

Global Agricultural Trade Liberalization and its Implications for Sub-Saharan Africa

By

**J. Alexander Nuetah
Ministry of Finance and Development Planning
Republic of Liberia**

**AERC Research Paper 350
African Economic Research Consortium, Nairobi
August 2018**

THIS RESEARCH STUDY was supported by a grant from the African Economic Research Consortium. The findings, opinions and recommendations are, however, those of the author and do not necessarily reflect the views of the Consortium, its individual members or the AERC Secretariat.

Published by: The African Economic Research Consortium
P.O. Box 62882 - 00200
City Square, Nairobi, Kenya

ISBN 978-9966-61-043-0

© 2018, African Economic Research Consortium.

Contents

| | |
|--|----|
| Acknowledgement | 5 |
| Abstract | 6 |
| 1. Introduction | 7 |
| 2. Methodology..... | 10 |
| 2.1 Equation system..... | 10 |
| 2.2 Modification of the ATPSM..... | 12 |
| 2.3 Data sources..... | 14 |
| 3. Results and Discussion..... | 15 |
| 3.1 World market price effect | 15 |
| 3.2 Potential implications of price changes for individual commodities and countries..... | 17 |
| 4. Conclusion..... | 23 |
| 5. References | 25 |
| 6. Appendix | 28 |

| | |
|--------------------|----|
| 7. Footnotes | 35 |
|--------------------|----|

List of Tables

| | |
|---|----|
| Table 2.1: Revised tiered formula for tariff reduction by developed and developing countries..... | 13 |
| Table 2.2: Tiered reduction formula for overall trade-distorting domestic support (OTDS)..... | 13 |
| Table 3.1: Percentage change in world prices after | 16 |
| Table 3.2: Effects of milk price changes on major net exporting and importing countries..... | 18 |
| Table A1: World and SSA agricultural commodity trade, 1995–2013..... | 28 |
| Table A2: Sub-Saharan Africa net agricultural commodity trade (million US\$), 1995–2013..... | 29 |
| Table A3: Major sugar traders from Sub-Saharan Africa, 1995–2013..... | 30 |
| Table A4: Potential impact of preference erosion on Sub-Saharan African countries..... | 31 |

Figure

| | |
|--|----|
| Figure 1: Sugar free market and preferential prices (actual and forecast) 2007–2016..... | 21 |
|--|----|

Acknowledgement

The author is grateful to the African Economic Research Consortium (AERC) for providing the grant that made the study successful. I also acknowledge the enormous contributions of the assigned resource persons whose comments and suggestions from the proposal development to the final paper improved the content and quality of this work. Special recognition goes to Prof. Oliver Morrissey and Dominique Njinkeu for their comments and suggestions.

Abstract

This paper analyzes the potential impact of agricultural trade liberalization on sub-Saharan Africa. We used the Agricultural Trade and Policy Simulation Model to estimate the potential effects of agricultural trade liberalization, mainly in the United States (US) and the European Union (EU), on the world market prices of agricultural commodities. We then used the estimated price changes to assess the impact of these reforms on net-food importers as well as other sub-Saharan African countries that enjoy preferential trade agreements with the EU and the US. The results indicate that the world market prices of all commodities imported by Sub-Saharan Africa are expected to rise while the prices of the key export commodities of the region would either decline or remain unchanged. Given that the prices of major food commodities are expected to rise, net food-importing countries will experience an increasing import bill, thus leading to welfare loss. Major Sub-Saharan Africa sugar exporters who are beneficiaries of preferential agreements such as the EU Sugar Protocol and the US's Africa Growth and Opportunity Act initiative will become losers as preferences are eroded due to global liberalization. Thus, the region is expected to generally become a net loser from the current WTO reform modalities.

JEL classification: F13, F15, F17

Key words: Agricultural trade, Liberalization, Sub-Saharan Africa, Domestic support, Export subsidies

1. Introduction

Global efforts to liberalize agricultural trade were boosted by the conclusion of the December 2013 Bali Ministerial conference. The conference reaffirmed developed countries' commitment to reducing tariffs and domestic support, and to eliminate export subsidies, which had been blamed for creating distortions in the agricultural commodity markets of developing and least developed countries (LDCs). Thus, it has been argued that removing these distortions would enable LDCs, including those in Sub-Saharan Africa (SSA), to lift themselves out of poverty through gains from agricultural trade (see Oxfam, 2004; Nebehay, 2006; Jensen and Zobbe, 2006 and Anderson and Masters, 2009). However, while global agricultural trade liberalization through the World Trade Organization (WTO) system is still underway, most developed countries have removed barriers to at least 98% of all LDC exporters, whereas China and India have adopted less expansive programmes to improve market access for LDCs (see Matthews, 2013). Sub-Saharan African agricultural exports also enjoy duty-free and quota-free (DFQF) access to the European Union (EU) market through various Economic Partnership Agreements (EPAs), and the Everything But Arms (EBA) initiative that grants market access to 34 SSA LDCs. In addition, the United States' (US) African Growth and Opportunity Act (AGOA) provides DFQF access to 40 designated African countries, of which 26 are LDCs in SSA (see Elliott, 2013).

While substantial efforts have been made by developed and transition economies to create market access for LDCs, many argue that SSA has not gained much from most of the DFQF access granted to African LDCs by developed countries. For instance, it is argued that about 90% of all imports recorded under the US AGOA initiative are oil, while a wide range of processed agricultural products, including dairy products, sugar, cocoa and cotton, which are of interest to the region, are excluded (see Ancharaz and Laird, 2013.¹ Moreover, non-tariff barriers such as sanitary and phytosanitary (SPS) and rules of origin (RoO) requirements under EU and US preferential agreements prevent African beneficiaries from fully utilizing the gains from liberalization. The structure of agricultural production and the limited scale of diversification of SSA agriculture also limit the size of the market for most of the beneficiary countries, and prevent them from utilizing the market accesses created through preferential trade arrangements provided by developed and transition economies (see Basnett and Engel, 2013). Furthermore, although the global agricultural market has experienced a transformation away from agricultural production to agri-food processing, with the active involvement of private stakeholders, the region's agriculture still struggles with productivity growth. Private-sector involvement remains at a bare minimum, thereby limiting the region's ability to

provide the appropriate volume of essential commodities to feed its growing population, and to sufficiently participate in global agricultural trade. For example, in 2012, the total value of agricultural commodities exported by the region was just 6% of the EU's exports in 1995.³ Trade in agricultural commodities performed particularly dismally because of the region's failure to respond to the changing demands of global integration (see Losch, 2011).

Given the limitations, it remains doubtful whether SSA enjoys the intended benefits from existing market access, and whether further liberalization under the WTO would provide better incentives for expanding its gains from global agricultural trade. Proponents of liberalization argue that agricultural trade liberalization would increase world prices and enable poor countries to increase their income levels (see Frith, 2005; Anderson and Valenzuela, 2007; Binswanger-Mkhize and McCalla, 2008; Heo and Doanh, 2009 and Anderson et al., 2010). Critics however argue that LDCs and net-food-importing countries benefit from the low food prices that result from the domestic agricultural policies of rich countries, and that reforms that lead to price rises will further increase poverty in poor and net-food-importing countries (see for example, Moore and Zanardi, 2009). It is further argued that poor countries do not benefit from increased world prices since low domestic production prevents them from taking advantage of the high prices resulting from the liberalization (see, for example, Rodriguez and Rodrik, 1999; Clemens and Williamson, 2002 and Vamvakidis, 2002). In addition, some argue that tariff reductions resulting from liberalization reduce government revenue, and lead to significant fiscal instability that may affect government spending on development activities, which may lead to a further deterioration of the national welfare (see Aizenman and Jinjarak, 2009 and Younas and Bandyopadhyay, 2009).

While African countries in general have indicated some satisfaction with how the discussion has progressed (see Imboden, 2013), it remains unclear how global agricultural trade reform under the WTO system would affect the different interest groups in SSA. For instance, it is argued that some SSA beneficiaries of the Africa Growth and Opportunity Act (AGOA) programme (for example, Lesotho and Kenya) have realized a massive increase in trade with the US, with the bilateral export volume increasing three-fold from 2000 to 2012 (Elliot, 2013). However, an earlier assessment of full WTO agricultural trade liberalization indicates that consumers in the West African region of SSA would tend to incur net welfare losses (see Nuetah et al., 2011). Furthermore, major SSA exporters of sugar and sugar products currently benefiting from the EU Sugar Protocol, as well as the AGOA and exporting sugar to EU and US markets at guaranteed prices, would be affected as the reform results in preference erosion due to the expansion of duty-free, quota-free market access to all LDCs.⁴ There remains uncertainty over the impact of global agricultural trade liberalization on the different interest groups in SSA.

The main purpose of this study is to assess how agricultural trade liberalization in the global context would affect agricultural commodity prices, and how the prices changes would affect primary-commodity-exporting and net-food-importing

countries in the SSA region. We further consider how preference erosion due to global liberalization would affect SSA countries that enjoy special treatment from developed countries. Through the findings of this research, insights are provided into the potential impact of the WTO reforms on the different SSA players in the agricultural commodity market. This is followed by some suggestions for policy makers about what could be of interest to SSA during the next rounds of global trade reform negotiations.

The rest of this paper is organized as follows: In the next section, we discuss the Agricultural Trade and Policy Simulation Model (ATPSM) and the modifications made to the model as well as the simulation scenarios. Section 3 presents and discusses the simulation results, and how price changes resulting from the simulation affect the different groups of countries in the region. In the final section, we draw conclusions and make some policy suggestions.

2. Methodology

This study used the standard version of the ATPSM developed by the United Nations Conference on Trade and Agricultural Development (UNCTAD) and the Food and Agricultural Organization (FAO) to assess the potential effects of agricultural policy liberalization on world prices of selected agricultural commodities. ATPSM is a static, partial-equilibrium, global agricultural trade analysis model. This means that there are no stochastic shocks or other uncertainties, and there is no specific time dimension to the implementation of the policy measures or to the maturing of their economic effects. The comparative static nature of the model does not imply that the policies take effect instantly. Rather, it compares two states at a similar point in time, one with the policy change, the other without. Finally, whereas the model aims at estimating far-reaching details of the agricultural economy, it does not deal with the repercussions of barrier reductions on other parts of the national economy. Thus, neither effects on the government budget (except for tariff revenues and subsidies to exports and domestic production) nor on the industrial and service parts of the economy or the labour market are subject to analysis. Simplifying the model in these respects allows for a detailed specification of policies in a large number of countries for numerous commodities (see Peters, 2006).

2.1 Equation system

The model base-period equilibrium requires that:⁵

$$\sum_{n=1}^N \{D_{i,r}(P_{i,r,d}, P_{i,\{j\},d}, Z_{i,r,d}) + X_{i,r}\} = \sum_{n=1}^N \{S_{i,r}(P_{i,r,s}, P_{i,\{j\},s}, W_{i,r,s}) + M_{i,r}\} \quad (1)$$

$$P_{i,r,d} = P_{i,w} \cdot (1 + t_{c,i,r}) \quad (2)$$

$$P_{i,r,s} = P_{i,w} \cdot (1 + t_{p,i,r}) \quad (3)$$

Where the subscripts i , j and r , respectively, are defined as follows: i denotes a commodities index in country r ; j represents the number of other commodities that substitute in consumption; and r is a country index. The letters D , S , X , M and P , respectively, denote demand, supply, exports, imports and price; $D(\cdot)$ and $S(\cdot)$, respectively, represent the domestic demand and supply functions for commodity i and in country r ; $M(\cdot)$ and $X(\cdot)$, respectively, denote imports and exports of commodity i in country r ; $P_{i,r,d}$ represents the domestic demand price of commodity i in country r ; $P_{i,r,s}$ denotes the supply price of commodity i in country r ; $\{j\}$ in the subscripts of the

second price terms in the demand and supply functions denotes the prices of other commodities that substitute or compete for resources for commodity i in country r ; N is the total number of countries that produce and trade in the commodity in question; the vectors Z and W , denote other non-price variables that affect the domestic demand and supply of commodity i in country r , respectively. $P_{i,w}$ is the world price of commodity i , and t_c and t_p , respectively, denote the consumption and production tariff equivalent wedges between domestic and international prices for commodity i in country r . The endogenous variables are the quantities demanded and supplied, as well as the world prices. Exogenous variables are the demand and supply policy wedges, as well as all other variables that affect supply and demand.

After a trade policy change such as a change in tariffs, export subsidies and/or domestic support is specified, the model calculates the new equilibrium. The standard equation system for all countries has four equations:

$$\hat{D}_{i,r} = \eta_{i,r} \left[\hat{P}_{wi} + \left(1 + \hat{t}_{c,i,r} \right) \right] + \sum_{\substack{j=1 \\ i \neq j}}^J \eta_{i,j,r} \left[\hat{P}_{wj} + \left(1 + \hat{t}_{c,j,r} \right) \right]; \dots \dots \dots (4)$$

$$\hat{S}_{i,r} = \varepsilon_{i,r} \left[\hat{P}_{wi} + \left(1 + \hat{t}_{p,i,r} \right) \right] + \sum_{\substack{j=1 \\ i \neq j}}^J \varepsilon_{i,j,r} \left[\hat{P}_{wj} + \left(1 + \hat{t}_{p,j,r} \right) \right]; \dots \dots \dots (5)$$

$$\Delta M_{i,r} = D_{i,r} \hat{D}_{i,r} - S_{i,r} \hat{S}_{i,r} + \Delta X_{i,r}; \dots \dots \dots (6)$$

$$\Delta X_{i,r} = \gamma_{i,r} \Delta S_{i,r}; \dots \dots \dots (7)$$

where $\hat{}$ denotes relative changes and Δ absolute changes;

η denotes own and cross elasticities of demand in country r ;

ε denotes own and cross elasticities of supply in country r ;

γ denotes the ratio of exports to production.

Equations 4 and 5 specify that the new demand and supply are determined by the price changes, trade policy changes and the corresponding elasticities and cross-price elasticities. Equation 6 clears the market so that imports plus production equals domestic consumption and exports. Equation 7 requires that the change in exports in each market is some proportion of the change in production. This proportion is determined by the ratio of exports to production. For example, if all the initial production is exported, all the change in production is exported. If half the initial production is exported, half of the change in production is exported. This implies that the proportion of exports to production is maintained.

The absolute change in world market price is then calculated as:

$$\Delta P_w^w = \hat{P}_w P_w; \dots \dots \dots (8)$$

Given the linearity of the Equations 4 to 7, the change in the world price

reflected in Equation 8 can be obtained by matrix inversion (see also Poonyth et al., 2004; Peters and Vanzetti, 2004 and Peters, 2006).

2.2 Modification of the ATPSM

The simulation used in this paper is based on the WTO's July framework agreement scenario, which considers the initial draft modalities for agricultural trade reform.⁶ This scenario adopts a Harbinson approach for reductions in tariff rates and domestic support in developed and developing countries. This approach is based on a tiered formula that includes sensitive plus special product provisions, and ensures that tariffs in higher tiers have larger cuts than those in lower ones. The original Harbinson formula sets three tiers for tariff reduction with maximum and minimum ad valorem bound rates at 90% and 15%, respectively, for developed countries, and a maximum and minimum average reduction of 60% and 40% for the upper and lower bounds. For developing countries, the maximum bound was set at 120% and 20%, respectively, with an average reduction of 40% for the upper bound and 25% for the lower bound. Domestic support reduction was set at 60% and 40%, respectively, for developed and developing countries. We changed these parameters to reflect those of the WTO's revised modalities of December 2008 (see Table 2.1), which was reaffirmed at the December 2013 Bali Ministerial Conference. Furthermore, the model equations were modified to reflect the changes in parameters, the original model has equations that confound with the three tariff bounds so the modified equations account for the fourth tariff bound set with the revised modalities; the price data were updated from 1999 and 2001 prices to the September 2013 commodity prices published by the IMF. The absolute change in world market prices is then simulated using the newly calibrated model containing the tiered reduction formula for trade-distorting domestic supports and tariffs in Tables 2.1 and 2.2.⁷

Table 2.1: Revised tiered formula for tariff reduction by developed and developing

countries

| Developed countries | |
|--|--------------------------|
| Tariff rates | Average reduction |
| Ad valorem rates >75% | 70 |
| Ad valorem rates between 50% and 75% | 64 |
| Ad valorem rates between 20% and 50% | 57 |
| Ad valorem rates between 0% and 20% | 50 |
| Developing countries | |
| Ad valorem rates >130% | 47 |
| Ad valorem rates between 80% and 130% | 43 |
| Ad valorem rates between 30% and 80% | 38 |
| Ad valorem rates between 0% and 30% | 34 |

Source: Revised Draft Modalities for further commitment, WTO (2008)

The bands for domestic support reforms are described in Table 2.2. It sets reduction targets for all levels of domestic support. From the review of existing literature, the EU reported domestic support expenditure within the range of the top tier, while the US reported domestic-support expenditures within the range of the second tier. In this study, therefore, we set the parameters for cut in domestic support at 80% for the EU, and 70% for the US while all other countries are excluded. The analysis is based on two simulation scenarios. Scenario one applied reductions to the US and EU and exclude the rest of the world (ROW). In scenario two, we applied the reforms to all SSA countries and exclude the rest of the world. Scenario two is intended to assess whether liberalization by SSA can influence world market prices of agricultural commodities.

Table 2.2: Tiered reduction formula for overall trade-distorting domestic support (OTDS)

| Domestic support | Percentage reduction |
|---|-------------------------|
| Greater than US\$60 billion | 80 |
| Greater than US\$10 billion and less than US\$60 billion | 70 |
| Less than or equal to US\$10 billion | 55 |

Source: Revised Draft Modalities for further commitment, WTO (2008)

2.3 Data sources

This study used macro level data for the analysis. The data on production, import, export and consumption used were compiled from the FAOSTAT database, while the tariff data are sourced from the United Nation Conference on Trade and Agricultural Development (UNCTAD) dataset. Data on export subsidies and domestic supports are macro level data provided by WTO member countries to the Agriculture Committee. However, it is reasonable to think that, in an attempt to protect national interest, countries may not have provided accurate information to the WTO on applied tariff rates and other official support to the agricultural sector. Furthermore, because of the multiplicity of commodities and countries contained within the model, there are reasonable concerns about the quality and reliability of results from analyses using such data. However, as previous users of the ATPSM (for example, Vanzetti and Graham, 2002 and Peters, 2006) have highlighted, these data provide useful information on the existing levels of trade distortions, and analysis using these data offers some insights into the potential effects of the proposed agricultural trade reform modalities on world market prices of agricultural commodities.

3. Results and Discussion

This section discusses the potential effects of the agricultural trade reform proposals of the Doha Development Agenda on the prices of agricultural commodities, and how these price factors potentially affect SSA countries. It begins with discussions of how the proposed reforms change world market prices of agricultural commodities, and proceeds with the implication of these price changes on the various commodity market participants in SSA.

3.1 World market price effect

The results of the analysis indicate that liberalization of agricultural trade policies within the framework of the proposed Doha Development Agenda would have diverse impacts on the prices of agricultural commodities. That is, while the world prices of most processed agricultural commodities would increase, producers of primary agricultural commodities do not gain as much as from processed commodities (see Table 3.1). Furthermore, even though the reform modalities exclude SSA countries from any reform commitments, the results also show that reforming agricultural trade policies in SSA would have no impact on the world market prices, mainly due to the region's limited share in global agricultural commodity trade. For instance, SSA's share of total global agricultural commodities trade averaged about 2.8% from 1995 to 2013, while its respective shares of import and export for the period averaged about 2.5% and 3.2% (see Table A1).⁸ Furthermore, the region has become more dependent on the rest of the world for food imports. As a result, imports of agricultural commodities have been growing faster than exports, thus accounting for about 3.4% of total imports and about 3.1% of exports in 2013. With an anticipated increase in the prices of major import commodities in the region, its agricultural trading position is expected to deteriorate, as the prices of its key export commodities encounter either price declines or no price change.

As shown in Table 3.1, the potential effects of the reform on agricultural commodities would be different. The region's key import commodities – dairy products, cereal products, meat and sugar – would experience higher price increases, although hides and skins would experience the largest price rises. For beverages, vegetable and oilseeds and rubber, which are major export commodities for some low-income countries in the region, there would be minimum or no price rises. These price changes are important to SSA economies given that the region is a net importer of food commodities and they have recorded deficits in trade with the rest of the world in cereal, dairy, sugar, meat

and meat products as well as vegetable oil between 1995 and 2013 (see Table B1).⁹ In the discussion that follows, the focus is on how changes in the prices of individual commodities potentially affect the region in general, and in specific countries where trade in the commodity is significant.

Table 3.1: Percentage change in world prices after reforms

| Commodity | Reform by US and EU | Reform in SSA (without reform in ROW) | Commodity | Reform by US and EU | Reform in SSA (without reform in ROW) |
|----------------------------------|---------------------|---------------------------------------|-------------------------------|---------------------|---------------------------------------|
| Sheep meat | -3.15 | 0.00 | Hides & skins | 20.05 | 0.00 |
| Bovine meat | 2.79 | 0.00 | Citrus fruit | 0.05 | 0.00 |
| Pig meat | 3.83 | 0.00 | Bananas | 0.00 | 0.01 |
| Poultry | 0.63 | 0.00 | Other tropical fruit | 0.01 | 0.003 |
| Meat | 2.417 | 0.00 | Apples | 0.46 | 0.02 |
| Milk, concentrate | 18.29 | 0.01 | Fruit | 0.13 | 0.01 |
| Butter | 8.86 | 0.00 | Sugar, raw | 1.39 | 0.00 |
| Cheese | 9.91 | 0.00 | Sugar, refined | 2.47 | 0.01 |
| Dairy products | 12.353 | 0.003 | Sugar | 1.93 | 0.03 |
| Wheat | 2.55 | 0.00 | Coffee, green | -0.05 | 0.008 |
| Rice | 1.18 | 0.00 | Coffee, processed | 0.02 | 0.00 |
| Barley | 9.26 | 0.00 | Cocoa beans | -0.01 | 0.00 |
| Maize | 1.08 | 0.02 | Cocoa, processed | 0.14 | 0.00 |
| Sorghum | 1.19 | 0.01 | Tea | 0.11 | 0.00 |
| Cereal products | 3.052 | 0.006 | Beverages | 0.042 | |
| Pulses | 0.07 | 0.01 | Oilseeds, tropical | -0.02 | |
| Tomatoes | 0.07 | 0.01 | Vegetable oils | 0.70 | |
| Roots & tubers | 0.14 | 0.01 | Oilseeds temperate | 1.08 | |
| Vegetables | 0.093 | 0.01 | Vegetable and oilseeds | 0.59 | |
| Tobacco leaves | 0.17 | 0.00 | Rubber | 0.00 | |
| Cotton | 0.00 | 0.00 | | | |
| Tobacco leaves and Cotton | 0.09 | 0.00 | | | |

Source: Author's calculations from simulation results

3.2 Potential implications of price changes for individual commodities and countries

The results in Appendix B indicate that the SSA region has encountered a net agricultural trade deficit with the rest of the world since 2005. Given that the prices of the key consumables of the region would rise while its primary export commodities – beverages and rubber – would experience either a price decline or no change, the region's agricultural trade position is expected to deteriorate further. The net food importing countries will be most affected by the price increases while gains to net exporters would be minimal. The following discussions highlight how the price changes for each commodity would potentially affect the different actors in the market for such commodity.

*Dairy products*¹⁰

Dairy products, which are key consumption commodities for SSA, are expected to experience an average price rise of about 12%. Milk is expected to experience the highest price rise, followed by cheese and butter.¹¹ However, except for South Africa, which has some levels of competitive advantage in trade in the commodity, and a limited number of other countries (Swaziland, Togo and Uganda, who have begun registering trade surpluses since 2011), the region remains a net importer, and recorded a trade deficit of about US\$2,256 million in 2013. Furthermore, of the region's total trade in agricultural commodities between 1995 and 2013, annual trade in dairy products averaged about 9% of imports and 1.6% of exports. While the net exporters are expected to gain from the price increase (assuming perfect price transmission), net importers, who constitute the majority of countries in the region, will be adversely affected. For instance, although an 18% increase in the price of milk concentrate would increase South Africa's dairy-product-export revenue by about 14%, the rise in the milk price would result in a higher import bill for net importers of dairy products. Moreover, while the impacts of a rise in the milk price would be proportional on the dairy export revenue or import bill of some economies, the impacts on other economies would be either greater or less than the percentage change given the significance of the commodity in the country's overall trade in dairy products (see Table 3.2).

Table 3.2: Effects of milk price changes on major net exporting and importing countries

| Country | Price effect on milk export revenue/import cost (US\$'000) | Net dairy product trade revenue/import cost (US\$'000) | Percentage change in net dairy product export revenue/import cost |
|--------------------------------------|--|--|---|
| Major net-exporting countries | | | |
| S. Africa | 33,399.57 | 239,252.83 | 13.96 |
| Swaziland | 56.54 | 772.52 | 7.32 |
| Togo | 2,690.75 | 14,703.71 | 18.30 |
| Uganda | 3,949.00 | 22,519.45 | 17.54 |
| Major net-importing countries | | | |
| Angola | 58,951.65 | (319,558.69) | 18.45 |
| Congo | 7,559.86 | (149,647.38) | 5.05 |
| Gambia | 1,561.17 | (183,306.18) | 0.85 |
| Mauritius | 16,822.62 | (107,846.73) | 15.60 |
| Nigeria | 62,463.58 | (522,099.54) | 11.96 |
| Senegal | 22,478.78 | (108,682.15) | 20.68 |

Source: Author's calculations from UNCTAD data and simulation results

For example, an 18% rise in the milk price expands The Gambia's dairy product trade deficit by about a percentage point, but Senegal's deficit would increase by about 20%, while Togo and Uganda would, respectively, experience about 18% and 17% increase in dairy-product export revenue. However, given that the region is a net importer of milk, the price rise would result in a net loss as the import bill of most countries in the region rises.

Cereal products

Cereal products are important dietary commodities for all SSA countries. Between 1995 and 2013, the region imported about US\$134 billion worth of this commodity from the rest of the world, but exported only about US\$15 billion, thus recording a deficit of about US\$119 billion.¹² Given that the proposed Doha reform is expected to increase the average price of cereal products by about 3%, with the key agricultural commodities imported by the region – rice, maize and wheat – respectively experiencing price rises of about 1.18%, 1.08% and 2.55%, net importers would be adversely affected. The price rises mean that the bill for cereal imports for economies in the region would increase, while major exporters would enjoy revenue increases. Except for South Africa and Zambia who registered surpluses in maize trade, the rest of the region is a net importer of cereal. Thus, the 1.18% increase in the rice price would raise Nigeria's (which imported about 20% of SSA's total rice imports in 2013) cereal import bill by about 0.38%, while Liberia, which accounted for about 0.17% of SSA's 2013 rice imports, would experience around 1% rise in its cereal import bill. For South Africa, which is a net exporter of maize, a 1.08% increase in the maize price would reduce its cereal trade deficit by about 2%, while Zambia's net cereal trade revenue would

increase by about a percentage point.¹³ Therefore, although South Africa and Zambia could gain from an increase in the maize price, only Zambia could become a net gainer while South Africa and the rest of the SSA countries would experience net losses.

Meat products

Meat products are expected to experience an average price rise of about 2.42%, with the largest increase arising from pig meat (pork), followed by bovine meat and poultry, while sheep meat (mutton) would decline in price. In SSA, however, only four countries had enjoyed surpluses in meat trade between 1995 and 2012, while two of these countries – Kenya and Ethiopia – recorded deficits in 2013. Namibia and Botswana are the largest meat exporters from the region, together accounting for about 78% of the region's bovine meat exports between 1995 and 2013. Their combined bovine meat exports in 2013 constituted about 62% of total exports of the region. Nonetheless, the region recorded a deficit of about US\$3.2 billion, with Angola and South Africa accounting for 34% and 18% of this deficit, respectively. With an expected increase of about 2.8% in the price of bovine meat, Botswana's net meat trade revenue would increase by about 3.8%, while Namibia's would rise by about 3.5%. For the largest importers – Angola and South Africa – meat trade deficits are expected to increase by about 0.5 and 0.2%, respectively, while the meat trade deficit of the region is set to worsen by 0.4%. Thus, while net exporters of the commodity will enjoy total net meat trade revenue increases that are higher than the price increase, the impact on the region's net meat trade would be minimal.

Hides and skins

Hides and skins are expected to enjoy the largest increase in the prices of agricultural commodities resulting from agricultural trade reform. However, it contributed only about 1.3% of the region's total agricultural trade between 1995 and 2013, with South Africa accounting for about 40% of net trade revenue during this period. While an anticipated price rise of about 20% would have a proportionate impact on some net exporting countries, the impact on other countries would be less or greater than the price change. For instance, the net trade revenue of South Africa and 24 other countries would rise by about 20%, while Uganda's deficit would reduce by about 13%. For Ethiopia, a former exporting country that has expanded its imports due to an expansion in its shoe manufacturing industry, a 20% price rise would translate into a 30% deficit in hides-and-skins trade, while Côte d'Ivoire and Djibouti would, respectively, encounter deficits of 38% and 22%. For the net importing countries, the price rise would lead to an expansion of the deficits proportional to the price rise, while others would experience deficit expansion greater than the price rise. For instance, Angola, Nigeria, Seychelles and Sierra Leone would experience about 20% increase in their trade deficit, while Lesotho's would expand by about 42%. Thus, even though the commodity's share is insignificant in the total agricultural trade of the region, the price rise would result in a proportionate expansion in the region's 2013 hides-and-skins net trade revenue, representing about 12% of the region's net agricultural trade revenue between 1995 and 2013.

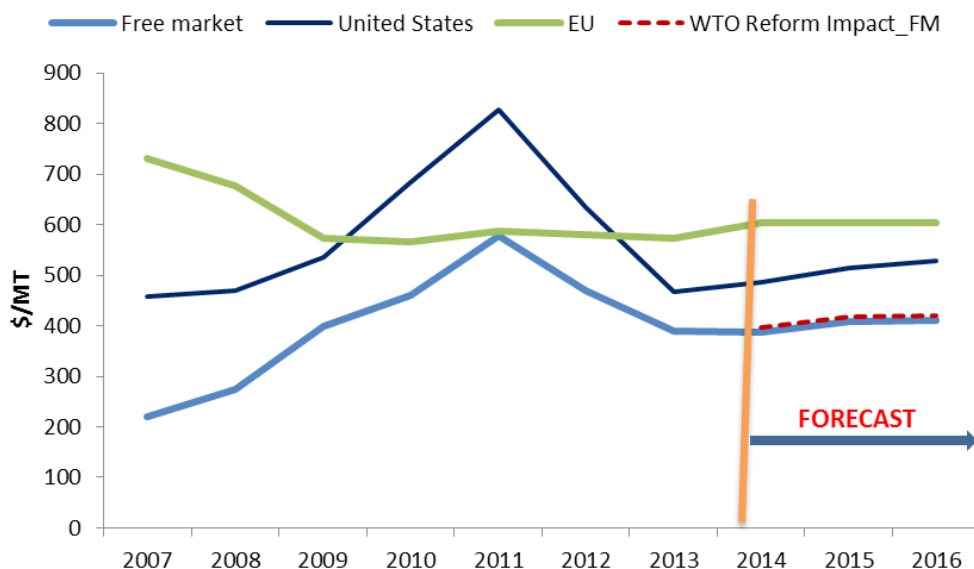
Sugar¹⁴

Sub-Saharan Africa is a major trader in sugar and sugar products. Between 1995 and 2013, the region's total sugar trade amounted to about US\$60 billion, while it recorded a deficit of about US\$9.7 billion in 1995 and about US\$1.8 billion in 2013. Even though the region remains a net importer of the product, four key trading countries – Swaziland, Mauritius, Zambia and Malawi – benefit from trade in the commodity, and have been net exporters since 1995. Côte d'Ivoire, Mozambique, South Africa and Zimbabwe have also accumulated net surpluses over the period 1995–2013 (see Table C1). The total value of sugar trade by the four large trading countries accounted for about 58% of the region's total sugar trade in 2013, and about 66% of its sugar export. The revenue generated by these countries also contributes significantly to annual GDP. For instance, Mauritius, one of the largest sugar exporters from SSA accounts for about 24% of the region's total export for the period 1995–2013, and about 16% of export in 2013. Although Mauritius's sugar export contracted by about 6% in 2013,¹⁵ its net revenue from sugar trade amounted to about 2.5% of its 2013 GDP of about US\$11.9 billion. With global reforms, sugar is expected to experience an average world market price increase of about 2%, with the price of refined sugar rising by about 2.5%. While the increase in the refined sugar price would raise the region's sugar export revenue by less than 1%, its refined sugar import cost would increase by the percentage price rise. This implies that net sugar-importing countries would experience an increase of around 2.5% in their sugar import bills, thus increasing the annual sugar trade deficit by about 2%. Nigeria, Somalia, Ghana and Angola would experience the largest expansions in their deficits, with the deficits of Nigeria and Somalia increasing by about 25 and 18%, respectively, while Ghana and Angola would experience deficit increases of about 16% and 11%, respectively.

However, what matters to major sugar exporters who benefit from preferential trade agreements such as the Sugar Protocol with the EU, and the AGOA initiative with the US is not what happens to world market prices, but what happens in the EU and US markets, where guaranteed prices are above the free market price of the commodity. Given that 12 of the 20 beneficiaries of the EU Sugar Protocol are from SSA, while a number of SSA countries benefit from the US's AGOA initiative, exporters from the region tend to be more affected by price changes on the US and EU markets. With the current reform proposal expected to harmonize global agricultural commodity prices into a common world market price, beneficiaries of guaranteed prices would experience income losses as sugar revenues decline due to reduced prices ensuing from the reform. For instance, even though the reform would potentially increase the refined sugar free market price by about 2.5%, the resulting price remains far below the guaranteed prices in the US and EU markets (see Figure 1). With global reforms that lead to preference erosion resulting in the removal of guaranteed prices, prices in the EU and US markets from 2014 could, respectively, fall by about 34 and 18%. This implies that the major EU beneficiaries – Mauritius, Swaziland, Zambia, Mozambique and Zimbabwe – would lose about US\$200 million annually, while the major AGOA beneficiaries – Ghana and Niger – would lose about US\$58 million annually due to preference erosions (see Table D1).¹⁶ The average annual projected revenue lost by Mauritius between 2015 and

2016 would represent about 0.7% of its 2013 nominal GDP, while Zambia's revenue lost for the same period would be about 0.3% of GDP. This finding is consistent with the argument of Milner et al. (2011) that a successful conclusion and implementation of the Doha Round agreement will adversely affect SSA countries who benefit from guaranteed prices for sugar exports to EU markets.

Figure 1: Sugar free market and preferential prices (actual and forecast) 2007–2016



Source: Authors' calculation from IMF price data

Beverages, vegetables and fruit and rubber¹⁷

SSA enjoys a competitive advantage in the trade in beverages, vegetables and fruit, as well as rubber. Of the total agricultural trade between the region and the rest of the world from 1995 to 2013, the combined value of these three commodities constitutes about 82% of all exports and about 16% of imports. Cocoa beans and coffee exports alone account for about 46% of total agricultural commodity exports, while vegetables and fruit, and rubber exports, respectively, constitute 27% and 9% of export over the period. Furthermore, revenue generated from the export of these commodities represents a significant percentage of the nominal GDP of some small agriculture-based economies in the region. For example, although Nigeria and Côte d'Ivoire, respectively, accounted for about 44% and 35% of the region's rubber exports in 2013, the export revenues accounted for about 0.32% and 2.55%, respectively, of GDP in Nigeria and Côte d'Ivoire in 2013. However, in the case of Liberia, whose rubber export revenues constituted about 5% of the region's exports, its export values represented more than 5% of GDP for the trading period. In the case of trade in beverages, Ghana and Côte d'Ivoire accounted for 28% and 29% of total exports, respectively, which translated to about 8% and 13% of their respective 2013 GDP. For the vegetable and fruit trade, South Africa and Ghana respectively contributed about 42% and 16% of the region's

total export value in 2013, but their exports represent only about 1% and 3% of their respective GDP, while export revenue generated by Guinea-Bissau and Cameroon, who each accounted for 2% of the region's total exports, represents about 23% and 10% of their respective GDP in 2013.

Although these commodities represent an integral part of SSA agricultural trade, the reform is expected to either result in minimal or no price increases, while some commodities would experience a price decline. For instance, vegetable and fruit would experience an average price rise of about 0.13%, while the average price of beverages would rise by 0.04%. The unprocessed forms of beverages – green coffee and cocoa beans – that are mainly exported by SSA countries would experience price declines, while the price of rubber would remain unchanged (see Table 3.1). Thus, although trade reform would lead to a rise in the prices of the region's imports, its major export commodities would experience price declines or no change, resulting in a net loss in agricultural commodity trade by the region.

4. Conclusions

The findings of this research lead to a number of conclusions on the potential implications for SSA of industrialized countries' agricultural trade liberalization. First, the price changes resulting from the proposed reforms negatively affect commodities produced by SSA countries. That is, while the proposed reforms tend to increase the world prices of some agricultural commodities, producers of primary agricultural commodities do not gain as much as those of processed commodities. Therefore, while consumers in the region are expected to pay more for the importation of processed agricultural commodities, most SSA producers would be losing due to reductions in the prices of primary commodities that they mainly produce. Second, with the expected increases in almost all food-commodity prices as a result of the reforms, the import bills of countries within the region are expected to rise. The rise in import bills means that net-food-importing countries would encounter welfare losses. Third, beneficiaries of preferential treatment granted by developed nations would tend to be losers as a result of preference erosion due to liberalization. For example, the major sugar exporters of the region will experience export revenue losses if liberalization results in the removal of guaranteed prices in the US and EU, and the extension of duty-free, quota-free access to other LDCs. Thus, while the impact of liberalization may be diverse across countries, in general, net food importers would be the worst off. Given that most SSA countries are net importers of food commodities, the region therefore stands to be potentially negatively affected by full implementation of the current WTO reform proposal.

Given the diversity of the potential impacts of the current WTO reform proposal on SSA countries, future agricultural trade reform negotiations would be critical to the diverse interest groups in the region. Historically, agricultural production and trade in SSA has basically focussed on primary commodities. Inadequate public investment in agriculture, along with overdependence on imported food and production inputs, have further worsened Africa's position in global agricultural trade. To reverse this situation, African governments should focus on attracting the necessary investments to improve productivity and change the structure of agricultural trade in the next rounds of negotiation. Particularly at the national levels, countries should focus on supporting the production of commodities of interest to food security in order to reduce the import bill on food items. Moreover, countries should take advantage of the ongoing drive for African industrialization to mobilize the necessary human and physical resources to develop or improve their agro-processing industries. This will not only help improve their markets for processed agricultural commodities, but also expand gains from

agricultural trade by benefiting from the higher prices of processed commodities. In addition, it remains unclear whether SSA agriculture fully benefits from the existing preferential agreements.¹⁸ SSA or the beneficiaries of preferential agreements should consolidate efforts in the next rounds of negotiation to ensure that preference-granting countries are not only allowed some levels of flexibility to shield specific products from the normal cut as a way of reducing the rate of preference erosion associated with most-favoured nation liberalization, but also to ensure that agricultural commodities of greater interest to the region are included in existing agreements. Alternatively, for countries adversely affected as a result of preference erosion, efforts should be made through the multilateral system (such as the Aid for Trade programme) to provide some compensation. Finally, the region should encourage more inter-regional trade to be able to create markets for its processed products in preparation for the loss of preference, which may result from a successful conclusion of the ongoing WTO reform negotiations.

References

- Aizenman, J. and Y. Jinjark. 2009. "Globalisation and developing countries – A shrinking tax base?" *Journal of Development Studies*, 45(5): 653–71.
- Ancharaz, V. and S. Laird. 2013. "Duty-free, quota-free market access: What's in it for African LDCs?" *Bridges Africa Vol. 2, Issue 3*, pp. 7-10
- Anderson, K., J. Francois, T. Hertel, B. Hoekman and W. Martin. 2000. Potential Gains from Trade Reform in the New Millennium. Paper presented at the Third Annual Conference on Global Economic Analysis, Monash University. At <http://www.copsmodels.com/2000gtapconf/65anderson.pdf> (accessed 20 January 2013).
- Anderson, K. and W.A. Masters. 2009. "Introduction and Summary". In K. Anderson and W.A. Masters, eds, *Distortions in Agricultural Incentives in Africa*. Washington, D.C.: The World Bank.
- Anderson, K. and E. Valenzuela. 2007. "Do global trade distortions still harm developing country farmers?" *Review of World Economics*, 143(1): 108–39.
- Binswanger-Mkhize, H. and A. McCalla. 2008. "The changing context and prospect for agricultural and rural development in Africa". AfDB-IFAD Joint Evaluation of ARD in Africa. At http://www.ieri.org.za/sites/default/files/outputs/Binswanger_McCalla_2008.pdf (accessed 15 March 2013).
- Basnett, Y. and J. Engel. 2013. Focusing on what Matters in Aid-for-Trade. Briefing Paper No. 79. Overseas Development Institute, London. At <http://www.odi.org.uk/publications/7200-aid-trade-development-private-sector-global-markets>
- Bouët, A., S. Mevel and D. Orden. 2007. "More or less ambition in the Doha round: Winners and losers from trade liberalisation with a development perspective". *The World Economy*, 30(8): 1253–80.
- Clemens, M. A. and J.G. Williamson. 2002. "Why did the tariff–growth correlation reverse after 1950?" Working Paper No. 9181. National Bureau of Economic Research, Washington, D.C. At http://www.nber.org/papers/w9181.pdf?new_window=1
- Elliott, K. 2013. "Protecting and improving US market access for the poorest countries". *Bridges Africa, Vol. 2, Issue 7*, pp 22-24
- Food and Agricultural Organization (FAO) Stats: <http://faostat3.fao.org/home/E> (Accessed June 25, 2013)
- Frith, M. 2005. "Bitter Harvest: How EU Sugar subsidies Devastate Africa", *Independent newspaper article*, 21 June 2005. At <http://www.independent.co.uk/environment/bitter-harvest-how-eu-sugar-subsidies-devastate-africa-294164.html> Accessed 20 February 2013.

- Heo, Y and N.K. Doanh. 2009. "Trade Liberalization and Poverty Reduction in Vietnam". *The World Economy*, 32(6) .DOI 10.1111/j.1467-9701.2009.01183.x
- Imboden, N. 2013. "Bali, the Doha Round, and the multilateral legal framework". *Bridges Africa, Vol. 2 Issue 7, pp 7-9*
- IMF Primary Commodity Price: <http://www.imf.org/external/np/res/commod/index.aspx> (accessed June 15, 2013)
- Jensen, H.G. and H. Zobbe. 2006. "Consequences of reducing limits on aggregate measurement of support". In K. Anderson and W. Martin, eds, *Agricultural Trade Reform and the Doha Development Agenda*. Basingstoke, UK: Palgrave Macmillan; Washington, D.C.: World Bank: 245–70.
- Losch, B. 2011. "The Need for Inclusive Agricultural Growth at the Heart of Africa's Economic Transition". In J-C. Devèze, ed., *Challenges for African Agriculture*. Washington, D.C.: The World Bank, pp. 35–58.
- Matthews, A. 2013. "What does the EU common agricultural policy reform mean for Africa?" *Bridges Africa Review Vol. 2, Issue 7*
- Milner, C., O. Morrissey and E. Zgovu. 2011. "Policy responses to trade preference erosion options for developing countries". *Asian-Pacific Economic Literature*, 25(1): 175–6.
- Moore, M.O. and M. Zanardi. 2009. "Does antidumping use contribute to trade liberalization in developing countries?" *Canadian Journal of Economics*, 42(2):469–95.
- Nebehay, S. 2006. "UN food envoy slams Europe over hunger refugees". Global Policy Forum. At [http:// www.globalpolicy.org/component/content/article/217/46136.html](http://www.globalpolicy.org/component/content/article/217/46136.html) (accessed 24 December 2012).
- Nuetah, A., T. Zuo and X. Xian. 2011. "Agricultural export subsidies and domestic support reform under the WTO system: What does it mean for welfare in West Africa?" *The World Economy*, 34(12): 2044 –62.
- Oxfam. 2004. "Where's the moral fiber?" Global Policy Forum. At: <http://www.globalpolicy.org/component/content/article/220/47358.html> (accessed 24 December 2012).
- Pearson, M. 2013. "Preferential multilateral rules of origin for LDCs". *Bridges Africa Vol. 2, Issue 8, pp. 25-26*
- Peters, R. 2006. "Roadblock to reform: The persistence of agricultural export subsidies". Policy Issues in International Trade and Commodities Study Series No. 32. United Nations Conference on Trade and Development. At: [http:// www.unctad.org/en/docs/itcdtab33_en.pdf](http://www.unctad.org/en/docs/itcdtab33_en.pdf) (accessed 12 October 2013).
- Peters, R. and D. Vanzetti. 2004. "User manual and handbook on agricultural trade policy simulation model (ATPSM)". Policy Issues in International Trade and Commodities Study Series No. 24. United Nations Conference on Trade and Development. At http://unctad.org/en/docs/itcdtab25_en.pdf (accessed 9 June 2014).
- Poonyth, D., A. Sarris, R. Sharma and S. Shui. 2004. *The Impact of Domestic and Trade Policies on the World Cotton Market*. Commodity and Food Policy Research Working Paper No. 8. Food and Agriculture Organization of the United Nations. At: <ftp://ftp.fao.org/docrep/fao/006/ad767e/ad767e00.pdf> (accessed 15 June 2014).

- Rodriguez, F. and D. Rodrik. 1999. "Trade policy and economic growth: A skeptic's guide to the cross-national evidence". *Macroeconomics Annual*, 15: 261–292.
- United Nations Conference on Trade and Development (UNCTAD) http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?IF_ActivePath=P,15912&sCS_ChosenLang=en (Accessed February 24, 2014)
- Vamvakidis, A. 2002. "How robust is the growth–openness connection? Historical evidence". *Journal of Economic Growth*, 7: 57–80.
- Vanzetti, D. and B. Graham. 2002. "Simulating agricultural policy reform with ATPSM". Paper presented at European Trade Study Group Fourth Annual Conference, Kiel, Germany, 13–15 September. At <http://www.elspl.com.au/TradeCommodities/Publications/Kiel.pdf> (accessed 20 October 2013).
- WTO .2008. Revised Draft Modalities for Agriculture, https://www.wto.org/...e/agric_e/agchairtxt_feb08_e.doc, (Accessed November 26, 2014)
- Younas, J. and S. Bandyopadhyay. 2009. "Do donors care about declining trade revenue from liberalization? An analysis of bilateral aid allocation". *Federal Reserve Bank of St. Louis Review*, May/June 2009, 91(3): 141–53.

APPENDIX

Table A1: World and SSA agricultural commodity trade, 1995–2013

| Year | Total world agricultural trade (billion US\$) | SSA total agricultural trade (billion US\$) | SSA share of global agricultural trade (%) |
|------|---|---|--|
| 1995 | 1,186.14 | 28.56 | 2.41 |
| 1996 | 1,219.91 | 30.38 | 2.49 |
| 1997 | 1,197.13 | 31.51 | 2.63 |
| 1998 | 1,147.11 | 30.50 | 2.66 |
| 1999 | 1,121.52 | 29.34 | 2.62 |
| 2000 | 1,106.38 | 27.86 | 2.52 |
| 2001 | 1,113.14 | 29.44 | 2.64 |
| 2002 | 1,177.97 | 31.36 | 2.66 |
| 2003 | 1,353.56 | 38.76 | 2.86 |
| 2004 | 1,563.13 | 42.82 | 2.74 |
| 2005 | 1,698.72 | 46.77 | 2.75 |
| 2006 | 1,875.49 | 51.78 | 2.76 |
| 2007 | 2,221.82 | 61.18 | 2.75 |
| 2008 | 2,609.52 | 73.74 | 2.83 |
| 2009 | 2,279.52 | 72.07 | 3.16 |
| 2010 | 2,638.37 | 83.31 | 3.16 |
| 2011 | 3,233.74 | 111.29 | 3.44 |
| 2012 | 3,190.27 | 108.57 | 3.40 |
| 2013 | 3,340.28 | 108.79 | 3.26 |
| | 1,856.51 | 54.63 | 2.83 |

Source: Authors' calculation from UNCTAD data, 2014

Table A2. Sub-Saharan Africa net agricultural commodity trade (million US\$), 1995-2013

| | Cereal products | Dairy products | Sugar | Meat and meat products | Hides and skins | Beverages | Vegetables and fruit | Vegetable oil | Rubber | SSA |
|--------------|-------------------------|-------------------|-------------------|------------------------|-----------------|-------------------|----------------------|--------------------|------------------|---------------|
| 1995 | (2,138.62) ¹ | (582.55) | 132.52 | (188.15) | 130.34 | 4,569.59 | 1,240.82 | (295.15) | 314.81 | 3,183.60 |
| 1996 | (2,429.40) | (530.55) | 272.17 | (257.27) | 125.68 | 4,716.78 | 1,306.54 | (397.30) | 338.66 | 3,145.32 |
| 1997 | (2,465.16) | (567.55) | 104.88 | (230.77) | 131.57 | 4,655.07 | 1,408.57 | (446.75) | 249.08 | 2,838.94 |
| 1998 | (2,638.98) | (617.69) | 1.48 | (249.37) | 92.25 | 4,925.72 | 1,171.27 | (481.75) | 193.51 | 2,396.44 |
| 1999 | (2,612.11) | (687.58) | 144.48 | (209.82) | 81.49 | 4,197.51 | 1,322.40 | (526.37) | 212.76 | 1,922.76 |
| 2000 | (2,158.48) | (557.31) | 116.65 | (232.50) | 112.28 | 3,273.31 | 1,348.90 | (459.03) | 209.30 | 1,653.11 |
| 2001 | (2,656.25) | (660.93) | 78.96 | (241.05) | 168.84 | 3,438.65 | 1,333.35 | (495.30) | 247.35 | 1,213.60 |
| 2002 | (2,817.81) | (563.49) | 50.55 | (345.64) | 136.41 | 4,572.08 | 1,500.37 | (621.99) | 243.75 | 2,154.22 |
| 2003 | (3,555.05) | (753.91) | 32.40 | (577.29) | 113.57 | 5,262.74 | 1,910.26 | (956.16) | 376.83 | 1,853.40 |
| 2004 | (4,152.40) | (891.17) | 130.62 | (767.62) | 145.41 | 4,976.82 | 2,329.90 | (1,059.25) | 363.91 | 1,076.22 |
| 2005 | (4,995.29) | (1,212.39) | (45.58) | (1,003.54) | 158.56 | 4,945.66 | 2,163.80 | (1,098.49) | 470.38 | (616.88) |
| 2006 | (5,417.75) | (1,484.05) | (292.87) | (1,032.39) | 174.44 | 5,767.13 | 2,198.56 | (1,337.42) | 587.08 | (837.28) |
| 2007 | (7,012.74) | (1,775.94) | (451.77) | (1,390.42) | 193.85 | 7,109.46 | 2,536.34 | (1,969.20) | 794.06 | (1,966.36) |
| 2008 | (9,297.85) | (2,062.76) | (714.09) | (1,793.10) | 185.61 | 8,563.89 | 2,978.85 | (2,770.02) | 953.77 | (3,945.69) |
| 2009 | (7,188.39) | (1,473.84) | (601.06) | (1,677.78) | 136.00 | 10,396.65 | 3,165.78 | (1,927.50) | 872.72 | 1,702.57 |
| 2010 | (7,604.66) | (1,794.63) | (1,361.18) | (1,758.72) | 194.44 | 12,136.44 | 3,795.58 | (2,608.42) | 1,057.53 | 2,056.40 |
| 2011 | (11,199.39) | (2,789.54) | (2,090.43) | (3,005.16) | 225.63 | 12,508.86 | 3,850.42 | (4,115.07) | 2,078.13 | (4,536.57) |
| 2012 | (11,820.93) | (2,344.63) | (1,791.23) | (3,417.30) | 207.38 | 11,409.82 | 3,967.57 | (3,667.45) | 1,309.69 | (6,137.08) |
| 2013 | (13,120.95) | (2,258.46) | (1,801.37) | (3,190.09) | 384.57 | 10,557.58 | 4,680.09 | (3,200.40) | 1,419.22 | (6,529.80) |
| Total | (23,598.97) | (8,084.86) | (8,084.86) | (21,567.98) | 3,098.34 | 127,983.74 | 44,209.37 | (28,423.03) | 12,292.54 | 626.94 |

Source: Authors' calculation from UNCTAD data, 2014

Table A3: Major sugar traders from Sub-Saharan Africa, 1995–2013

| Year | Swaziland | Zambia | Malawi | Mauritius | Côte d'Ivoire | Mozambique | South Africa | Zimbabwe | SSA |
|--------------|-----------------|-----------------|---------------|-----------------|---------------|---------------|-----------------|-----------------|-------------------|
| 1995 | 147.50 | 18.60 | 17.17 | 359.43 | (17.31) | (11.04) | 271.25 | 93.79 | 128.96 |
| 1996 | 142.99 | 19.59 | 42.21 | 436.81 | 10.53 | (33.48) | 283.51 | 118.39 | 275.32 |
| 1997 | 160.09 | 26.83 | 18.37 | 350.37 | 10.03 | (20.09) | 296.55 | 97.15 | 103.18 |
| 1998 | 174.23 | 18.86 | 25.70 | 353.12 | (13.47) | (35.89) | 264.14 | 96.47 | (6.97) |
| 1999 | 149.28 | 10.29 | 21.36 | 305.63 | 10.36 | (35.55) | 253.05 | 76.15 | 130.88 |
| 2000 | 126.63 | 24.42 | 21.83 | 198.01 | 27.99 | (10.51) | 253.94 | 83.77 | 75.86 |
| 2001 | 231.06 | 46.23 | 42.20 | 274.69 | 16.69 | (16.39) | 285.00 | 47.34 | 20.46 |
| 2002 | 108.09 | 31.17 | 28.83 | 277.32 | 3.04 | (9.76) | 204.07 | 59.77 | 15.94 |
| 2003 | 180.76 | 32.85 | 76.92 | 290.58 | 14.39 | (19.48) | 84.12 | 42.17 | (79.28) |
| 2004 | 278.54 | 31.80 | 46.63 | 348.07 | 24.38 | (14.23) | 116.12 | 71.78 | 51.97 |
| 2005 | 243.80 | 52.20 | 36.12 | 333.31 | 18.28 | 12.22 | 123.04 | 60.23 | (129.51) |
| 2006 | 297.20 | 65.42 | 47.43 | 331.95 | 1.51 | 38.66 | 170.30 | 50.03 | (399.79) |
| 2007 | 290.22 | 88.27 | 56.85 | 279.61 | 0.94 | 22.65 | 28.96 | 35.97 | (644.99) |
| 2008 | 284.34 | 69.68 | 60.79 | 274.70 | 7.69 | 27.24 | (28.38) | 71.96 | (836.80) |
| 2009 | 306.87 | 96.03 | 64.39 | 202.02 | 8.58 | (10.05) | 149.24 | 109.52 | (761.36) |
| 2010 | 337.51 | 157.45 | 61.83 | 244.45 | (2.62) | 6.97 | 147.80 | 29.60 | (1,375.31) |
| 2011 | 347.06 | 184.95 | 140.80 | 268.17 | 9.12 | 60.01 | (42.65) | 145.91 | (2,276.07) |
| 2012 | 282.18 | 168.92 | 87.85 | 221.25 | 20.58 | 106.66 | (36.22) | 161.72 | (2,179.05) |
| 2013 | 280.31 | 206.94 | 79.99 | 278.97 | 40.60 | 97.73 | (231.98) | (6.05) | (1,805.35) |
| Total | 4,368.67 | 1,350.51 | 977.26 | 5,628.46 | 191.31 | 155.65 | 2,591.85 | 1,445.67 | (9,691.91) |

Source: Authors' calculation from UNCTAD data, 2014.

Table A4: Potential impact of preference erosion on Sub-Saharan African countries

| Year | Export volume (MT) | Free market price | US guaranteed price/MT | EU Guaranteed price/MT | Post-reform WM price/MT | Sugar reform (million US\$)/FM | Sugar revenue (million US\$)/US | Sugar revenue (million US\$)/EU | Sugar revenue/post reform effects (million US\$) | Revenue loss to preference erosion (million US\$) | EU price decline (%) | US price decline (%) |
|--------------------------------------|--------------------|-------------------|------------------------|------------------------|-------------------------|--------------------------------|---------------------------------|---------------------------------|--|---|----------------------|----------------------|
| Mauritius (EU Sugar Protocol) | | | | | | | | | | | | |
| 2007 | 344,250 | 219.05 | 456.79 | 732.26 | 219.05 | 75.41 | 157.25 | 252.08 | 75.41 | 176.67 | (0.70) | (0.52) |
| 2008 | 382,534 | 273.95 | 469.11 | 677.95 | 273.95 | 104.79 | 179.45 | 259.34 | 104.79 | 154.55 | (0.60) | (0.42) |
| 2009 | 317,988 | 399.31 | 535.39 | 572.32 | 399.31 | 126.98 | 170.25 | 181.99 | 126.98 | 55.02 | (0.30) | (0.25) |
| 2010 | 427,029 | 459.60 | 683.13 | 565.68 | 459.60 | 196.26 | 291.71 | 241.56 | 196.26 | 45.30 | (0.19) | (0.33) |
| 2011 | 442,145 | 577.18 | 826.59 | 586.63 | 577.18 | 255.20 | 365.47 | 259.38 | 255.20 | 4.18 | (0.02) | (0.30) |
| 2012 | 427,378 | 470.24 | 635.70 | 579.94 | 470.24 | 200.97 | 271.68 | 247.85 | 200.97 | 46.88 | (0.19) | (0.26) |
| 2013 | 432,184 | 389.33 | 466.36 | 572.26 | 389.33 | 168.26 | 201.55 | 247.32 | 168.26 | 79.06 | (0.32) | (0.17) |
| 2014 | 433,902 | 388.08 | 487.30 | 602.80 | 397.67 | 168.39 | 211.44 | 261.56 | 172.55 | (89.01) | (0.34) | (0.18) |
| 2015 | 465,647 | 408.65 | 513.70 | 602.80 | 418.74 | 190.29 | 239.20 | 280.69 | 194.99 | (85.71) | (0.31) | (0.18) |
| 2016 | 479,424 | 410.30 | 528.00 | 602.80 | 420.43 | 196.71 | 253.14 | 289.00 | 201.57 | (87.43) | (0.30) | (0.20) |
| Swaziland (EU Sugar Protocol) | | | | | | | | | | | | |
| 2007 | 24,003 | 219.05 | 456.79 | 732.26 | 219.05 | 5.26 | 10.96 | 17.58 | 5.26 | 12.32 | (0.70) | (0.52) |
| 2008 | 83,656 | 273.95 | 469.11 | 677.95 | 273.95 | 22.92 | 39.24 | 56.71 | 22.92 | 33.80 | (0.60) | (0.42) |
| 2009 | 68,472 | 399.31 | 535.39 | 572.32 | 399.31 | 27.34 | 36.66 | 39.19 | 27.34 | 11.85 | (0.30) | (0.25) |
| 2010 | 56,972 | 459.60 | 683.13 | 565.68 | 459.60 | 26.18 | 38.92 | 32.23 | 26.18 | 6.04 | (0.19) | (0.33) |
| 2011 | 33,012 | 577.18 | 826.59 | 586.63 | 577.18 | 19.05 | 27.29 | 19.37 | 19.05 | 0.31 | (0.02) | (0.30) |
| 2012 | 52,819 | 470.24 | 635.70 | 579.94 | 470.24 | 24.84 | 33.58 | 30.63 | 24.84 | 5.79 | (0.19) | (0.26) |
| 2013 | 47,601 | 389.33 | 466.36 | 572.26 | 389.33 | 18.53 | 22.20 | 27.24 | 18.53 | 8.71 | (0.32) | (0.17) |
| 2014 | 44,477 | 388.08 | 487.30 | 602.80 | 397.67 | 17.26 | 21.67 | 26.81 | 17.69 | (9.12) | (0.34) | (0.18) |
| 2015 | 48,299 | 408.65 | 513.70 | 602.80 | 418.74 | 19.74 | 24.81 | 29.11 | 20.22 | (8.89) | (0.31) | (0.18) |
| 2016 | 46,792 | 410.30 | 528.00 | 602.80 | 420.43 | 19.20 | 24.71 | 28.21 | 19.67 | (8.53) | (0.30) | (0.20) |

Table A4 continued

| | | | | | | | | | | | | |
|-------------------------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| Zambia (EU Sugar Protocol) | | | | | | | | | | | | |
| 2007 | 135,062 | 219.05 | 456.79 | 732.26 | 219.05 | 29.58 | 61.69 | 98.90 | 29.58 | 69.32 | (0.70) | (0.52) |
| 2008 | 98,216 | 273.95 | 469.11 | 677.95 | 273.95 | 26.91 | 46.07 | 66.59 | 26.91 | 39.68 | (0.60) | (0.42) |
| 2009 | 155,053 | 399.31 | 535.39 | 572.32 | 399.31 | 61.91 | 83.01 | 88.74 | 61.91 | 26.83 | (0.30) | (0.25) |
| 2010 | 273,679 | 459.60 | 683.13 | 565.68 | 459.60 | 125.78 | 186.96 | 154.82 | 125.78 | 29.03 | (0.19) | (0.33) |
| 2011 | 257,730 | 577.18 | 826.59 | 586.63 | 577.18 | 148.76 | 213.04 | 151.19 | 148.76 | 2.44 | (0.02) | (0.30) |
| 2012 | 286,026 | 470.24 | 635.70 | 579.94 | 470.24 | 134.50 | 181.83 | 165.88 | 134.50 | 31.38 | (0.19) | (0.26) |
| 2013 | 340,598 | 389.33 | 466.36 | 572.26 | 389.33 | 132.60 | 158.84 | 194.91 | 132.60 | 62.31 | (0.32) | (0.17) |
| 2014 | 388,481 | 388.08 | 487.30 | 602.80 | 397.67 | 143.00 | 179.56 | 222.12 | 146.53 | (75.59) | (0.34) | (0.18) |
| 2015 | 331,701 | 408.65 | 513.70 | 602.80 | 418.74 | 135.55 | 170.40 | 199.95 | 138.90 | (61.05) | (0.31) | (0.18) |
| 2016 | 346,927 | 410.30 | 528.00 | 602.80 | 420.43 | 142.34 | 183.18 | 209.13 | 145.86 | (63.27) | (0.30) | (0.20) |
| Zimbabwe (EU Sugar Protocol) | | | | | | | | | | | | |
| 2007 | 53,066 | 219.05 | 456.79 | 732.26 | 219.05 | 11.62 | 24.24 | 38.86 | 11.62 | 27.23 | (0.70) | (0.52) |
| 2008 | 97,602 | 273.95 | 469.11 | 677.95 | 273.95 | 26.74 | 45.79 | 66.17 | 26.74 | 39.43 | (0.60) | (0.42) |
| 2009 | 131,800 | 399.31 | 535.39 | 572.32 | 399.31 | 52.63 | 70.56 | 75.43 | 52.63 | 22.80 | (0.30) | (0.25) |
| 2010 | 112,000 | 459.60 | 683.13 | 565.68 | 459.60 | 51.48 | 76.51 | 63.36 | 51.48 | 11.88 | (0.19) | (0.33) |
| 2011 | 88,000 | 577.18 | 826.59 | 586.63 | 577.18 | 50.79 | 72.74 | 51.62 | 50.79 | 0.83 | (0.02) | (0.30) |
| 2012 | 110,600 | 470.24 | 635.70 | 579.94 | 470.24 | 52.01 | 70.31 | 64.14 | 52.01 | 12.13 | (0.19) | (0.26) |
| 2013 | 103,533 | 389.33 | 466.36 | 572.26 | 389.33 | 40.31 | 48.28 | 59.25 | 40.31 | 18.94 | (0.32) | (0.17) |
| 2014 | 125,889 | 388.08 | 487.30 | 602.80 | 397.67 | 48.85 | 61.35 | 75.89 | 50.06 | (25.82) | (0.34) | (0.18) |
| 2015 | 136,009 | 408.65 | 513.70 | 602.80 | 418.74 | 55.58 | 69.87 | 81.99 | 56.95 | (25.03) | (0.31) | (0.18) |
| 2016 | 121,810 | 410.30 | 528.00 | 602.80 | 420.43 | 49.98 | 64.32 | 73.43 | 51.21 | (22.21) | (0.30) | (0.20) |

Table A4 continued

| Mozambique (EU Sugar Protocol) | | | | | | | | | | | | | |
|--------------------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--|
| 2007 | 8,317 | 219.05 | 456.79 | 732.26 | 219.05 | 1.82 | 3.80 | 6.09 | 1.82 | 4.27 | (0.70) | (0.52) | |
| 2008 | 5,941 | 273.95 | 469.11 | 677.95 | 273.95 | 1.63 | 2.79 | 4.03 | 1.63 | 2.40 | (0.60) | (0.42) | |
| 2009 | 6,422 | 399.31 | 535.39 | 572.32 | 399.31 | 2.56 | 3.44 | 3.68 | 2.56 | 1.11 | (0.30) | (0.25) | |
| 2010 | 11,114 | 459.60 | 683.13 | 565.68 | 459.60 | 5.11 | 7.59 | 6.29 | 5.11 | 1.18 | (0.19) | (0.33) | |
| 2011 | 11,114 | 577.18 | 826.59 | 586.63 | 577.18 | 6.41 | 9.19 | 6.52 | 6.41 | 0.11 | (0.02) | (0.30) | |
| 2012 | 10,792 | 470.24 | 635.70 | 579.94 | 470.24 | 5.07 | 6.86 | 6.26 | 5.07 | 1.18 | (0.19) | (0.26) | |
| 2013 | 12,437 | 389.33 | 466.36 | 572.26 | 389.33 | 4.84 | 5.80 | 7.12 | 4.84 | 2.28 | (0.32) | (0.17) | |
| 2014 | 12,936 | 388.08 | 487.30 | 602.80 | 397.67 | 5.02 | 6.30 | 7.80 | 5.14 | (2.65) | (0.34) | (0.18) | |
| 2015 | 13,622 | 408.65 | 513.70 | 602.80 | 418.74 | 5.57 | 7.00 | 8.21 | 5.70 | (2.51) | (0.31) | (0.18) | |
| 2016 | 14,688 | 410.30 | 528.00 | 602.80 | 420.43 | 6.03 | 7.76 | 8.85 | 6.18 | (2.68) | (0.30) | (0.20) | |
| Ghana (AGOA Initiative) | | | | | | | | | | | | | |
| 2007 | 237,000 | 219.05 | 456.79 | 732.26 | 219.05 | 51.91 | 108.26 | 173.54 | 51.91 | 121.63 | (0.70) | (0.52) | |
| 2008 | 234,000 | 273.95 | 469.11 | 677.95 | 273.95 | 64.10 | 109.77 | 158.64 | 64.10 | 94.54 | (0.60) | (0.42) | |
| 2009 | 101,200 | 399.31 | 535.39 | 572.32 | 399.31 | 40.41 | 54.18 | 57.92 | 40.41 | 17.51 | (0.30) | (0.25) | |
| 2010 | 82,000 | 459.60 | 683.13 | 565.68 | 459.60 | 37.69 | 56.02 | 46.39 | 37.69 | 8.70 | (0.19) | (0.33) | |
| 2011 | 225,400 | 577.18 | 826.59 | 586.63 | 577.18 | 130.10 | 186.31 | 132.23 | 130.10 | 2.13 | (0.02) | (0.30) | |
| 2012 | 169,569 | 470.24 | 635.70 | 579.94 | 470.24 | 79.74 | 107.79 | 98.94 | 79.74 | 18.60 | (0.19) | (0.26) | |
| 2013 | 197,942 | 389.33 | 466.36 | 572.26 | 389.33 | 77.06 | 92.31 | 113.27 | 77.06 | 36.21 | (0.32) | (0.17) | |
| 2014 | 246,058 | 388.08 | 487.30 | 602.80 | 397.67 | 95.49 | 119.90 | 148.32 | 97.85 | (50.47) | (0.34) | (0.18) | |
| 2015 | 254,631 | 408.65 | 513.70 | 602.80 | 418.74 | 104.06 | 130.80 | 153.49 | 106.63 | (46.87) | (0.31) | (0.18) | |
| 2016 | 289,932 | 410.30 | 528.00 | 602.80 | 420.43 | 118.96 | 153.08 | 174.77 | 121.90 | (52.87) | (0.30) | (0.20) | |

Table A4 continued

Niger (AGOA Initiative)

| | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|-------|-------|-------|-------|--------|--------|--------|
| 2007 | 8,835 | 219.05 | 456.79 | 732.26 | 219.05 | 1.94 | 4.04 | 6.47 | 1.94 | 4.53 | (0.70) | (0.52) |
| 2008 | 20,609 | 273.95 | 469.11 | 677.95 | 273.95 | 5.65 | 9.67 | 13.97 | 5.65 | 8.33 | (0.60) | (0.42) |
| 2009 | 20,609 | 399.31 | 535.39 | 572.32 | 399.31 | 8.23 | 11.03 | 11.79 | 8.23 | 3.57 | (0.30) | (0.25) |
| 2010 | 37,893 | 459.60 | 683.13 | 565.68 | 459.60 | 17.42 | 25.89 | 21.44 | 17.42 | 4.02 | (0.19) | (0.33) |
| 2011 | 15,573 | 577.18 | 826.59 | 586.63 | 577.18 | 8.99 | 12.87 | 9.14 | 8.99 | 0.15 | (0.02) | (0.30) |
| 2012 | 34,321 | 470.24 | 635.70 | 579.94 | 470.24 | 16.14 | 21.82 | 19.90 | 16.14 | 3.77 | (0.19) | (0.26) |
| 2013 | 40,675 | 389.33 | 466.36 | 572.26 | 389.33 | 15.84 | 18.97 | 23.28 | 15.84 | 7.44 | (0.32) | (0.17) |
| 2014 | 30,190 | 388.08 | 487.30 | 602.80 | 397.67 | 11.72 | 14.71 | 18.20 | 12.01 | (6.19) | (0.34) | (0.18) |
| 2015 | 48,736 | 408.65 | 513.70 | 602.80 | 418.74 | 19.92 | 25.04 | 29.38 | 20.41 | (8.97) | (0.31) | (0.18) |
| 2016 | 39,867 | 410.30 | 528.00 | 602.80 | 420.43 | 16.36 | 21.05 | 24.03 | 16.76 | (7.27) | (0.30) | (0.20) |

Source: Authors' calculation from FAO, IMF, Bank of Ghana, US Department of Agriculture Data

Footnotes

- 1 India's duty-free trade preference (DFTP) scheme also excludes a number of products such as fruit and vegetables, nuts, coffee, tea, maize and tobacco products, and provides limited concessions on several others (cut flowers, vegetable oils, and clothing), commodities that are of key export interest to African LDCs. Similarly, while 99% of all LDC imports into China in 2011 were under the duty-free scheme, China has imported little beyond oil and a few other commodities from African LDCs (see Ancharaz and Laird, 2013).
- 3 Author's calculation based on UNCTAD trade data for the period under consideration.
- 4 Twelve of the 20 members of the EU Sugar Protocol beneficiaries are SSA countries, namely: Republic of Congo, Côte d'Ivoire, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. The Sugar Protocol commits the EU to purchasing 1.3 million tons of sugar from these countries annually at guaranteed prices.
- 5 Poonyth et al. 2004 used a similar model formulation to assess the impact of domestic and trade policies on the world cotton market.
- 6 The ATPSM has five simulation scenarios: the default (Uruguay Rounds), Conservative, Harbinson, Revised Harbinson (July 2007 Package), and the Swiss scenario. Each of the scenarios has specific reform modalities.
- 7 The Harbinson proposal exempts LDCs from tariff reduction requirements, and proposes 100% cancellation of export subsidies for both developed and developing countries. These provisions are retained by the Falconer versions.
- 8 The respective values are based on the author's calculations from UNCTAD 2014 trade data.
- 9 Note: The spreadsheets containing the results for individual countries and commodities are available and can be submitted upon request, as some of the proceeding discussions may not provide tables depicting the results under discussion. The spreadsheets are not included due to their large size.
- 10 Dairy products covers milk, butter and cheese (see compositions of commodity groups in Table 6.1).
- 11 The price rises for dairy products are consistent with Bouët et al.'s (2007) findings that full liberalization of agricultural trade will create larger price effects for dairy products and meat.
- 12 The deficit represents about 88% of the region's import value for cereal products, and about 38% of its total agricultural commodity imports for the period.
- 13 These estimates and other preceding trade gain or loss estimates are based on 2013 trade figures with the assumption that the same trade value would be recorded in 2014.
- 14 Sugar includes both raw and refined products. Most of the sugar exported by the region is in the form of raw sugar, while its imports come as refined sugar.
- 15 Information from Mauritius Ministry of Finance and Development Planning <http://statsmauritius.govmu.org/English/StatsbySubj/Pages/natmarch2013.aspx> Accessed August 28, 2014.
- 16 Mauritius, Mozambique, Swaziland, Zambia and Zimbabwe are beneficiaries of the EU Sugar Protocol, and Ghana and Niger benefit from the US AGOA initiative.

- 17 Beverages here refer to trade in coffee and cocoa beans, and their processed forms, along with tea. SSA exports mainly the unprocessed and imports the processed forms.
- 18 For the US's AGOA initiative, which is expected to expire in 2015, it is reported that about 90% of all imports recorded under this programme are in oil, while it excludes a wide range of processed agricultural products, including dairy products, sugar, cocoa, and cotton, where most SSA LDCs could enhance their comparative advantage; India's Duty-Free Trade Preference (DFTP) scheme excludes a number of products such as fruit and vegetables, nuts, coffee, tea, maize and tobacco products, and provides limited concessions on several others (cut flowers, vegetable oils, and clothing), which commodities are of key export interest to African LDCs; Under its DFQF arrangement, China has imported little beyond oil, and a few other commodities, from African LDCs (see Ancharaz and Laird, 2013); **In the case of EU-SSA trade agreements, most SSA beneficiaries have not been able to fully benefit from these due to SPS requirements (Pearson, 2013) .**