will dissolve this vicious circle of poverty and bridge poor countries to the virtuous circle of productivity and growth mainly owing to export earnings. But, one couldn't be certain as a unanimous approach that free trade in Africa is a universal accepted wisdom and is holistic in its policy dimensions too.

In most instances the reputation of Africa's free trade establishment is closely associated with colonial and post-colonial eras. At present there are many regional trade agreements, such as Common Market for Eastern and Southern Africa (COMESA), Regional Integration Facilitation Forum (RIFF) formerly the Cross-Boarder Initiative (CBI), Southern Africa Custom Union (SACU), Economic Community of Western Africa (ECOWAS), Commission for Eastern Africa (CEA), and Indian Ocean Commission (IOC). A country can be member of one or more regional trading block. In the sub-Saharan Africa COMESA is the biggest trading blocks which five of the eight countries selected for this research are members. The entry point for

African trade regions were as preferential trade area eventually to be succeeded by free trade, region trade integration and custom unions. Nonetheless, the reputation that they have in succeeding these ultimate goals and gains from free trade initiatives has been much less than anticipated at the inception except for few blessed countries that have succeeded. But most countries have moved to abject poverty than ever before. As a result of the trading disarray within Africa countries trade balances have widened over years. For example, intra-COMESA exports and imports show significant differences in trade balance among member countries.

In general, residual and direct effects of free trade coupled with the protracted multifaceted problems have forced African to opt alternative solution either to lobby developed nations to reduce their farm subsidies or through other means to ameliorate the life its poorest nation. Besides to the debit cancellation and market access initiatives, the unilateral tariff elimination on certain commodities through bilateral trade agreement is taken as one of the breakthroughs to overcome the economic dismal. Experiences, nevertheless, show that it wouldn't be as such simple to implement unilateral tariff elimination because it possesses or performs a risk-sharing function.

Thus, this research aims at determining the implications of free trade area within eight Africa countries: Botswana, Madagascar, Malawi, Mozambique, Tanzania, Uganda, Zambia, and Zimbabwe referred as AF8 and unilateral tariff elimination with countries and regions that have big economies using Global Trade Analysis project (GTAP) version 6.0 database. We understand that the pathways and recipes for free trade in the African aren't impregnated enough to address all issues and concerns that Africans have through the simulation to be carried out in this study but we try to highlight the implications of free trade and unilateral tariff elimination with respect to the datasets of each country and region. We also take into account that trade liberalization in Africa has not been reciprocated in terms of better access to international markets for African producers and manufactures in industrial countries because of massive subsidies offered to agricultural producers in some developed countries and other forms of protection that have hindered Africa's efforts to upgrade her capacities and alleviate poverty.

2. GTAP data and Aggregation Description

The centerpiece of GTAP database contains bilateral trade, transportation, and protection characterizing economic linkages among regions, together with individual-country input-output databases that account for international linkages within each region (Hertel, 1997). These different arrays of dataset were taken from different sources. Data on private household consumption, government purchases of good and services were obtained from World Bank. Regional database were derived from individual country input-output tables. Merchandized tariff

data from the World Integrated trade Solutions (WIST) system of the World Bank and UNTAD. Tariffs on food and agriculture from the agriculture trade policy data base of the United States Department of Agriculture (USDA/ERS). Trade data from United Nations COMTRADE data base and export values are free on board (*f.o.b*) and imports cost-insurance and freight (*c.i.f*) and all monetary values are in United State's dollar.

2.1 Region Aggregation

In the GTAP database there are 87 countries. The eight Africa countries were separated individually in order to differentiate and capture the effect of policy changes on welfare and trade. Owing to her trade role in the sub-Saharan countries South Africa was treated individually. The multi-trillion dollar economies of the United States, the European Union, and Japan which together make up 70 percent of world GDP (Dimaranan and McDougall, 2002) were grouped as NAFTA (inclusive of Canada and Mexico), EU (EU15), and Japan. European Union member countries are believed to be traditional trade partner of African countries from colonial history view point. China and India as newly advancing economies were grouped individually. Whilst, countries in the South East Asia, sub-Saharan Africa and the other countries were aggregated respectively as, Rest of south East Asia (XSEA), Rest of sub-Saharan Africa (R_SSA) and Rest of world (ROW). Accordingly the following 17-region aggregation was employed:

1. United States, Canada and Mexico (NAFTA)
2. European Union (EU)
3. Japan (JPN)
4. China (CHN)
5. India (IND)
6. Rest of south East Asia (XSEA)
7. Malawi (MWI)
8. Botswana (BWA)
9. Zambia (ZMB)
10. Zimbabwe (ZWE)
11. Mozambique (MOZ)
12. Tanzania (TZA)
13. Madagascar (MDG)
14. Uganda (UGA)
15. Rest of Sub-Saharan Africa (R_SSA)
16. South Africa (ZAF)
17. Rest of World (ROW)

2.2 Sector aggregation

In the sector aggregation scheme of GTAP database there are fifty seven sectors that fall into three main sectors: Food, Manufacture and Service. For the purpose of this study the 57 sectors were aggregated into 19 groups where the food sector which is some how synonymous to agriculture comprises 9 groups. Be-

cause disaggregating the agriculture sectors enables us to see the leverage that the commodities have on welfare and terms of trade (TOT) for each country.

1. Cereal grains not elsewhere classified (GRO)
2. Wheat (Wht)
3. Vegetables, fruit, nuts (V_F)
4. Crops not elsewhere classified (OCR)
5. Animal products not elsewhere classified (OAP)
6. Oil seed (OSD)
7. Sugar (SGR)
8. Plant-based fibers (PBF)
9. Rest of food (R_Food)
10. Textile (TEX)
11. Petroleum, coal products (P_C)
12. Chemical, rubber, plastic products (CRP)
13. Motor vehicle and parts (MVH)
14. Transport equipment not elsewhere classified (OTN)
15. Manufacturing not elsewhere classified (OME)
16. Communication (CMN)
17. Public admin., Defense, Education, Health (OSG)
18. Shoe polish and other manufactures (R-Mnfcs)
19. Rest of service and activities not elsewhere classified (R_Svces)

3. Experimental design

As the world economy becomes integrated, there is an increasing demand for quantitative analyses of policy issues on a global basis and GTAP aims to facilitate such multi-country, economic wide analyses. The Computable General Equilibrium (CGE) model that GTAP employs is descriptive and advantageous in response of forecasting how economy can react to changes in policy, technology or other external factors. GTAP is a multi-region CGE model designed for comparative-static analysis of trade policy issues (Adams et al, 1997). Basically the CGE model equations tend to be neo-classical in spirit, often assuming cost-minimization behavior by producers, average cost-pricing and household demands based on optimizing behavior (household utility).

Computable general equilibrium model database consists of usually the database that is presented as an input-output table or as a social accounting matrix. In either case, it covers the whole economy of a country and the whole world. It distinguishes a number of sectors, commodities, primarily factors, elasticities that captures behavioral changes, and perhaps types of household. For example, export demand elasticities specify by how much export volumes might fall if export prices went up. That is CGE models are descended from the input-output models pioneered by Wassily Lwontief, but assign more important role to prices.

Whilst the Social Accounting Matrix depicts the conventional wisdom of putting regional transactions (or regional and national accounts). A Social Accounting

Matrix (SAM) represents flows of all economic transactions that take place within an economy (regional or national). It is a statistical representation of the economic and social structure of a country. SAMs refers to a single year providing a static picture of the economy. SAMs are square (columns equal rows) in the sense that all institutional agents (Firms, Households, Government and Foreign sector) are all buyers and sellers where the columns represent buyers (expenditures) and the rows represent sellers (receipts).

Anchored in the datasets available in the GTAP database for each country and region six experiments were identified on two assumptions: a) Complete removal of ad valorem tariffs and tariff equivalents of bilateral non-tariff barriers referred as power of the tax on import of tradeable commodity i from source r to destination s represent as $tms(i,r,s)$ among the AF8 countries, and b) Unilateral tariff elimination by NAFTA, EU, JPN, CHN, and R_SSA. That is these regions/countries would open their markets for the eight African countries commodities at zero import tariffs; without looking at reciprocity. The experiments were conducted under the general equilibrium closure which is an appropriate tool for capturing the substitution in production and consumption that occur between goods and the resulting changes in trade flows and values.

Based on the two assumptions we set six scenarios:

- a) AF8 vs EU [EU]
- b) AF8 vs Japan [Japan]
- c) AF8 vs NAFTA [NAFTA]
- d) AF8 Vs China [China]
- e) AF vs R_SSA [R_SSA]
- f) AF8 vs AF8 [AF8]

4. Simulation Results and Discussion

The simulation results show different figures for each country and region due to economic scale that the countries and regions have. Table 1 shows equivalent variation change for each country and region under the six scenarios due to free trade within AF8 countries and unilateral tariff eliminations by the other countries and regions for AF8 commodities. The equivalent variation (EV) change, which is also referred as welfare, for the AF8 countries is positive while Zambia registers negative US\$0.08 million under the Japan scenario attributed to losses from TEX, OTN, R_Mnfcs, and R_Svces (see Table 7). Francois and Reinert (1997) argue that it is not always the case that trade liberalization improves welfare. The above Zambian EV asserts this fact but theoretically welfare under free trade must be at least as great as welfare under autarky (where a country does no foreign trade). That is welfare literally increases as a result of movement towards free trade.

Unlike the other seven countries the EV gain for Botswana is bigger under the five scenarios. While in China scenario Botswana EV outweighed by Zimbabwe (US\$ 14.51 million for Botswana and US\$ 28.59 million for

Zimbabwe). But Botswana gains a lion-share of US\$ 117 million and US\$ 146.72 million from EU and NAFTA respectively.

Table 1. Effect of Free Trade and Unilateral Tariff Elimination on Equivalent Variation Change (US\$ Million)

	EU	JAPAN	NAFTA	CHINA	R_SSA	AF8
NAFTA	-12.01	-1.80	-44.62	-2.69	-2.61	-2.62
EU	145.42	-4.38	-52.49	-11.67	-11.23	-9.26
Japan	-6.19	-1.35	-7.13	-0.55	-2.73	-1.35
China	-1.36	-0.80	-7.51	26.20	-2.29	-0.80
India	-2.44	-0.23	-4.39	-0.51	-2.30	-0.85
XSEA	0.01	-0.03	-0.32	-0.08	-0.01	0.00
Malawi	12.33	0.10	21.84	0.21	-0.22	2.86
Botswana	117.36	6.62	146.72	14.51	12.29	24.30
Zambia	1.29	-0.08	0.02	1.35	5.14	0.60
Zimbabwe	29.26	5.23	7.66	28.59	6.87	6.55
Mozambique	0.44	0.32	1.38	0.44	0.77	3.11
Tanzania	4.81	0.19	2.06	1.17	15.91	4.82
Madagascar	1.01	0.21	37.52	0.58	0.16	0.02
Uganda	0.43	0.04	0.30	0.39	11.77	1.67
R_SSA	-5.01	0.15	1.39	0.29	-1.04	-0.73
South Africa	0.10	0.07	0.39	-0.28	-2.22	-3.91
Rest of World	-11.39	-2.88	-21.41	-17.67	-5.37	-4.73

Source: Authors simulation

Zimbabwe's welfare gain is relatively much better in the EU and China scenarios. Zimbabwe gains about four times from China than from NAFTA, that is the China scenario goes in favor of Zimbabwe uniquely among others. But from 1996 to 2002 Zimbabwe has exported more commodities to EU and Africa and imported more from South Africa. Under the AF8 Botswana and Zimbabwe gain significant amount than the six other countries. While gains from R_SSA scenario goes in the order of Tanzania (US\$ 15.91 million), Botswana (US\$ 12.29 million), Zimbabwe (US\$ 6.87 million), Zambia (US\$ 5.14 million) and a loss of US\$ 0.22 million for Malawi. Whereas the biggest loss goes to EU. In the bilateral tariff reduction scenario (AF8 scenario) Madagascar that have signed free trade agreement with most of the countries gains US\$ 0.02 million, which is by far much less than the others. In the Ugandan case, the substantial gain is from R_SSA because much of Ugandan import comes from Africa while her export goes to EU. Madagascar, Tanzania, and Uganda do not have strong trade relation with South Africa but on average more than fifty percent of Malawi, Mozambique, Zambia, and Zimbabwe imports comes from South Africa as a result South Africa experiences loss of US\$ 3.91 million from AF8 and US\$ 2.22 million from R_SSA, as compared to the other scenarios.

Table 2 shows total welfare changes decomposed by source. The welfare changes for each country and region are attributed to three effects, namely, allocative efficiency; terms of trade; and investment-saving balance. As it can be seen from the table terms of trade effects

dominate in their contribution to welfare for Malawi more significantly in EU and NAFTA scenarios and allocative efficiency in AF8 scenario. That is, gains from elimination of imported tariffs unilaterally by EU and NAFTA overshadows complete reduction of tariffs by AF8 countries. While for Botswana under all scenarios gains from terms of trade are significant which is an indication of its strong economy.

The gains from TOT for the eight countries is positive in the six scenarios except negative values for Zambia in Japan, NAFTA and R_SSA scenarios and in R_SSA for Malawi indicating that a consumer suffers from high domestic prices but enjoys when the values are negative regardless of the total equivalent variation changes. If we look into the TOT values of EU, Japan, NAFTA, China, and India in all the scenarios except NAFTA in R_SSA scenario with positive US\$ 0.4 million they are all negative implying that the developed countries consumers enjoy from low prices of AF8 commodities imported under the unilateral tariff elimination orthodoxy.

One of the impressive result of the simulation is that EU and China register a positive equivalent variation changes uniquely US\$145.42 million for EU in the EU scenario and US\$ 26.20 million for China in the China scenario. The source for these equivalent variation changes in the two economic regimes is allocative efficiency. Because allocative efficiency contribution arises when the allocation of resources changes relative to pre-existing distortions (Hanslow, 2000).

In case of Japan the contribution of IS to EV in all scenario is positive except in the R_SSA scenario. However, the total EV change for Japan remains negative under all scenarios. The biggest loss is from NAFTA followed by EU and the least loss is from China (US\$ 0.55 million). In the NAFTA scenario Japan loses biggest

amount (US\$ 9.9 million) from TOT than in others and gains significant amount from IS. This situation could signal that whenever NAFTA (especially the United States) signed bilateral or multilateral agreements with other countries Japan, as a major trading partner could suffer losses from TOT.

Table 2. Implication Free Trade and Unilateral Tariff Elimination on Welfare Decomposition (US\$ million)

Country	EU				JAPAN				NAFTA			
	Alloc. Eff.	TOT	IS	Total	Alloc. Eff.	TOT	IS	Total	Alloc. Eff.	TOT	IS	Total
NAFTA	-3.7	-6.5	-1.8	-12	-0.3	-0.9	-1	-1.8	37.9	-62.5	-20.1	-44.6
EU	248	-104	1.6	145.4	-1.3	-3.2	0.1	-4.4	-11	-43.2	1.6	-52.5
Japan	-1.2	-6.1	1.1	-6.2	0.8	-2.5	0.3	-1.4	-0.5	-9.9	3.2	-7.1
China	-1.2	-1.3	1.1	-1.4	-0.2	-1.1	0.4	-0.8	-3.6	-8.4	4.5	-7.5
India	-0.3	-2.2	0.1	-2.4	-0.1	-0.2	0	-0.2	-1.1	-3.4	0.2	-4.4
XSEA	0	0	0	0	0	0	0	0	0	-0.4	0.2	-0.3
Malawi	3.7	8.9	-0.3	12.3	0	0.1	0	0.1	4.6	17.6	-0.4	21.8
Botswana.	32.4	85.5	-0.6	117.4	2.1	4.6	0	6.6	48.4	98.9	-0.6	146.7
Zambia	-0.3	1.8	-0.2	1.3	0.1	-0.1	0	-0.1	0.1	-0.1	0	0
Zimbabwe	2.2	30.3	-3.2	29.3	1	4.8	-1	5.2	1	7.4	-0.7	7.7
Mozambique	0.1	0.2	0.1	0.4	0.1	0.2	0	0.3	0.4	0.9	0.1	1.4
Tanzania	0.8	2.9	1.1	4.8	0	0.1	0	0.2	0.4	1.3	0.4	2.1
Madagascar	0	0.8	0.2	1	0	0.2	0	0.2	6.7	23.1	7.7	37.5
Uganda	0	0.3	0.2	0.4	0	0	0	0	0	0.2	0.1	0.3
R_SSA	-0.6	-4	-0.4	-5	0	0.1	0	0.2	1.3	-0.1	0.1	1.4
S. Africa	-0.8	2	-1.1	0.1	0	0.2	-0	0.1	-1	2.2	-0.9	0.4
ROW	-4.6	-8.9	2.1	-11.4	-0.8	-2.4	0.3	-2.9	-2.1	-23.7	4.5	-21.4
Total	274	0	0	274	1.4	0	0	1.4	81.4	0	0	81.4

Country	China				R_SSA				AF8			
	Allo. Eff.	TOT	IS	Total	Alloc. Eff.	TOT	IS	Total	Alloc. Eff.	TOT	IS	Total
NAFTA	0	-1.9	-0.9	-2.7	-0.5	0.4	-2.5	-2.6	-0.2	-1.3	-1.1	-2.6
EU	-2	-10.2	0.5	-11.7	1.2	-12	-0.9	-11.2	-1	-8.1	-0.2	-9.3
Japan	0.1	-1.5	0.9	-0.5	-0.3	-1.9	-0.5	-2.7	-0.2	-1.2	0.1	-1.3
China	33.7	-7.2	-0.2	26.2	-0.6	-1.7	0	-2.3	-0.2	-0.8	0.2	-0.8
India	0.1	-0.7	0.1	-0.5	-0.8	-1.4	-0.1	-2.3	-0.1	-0.7	0	-0.8
XSEA	0.1	-0.2	0	-0.1	0	0	0	0	0	0	0	0
Malawi	0.2	0	0	0.2	0	-0.2	0	-0.2	2.7	0.1	0	2.9
Botswana.	5.4	9.2	-0.1	14.5	4.3	8.1	-0.1	12.3	14.1	10.2	-0.1	24.3
Zambia	0.4	1	-0.1	1.3	-0.2	5.6	-0.3	5.1	0.7	-0.1	0	0.6
Zimbabwe	2.1	28.4	-1.9	28.6	0.5	7.1	-0.7	6.9	2	5.1	-0.5	6.6
Mozambique	0.1	0.3	0	0.4	0.1	0.6	0	0.8	0.5	2.4	0.1	3.1
Tanzania	0.3	0.7	0.2	1.2	3.1	9.7	3.1	15.9	2.9	1.7	0.3	4.8
Madagascar	0	0.4	0.1	0.6	0	0.1	0	0.2	0	0	0	0
Uganda	0	0.2	0.2	0.4	1	6.6	4.1	11.8	0.4	0.8	0.5	1.7
R_SSA	0	0.2	0.1	0.3	16.9	-16	-1.7	-1	-0.3	-0.4	-0.1	-0.7
S. Africa	-0.1	0.3	-0.5	-0.3	-0.6	-1.8	0.1	-2.2	-0.8	-3.6	0.5	-3.9
ROW	-0.1	-19.1	1.6	-17.7	-1.1	-3.7	-0.6	-5.4	-0.8	-4.2	0.2	-4.7
Total	40.3	0	0	40.3	22.9	0	0	22.9	19.7	0	0	19.7

Source: Authors simulation

Note: Alloc.Eff., TOT, and IS stand for Allocative Efficiency, Terms of Trade, and Investment-Saving balance respectively.

The welfare gains for each country have different impacts on the real GDP, terms of trade, and household

utility percent changes. Because most of the EV gains are from agriculture and agriculture's share to GDP for each

country differs though it is believed that for most African nations agriculture is the main economic stay. For instance, in the case of Botswana where agriculture share to GDP is very minimal (close 2.4 %) we wouldn't expect a significant change in the real GDP from EV changes attributed to agricultural commodities. Whereas for countries like Malawi and Tanzania where the agriculture share to GDP remains as high as above 36 percent for Malawi and 43 percent for Tanzania welfare gains from tariff reduction or elimination on the agricultural commodities will have a remarkable share.

As shown in Table 3, a welfare gain of US\$ 12.33 million for malawi in the EU scenarion has an impact of 0.21 percent change in the real GDP, 0.79 percent change in household utility, and 1.31 percent change in terms of trade. While US\$ 117.36 million welfare gain for Botswana under similar scenario has an effect of 0.02 percent change in real GDP, 0.07 percent change in household utility, and 0.20 percent change in terms of trade. Similar trend applies to the rest other countries depending on the percentage share of agriculture to real GDP.

Table 3. Effect of Free Trade and Unilateral Tariff Elimination on Read GDP (% change)

Country	EU	Japan	NAFTA	China	R_XSS	AF8
NAFTA	0	0	0	0	0	0
EU	0	0	0	0	0	0
JPN	0	0	0	0	0	0
CHN	0	0	0	0	0	0
IND	0	0	0	0	0	0
XSEA	0	0	0	0	0	0
MWI	0.21	0	0.26	0.01	0	0.16
BWA	0.02	0	0.03	0.00	0	0.01
ZMB	-0.01	0	0.00	0.01	-0.01	0.02
ZWE	0.02	0.01	0.01	0.02	0.01	0.02
MOZ	0.00	0	0.01	0	0	0.01
TZA	0.01	0	0.00	0	0.03	0.03
MDG	0	0	0.15	0	0	0
UGA	0	0	0	0	0.02	0.01
R_SSA	0	0	0	0	0	0
ZAF	0	0	0	0	0	0
ROW	0	0	0	0	0	0

Source: Authors simulation

Table 4. Effect of Free Trade and Unilateral Tariff Elimination on Household Utility (% change)

Country	EU	Japan	NAFTA	China	R_SSA	AF8
NAFTA	0	0	0	0	0	0
EU	0	0	0	0	0	0
JPN	0	0	0	0	0	0
CHN	0	0	0	0	0	0
IND	0	0	0	0	0	0
XSEA	0.0	0.0	0.0	0.0	0.0	0.0
MWI	0.79	0.01	1.40	0.01	-0.01	0.18
BWA	0.07	0	0.09	0.01	0.01	0.01
ZMB	0.04	0	0	0.04	0.16	0.02
ZWE	0.37	0.07	0.10	0.36	0.09	0.08

MOZ	0.01	0.01	0.04	0.01	0.02	0.09
TZA	0.05	0	0.02	0.01	0.18	0.05
MDG	0.02	0.01	0.89	0.01	0.00	0.00
UGA	0.01	0.00	0.01	0.01	0.22	0.03
XSS	0	0	0	0	0	0
ZAF	0	0	0	0	0	0
ROW	0	0	0	0	0	0

Source: Authors simulation

Table 5. Effect of Free Trade and Unilateral Tariff Elimination on Terms of Trade (% change)

Country	EU	Japan	NAFTA	China	R_SSA	AF8
NAFTA	0	0	-0.01	0	0	0
EU	0	0	0	0	0	0
JPN	0	0	0	0	0	0
CHN	0	0	0	0	0	0
IND	0	0	-0.01	0	0	0
XSEA	0	0	0	0	0	0
MWI	1.31	0.01	2.59	0	-0.03	0.02
BWA	0.20	0.01	0.23	0.02	0.02	0.02
ZMB	0.10	-0.01	-0.01	0.06	0.36	-0.01
ZWE	1.31	0.21	0.32	1.24	0.31	0.22
MOZ	0.02	0.02	0.07	0.03	0.04	0.19
TZA	0.20	0.01	0.09	0.05	0.65	0.11
MDG	0.07	0.02	2.27	0.04	0.01	0
UGA	0.04	0	0.02	0.03	0.85	0.10
XSS	-0.01	0	0	0	-0.03	0
ZAF	0	0	0	0	-0.01	-0.01
ROW	0	0	0	0	0	0

Source: Authors simulation

However, the welfare losses for NAFTA, EU, Japan, China, and India on their real GDP, household utility, and term of trade percentage changes don't have any impact as you can see from Table 3. Only for India and NAFTA in the NAFTA scenario show a minor rounded off effect on their terms of trade (US\$-0.01 percent change for both). The impacts of both bilateral tariff reduction and unilateral tariff eliminations would be a bit argueable. Because, despite the positiveness of the welfare gains, the impacts on real GDP, household utilities, and terms of trade percentage changes are not as significant as we anticipated for the AF8 countries. These small percentage changes could signal two things: 1) Export commodities of the eight African countries might have not yet diversified in both assumptions, and 2) Import revenues could be high and the bilateral tariff reduction (first assumption of this study) might reduce the revenues to be collected and the small percentage changes occur.

Karingi et.al (2002) who studied implications of the COMESA free trade area and the proposed customs union concluded that COMESA is better off with free trade. In the short run, as there are disparities among member states intra-trade surplus, this wouldn't be a fair conclusion given that each member country has its own pitfalls to exercise free trade in a short span. We would agree if the conclusion is to mean that all roads that run to free trade

has to be paved. On the other hand, a study carried out by Alemayehu and Haile (2002) on “regional economic integration in africa: a review of problems and prospects with a case study of COMESA” shows that at present the potential revenue loss from intra-COMESA is low owing to the low level of intra-regional trade flows. That is there would have been big loss if the intra-regional trade had been big enough. They mentioned the Kenyan case where government revenue from its imports from EU constitutes 10% of its total revenue. They further have asserted that given that Kenya a more liberalized country the revenue loss for other country could be large. Concerning the impact of trade liberalization Winters (*et.al*, 2002) argue that there is a strong presumption that trade liberalization will be poverty-alleviating in the long run and on average. Thus, the long-run impact of trade liberalization is so evident but not in a short-run.

In this study the agriculture sector has contributed a big portion for the welfare gain. But African agriculture could not compete with developed countries’ agriculture which is a highly subsidized sector. Balasing and Francois (2005) indicate that the EU seems to be providing relatively high import protection for declining sectors such as processed food and agriculture and relatively low protection for manufacturing, one of its leading sectors. While Rodrik (1997) finds that the only systematic relationship is that countries reduce barriers to trade as they get richer concluding that initial economic growth was generated when trade was protected. But nowadays almost it is impossible for Africans to exercise this because it is not affordable and yet not recommended option.

The World Trade Organization (WTO) has put a benchmark economic pathway for African that “if Sub Sahara Africa (SSA) is supposed to be benefited from sustained economic growth it will need to do it through trade liberalization and regional integration”.

Whatever studies have been conducted and recommendations are made African poor continue to suffer due to their own long-standing problems and due to trade irregularities. For instance, sugar that employs more poor is one

of the contributors for the welfare gain for five African countries in this study. Because, Tax levied on sugar imports from the eight countries by EU is in the order of Zimbabwe (116%), Zambia (97.8%), Malawi (96.2%), Tanzania (96%), Madagascar (94%), Mozambique (21.4%), Botswana (6%), and Uganda (0%), and NAFTA levied respectively: 28.6%, 0%, 24.2%, 0%, 0%, 24.2%, 1.7% and 0 %. European Union levied much less tax on Botswana’s sugar and no tax on Uganda’s sugar because Botswana and Uganda aren’t sugar exporters but importers. Given these high tax rates levied on sugar it remains one of the five top exportable commodities in the five countries. On the other hand, the EU levied 42% import tax on Botswana’s meat and veal and 70.6% import tax on Zimbabwean commodities disaggregated as Rest of Food (R_Food) because these two are the most exported commodities by Botswana and Zimbabwe. Then, how these countries and similar others will gain from agricultural commodities trade being heavily taxed by the developed nations is a paradox and challenging issue. One of the purposes of this study was to highlight the above mentioned anomalous on agricultural commodities trade.

Table 6 shows pre-simulation data of bilateral exports at market prices. When we compare with the post-simulation result on bilateral exports at market prices it tells us the contribution of these commodities to welfare gains for each country. For example, sugar in EU scenario for Malawi, Zambia, Zimbabwe, Tanzania and Madagascar, and rest of food for Botswana. In case of NAFTA scenario textile contributes for Botswana and Madagascar and sugar for Mozambique. Among others Zimbabwe gets as big as US\$ 91.2 million from crops in the china scenario.

Generally the simulation results show that agricultural commodities are major players for the economic growth except for few countries that depend on mining industry as the main engine of their overall economic growth.

Table 6. Pre-Simulation Bilateral Exports at Market Prices (US\$ Million)

Commodity	MWI	BWA	ZMB	ZWE	MOZ	TZA	MDG	UGA
GRO	2.1	24.4	2.6	4.1	1.3	15.8	0	15.6
Wht	0	35.8	0	0.9	0	0.6	0	0
V_F	9.8	264.2	12.8	50.6	7.8	73.3	27.8	17.8
OCR	426.5	54	54.6	715	33.2	223.2	130.9	245.5
OAP	0.8	84.5	4.8	9.2	0.7	21.3	5.8	17.9
OSD	2.1	19.4	1	9.9	4.4	13.3	0.6	4
SGR	53.4	74	44.2	58.2	8.1	7.8	4.4	1.6
PBF	5.8	216.8	14.5	153.8	17.1	45.5	9	21.4
R_Food	4.8	545.8	10.6	97.2	116.5	198.1	178.1	84.8
TEX	6.8	709.1	39.6	35.2	3.2	41.1	237.3	9.1
P_C	0.6	4430.4	0.5	2.7	0	0	1.6	1.9
CRP	7.7	1303.5	11.6	44	3.9	17.5	13.7	7.5
MVH	4.8	66.7	1.6	1.9	2.1	0.6	0.1	1.8

OTN	1.5	54.8	11.3	2	1.6	4.9	2.4	1.2
OME	2.1	310.8	19.7	21	8.7	10.9	9.6	8.8
CMN	2.6	319.2	2.9	13.4	10.9	27.1	1.4	12.2
OSG	3.4	1687.5	1.4	39.5	2.2	18.9	10.5	31.5
R_Mnfcs	64.4	21868.7	1075.2	633.8	496.4	425	344	133.7
R_Svces	66.8	9249.9	168.8	337.4	579.6	302.3	33.5	113.8
Total	665.9	41319.6	1477.7	2229.7	1297.9	1447.2	1010.6	730.1

Source: GTAP database

Table 7. Post –Simulation Bilateral Exports at Market Prices (US\$ Million)

EU								
Commodity	MWI	BWA	ZMB	ZWE	MOZ	TZA	MDG	UGA
GRO	2	24.6	2.6	4.1	1.3	15.7	0	15.6
Wht	0	36.2	0	0.8	0	0.6	0	0
V_F	9.5	314.3	12.7	55.5	7.8	72.9	27.9	18.6
OCR	405.4	54	53.5	676.3	33.1	221	130.4	245.3
OAP	0.7	84.1	4.7	9	0.7	21.2	5.8	17.9
OSD	2.1	19.2	1	9.6	4.4	13.2	0.6	4
SGR	103	81	61.3	146	8.9	25.9	8.6	1.6
PBF	5.7	214.7	14.6	149	17.1	45.3	9	21.4
R_Food	4.5	744.4	10.6	147.2	116.2	196.5	177.5	84.5
TEX	6.1	700	39	32.2	3.2	40.7	236.5	9.1
P_C	0.6	4480.8	0.5	2.6	0	0	1.6	1.9
CRP	6.9	1327.5	11.5	42.3	3.9	17.3	13.6	7.5
MVH	4.7	66.4	1.6	1.8	2.1	0.6	0.1	1.8
OTN	1.3	54.1	11.1	1.8	1.6	4.8	2.4	1.2
OME	1.9	307.2	19.5	19.3	8.8	10.9	9.6	8.8
CMN	2.4	317	2.9	12.8	10.9	27	1.4	12.2
OSG	3.1	1676.4	1.4	37.7	2.2	18.8	10.5	31.5
R_Mnfcs	55.9	21776	1062.7	571.5	494.8	419.6	342.4	133.6
R_Svces	62.4	9189.3	167.9	322.3	581.3	300.5	33.4	113.7
Total	678.2	41468	1479.2	2241.8	1298	1452.6	1011.3	730.3

NAFTA								
Commodity	MWI	BWA	ZMB	ZWE	MOZ	TZA	MDG	UGA
GRO	2	24.4	2.7	4.1	1.4	15.8	0	15.6
Wht	0	37.7	0	0.8	0	0.6	0	0
V_F	9	265	12.8	50.4	7.8	73.1	26.7	17.8
OCR	451.7	53.7	55.6	719.5	33.7	225.8	118.4	245.5
OAP	0.7	84.2	4.8	9.1	0.7	21.3	5.6	17.9
OSD	1.9	19.2	1	9.9	4.4	13.3	0.5	4
SGR	57.9	74.3	44.3	64.2	14.1	7.8	4	1.6
PBF	5.3	215.6	14.6	152.6	17	45.4	8.4	21.4
R_Food	4.3	551.8	10.7	96.5	115.8	197.8	160.8	84.7
TEX	6.5	830.9	39.5	36.2	3.4	41.8	287.1	9.1
P_C	0.6	4473.1	0.5	2.7	0	0	1.5	1.9
CRP	6.8	1292.4	11.6	43.9	3.9	17.7	11.9	7.5
MVH	4.7	66.4	1.6	1.9	2.1	0.6	0.1	1.8
OTN	1.3	54	11.2	1.9	1.6	4.9	2.4	1.2
OME	1.9	307.2	19.7	20.7	8.7	10.9	9.5	9
CMN	2.4	316.8	2.9	13.3	10.9	27.1	1.3	12.2
OSG	3.1	1675.9	1.4	39	2.2	18.9	9.6	31.5
R_Mnfcs	65.5	21932	1074	635.5	493.4	424.9	374	133.8
R_Svces	61.6	9184.7	168.7	334	578.5	301.6	31.1	113.8
Total	687.2	41459	1477.7	2236.3	1300	1449.3	1052.9	730.3

Japan

Commodity	MWI	BWA	ZMB	ZWE	MOZ	TZA	MDG	UGA
GRO	2.1	24.4	2.6	4.1	1.3	15.8	0	15.6
Wht	0	35.8	0	0.8	0	0.6	0	0
V_F	10.1	264.6	12.8	50.5	7.8	73.3	27.8	17.8
OCR	426.3	54.1	54.6	710	33.2	223.2	130.7	245.5
OAP	0.8	84.5	4.8	9.1	0.7	21.3	5.8	17.9
OSD	2.1	19.4	1	9.8	4.4	13.3	0.6	4
SGR	53.4	74	44.2	57.7	8.1	7.8	4.4	1.6
PBF	5.8	216.7	14.6	153.2	17.1	45.5	9	21.4
R_Food	4.8	552.8	10.6	96.6	117.4	198.7	178.9	84.8
TEX	6.8	710.1	39.6	35.1	3.2	41.1	237.2	9.1
P_C	0.6	4434.2	0.5	2.7	0	0	1.6	1.9
CRP	7.7	1302.8	11.6	43.7	3.9	17.5	13.7	7.5
MVH	4.8	66.7	1.6	1.9	2.1	0.6	0.1	1.8
OTN	1.5	54.8	11.3	1.9	1.6	4.9	2.4	1.2
OME	2.1	310.6	19.7	20.7	8.7	10.9	9.6	8.8
CMN	2.6	319.1	2.9	13.3	10.9	27.1	1.4	12.2
OSG	3.4	1687	1.4	39.1	2.2	18.9	10.5	31.5
R_Mnfcs	64.4	21868	1075	649.3	495.8	424.7	343.7	133.7
R_Svces	66.8	9246.8	168.8	334.8	579.8	302.2	33.5	113.8
Total	665.8	41327	1477.6	2234.3	1298	1447.4	1010.8	730.1

AF8

Commodity	MWI	BWA	ZMB	ZWE	MOZ	TZA	MDG	UGA
GRO	2.1	24.4	2.6	4.1	1.3	15.8	0	15.6
Wht	0	35.8	0	0.9	0	0.6	0	0
V_F	9.8	264.2	12.8	50.6	7.8	73.3	27.8	17.8
OCR	426.5	54	54.6	715	33.2	223.2	130.9	245.5
OAP	0.8	84.5	4.8	9.2	0.7	21.3	5.8	17.9
OSD	2.1	19.4	1	9.9	4.4	13.3	0.6	4
SGR	53.4	74	44.2	58.2	8.1	7.8	4.4	1.6
PBF	5.8	216.8	14.5	153.8	17.1	45.5	9	21.4
R_Food	4.8	545.8	10.6	97.2	116.5	198.1	178.1	84.8
TEX	6.8	709.1	39.6	35.2	3.2	41.1	237.3	9.1
P_C	0.6	4430.4	0.5	2.7	0	0	1.6	1.9
CRP	7.7	1303.5	11.6	44	3.9	17.5	13.7	7.5
MVH	4.8	66.7	1.6	1.9	2.1	0.6	0.1	1.8
OTN	1.5	54.8	11.3	2	1.6	4.9	2.4	1.2
OME	2.1	310.8	19.7	21	8.7	10.9	9.6	8.8
CMN	2.6	319.2	2.9	13.4	10.9	27.1	1.4	12.2
OSG	3.4	1687.5	1.4	39.5	2.2	18.9	10.5	31.5
R_Mnfcs	64.4	21869	1075.2	633.8	496.4	425	344	133.7
R_Svces	66.8	9249.9	168.8	337.4	579.6	302.3	33.5	113.8
Total	665.9	41320	1477.7	2229.7	1298	1447.2	1010.6	730.1

China

Commodity	MWI	BWA	ZMB	ZWE	MOZ	TZA	MDG	UGA
GRO	2.1	24.4	2.6	4	1.3	15.8	0	15.6
Wht	0	35.8	0	0.8	0	0.6	0	0
V_F	9.8	265.1	12.8	49.4	7.8	73.4	27.7	17.8
OCR	426.5	54	54.4	806.2	33.3	223.1	130.8	245.4
OAP	0.8	84.9	4.7	9	0.7	21.5	5.8	18
OSD	2.1	19.4	1	9.5	4.4	13.3	0.6	4
SGR	53.4	73.9	44.1	55.7	8.1	7.8	4.4	1.6
PBF	5.8	217.6	14.8	147.8	17.1	45.6	9.2	21.4
R_Food	4.8	547.7	10.6	93.3	116.5	198.2	178	84.8
TEX	6.8	716.5	39.2	33.3	3.2	41.2	237.7	9.1
P_C	0.6	4437.6	0.5	2.6	0	0	1.6	1.9

CRP	7.8	1307	11.6	42.9	4	17.6	13.8	7.5
MVH	4.8	67	1.6	1.8	2.1	0.6	0.1	1.8
OTN	1.5	54.7	11.2	1.8	1.6	4.9	2.4	1.2
OME	2.1	310.8	19.6	19.9	8.8	11	9.6	8.8
CMN	2.6	318.9	2.9	13	10.9	27.1	1.4	12.2
OSG	3.4	1686.4	1.4	38.3	2.2	18.9	10.5	31.5
R_Mnfcs	64.3	21868	1077.8	601.9	495.5	425.9	344.4	133.9
R_Svces	66.8	9243.5	168.2	328.3	580.8	301.9	33.5	113.8
Total	665.8	41333	1479	2259.5	1298	1448.4	1011.3	730.3

R_SSA								
Commodity	MWI	BWA	ZMB	ZWE	MOZ	TZA	MDG	UGA
GRO	2.1	24.4	3.2	4.1	1.3	17.4	0	15.9
Wht	0	35.8	0	0.9	0	1.1	0	0
V_F	9.8	264.3	12.8	50.4	7.8	72.9	27.8	17.7
OCR	426.8	54.9	53.5	713.1	33.2	229	130.9	248
OAP	0.8	84.5	5.2	9.1	0.7	21.1	5.8	17.7
OSD	2.1	19.4	1	9.8	4.4	13.1	0.6	3.9
SGR	51.5	73.6	60.9	81.6	9.3	8	4.4	2.4
PBF	5.8	216.7	14.5	152.7	17.1	44.8	9	20.8
R_Food	4.9	552.7	13.8	96.7	117	206.2	178.2	87.7
TEX	6.8	710.3	39.2	34.7	3.3	48.9	237.3	9.4
P_C	0.6	4430.6	0.6	2.7	0	0	1.6	1.9
CRP	7.7	1322.1	13.2	43.9	4	20.7	13.8	11.7
MVH	4.8	67.5	1.9	1.9	2.1	0.7	0.1	2.1
OTN	1.5	54.7	11	1.9	1.6	4.9	2.4	1.3
OME	2.1	312.7	20.1	20.8	8.7	11.6	9.6	9.3
CMN	2.6	319	2.9	13.3	10.9	26.7	1.4	12
OSG	3.4	1686.4	1.4	39.1	2.2	18.6	10.5	30.9
R_Mnfcs	65.4	21860	1060.2	622.8	495.7	420.7	343.9	132.5
R_Svces	66.9	9244.1	167.8	334.1	579.5	297	33.5	111.6
Total	665.5	41333	1483.3	2233.7	1299	1463.4	1010.7	736.7

Source: authors simulation

5. Conclusion

In spite of the bilateral tariff reduction on certain commodities a complete unilateral tariff elimination is much less known approach as literatures reveal. It has not yet fully tested because decision-makers are doubtful on its risk-sharing function and related problems. The African Growth Opportunity Act (AGOA) initiated by the United States to open its market for commodities from the least developed countries free of import tax is a good start for a complete unilateral tariff elimination. We have seen from the results of simulation that by so doing developed countries wouldn't have any significant loss to their economy. In other words it is not painful for their economy. Then, if developed countries put this initiative down-earth for the Africans, however, can open a competitiveness in diversifying their export commodities and eventually improve their economic burden.

While the bilateral tariff reduction within the Eastern and Southern Africa countries (AF8) couldn't be taken as robust approach even though the outcomes are positive. Because this is an indication of less intra-trade flow among these countries. So, the countries should pave the pathways that lead to boost their trade flows within the region and ultimately the economy too. If trade flows within the region increase there will be a chance for trade expansion

and trade reorientation based on the diversification and the comparative advantage they are going to accomplish in the near future.

In conclusion we would say that unilateral tariff elimination is possible while it is costly for African countries to reciprocate, and much has to be done to increase competitiveness of African agriculture given that anomalous provisos in agricultural trade would improve in future to accommodate African commodities in the world market. Because agricultural commodities have played a substantial role in the welfare gain in this study.

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