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Africa Agriculture Trade Monitor

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Acronyms

AATM	Africa Agriculture Trade Monitor
ACP	African, Caribbean and Pacific countries
ACTESA	Alliance for Commodity Trade in Eastern and Southern Africa
AfDB	African Development Bank
AfCFTA	African Continental Free Trade Area
AMS	Aggregate measure of support
AMU	Arab Maghreb Union
ASEAN	Association of Southeast Asian Nations
AU	African Union
AUC	African Union Commission
BACI	French acronym for international trade database at the product level (Base pour l'Analyse du Commerce International)
BRIC	Brazil, Russia, India, China
CAADP	Comprehensive Africa Agriculture Development Programme
CACM	Central American Common Market
CEN-SAD	Community of Sahel-Saharan States
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CIF	Cost, insurance, and freight
CILSS	French acronym for the Permanent Interstate Committee for Drought Control in the Sahel (Comité permanent Inter-État de Lutte contre la Sécheresse)
COMESA	Common Market for Eastern and Southern Africa
DRC	Democratic Republic of Congo (COD)
EAC	East African Community
ECCAS	Economic Community of Central African States
ECENE	French acronym for survey of informal cross-border trade (Enquête sur le commerce extérieur non enregistré)
ECOWAS	Economic Community of West African States
EU	European Union
ESA	Eastern and Southern Africa
ESI	Export Similarity Index
FAO	Food and Agriculture Organization of the United Nations
FEWSNET	Famine Early Warning System Network
FOB	Free on board
FTA	Free trade area
FSNWG	Food Security and Nutrition Working Group
GDP	Gross domestic product
HS	Harmonized system
ICT	Information and communications technologies
ICBT	Informal cross-border trade
IFPRI	International Food Policy Research Institute
IGAD	Inter-Governmental Authority on Development
INSAE	Institut National de la Statistique et de l'Analyse Economique

ITC	International Trade Center
ITRSP	Informal Trade Regulation Support Programme
LAC	Latin America and the Caribbean
LARES	Laboratoire d'Analyse Régionale et d'Expertise Sociale
MERCOSUR	Mercado Comun del Sur
MT	Metric tons
NAFTA	North American Free Trade Agreement (replaced by the United States-Mexico Canada Agreement - USMCA - on July 1, 2020)
NEPAD	New Partnership for Africa's Development
NTM	Nontariff measure
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
OSBP	One-stop border posts
PPP	Public-private partnership
PTA	Preferential trade area
RCA	Revealed comparative advantage
REC	Regional economic community
RISDP	Regional Indicative Strategic Development Plan
ReSAKSS	Regional Strategic Analysis and Knowledge Support System
RTAs	Regional trade and investment agreements
SAARC	South Asian Association for Regional Cooperation
SACU	Southern African Customs Union
SADC	Southern African Development Community
SADCC	Southern African Development Coordinating Community
SPS	Sanitary and phytosanitary measures
SSA	Africa south of the Sahara
TBT	Technical barriers to trade
TCI	Trade Complementarity Index
TII	Trade Intensity Index
UBoS	Uganda Bureau of Statistics
BoU	Bank of Uganda
UNCTAD	United Nations Conference on Trade and Development
UNCTAD-TRAINS	United Nations Conference on Trade and Development Trade Analysis Information System
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
USAID	United States Agency for International Development
WACTAF	West African Association for Cross-Border Trade in Agro-forestry-pastoral and Fisheries products
WITS	World Integrated Trade Solution
WTO	World Trade Organization

Country Abbreviations

AGO	Angola	**KEN**	Kenya
BDI	Burundi	**LIB**	Liberia
BEN	Benin	**MDG**	Madagascar
BFA	Burkina Faso	**MLI**	Mali
CAF	Central African Republic	**MOZ**	Mozambique
CIV	Côte d'Ivoire	**MUS**	Mauritius
CMR	Cameroon	**MWI**	Malawi
COD	Democratic Rep. of the Congo	**NER**	Niger
COG	Republic of the Congo	**NGA**	Nigeria
COM	Comoros	**RWA**	Rwanda
CPV	Cabo Verde	**SDN**	Sudan
DJI	Djibouti	**SEN**	Senegal
EGY	Egypt	**SLE**	Sierra Leone
ERI	Eritrea	**STP**	São Tomé and Príncipe
ETH	Ethiopia	**SYC**	Seychelles
GAB	Gabon	**TCD**	Chad
GHA	Ghana	**TGO**	Togo
GIN	Guinea	**UGA**	Uganda
GMB	Gambia	**ZMB**	Zambia
GNB	Guinea-Bissau	**ZWE**	Zimbabwe
GNQ	Equatorial Guinea		

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Foreword

Currently, the world is facing an unprecedented period characterized by protectionist measures and multiple shocks. The latter include the COVID-19 pandemic and the historic decline in oil prices. In addition, with Brexit, the trade war between the United States and China and its implications for emerging economies, and the World Trade Organization crisis, the proper functioning of the international trading system is clearly at stake. Certainly, Africa is not immune to the current crisis and the stability of its trade is threatened. Hence, its resilience and agility will chiefly depend on how African governments will react: adopting policies to promote trade and economic growth should be considered.

As argued by Albert Einstein, "*in the midst of every crisis, lies great opportunity*." While the picture is gloomy, there are several opportunities for Africa. First, there is strong political will to improve intra-African integration with the ratification of the African Continental Free Trade Area (AfCFTA) agreement. The agreement aims to eliminate tariff and nontariff measures on goods, improve continental integration, and speed-up customs procedures that remain a serious barrier to trade performance in Africa. Second, even if the pandemic may put a hold on African integration, Heads of African States agreed to establish trade corridors and reduce duties to enable the transit of essential goods that are fundamental to combatting the pandemic. These short-term measures can clearly increase intra-African exports. Third, as is shown in the *2020 Africa Agriculture Trade Monitor* (AATM), there is room for boosting intraregional trade flows, given the dissimilarity of goods exported from African countries. These opportunities can give some momentum to integration in Africa amid these strange times we live in.

Against this background, the AATM, as usual, aims to provide policymakers and development practitioners with accurate statistics and robust analysis of intra-African agricultural trade and to inform the debate on measures to boost intra-Africa agricultural trade and transformation on the continent. Last year, the 2019 AATM showed that while the agricultural trade deficit has been declining since 2012, Africa's comparative advantage is chiefly concentrated in unprocessed and semi-processed products. In addition, the costs of trade and nontariff measures are still the biggest impediments to Africa's trade performance. Consequently, Africa is still characterized by a marginal role in global agricultural trade. At the regional level, the Eastern and Southern Africa (ESA) region, notably the Common Market for Eastern and Southern Africa (COMESA), was analyzed. This year, the 2020 AATM extends the analysis of last year in several directions. First, it attempts to identify the recent developments in African intraregional and extraregional trade in agriculture. Second, given the importance of informal cross-border trade for the region, the 2020 AATM dedicates a chapter to analyzing this trade by examining its definitions, measurement, and effects. Finally, at the regional level, the Southern African region is featured, with a special focus on the Southern African Development Community (SADC).

The next issue of the AATM will clearly have to assess the ex post effects of the pandemic on African trade in agriculture, investigate to what extent the AfCFTA has been successful in mitigating its effects, and how nontariff measures can be addressed at both the regional and domestic levels. As for the regional economic communities, the Arab Maghreb Union may be featured, especially given recent developments in Libya.

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Executive Summary

As the coronavirus pandemic unfolds, policy reactions among the world's leading food and agricultural producers have led to disruptions in world supply chains, threatening food security systems in food import-dependent countries. African governments have also taken some policy steps in an attempt to curb the spread of the disease. Policy changes include social distancing, containment measures, curfews, market bans, border controls, and transport restrictions. However, those measures are amplifying the negative impact of the crisis on intracontinental trade flows and the livelihoods of millions of people across Africa. Against this background, the *2020 Africa Agriculture Trade Monitor* (AATM) focuses on analysis of continental and regional trends in African agricultural trade flows and policies, with special coverage of informal cross-border trade flows and initiatives to assess and formalize informal trade. The major findings across the report's six chapters are summarized below.

African exports are expanding into emerging and fast-growing countries. African agricultural exports showed an upward trend between 2003 and 2018, as well as a diversification of export destinations, with exports increasing to Brazil, Russia, India, China, and other Asian countries, including Saudi Arabia, Viet Nam, United Arab Emirates, Turkey, Malaysia, and Pakistan. This diversification has resulted in a progressive decrease in the share of the European Union (EU) as a destination for African exports, from 45 percent in 2005–2007 to 36 percent in 2016–2018. However, in current US dollar value terms, EU imports of Africa's agricultural products have experienced a sustained increasing trend, despite the decrease in share, and the EU has remained the primary destination for African agricultural exports. Similarly, exports to the United States and intra-African destinations have continually grown in value terms but the corresponding shares (5 and 20 percent, respectively) have remained unchanged. Cocoa beans, cashew nuts (in shell), tobacco, coffee, oranges, cotton, sesame seeds, black tea, cocoa paste, and fresh grapes are the 10 most exported agricultural products.

There is room for expanding intra-African trade by further opening countries to extraregional trade flows. Intracontinental agricultural exports have steadily grown over the past two decades, with growth largely dominated by SADC and COMESA member countries. However, trade occurs predominantly within regional economic communities (RECs). On average, SADC and COMESA retained 84 percent and 66 percent of their intra-Africa exports within their respective regions in 2016–2018; ECOWAS, AMU, and ECCAS retained 79, 60, and 46 percent, respectively. In addition, the share of intraregional agricultural exports within each REC is significantly larger than the share of world agricultural exports to that REC. This indicates that intraregional agricultural trade is higher than would be expected given the RECs' importance in world agricultural trade. High intraregional trade in Africa is attributable to regional factors such as geographic proximity, cultural similarities, historical trading relationships, and preferential trade agreements, while current policy and nonpolicy barriers to trade likely deter exchanges among African countries. Tariffs on intraregional imports are minimal in EAC (0.1 percent) and IGAD (1.3 percent), but as high as 12.5 within ECCAS and 16.6 percent within AMU. However, tariffs are notably higher for extra-REC imports. For instance, IGAD and EAC countries charge 44.3 percent and 41.9 percent, respectively, for imports from AMU. As to nontariff measures, their ad-valorem equivalent can be as high as a tariff rate of 21 percent, on average, across Africa.

Intracontinental trade flows are responding well to emerging trends in domestic food demand. Intracontinental flows show an expansion of the export shares of emerging cash products and processed food products while the shares of more traditional export products are contracting. Among food products, we observe increased export shares over time for maize and wheat, but especially for processed foods such as soups, broths, and food preparations, reflecting growth in processed food consumption, along with demographic shifts, growing urban food demand, and changing lifestyles and habits in rural areas. Other products among the top 20 commodities traded intraregionally include rice, cattle, apples, vegetables,

sweeteners and fats, beverages, and traditional nonfood products such as tea, coffee, palm oil, cotton, and tobacco. The top 20 products accounted for 38 percent of overall intracontinental agricultural trade in 2016–2018. The corresponding share is lower in the EU and at the global level (31 and 32 percent, respectively) but significantly higher in South Asia (65 percent) and the Middle East and North Africa (44 percent). Thus, intracontinental agricultural trade, though relatively less diversified in Africa compared to Europe, is significantly more diversified in Africa than South Asia.

Intracontinental trade expansion can leverage regional differences in the competitiveness of African countries in key food value chains. Between 2003 and 2018, the cereals (wheat, maize, rice) and vegetable oils value chains showed a comparative disadvantage, which was especially substantial in the case of vegetable oils, but the sugar value chain exhibited a declining comparative advantage. The comparative advantage of unprocessed products is generally higher than that of semi-processed and processed ones. However, this general picture of (un)competitiveness at the continental level hides a few exceptions at country level. Nigeria, the Democratic Republic of the Congo, and Ghana are relatively more competitive in cassava, as are Eswatini, Mauritius, and Zambia in semi-processed and processed sugar products. The same can be said of Tanzania in sugarcane; Algeria, Egypt, and Morocco in sugar confectionery; Nigeria, Sudan, and Tanzania in groundnuts; and Côte d'Ivoire and Sudan in (processed) vegetable oils. The report shows that the generally low competitiveness of African countries can be explained either by supply-side factors (lack of comparative advantage) or demand-side factors (tariff escalation and domestic support for some products in the main producers of agricultural products).

Export diversification away from primary commodities is key to African trade expansion, as exemplified by the case study of the Southern Africa region. A few products dominate intra–SADC agricultural trade. Maize is the most exported, predominantly from South Africa, followed by sugar from Eswatini and cattle from Namibia. However, there is potential for intensifying intraregional trade by building on comparative advantages. SADC countries show differences in their comparative advantages: Botswana, Mauritius, and Namibia have a comparative advantage in animal products while eight SADC countries, including Comoros, Madagascar, Mozambique, Mauritius, and Malawi, show consistent revealed comparative advantage in vegetable products. The ability of SADC countries to trade new agricultural products varies across countries. Results show an increase in the number of traded agriculture products (extensive margin) between 2005–2007 and 2016–2018 for Zambia, Mauritius, Mozambique, Lesotho, and Angola. In contrast, Madagascar, Malawi, Seychelles, and Zimbabwe all show a decrease in extensive margin.

Intra-African trade, especially agricultural trade, is much larger than official statistics alone suggest. For instance, it is estimated that informal cross-border trade in staple foods accounts for about 30 percent of total trade in West Africa. Two major initiatives, which deserve to be scaled up, attempt to assess the magnitude of the gap between reported trade and total trade that is due to informal trade, a major phenomenon in Africa. In West Africa, CILSS[1] and WACTAF[2] have the only permanent informal cross-border trade monitoring system for agro-sylvo-pastoral products and fisheries, under USAID funding. This system collects data on the value and volume of intraregional agricultural trade in strategic markets and along the major commercial corridors linking Senegal, Mali, Burkina Faso, Benin, Togo, Ghana, Côte d'Ivoire, and Nigeria. In East Africa, a survey initiative by the Uganda Bureau of Statistics aims to assess the volume and value of informal trade between Uganda and its neighbors (Democratic Republic of Congo, Kenya, Rwanda, South Sudan, and Tanzania). The goal is to provide an estimate of informal cross-border exports, primarily of agricultural and food commodities. These initiatives and many others are promoted either by governments (central bank or national statistical institutes), development agencies, or regional or international institutions. But there is currently no permanent continentwide system for monitoring and quantifying informal cross-border trade in Africa, although such an initiative would be quite useful. The FARM-TRAC project, financed by the International Fund for Agricultural Development and implemented by the CILSS consortium, IFPRI, and WACTAF, is exemplary in this respect.

1 CILSS is the French acronym for the Permanent Interstate Committee for Drought Control in the Sahel (Comité permanent Inter-État de Lutte contre la Sécheresse au Sahel).
2 WACTAF is the West African Association for Cross-Border Trade in Agro-forestry-pastoral and Fisheries products.

Lack of competitiveness and nontariff measures constrain Africa's global trade potential. Africa performs relatively better in agricultural production than in agricultural exports. The region accounts for 10.2 percent of the world's agricultural GDP but only 2.7 percent of global GDP and 4.2 percent of global agricultural exports. Still, these shares are low when compared to those of the Latin America and the Caribbean and the Asia-Pacific regions, reflecting Africa's lower labor productivity, lack of competitiveness in world markets, and the prevalence of nontariff barriers affecting the continent's exporters. Nontariff measures (NTMs) faced by African countries range from sanitary and phytosanitary measures to conformity assessment and domestic support in the main producers of agricultural products. In particular for agriculture products, unfair competition resulting from domestic support in other countries affects the competitiveness of African countries' exports. The major players in terms of domestic support include both emerging economies like China and Brazil and advanced economies such as the EU and the United States. Brazil is a large user of government support services (that are transfers creating enabling conditions for the primary agriculture sector, including private and public services, institutions, and infrastructure). The EU provides its support to producers, and the United States to its consumers. In general, in terms of size and policy choice, China has the highest domestic support as a share of GDP.

It is also important to note that NTMs within African countries remain the main obstacle to raising the continent's trade competitiveness and improving Africa's trade integration. As reported in the 2019 AATM, customs formalities and regulatory and administrative barriers raising the cost of trading are a major impediment to the expansion of African agricultural trade, along with insufficient transport and communication infrastructure as well as inefficient credit and insurance markets.

The limited complementarity or overlap between the commodity composition of African imports and exports suggests a limited scope for intra-African trade expansion through trade diversion. In other words, African countries will not be able to sensibly increase intra-continental trade by simply substituting products supplied by other African countries for those currently sourced from their extra-continental partners. Findings show that the average agricultural trade complementarity index is 10 percent in Africa, meaning that 10 percent of one country's import schedule overlaps with another country's export portfolio, on average. The corresponding average index value is 14 percent in South Asia, 17 percent in Southeast Asia, 23 percent in Central America, and about 43 percent in the EU and Northern America. Indeed, Africa's world agricultural imports largely and persistently consist of food products, while exports are predominantly unprocessed nonfood products.

From the point of view of a REC, low trade complementarity means that what one member state imports from the world market poorly matches what other member states export to the world market. As population and economies continue to grow rapidly, and urban lifestyles and consumption habits develop in rural areas, increasing demand for food creates export opportunities to the large domestic markets. Indeed, intra-African trade can be expanded both through expansion of existing trade flows (along the intensive margin) and or the addition of new products and markets (along the extensive margin). Hence, the need for coordinated actions within RECs to increase regional trade through a better match of intra-African supply capacities to its demand for agricultural products.

In light of the above evidence, African governments and the development community should focus on addressing many domestic factors that affect agricultural competitiveness: low agricultural productivity related to poor access to credit markets; insufficient investment in research and development; insufficient access to fertilizers, new technology, and irrigation; high costs related to logistics, transportation, and customs procedures; and relatively high import duties that continue to impede interregional trade and the development of regional value chains.

Chapter 1

Overview

Antoine Bouët, Sunday Pierre Odjo, and Chahir Zaki

Introduction

This is the third annual *Africa Agriculture Trade Monitor* (AATM), an annual flagship publication initiated by the International Food Policy Research Institute (IFPRI). These reports provide an overview of trade in agriculture in Africa that includes analysis of short- and long-term trends and drivers behind Africa's global trade, intra-African trade, and trade within regional economic communities (RECs). The AATM is supported by the United States Agency for International Development (USAID) and the Federal Ministry for Economic Cooperation and Development (BMZ).

The 2019 AATM highlighted findings that help explain why Africa stills faces several barriers to trade expansion. First, the main barrier to improving Africa's trade integration is nontariff measures (NTMs), especially administrative barriers to trade and customs procedures. Second, when compared to other regions, intraregional trade in Africa is low as a proportion of total trade. This is chiefly due to poor integration, on the one hand, and on the other, low gross domestic product (GDP) levels in Africa. Third, informal cross-border trade is significant and plays a crucial role in poverty alleviation and food security: with informal trade included in this statistic, intraregional trade as a share of total trade would be significantly higher. Despite these obstacles, however, it is worth noting that Africa's comparative advantage in agriculture has recently increased. But this competitiveness is chiefly in unprocessed and semi-processed products and not in processed ones. There is still much work to do to improve Africa's trade integration and export performance.

With this background, the 2020 AATM, using a rigorous statistical approach and technically robust tools, focuses on several issues related to Africa's trade integration. The second chapter provides a general overview of Africa's agriculture trade performance (in terms of exports growth, shares, products, and partners). It also analyzes the main trade barriers affecting agricultural exports, including both tariffs and NTMs (ranging from sanitary and phytosanitary measures to domestic support) in the main destination markets. The third chapter investigates intra-African trade integration. It assesses the degree of trade complementarity among African countries within their respective regions, and also examines whether African countries trade less or more intensely within their regional markets than the world does on average. The fourth chapter looks at value chains in Africa. While the 2019 report looked at traditional cash crops (such as cashew nuts, cocoa, coffee, cotton, sugar, and tea) and recently well-performing value chains (like citrus, grapes, legumes and pulses, sesame seeds, and tomatoes), this year we focus on three value chains where African economies have a defensive interest. These value chains are (1) the value chain for three major cereals (wheat, maize, rice) and cassava, (2) the sugar value chain, and (3) the vegetable oils value chain. For each of these value chains, we examine both trade flows and trade policies (whether tariffs or NTMs). Although our main focus, given current data availability, is formally registered trade flows, informal trade continues to play a major role in Africa. Chapter 5 attempts to assess informal cross-border trade (ICBT) in Africa, particularly in agriculture, by examining different definitions of ICBT and its determinants and magnitude. Finally, at the RECs level, Chapter 6 is usually dedicated to analysis of a specific region in Africa. The Eastern and Southern Africa (ESA) region, and in particular the Common Market for Eastern and Southern Africa (COMESA), was analyzed in the 2019 AATM, and the Economic Community of West African States (ECOWAS) was featured in the 2018 AATM. This year's AATM focuses on Southern Africa, with a special focus on the Southern African Development Community (SADC).

The objective of this first chapter is to provide an overview of recent issues related to agricultural trade in Africa. Hence, the next section explains how regional integration has experienced some new trends, yet is still impeded by old and structural issues. The following section provides an analysis of informal trade flows, given their importance for agriculture in Africa. In addition, we

look at the unprecedented shock of COVID-19 as it can be expected to have a major impact on trade and food security in Africa. The final section describes some issues concerning data and methodology for this report.

Regional integration: new trends and old issues

The agriculture sector remains an important source of livelihood for more than half of Africa's population. Yet, Africa represented only 11 percent of the world agricultural GDP and 4 percent of world agricultural exports in 2018 (World Development Indicators 2020). This reflects the numerous impediments — poor infrastructure, old technologies, and weak productivity — that continue to affect the performance of the agriculture sector. However, at the global level, Africa experienced an upward trend in the value of its agricultural exports between 2003 and 2018. The European Union remained the main destination for its raw products, followed by Brazil, Russia, India, and China whose share has been recently increasing. Diversification of Africa's agricultural exports thus consists of market expansion toward emerging countries while sustaining exports to traditional markets in advanced economies. At the regional level, intracontinental destinations represent a constant 20 percent share of African agricultural exports, dominated chiefly by SADC and COMESA member countries. A closer look at the exported products reveals that cocoa beans, cashew nuts (in shell), tobacco, coffee, and oranges are the top five products, together accounting for 27 percent of African agricultural exports in 2016–2018.

In terms of protectionism faced by African exports, our assessment shows that 60 percent of African economies face average duty rates across all goods that are not higher than 5 percent. Only 5 percent of African economies face average duties greater than 10 percent.

However, the pattern is different for NTMs, which continue to constrain regional integration. NTMs affecting agricultural products include sanitary and phytosanitary measures, technical barriers to trade, and domestic support. In fact, most African exporters perceive conformity assessment measures (which include control and approval procedures such as inspection, testing, certification, and traceability designed to safeguard consumer health and safety) as the greatest impediments to trade. On average, when companies are asked what type of regulatory obstacles they face to trade, 36 percent of the barriers cited are related to conformity assessment and 30 percent to export-related measures.

In addition, agricultural products are particularly affected by domestic support. Most domestic support is provided by large agrifood producing countries that are heavily involved in international trade; because these countries can influence world agricultural markets, their use of domestic support can be significantly distorting for small producers (such as African ones). While total support has been declining in all the main producers of agricultural products, on average, support in China remains the highest (2.1 percent of GDP), followed by the EU28 (0.9 percent), Brazil (0.6 percent), and the United States (0.5 percent). China and other emerging economies (such as Brazil, India, and Indonesia) are really shaping agriculture trade relations and future WTO rules. However, it is important to note that part of the domestic support, namely the "green box" measures, is related to unconstrained spending on programs that do not distort trade, including spending for research, pest and disease control, rural infrastructure, and advisory services (Glauber et al. 2020).

While most analysis in this field focuses on formal trade flows when considering exports, imports, tariffs, and NTMs, several informal flows are not included and might not be subject to stringent

trade rules. Neglecting informal trade in Africa would definitely alter our understanding of the trade dynamics in Africa. The next section provides a brief analysis of the main challenges and opportunities related to informal cross-border trade.

Informal trade: challenges and opportunities

A comprehensive analysis of informal cross-border trade (ICBT) is crucial given the wide range of activities it encompasses and its connections with rural employment, income generation, women's economic empowerment, and national food security.

Broadly considered, ICBT includes cross-border trade conducted by informal traders crossing official border posts with small quantities or crossing borders at points not covered by officials to avoid controls; and cross-border trade conducted by formal traders who reduce the cost of import duties at the border by under-declaration or misclassification, or who smuggle merchandise to avoid customs officials. While, generally speaking, ICBT is a product of a specific culture and history, the magnitude of ICBT is primarily determined by economic factors, including high costs of formal trade, the relatively low level of enforcement of laws and regulations in African countries, and poverty.

Over the years, various methods have been proposed to measure this "missing" trade in Africa. These can be broadly divided into indirect and direct methods: indirect methods involve using mirror data and econometric techniques; direct methods use surveys at border points and strategic markets.

Across the entire continent, many initiatives to measure ICBT have been introduced by governments (central banks or national statistical institutes), development agencies, and regional or international institutions. The best known are the CILSS[1] and WACTAF[2] initiatives in Western Africa and UBoS[3] initiative in Uganda. But there is currently no permanent and general system for monitoring and quantifying ICBT in Africa, although such an initiative would be quite useful. In that respect, the FARM-TRAC project, financed by the International Fund for Agricultural Development (IFAD) and implemented by the CILSS consortium, IFPRI, and WACTAF, offers a promising initiative aimed at establishing a permanent and generalizable ICBT monitoring system.

From a political point of view, the objective of African authorities is now to "formalize" informal trade, and end the practice of sanctioning it. In the eyes of decision-makers, the costs associated with formal trade must be lowered in order to reduce incentives for informal trade. In regard to this, there has been political momentum for several years now to establish regional trade agreements or deepen existing relations as a means to lower formal trade costs: lowering trade barriers, improving the efficiency of customs procedures, trade facilitation, and so on. These policies have been implemented to enhance regional trade in general, not just to reduce incentives for ICBT.

Trade integration at the continental level should facilitate the reduction of ICBT. The African Continental Free Trade Area (AfCFTA) is moving forward today and aims to be the largest free trade area in the world. Implementation of this free trade zone should boost regional trade and reduce smuggling and fiscal evasion in particular, thanks to the elimination of import duties on most

1 CILSS is the French acronym for the Permanent Interstate Committee for Drought Control in the Sahel (Comité permanent Inter-État de Lutte contre la Sécheresse au Sahel).
2 WACTAF is the West African Association for Cross-Border Trade in Agro-forestry-pastoral and Fisheries Products.
3 UBoS is the Uganda Bureau of Statistics.

products and the simplification or removal of NTMs and customs procedures. If this continental integration favors economic growth and reduces poverty, it should also indirectly reduce ICBT conducted by unregistered traders.

In a nutshell, despite a high share of informal trade, Africa has recently witnessed some new trends (diversification of its destinations and the ratification of AfCFTA) that are likely to boost its formal trade flows. However, it is currently facing a very serious external shock, namely the COVID-19 pandemic, which is also associated with a historic decline in oil prices. These two linked shocks are likely to have a significant effect on African countries and will put a halt on their progress in trade.

Africa and COVID-19

The number of coronavirus victims in Africa has increased rapidly since February 25, 2020, when the first case was reported. Just four months later, on June 25, 2020, there were 245,906 cumulative cases and 5,405 deaths related to COVID-19 on the continent. The most affected countries at that point were South Africa with 111,796 confirmed cases, Nigeria with 22,020, and Ghana with 15,013.[4]

This health crisis is of particular concern in Africa, given the weak medical infrastructure and the prevalence of tuberculosis and immunodeficiency diseases.[5] But beyond the health crisis, a major economic crisis is looming that could significantly affect food security on the continent. On one hand, Africa imports (in net terms) essential food products in significant amounts: the three major cereals (wheat, maize, rice) for almost US$25 billion per year, and also meat and edible offal for US$4 billion, and dairy products and other animal products for US$4.3 billion. Its annual net imports in the sugar sector are US$4.1 billion and in the vegetable oil sector US$8.8 billion. On the other hand, Africa has significant net exports of coffee, cocoa, cotton, tea, pulses, and certain niche products, including citrus fruits, tomatoes, South African wines, cut flowers, sesame seeds, and cashew nuts (Bouët and Odjo 2019). But these are not basic food products that are critical for human nutrition.

Let us first look at the state of the global food supply, and examine how this health crisis is affecting Africa. Then we will look at how policy responses have contributed to amplifying the negative impact of this crisis.

World food production is currently satisfactory

Global production of essential food commodities in 2020 is satisfactory. For the major cereals (wheat and rice), world stocks are at a normal level and world harvests promise to be good. For example, the US Department of Agriculture predicts a 5 percent increase in the world wheat harvest compared to 2019, while the rice harvest is expected to be at the same level as 2019. This is reflected in (so far!) stable world prices.[6] Harvesting in rich countries is not threatened by social distancing measures, as it is highly mechanized and requires little labor. This is also true for international transport that supports trade between rich countries and emerging countries. However, for poor regions, including Africa, harvesting and trade are less mechanized and more

4 See World Health Organization, Africa regional office: https://www.afro.who.int/health-topics/coronavirus-covid-19, accessed June 25, 2020.
5 The link between COVID-19 and tuberculosis is not clear, but the BC Centre for Disease Control states that tuberculosis "disease is not known to put people at higher risk of COVID-19 infection, but it may put you at risk of having more severe symptoms" (http://www.bccdc.ca/health-info/diseases-conditions/covid-19/priority-populations/tuberculosis-and-covid-19, accessed June 29, 2020).
6 See the Food Security Portal, www.foodsecurityportal.org.

likely to be affected by social distancing measures. Moreover, food distribution in supermarkets continues to operate. As a consequence, the current health crisis therefore does not threaten world agricultural production and distribution channels even if, at the microeconomic level, there could be some significant problems.

Four channels of transmission

However, to be able to import its essential food commodities on a massive scale, Africa needs foreign exchange earnings or capital inflows beyond the revenue received from its exports of cash crops and niche products, which is not enough to cover imports of staple food products. Yet its most important sources of foreign exchange have been drying up fast since the beginning of the crisis.

1. *Remittances* provide a key source of revenues for African economies. According to the World Bank, among the top 10 recipient countries in 2017 are Nigeria (5th with US$22 billion) and Egypt (7th with US$20 billion). Remittances represent 24.4 percent of GDP in Lesotho, 19.8 percent in Gambia, and 18.5 percent in Liberia. These statistics illustrate clearly how a decrease in remittances, related to the world economic recession, could affect African economies. Facing higher unemployment in many places, migrants are expected to reduce remittances to their home countries. Many research papers find a significant positive relation between remittances and economic activity in the recipient countries, in particular in countries with less developed financial systems (Giuliano and Ruiz-Arranz 2009), as is the case in Africa. Remittances are also found to significantly augment business cycle synchronization between recipient countries and the rest of the world — but they are more effective in channeling economic downturns than economic booms from the sending countries to the receiving countries (Barajas et al. 2012). This is indeed worrying in the case of the current world economic situation.
2. *Tourism* receipts are another big source of revenue for African economies. Tourism to Africa has grown significantly in recent years with, for example, a 10.5 percent increase in the number of tourists in 2018,[7] and it has become an important source of economic activity and livelihoods. Tourism receipts are especially large in Egypt (US$11.6 billion), South Africa (US$8.8 billion), and Morocco (US$7.8 billion). For several small countries, tourism receipts represent a high share of GDP: 26.4 percent in Seychelles and 18.6 percent in Cabo Verde. The health crisis directly affects all activities related to mobility, and tourism will be among the most affected activities, if not the most affected.
3. African countries are major exporters of *raw materials*: oil, natural gas, base metals, precious metals, and minerals. To take the example of oil, three African countries were among the top 10 oil-exporting countries in 2019: Nigeria (US$41 billion), Angola (US$32.3 billion), and Libya (US$24.8 billion) (Workman 2020). The price of a barrel of oil collapsed from US$52–US$64[8] in 2019 to less than US$20 in April 2020 (at the end of June 2020, it is close to US$38). Prices of base metals also fell. The price of cobalt (exported by Democratic Republic of the Congo [DRC], Zambia, South Africa), copper (DRC, Zambia), and aluminum (South Africa, Mozambique) is down by more than 10 percent at the end of May 2020 as compared to one year ago; of tin (DRC, Rwanda, Nigeria) and zinc (Namibia) by more than 20 percent.[9]
4. *International aid* is an important source of capital for many African countries, especially official development assistance (ODA) for the least developed countries. While international institutions (for example, UNCTAD) recommend that developed countries commit 0.7 percent of their gross national income to ODA and between 0.15 and 0.2 percent to ODA for

7 World Tourism Organization. https://www.e-unwto.org/doi/pdf/10.18111/9789284419876.
8 2019 oil prices were in line with prices recorded over the past 15 years.
9 Statistics around the evolution of raw commodities prices are from the IMF "Primary Commodity Prices."

least developed countries, the general decline in tax revenues and the increase in health, economic, and social expenditures in rich countries in response to the pandemic raise concerns about a potential decline in ODA.

Domestic COVID-19 policy actions

Social distancing measures have been implemented in many African countries. This has led to containment measures and bans on open markets in some places. Yet much of Africa's food supply is still provided by "transitional" value chains that are dominated by small and medium-sized food processors, street vendors, and a significant number of wholesalers and retailers selling in wholesale public markets, where high densities of people are the norm. Preventing these markets from functioning obviously jeopardizes sources of income for many agents and access to food for many others (Reardon et al. 2020).

In March, some producing countries, in a somewhat irrational panic, applied export restrictions or even export bans.[10] For example, on March 15, Russia, the world's largest exporter of wheat, banned all exports of buckwheat and rice for 10 days, claiming that it was because of an explosion of purchases in its own supermarkets. Russia was followed by, among others, Serbia, Egypt, Kazakhstan, and even Viet Nam, the third largest exporter of rice, which suspended these exports for a few days. Restricting exports on world markets leads to a rise in international prices. However, the situation on world markets for basic food products in no way justifies the adoption of these measures. Fortunately, these political reactions have ceased, and overall, these export restrictions have had little effect on world agricultural markets.

The COVID-19 pandemic has also triggered a range of border controls in countries around the world to curb the spread of the disease. In Africa, these moves have interrupted progress toward economic integration. The AfCFTA, for example, was supposed to establish continentwide free movement of goods starting on July 1. Now, the African Union Commission has proposed postponing the launch until January 1, 2021.

Across Africa, pandemic-related border controls are having many economic impacts, large and small. Most African countries have closed land borders to travelers, while still allowing freight to pass under tighter controls, which sometimes allow the movement of only agricultural and food products. Over one 10-day period in March, 25 African countries imposed such measures on land borders. Almost all these countries have also suspended the arrival of international flights, at least from countries particularly affected by the virus. Many governments have also imposed curfews.

The DRC, Kenya, Liberia, and Namibia chose a different path: the entry of people at border posts is subject to temperature checks and testing, followed by hospitalization and/or quarantine if necessary.

These measures have been adopted to protect public health, but their economic consequences could be significant. Stricter sanitary border controls on the transport of products can be expected to slow intra-African trade. In addition, prohibiting people from crossing the border stops one means of informal trade that is widely practiced in Africa and often the main source of income for a family. This type of trade accounts for a significant share of recorded trade, for example, between 15 percent and 30 percent of official exports in Uganda.

The consequences of these measures for intracontinental trade are still unclear due to a lack of recent data. Thus far, statistics compiled by the Food Security and Nutrition Working Group (weekly data collected at border posts in East Africa — the only data available through the end of

10 See the IFPRI tracker for export restrictions at:
https://public.tableau.com/profile/laborde6680#!/vizhome/ExportRestrictionsTracker/FoodExportRestrictionsTracker

May) do not indicate a decrease in cross-border agricultural trade.

Nevertheless, at some border crossings there has been a significant decrease in informal trade and an increase in registered trade.[11] The numerous health controls are therefore leading to a change in the type of agricultural trade in this part of Africa.

An estimation of the global impact

Laborde et al. (2020), at IFPRI, have conducted a simulation of the economic consequences of COVID-19 using IFPRI's global model. The model simulates countries affected by COVID-19 implementing social distancing measures covering between 40 and 50 percent of the population, a shutdown of international travel and many tourism-related activities, an increase in freight costs due to bottlenecks in international transport, increased postharvest losses, and a stimulus package in rich countries.

The model forecasts a downturn in global economic growth of 5 percent in 2020 (a projection broadly similar to the recent IMF forecast), with the poorest nations facing significantly greater adversity. The recession is projected to depress economic activity across developed countries by 6 percent on average in 2020, and to spill over to the rest of the world through lower demand for trade and lower commodity prices. Developing economies will also be hurt by the economic fallout caused by their own social distancing measures and by increased morbidity affecting the labor supply for farming and other business activity. In this modeling exercise, African economies are hit hardest, with an almost 9 percent decline in GDP. But agrifood sectors may be spared and even expand. The model indicates that urban and rural populations in Africa south of the Sahara would suffer most, with an increase of 80 million poor people, a 23 percent increase.

Finally, countries should not let the pandemic stop progress toward economic integration. The need for the AfCFTA has been reaffirmed by influential figures such as Presidents Paul Kagame of Rwanda and Cyril Ramaphosa of South Africa. It can provide not only a solid basis for long-term economic development, but also a means of effectively fighting future pandemics by facilitating the cross-border trade of food and medical goods. Virtual negotiations could begin in the coming days to set a new start date, possibly before January 1, 2021.

Issues concerning data and methodology

The AATM relies heavily on trade statistics. The quality of statistics is a fundamental issue for economic policy. It is obviously difficult, if not impossible, for economists and governments to make sound policy recommendations without reliable and accurate statistics. This is particularly true for agricultural trade issues in Africa, where international statistics are often reported to be of poor quality. For this reason, the establishment of a high-quality trade database was considered essential during the preparation of this report. Here we discuss issues related to the statistical approach we have adopted to ensure rigorous analysis.

Like in the 2019 AATM report, the 2020 release is based on an original dataset in order to provide appropriate statistics on global and African trade. This analytical database was developed with the support of the CGIAR Research Program on Policies, Institutions, and Markets (PIM), and based

11 This has been suggested by an assessment of data on formal and informal cross-border trade in Eastern Africa, obtained from the Food Security and Nutrition Working Group (FSNWG), and a discussion with Thomas Awuor from FSNWG. These data cover cross-border trade in Eastern Africa from January 2012 to May 2020.

on the United Nations Commodity Trade Statistics Database (UN-COMTRADE). Raw trade data are processed to provide an accurate estimate of formal cross-border trade in Africa (no estimate of informal trade was included in the dataset in the 2020 edition).

In the first step, the dataset is harmonized and cleaned. Trade flows below US$1,000 at the product and bilateral level are discarded since they are associated with significant noise in quantity estimates. Because countries report in different harmonized system (HS) nomenclatures, they are all converted to the HS 2012.

The second step aims to reconstruct a unique trade flow in the presence of discrepancies in mirror trade flows. Instead of averaging the two declarations, a series of checks aimed at identifying the most reliable declaration is conducted. First, exports/imports unit values (UV) for each trade flow (trade value divided by the corresponding trade quantity) are computed; outliers are identified and their associated trade flows discarded. The remaining trade flows were selected based first on the importer declaration, which is considered most reliable, then if not available, or previously discarded, the exporter declaration is used.

Finally, the trade flows are all expressed in CIF (cost insurance freight) value. When the exporter's FOB (free on board) declaration has been used, a CIF/FOB correction is applied. The estimates of the CIF/FOB ratios used to make this correction were obtained using a gravity equation including distance, contiguity, common official language, and colonial origin as explanatory variables.

Overall, increasing the resilience of African domestic food markets in the face of external shocks should be at the core of national, regional, and continental policy debates. Africa has demonstrated capacity to sustain significant net exports of nonfood products, while it continues to depend on substantial food imports. Though the current health crisis does not threaten world agricultural production and distribution channels, it is affecting the most important sources of foreign currencies for African nations, with remittances, tourism revenues, prices of raw materials, and international aid all falling. In addition, policy reactions of African nations affect the functioning of ICBT and livelihoods of large segments of their populations, with implications for resilience.

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Chapter 2

Africa in Global Agricultural Trade

Sunday Pierre Odjo and Chahir Zaki

Introduction

Africa represented around 11 percent of world agricultural GDP and 4 percent of world agricultural exports in 2018 (World Bank 2020). At the same time, the agriculture sector remains an important source of livelihood for more than half of the African population. Yet, the region still faces numerous impediments that affect its trade performance. Despite implementation of several trade agreements including the regional economic communities (RECs) intended to boost trade, Africa's exports have not improved significantly.

This poor trade performance can be explained by a combination of supply-side and demand-side factors. On the supply side, the agriculture sector suffers from low productivity because of the limited use of irrigation and dependence on rainfed agriculture (Moyo 2016; Olayide et al. 2016). Second, at the budget level, public spending allocated to agriculture is minor, which affects investment and infrastructure in this sector, especially for farm equipment, machinery, and such. Third, insufficient use of modern technologies affects the sector's performance (Boniphace et al. 2015; Pindiriri 2018).

On the demand side, African exporters face several trade barriers (both tariffs and nontariff measures) that affect their penetration in developed and emerging markets (Disdier et al. 2008; Gelan and Omore 2014; Liu et al. 2019). Moreover, African products are not sufficiently competitive, as they do not meet the quality standards of world markets (World Bank 2015). As a consequence of all these handicaps, the agriculture sector continues to underperform in general and at the export level in particular.

The 2019 *Africa Agriculture Trade Monitor* (Chapter 2) showed that, although Africa has a trade deficit in agriculture, this deficit has been significantly reduced since 2012 and Africa's share of global agricultural GDP has been steadily increasing since 1995. Moreover, Africa has comparative advantages in traditional agricultural products that are either raw or unprocessed such as cocoa, coffee, cotton, fish, fruits, legumes, and tea. An important finding is that there is a high concentration of exports in a relatively small number of products, which are, again, raw or semi-processed. Finally, it showed that Africa performs poorly in terms of participation in world trade, whether intra- or extraregional, as a result of supply- and demand-side constraints and nontariff barriers, especially administrative barriers.

Against this background, the objective of this chapter is to provide an overview of Africa's trade structure and trade policy. We first analyze recent performance in different markets and identify changes in the composition and direction of trade. Second, we examine both tariffs and nontariff measures faced by African agricultural exporters, using several sources of data for trade barriers.

Our main findings show that, while agricultural productivity is low, the European Union remains the primary destination for agricultural exports, although its share is constantly decreasing. At the product level, the top 10 agricultural export products represent 39 percent of Africa's agricultural exports and include sesame seeds, black tea, cocoa paste, and fresh grapes. In terms of trade barriers, despite low tariffs faced by African economies, they are facing several nontariff measures (NTMs) ranging from sanitary and phytosanitary measures to conformity assessment and domestic support in other countries. Indeed, and in particular for agriculture products, unfair competition resulting from the domestic support in other countries affects the competitiveness of African countries' exports.

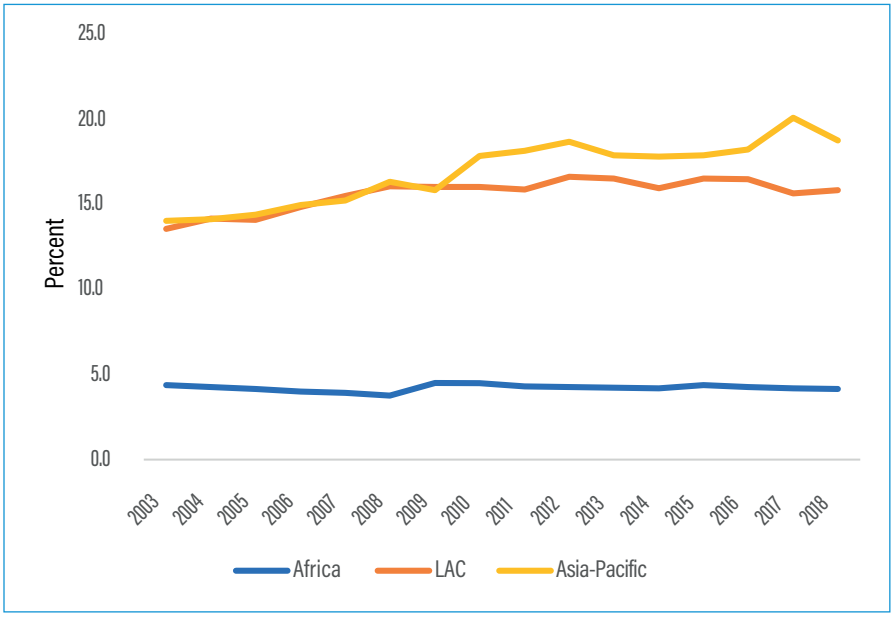
The following section provides a general overview of the agriculture sector in Africa in terms of value-added, employment, and trade performance. The next section examines trade policies facing African countries in both developed and emerging markets, and the final section of this chapter offers some conclusions.

Trends in agricultural trade in Africa

General trends

Despite its comparative advantage in several agricultural products, Africa's share in total exports at the world level is relatively low when compared to other regions with a similar level of development. Africa's share in world agricultural exports averaged 4.2 percent between 2003 and 2018, while the Asia-Pacific developing region averaged 16.9 percent and Latin America and the Caribbean (LAC) averaged 15.6 percent over the same period (see Figure 2.1).

Figure 2.1 Share in total world agricultural exports, by region



Source: 2020 AATM database.

Such a weak performance becomes more evident when the share of Africa's agricultural exports is compared to its share in the world's agricultural value-added. Figure 2.2a shows that, on average, Africa represents 10.2 percent of the world's agricultural GDP (and Africa's total GDP represents 2.7 percent of the world's GDP, see Figure 2.2b), whereas LAC and Asia-Pacific's shares of world agricultural GDP are 9.5 percent and 54.9 percent respectively (7.6 percent and 29.5 percent of total GDP). Hence, in terms of shares, Africa is doing slightly better in production than exports. This can be explained by several factors, including large domestic demand, lack of competitiveness, high tariffs, and numerous NTMs in different destinations. Some of these issues will be explored in this report.

Figure 2.2a Share in world's agricultural GDP, by region

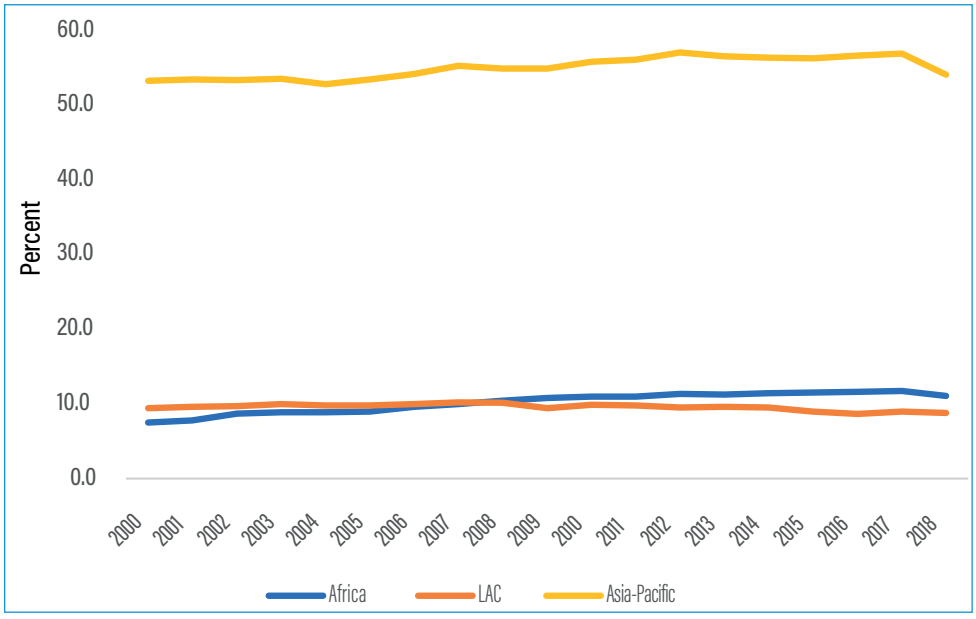
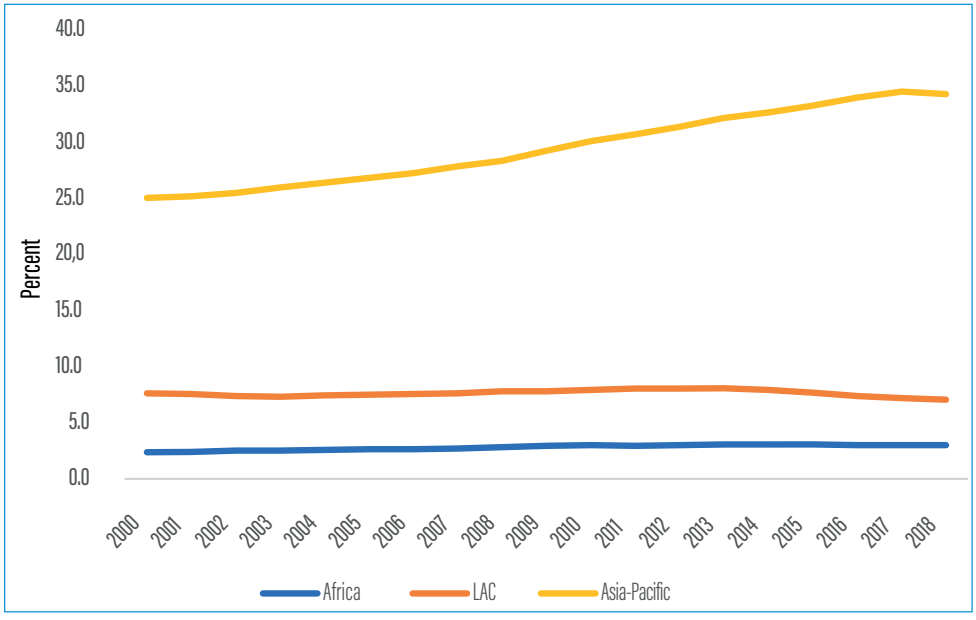


Figure 2.2b Share in world's GDP, by region



Source: World Development Indicators.

Note: Figures are calculated using 2010 constant US dollars.

One of the reasons underlying the weak performance of Africa in the agriculture sector on the supply side is the low labor productivity in this sector. Figure 2.3a shows that, on average, while this sector accounts for 59 percent of total employment in Africa (and 36 percent in Asia-Pacific and 17 percent in LAC), its productivity (calculated as value-added per worker) does not exceed 50 percent of Asia's productivity or 20 percent of LAC's (Figure 2.3b). Furthermore, it is important to note that, while Africa's productivity stagnated over the whole period, LAC and Asia experienced increases.

Figure 2.3a Employment in the agriculture sector

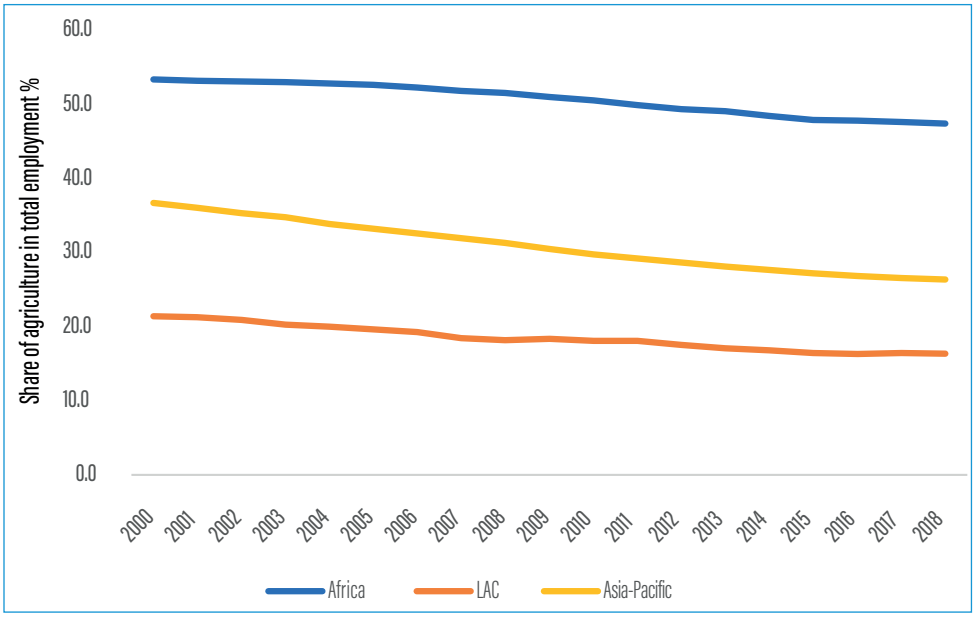
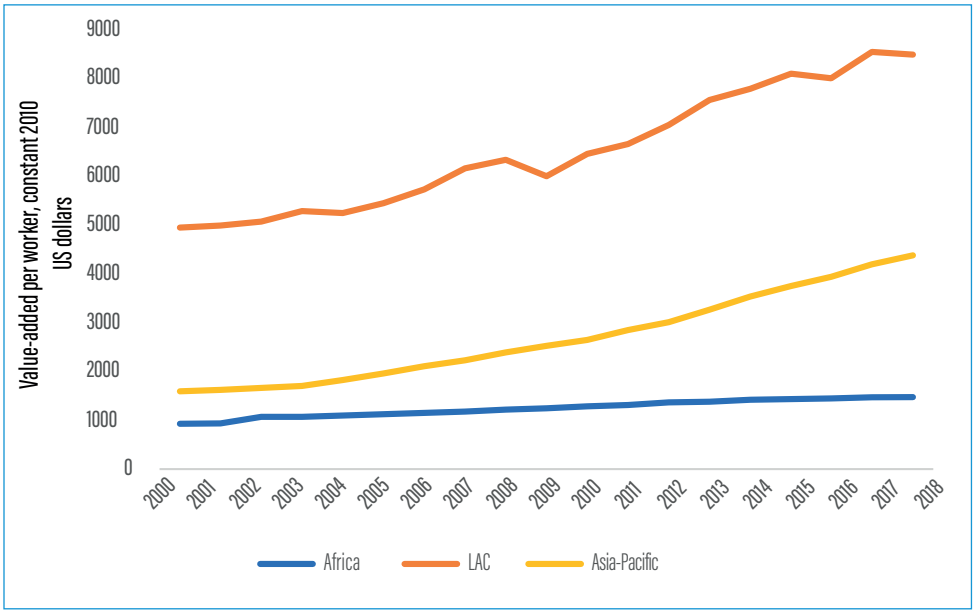


Figure 2.3b Productivity in the agriculture sector



Source: World Development Indicators.

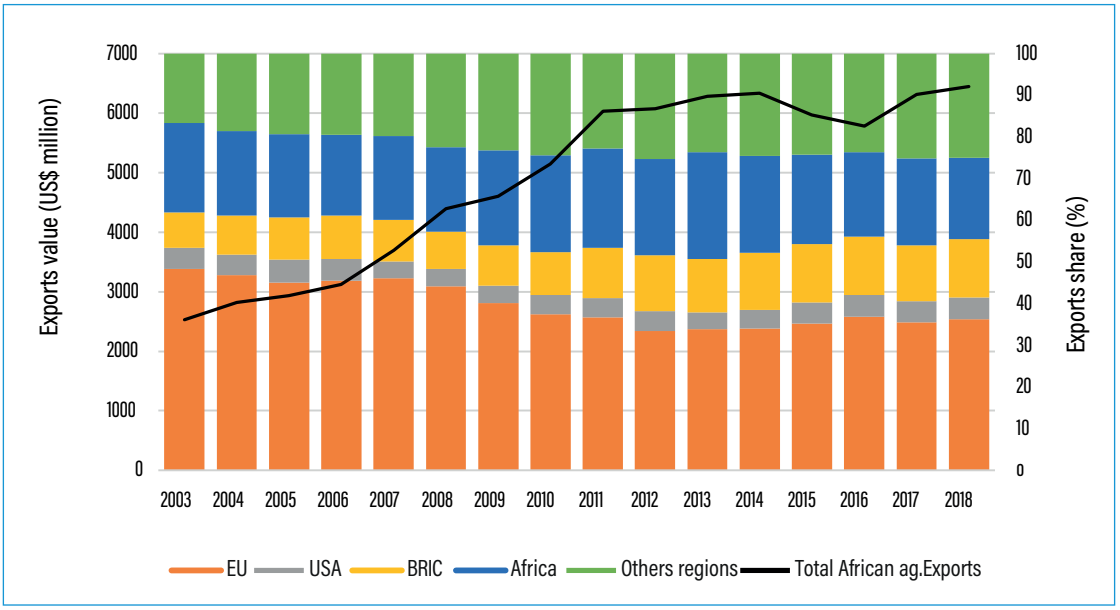
In a nutshell, Africa has low productivity in the agriculture sector and a trivial share in world agricultural exports compared to other emerging regions. Yet, this result hides a lot of heterogeneity at the level of the products exported by African countries and the level of markets served by them. Therefore, the next section will examine the main destinations and products exported by African countries.

Where do Africa's agricultural exports go?

Africa's low share of world agricultural exports between 2003 and 2018 hides an upward trend in the value of its agricultural exports. Figure 2.4 depicts a sustained growth pace in export value that was interrupted only in 2015–2016. The figure highlights the evolution of the shares of major destinations of African agricultural exports. The European Union (EU) has remained the main destination, though its share has steadily decreased, with on average 45 percent in 2005–2007 and 36 percent in 2016–2018, with raw products ranked first. The United States accounts for 5 percent of African agricultural exports, with on average no significant change since 2003. Intra-Africa destinations have almost invariably accounted for 20 percent of African agricultural exports.

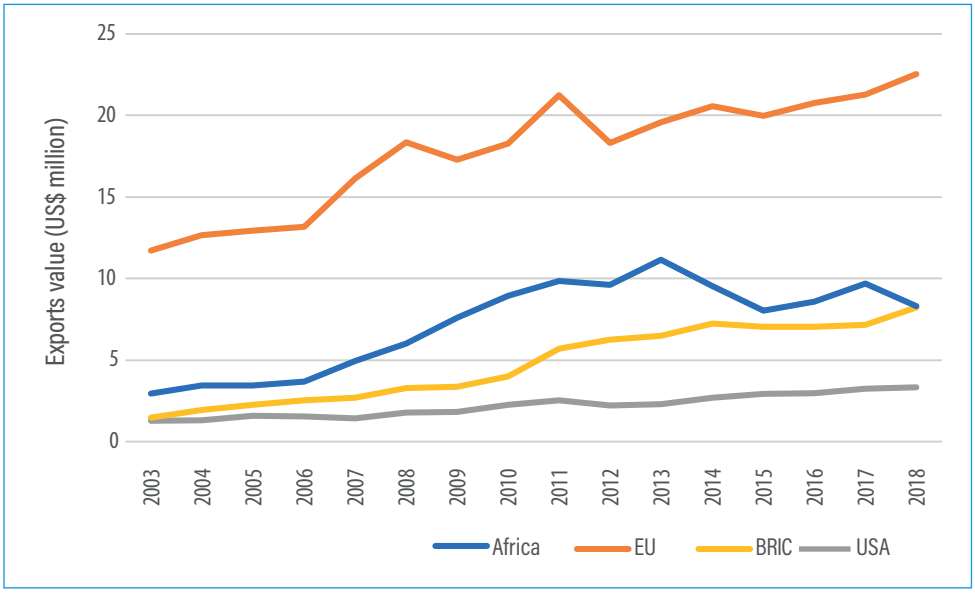
In contrast, Brazil, Russia, India, and China (BRIC) have increased their combined share from 10 percent in 2005–2007 to 14 percent in 2016–2018. Similarly, the share of Africa's exports to other world regions has increased significantly, from 20 percent in 2005–2007 to 25 percent in 2016–2018. Thus, Figure 2.4 shows that African exporters are diversifying away from EU market destinations toward emerging markets of BRIC and elsewhere outside the developing world (right axis). Figure 2.5 shows that, in value terms, EU imports of Africa's agricultural products have experienced a sustained increasing trend, despite the decrease in shares observed in Figure 2.4 (right axis). Similarly, Figure 2.5 indicates that US agricultural imports from Africa have been increasing, though the US share of Africa's export market has not significantly changed. Therefore, the diversification of Africa's agricultural exports mostly consists of market expansion into emerging and faster-growing countries while sustaining exports to traditional markets in advanced economies.

Figure 2.4 Africa's agricultural exports value and major destinations, 2003–2018



Source: 2020 AATM database.

Figure 2.5 Trends in Africa's agricultural exports to major destination markets



Source: 2020 AATM database.

We now turn to scrutinize which countries of the above five world regions are the top destinations for African exporters. Table 2.1 presents the leading destinations for Africa's agricultural exports in ascending order of their ranks in 2016–2018 along with their ranks in 2005–2007 and their shares in total agricultural exports in both periods. As for most economies in the world, EU countries, the United States, and China are the leading export (as well as import) partners of African economies in terms of value. The Netherlands, France, the United States, Germany, and China are the top five destinations and together account for 30 percent of Africa's agricultural exports in 2016–2018, almost the same average share as in 2005–2007.

It is worth noting that between the two periods these five countries have displaced the United Kingdom, which ranked first in 2005–2007 and sixth in 2016–2018. China has progressed by two places, from number 7 to 5, and India has moved from 14 to 7, moving past seven countries, namely Japan, Saudi Arabia, South Africa, the Russian Federation, Spain, Italy, and Belgium. No African country is among the top 10, and South Africa, which ranked as number 11 in 2005–2007, has fallen to 15 in 2016–2018. Most interestingly, Viet Nam has moved up in the rankings from 69 to 12. Also, Kenya, Malaysia, and the United Arab Emirates have recently joined the top 20 destinations for Africa's agricultural exports.

Africa's 20 top trade partners account together for 65 percent of the continent's total agricultural exports in both reference periods. Interestingly, these partners account for a slightly lower share of world agricultural export destinations. As can be seen in Table 2.1, they were the destinations for 61 percent and 58 percent of global agricultural exports in 2005–2007 and 2016–2018, respectively. Viet Nam, India, China, and the United Arab Emirates have increased their shares in Africa's agricultural export markets most significantly between the two periods. For instance, Viet Nam's importance as a destination for African exporters has increased tremendously — from 0.3 percent to 2.5 percent of the continent's exports. The increased share of these countries is mirrored by the declining share of other partners including remarkably the United Kingdom, Italy, France, Germany, and Japan. For example, the UK share in Africa's exports decreased from 9.0 percent to 4.3 percent.

It is worth noting that almost all partners that expanded or reduced their importance as destinations for Africa's exports likewise expanded or reduced their share of world the United States, Saudi

Arabia, the Russian Federation, and Spain are the exceptions. Russia has increased its share of Africa's export market but decreased its share of world exports. The shares of the Netherlands, the United States, Saudi Arabia, and Spain in world exports have remained unchanged while their share in Africa's exports contracted.

In sum, this analysis of the leading partners for African exporters shed light on the decreasing importance of the EU and the increasing weight of BRIC and "other world regions" as destinations for Africa's agricultural exports. This trend largely reflects the faster economic and demographic growth in emerging countries compared with advanced economies over the last few decades. In the next section, we investigate the changes in Africa's list of most exported products.

Table 2.1 List of top 20 destinations of Africa's agricultural exports in 2005–2007 and 2016–2018

	Rank among African exports destinations		Share in African exports (%)		Share in world exports (%)	
	2005–2007	2016–2018	2005–2007	2016–2018	2005–2007	2016–2018
Netherlands	2	1	8.2	8.8	4.2	4.2
France	3	2	7.3	6.1	4.8	3.8
USA	5	3	4.9	5.2	9.1	9.1
Germany	4	4	6.0	5.0	7.9	6.3
China	7	5	3.4	4.7	3.8	8.1
United Kingdom	1	6	9.0	4.3	6.3	4.1
India	14	7	1.9	4.3	0.8	1.7
Belgium	8	8	3.3	3.2	3.3	2.6
Spain	9	9	2.9	2.9	3.0	2.2
Russian Federation	10	10	2.3	2.8	2.7	1.8
Saudi Arabia	12	11	2.2	2.5	1.2	1.2
Viet Nam	69	12	0.3	2.5	0.4	1.8
Italy	6	13	3.7	2.2	4.5	3.0
United Arab Emirates	22	14	1.0	2.0	0.8	1.1
South Africa	11	15	2.3	1.7	0.5	0.4
Turkey	17	16	1.2	1.6	0.7	1.0
Malaysia	25	17	0.8	1.4	0.8	1.0
Japan	13	18	2.1	1.4	5.3	3.9
Kenya	24	19	0.8	1.4	0.1	0.2
Pakistan	20	20	1.1	1.2	0.5	0.6
Total			**64.9**	**65.1**	**60.8**	**58.2**

Source: 2020 AATM database.

To sum up, with stagnating demand in OECD countries, Africa reoriented its exports to other markets. Yet African agricultural exports remain relatively low at the world level because of several bottlenecks that will be analyzed in Chapters 3 and 4.

What do African countries trade?

Table 2.2 presents the 20 most exported products in ascending order of their ranks in 2016–2018 along with their ranks in 2005–2007 and their shares in total agricultural exports in both periods. Cocoa beans, cashew nuts (in shell), tobacco, coffee, and oranges are the top five products, which together account for 27 percent of African agricultural exports in 2016–2018, on average. Cashew nuts ranked fifteenth in 2005-2007 but rose to second in 2016–2018. In contrast, coffee (not roasted or decaffeinated) lost its place to tobacco. Cocoa beans and oranges maintained their positions in both rankings as the first and fifth export products.

The top 10 export products represent 39 percent of Africa's agricultural exports and include cotton, sesame seeds, black tea, cocoa paste, and fresh grapes, in addition to the above-cited five products. Cotton ranked second in 2005–2007 but fell to sixth in 2016–2018. Sesame seeds progressed in the rankings from number 13 to 7.

Table 2.2 List of the 20 most exported products from Africa in 2005–2007 and 2016–2018

		2005–2007		2016–2018	
HS6		ExportShare		Export Share	
Code	Short Description	(%)	Rank	(%)	Rank
180100	Cocoa beans	12.5	1	12.1	1
080131	Cashew nuts, in shell	1.3	15	4.2	2
240120	Tobacco, stemmed or stripped	3.5	4	4.0	3
090111	Coffee, not roasted or decaffeinated	4.2	3	3.4	4
080510	Oranges, fresh or dried	3.4	5	3.2	5
520100	Cotton, not carded or combed	6.3	2	2.9	6
120740	Sesamum seeds	1.5	13	2.8	7
090240	Tea, black and (partly) fermented	2.0	7	2.6	8
180310	Cocoa paste, not defatted	1.5	12	2.0	9
080610	Grapes, fresh	2.3	6	1.9	10
170199	Sucrose, no flavoring or coloring	0.8	24	1.8	11
070200	Tomatoes, fresh or chilled	1.1	19	1.6	12
180400	Cocoa butter, fat and oil	1.3	14	1.6	13
080520	Mandarins, fresh or dried	1.2	17	1.4	14
090510	Vanilla, neither crushed nor ground	0.1	136	1.4	15
060311	Flowers, for bouquets	0.4	45	1.4	16
080390	Bananas, other than plantains	0.7	26	1.3	17
150910	Olive oil, virgin	1.7	11	0.9	18
170114	Cane sugar, raw	1.8	9	0.9	19
220421	Wine, still	1.9	8	0.9	20
	Total	49.3		52.6	

Source: 2020 AATM database.

The top 20 products in 2016–2018 make up 53 percent of Africa's agricultural exports. The most noticeable progress in terms of export shares is achieved by cashew nuts (in shell), sesame seeds,

vanilla, flowers, and sucrose, which ranked 15, 13, 136, 45, and 24, respectively, in 2005–2007 and are found among the top 20 export products in 2016–2018, ranking 2, 7, 15, 16, and 11, respectively. These products increased their shares, while the shares fell for other exports, including cotton, coffee, olive oil, raw cane sugar, and still wine. In a nutshell, Africa's exports remain concentrated in terms of both destination and products. Among the reasons behind the lack of diversification, trade policy is at the top of the list. The next section analyzes both tariff and nontariff measures and highlights how they affect African exports.

Overview of trade protection faced by African agriculture

Tariffs

The tariff regimes applied by African countries and those that their exporters face on world markets reveal that much remains to be achieved on the two fronts for further opening Africa's agriculture sector and enhancing Africa's access to world agricultural markets. Table 2.3 summarizes a comprehensive study by Bouët, Cosnard, and Laborde (2017) that estimates the average ad-valorem equivalent of tariffs levied on imports into African countries and those faced by African exporters on world markets. The table shows the frequency of African countries in specific ranges of average duty rates distinguishing duties levied and those faced, considering firstly whole economies and secondly national agriculture.

Table 2.3 Frequency of African countries by a range of average duty rate faced as exporters vs. levied as importers (%)

	Duty faced on export markets		Duty levied on imports	
Range of average duty rate (%)	All goods	Agricultural products	All goods	Agricultural products
0–5	60	24	28	6
5–10	35	36	35	18
10–20	5	38	35	52
>20	0	2	2	24
Total	100	100	100	100

Source: Authors, based on Bouët, Cosnard, and Laborde (2017, 10, Table 2.3).

It appears that 60 percent of African economies face average duty rates across all goods that are not higher than 5 percent. Only 5 percent of African economies face average duties that are higher than 10 percent. These include Kenya, Malawi, and Western Sahara, whose exports to world markets face, on average, ad-valorem equivalent duty rates of 12 percent, 13 percent, and 16 percent, respectively. However, African economies are more protected. Only 28 percent of those economies apply import tariffs not higher than 5 percent, while 37 percent of the economies impose average duty rates higher than 10 percent, including Djibouti whose import duty rates are 22 percent, on average.

With regard to agriculture, the same situation prevails. Table 2.3 reveals a divergence between Africa's access to world agricultural markets and the protection of national agricultures across

the continent. About 52 percent of African countries impose average duty rates between 10 and 20 percent on agricultural imports from world markets and another 24 percent of countries apply average duty rates higher than 20 percent. In other words, 76 percent of African countries impose average duty rates higher than 10 percent. In contrast, only 40 percent of African countries face average duty rates higher than 10 percent in exporting to world agricultural markets, including 38 percent facing average rates between 10 and 20 percent. One can conclude from this that African agriculture is more protected from foreign competition than it is impeded by tariff barriers elsewhere.

To further illustrate the discrepancy, Tables 2.4 and 2.5 present the weighted average tariff rates levied as of 2018 on Africa's top agricultural imports from world markets and those faced by the continent's top exports to world markets. Table 2.4 shows that the cluster of top 20 import products, which accounts for 56.5 percent of Africa's agricultural imports in 2018, faces a weighted average tariff rate as high as 10.8 percent. Nine of these products are protected by tariff rates higher than 10 percent while only maize is taxed at less than 5 percent. Milled rice is taxed at 8.9 percent, broken rice at 12.1 percent, and wheat and meslin at 7.1 percent, while other cereals are taxed at 10.8 percent. Even higher tariff rates are levied on palm oil and sugars, and food preparations and frozen meat and offal of fowls are the most protected among the top 20 import products, with average tariff rates at 43.3 percent and 21.1 percent, respectively.

Table 2.4 Effectively applied tariff rates levied on Africa's top 20 agricultural imports, 2018

Product HS-6 code	Product name	Weighted average tariff rates (%)	Share in Africa's agricultural imports (%)
100119	Durum wheat, other than seed	6.3	7.0
100199	Cereals, other than durum wheat, other than seed	10.8	6.2
100630	Rice, semi-milled or wholly milled	8.9	5.8
100590	Maize (corn), other than seed	2.4	5.4
151190	Palm oil and its fractions, other than crude	15.0	4.6
170114	Cane sugar, raw, in solid form	15.4	3.4
170199	Sucrose, chemically pure, in solid form	16.3	3.0
151110	Palm oil and its fractions, crude, not chemically modified	10.2	2.2
040221	Milk and cream, concentrated, not containing sugar	5.5	2.1
210690	Food preparations	43.3	2.0
020230	Meat, of bovine animals, boneless cuts, frozen	5.0	2.0
150710	Soya-bean oil, crude, not chemically modified	5.6	2.0
230400	Oilcake and other solid residues of soya-bean	4.8	1.9
100640	Rice, broken	12.1	1.7
020714	Meat and edible offal, of fowls, frozen	21.1	1.5
110100	Wheat or meslin flour	7.4	1.3
040210	Milk and cream, concentrated or containing sugar	7.3	1.2
190190	Food preparations, of flour, meal, starch, malt or milk	10.7	1.2
230990	Dog or cat food	5.1	1.2
151211	Sunflower seed or safflower oil and their fractions	2.7	1.0
	Total top 20 agricultural imports	10.8	56.5

Source: World Integrated Trade Solution (WITS) database and authors' calculations.

In contrast, Table 2.5 reveals that the cluster of top 20 export products, which represents 58 percent of Africa's agricultural exports, faces an average tariff rate of only 3.1 percent on world markets. Only three products in this cluster face an average tariff rate higher than 10 percent, including cashew nuts (in shell), sesame seeds, and maize (other than seed), whose export destinations are protected with average tariff rates of 11.1 percent, 12.3 percent, and 17.7 percent, respectively. Ten other products face tariff protection of less than 1 percent in world export markets, including cocoa beans, which account for 14.9 percent of African exports and face an average tariff rate of only 0.5 percent in world markets. The remaining products in this cluster face average tariff rates that are lower than 5 percent, except for tobacco (stemmed or stripped), which is taxed on average at 6.1 percent in world export markets.

Table 2.5 Effectively applied tariff rates faced by Africa's top 20 agricultural exports, 2018

Product HS-6 code	Product name	Weighted average tariff rates (%)	Share in Africa's agricultural exports (%)
180100	Cocoa beans	0.5	14.9
240120	Tobacco, stemmed or stripped	6.1	4.5
090111	Coffee, not roasted or decaffeinated	2.5	3.8
080510	Oranges, fresh or dried	4.3	3.6
080610	Grapes, fresh	0.6	2.8
090240	Tea, black and (partly) fermented	4.4	2.6
180400	Cocoa butter, fat and oil	0.3	2.5
080131	Cashew nuts, in shell	11.2	2.5
180310	Cocoa paste, not defatted	0.7	2.4
070200	Tomatoes, fresh or chilled	3.9	2.3
090510	Vanilla, neither crushed nor ground	0.4	2.1
080390	Bananas, other than plantains	0.2	2.0
120740	Sesamum seeds	12.3	2.0
060311	Flowers, for bouquets	0.4	2.0
520100	Cotton, not carded or combed	1.7	1.8
150910	Olive oil, virgin	0.8	1.7
070820	Beans, shelled or unshelled, fresh or chilled	0.0	1.4
220421	Wine, still	1.7	1.1
100590	Maize (corn), other than seed	17.7	1.1
080440	Avocados, fresh or dried	0.4	1.0
	Total top 20 agricultural exports	3.1	58.0

Source: World Integrated Trade Solution (WITS) database and authors' calculations.

In sum, African countries are more protected against agricultural imports than the world markets are against their agricultural exports. While trade liberalization in developed countries remains crucial for expanding African agricultural exports, the implementation of the African Continental Free Trade Area is also expected to contribute to that expansion by dismantling or reducing tariff barriers between African countries themselves and between them and their emerging trading partners.

Frequency and coverage of nontariff measures

In addition to tariffs, African exports are hindered by several NTMs. According to UNCTAD,[1] NTMs are generally defined "*as policy measures other than ordinary customs tariffs that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both.*" Moreover, NTMs are heterogeneous and have different advantages and disadvantages. While the development of multilateral trade negotiations reduced tariff barriers, the use of NTMs as an instrument for trade regulation and consumer safety protection has increased over the past decades (WTO 2012).

In terms of heterogeneity, UNCTAD identifies 16 chapters of NTMs that include sanitary and phytosanitary measures (SPS), technical barriers to trade (TBT), price-control measures, quantity-control measures, and export-related measures.[2] Among these measures, and in particular for agricultural products, domestic support in other countries and the resulting unfair competition with regards to the supported vs. the unsupported product affects the competitiveness of African countries' exports.

There are some arguments to justify the use of NTMs by different governments. First, generally speaking, as NTMs include contingent trade-protective measures, some arguments in favor of protectionism are relevant for NTMs (e.g. protection against unfair competition). Second, in some cases, while the increase of tariffs can be prohibited by the GATT/WTO rules thanks to bound duties, some NTMs are not prohibited. Third, NTMs can be imposed to protect human, animal, or plant life or health (such as the SPS or TBT measures). Finally, they might be employed to assist firms and workers who may be negatively affected by imports.

However, NTMs also may have several disadvantages. First, like tariffs, they induce a distortion in the market as they reduce competition and hence both prices and quantities deviate from those of the market equilibrium. Second, and as consequence of this, consumers will have a narrower choice of goods, with lower quality and higher prices (Maertens and Swinnen 2009). Third, when compared to tariffs, NTMs are less transparent since they include a wide range of standards not just an official rate consolidated at the WTO. Fourth, NTMs can be considered as a strategic barrier that comprises political and retaliatory components (Gawande 1997). Yet, it is important to note that, while NTMs can impede trade in some cases (which is why they are sometimes called nontariff barriers), they can boost trade when a country complies with specific standards or when these standards are harmonized (this is why, in this case, we refer to nontariff measures).

In general, the literature has shown that the negative effects of NTMs are likely to outweigh the positive effects in terms of trade, employment, and economic growth. Disdier et al. (2008) argued that African, Caribbean, and Pacific (ACP) countries' exports appear to have been negatively affected by SPS measures, whereas the impact on Asian countries was not statistically significant. In the same vein, Ghodsi et al. (2017) showed that the greatest trade-reducing effects are reported for SPS measures that have been imposed by the rest of the world on sub-Saharan Africa. Therefore, in our analysis, we will mainly focus on NTMs that are imposed on African exports given that the exporters are negatively affected by these measures, especially those imposed by

1 https://unctad.org/en/Pages/DITC/Trade-Analysis/Non-Tariff-Measures/NTMs-Classification.aspx

2 UNCTAD identifies 16 chapters of NTMs as follows: Chapter A: Sanitary and phytosanitary measures; Chapter B: Technical barriers to trade; Chapter C: Pre-shipment inspection and other formalities; Chapter D: Contingent trade-protective measures; Chapter E: Non-automatic import licensing, quotas, prohibitions, quantity-control measures and other restrictions not including sanitary and phytosanitary measures or measures relating to technical barriers to trade; Chapter F: Price-control measures, including additional taxes and charges; Chapter G: Finance measures; Chapter H: Measures affecting competition; Chapter I: Trade-related investment measures; Chapter J: Distribution restrictions; Chapter K: Restrictions on post-sales services; Chapter L: Subsidies and other forms of support; Chapter M: Government procurement restrictions; Chapter N: Intellectual property; Chapter O: Rules of origin; and Chapter P: Export-related measures.

the EU, which is a key trade partner for Africa. While this section analyzes NTMs in Africa and its main trade partners, Chapter 3 focuses on NTMs that affect intraregional African trade.

Table 2.6 shows that almost 50 percent of trade in agriculture is affected by one or more NTMs.[3] These figures range from, on average, 29 percent for Gambia to 71 percent for Ghana. At the sectoral level, while on average 38 percent of trade in food products is affected by NTMs, this share reaches 49 percent for vegetables and 61 percent for the animal sector. These shares can be as high as 95 percent for animals in Ethiopia, and 63 percent for food products in Ghana and 79 percent for vegetables in Ghana as well. This shows the extent to which NTMs hinder a significant share of trade in agriculture. As a consequence of these NTMs, prices of African exports are likely to increase. Indeed, Andriamananjara et al. (2004) showed that, for instance, NTMs on vegetable oils and fats increased their prices significantly.

It is important to compare Africa to other large producers of agricultural products such as Brazil, China, India, the EU, and the United States. A significant share of trade of these countries is subject to one or more NTMs. The highest share is that of the United States (81 percent for food products), followed by Brazil (83 percent for vegetables, 75 percent for food, and 74 percent for animal products), and the EU (55 percent for vegetables, 46 percent for animals, and 43 percent for food products). India's share of trade affected by one or more NTMs is lower than other countries' (ranging from 23 percent for food products to 47 percent for vegetables).[4]

Table 2.6 Share of trade affected by NTMs

	Animals	Food products	Vegetables
Algeria	55%	41%	74%
Benin	73%	49%	47%
Burkina Faso	53%	42%	62%
Côte d'Ivoire	37%	42%	31%
Cameroon	74%	55%	39%
Ethiopia	95%	57%	42%
Ghana	71%	63%	79%
Gambia	36%	16%	32%
Liberia	60%	47%	59%
Morocco	62%	29%	57%
Mauritania	50%	14%	48%
Niger	70%	40%	63%
Nigeria	70%	36%	33%
Senegal	62%	6%	43%
Tunisia	55%	29%	29%
Brazil	74%	75%	83%
European Union	46%	43%	55%
India	40%	23%	47%
USA	74%	81%	67%

Source: UNCTAD dataset.

Note: (i) Sum of gross imports or gross exports that are affected by one or more NTMs.

(ii) These figures come from the latest available year for each country (see Appendix Table A2.1).

3 The UNCTAD dataset does not include all African countries. This is why we report countries for data is available.
4 Even though China is interesting to take into consideration, we were not able to find data.

A closer look at NTMs shows that some of these measures can be more trade-impeding than others. Table 2.7 presents the coverage ratio that is calculated by determining the value of trade of each commodity subject to NTMs in the value of total trade, the frequency ratio that indicates the percentage of traded products to which one or more NTMs are applied, and the count of traded HS 6-digit products that are subject to one or more NTM measures.[5] These indices show the incidence of NTMs, not their impact. The latter needs to be assessed through another methodology, including gravity models and simulations. It is notable that, in terms of the number of products affected by NTMs, the vegetable sector ranks first. Moreover, for the EU, the United States, and Brazil, the number of products affected by NTMs is generally higher than for African countries. Indeed, the mounting and more stringent NTMs may challenge exports of African countries, especially measures related to product quality and health safety (Santeramo and Lamonaca 2019). For instance, according to Kalaba and Kirsten (2012), for the Southern African Development Community (SADC), most of the SPS measures are imposed on fruits (that can carry insects or pesticides), meat and dairy products (that can contain bacteria such as salmonella and listeria), and livestock (to limit the spread of various diseases). Clearly such measures can be required for safety reasons. Yet, some other NTMs that are less technical and that are related to prices or quantities are more likely to exert a negative effect on trade.

Table 2.7 Share of trade affected by one or more NTMs

	Animals			Vegetables			Food Products		
	Cov.	Freq.	Num.	Cov.	Freq.	Num.	Cov.	Freq.	Num.
Algeria	56	52	108	42	50	227	76	73	94
Benin	74	65	69	48	50	81	51	47	75
Burkina Faso	55	45	43	40	41	100	60	53	63
Côte d'Ivoire	36	34	59	26	19	43	32	16	34
Cameroon	76	72	110	44	20	88	43	37	36
Ethiopia	80	80	107	57	48	117	41	40	84
Ghana	71	64	120	54	55	200	77	72	101
Gambia	36	51	46	15	29	50	30	28	41
Liberia	64	60	85	46	53	118	58	53	84
Morocco	59	57	108	28	39	154	57	51	74
Mauritania	42	52	64	13	16	122	48	49	26
Niger	65	50	59	38	28	149	63	62	49
Nigeria	61	58	73	36	46	129	31	49	84
Senegal	53	48	63	6	8	77	42	31	14
Tunisia	56	58	98	31	33	73	31	29	55
Brazil	50	51	91	80	74	225	54	53	98
European Union	45	45	146	55	52	182	44	43	90
India	40	44	48	48	38	96	32	38	71
USA	75	77	250	65	64	226	81	77	162

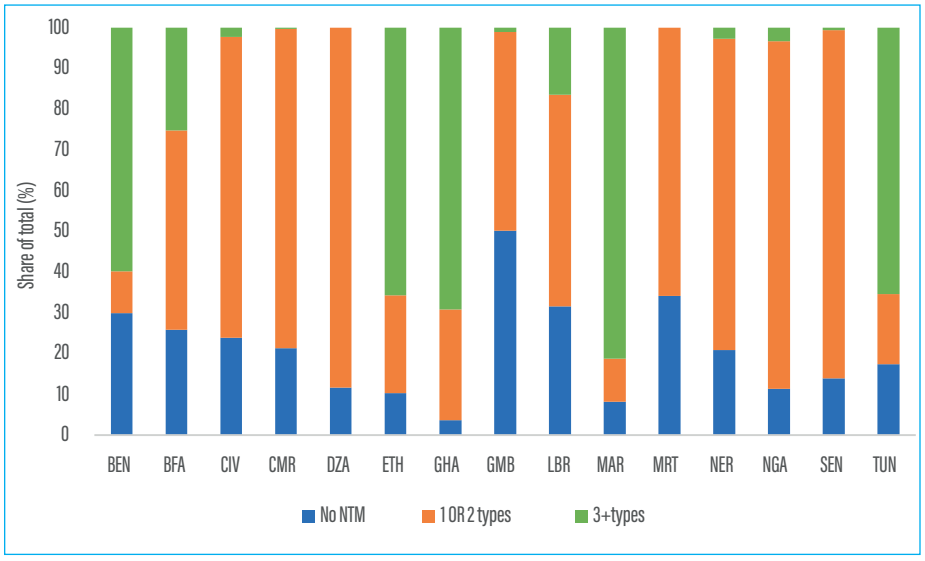
Source: UNCTAD dataset.

Note: (i) Cov. represents the coverage ratio that is calculated by determining the value of trade of each commodity subject to NTMs, aggregating by applicable HS commodity group, and expressing the value of trade covered as a percentage of total trade in the HS commodity group. (ii) Freq. represents the frequency ratio accounts for the presence or absence of an NTM, and indicates the percentage of traded products to which one or more NTMs are applied. (iii) Num. represents the count of traded HS 6 digits products that are subject to one or more NTM measures. (iv) These figures come from the latest available year for each country (see Appendix Table A2.1).

5 Chapter 3 presents the formulas used to calculate both the frequency and coverage ratio.

Figures 2.6, 2.7, and 2.8 confirm these findings. They show the share of products subject to zero NTMs, one or two types of NTMs, and three or more NTMs. While, on average 20 percent of vegetable and food products are not subject to NTMs, this share increases to 40 percent for the animal sector. By contrast, several countries have substantial shares of products facing three or more types of NTMs — Ethiopia, Benin, Ghana, Morocco, and Tunisia for vegetable exports (not less than 60 percent), animal exports (almost 50 percent), and food product exports (not less than 60 percent). Vegetables with one or two NTMs represent more than 70 percent for Algeria, Côte d'Ivoire, Cameroon, Niger, Nigeria, and Senegal. These figures are slightly lower for food products and even lower for animals.

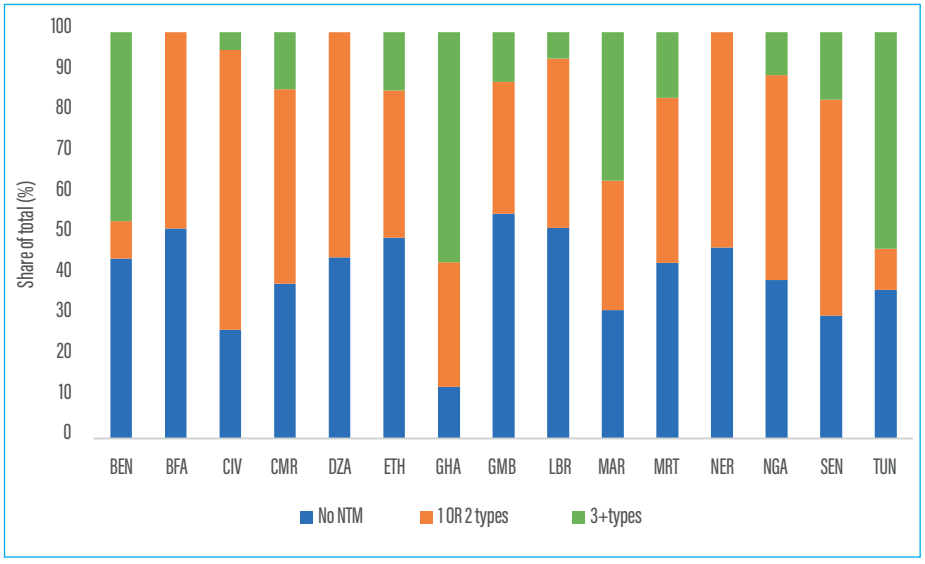
Figure 2.6 Number of NTMs by product and country, vegetable sector



Source: Authors' elaboration using the UNCTAD dataset.

Note: These figures come from the latest available year for each country (see Appendix Table A2.1).

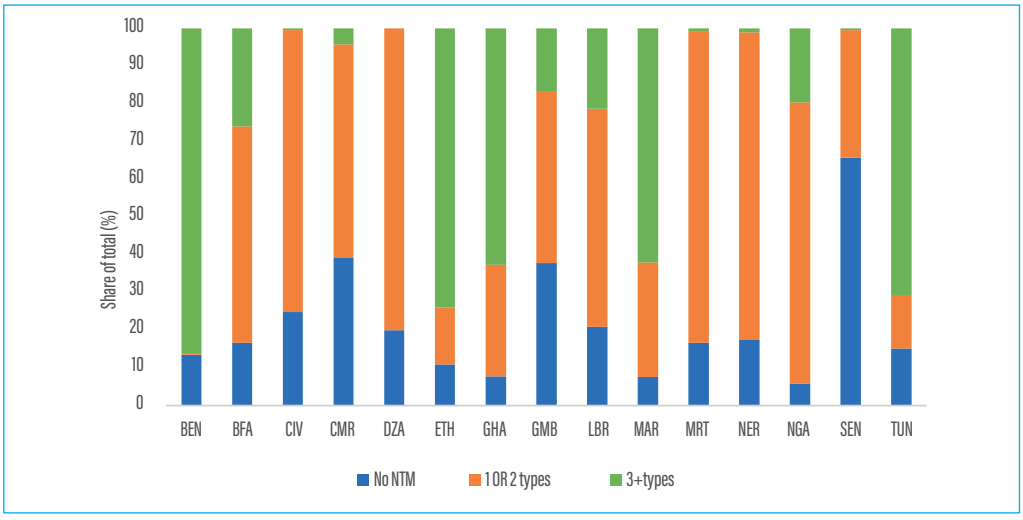
Figure 2.7 Number of NTMs by product and country, animal sector



Source: Authors' elaboration using the UNCTAD dataset.

Note: These figures come from the latest available year for each country (see Appendix Table A2.1).

Figure 2.8 Number of NTMs by product and country, food products sector



Source: Authors' elaboration using the UNCTAD dataset.

Note: These figures come from the latest available year for each country (see Appendix A2.1).

In summary, exports of African agricultural products face numerous NTMs that reduce their competitiveness at the world level. The next section examines the types of NTMs that affect African exporters most.

Types of NTMs

Table 2.8 presents the main types of NTMs that affect agricultural products, namely SPS measures and export-related measures (primarily domestic support). We focus on these NTMs for two reasons. First, SPS measures deal mainly with the protection of human or animal life from risks arising from additives, contaminants, and toxins in their food. Therefore, they are mainly imposed on agricultural products. Furthermore, several countries that are large producers of agricultural products tend to protect this sector through domestic support (mainly the EU, United States, and China). Second, in terms of impact, as it will be shown later, these measures affect the competitiveness of African products and thus reduce their market access in the main importing

First, while SPS measures represent, on average, 53 percent of the total number of measures, export-related measures[6] represent 20 percent and other measures 27 percent. Second, for most of the countries in the case of SPS, the coverage ratio is greater than the frequency ratio, showing how a large share of the value of trade is subject to NTMs. In addition, SPS measures affect a higher number of products than the other types of measures since, on average, 107 products are affected by SPS while 42 and 56 products respectively are affected by export-related and other measures. This prevalence of SPS measures is particularly high in Ethiopia (117 products), Morocco (118), Liberia (130), Niger (139), Nigeria (149), and Ghana (183). Export-related measures are especially prevalent for exports from Ethiopia (67 products), Tunisia (72), Morocco (96), and Ghana (115).

The other producers of agricultural products (Brazil, India, EU, and United States) have larger figures for the coverage ratio, frequency ratio, and the number of products subject to NTMs (with the exception of India). This indicates to what extent these countries are more stringent in terms of NTMs (especially SPS measures) when compared to African countries (see Table 2.8).

6 According to UNCTAD, export-related measures include export regulations referring to the technical specification of products and conformity assessment systems thereof, export formalities; export licenses, export quotas, export prohibition and other restrictions other than sanitary and phytosanitary or technical barriers to trade measures; export price-control measures, including additional taxes and charges, state-trading enterprises, for exporting and other selective export channels; export-support measures; and measures on re-export.

It is important also to note that some SPS measures can be more stringent and hence more costly than others. For instance, Otsuki and Sewadeh (2001) found a negative effect of the EU standard for aflatoxin on African exports. They showed that shifting from the Codex Alimentarius standard, (established by the Food and Agriculture Organization of the United Nations and the World Health Organization) to the more stringent European Commission standards decreases African exports of cereals, dried fruits, and nuts to Europe. This result has also been confirmed by El-Enbaby et al. (2016) and Ghodsi et al. (2017), who both found that standards and restrictions implemented in Europe and Central Asia affect imports more than do North American NTMs. Yet, some studies highlighted the potential positive effect of NTMs on exports. Indeed, Martens and Swinnen (2009) showed that exports increased significantly despite increasing standards, which contributed to rising rural incomes and poverty reduction. This positive impact reflects the fact that tightening standards led to a shift from smallholder contract farming to large estate production and thus boosted labor demand.

Table 2.8 Types of NTMs

	SPS				Export-related				Other			
	Cov.	Freq.	Num.	Share	Cov.	Freq.	Num.	Share	Cov.	Freq.	Num.	Share
Benin	55	53	82	52	66	67	53	17	66	60	97	31
Burkina Faso	61	59	97	75	56	50	39	25	29	21	40	0
Côte d'Ivoire	27	20	42	42	35	9	14	25	21	24	48	33
Cameroon	52	52	122	47	67	37	37	37	28	28	56	16
Algeria	63	66	156	73	0	0	0	0	40	33	79	27
Ethiopia	56	56	117	50	72	62	67	17	59	41	88	33
Ghana	82	80	183	32	81	64	115	16	24	23	52	52
Gambia	39	46	62	51	14	27	13	7	10	16	21	41
Liberia	71	67	130	55	51	76	33	10	27	27	51	35
Morocco	45	49	118	56	60	54	96	22	45	38	102	22
Mauritania	37	40	74	40	32	40	37	24	9	22	29	36
Niger	78	75	139	70	37	13	5	30	35	24	53	0
Nigeria	65	77	149	55	5	22	9	14	18	19	34	32
Senegal	38	37	69	63	49	32	45	26	10	8	12	11
Tunisia	37	35	71	46	50	47	72	23	31	38	80	31
Brazil	100	99	224	27	97	99	216	5	42	39	93	68
EU	97	95	283	32	-	-	-	2	34	33	97	66
India	88	92	172	52	18	3	7	1	26	27	54	48
USA	96	92	273	32	98	100	298	13	60	60	177	54

Source: Authors' elaboration using the UNCTAD dataset.

Note: (i) Cov. represents the coverage ratio that is calculated by determining the value of trade of each commodity subject to NTMs, aggregating by applicable HS commodity group, and expressing the value of trade covered as a percentage of total imports in the HS commodity group.(ii) Freq. represents the frequency ratio accounts for the presence or absence of a NTM, and indicates the percentage of traded products to which one or more NTMs are applied. (iii) Num represents the count of traded HS 6-digit products that are subject to one or more NTM measures. (iv) Share represents the share of each measure in the total number of measures affecting each country. (v) Other includes: technical barriers to trade; pre-shipment inspection and other formalities; price control measures; licenses, quotas, prohibitions and other quantity control measures; charges, taxes and other para-tariff measures; finance measures and trade-related investment measures.

Since NTMs are heterogeneous, they do not all have the same effect on African exporters. Using the International Trade Center surveys, Table 2.9 shows that most of African exporters perceive conformity assessment measures (that include control and approval procedures such as inspection, testing, certification, and traceability designed to safeguard consumer health and safety) create the greatest impediments to trade. Indeed, on average, when companies are asked to describe the type of regulatory obstacle to trade that they face, 36 percent of the barriers mentioned are related to conformity assessment followed by export-related measures (30 percent). At the country level, companies in Burkina Faso attribute 64.5 percent of the barriers to conformity assessment, followed by Mauritius (56.6 percent), Senegal (47.2 percent) and Guinea (31.6 percent). For export-related measures, the figures are particularly high for Tanzania (57.5 percent), Madagascar (53.1 percent), Malawi (50.5 percent), Kenya (39.2 percent), and Guinea (35.2 percent).

Table 2.9 NTMs faced by African exporters in the agriculture sector

	Export-related	Conformity assess.	Technical req.	Rules of origin	Others	Total
Burkina Faso	8.1	64.5	9.7	6.5	11.2	100
Côte d'Ivoire	28.4	30.2	0	13.6	27.8	100
Egypt	21.3	23.7	31	7.8	16.2	100
Guinea	35.2	31.6	5.5	0	27.7	100
Kenya	39.2	28.8	8.4	15.9	7.7	100
Madagascar	53.1	13	21.4	7.6	4.9	100
Malawi	50.5	32	6.2	0	11.3	100
Mauritius	13.3	56.6	18.1	0	12	100
Morocco	25.6	26.8	47.6	0	0	100
Rwanda	8.6	58	7.4	5.6	20.4	100
Senegal	23.4	47.2	21.8	0	7.6	100
Tanzania	57.5	19.2	8.2	13.7	1.4	100
Average	30	36	15	6	13	100

Source: International Trade Center.

Note: (i) These figures come from different surveys that were implemented between 2011 and 2013. (ii) Affected companies are asked to describe the type of regulatory obstacle to trade they face. These regulatory difficulties are categorized according to the NTM classification for surveys. (iii) Others include also pre-shipment.

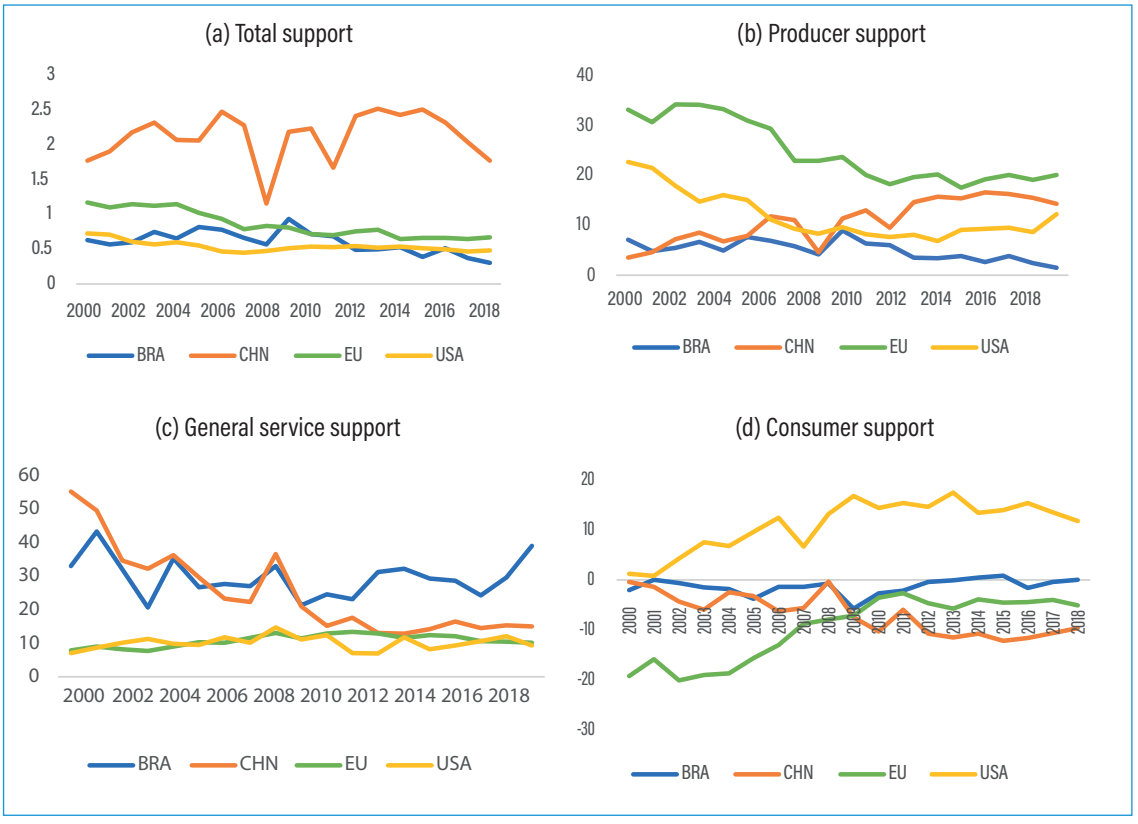
Finally, it is important to examine the role of domestic support in countries that are large producers of agricultural products. If domestic support is concentrated in countries that can influence world agricultural markets, such support will be significantly distorting for small producers, like African countries. Indeed, data show that large agro-food producing countries that are heavily involved in international trade provide much of the world's domestic agricultural support. This, in turn, significantly increases world supply and decreases world prices.

Figure 2.9 shows the different components of domestic support (producer, consumer, and general service support) in two emerging economies (China and Brazil) and two developed ones (the EU and the United States). In general, while total support exhibits a declining trend in all destinations, on average, China's level remains the highest (2.1 percent of GDP) followed by the EU (0.9 percent), Brazil (0.6 percent), and the United States (0.5 percent). A more detailed analysis shows that this ranking differs for each component of domestic support. The EU appears to provide the highest support, amounting to 25 percent of gross farm receipts, followed by the United States (12 percent),

China (11 percent), and Brazil (5 percent). The general services support measured as a percentage of total support provided in Brazil is the highest (30 percent), followed by China (25 percent), the EU (11 percent), and United States (10 percent). Consumer support exhibits a different pattern. Indeed, while several countries provide a subsidy for consumers, they also impose different taxes. This is why for Brazil, China, and the EU, the consumer support measured as a percentage of agricultural consumption has a negative value. The only country where subsidies are higher than taxes is the United States. At the product level, OECD countries provide support mainly to the rice, maize, pork, beef, and dairy sectors (in absolute terms).

Thus, each country has its own distorting tool that can affect African producers: Brazil is a large user of government support service, the EU-28 provides its support to producers, and the United States to its consumers. In general, as a matter of size and policy choice, China has the highest support as a share of GDP.

Figure 2.9 Domestic support in selected markets



Source: OECD dataset.

Note: (i) BRA = Brazil, CHN = China, EU = European Union, USA = United States of America. (ii) The total support is measured as a percentage of GDP. Producer support is measured as a percentage of gross farm receipts. Consumer support is measured as a percentage of agricultural consumption. The general services support estimate (GSSE) is measured as a percentage of total support. (iii) Total support transfers represent the total support granted to the agricultural sector, and consist of producer support, consumer support, and general services support. (iv) Producer support transfers to agricultural producers are measured at the farmgate level and comprise market price support, budgetary payments, and the cost of revenue foregone. (v) Consumer support transfers from consumers of agricultural commodities are measured at the farmgate level. If negative, it measures the burden (implicit tax) on consumers through market price support (higher prices) that more than offsets consumer subsidies that lower prices to consumers. (vi) GSSE transfers are linked to measures creating enabling conditions for the primary agricultural sector through the development of private or public services, institutions, and infrastructure. GSSE includes policies where primary agriculture is the main beneficiary but does not include any payments to individual producers. GSSE transfers do not directly alter producer receipts or costs or consumption expenditure.

Conclusion

Although Africa's share of world agricultural trade has remained low, the value of its exports has been growing steadily. African exporters are diversifying from EU market destinations to emerging markets of BRIC and elsewhere outside the developing world. This chapter sheds light on the EU's decreasing importance and the increasing weight BRIC and "other world regions" as destinations for Africa's agricultural exports. It reveals that countries including Viet Nam, India, and China are significantly displacing the United Kingdom, Italy, France, and Germany. Some emerging products such as cashew nuts (in shell), sesame seeds, vanilla, flowers, and sucrose are surpassing traditional products such cotton, coffee, olive oil, cane sugar, and wine in the ranking of top export products. Hence, African agricultural exports are being diversified in terms of both their destinations and products.

The chapter also investigates agriculture sector protection in and outside Africa. The tariff regimes applied by African countries and those faced by their exporters on world markets reveal that much remains to achieve on the two fronts of further opening Africa's agricultural sectors and enhancing Africa's access to world agricultural markets. While efforts of regional integration schemes are culminating in a wider continental free trade area, African governments will have to play a critical role in enforcing the removal of nontariff barriers to intracontinental trade. The challenge of further opening national agriculture sectors is crucial as intracontinental destinations account for 20 percent of Africa's agricultural exports.

In terms of nontariff measures, conformity assessment remains one of the most serious impediments affecting African exporters. Domestic support in both developed and emerging markets is also crucial since much of the support is provided by large agrifood producing countries that are heavily involved in international trade. Thus, from a policy perspective, adopting a more comprehensive approach to help African exporters increase their competitiveness is essential to reduce the negative effect of NTMs. Finally, it is worth noting that all these policies must be coupled with an improvement in customs efficiency. Indeed, the trade performance of African agriculture is also related to administrative barriers, lack of efficiency of African customs procedures, and lack of transportation and telecommunication infrastructure.

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Table A2.1 NTMs reference year

Country	Code	Year
African Countries		
Algeria	DZA	2016
Benin	BEN	2014
Burkina Faso	BFA	2012
Cameroon	CMR	2015
Côte d'Ivoire	CIV	2012
Ethiopia	ETH	2015
Gambia, The	GMB	2013
Ghana	GHA	2014
Morocco	MAR	2016
Senegal	SEN	2012
Tunisia	TUN	2016
Liberia	LBR	2014
Mauritania	MRT	2015
Niger	NER	2014
Nigeria	NGA	2013
Non-African Countries		
Brazil	BRA	2016
European Union	EUN	2016
India	IND	2012
United States	USA	2014

Source: UNCTAD, Chapter 3 (Intra-African Trade Integration).

Chapter 3

Intra-African Trade Integration

Fatou Cissé, Julie Kurtz, and Sunday Pierre Odjo

Introduction

African leaders have placed great hope in regional integration and the expansion of intra-African trade as a way to promote economic growth and alleviate poverty across the continent. Although participation in world trade has remained low, Africa's agricultural exports have increased since the 2000s, including in the form of intra-African agricultural trade. Eight regional economic communities (RECs) have helped establish preferential tariff agreements, free trade zones, or customs unions among some neighboring member states. Nonetheless, the current pace of trade growth within Africa remains slow, prompting a recent commitment by African heads of state to triple intracontinental agricultural trade by 2025, and raising questions about the feasibility for Africa of enhancing its food security through its own regional supply chains and greater intra-African trade. Among the steps taken to facilitate expanded African trade, countries launched the African Continental Free Trade Area (AfCFTA) in July 2019, which culminated long-time efforts aimed at regional and continental integration.

Domestic food markets face growing demand driven by population growth, urbanization, and higher incomes. The rapid demand growth is creating new challenges for food security at the country level and new opportunities for intraregional trade expansion. In addition, the current COVID-19 pandemic and its potential impacts on domestic food production and markets threaten the resilience of African food systems, given the continent's heavy reliance on food imports and chronic vulnerability to shocks. Africa's world trade is currently characterized by significant exports of nonfood unprocessed products and significant imports of processed food products. This pattern is so common among African countries and so persistent that it is important to investigate whether current supply capabilities can meet current and emerging African demand.

Addressing the question of Africa's ability to meet its food demand requires a careful examination of the current level of trade intensity between countries, the similarity of current exports of African countries, and the degree of trade complementarity among African countries — whether world imports of African countries overlap with world exports of other African countries. The existence and magnitude of overlapping flows suggest the scope of market opportunities for expanding intraregional trade, either by redirecting those flows to regional markets or substituting or complementing them with local varieties, given consumers' preference for diversity. Finally, if trade opportunities exist, to what degree do tariffs or nontariff policies discourage or encourage intra-African trade?

This chapter aims to shed light on those questions through the calculation of simple trade indicators, namely the export similarity index, trade complementarity index, and regional trade intensity index, as well as assessing the impact of tariffs and examining the costs of nontariff measures (NTMs) at the intra-African level. Our results reveal that African economies mostly have dissimilar export patterns, suggesting possibilities for transborder trade expansion. However, complementarity between exports and imports among African countries is low, reflecting Africa's colonial history of exporting raw commodity goods globally while importing processed goods, without developing a strategic web of regional supply chains within the continent. Yet despite limited complementarity in their current trading patterns, and high tariff and nontariff costs in some regions, the intensity of intraregional trade in Africa is higher than expected.

We attribute the intensity of trade predominantly to geographic proximity, cultural similarities, historic trading relationships, and preferential trade agreements. These factors, rather than well-matched exports and imports, intensify trade within the continent. Yet greater intracontinental

trade could be captured if trade tariffs and nontariff barriers were removed — some intraregional exports face high tariffs and, in many cases, nontariff barriers impede trade more than tariffs.

The first section of this chapter reviews the trends in current intracontinental and intraregional trade flows, along with the leading exporting and importing countries, and the chief products traded. The next section explores the potential for regional agricultural trade expansion. The third section reviews the trade policy instruments and trade barriers that either encourage or restrict intraregional trade across the different RECs, and the final section offers conclusions.

Intra-African trade trends and structures

This section reviews the intracontinental and intraregional trade trends for agricultural products[1] between 2003 and 2018. The analysis is conducted for two reference periods, 2005–2007 and 2016–2018, focusing on five of the eight RECs recognized by the African Union, including the Arab Maghreb Union (AMU), the Common Market for Eastern and Southern Africa (COMESA), the Economic Community of Central African States (ECCAS), the Economic Community of West African States (ECOWAS), and the Southern African Development Community (SADC). The memberships of the different RECs are indicated in Table A3.1 in the appendix. There are 5 members in AMU, 19 in COMESA, 11 in ECCAS, 15 in ECOWAS, and 16 in SADC. With these five RECs, all countries across the entire continent are covered in this analysis.

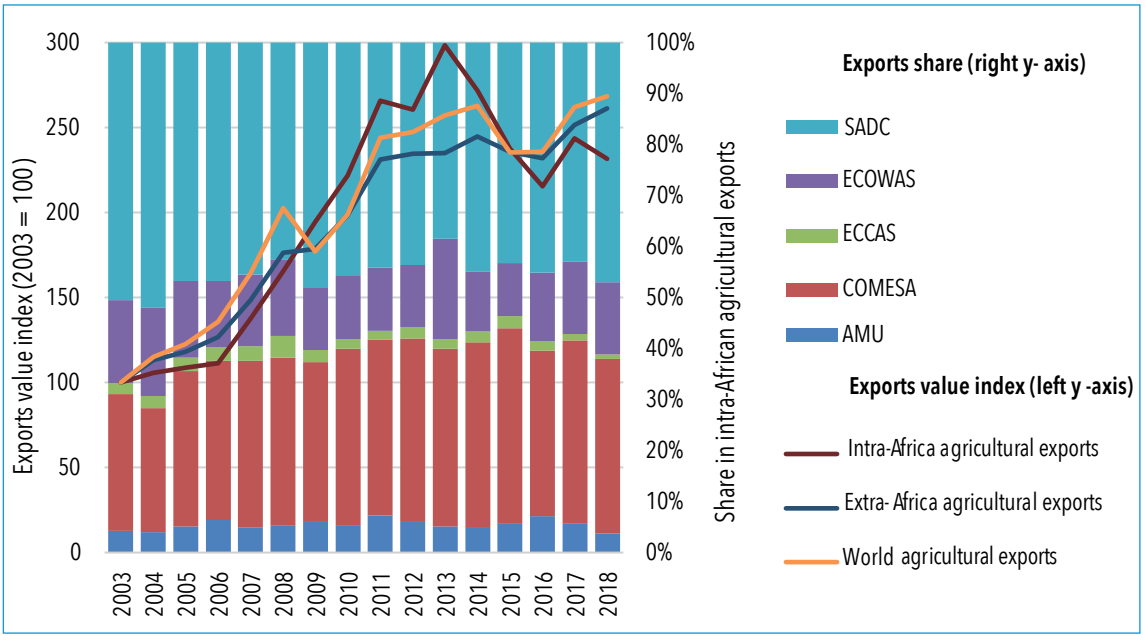
Trade flow trends within Africa

The value (in current US dollars) of intra-African food and agricultural trade rose steadily beginning roughly in 2007, peaking in 2013, with a significant decline following until 2016 when it resumed its general upward trend (Figure 3.1). This pattern roughly follows the global food price index (FAO 2020), which fell from a record high of 230 in 2011 to 162 in 2016, again with a slight rise since then. Additionally, the US dollar real effective exchange rate bottomed out in 2011, and since then has appreciated, impacting the value of internationally traded goods. Globally, we observe similar trade dynamics for agricultural exports; however, the upward trend in global exports slowed significantly in 2009, while Africa's exports — particularly the intracontinental flows — continued their rise through the 2008 crisis. Intracontinental exports grew (beyond the 2003 level) faster annually than extracontinental exports and global exports did from 2008 to 2015, while the reverse holds in subsequent years.

Figure 3.1 also shows there was no significant variation in the contributions of the different RECs to total intracontinental trade. SADC and COMESA are notably the largest players, accounting for 46 percent and 31 percent, respectively, of intracontinental agricultural exports in 2005–2007 and similar shares in 2016–2018. ECOWAS played a smaller role, accounting for 14 percent on average in both periods, and almost 20 percent in 2013. AMU and ECCAS contribute minimally to intra-African trade, with only 6 percent and 1 percent of the market, respectively.

1 Agricultural products are defined as in Annex 1 of the WTO Agreement on Agriculture, which excludes fish and fish products as well as forest products (https://www.wto.org/english/docs_e/legal_e/14-ag.doc).

Figure 3.1 Intra-African agricultural exports by region of origin, 2003–2018



Source: 2020 AATM database and authors' computations.
Note: SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union. With these five RECs, all countries across the entire continent are covered in this analysis.

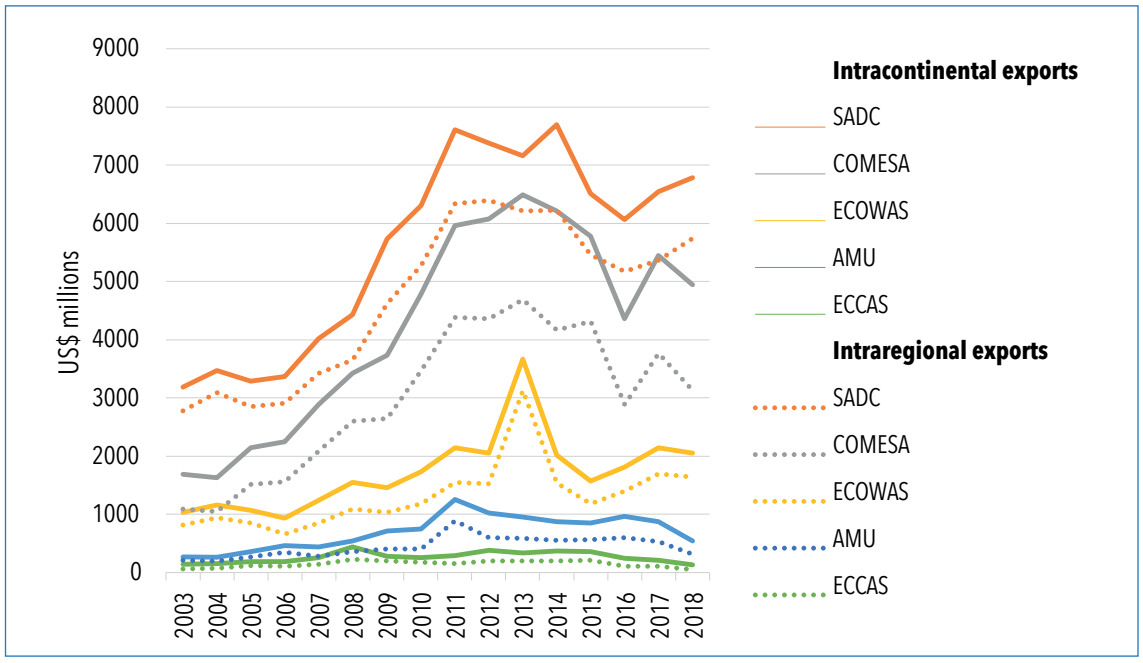
Trade within Africa predominantly occurs within RECs. While the five RECs covered in this analysis also trade with African countries beyond their REC, Figure 3.2 makes it clear that the bulk of individual country exports remain within the region, with total intra-African exports for each REC mostly captured by total intra-REC exports.

Compared to other RECs, ECCAS (11 members) ships the largest share of its intra-African exports outside the region. On average, only 46 percent of ECCAS' intracontinental trade remained within the REC in 2016–2018, which is a significantly lower share than in 2005–2007 (58 percent). However, ECCAS' total exports are very small compared to the other RECs. Larger exporters SADC (16 members) and COMESA (19 members) retained 84 percent and 66 percent, respectively, of their intra-African exports within their respective regions in 2016–2018; ECOWAS (15 members) and AMU (5 members) retained 79 and 60 percent, respectively.

The peak in export values in 2013 aligns with the global food price index peak that occurred at that time. ECOWAS experienced the most notable intra-REC export trade spike in 2013; other RECs underwent a more gradual increase and decline. Only SADC has demonstrated an obvious increase in exports since 2016. The slightly positive trade flow trend in recent years may relate to the 2014 Malabo Declaration[2] commitment to increase intra-African trade in agricultural commodities and services.

2 In the 2014 Malabo Declaration, African Union Member States pledged to monitor and report on progress on seven thematic commitments, including Commitment 5: Boost intra-African trade in agricultural commodities and services.

Figure 3.2 Trends in intra-African and intraregional agricultural exports, by region, 2003–2018



Source: 2020 AATM database and authors' computations.
Note: SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union.

In a nutshell, intracontinental agricultural exports have grown steadily over the past two decades, with growth largely dominated by SADC and COMESA member countries. Next, we shall investigate which countries and which traded commodities played the most significant roles in the intracontinental market.

Top exporters and importers

Tables 3.1 and 3.2 present the top 10 intra-African exporters and importers of agricultural products, in ascending order of their ranks in 2016–2018, along with their ranks in 2005–2007 and their shares in total intracontinental agricultural markets in both periods. In line with the results from the previous section, most top traders listed are either SADC or COMESA member countries.

The top 10 intra-African exporters account for roughly 70 percent of the formal market. Agricultural imports are more widely dispersed, with the top importing countries accounting for only half of formal trade. Across the two time periods, South Africa remained the dominant market player, exporting nearly a third of all intra-African formal exports and importing roughly a tenth of all agricultural goods. South Africa's exports increased over time, while its import share fell. The other top exporters include Egypt, Uganda, Kenya, and Tanzania — whose shares increased over time — and Côte d'Ivoire, Zambia, Namibia, Tunisia, and Ethiopia — whose shares of overall intra-African exports declined between the two time periods. In addition to South Africa, top importers include Kenya, Egypt, Zimbabwe, Mozambique, and the Democratic Republic of Congo (DRC), which all increased their shares in the import market, and Namibia, Botswana, Libya, and Nigeria, which decreased their shares.

Of ECOWAS countries, Côte d'Ivoire is the sole top intra-African exporter, and Nigeria is the sole top importer. South Africa, Kenya, Namibia, and Egypt — all top exporters — are also among the largest importers, accounting for 25 percent of intracontinental agricultural imports. Egypt ranked as the fourth largest importer in 2016–2018, up from tenth largest in 2005–2007 and almost tripling its share of intracontinental agricultural imports.

Table 3.1 Top 10 intra-African exporters of agricultural products, 2005–2007 and 2016–2018

	2005–2007		2016–2018	
	Export share (%)	Rank	Export share (%)	Rank
South Africa	29.8	1	32.2	1
Egypt	5.6	4	8.7	2
Uganda	3.6	8	6.4	3
Kenya	5.3	5	6.2	4
Côte d'Ivoire	6.3	3	4.6	5
Zambia	4.1	7	3.8	6
Tanzania	2.2	10	3.1	7
Namibia	6.5	2	2.8	8
Tunisia	4.4	6	2.6	9
Ethiopia	2.8	9	0.5	10
Total	70.6		71.0	

Source: 2020 AATM database and authors' computations.

Table 3.2 Top 10 intra-African importers of agricultural products, 2005–2007 and 2016–2018

	2005–2007		2016–2018	
	Import share (%)	Rank	Import share (%)	Rank
South Africa	11.5	1	8.3	1
Kenya	4.3	5	6.7	2
Namibia	6.7	3	5.7	3
Egypt	2.0	10	5.4	4
Botswana	6.9	2	5.3	5
Zimbabwe	4.2	6	4.8	6
Mozambique	2.6	9	4.3	7
Libya	4.6	4	3.6	8
Dem. Rep. Congo	3.3	7	3.6	9
Nigeria	2.6	8	2.3	10
Total	48.7		50.2	

Source: 2020 AATM database and authors' computations.

Eastern and southern African countries and Maghreb countries lead intra-African agricultural trade. Apart from Côte d'Ivoire as a large exporter and Nigeria as a large importer, other western and central African countries play only a small role compared to major players from the other regions, which control 71 percent of agricultural export flows and 50 percent of agricultural import flows within Africa. Next, we will explore the commodity composition of these trade flows.

Agricultural commodity composition of intracontinental trade

The top products traded among African countries have remained relatively stable over the past decade and a half, with sucrose and sugar products, cigarettes, maize, and palm oil consistently representing the largest shares of total intracontinental agricultural trade. Table 3.3 identifies the 20 products most exported within Africa in the periods 2005–2007 and 2016–2018, ranking them by their share (as a percentage) of overall intra-African agricultural export value in US dollars. The top 20 products during both time periods play a sizable role in overall agricultural trade, accounting for 39 percent and 38 percent of all exports, respectively. The corresponding share is lower in the European Union and at the global level, where it remained close to 30 percent during the two time periods. However, it is significantly higher in the South Asia region and the Middle East and North Africa region (see Table A3.3 in appendix). Thus, Africa's intracontinental agricultural trade, though relatively less diversified than intra-European trade, is significantly more diversified than intraregional trade in South Asia.

With a cumulated share of the top 20 products in Africa's world agricultural exports at 49 percent and 53 percent during the two periods (see Table 2.2 in this volume), Africa's intracontinental exports in agriculture are relatively more diversified than its world exports. Among the top 20 products exported within Africa, only 6 products (maize, wheat, rice, cattle, apples, and vegetables) play key food security and nutrition roles for African consumers, while the remaining products include sweeteners and fats, beverages and processed foods, and traditional exports such as tea, coffee, palm oil, cotton, and tobacco products.

Between 2005–2007 and 2016–2018, the proportionate values of sucrose and sugars, black tea, wheat or meslin flour, maize seed, soups and broths, food preparations, and vegetables in intra-African trade increased. Conversely, the value shares of maize, tobacco products, rice, beer, coffee, and cotton all decreased between those time periods. Figure 3.3 displays the change in each product's weight in agricultural trade. Most notably, exports of sucrose and black tea within Africa increased and cotton exports declined, though cotton remains a top-traded product. This parallels the trends observed in Africa's world exports, which show an expansion of the export shares of emerging cash products and processed food products in conjunction with a contraction of the shares of more traditional export products (see Table 2.2).

We observe only a few food products among the most traded products on intra-African markets. This is not surprising since food products are heavily traded in the informal market and thus poorly reflected in official trade statistics (Traoré and Mitaritonna 2016; also see Chapter 5 in this volume). Among food products, we observe increased export shares over time for maize and wheat, but especially for processed foods like soups, broths, and other food preparations, reflecting growth in processed food consumption, as well as demographic shifts, growing urban food demand, and changing lifestyles and habits in rural areas.

Achieving the African Union's continental trade goals will require strategic development of regional food processing and supply chains that capitalize on the existing production and local processing potential, and access to markets. As African food businesses and policymakers consider the greatest opportunities to develop regional supply chains in Africa, they should consider not only traditional cash crops and shelf-stable processed foods, but also commodities that promise both economic and nutritional benefit for consumers. Many regions have been swept up by the allure of extremely efficient commodity supply chains, but at the cost of nutrient-dense traditional foods. With these changes, we observe an increase of obesity and metabolic disease on every continent

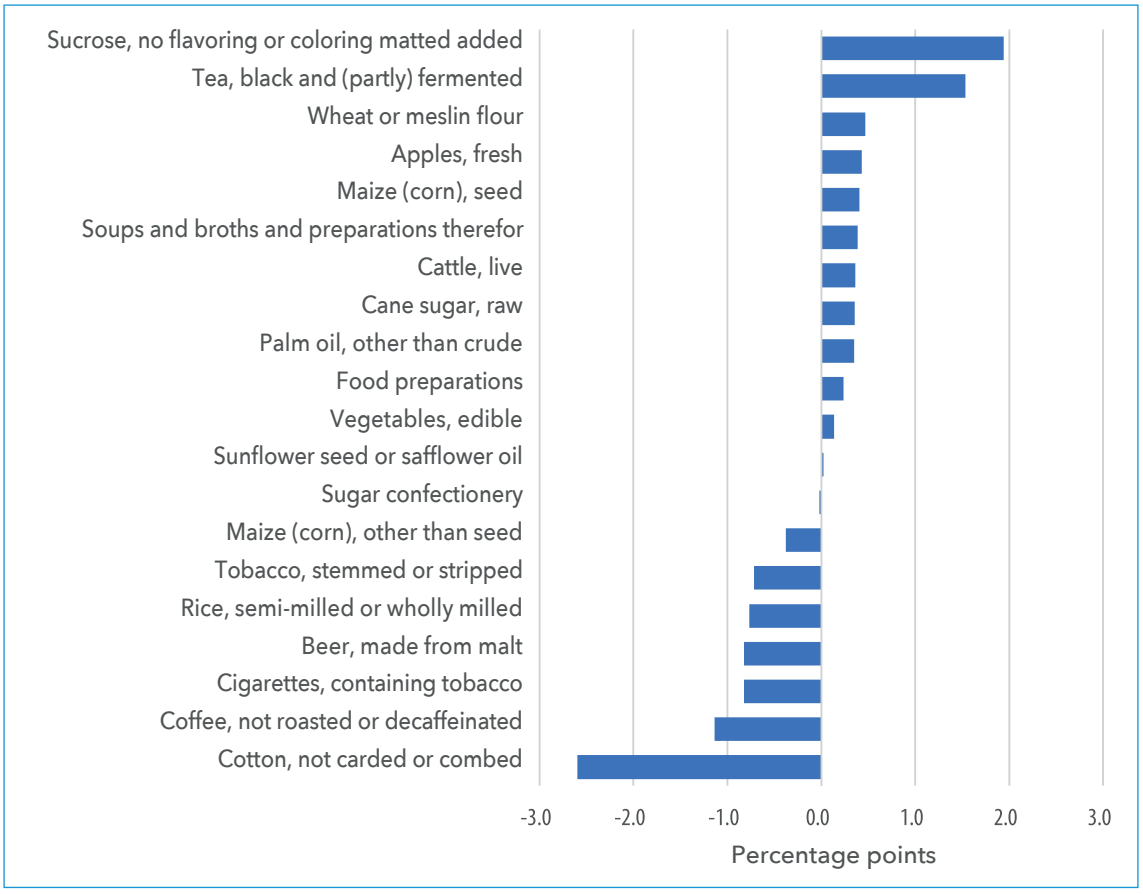
in the world. If supply chains prioritize low-nutrient commodities, African consumers will be forced to rely heavily on global imports to achieve balanced nutrition. In the next section, we focus on the extent to which intraregional trade can be expanded to meet the new demand trends. Yet careful thought must be devoted not only to how Africa meets consumer demand, but also to how its policies and private investment shape demand for healthy — or unhealthy — food. Supply chains with appropriate public infrastructure investment must benefit producers and consumer health. Policymakers and investors must consider how to develop nutrition-sensitive supply chains. This will likely require better trade data for fruits, vegetables, and other nutrient-dense foods currently traded informally, as well as collaboration with nutrition and public health officials and other local, regional, or grassroots organizations.

Table 3.3 Top 20 HS6-level products traded between African countries, 2005–2007 and 2016–2018

		2005–2007		2016–2018	
HS6 Code	Short description	Export Share (%)	Rank	Export Share (%)	Rank
170199	Sucrose, no flavoring or coloring matted added	3.06	4	5.00	1
240220	Cigarettes, containing tobacco	4.24	1	3.42	2
090240	Tea, black and (partly) fermented	1.80	11	3.34	3
100590	Maize (corn), other than seed	3.03	5	2.65	4
151190	Palm oil, other than crude	2.26	8	2.62	5
110100	Wheat or meslin flour	2.03	9	2.49	6
210690	Food preparations	1.96	10	2.20	7
090111	Coffee, not roasted or decaffeinated	3.17	3	2.03	8
210410	Soups and broths and preparations therefor	1.34	13	1.73	9
220300	Beer, made from malt	2.50	6	1.68	10
170113	Cane sugar, raw	1.31	14	1.66	11
240120	Tobacco, stemmed or stripped	2.34	7	1.63	12
520100	Cotton, not carded or combed	3.94	2	1.34	13
100510	Maize (corn), seed	0.80	17	1.20	14
010229	Cattle, live	0.84	16	1.20	15
170490	Sugar confectionery	1.19	15	1.16	16
080810	Apples, fresh	0.68	19	1.11	17
151219	Sunflower seed or safflower oil	0.73	18	0.75	18
100630	Rice, semi-milled or wholly milled	1.43	12	0.66	19
070999	Vegetables, edible	0.04	20	0.17	20
	Total	38.7		38.0	

Source: 2020 AATM database and authors' computations.

Figure 3.3 Change in product export shares in intra-African agricultural trade, between 2005–2007 and 2016–2018



Source: 2020 AATM database and authors' computations.
Note: Traded products listed at HS6-level.

Potential for regional agricultural trade expansion

In this section, we explore the potential for Africa to expand intracontinental trade, particularly within the RECs, where most intracontinental trade occurs. We examine the degree of similarity in the products that countries produce and export, and assess the degree of trade complementarity in current trading patterns for indications of existing and future trade expansion opportunities. We then examine trade intensity within RECs to get a measure of untapped trade potential and of the importance of barriers that restrain intraregional trade in agriculture.

While the overall volume of trade between African member states is low when compared globally, many scholars find that the intensity of trade within Africa actually corresponds to the predicted flows according to gravity models, which indicate relatively low trade, explainable by countries' low GDP. Our results, like those of Yan and Gupta (2007), Iapadre and Luchetti (2009), and Bouët, Cosnard, and Laborde (2019) show that the intensity of intra-African trade exceeds its expected level.

Similarity of export patterns among African countries

This subsection considers whether similarity in export patterns of close neighbors among African countries could explain a low level of cross-border trade. To investigate this, we calculate an intraregional export similarity index (ESI) for every country pair within the different RECs. The ESI considers how similar the export structures of two countries are to a specified destination market. In this application, instead of considering the world market, we specify the regional market in order to explore the scope of current regional competition and the potential to expand intraregional trade by building on dissimilarities. The index is defined after Finger and Kreinin (1979) by the following formula and computed for the periods 2005–2007 and 2016–2018, where X_{ir}^{k} is the average share of commodity *k* in the value of country *i*'s agricultural exports to market r, and X_{jr}^{k} is the average share of the same commodity in the value of country *j*'s agricultural exports to the same market *r*.

$$ESI_{ijr} = \left\{ \sum_{k} min\left(X_{ir}^{k}, X_{jr}^{k}\right) \right\} \cdot 100$$

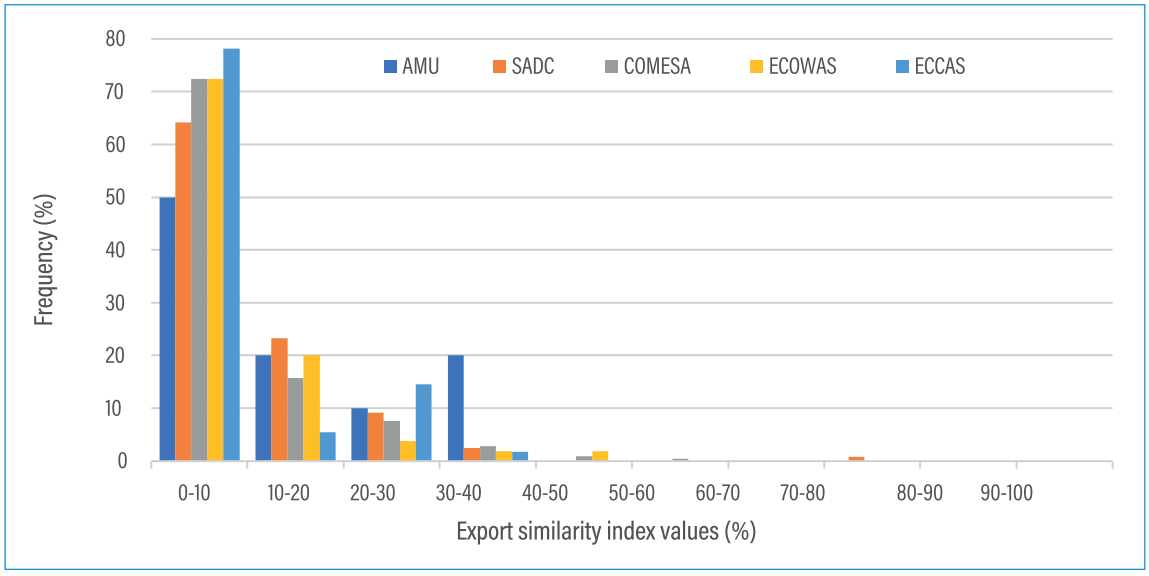
Commodity *k* is restricted to agricultural products only and defined at the HS6-digit level, *r* is a REC's market, and countries *i* and *j* are restricted to the REC's members. ESI varies between 0 (complete dissimilarity) and 100 (complete similarity). For each REC, ESI values are calculated for a total number $N=J*(J-1)/2$ of country pairs per period of reference, where *J* is the number of countries that form the REC.

Table A3.4 in the appendix summarizes the distribution of ESI values in the two periods of reference and Figure 3.4 plots their frequency distribution in the most recent period (2016–2018). It appears that nearly all country pairs across all regions reveal a very low similarity in their export patterns, with ESI values concentrated in the 0–10 percent interval. These results are comparable to those obtained by Hoang (2018) for country pairs within the Association of Southeast Asian Nations (ASEAN), which ranged between 0.05 and 10.3 percent in 2017.

Figure 3.4 shows that the frequency of the lowest ESI values in 2016–2018 is highest in ECCAS and lowest in AMU. While this frequency distribution is the same in both reference periods, Figure 3.5 shows that dissimilarity has, on average, diminished among AMU and ECCAS countries and increased among COMESA, ECOWAS, and SADC countries between the two periods. As indicated in Table A3.4, only one country pair within SADC (Comoros and Madagascar) reveals an ESI value in the 70–80 percent interval (75 percent), suggesting a potentially high level of competition between these two countries on the regional agricultural markets. In the COMESA market, where Comoros and Madagascar are also members, they also have a high ESI value of 59 percent. Of course, the bulk of these two countries' exports to both RECs consists of vanilla and cloves. The two spices accounted for around 99 percent of agricultural exports from Comoros to SADC as well as COMESA in 2016–2018. During the same period, they represented 79 percent of Madagascar's agricultural exports to SADC and 67 percent of the country's exports to COMESA.

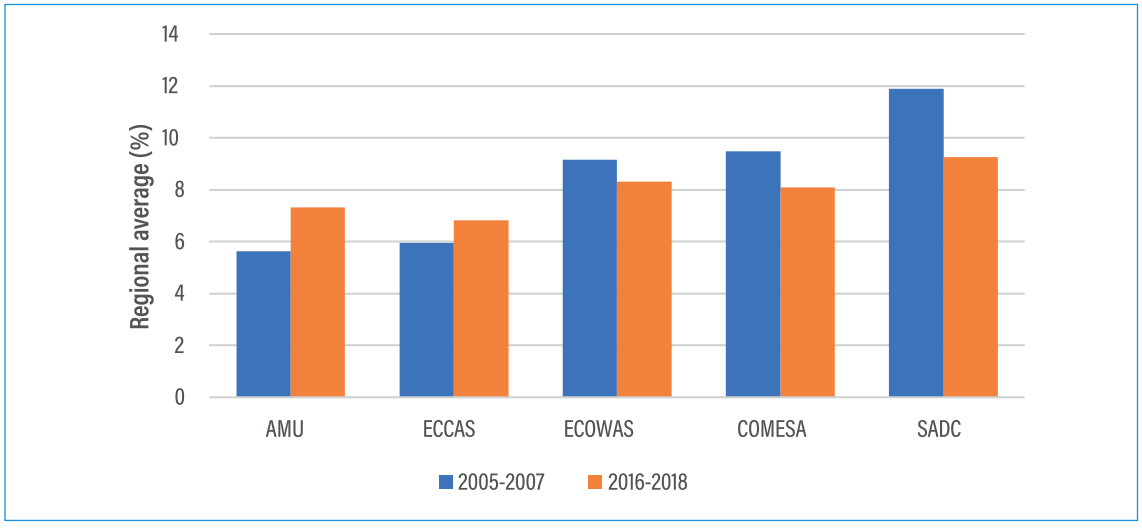
Overall, current export patterns are dissimilar enough within the different African regions to suggest there is room to expand intraregional trade within the continent. However, export dissimilarity is not a sufficient condition for bilateral trade expansion. To further explore the potential for bilateral trade expansion, next we will explore the degree to which African exports are well-matched to the demand for African country imports.

Figure 3.4 Distribution of intraregional export similarity index values, 2016–2018



Source: 2020 AATM database and authors' computations.
Note: This histogram depicts the frequencies of country pairs with intraregional export similarity index values in specific ranges. SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union.

Figure 3.5 Evolution of intraregional export similarity index values, 2005–2007 versus 2016–2018



Source: 2020 AATM database and authors' computations.
Note: SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union.

Trade complementarity among African countries

Given the dissimilarity of export trading patterns within the various RECs, it is of interest to assess the scope of overlapping trade flows between countries and the extent to which demand potential and supply capacity match between countries. Trade complementarity exists between two countries *i* and *j* when what country *i* imports from world markets matches well what country *j* exports to world markets and when what country *i* exports to world markets matches well what country *j* imports from world markets. When country *i*'s imports and country *j*'s exports match well enough but not country *i*'s exports and country *j*'s imports, partial trade complementarity exists between the two countries. The situation is characterized as one of poor trade complementarity when imports and exports do not match well between the two countries (Raghavan 1995).

The trade complementarity index (TCI) is defined after Michaely (1996) by the following formula, where M_i^k is the average share of commodity *k* in total imports of country *i*, X_j^k the average share of commodity *k* in total exports of country *j*, and *k* is an agricultural product defined at the HS 6-digit level.

$$TCI_{ij} = \left\{1 - \sum_k \frac{\left|M_i^k - X_j^k\right|}{2}\right\} \cdot 100$$

TCI varies between 0 (no complementarity) and 100 (perfect complementarity). It is computed for every country pair within the different RECs for the periods 2005–2007 and 2016–2018. For each region, TCI values are calculated for a total number N=*J**(*J*-1) of country pairs per period of reference, where *J* is the number of countries that form the REC. These values indicate how well a country's imports structure matches the exports structure of each of its regional trading partners, as well as how well its exports structure matches each regional counterpart's imports structure.

Table A3.5 summarizes the distribution of TCI values in the two periods of reference and Figure 3.6 plots their frequency distribution in the most recent period (2016–2018). The table shows a concentration of TCI values under 10 percent across all regions except AMU, where most TCI values fall in the 10–20 percent interval. This indicates that in most country pairs less than 10 or 20 percent of the world trade flows of a country overlap with the world trade flows of the other pair country.

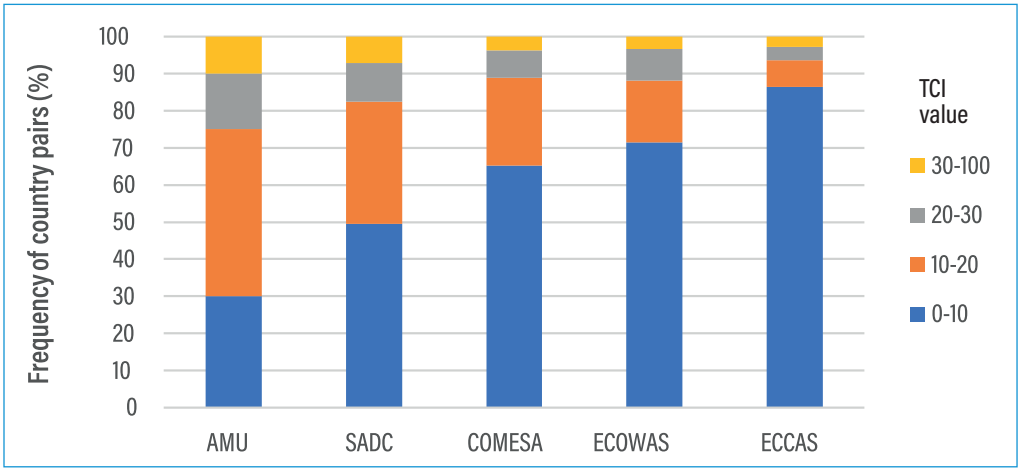
For comparison purposes, agricultural TCI values for country pairs in other world regions are computed at the same HS6-digit level as for African country pairs in 2016–2018. Their distribution is summarized in Table A3.6. The results show, like in Africa, a concentration of low TCI values among the members of the Association of Southeast Asian Nations (ASEAN), the South Asian Association for Regional Cooperation (SAARC), the Central American Common Market (CACM), and the Southern Common Market (MERCOSUR). In contrast, most agricultural TCI values among the members of the European Union are above 20 percent and almost two-thirds of them are higher than 40 percent. As to the North American Free Trade Agreement (NAFTA), all TCI values among its three members are above 30 percent. Table A3.6 indicates that, on average, agricultural TCI values are the lowest in Africa, ASEAN, and SAARC, where they are less than 20 percent, and the highest in EU25 and NAFTA, where they are above 40 percent. In the relevant literature, Hoang (2018) also demonstrated low agricultural TCI values among ASEAN members in 2017, with country-level averages ranging between 5 and 29 percent for import TCI and 0 and 38 percent for export TCI. Africa, like Southeast Asia, is well-positioned to increase regional trade, compared with other world regions if policies helped capitalize on the compatibility of agricultural supply potential and consumer demand across the continent.

Figure 3.6 shows that the frequency of the lowest TCI values in 2016–2018 is highest in ECCAS and lowest in AMU. While this frequency distribution is the same in both reference periods, Figure 3.7 shows that trade complementarity has, on average, improved among AMU countries, remained unchanged among ECCAS and SADC countries, and slightly worsened among COMESA and ECOWAS countries between the two periods.

In general, the frequency of TCI values in the 0–10 percent interval is greater in 2016–2018 than in 2005–2007 for COMESA, ECOWAS, and SADC, suggesting that trade complementarity has been decreasing in these regions. The TCI values of a few country pairs suggest that their world trade flows encompass a higher share of overlapping trade flows. For instance, in 15 pairs of COMESA countries, TCI values for 2016–2018 are in the 30–40 percent interval. Yet few country pairs have a TCI value above 50 percent. Such cases are found only in 2005–2007, including one in COMESA between Djibouti and Ethiopia (50.3 percent), one in SADC between Namibia and South Africa (57.6 percent), and three in ECOWAS between Benin and Togo (64.6 percent), Burkina Faso and Togo (78.5 percent), and Mali and Togo (72.9 percent). In each of these cases, the TCI value reflects the complementarity between the world imports of the first country named and the world exports of the second country named. Hence, Togo's exports match 64.6 percent of Benin's imports, 78.5 percent of Burkina Faso's imports, and 72.9 percent of Mali's imports. However, no such case with a high TCI value remains in the most recent period, confirming the decreasing trend of the complementarity of trade structures among African countries.

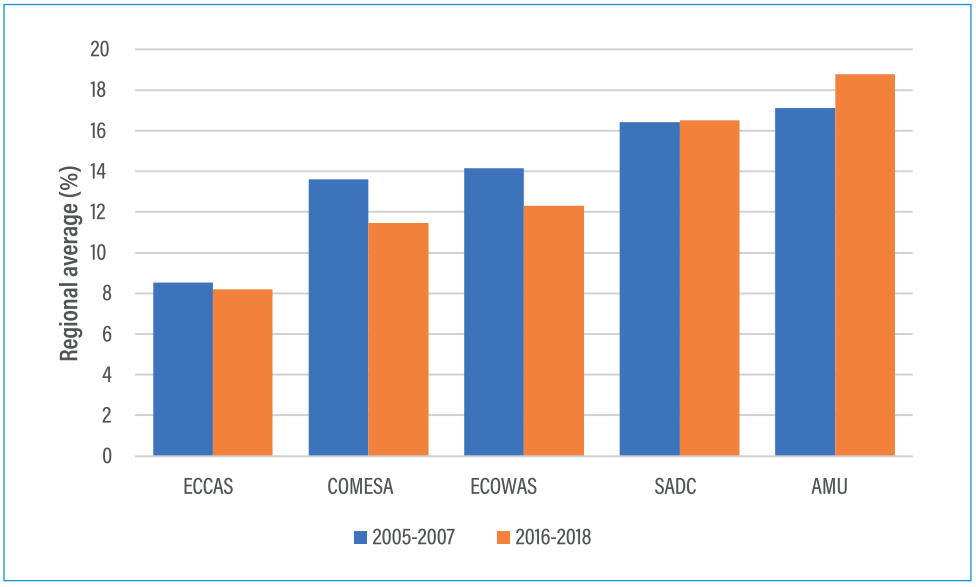
Except in a few cases, most pairs of African countries demonstrate poor and partial trade complementarity, suggesting a limited potential to expand trade, even though most country pairs had dissimilar agricultural exports. In other words, the composition of Africa's world imports and exports does not match sufficiently to trigger a process of import substitution away from the rest of the world. Here again, poor coverage of informal trade in our database leads to a degree of uncertainty in these conclusions.

Figure 3.6 Distribution of agricultural trade complementarity index (TCI) values (%), 2016–2018



Source: 2020 AATM database and authors' computations.
Note: SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union.

Figure 3.7 Evolution of agricultural trade complementarity index values, 2005–2007 versus 2016–2018



Source: 2020 AATM database and authors' computations.
Note: SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union.

Trade intensity among African countries

In this section, we examine the extent to which African countries are actually trading with their regional counterparts by calculating a trade intensity index (TII) for each country in its REC or RECs (in the case of multiple memberships). TII is a relative measure that minimizes the effects of scale. Wealthy countries can trade more goods and services in part because of their economic weight in global trade. If we were to compare the total intraregional trade of African countries to the total intraregional trade of other continents, African countries' lesser economic contribution to total global trade would make their intraregional trade look comparatively small. Trade intensity removes these scale distortions, allowing us to ask whether a country or region trades more with certain countries or regions than with the world on average, regardless of the total economic weight of their trade. It is comparable across regions and over time.

The trade intensity index of a country *i* in a region *r* is defined by the ratio of two shares as follows (Yamazawa 1970; Drysdale and Garnaut 1982):

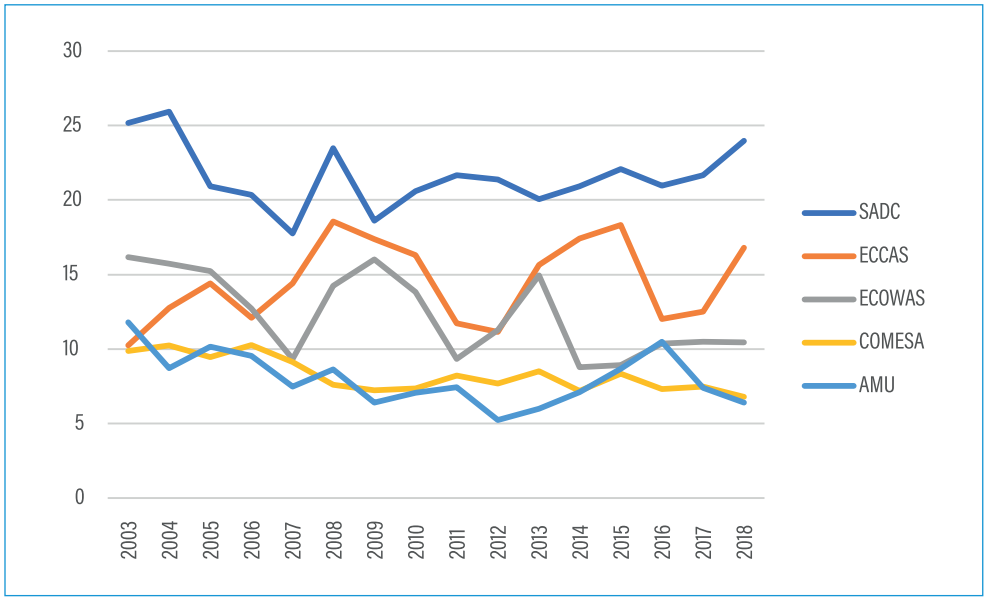
$$TII_{ir} = \frac{X_{ir}}{X_{wr}}$$

where X_{ir} is the share of region *r* as a destination of country *i*'s agricultural exports and X_{wr} is the share of destination *r* in the total value of world agricultural exports. The index can range between 0 and +∞. Values greater than 1 indicate that intraregional trade flows are larger than expected given the region's importance in world trade, and index values less than 1 indicate smaller trade flows than expected.

We calculated TII values for individual countries within their RECs, and then computed the simple averages at REC-level between 2003 and 2018, as shown in Figure 3.8. In every region and across all years, the TII values far exceed 1, suggesting intense intraregional trade within RECs. Regional trade intensities are somewhat erratic, especially in ECCAS and ECOWAS.

Note that the trade flows of ECCAS become more global starting in 2016, with its regional TII falling sharply in the years thereafter. We observe a more erratic trend for ECCAS overall, as well as for ECOWAS, though to lesser extent. The inconsistent TII values over time could reflect changes in regional and global trade patterns due to factors explored later in this chapter, such as trade policies and barriers. Alternatively, the erratic trends may have been due to regional environmental or political shocks, price changes in key exports or imports, the global food crisis of 2008, or a change in reported formal trade data. We will explore these causes further in the following section.

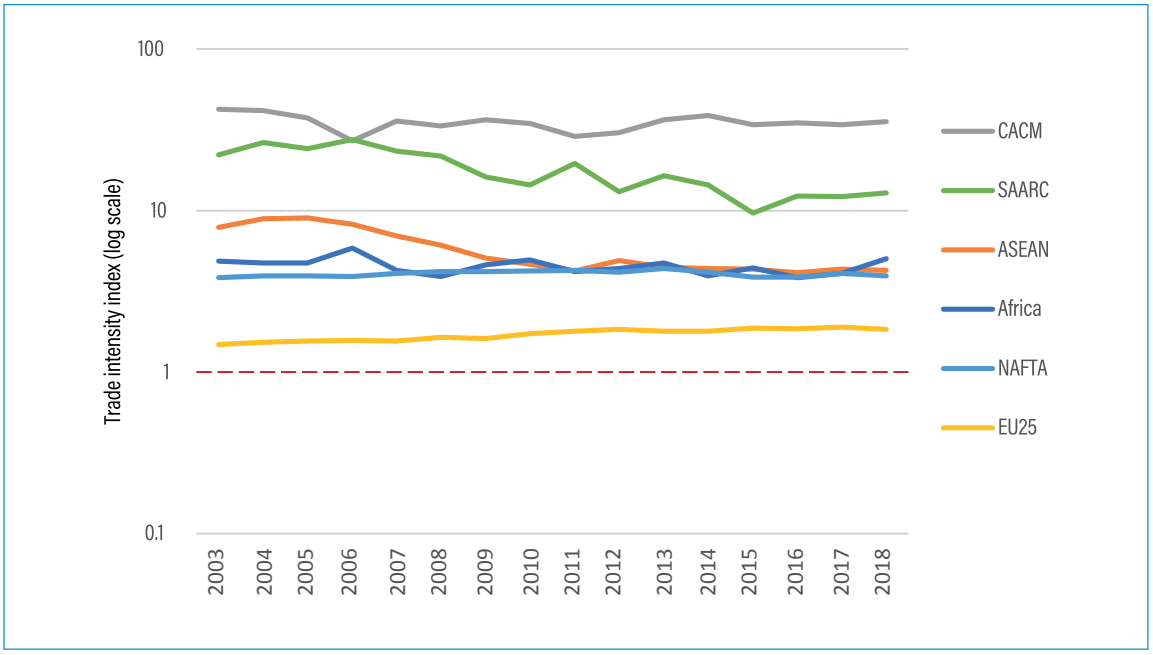
Figure 3.8 Evolution of the intraregional agricultural trade intensity index (TII), 2003–2018



Source: 2020 AATM database and authors' computations.
Note: SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union.

For the sake of comparison and following the same procedure as for RECs above, TII values are computed for Africa and for selected world regions as presented in Figure 3.9. It appears that average TII values in Central America (CACM) and South Asia (SAARC) are significantly higher than the African average, though intracontinental agricultural trade is more intense in Africa than in the EU. Hence, there is still room for improvements in Africa in order to reach the level achieved in other developing regions, such as SAARC and CACM, through strategic coordination of regional production, exports, and import demand.

Figure 3.9 Intraregional agricultural trade intensity index (TII) values across world regions, 2003–2018



Source: 2020 AATM database and authors' computations.
Note: ASEAN: Association of Southeast Asian Nations; CACM: Central American Common Market; EU25: European Union-25 countries; NAFTA: North American Free Trade Agreement; SAARC: South Asian Association for Regional Cooperation. The red dotted line depicts a TII value equal to 1. A TII value greater than 1 indicates an intense trade relationship among countries of the same region.

TII values at country-level across all RECs are summarized in Table A3.7 in the appendix and plotted in Figure 3.10 for an easier examination of countries' progress between 2005–2007 and 2016–2018. They show that trade intensity is the highest in SADC and the lowest in AMU during the two periods, with average TII values at 22.2 and 8.1, respectively, in 2016–2018. In 2005–2007, ECCAS' regional trade intensity exceeds other regions with an index of 13.6, followed by SADC with an index of 19.7. By 2016–2018, only SADC's regional trade intensity far exceeds other regions, suggesting a stronger intraregional trade focus within SADC.

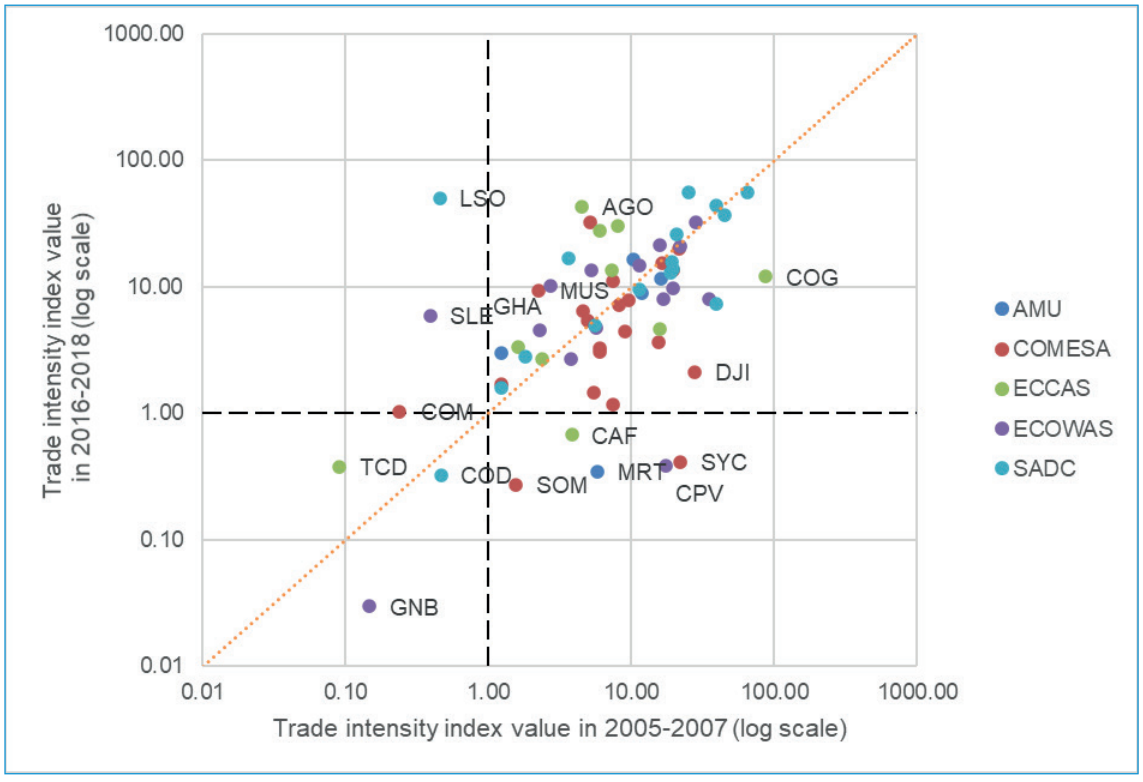
The Figure 3.10 scatter plot shows a few countries (in the bottom-left quadrant) with TII values smaller than 1.0 in both periods. Those countries trade within their respective regions less intensely than expected, given their importance in world trade. They include Chad, DRC within SADC, and Gambia. However, Chad improved its TII value in 2016–2018 compared to 2005–2007, while DRC and Gambia regressed.

The bottom-right quadrant shows five countries that were trading intensely within their regions in the first period but lost their intensity in the more recent period. These include Cabo Verde, Central African Republic, Mauritania, Seychelles, and Somalia. Conversely, the top-left quadrant shows three countries that were not trading intensely within their regions in the first period but recently gained in intraregional trade intensity. This trio consists of Comoros, Lesotho, and Sierra Leone.

Finally, the top-right quadrant reveals that the bulk of African countries consistently traded intensively with their respective regions during the two periods. Among these intense intraregional traders, we can observe half of them (above the diagonal line) whose intraregional trade has become more intense since 2005–2007 and the other half (below the diagonal line) whose intraregional trade has become less intense than in 2005–2007. We can also see that all five RECs are represented in both subgroups.

In a nutshell, Africa's low export similarity indices set the stage for a collaborative rather than competitive trade environment. However, we observe that trade complementarity is generally low even while intraregional trade intensity is generally high across all RECs. Africa may not always be able to rely on its regional factor advantages to maintain its higher regional trade intensity, especially as global trade patterns evolve. Coordinated continental efforts must seek market and supply chain integration that benefits producers, processing industries, and ultimately consumer health.

Figure 3.10 Intraregional trade intensity among African countries, 2005–2007 versus 2016–2018



Source: 2020 AATM database and authors' computations.
Note: SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union; AGO: Angola; CAF: Central African Republic; COD: Democratic Republic of the Congo; COG: Republic of Congo; COM: Comoros; CPV: Cabo Verde; DJI: Djibouti; GNB: Gambia; GHA: Ghana; LSO: Lesotho; MRT: Mauritania; MUS: Mauritius; SLE: Sierra Leone; SOM: Somalia; SYC: Seychelles; TCD: Chad.

Intra-African trade policies and the challenges of integration

In the above sections, we discussed the expansion of intra-African trade since 2003, the predominantly traded products, and the size and distribution of African countries' complementarity in trade and actual levels of trade intensity. Chapter 2 has offered an extensive overview of the subduing impact of nontariff measures (NTMs) on African trade in the global market. Now we turn our attention to the tariffs and nontariff barriers that hinder formal intra-African trade.

Cost of protective tariff and nontariff measures

Efforts to promote regional integration have reduced tariff protections, but despite significant progress, intraregional traders still face high tariffs. Table 3.5 presents intraregional and extraregional agricultural tariff protection across RECs as estimated by UNCTAD (2019). Even intraregional imports (see shaded cells in Table 3.5) face tariffs; in EAC and IGAD, these are nominal, but reach 12.5 and 16.6 percent within ECCAS and AMU, respectively. Tariffs are notably higher for extra-REC imports, with some protections against other African countries far exceeding the world tariffs (for example, IGAD and EAC countries charge 44.3 percent and 41.9 percent, respectively, on imports from AMU). As expected, the four RECs with overlapping membership (EAC, IGAD, ECCAS, and COMESA) have lower protections. Neighboring RECs typically have lower tariff protections than geographically distant RECs.

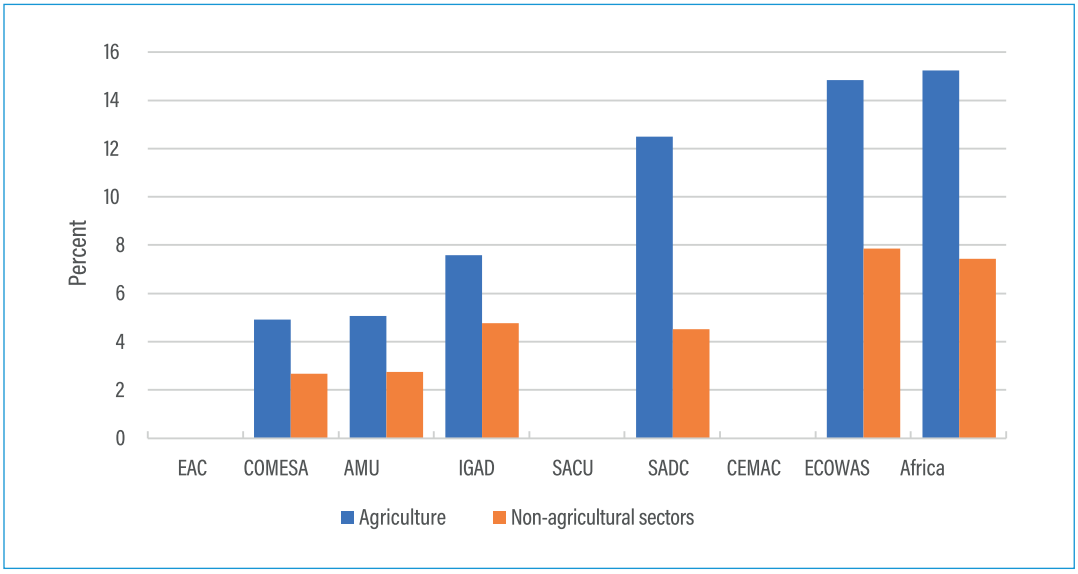
Table 3.5 Simple average tariff rates on agricultural products, 2016 (percent)

	Exporter										
Importer	World	EU	Africa	AMU	CEN-SAD	COMESA	EAC	ECCAS	ECOWAS	IGAD	SADC
Africa	15.1	18.3	6.9	17.4	8.6	5.5	2.3	9.3	6.8	4.2	5.9
AMU	18.7	17.7	15.8	16.6	14.8	15.4	16.9	18.4	13.3	14.7	20.0
CEN-SAD	20.0	23.2	11.6	18.6	9.0	13.8	6.8	9.3	5.3	14.0	18.1
COMESA	14.7	20.8	5.0	7.9	3.5	2.6	0.7	6.8	14.8	1.6	5.8
EAC	18.3	23.3	6.9	41.9	2.3	2.1	0.1	6.7	20.9	0.5	11.8
ECCAS	21.2	23.5	14.5	22.1	10.4	5.7	0.4	12.5	22.8	0.8	22.0
ECOWAS	16.9	19.3	10.7	19.6	8.4	18.6	19.4	13.5	5.0	19.9	17.9
IGAD	19.0	22.6	10.2	44.3	1.3	0.9	0.4	3.1	19.4	1.3	16.3
SADC	10.2	11.5	3.9	13.2	9.5	4.5	4.2	9.4	11.5	6.4	2.7

Source: UNCTAD secretariat calculations based on UNCTAD TRAINS (UNCTAD 2019, Table 2, p. 43).
Note: SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union, EU: European Union; CEN-SAD: Community of Sahel-Saharan States; EAC: Eastern African Community; IGAD: Inter-Governmental Authority on Development

Simple average tariff rates only capture a portion of trade costs. As Chapter 2 details, NTMs such as quotas, subsidies, and phytosanitary regulations can prohibit and distort trade markets more than tariffs. To account for the prohibitory costs of NTMs, economists analyze the ad valorem equivalent, which estimates the overall cost of both tariff and nontariff protections. Compared to other regional trade agreements globally, RECs in Africa have some of the highest ad valorem costs for outside trading partners, with average agricultural import duties ranging from 13.56 percent (SADC) to 25.50 percent (COMESA), far greater than other global trade agreements such as ASEAN (8.54 percent) and the EU (10.63 percent) (Bouët et al. 2017). High overall costs from tariffs and NTMs deter global exports and trade between African countries, including within RECs. Figure 3.11 depicts the average ad valorem equivalent of intraregional import duties imposed by RECs. Apart from EAC, SACU, and CEMAC where intraregional import tariffs are nil, intra-REC protections are common. Protection was highest in ECOWAS (14.9 percent) and lowest in COMESA (4.9 percent) in 2007. But since then ECOWAS has made efforts toward the liberalization of intraregional imports of local products. The figure shows that the level of protection is significantly higher for agriculture than for nonagriculture sectors across the RECs.

Figure 3.11 Average ad valorem equivalent of intraregional import duties by regional economic community, 2007 (percent)



Source: Authors, based on Bouët, Cosnard, and Laborde (2017).
Note: SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union; EAC: Eastern African Community; IGAD: Inter-Governmental Authority on Development; SACU: Southern African Customs Union.

Nontariff measures are potentially more trade-restrictive than tariffs

In many cases, NTMs are more trade-restrictive than tariffs. To identify which barriers are most prohibitory, we estimate the incidence of NTMs by calculating their frequency index, coverage ratio, and prevalence score.

The frequency index measures the percentage of products that are affected by one or more NTM. It is defined as follows:

$$FI_i = \left[\frac{\sum_k (D_{ik} \cdot M_{ik})}{\sum_k M_{ik}}\right] \cdot 100$$

where FI_i is the frequency index of NTMs imposed by country i, D_{ik} is a dummy variable that indicates whether one or more NTMs are used on product k in country I, and M_{ik} is another dummy variable that indicates whether country i imports product k.

The coverage ratio reveals the share of country i's imports that are subject to NTMs. It is given by:

$$CR_i = \left[\frac{\sum_k (D_{ik} \cdot V_{ik})}{\sum_k V_{ik}}\right] \cdot 100$$

where CR_i is the coverage ratio of NTMs imposed by an importing country i, D_{ik} is defined as before, and V_{ik} is the value of country i's imports of product k. Unlike the frequency index, the coverage ratio reflects the relative value of products that are affected by NTMs in a country's overall imports.

The prevalence score corresponds to the average number of NTMs applied to an imported product. The prevalence score (PS_i) of NTMs imposed by an importing country i is given by:

$$PS_i = \left[\frac{\sum_k (N_{ik} \cdot M_{ik})}{\sum_k M_{ik}}\right] \cdot 100$$

where N_{ik} denotes the number of NTMs affecting a product k and M_{ik} is defined as before. Unlike the frequency index and the coverage ratio, the prevalence score reflects the fact that more than one NTM is usually applied on the same product.

To calculate the three indicators, we use the NTM-MAP tool developed by the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), the Trade Analysis Information System of the United Nations Conference for Trade and Development (UNCTAD-TRAINS) database, and the United Nations Commodity Trade Statistics (UN-COMTRADE) database. UNCTAD-TRAINS contains detailed information on 195 nontariff barriers covering 5,771 products classified at the HS6 level. The data cover 92 countries, including 22 in Africa, and relate to the period 2010–2018. NTMs are classified into nine chapters and include technical measures such as health regulations or environmental protection measures, as well as traditional trade policy instruments such as quotas, price controls, and export restrictions. Table A3.8 in the appendix offers an exhaustive list and definitions of the different categories of nontariff measures given in the TRAINS database.

UN-COMTRADE provides the information needed on the bilateral import values among African countries. The three indicators are calculated at country level, considering in turn intracontinental and intraregional agricultural imports of each of 22 African countries whose NTMs information is available in UNCTAD-TRAINS.

Figure 3.12 shows the results of the calculations of the frequency index, coverage ratio, and prevalence score of NTMs affecting intra-African agricultural imports in selected African countries, sorted by decreasing value of the prevalence score. The frequency index values show that all countries use NTMs to varying degrees on agricultural imports from other African countries. According to the frequency index values, the incidence of NTMs is the highest in Algeria, Morocco, Cabo Verde, Tunisia, and Ethiopia where more than 60 percent of agricultural products sourced within Africa are affected by NTMs. In contrast, the incidence of NTMs is the lowest in Guinea, Botswana, Zimbabwe, and Burkina Faso where NTMs affect less than 30 percent of agricultural products imported from other African countries.

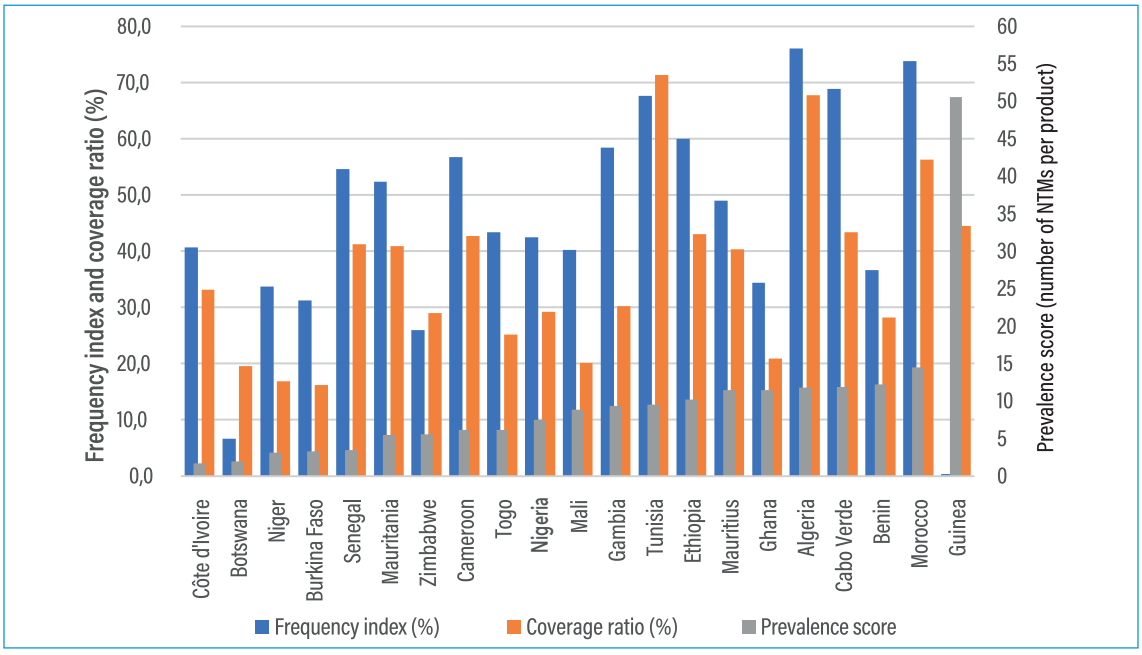
However, the coverage ratio values indicate that the incidence is not negligible in the case of Guinea. NTMs affect up to 44 percent of the value of this country's agricultural imports originating from other African countries. With respect to the coverage ratio indicator, countries where the incidence of NTMs is lowest for African exporters include Burkina Faso, Botswana, Niger, and Mali where coverage ratio values are not higher than 20 percent while the incidence is the highest in Tunisia, Algeria, and Morocco where coverage ratio values are above 50 percent.

With regard to the prevalence score, the occurrence of NTMs is lowest in Côte d'Ivoire, Botswana, Niger, Burkina Faso, and Senegal where the average number of NTMs per product is lower than 5 while the occurrence is highest in Algeria, Cabo Verde, Benin, Morocco, and Guinea where the average number of NTMs per product is 12 or higher. In the case of Guinea, the average number is 51. Hence, the three indicators inform us that this country uses a high number of NTMs on very few products that account for a large share of the value of agricultural imports from African suppliers.

The incidence of NTMs applied by a sample of African countries on their world imports of the main agricultural food products is presented in Table A3.9 in the appendix as estimated by the World Integrated Trade Solution (World Bank 2019). It appears that the NTM coverage ratio and frequency index measures are generally close to or higher than 80 percent for food, vegetable, and animal products. These are NTM incidence values comparable to those observed in emerging countries (Brazil and India) as well as advanced economies (EU and USA). Cameroon and Côte d'Ivoire show lower estimates of NTM incidence on their world imports of food products. For Côte d'Ivoire, the estimates of NTM coverage ratio and frequency index on world imports of food

products are 58 and 80 percent, which is still higher than the average values of the two indicators for the country's intracontinental agricultural imports (33 and 41 percent, respectively). The same comparison holds for Cameroon. Only in Senegal are the estimates of NTM incidence indicators lower for world imports of food products (23 and 37 percent, respectively) than for intracontinental agricultural imports (41 and 55 percent, respectively). Thus, these results suggest that the incidence of NTM-based protection is more significant against imports from the rest of the world than for intracontinental imports.

Figure 3.12 Incidence of nontariff measures in intra-African agricultural trade, latest available year



Source: Authors' calculations using UNCTAD-TRAINS database, UN-COMTRADE database, and CEPII's NTM-MAP tool (Gourdon 2014).
Note: Latest available years across all covered countries range from 2015 to 2019. NTM= nontariff measure.

The average number of NTMs applied to the same product does not tell us about the diversity of the measures. Trade of an import product is more regulated if the applied measures are from different NTM chapters. To better illustrate the pervasiveness of NTMs, we follow the same approach as Gourdon (2014) by calculating the proportion of products affected by 1, 2, 3, 4, 5, or 6 and more types of NTMs differentiated by chapter. Results in Table 3.6 reveal that the number of categories of NTMs affecting intra-African agricultural imports varies across countries. Of the 22 countries analyzed, 12 have a large share of imports affected by more than two types of NTMs while the situation is different in the 10 other countries, where the largest share of imports is affected by fewer than three categories of NTMs. For example, in Ethiopia, 86 percent of the imports facing NTMs are affected by more than two different NTMs, while in Gambia, 83 percent of imports facing NTMs are affected by one or two NTMs only.

Table 3.6 Number of NTMs affecting intra-African agricultural trade, by country

Country	No NTMs	1 type of NTMs	2 types of NTMs	3 types of NTMs	4 types of NTMs	5 types of NTMs	6 types or more of NTMs	Total
Algeria	-	4.57	79	14.61	1.83	-	-	100
Benin	5.75	-	-	15.06	32.45	20.5	26.24	100
Botswana	70.37	10.81	4.35	13.06	1.4	-	-	100
Burkina Faso	13.26	25.72	10.54	47.28	3.04	0.16	-	100
Cabo Verde	-	-	26.79	61.98	10.28	0.95	-	100
Cameroon	11.78	6.48	56.11	14.43	10.31	0.88	-	100
Côte d'Ivoire	7.04	28.79	59.88	4.29	-	-	-	100
Ethiopia	-	10.58	3.66	32.29	46.13	6.11	1.22	100
Gambia	7.26	2.28	80.91	-	7.47	2.07	-	100
Ghana	12.24	0.94	15.07	3.61	65.62	2.51	-	100
Guinea	2.3	-	0.16	-	-	-	97.54	100
Liberia	-	5.19	7.39	78.62	6.29	2.36	0.16	100
Mali	5.3	-	18.25	71.76	4.68	-	-	100
Mauritania	1.77	74.52	8.69	0.74	9.28	5.01	-	100
Mauritius	1.26	3.09	30.48	37.78	24.3	3.09	-	100
Morocco	0.71	3.24	15.23	25.67	4.65	43.86	6.63	100
Niger	13.99	21.94	59.3	4.77	-	-	-	100
Nigeria	5.24	50	25.4	14.29	4.76	0.32	-	100
Senegal	18.75	38.39	29.29	13.57	-	-	-	100
Togo	11.49	1.61	4.03	73.99	-	8.87	-	100
Tunisia	0.28	3.38	5.21	13.66	32.96	36.76	7.75	100
Zimbabwe	27.45	8.91	23.07	22.77	15.18	2.63	-	100

Source: Authors' calculations using UNCTAD-TRAINS database, UN-COMTRADE database, and CEPII's NTM-MAP tool (Gourdon 2014).

Note: Latest available years across all covered countries range from 2015 to 2019. NTM = nontariff measure.

The evidence in Table 3.6 tells us more about the level of trade regulation in the countries than both the frequency index and the coverage ratio. For example, although Algeria's frequency index and coverage ratio are higher than those of Morocco, Algeria's intra-African agricultural imports can be considered relatively less regulated, as most of Algeria's imports (83.6 percent) are affected by NTMs from fewer than three chapters, while in Morocco, the majority of imports (80.8 percent) are affected by NTMs from three or more chapters.

The different categories of NTMs do not have the same impact on trade

NTMs are heterogeneous and do not all have the same effect on African traders. We now look at how the type of NTMs applied affect the level of regulation of the imports in a country. For that we compute, for each country, the share of intra-African agricultural imports affected by different types of NTMs. NTMs are grouped in four main categories: sanitary and phytosanitary measures (SPS), technical barriers to trade (TBT), and other import measures and export-related measures.

Table 3.7 presents the proportion of agricultural products affected by the main types of NTMs, SPS and TBS, or export-related measures. Of the 22 countries, 15 use predominantly export-related measures (Cabo Verde, Benin, Guinea and Mali exclusively use export-related measures). Two countries (Algeria and Gambia) apply TBT measures on more than 80 percent of the agricultural import products; only one country (Mauritania) favors SPS measures, which affect over 75 percent of its agricultural imports.

Table 3.7 Types of NTMs affecting intra-African agricultural trade, by country (percentage of total agricultural products affected)

Country	SPS	TBT	Other import measures	Export-related measures	Total
Algeria	0.6	81.4	17.7	0.3	100
Benin	0	0	0	100	100
Botswana	36.5	0	5.7	57.8	100
Burkina Faso	28.4	1.3	0.4	70	100
Cabo Verde	0	0	0	100	100
Cameroon	0	1	12	87	100
Côte d'Ivoire	31	0.3	65.1	3.6	100
Ethiopia	0.9	0	11.3	87.8	100
Gambia	2.5	83.7	9.8	4	100
Ghana	0.4	0	2.5	97.1	100
Guinea	0	0	0	100	100
Liberia	1.4	0.2	9.4	89	100
Mali	0	0	0	100	100
Mauritania	75.9	0	4.5	19.6	100
Mauritius	0.4	23.5	21.2	54.9	100
Morocco	2	8.2	1.7	88.1	100
Niger	25.1	0	58.4	16.5	100
Nigeria	34.8	14.6	35.5	15.1	100
Senegal	42	0	14.9	43.1	100
Togo	0	1.8	0	98.2	100
Tunisia	0	0	1.7	98.3	100
Zimbabwe	0.4	15.1	7.6	76.9	100
Total	11.8	10.3	12.7	65.3	100

Source: Authors' calculations using UNCTAD-TRAINS database, UN-COMTRADE database, and NTM-MAP tool (Gourdon 2014).
Note: Latest available years across all covered countries range from 2015 to 2019; SPS = sanitary and phytosanitary measures; TBT = technical barriers to trade.

Before turning to the assessment of the size of NTMs' tariff equivalents, we now consider their occurrence in intraregional trade across the different RECs.

Table 3.8 shows very large values for the three indicators of the occurrence of NTMs in agricultural trade within AMU. Mauritania tends to have a smaller number of NTMs per product. Nevertheless, 70 percent of agricultural products imported within the region are regulated and 60 percent of intraregional imports by value are affected by NTMs. The situation is similar in COMESA. The incidence of NTMs is lower in Zimbabwe than in Ethiopia, Mauritius, and Tunisia. Yet 54 percent of all agricultural products imported from the region and 54 percent of the value of intraregional imports of agricultural products are affected by the use of NTMs.

As the only country analyzed in ECCAS, Cameroon may not reflect the regional situation. However, the values of the three indicators show that NTMs are heavily used by the leading intraregional importer and exporter of the region. With a larger sample of countries, our results for ECOWAS show more heterogeneity among countries. The incidence of NTMs on intraregional imports is lowest in Burkina Faso and Niger and highest in Cabo Verde. Finally, the results for Botswana and Zimbabwe suggest a relatively low incidence of NTMs on their intraregional trade, as compared to COMESA and AMU countries. Given that both countries are among the top five intraregional importers, their low use of NTMs suggests relatively easier access for intraregional exporters to their domestic markets.

Hence, NTMs do not only affect extraregional agricultural trade. The preceding analysis shows that their incidence in intraregional trade may be more substantial in some countries, in particular within AMU.

Table 3.8 Incidence of nontariff measures in intraregional agricultural trade, latest available year per country

		Frequency index (%)	Coverage ratio (%)	Prevalence score
AMU	Algeria	91.2	94.0	12.0
	Mauritania	69.9	60.2	5.8
	Morocco	96.3	86.1	14.3
	Tunisia	86.5	83.6	10.2
COMESA	Ethiopia	76.1	59.5	10.1
	Mauritius	72.5	64.1	11.3
	Tunisia	77.3	75.2	10.0
	Zimbabwe	54.4	54.5	4.4
ECCAS	Cameroon	92.5	97.3	4.1
ECOWAS	Benin	43.0	32.8	11.1
	Burkina Faso	34.2	19.4	2.8
	Cabo Verde	83.9	63.8	11.7
	Côte d'Ivoire	60.5	49.1	1.7
	Gambia	70.5	43.8	9.4
	Ghana	60.6	34.7	11.9
	Guinea	0.4	44.5	16.7
	Mali	54.0	32.1	8.7
	Niger	40.1	23.0	3.2
	Nigeria	80.4	51.6	7.7
	Senegal	80.5	65.4	4.0
	Togo	50.5	31.5	6.3
SADC	Botswana	13.5	19.7	2.4
	Zimbabwe	31.9	28.8	3.8

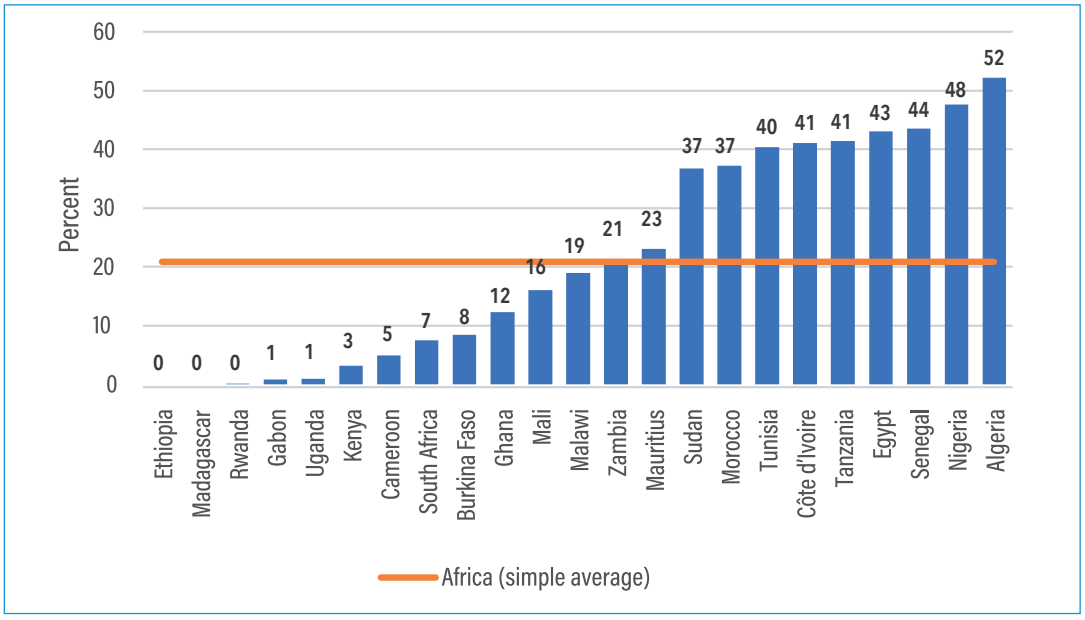
Source: Authors' calculations using UNCTAD-TRAINS database, UN-COMTRADE database, and NTM-MAP tool (Gourdon 2014).
Note: Latest available years across all covered countries range from 2015 to 2019; SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union.

To provide African policymakers with more evidence about the benefits of addressing and streamlining NTMs, we examine the costs of NTMs by considering their ad valorem equivalent (AVE). Figure 3.13 shows that the average AVE of NTMs across Africa can be as high as a tariff rate of 21 percent. While the AVE is nil in Ethiopia, Madagascar, and Rwanda, indicating that NTMs are not always a trade barrier, it is very low in Gabon and Uganda and highest in Algeria. At 52 percent, the AVE estimate for Algeria is almost three times the continental average, and almost twice that average for other AMU countries, namely Morocco and Tunisia. Côte d'Ivoire, Nigeria, and Senegal (ECOWAS), Tanzania (SADC), and Egypt and Sudan (COMESA) are also in this high AVE range. AVE estimates are around the continental average in Mauritius, Malawi, and Zambia (COMESA and SADC), and significantly below the continental average in Kenya (COMESA), South Africa (SADC), Cameroon (ECCAS), and Burkina Faso, Ghana, and Mali (ECOWAS). Thus, the trade-restrictiveness of NTMs as captured by the AVEs varies substantially across countries. While differences in endowments and comparative advantages may trigger bilateral trade, differences in trade regulations and policies between close neighbors are likely to hold back bilateral trade.

Our results suggest that on-going efforts to reduce tariffs at regional and continental levels should also seek to harmonize trade regulations across the continent and minimize the trade-chilling effect of both tariffs and NTMs. This would open the door for a broader exchange of goods, as well as create the environment for integrated regional supply chains. Tapping into Africa's regional trade potential will require coordination between regions with strong production and processing potential, and careful consideration of nutrition-sensitive consumer demand. Both tariffs and NTMs can incentivize transshipment and smuggling, or heighten risk for businesses working to build streamlined, secure, and transparent supply chains. Administrative barriers cause undue time delays that are unworkable for certain agricultural products, notably those that may deteriorate or rot quickly, especially without cold storage and transport. Delays, cost, and administrative burdens discourage private investment in regional supply chains of sensitive agricultural products and may partly explain the high reliance on informal trade of fruits, vegetables, and other time-sensitive goods (see Chapter 5). If these barriers can be removed, time-sensitive agrifoods may offer good opportunities to enhance regional trade through agrifood value chains. It is possible that the greatest regional supply chain opportunities lie outside of formally traded goods (Torres et al. 2017), which highlights the urgent call for better data on informal trade patterns if these opportunities are to be realized.

Finally, trade policies are not the only facilitators (or barriers) to integrated regional trade. Improving regional agrifood value chains will require due investment in road, transport, and information systems infrastructure. Improving linkages between production and agro-processing areas, or between groups of smaller producers and cross-border markets, can open new opportunities for regional value chains — especially if infrastructure investment targets key corridor routes and provides relevant market information for priority regional value chains.

Figure 3.13 Average ad valorem equivalent of nontariff measures affecting agricultural products, selected African countries, 2009 (percent)



Source: Authors, based on Bouët, Cosnard, and Laborde (2017, Tables 2.5 and 2.6, pp. 14-15).

Conclusions and key lessons

Recent intra-African agricultural trade patterns show that intracontinental agricultural exports have been growing steadily over the past two decades, largely dominated by SADC and COMESA member countries. The countries with the largest export and import shares in the intracontinental market predominantly belong to these two regions, including most notably South Africa, Kenya, and Egypt. Apart from Côte d'Ivoire as a large exporter and Nigeria as a large importer, western and central Africa countries play marginal roles in agricultural trade within Africa.

Only a few food products are among the most traded agricultural products in intra-African markets, namely maize, rice, wheat, and vegetables. Yet formal trade data hide the realities of intraregional informal trade, mostly composed of staple foodstuffs (see Chapter 5). Our results show trade of processed food products increased, likely due to a young African population, growing urban food demand, and changing lifestyles and consumption habits in rural areas. This trend follows the global pattern of the growing dominance of processed foods, accompanied by the growing risk of obesity and metabolic diseases, in some cases even simultaneously with malnourishment.

This chapter assessed the potential to expand intraregional trade through product diversification or by matching countries' export and import supply and demand. To explore this potential, we calculated a handful of simple trade indicators: ESI, TII, and TCI. Current export dissimilarity between countries suggests there is room to expand intraregional trade on the continent. However, poor and partial trade complementarity between African countries indicates that actual cross-border trade intensity stems from regional factors such as geographic proximity, cultural similarities, historic trading relationships, and preferential trade agreements.

Despite trade liberalization and regional integration efforts, African exporters continue to face tariff barriers within and outside their regions. While tariffs are relatively low in SADC and ECOWAS countries, they remain high within ECCAS and AMU. Tariff protection against imports from extraregional suppliers can be as high as for imports from world markets. Suppliers from AMU countries are the least favored by other African RECs. Beyond tariff protection, the ad valorem equivalents incorporating NTMs suggest that NTMs can be more trade-restrictive than tariffs. Improving intra-African trade by reducing logistical barriers could benefit the development of African regional value chains, since current barriers stunt coordinated supply chains between and within RECs.

A number of policy actions could improve formal cross-border exchanges and prioritize agrifood products essential to consumer health:

African states should continue the processes needed to harmonize trade regulation at the continental level, emphasizing not only import duty reductions but also streamlining the costly NTMs that suffocate trade.

Policymakers, investors, and businesses should prioritize culturally appropriate, nutrient-dense foods, so that trade and value-chain development benefit consumers' health. Nutrition-focused trade is imperative if Africa wants to avoid the risks of obesity, metabolic disease, and malnourishment caused by processed foods with poor nutrition quality.

Infrastructure investments such as roads, low-cost cool-storage, and food safety measures should target the trade of diverse, nutrient-rich agricultural food products.

Stakeholders should coordinate efforts to integrate informally traded goods into formal markets by removing barriers for producers and supply intermediaries. Improved informal trade data can better inform this process.

Africa has the opportunity for powerful collaboration across the continent through the AfCFTA, capitalizing on the demonstrated trade potential outlined in this chapter. Yet policymakers must proceed cautiously — trade policy changes can have unintended consequences for informal, local supply chains and dietary habits, sometimes excluding producers or elevating less-nutritious processed foods over traditional dietary staples. In many developing regions, this has led to the "double-burden" of both malnourishment and obesity or metabolic disease, such as heart disease and diabetes. To have the most impact on consumer health and agrifood producers, infrastructure investments and policies that minimize formal trade barriers must thoughtfully prioritize nutrient-dense foods that equitably benefit producers and improve consumer health (Hanson 2015). The on-going efforts for the implementation of the African Continental Free Trade Area set the stage to realize this potential, provided member countries continue collaborative efforts and coordination to inclusively serve the public good.

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Appendix

Table A3.1 Memberships of AU-recognized regional economic communities

Country	AMU	CEN-SAD	COMESA	EAC	ECCAS	ECOWAS	IGAD	SADC
Angola	0	0	0	0	1	0	0	1
Burundi	0	0	1	1	1	0	0	0
Benin	0	1	0	0	0	1	0	0
Burkina Faso	0	1	0	0	0	1	0	0
Botswana	0	0	0	0	0	0	0	1
Central African Republic	0	1	0	0	1	0	0	0
Côte d'Ivoire	0	1	0	0	0	1	0	0
Cameroon	0	0	0	0	1	0	0	0
Congo, Dem. Rep.	0	0	1	0	1	0	0	1
Congo, Rep.	0	0	0	0	1	0	0	0
Comoros	0	1	1	0	0	0	0	1
Cabo Verde	0	1	0	0	0	1	0	0
Djibouti	0	1	1	0	0	0	1	0
Algeria	1	0	0	0	0	0	0	0
Egypt, Arab Rep.	0	1	1	0	0	0	0	0
Eritrea	0	1	1	0	0	0	1	0
Ethiopia	0	0	1	0	0	0	1	0
Gabon	0	0	0	0	1	0	0	0
Ghana	0	1	0	0	0	1	0	0
Guinea	0	1	0	0	0	1	0	0
Gambia	0	1	0	0	0	1	0	0
Guinea-Bissau	0	1	0	0	0	1	0	0
Equatorial Guinea	0	0	0	0	1	0	0	0
Kenya	0	1	1	1	0	0	1	0
Liberia	0	1	0	0	0	1	0	0

Country	AMU	CEN-SAD	COMESA	EAC	ECCAS	ECOWAS	IGAD	SADC
Libya	1	1	1	0	0	0	0	0
Lesotho	0	0	0	0	0	0	0	1
Morocco	1	1	0	0	0	0	0	0
Madagascar	0	0	1	0	0	0	0	1
Mali	0	1	0	0	0	1	0	0
Mozambique	0	0	0	0	0	0	0	1
Mauritania	1	1	0	0	0	0	0	0
Mauritius	0	0	1	0	0	0	0	1
Malawi	0	0	1	0	0	0	0	1
Namibia	0	0	0	0	0	0	0	1
Niger	0	1	0	0	0	1	0	0
Nigeria	0	1	0	0	0	1	0	0
Rwanda	0	0	1	1	1	0	0	0
Sudan	0	1	1	0	0	0	1	0
Senegal	0	1	0	0	0	1	0	0
Sierra Leone	0	1	0	0	0	1	0	0
Somalia	0	0	1	0	0	0	1	0
South Sudan	0	0	0	1	0	0	1	0
Sao Tome and Principe	0	1	0	0	1	0	0	0
Eswatini	0	0	1	0	0	0	0	1
Seychelles	0	0	1	0	0	0	0	1
Chad	0	1	0	0	1	0	0	0
Togo	0	1	0	0	0	1	0	0
Tunisia	1	0	1	0	0	0	0	0
Tanzania	0	0	0	1	0	0	0	1
Uganda	0	0	1	1	0	0	1	0
South Africa	0	0	0	0	0	0	0	1
Zambia	0	0	1	0	0	0	0	1
Zimbabwe	0	0	1	0	0	0	0	1

Source: Authors, African Union Website (https://au.int/en/organs/recs), accessed on April 30, 2020.
Note: AU: African Union; AMU: Arab Maghreb Union; CEN-SAD: Community of Sahel-Saharan States; COMESA: Common Market for Eastern and Southern Africa; EAC: East African Community; ECCAS: Economic Community of Central African States; ECOWAS: Economic Community of West African States; IGAD: Intergovernmental Authority on Development; SADC: Southern African Development Community.

Table A3.2 Intra-ECCAS agricultural exports by top 5 intraregional exporters, 2003–2018 (US$ millions)

	Cameroon	Dem. Rep. of the Congo	Rep. of Congo	Gabon	Rwanda	Other ECCAS members	ECCAS
2003	47.6	0.1	9.0	7.5	0.7	1.8	66.7
2004	40.3	0.4	12.4	17.1	1.0	3.8	75.1
2005	51.4	0.1	26.9	35.7	1.1	3.2	118.4
2006	45.0	1.0	23.2	34.1	1.4	1.4	106.0
2007	69.5	3.8	26.0	25.5	6.9	6.9	138.5

	Cameroon	Dem. Rep. of the Congo	Rep. of Congo	Gabon	Rwanda	Other ECCAS members	ECCAS
2008	86.1	7.7	38.6	38.7	49.7	6.7	227.5
2009	75.2	9.8	33.7	63.8	6.6	5.7	194.8
2010	87.0	18.7	29.1	30.4	9.9	5.3	180.3
2011	72.7	15.7	8.7	22.6	26.6	5.1	151.4
2012	75.9	12.3	5.3	20.1	81.3	3.3	198.3
2013	60.6	8.7	5.1	13.0	96.8	11.2	195.4
2014	80.9	16.5	5.8	1.9	75.9	16.0	197.0
2015	74.9	12.8	3.4	0.8	92.9	20.6	205.4
2016	6.6	6.2		0.0	97.9	2.5	113.2
2017	74.8	2.9	6.4	4.1	2.2	19.3	109.7
2018	0.2	3.1	0.5		0.8	45.8	50.4

Source: 2020 AATM database and authors' computations.

Note: ECCAS: Economic Community of Central African States.

Table A3.3 Cumulative share of the top 20 products in total intracontinental agricultural exports, 2005–2007 and 2016–2018

	2005–2007	2016–2018
Africa	38.7	38.0
European Union (EU25)	32.2	31.3
Middle East & North Africa	47.7	44.0
North America	41.1	43.1
South Asia	76.7	65.4
World	31.3	32.2

Source: 2020 AATM database and authors' computations.

Table A3.4 Counts of country pairs per range of export similarity index values in 2005–2007 and 2016–2018

ESI	AMU		COMESA		ECCAS		ECOWAS		SADC	
value (%)	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]
0-10	7	5	135	152	45	43	77	76	69	77
10-20	1	2	50	33	8	3	16	21	33	28
20-30	1	1	17	16	2	8	9	4	6	11
30-40	0	2	5	6	0	1	0	2	8	3
40-50	1	0	3	2	0	0	3	2	4	0
50-60	0	0	0	1	0	0	0	0	0	0
60-70	0	0	0	0	0	0	0	0	0	0
70-80	0	0	0	0	0	0	0	0	0	1
80-90	0	0	0	0	0	0	0	0	0	0
90-100	0	0	0	0	0	0	0	0	0	0
Total	10	10	210	210	55	55	105	105	120	120

Source: 2020 AATM database and authors' computations.
Note: [1] and [2] stand for 2005-2007 and 2016-2018, respectively.
SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union.

Table A3.5 Counts of country pairs per range of agricultural trade complementarity index values in 2005–2007 and 2016–2018

TCI value (%)	AMU		COMESA		ECCAS		ECOWAS		SADC	
	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]	[1]	[2]
0-10	5	6	225	274	96	95	136	150	100	119
10-20	12	9	131	99	7	8	42	35	89	79
20-30	3	3	44	31	3	4	20	18	30	25
30-40	0	2	15	11	1	3	7	7	19	15
40-50	0	0	4	5	3	0	2	0	1	2
50-60	0	0	1	0	0	0	0	0	1	0
60-70	0	0	0	0	0	0	1	0	0	0
70-80	0	0	0	0	0	0	2	0	0	0
80-90	0	0	0	0	0	0	0	0	0	0
90-100	0	0	0	0	0	0	0	0	0	0
Total	20	20	420	420	110	110	210	210	240	240

Source: AATM database and authors' computations.
Note: [1] and [2] stand for 2005-2007 and 2016-2018, respectively.
SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: Economic Community of Central African States; COMESA: Common Market for Eastern and Southern Africa; AMU: Arab Maghreb Union.

Table A3.6 Counts of country pairs per range of agricultural trade complementarity index values in selected world regions in 2016–2018

TCI value (%)	Africa	ASEAN	CACM	EU25	MERCOSUR	NAFTA	SAARC
0-10	1834	14	0	0	0	0	8
10-20	718	50	8	41	6	0	6
20-30	162	23	9	25	3	0	4
30-40	37	3	3	158	1	3	2
40-50	5	0	0	265	2	2	0
50-60	0	0	0	103	0	0	0
60-70	0	0	0	7	0	1	0
70-80	0	0	0	1	0	0	0
80-90	0	0	0	0	0	0	0
90-100	0	0	0	0	0	0	0
Total number	2756	90	20	600	12	6	20
Regional average (%)	10.2	16.9	23.2	41.6	22.8	43.9	13.5

Source: 2020 AATM database and authors' computations.
Note: ASEAN: Association of Southeast Asian Nations; CACM: Central American Common Market; EU: European Union; MERCOSUR: Southern Common Market (Mercado Común del Sur); NAFTA: North American Free Trade Agreement; SAARC: South Asian Association for Regional Cooperation.

Table A3.7 Regional agricultural trade intensity index, 2005–2007 and 2016–2018

	2005–2007	2016–2018		2005–2007	2016–2018
AMU	**9.1**	**8.1**	**ECOWAS**	**12.4**	**10.5**
Algeria	11.9	8.9	Benin	16.7	8.1
Libya	10.3	16.6	Burkina Faso	19.4	9.7
Morocco	1.2	3.0	Côte d'Ivoire	5.6	4.7
Mauritania	5.8	0.3	Cabo Verde	17.3	0.4
Tunisia	16.2	11.7	Ghana	2.3	4.5
COMESA	**9.6**	**7.2**	Guinea	3.8	2.7
Burundi	7.4	11.0	Gambia	11.4	14.7
Dem. Rep. of Congo	15.5	3.7	Guinea-Bissau	0.1	0.0
Comoros	0.2	1.0	Liberia	5.2	13.5
Djibouti	27.8	2.1	Mali	22.1	20.9
Egypt	4.9	5.5	Niger	35.1	8.1
Eritrea	5.1	32.1	Nigeria	2.7	10.1
Ethiopia	7.4	1.2	Senegal	28.4	32.2
Kenya	8.2	7.3	Sierra Leone	0.4	5.9
Libya	9.6	7.9	Togo	15.9	21.3
Madagascar	1.2	1.7	**SADC**	**19.7**	**22.2**
Mauritius	2.3	9.4	Angola	19.1	15.7
Malawi	5.9	3.0	Botswana	44.8	37.1
Rwanda	19.5	13.7	Dem. Rep. of Congo	0.5	0.3
Fmr Sudan	4.6	6.5	Comoros	1.2	1.6
Somalia	1.6	0.3	Lesotho	0.5	50.3
Eswatini	6.0	3.3	Madagascar	1.8	2.8
Seychelles	22.0	0.4	Mozambique	19.4	13.8
Tunisia	9.1	4.5	Mauritius	3.6	16.9
Uganda	16.4	15.5	Malawi	11.3	9.6
Zambia	21.6	20.0	Namibia	64.3	55.6
Zimbabwe	5.4	1.5	Eswatini	25.0	56.0
ECCAS	**13.6**	**15.9**	Seychelles	39.1	7.3
Angola	4.5	43.0	Tanzania	5.6	5.0
Burundi	8.1	30.1	South Africa	20.5	26.2
Central African Rep.	3.8	0.7	Zambia	39.4	44.2
Cameroon	15.7	4.6	Zimbabwe	18.8	13.0
Dem. Rep. of Congo	7.3	13.4			
Rep. of Congo	86.9	12.0			
Gabon		37.7			
Equatorial Guinea	1.6	3.3			
Rwanda	6.0	27.6			
Sao Tome and Principe	2.4	2.7			
Chad	0.1	0.4			

Source: AATM database and authors' computations.
Note: AMU: Arab Maghreb Union; COMESA: Common Market for Eastern and Southern Africa; ECCAS: Economic Community of Central African States; ECOWAS: Economic Community of West African States; SADC: Southern African Development Community.

Table A3.8 Classification of nontariff measures by chapter

imports	Technical measures	A	Sanitary and phytosanitary measures
		B	Technical barriers to trade
		C	Pre-shipment inspection and other formalities
	Nontechnical measures	D	Contingent trade-protective measures
		E	Non-automatic import licensing, quotas, prohibitions, quantity-control measures and other restrictions not including sanitary and phytosanitary measures or measures relating to technical barriers to trade
		F	Price-control measures, including additional taxes and charges
		G	Finance measures
		H	Measures affecting competition
		I	Trade-related investment measures
	Exports	J	Distribution restrictions
		K	Restrictions on post-sales services
		L	Subsidies and other forms of support
		M	Government procurement restrictions
		N	Intellectual property
		O	Rules of origin
		P	Export-related measures

Source: UNCTAD (2019b).

Chapter A deals with sanitary and phytosanitary measures. The chapter outlines measures such as those restricting substances, ensuring food safety, and preventing the dissemination of diseases or pests. Chapter A also includes all conformity-assessment measures related to food safety, such as certification, testing and inspection, and quarantine.

Chapter B provides a collection of technical measures, also called technical barriers to trade. The chapter describes measures relating to product characteristics such as technical specifications and quality requirements; related processes and production methods; and measures such as labelling and packaging in relation to environmental protection, consumer safety, and national security. As in the case of sanitary and phytosanitary measures, chapter B includes all conformity-assessment measures related to technical requirements, such as certification, testing, and inspection.

Chapter C, the last chapter in the technical measures section, classifies the measures related to preshipment inspections and other customs formalities.

Chapter D groups contingent measures, that is, those measures implemented to counteract the adverse effects of imports in the market of the importing country, including measures aimed at tackling unfair foreign trade practices. These include anti-dumping, countervailing, and safeguard measures.

Chapters E and F feature the "hard" measures that are traditionally used in trade policy. Chapter E includes licensing, quotas, and other quantity-control measures, including tariff-rate quotas. Chapter F lists the price-control measures that are implemented to control or affect the prices of imported goods. Among the examples are those measures designed to support the domestic prices of certain products when the import prices of these goods are lower, to establish the domestic prices of certain products because of price fluctuation in domestic markets or price instability in a foreign market, and to increase or preserve tax revenue. This category also includes measures other than tariffs measures that increase the cost of imports in a similar manner (para-tariff measures).

Chapter G lists the finance measures. The chapter outlines measures restricting the payments for imports, for example when the access and cost of foreign exchange is regulated. It also includes measures imposing restrictions on terms of payment.

Chapter H includes those measures affecting competition — those that grant exclusive or special preferences or privileges to one or more limited group of economic operators. They are mainly monopolistic measures, such as state trading, sole importing agencies, or compulsory national insurance or transport.

Chapter I deals with trade-related investment measures and groups the measures that restrict investment by requiring local content or requesting that investment be related to export in order to balance imports.

Chapters J and K relate to the way products — or services connected to the products — are marketed after being imported. They are considered nontariff measures because they could affect the decision to import such products or services. Chapter J, on distribution restrictions, describes restrictive measures related to the internal distribution of imported products. Chapter K deals with restrictions on post-sales services, for example restrictions on the provision of accessory services.

Chapter L contains measures that relate to the subsidies that affect trade.

Chapter M, on government procurement restrictions, describes the restrictions bidders may find when trying to sell their products to a foreign government.

Chapter N contains restrictions related to intellectual property measures and rights.

Chapter O, on rules of origin, groups the measures that restrict the origin of products or their inputs.

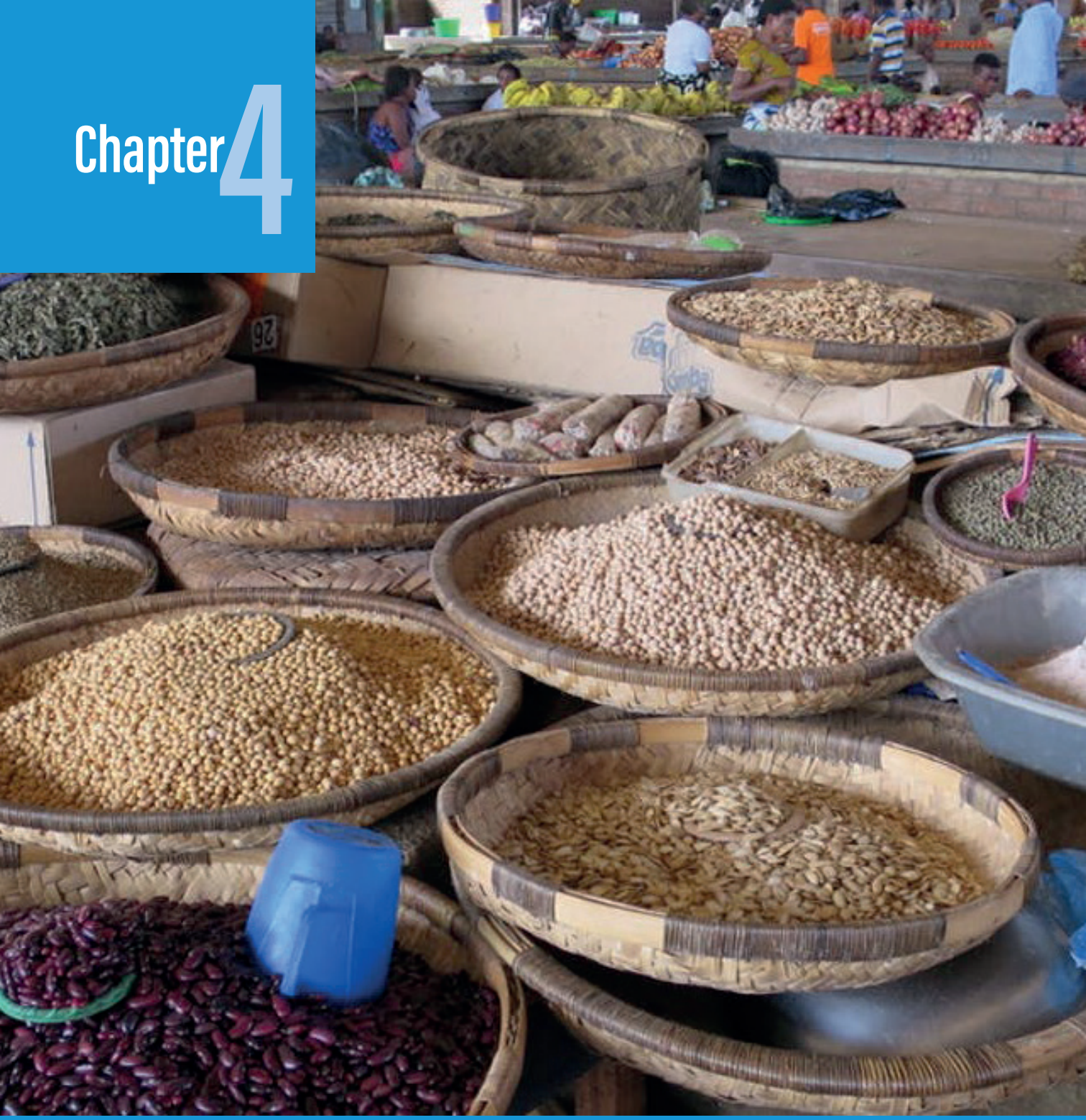
Chapter P, the last chapter, is on export measures. The chapter groups the measures applied by a country to its exports, inter alia, export taxes, export quotas, and export prohibitions.

Table A3.9 Incidence of nontariff measures imposed on import products, latest available year per county

	Food products			Vegetable			Animal		
	Cov (%)	Freq (%)	Num	Cov (%)	Freq (%)	Num	Cov (%)	Freq (%)	Num
Algeria	76.8	89.9	169	100.0	100.0	311	92.8	89.4	186
Benin	100.0	100.0	167	100.0	100.0	192	100.0	100.0	120
Burkina Faso	99.9	93.0	160	100.0	100.0	211	100.0	100.0	109
Cameroon	63.7	63.6	126	92.8	90.0	269	99.9	94.7	197
Côte d'Ivoire	57.8	80.5	144	99.5	86.0	228	99.2	88.1	156
Ethiopia	100.0	100.0	187	100.0	100.0	305	100.0	100.0	155
Gambia	97.5	83.9	120	83.1	81.9	149	99.7	90.6	87
Ghana	98.2	91.5	172	100.0	99.3	287	99.8	95.1	192
Liberia	99.7	93.3	167	100.0	91.9	237	97.8	96.2	152
Mauritania	91.9	93.6	175	100.0	93.9	232	100.0	100.0	131
Morocco	80.4	98.0	194	100.0	100.0	317	100.0	100.0	204
Niger	98.3	88.8	159	100.0	99.2	238	99.6	86.2	112
Nigeria	100.0	100.0	182	100.0	100.0	266	100.0	100.0	138
Senegal	23.5	36.7	66	99.9	97.0	257	100.0	100.0	134
Tunisia	79.7	94.4	168	100.0	98.1	263	100.0	100.0	179
Brazil	100.0	100.0	188	100.0	100.0	307	100.0	100.0	181
EU	99.8	99.5	210	99.9	98.9	348	99.9	99.7	321
India	99.8	99.5	184	99.9	96.9	247	86.0	87.2	95
Russia	100.0	100.0	204	100.0	100.0	337	100.0	99.7	296
USA	100.0	100.0	210	100.0	100.0	350	100.0	100.0	320

Source: World Integrated Trade Solution (WITS) database, accessed June 28, 2020.
Note: Latest available year varies from 2015 to 2019. Cov = NTM coverage ratio; Freq = NTM frequency index; Num = count of traded HS 6-digit products that are subject to one or more NTM measures.

Chapter 4



Competitiveness of African Countries in Agrifood Products

Antoine Bouët, Anatole Goundan, and Chahir Zaki

Introduction

In the 2019 AATM report (Chapter 4), we studied the competitiveness of several African export-oriented commodity value chains, focusing on export performance and offensive interests, and using a statistical approach based on trade flows. We included not only traditional cash crops like cashew nuts, cocoa, coffee, cotton, sugar, and tea, but also recently well-performing value chains like citrus, grapes, legumes and pulses, sesame seeds, and tomatoes. We found that Africa has a significant revealed comparative advantage in sesame seeds and in legumes and pulses, a steady comparative advantage for cashew nuts, cocoa, cotton, tea, and grapes, and a declining advantage for coffee. We also noticed regional differences, with the Common Market for Eastern and Southern Africa (COMESA) specialized in agriculture, unlike the Arab Maghreb Union (AMU) and Economic Community of Central African States (ECCAS). With a market share decomposition analysis, we also noticed the capacity of many African economies to change their product specialization and increase their export share in pro-growth products. The cases of Madagascar and Comoros with spices and vanilla, of Niger with sesame seeds, and of the Central African Republic with fresh fruits illustrate this flexibility well. Last, we emphasized an important feature of African agricultural exports: African exports to non-African markets are dominated (90 percent) by primary or semi-processed products, whereas those within the continent are balanced: half of Africa's intraregional trade is associated with processed products.

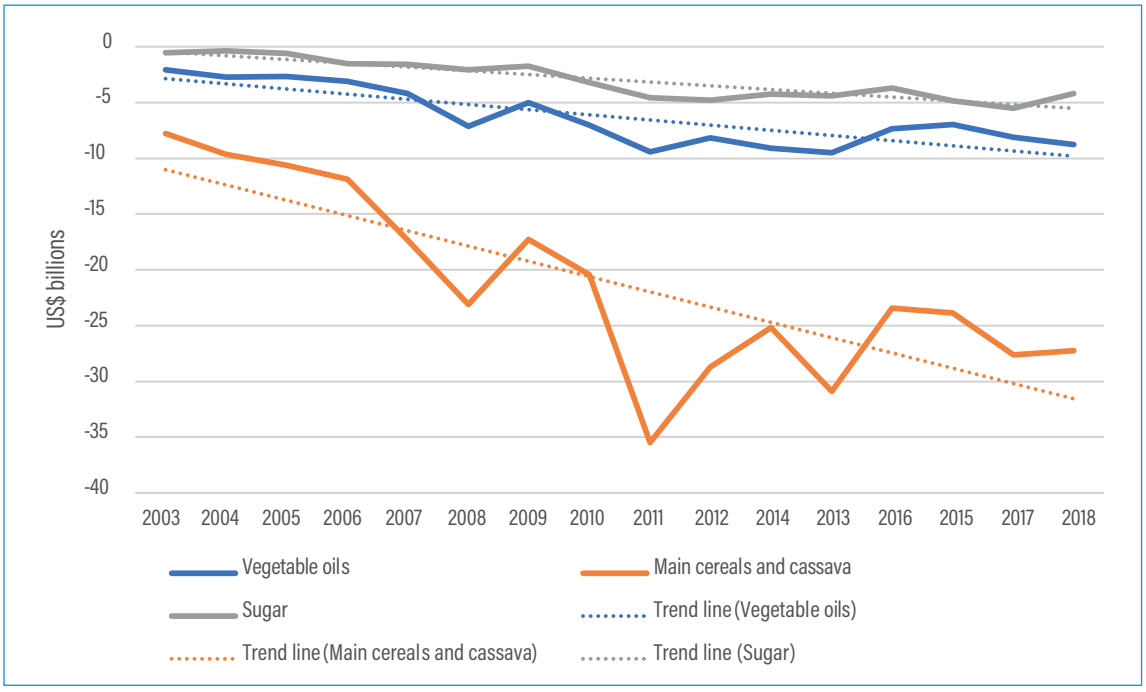
We now study the defensive trade interests of African economies regarding a few agricultural value chains. Let us take the example of the cereals sector, where Africa's trade deficit is large. Studying the lack of competitiveness of this value chain can be informative and support policy recommendations, and can be just as fruitful as analyzing a competitive sector. It is important to know, first, whether all African countries are characterized by this low competitiveness for cereals, or whether some countries on the continent reveal a comparative advantage; second, whether Africa is uncompetitive in all stages of this value chain, or whether, on the contrary, it has a comparative advantage at certain stages of production; and third, whether Africa's trade imbalance in this sector is as significant in its intraregional component as it is in its extraregional relations.

In 2018, Africa significantly imported (in net terms, i.e. accounting for exports) the three major cereals (wheat, maize, rice), amounting to almost US$25 billion per year, as well as US$4 billion of meat and edible offal and US$4.3 billion of dairy products and other animal products. Its annual net imports in the sugar sector are US$4.1 billion and in the vegetable oil sector US$8.8 billion.

We focus here on three value chains where African economies have a defensive interest: the value chain around the three major cereals (wheat, maize, rice) and cassava,[1] the sugar value chain, and the vegetable oils value chain. Two reasons explain this focus. First, the weight of these three value chains in the total African import bill is considerable. Figure 4.1 illustrates Africa's net exports — exports minus imports — in these three value chains over the 2003–2018 period.[2]

1 From an agronomic point of view, cassava is not a cereal; it is a root. However, cassava is used to produce close substitutes to cereals: starch, flour, animal feed, and human food preparations like bread, cakes, and cookies, and so we include it with these products.
2 As explained in Chapter 1 of this report, the lack of accuracy of African trade data is glaring (see for example Mitaritonna and Traoré 2017). This is why we have made a major effort in the statistical treatment of trade data from the United Nations COMTRADE database. This statistical treatment is explained in the annex to this report. In addition, the Chapter 5 discusses informal cross-border trade in Africa.

Figure 4.1 African net exports, value chains of main cereals and cassava, vegetable oils, and sugar, 2003–2018



Source: 2020 AATM database.
Note: Main cereals and cassava include the entire cassava/maize/rice/wheat commodities; Vegetable oils include groundnuts/palm/rapeseeds/soy oils; in each of the three value chains, we include unprocessed, semi-processed, and processed commodities. For each series, the linear trend line has been added.

Second, these three value chains are major foods in terms of kCal/person/day: in four populous African countries (Egypt, Ethiopia, Nigeria, and South Africa), they represent between 38.4 percent and 71.8 percent of the total food supply in kCal/person/day (see Table 4.1).[3]

Table 4.1 Food supply by value chain, in primary crop equivalent (kCal/person/day)

	Egypt	Ethiopia	Nigeria	South Africa
Cereals and cassava	2,188	704	987	1,519
Vegetable oils	74	56	177	137
Sugar	268	59	99	319
Total	2,530	819	1,263	1,975
Daily per capita caloric supply	3,522	2,131	2,700	3,022
Share of the 3 value chains	71.8%	38.4%	46.8%	65.4%

Source: FAOSTAT and Our World in Data (https://ourworldindata.org/food-supply), accessed May 27, 2020.

From 2003 to 2018, the African continent has been continuously in deficit in these three value chains, reaching US$40 billion in 2018, up from US$10 billion in 2003. This represents a huge bill to pay in macroeconomic terms, and this deficit has quadrupled in 15 years. However, it is worth noting that first, net exports are here expressed in current US dollars, so the total reflects variation

3 The remaining value chains with African defensive interests will be studied next year: meat and edible offal, with poultry and beef, dairy products, and other animal products.

in world prices and in exchange rates. World prices have been increasing over the period. For example, the FAO cereals price index, based on world prices of wheat, maize, and rice was 65 percent higher at the end of 2019 than in 2002–2004.[4] The global price of sugar, calculated monthly by the Federal Reserve Bank of Saint Louis, is 69 percent higher at the end of 2019 than in early 2003.[5] These rising world prices explain a significant part of the increasing deficit in nominal terms. In effective and nominal terms, the US dollar exchange rate is approximatively at the same level as early 2003.[6]

Second, over the 2003–2018 period, economic growth and population growth have been stronger in Africa than in the rest of the world.[7] This implies a stronger demand for food staples imports in Africa. Third, part of this imports bill is paid with African exports of traditional cash crops and new comparative advantages as mentioned earlier.

These increasing sectoral trade deficits are a source of concern for African governments. Of course, Africa's growing external deficit in agriculture and food is a sign of rapid domestic demand growth resulting from higher economic growth, demographic pressure, and increased urbanization. But the growth of this deficit is a missed opportunity for Africa: not only is African agriculture missing out on growing markets, but also the high level of imports is exposing the continent to additional risks, as agricultural markets usually experience relatively high volatility (Conway et al. 2019).

In this chapter, we will provide more detailed statistics concerning the (un)competitiveness of African economies in these three value chains. We first study African trade patterns (trade flows and prices) in the cereals, sugar, and vegetable oils value chains using statistics for both the continent and by country, by stage of processing, and by the destination of exports and source of imports. Then we present agricultural and trade policies adopted by rich, emerging, and African countries in these three value chains. We do not make any study here of causality between these policies and the trade performance of African agriculture. We just provide facts as they are revealed by data on trade flows and policies in order to analyze to the competitiveness of these value chains.

(Un)Competitiveness of three African agricultural value chains

Competitiveness is a concept that is difficult to define but commonly used in the public debate. In its narrow way, competitiveness can be understood by comparing prices of the same commodity produced in two different places, or in a broad way, at the national level by taking into account not only trade costs but also exchange rates, institutions, and other factors. It is important to keep in mind that producers can compete on price, quality, and degree of product differentiation.

Before studying each value chain (cereals, sugar, vegetable oils) in three subsections, we provide two indicators of competitiveness — revealed comparative advantage (RCA) and the ratio of unit values — for the entire value chains at the continental level over the 2003–2018 period. This provides a global perspective before studying each value chain specifically and allows us to introduce the main indicators that will be used to gauge competitiveness.

4 See the Agricultural Market Information System website, http://www.amis-outlook.org/ (accessed April 6, 2020).
5 See https://fred.stlouisfed.org/series/PSUGAISAUSDM, accessed April 6, 2020.
6 Federal Reserve of Saint Louis, https://fred.stlouisfed.org/series/NBUSBIS (accessed April 4, 2020). It shows a depreciation of the US dollar in effective terms over 2003–2008 by more than 20%, then an appreciation since 2011.
7 From the World Development Indicators, the average rate of real GDP growth of sub-Saharan Africa is 4.4% over the 2003–2018 period. For the world, it is 2.9%. All countries of sub-Saharan Africa have recorded growth rates over 3.3%, except Libya for which the GDP was stable over the period. Concerning populations, see UN DESA (2019).

We start with RCAs. Comparative advantage is a theoretical concept regarding what an economy is best at producing, relative to other things it could produce and to other economies. RCA is a bi-ratio (or a ratio of two ratios) and compares the share of one product in a country's total exports to the share of the same product in world exports. We use the RCA index defined by Balassa (1965), in which the RCA of country i for product j is measured by the product's share in the country's exports in relation to its share in world trade (Equation 4.1):

$$RCA_{ij} = \frac{X_{ij}/X_{it}}{X_{wj}/X_{wt}} \qquad (4.1)$$

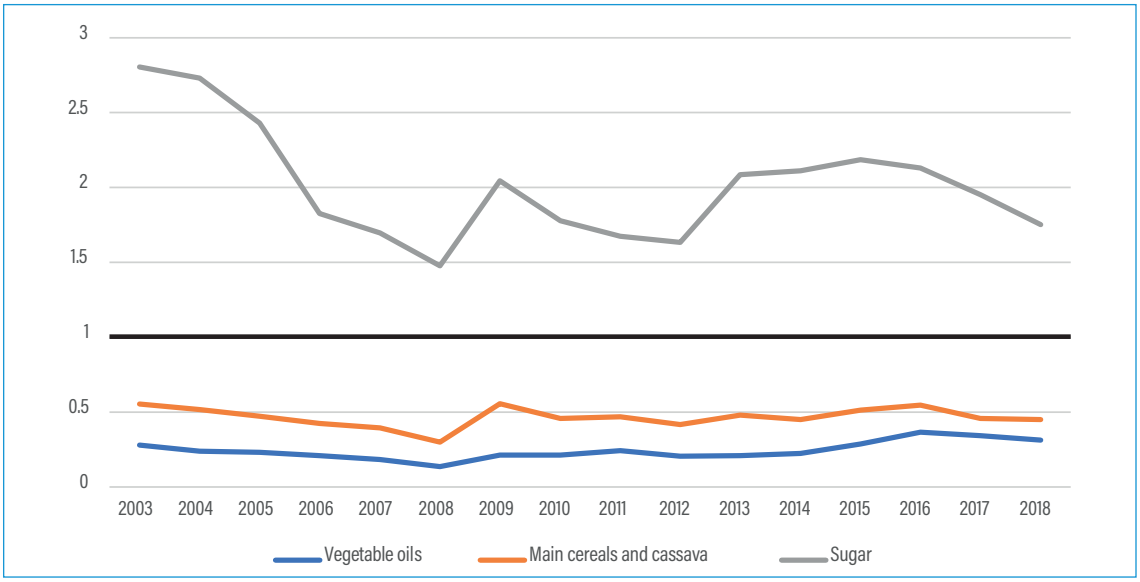
where X_{ij} and X_{wj} are the values of country i's exports of product j and world exports of product j, and where X_{it} and X_{wt} refer to the country's total exports and world total exports. A value of less than unity implies that the country has a revealed comparative *disadvantage* in the product. Similarly, if the index exceeds unity, the country is said to have a revealed comparative *advantage* in the product.

We note that the RCA reflects the comparative advantage of a country in the current policy environment. It may be the case that a country has a strong comparative advantage in, for example, maize production, but if export bans prevent maize from being exported, the comparative advantage in maize will not be revealed. Put differently, this indicator reveals a comparative advantage from observed trade flows, without explanation: competitiveness due to access to either technology or specific endowments, or domestic policy that gives an advantage to local producers, and so on.

RCA can be calculated at different levels of aggregation: for a specific product, for a specific processing stage of a value chain, for an entire value chain, or even for a sector of an economy. It can be assessed for a country, or for a group of countries such as a regional economic community (REC), or for an entire continent.

Figure 4.2 illustrates the evolution of the RCA for the African continent in the three value chains over the 2003–2018 period. Throughout this period, the cereals and vegetable oils value chains show a comparative disadvantage, especially substantial in the case of vegetable oils, but the sugar value chain exhibits a comparative advantage continuously from 2003 to 2018. However, this African comparative advantage in sugar is declining.

Figure 4.2 Revealed comparative advantage of Africa, value chains of cereals, vegetable oils, and sugar, 2003–2018



Source: 2020 AATM database.
Note: Main Cereals and Cassava include the entire cassava/maize/rice/wheat commodities; Vegetable Oils include groundnuts/palm/rapeseeds/soy oils; in each of the three value chains, we include unprocessed, semi-processed, and processed commodities. The horizontal line corresponds to an RCA of 1. An RCA greater than 1 indicates a comparative advantage; an RCA below 1 indicates no comparative advantage.

Is this figure in contradiction with Figure 4.1 and the levels of African net exports in this value chain? No. Indeed RCA (which considers only exports) and net exports (exports minus imports) measure two different economic phenomena. As we will see, concerning the sugar value chain, aside from a continental RCA which is greater than 1, national RCAs exhibit a strong dispersion and many African countries have a comparative disadvantage in this value chain. Obviously, this finding is important from the perspective of intra-African trade and has significant policy implications, in particular with respect to regional integration projects.

We confirm this perspective with an indicator of competitiveness based on price comparison. It gives, for each value chain, the ratio of unit values of exports in Africa over those in the rest of the world.

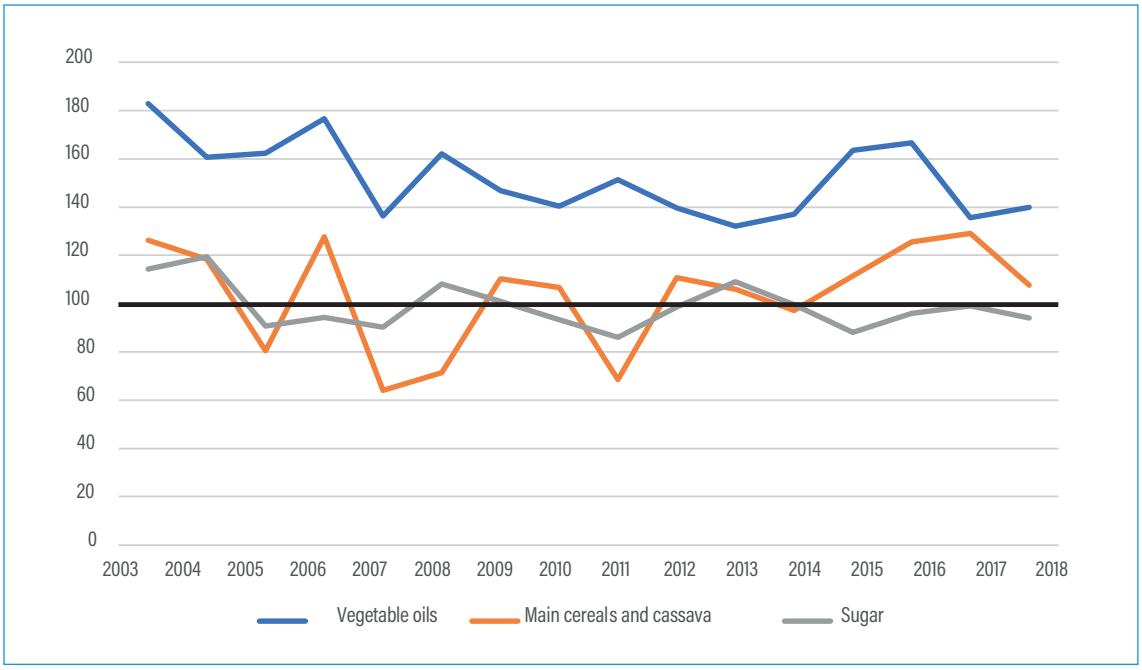
To measure competitiveness, the right method is to compare the prices of agricultural goods produced by African economies with the prices of the same goods produced by non-African economies. Unfortunately, price series for all traded goods for all world economies are not available. We also need to capture the value of traded items into a harmonized nomenclature. For this reason, we rely on the unit value of exports, which is the ratio between the value of export flows divided by the recorded quantities. These unit values are expressed in monetary units per physical units (for example, tons) when the goods from various countries are reasonably similar (for example, maize) or as an index when goods are heterogeneous.

A price difference for the same good between two countries may reflect either price competitiveness or differences in quality. We are studying agricultural goods, so the issue of quality differentiation is generally not very influential. This is especially true when we compare average unit values for homogenous products such as wheat, rice, maize, cassava, and sugarcane. However, beyond quality differentiation, higher unit values may also be associated with actual capture of preferential rents by exporters, for goods sold on the market with high tariffs, and preferences given to African countries.

We built a trade database where trade flows have been harmonized. All flow values include the cost of insurance and freight (CIF). When bundles are composed for a continent or for a country and compared to the rest of the world, they are harmonized in such a way that differences between unit value averages cannot result from composition effects (that is, in differences in the weights used for aggregation) but only from differences in prices.

Figure 4.3 describes the evolution, from 2003 to 2018, of the ratios of unit values of African exports over unit values for the rest of the world in the three value chains. This ratio is multiplied by 100. So, if this ratio is equal to 100, the price of a bundle of African commodities in a value chain is equal to the price of the same bundle in the rest of the world. If it is greater than 100, the bundle of African commodities is less competitive; if it is less than 100, the bundle of African commodities is more competitive.

Figure 4.3 Ratio of exports unit values, Africa over Rest of the World, value chains of cereals, sugar, and vegetable oils, 2003–2018



Source: 2020 AATM database.
Note: The horizontal line corresponds to an indicator of 100 and delimits the split between years when Africa's products are price-competitive (less than 100) from years when they are not (greater than 100).

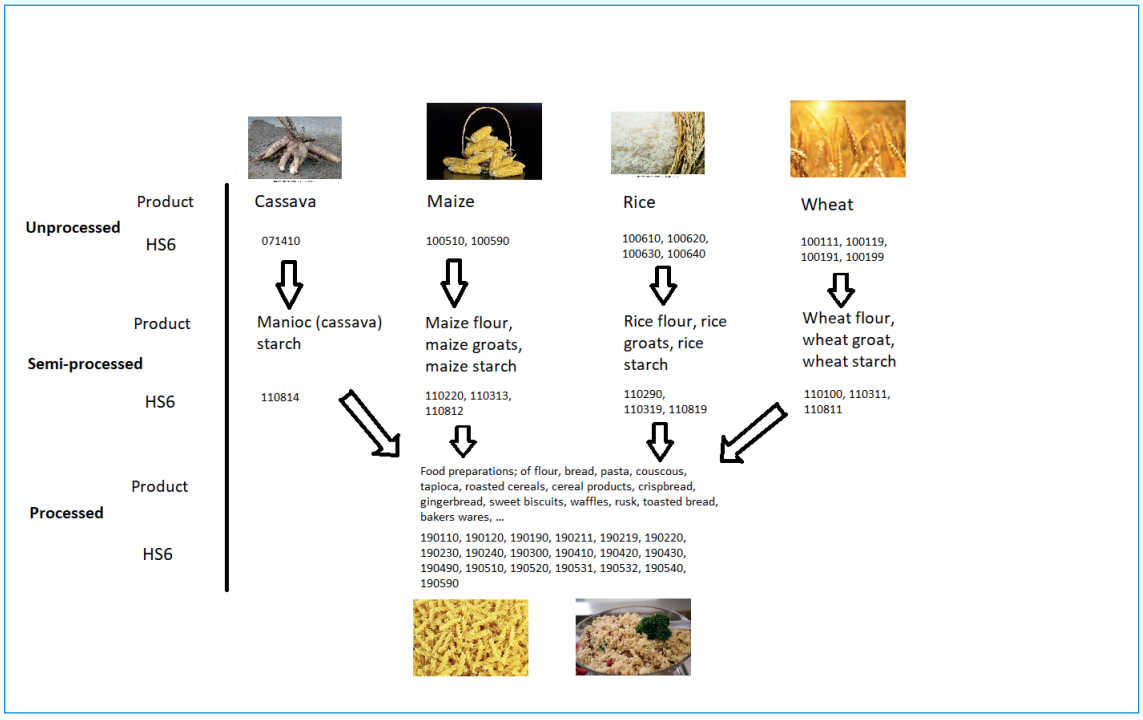
From Figure 4.3, we see that globally the African vegetable oils value chain has never been competitive over the 2003–2018 period, whereas the sugar value chain has been competitive in most years since 2005 (excepting 2008, 2009, and 2013). In 2009, the average unit value of African exports in the sugar value chain was very close to that of the rest of the world's exports. Concerning the cereals value chain, export prices in Africa are more often higher than export prices in the rest of the world (over 16 years, it happens 11 times): this suggests a lack of price-competitiveness of African producers.

We now describe each value chain.

Main cereals and cassava

The cereals value chain is represented in Figure 4.4. We identified three stages of processing in the cereals value chains (unprocessed; semi-processed; processed) and four sub-chains: maize, rice, wheat, and cassava.

Figure 4.4 Cereals value chain



Source: Authors' own elaboration.
Note: Photos from Pixabay; numbers refer to Harmonized System 6 (HS6) codes.

Figure 4.4 includes the HS6 codes that are included at each processing stage and for each cereal. The unprocessed stage is the crops. The semi-processed stage consists of flour, groats, and starch. The processed stage includes food preparations using these cereals: bread, pasta, couscous, tapioca, cereal products, biscuits, waffles, and so on. As it is not possible to distinguish among food preparations based on cassava, maize, rice, and wheat, the processed stage is the same for each cereal.

Who are the big players in this value chain? Table 4.2 points out the 10 largest producers of cassava, maize, rice, and wheat in 2018. While a few African countries are among the largest producers of cassava, especially Nigeria, Democratic Republic of the Congo, and Ghana, the world market of this crop is significantly smaller than those of maize, rice, and wheat. For those three cereals, there is no African country among the 10 largest producers. China, India, Ukraine, and the United States are often among the largest producers.

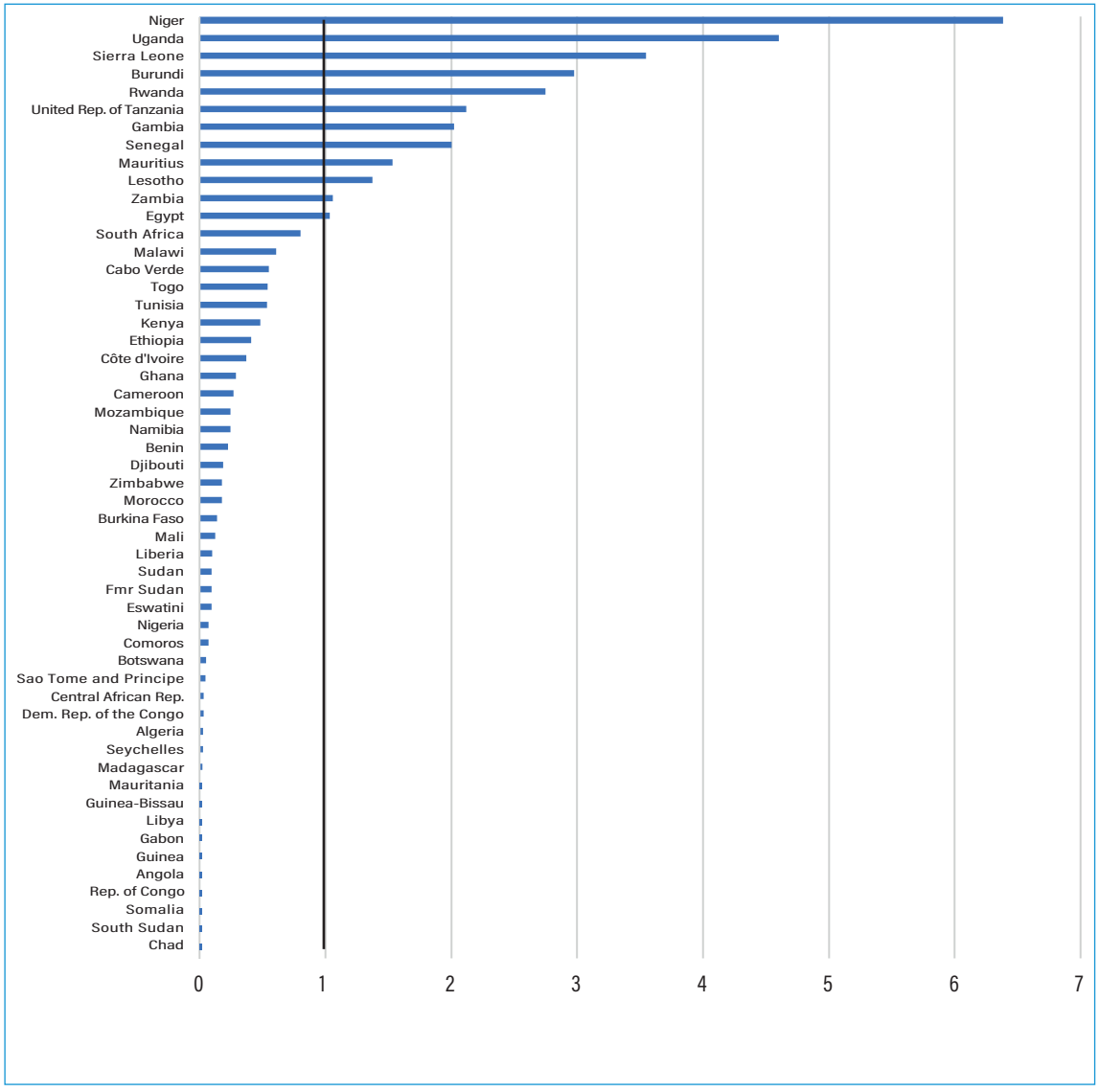
Table 4.2 Production in volume of cassava, maize, rice, and wheat, 10 largest producers, 2018

Cassava		Maize		Rice		Wheat	
Country	Production (MT)	Country	Production (MT)	Country	Production (MT)	Country	Production (MT)
1. Nigeria	59,475,202	*1. USA*	392,450,840	*1. China*	214,078,796	*1. China*	131,447,224
2. Thailand	31,678,017	*2. China*	257,173,900	*2. India*	172,580,000	*2. India*	99,700,000
3. DR Congo	29,952,479	*3. Brazil*	82,288,298	*3. Indonesia*	83,037,000	*3. Russia*	72,136,149
4. Ghana	20,845,960	*4. Argentina*	43,462,323	*4.Bangladesh*	56,417,319	*4. USA*	51,286,540
5. Brazil	17,644,733	*5. Ukraine*	35,801,050	*5. Viet Nam*	44,046,250	*5. France*	35,798,234
6. Indonesia	16,119,020	*6. Indonesia*	30,253,938	*6. Thailand*	32,192,087	*6. Canada*	31,769,200
7. Viet Nam	9,847,074	*7. India*	27,820,000	*7. Myanmar*	25,418,142	*7. Pakistan*	25,076,149
8. Angola	8,659,552	*8. Mexico*	27,169,977	*8. Philippines*	19,066,094	*8. Ukraine*	24,652,840
9. Mozambique	8,525,451	*9. Romania*	18,663,939	*9. Brazil*	11,749,192	*9. Australia*	20,941,134
10. Cambodia	7,646,022	*10. Canada*	13,884,800	*10. Pakistan*	10,802,949	*10. Germany*	20,263,500

Source: FAOSTAT.
Note: MT = metric tons; DR Congo = Democratic Republic of the Congo

Figure 4.5 illustrates the RCAs of African countries in the cereals value chain based on the 2016–2017–2018 average trade flows. Of the 52 African countries for which we have trade statistics, only 12 have a revealed comparative advantage in the cereals value chain. This revealed advantage is strongest for Niger, Uganda, Sierra Leone, Burundi, Rwanda, Tanzania, Gambia, and Senegal (RCA greater than 2).

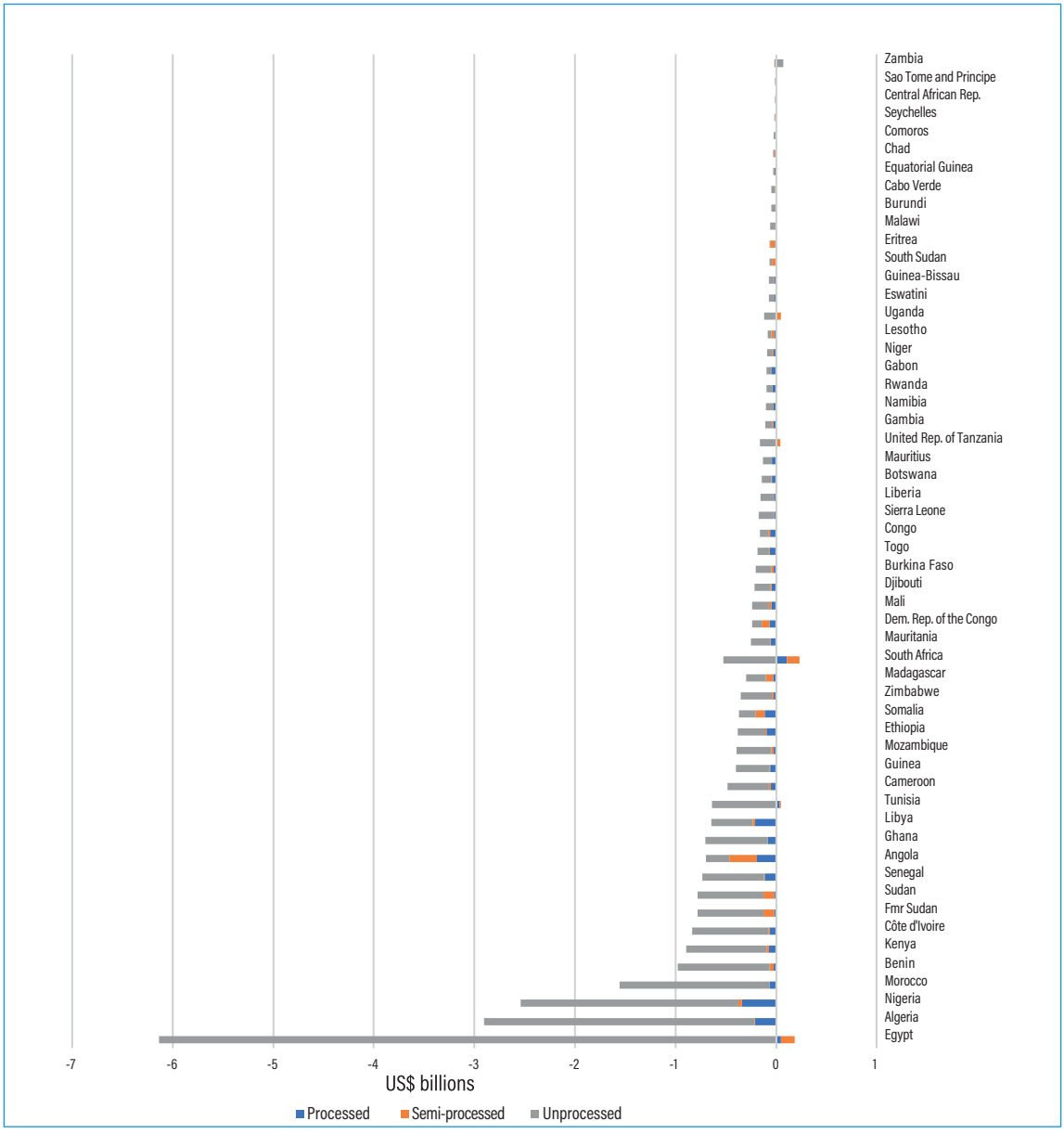
Figure 4.5 Revealed comparative advantage by African country, main cereals and cassava value chain, average 2016-2017-2018



Source: 2020 AATM database.
Note: Main Cereals include the entire cassava/maize/rice/wheat commodities; we include unprocessed, semi-processed, and processed commodities. The vertical line corresponds to an RCA of 1 and delimits the split between countries with a comparative advantage (RCA greater than 1) and countries without a comparative advantage (RCA less than 1) in the sugar value chain.

Even if a significant share of total exports of a country is from the cereals value chain, the country may also import large quantities of commodities within the same value chain. This trade pattern may reflect exports and imports in different processing stages, trade in differentiated products, and/or trade flows initiated in different regions of the country. We complement country-level RCAs in the cereals value chain with country-level net exports (Figure 4.6). The three largest net importing countries are Egypt, Algeria, and Nigeria.

Figure 4.6 Net exports by African country and by stage of processing, main cereals and cassava value chains, average 2016–2018



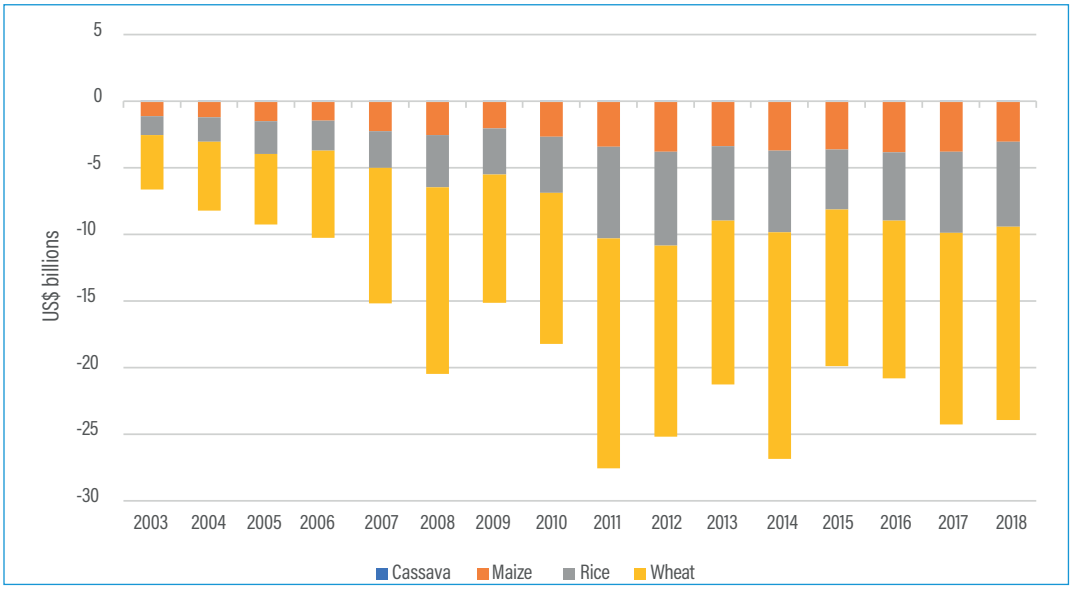
Source: 2020 AATM database.
Note: Main Cereals and Cassava include the entire cassava/maize/rice/wheat commodities.

Figure 4.6 also shows the decomposition by processing stages. A major share of trade in this value chain consists of unprocessed commodities (crops). On average from 2016 to 2018, Egypt and South Africa imported US$6.1 billion and US$524 million, respectively, of unprocessed crops in the value chain while exporting US$184 million and US$229 million, respectively, of semi-processed and processed products in the same value chain. Indeed, the large African deficit in this value chain mostly consists of a deficit in unprocessed commodities.[8]

8 On average over the 2003–2018 period, the African deficit in unprocessed cereals and cassava is equal to 87.4 percent of total deficit in this value chain.

Most of the deficit of African countries in unprocessed cereals occurs in wheat, which accounts for more than 60 percent of the continental trade deficit in this value chain (Figure 4.7) over the period, while the trade deficit in rice accounts for 24 percent.[9] The surplus in cassava is tiny. A few African countries are net exporters of (unprocessed) wheat, in significant quantities for South Africa (average surplus of US$176 million over 2016–2018), Zambia (US$90 million), and Uganda (US$75 million), more moderately for Burkina Faso (US$4 million) and Sudan (US$1 million). Tanzania has a small surplus in (unprocessed) cassava over the same period (US$5 million).

Figure 4.7 Net exports of Africa by type of crops, main cereals and cassava value chain, unprocessed stage, 2003–2018

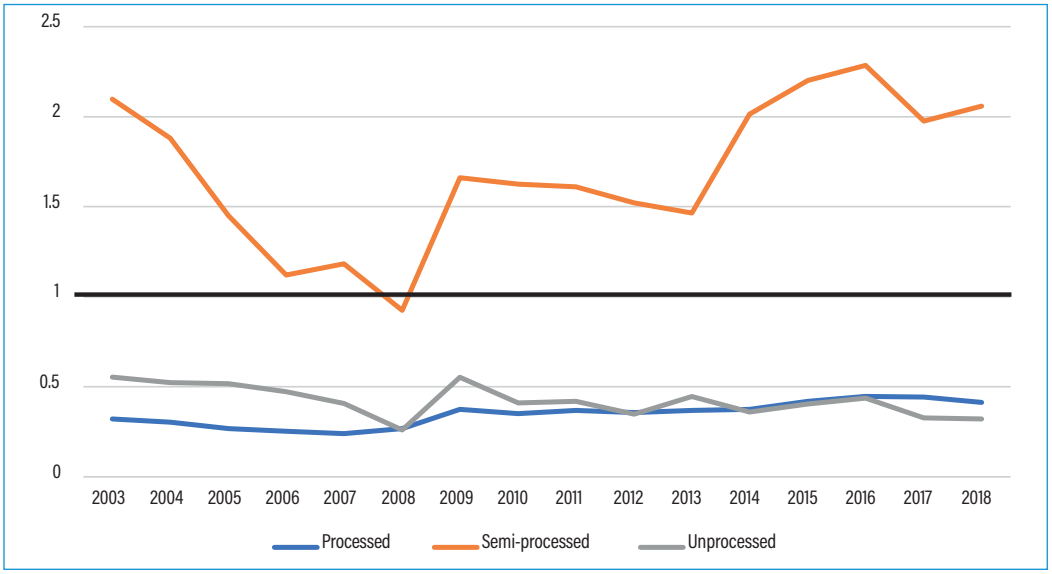


Source: 2020 AATM database.
Note: Net exports of cassava are not visible as they are tiny; they are positive for a total of US$3 million in 2018, around –0.1 percent of total sold.

Figure 4.8 provides the RCAs for Africa by processing stage over the 2003–2018 period. It shows that although Africa has a comparative disadvantage in the unprocessed and processed stages, it has a comparative advantage in the semi-processed stage of the cereals value chain (flour, groats, starch) and this advantage has been increasing since 2008. As will be shown later, this is largely because, most of the semi-processed cereals are chiefly exported to other African countries where tariff escalation is less pronounced than in OECD countries. RCA by country at the semi-processed stage is especially large in Sierra Leone, Burundi, Uganda, Lesotho, Rwanda, Tanzania, and Egypt (decreasing order).

9 In 2018, the African deficit in wheat was US$14.5 billion and US$6.4 billion in rice while the total deficit was US$23.9 billion.

Figure 4.8 Revealed comparative advantage of Africa by processing stage, main cereals and cassava value chain, 2003–2018

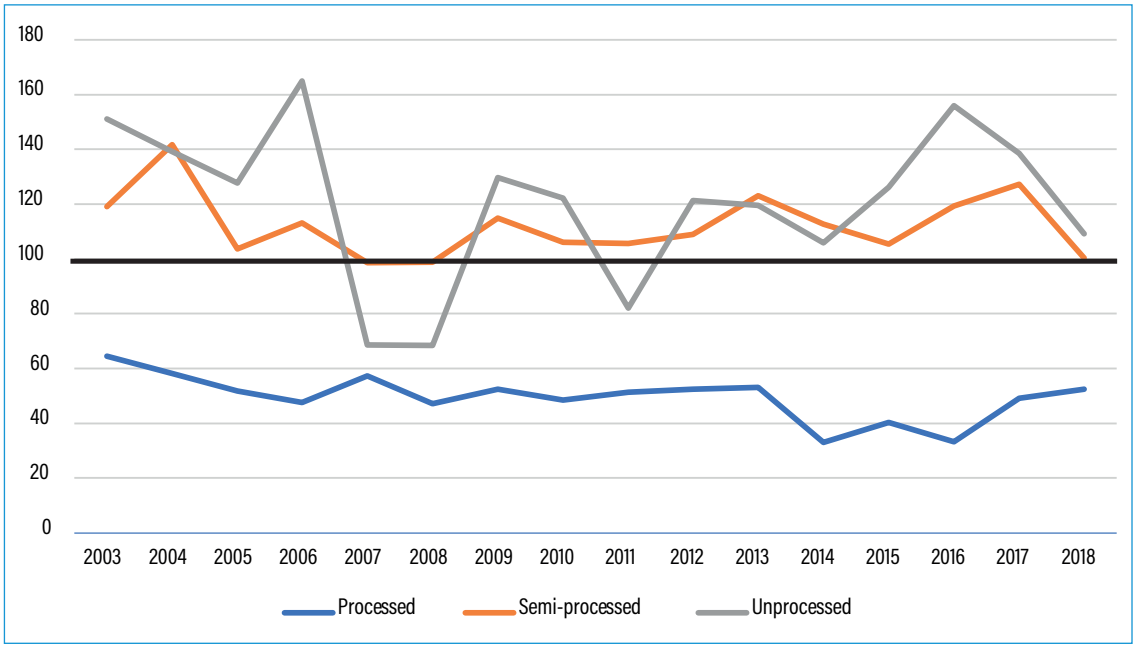


Source: 2020 AATM database.
Note: Main Cereals and Cassava include the entire cassava/maize/rice/wheat commodities. The horizontal line corresponds to an RCA of 1. An RCA greater than 1 indicates a comparative advantage; an RCA below 1 indicates no comparative advantage.

As mentioned earlier, in the cereals value chain, a comparison of average unit values of exports in Africa with this statistic for the rest of the world reveals that prices are higher in Africa, which means a lack of price-competitiveness. If we look at the ratio of unit values of exports in the main cereals and cassava value chain in each African country over unit values of the same bundle in the rest of the world, we see that only a few African countries are price-competitive: Benin, Burkina Faso, Republic of Congo, Côte d'Ivoire, Libya, Madagascar, Mozambique, Seychelles, Sudan, Togo, and Uganda.

Looking at these ratios by processing stage, Figure 4.9 shows that the export prices of unprocessed cereals are higher in Africa than in the rest of the world, except for specific years, notably 2007, 2008, and 2011, when world markets were volatile. Differences in prices can be large, reaching 54 percent in 2016. Prices of African exports of semi-processed cereal products are closer to world prices. For African processed cereal products, their relatively low unit values may reflect differences in quality (vertical product differentiation).

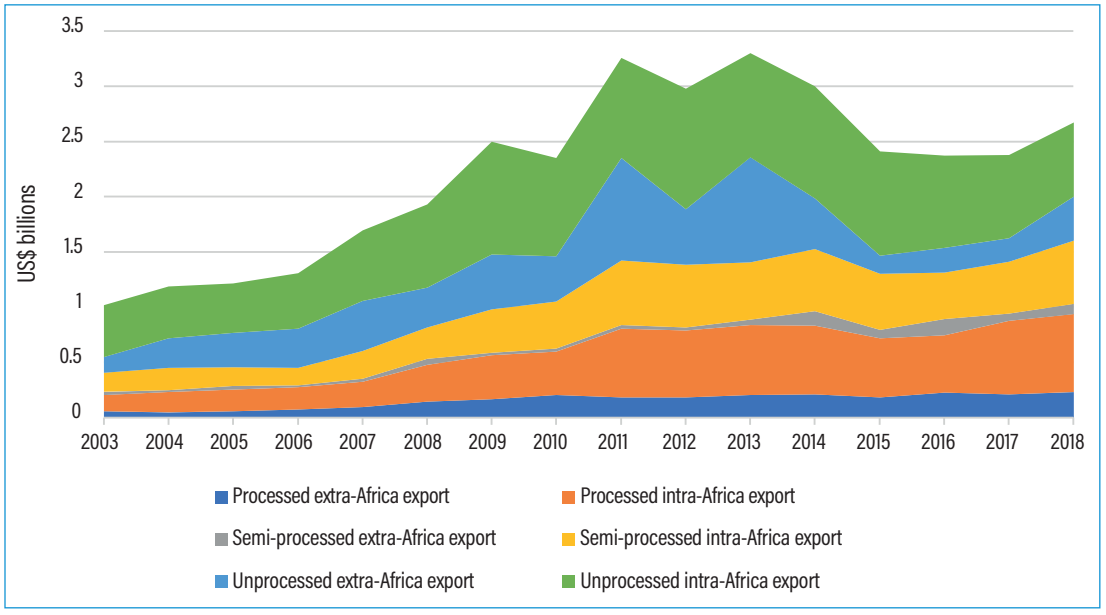
Figure 4.9 Ratio of unit values of exports, Africa over Rest of the World by processing stage, main cereals and cassava value chain, 2003–2018



Source: 2020 AATM database.
Note: Main Cereals and Cassava include the entire cassava/maize/rice/wheat commodities. The horizontal line corresponds to an indicator of 100 and delimits the split between years when Africa's products are price-competitive (less than 100) and years when they are not (greater than 100).

Figure 4.10 illustrates the evolution of African exports in the main cereals and cassava value chain by processing stage and by destination (either intra- or extra-African exports) over the 2003–2018 period.

Figure 4.10 African exports by destination and by processing stage, main cereals and cassava value chain, 2003–2018

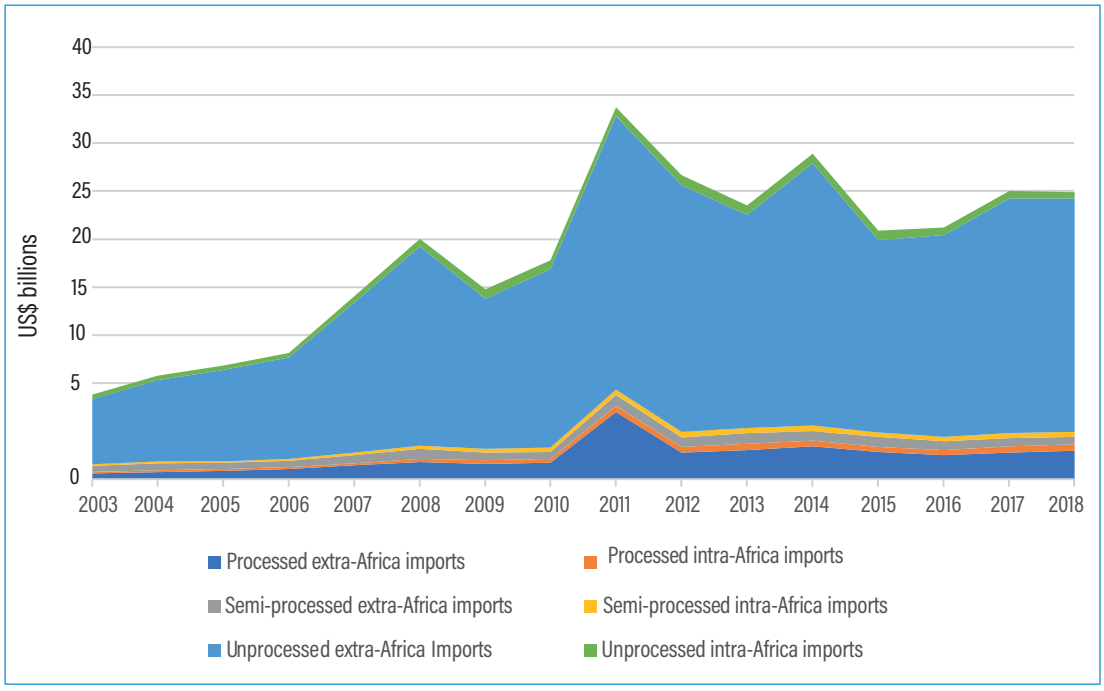


Source: 2020 AATM database.
Note: Main Cereals include the entire cassava/maize/rice/ wheat commodities.

Exports of processed and semi-processed products are mainly intra-African exports. While the bulk of unprocessed exports are also intra-African, unprocessed extra-African are sometimes significant: in 2011 and 2013, extra-African exports of unprocessed cereals were slightly larger than intra-African exports. Extreme climatic events occurred between 2011 and 2013, including severe droughts in Argentina, Russia, and the United States, intense rain damage in Australia, and even a freeze in Mexico that hurt part of the local standing corn crop. This led to extremely volatile world prices for cereals and an upheaval in the geographical pattern of world trade in cereals.

Figure 4.11 shows African imports (in current US dollars) in the main cereals and cassava value chain. The striking feature of the structure of African imports in this value chain is the overwhelming weight of unprocessed products from the rest of the world: more than 80 percent of the total in 2016, 2017, and 2018. Also noteworthy is the relative importance of imports, again from the rest of the world, of processed products.

Figure 4.11 African imports by origin and by processing stage, main cereals and cassava value chain, 2003–2018

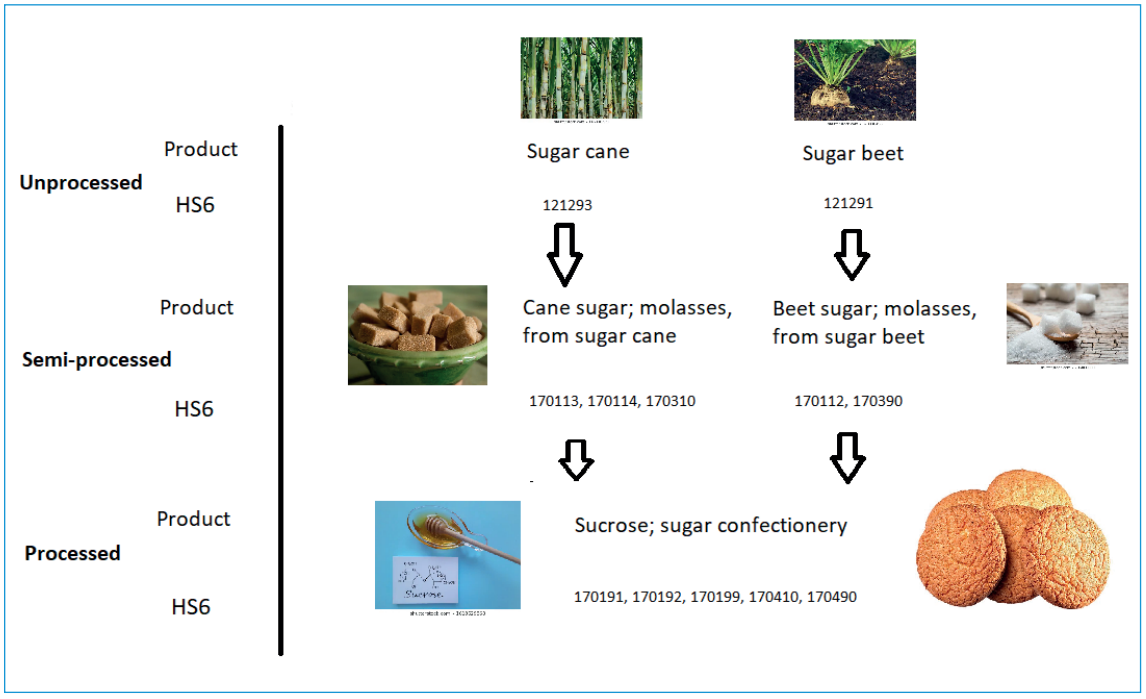


Source: 2020 AATM database.
Note: Cereals include the entire cassava/maize/rice and wheat commodities.

Sugar

Figure 4.12 depicts the sugar value chain. Both sugar beet and sugarcane are produced in Africa. These two crops are used in the semi-processed stage to produce sugar and molasses. In the same way as the cereal value chain, there is a single stage of processed products for these crops: sucrose and sugar confectionery.

Figure 4.12 Sugar value chain



Source: Authors' elaboration.
Note: Photos from Pixabay; numbers refer to Harmonized System 6 (HS6) codes.

Table 4.3 lists the 10 largest producers of sugar beet and sugarcane in 2018. The world market for sugarcane is significantly larger than that for sugar beet. There is no African country in this list, except Egypt for sugar beet (9th); for sugarcane South Africa is 14th.

Table 4.3 Production of sugarcane and sugar beet in volume, 10 largest producers, 2018

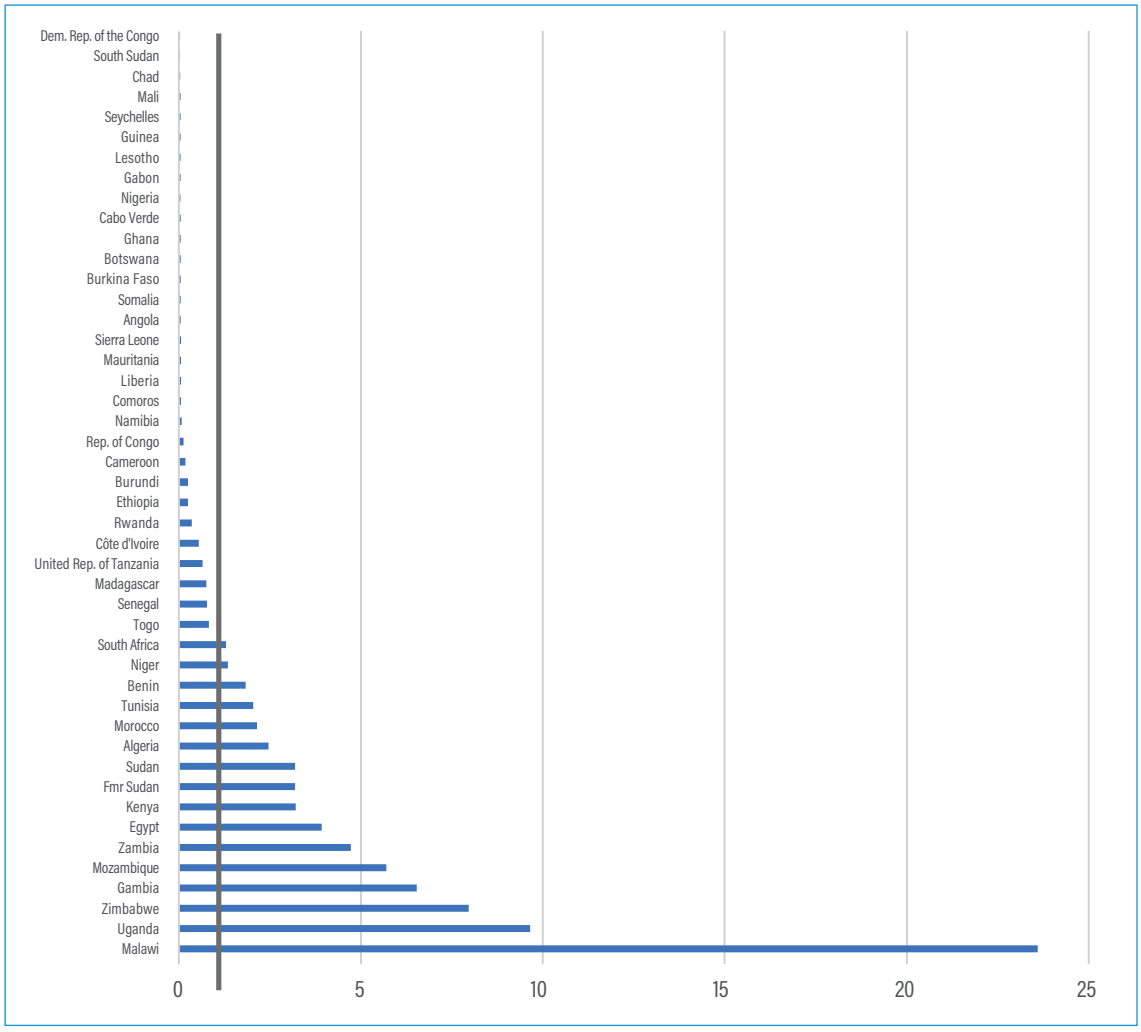
Sugar beet		Sugarcane	
Country	**Production (MT)**	**Country**	**Production (MT)**
1. Russia	42,065,957	*1. Brazil*	746,828,157
2. France	39,579,925	*2. India*	376,900,000
3. USA	30,068,647	*3. China*	108,718,971
4. Germany	26,191,400	*4. Thailand*	104,360,867
5. Turkey	18,900,000	*5. Pakistan*	67,173,975
6. Poland	14,302,911	*6. Mexico*	56,841,523
7. Ukraine	13,967,700	*7. Colombia*	36,276,860
8. China	12,077,618	*8. Guatemala*	35,568,207
9. Egypt	11,222,720	*9. Australia*	33,506,830
10. UK	7,620,000	*10. USA*	31,335,984

Source: FAOSTAT.
Note: MT = Metric tons

In the introduction of this section, Figure 4.2 showed a comparative advantage of the African continent in the entire value chain. The calculation of RCAs at the country level (Figure 4.13), on average over 2016–2018 for the entire value chain, shows that this comparative advantage is large

in six countries. Eswatini and Mauritius have the largest RCAs with 80.9 and 42.8, respectively. They have been dropped out of Figure 4.13 as their inclusion makes the graph less readable. RCAs of Malawi, Uganda, Zimbabwe, Gambia, and Mozambique (decreasing order), are greater than 5: this is still a strong comparative advantage. However, according to this indicator, 30 African countries had a comparative disadvantage in this value chain in 2016–2018.

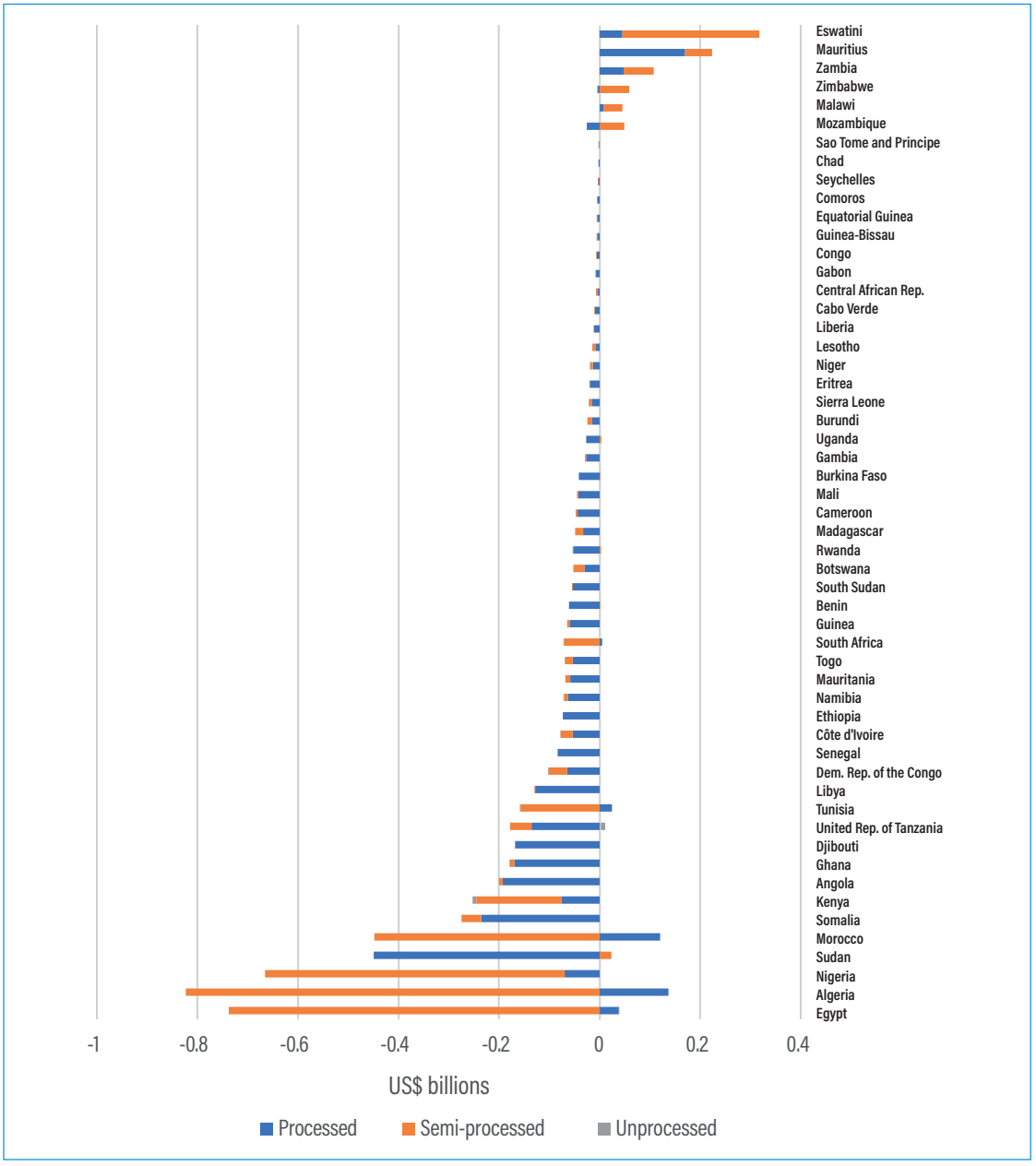
Figure 4.13 Revealed comparative advantage by African country, sugar value chain, average 2016–2018



Source: 2020 AATM database.
Note: We include unprocessed, semi-processed, and processed commodities. Eswatini and Mauritius have been dropped out of the graph as their RCAs are respectively 80.9 and 42.8: their inclusion makes the graph much less readable. The vertical line corresponds to an RCA of 1 and delimits the split between countries with a comparative advantage (RCA greater than 1) and countries without a comparative advantage (RCA less than 1) in the sugar value chain.

Figure 4.14 indicates the net exports of each African country on average in 2016–2018 by processing stage.

Figure 4.14 Net exports by African country and by processing stage, sugar value chain, average 2016–2018



Source: 2020 AATM database.

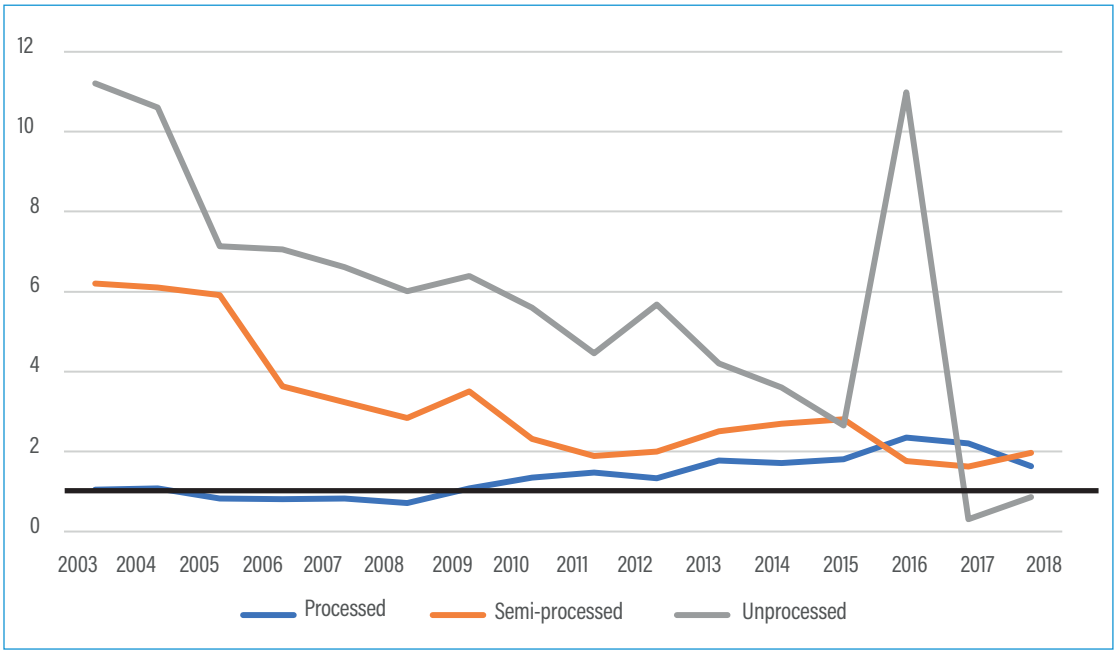
Trade in unprocessed commodities (sugarcane and sugar beet) is tiny. Africa is a net exporter of unprocessed products in this value chain (sugarcane), but these net exports represented less than 0.1 percent of total African trade in this value chain over 2016–2018.

The largest African importers in this value chain are Algeria, Egypt, Nigeria, Morocco, and Sudan. Patterns differ among these importing countries: Algeria, Egypt, and Morocco are net importers of semi-processed products but are net exporters of processed products (sugar confectionery). Nigeria is a net importer of both semi-processed and processed products. Sudan is a net importer of processed products, but a net exporter of semi-processed products.

Six African countries were globally net exporters in the sugar value chain for 2016–2018: Eswatini, Mauritius, Zambia, Zimbabwe, Malawi, and Mozambique. Here again, patterns differ. Eswatini, Malawi, and Zambia are net exporters of both semi-processed and processed products, with most of these net exports in the former category. Mauritius also is a net exporter at both processing stages, but the bulk of these net exports is in the processed stage. Mozambique and Zimbabwe are net exporters of semi-processed products but net importers of processed products.

Figure 4.15 brings a positive note. It shows RCAs at the continental level by processing stage over the 2003–2018 period. Let us put aside the unprocessed stage of production where trade is not significant. The semi-processed stage of production exhibits a decreasing, then steady (since 2011) comparative advantage, while the processed stage shows an increasing comparative advantage.

Figure 4.15 Africa, revealed comparative advantage by processing stage, sugar value chain, 2003–2018



Source: 2020 AATM database.
Note: The horizontal line corresponds to an RCA of 1. An RCA greater than 1 indicates a comparative advantage; an RCA below 1 indicates no comparative advantage.

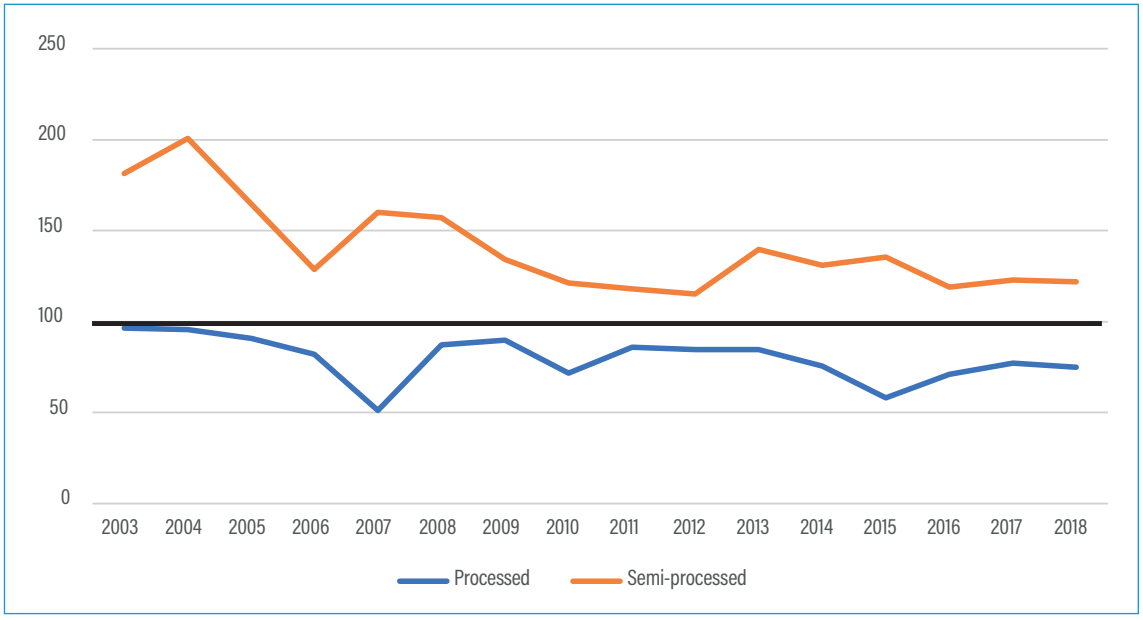
Calculations of RCAs by country and processing stage, on average for 2016–2018, show:

- At the unprocessed stage, a comparative advantage for Tanzania (very large), Egypt, Burundi, and Uganda.
- At the semi-processed stage, a large comparative advantage for Eswatini, Malawi, Mauritius, Zimbabwe, Sudan, and Mozambique; significant smaller advantage for Zambia, Benin, Uganda, Madagascar, and South Africa.
- At the processed stage, a large comparative advantage for Mauritius, Eswatini, Uganda, Malawi, and Gambia; a significant but smaller comparative advantage for Egypt, Kenya, Algeria, Zambia, Morocco, Tunisia, Mozambique, Niger, Togo, Senegal, South Africa, and Zimbabwe.

From Figure 4.3 above, we concluded that, regarding the whole sugar value chain, export prices on average, as indicated by export unit values, are lower in Africa than in the rest of the world.

Figure 4.16 indicates the same ratio of export unit values for Africa by processing stage; note we do not include the unprocessed stage as trade in these products (crops) is tiny and unit values are volatile. At the processed stage, this ratio systematically exhibits price-competitiveness of African products. At the semi-processed stage, after a period of non-competitiveness from 2003 to 2009, export unit values of African products are close to those for the rest of the world.

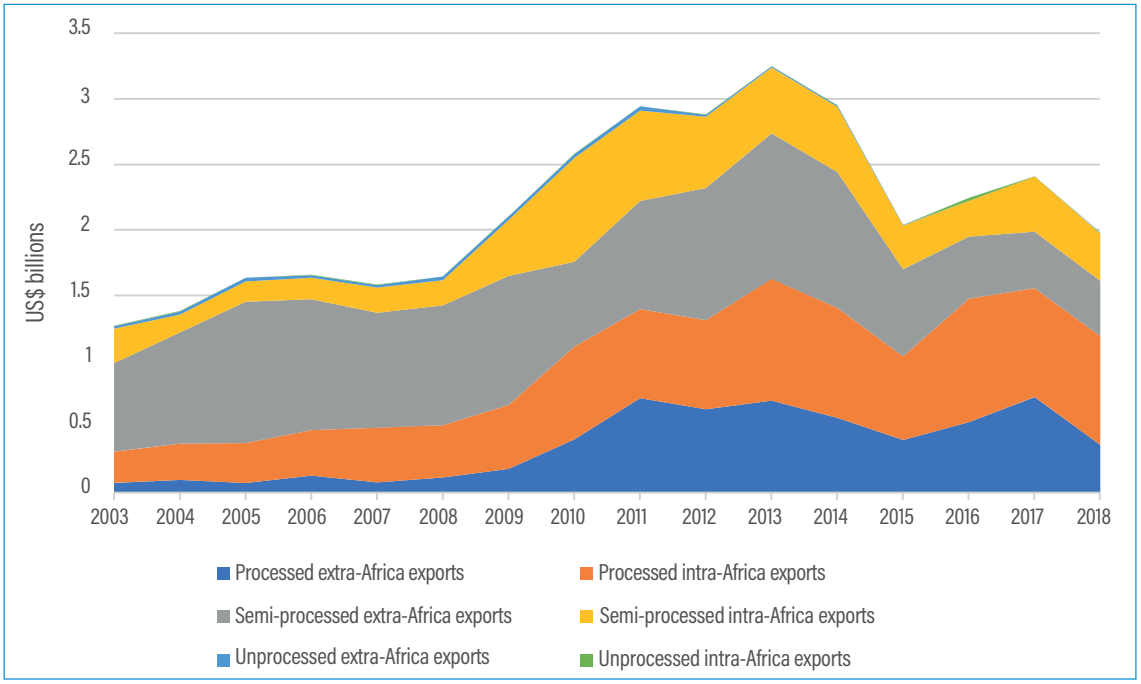
Figure 4.16 Ratio of export unit values by processing stage, Africa over Rest of the World, sugar value chain, 2003–2018



Source: 2020 AATM database.
Note: The horizontal line corresponds to an indicator of 100 and delimits the split between years when Africa's products are price-competitive (less than 100) and years when they are not (greater than 100).

Figure 4.17 shows the distribution of African exports in the sugar value chain by processing stage and by destination (intra-Africa vs. extra-Africa) over the 2003–2018 period. Exports of unprocessed products are close to zero. While between 2003 and 2008, the bulk of African exports was extra-Africa semi-processed exports, over the recent period, these exports are distributed relatively equally among the four remaining categories. The growth of African exports of processed sugar products (both extra- and intra-Africa) is worth noting, from 24 percent in 2003 to more than 60 percent in 2018, with an increasing importance of intra-African exports of processed products, which is now the leading category. The share of intra-African exports in the sugar value chain has increased from 40 percent to 60 percent of total exports.

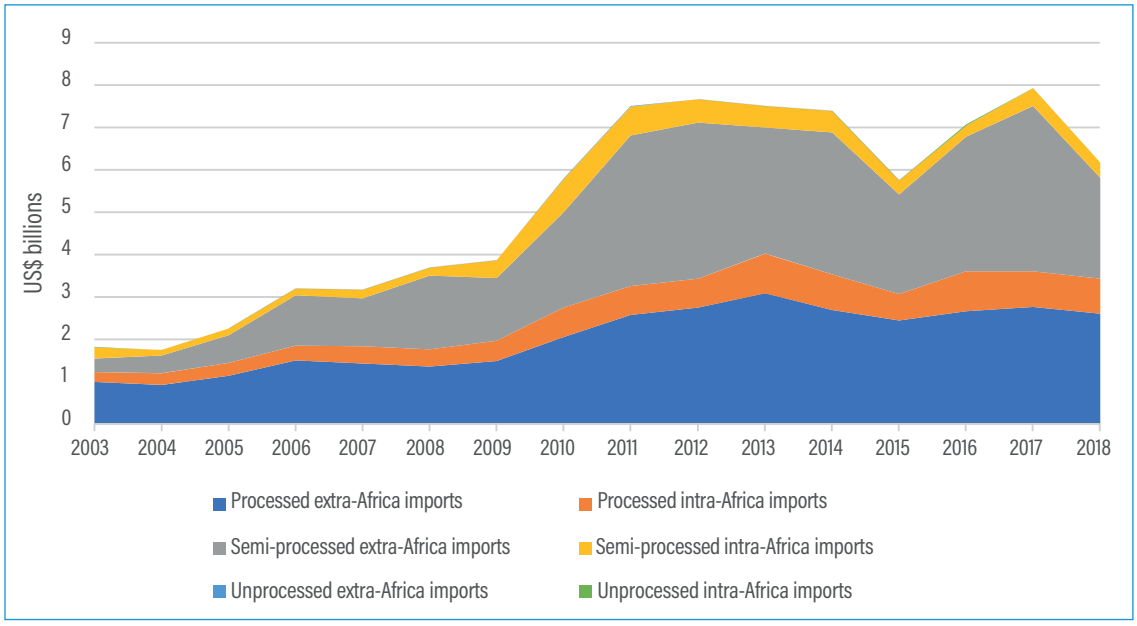
Figure 4.17 African exports by processing stage and by destination, sugar value chain, 2003–2018



Source: 2020 AATM database.

Figure 4.18 shows the distribution of African imports in the sugar value chain by processing stage and by origin (intra-Africa vs. extra-Africa) over the 2003–2018 period. Again, trade in unprocessed products is not significant. The bulk of these imports are extra-Africa imports of semi-processed and processed products: their share has increased from 72 percent in 2003 to more than 80 percent in 2018.

Figure 4.18 African imports by processing stage and by origin, sugar value chain, 2003–2018



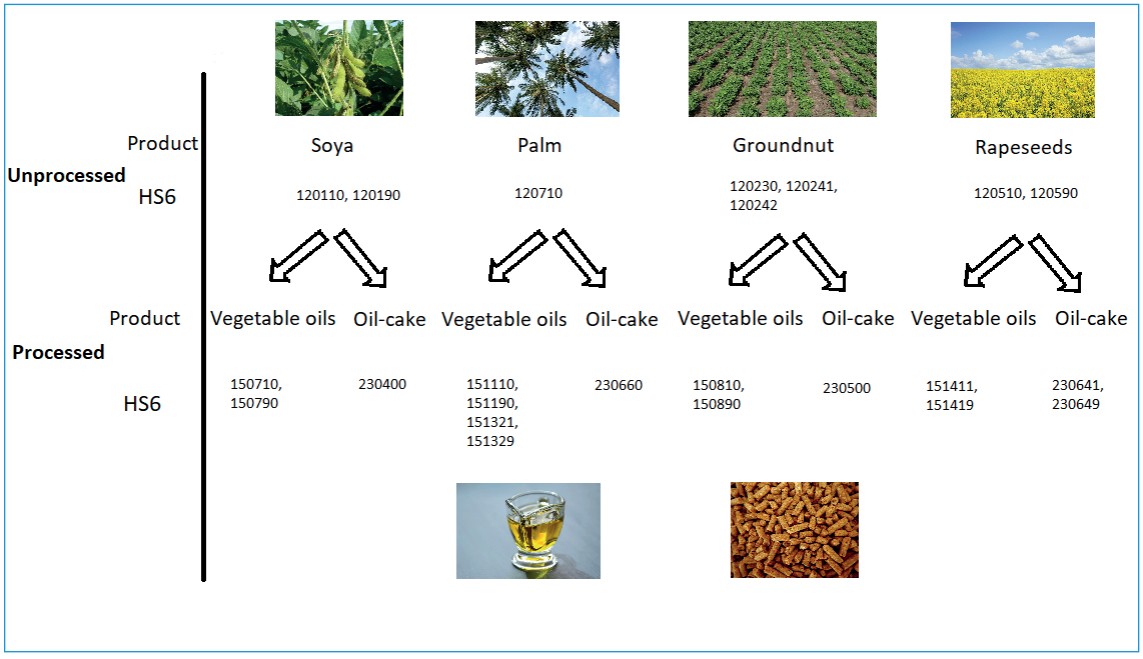
Source: 2020 AATM database.

Vegetable oils

Figure 4.19 presents the vegetable oil value chain. Here we only consider two processing stages: an unprocessed stage and a processed one. The unprocessed stage consists of crops — soya, palm, groundnut, or rapeseeds.[10] The processed stage consists of vegetable oil and cakes for animal feed. Indeed, cakes are a co-product of vegetable oils.

The concept of the value chain is not totally clear. For the cereal value chain, we focused on the upstream product: rice, maize, wheat, and so on. But for the vegetable oil value chain, we focus now on the downstream product, that is vegetable oils. This is an important point because we do not include product 200811 ("Nuts; ground-nuts, whether or not containing added sugar, other sweetening matter or spirit") in this value chain, which is a processed product. Nor do we include product 120810 ("Flours and meals; of soya beans"), which is another use of oilseed soya. However, we do include oil-cake, which is a co-product of vegetable oil in the crushing industry.

Figure 4.19 Vegetable oils value chain



Source: Authors' elaboration.
Note: Photos from Pixabay; numbers refer to Harmonized System 6 (HS6) codes.

Table 4.4 shows the 10 largest producers of palm fruit, soybeans, groundnuts, and rapeseeds in 2018. In terms of vegetable oils, palm, soya, and rapeseeds represent more than 90 percent of the world market. There is no African country in the list of the largest producers of the crops needed for the production of these oils. The world market for groundnut oil is comparatively small, but 5 African countries are in the list of the 10 largest producers of groundnuts.

10 We do not include sunflower, which is of lesser importance.

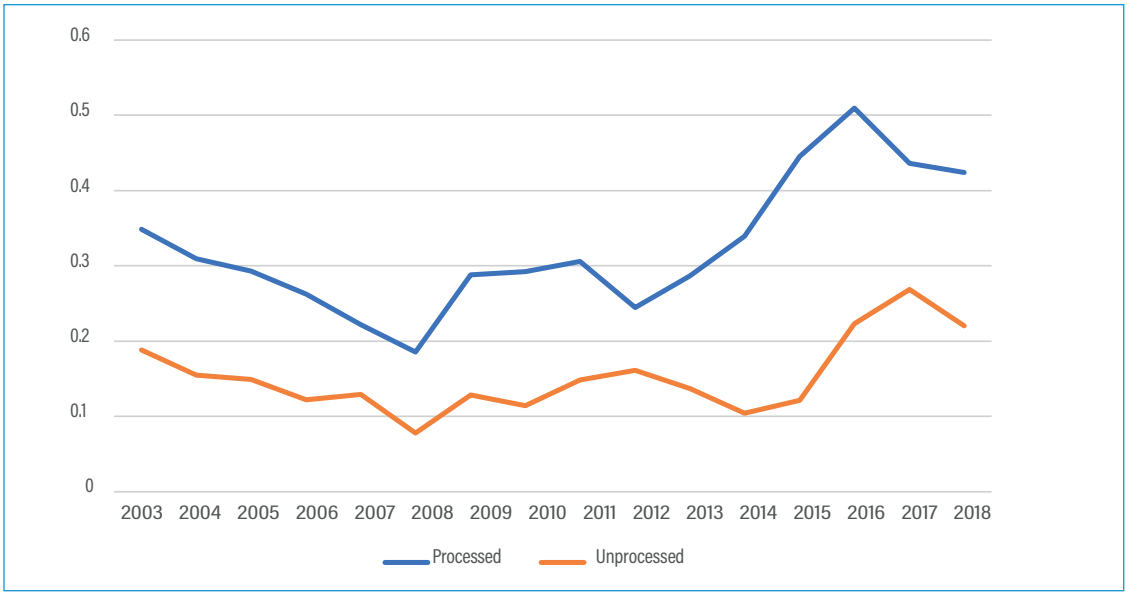
Table 4.4 Production of palm fruit, soybeans, groundnuts, and rapeseeds in volume, 10 largest producers, 2018

Palm		Soybeans		Groundnuts		Rapeseeds	
Country	Production (MT)	Country	Production (MT)	Country	Production (MT)	Country	Production (MT)
1. Indonesia	40,567,230	*1. USA*	123,664,230	*1. China*	17,392,071	*1. Canada*	20,342,600
2. Malaysia	19,516,100	*2. Brazil*	117,887,672	*2. India*	6,695,000	*2. China*	13,281,208
3. Thailand	2,776,800	*3. Argentina*	37,787,927	*3. Nigeria*	2,886,987	*3. India*	8,430,000
4. Colombia	1,630,000	*4. China*	14,193,621	*4. Sudan*	2,884,000	*4. France*	4,945,589
5. Nigeria	1,050,000	*5. India*	13,786,000	*5. USA*	2,477,340	*5. Australia*	3,893,071
6. Guatemala	875,000	*6. Paraguay*	11,045,971	*6. Myanmar*	1,599,149	*6. Germany*	3,670,600
7. Honduras	650,000	*7. Canada*	7,266,600	*7. Tanzania*	940,204	*7. Ukraine*	2,750,600
8. Papua NG	630,000	*8. Ukraine*	4,460,770	*8. Argentina*	921,231	*8. Poland*	2,203,869
9. Ecuador	560,000	*9. Russia*	4,026,850	*9. Chad*	893,940	*9. UK*	2,012,000
10. Brazil	450,000	*10. Bolivia*	2,942,131	*10. Senegal*	846,021	*10. Russia*	1,988,697

Source: FAOSTAT.
Note: MT = metric tons.

In the introduction of this section, Figure 4.2 illustrated a comparative disadvantage of Africa in the vegetable oils value chain throughout the 2003–2018 period. Again, at the continental level, from 2003 to 2018, Africa has a comparative disadvantage in both processing stages as illustrated by Figure 4.20. Africa had a net trade deficit in both processing stages: US$7.1 billion at the processed stage and US$870 million at the unprocessed stage on average for 2016–2018.

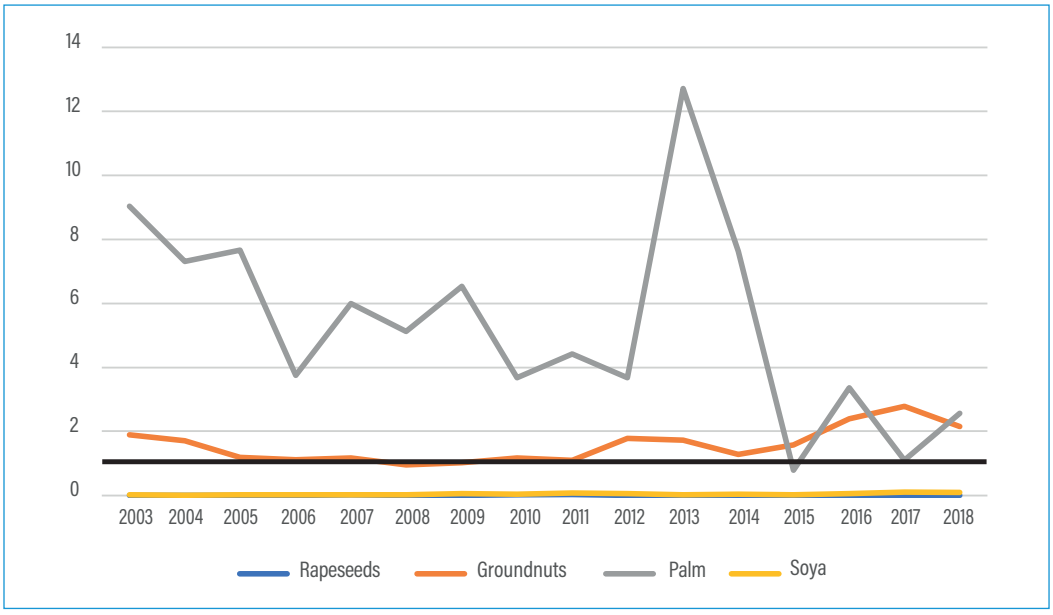
Figure 4.20 Africa, revealed comparative advantage by stage of processing, vegetable oils value chain, 2003–2018



Source: 2020 AATM database.
Note: Vegetable oils include groundnut, palm, rapeseed, and soy oils.

In this value chain, we consider four different crops at the initial stage of transformation: soya, palm, groundnut, and rapeseeds. Africa has a comparative advantage in unprocessed palm and groundnuts commodities (Figure 4.21). It is worth mentioning that rapeseed in Europe and soya in Brazil, the United States, and China benefit from a significant policy support that might affect their world market share, and thus might also contribute to Africa's comparatively low exports.

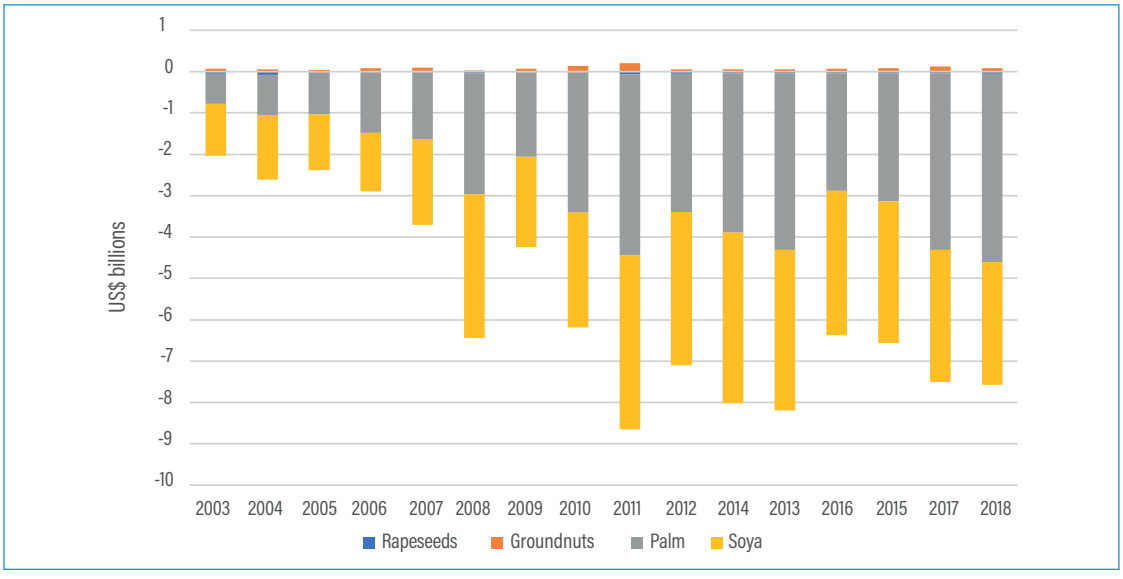
Figure 4.21 Africa, revealed comparative advantage, seeds, 2003–2018



Source: 2020 AATM database.
Note: : The horizontal line corresponds to an RCA of 1. An RCA greater than 1 indicates a comparative advantage; an RCA below 1 indicates no comparative advantage.

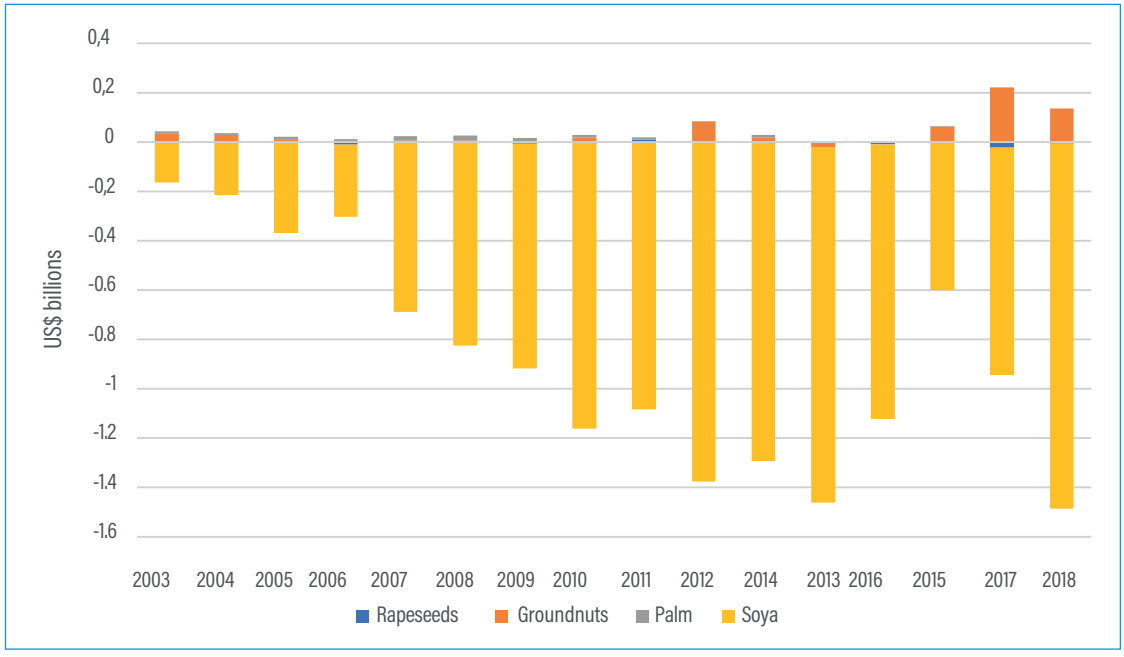
Figure 4.22 and Figure 4.23 show, respectively, the net exports of processed products and unprocessed commodities between 2003 and 2018 at the continental level. Africa is a net exporter of unprocessed groundnuts and vegetable oils fabricated from this crop, but the amounts are small, especially in comparison to the large import flows, by value, of palm oil, soya oil, and soybeans.

Figure 4.22 African net exports of processed vegetable oils by type of seeds, 2003–2018



Source: 2020 AATM database.

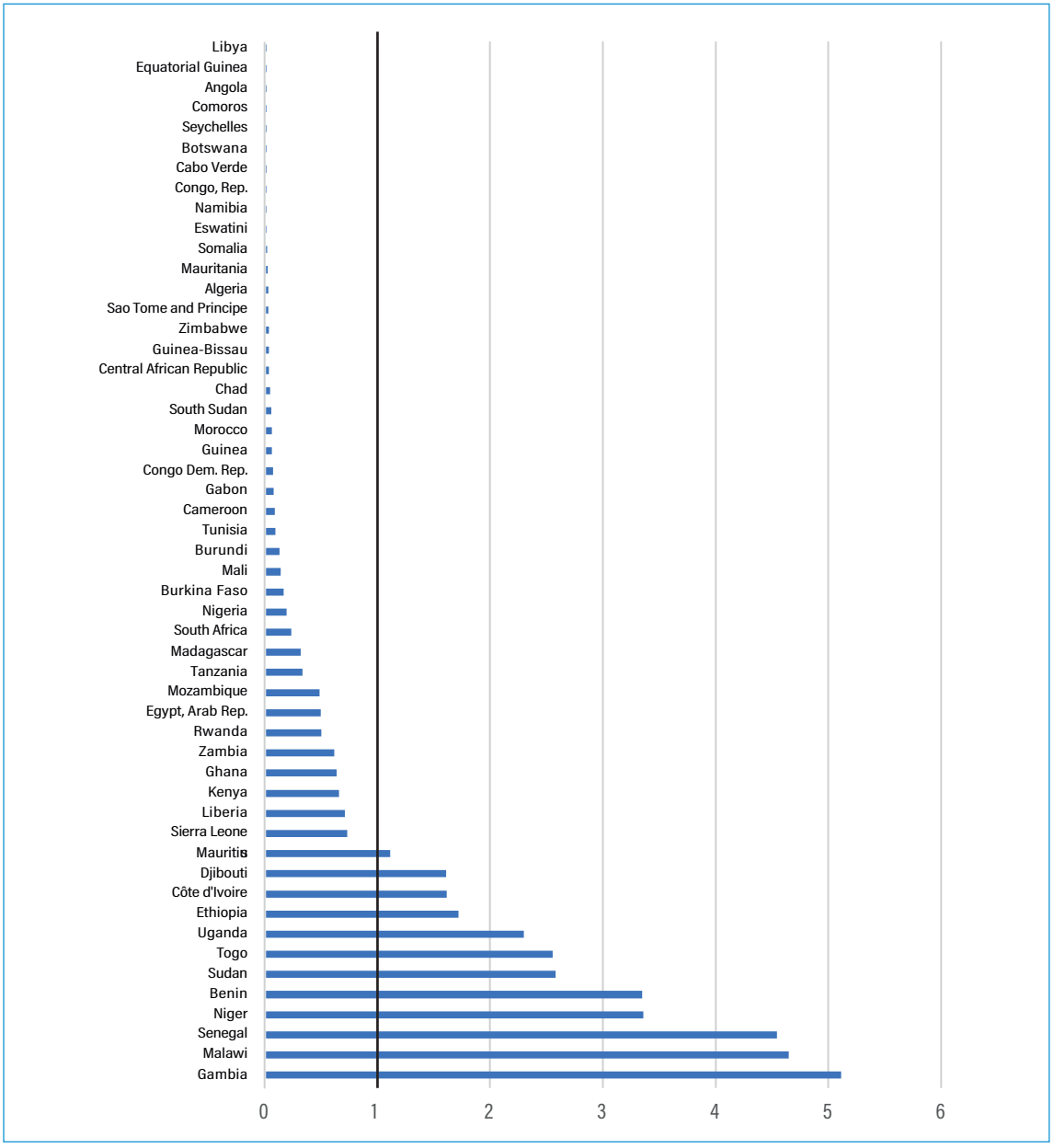
Figure 4.23 African net exports of unprocessed commodities, vegetable oils value chain, 2003–2018



Source: 2020 AATM database.

Figure 4.24 shows RCA by African country in the vegetable oil value chain. On average for 2016–2018, trade flows reveal a comparative advantage for 12 African countries in this value chain, the advantage being large for (in decreasing order) Gambia, Malawi, Senegal, Niger, Benin, Sudan, Togo, and Uganda. Forty African countries had a comparative disadvantage in this value chain in 2016–2018.

Figure 4.24 Revealed comparative advantage by African country, vegetable oils value chain, average 2016–2018

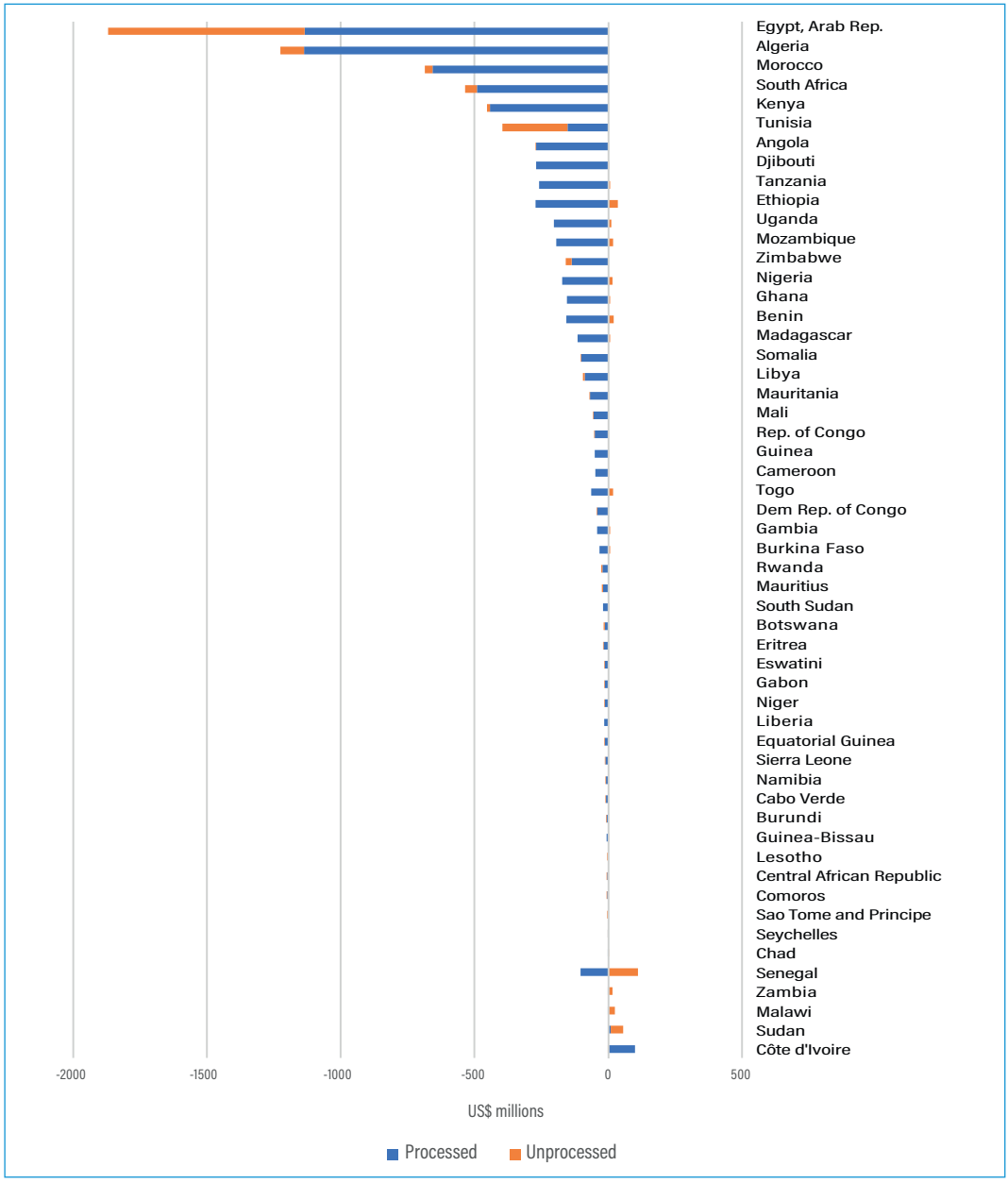


Source: 2020 AATM database.
Note: Vegetable oils include groundnut, palm, rapeseed, and soy oils; we include unprocessed, semi-processed, and processed commodities. The vertical line corresponds to an RCA of 1 and delimits the split between countries with a comparative advantage (RCA greater than 1) and countries without a comparative advantage (RCA less than 1) in the sugar value chain.

It is interesting to see what processing stage of this value chain African countries are specialized in. Figure 4.25 shows net exports by African country and processing stage on average for 2016–2018. Of 54 African countries, only Sudan is a net exporter in both processing stages. And only one, Côte d'Ivoire, is a net exporter of processed products and a net importer of unprocessed commodities (US$99 million of net exports of processed products, US$0.5 million of net imports of unprocessed commodities). Thirty-one African countries are net importers in both processing stages, in large amounts for Egypt (US$1.1 billion of net imports of processed products, US$735 million of unprocessed commodities). Twenty-one African countries are net importers of processed

products *and* net exporters of unprocessed commodities. The case of Senegal is emblematic with US$105 million of net imports of processed products and US$109 million of net exports of unprocessed commodities. This raises again the issue of the "right" positioning of African economies in agrifood value chains: very few African countries are able to move up the value chains and become competitive at stages of product processing. Many appear to be competitive only in the export of raw products.

Figure 4.25 Net exports by African country and by stage of processing, vegetable oils value chain, average 2016–2018

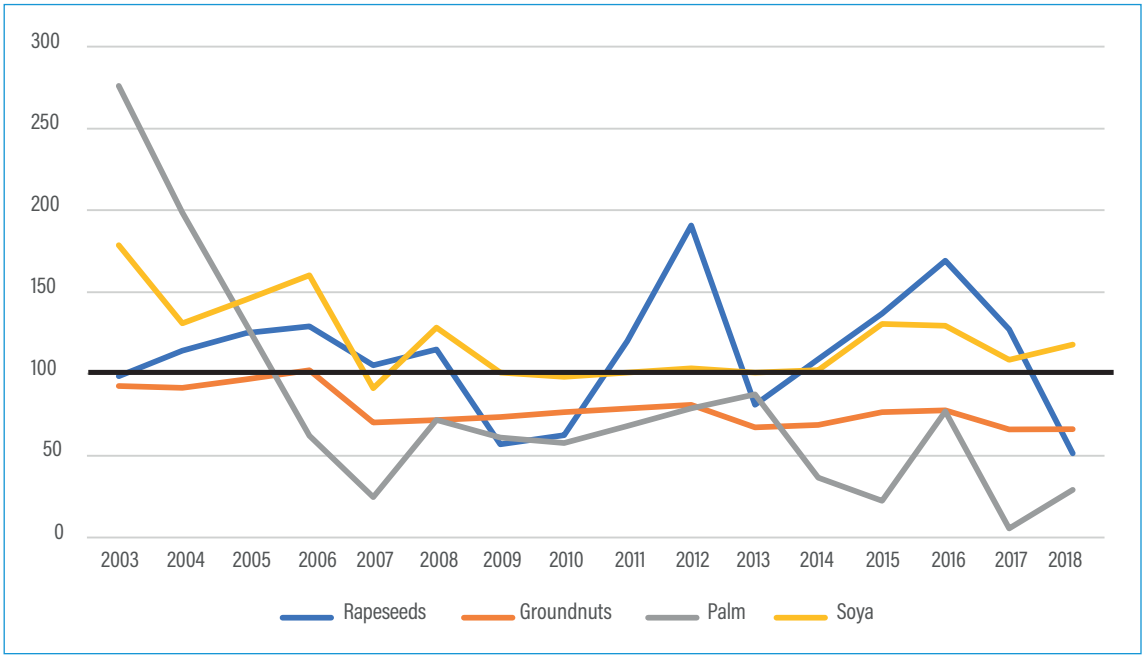


Source: 2020 AATM database.
Note: Vegetable oils include groundnut, palm, rapeseed, and soy oils; we include unprocessed, semi-processed, and processed commodities.

At the national level, calculations of RCAs reveal a few outstanding comparative advantages: Gambia in unprocessed groundnuts and palm kernels, Benin in both unprocessed and processed palm products, Malawi in unprocessed groundnut and soya products, Niger in (processed) palm oil, and Senegal in unprocessed and processed groundnuts products.

Figure 4.26 provides another indicator of competitiveness over the 2003–2018 period — the ratio of export unit values of unprocessed commodities for oilseeds, Africa over the rest of the world. It indicates competitiveness of African unprocessed groundnuts and palm commodities. Calculation of the same indicator for processed products shows price-competitiveness of oils from rapeseeds and groundnuts, while the price of African palm oil is close to the world price of the same product.

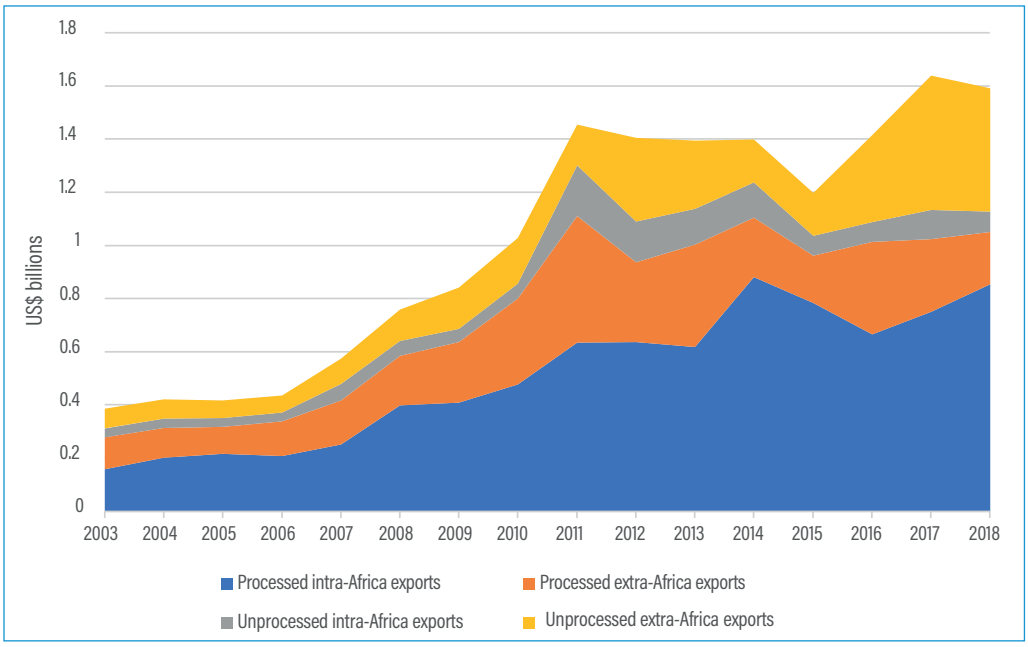
Figure 4.26 Ratio of export unit value for oilseeds, Africa over Rest of the World, vegetable oils value chain, unprocessed stage, 2003–2018



Source: 2020 AATM database.
Note: Vegetable oils include groundnut, palm, rapeseed, and soy oils; we include unprocessed, semi-processed, and processed commodities. The horizontal line corresponds to an indicator of 100 and delimits the split between years when Africa's products are price-competitive (less than 100) and years when they are not (greater than 100).

We turn now to the geographic pattern of African trade in the vegetable oil value chain. Figure 4.27 shows the distribution of African exports in this value chain between 2003 and 2018, by destination (extra-Africa vs. intra-Africa) and processing stage (unprocessed vs. processed). Figure 4.28 shows the distribution of African imports by origin (extra-Africa vs. intra-Africa) and processing stage (unprocessed vs. processed).

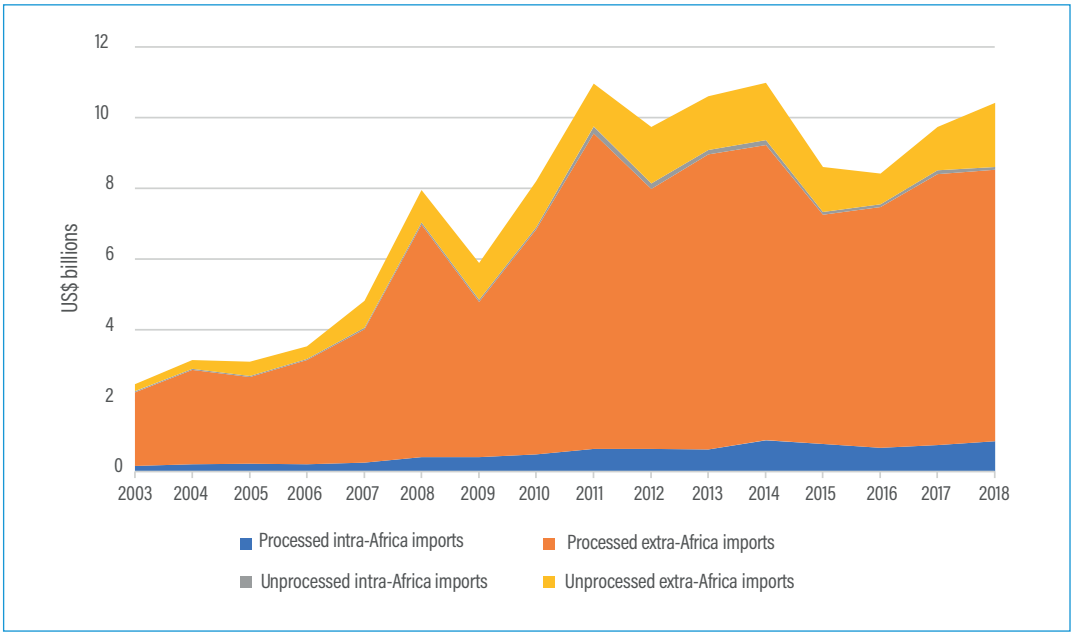
Figure 4.27 African exports by stage of processing and by destination, vegetable oils value chain, 2003–2018



Source: 2020 AATM database.
Note: Vegetable oils include groundnut, palm, rapeseed, and soy oils.

Figure 4.27 shows that in the vegetable oils value chain, the bulk of African exports is intra-African processed products. Total exports in this value chain are increasing over the whole period at an average growth rate of 9.9 percent (current US$) and the share of intra-African processed exports in total exports has grown from 41 percent to 54 percent. Since 2015, extra-African exports of unprocessed commodities are also increasingly significant.

Figure 4.28 African imports by stage of processing and by origin, vegetable oils value chain, 2003–2018



Source: 2020 AATM database.
Note: Vegetable oils include groundnut, palm, rapeseed, and soy oils.

Total African imports of vegetable oil have increased at an even more rapid pace: 10.1 percent over the 2003–2018 period (Figure 4.28). The bulk of these imports is extra-African imports of processed products. However, their share in total imports has decreased over the period from 84 percent to 74 percent, while the share of extra-African imports of unprocessed commodities (soya) was raised from 8 percent to 17 percent.

This section has clearly demonstrated the lack of competitiveness of African countries in the main cereals and cassava, vegetable oils, and sugar value chains, even if a few exceptions appear: Nigeria, Democratic Republic of the Congo, and Ghana in cassava; Eswatini, Mauritius, and Zambia in semi-processed and processed sugar products; Tanzania in sugarcane; Algeria, Egypt, and Morocco in sugar confectionery; Nigeria, Sudan, and Tanzania in groundnuts; and Côte d'Ivoire and Sudan in (processed) vegetable oils. Before looking for factors outside Africa, many domestic factors explain this lack of competitiveness: low agricultural productivity related to poor access to credit markets; insufficient investment in research and development; insufficient access to fertilizers, new technology, and irrigation; high costs related to logistics, transportation, and customs procedures; and relatively high import duties that continue to impede intraregional trade and the development of regional value chains.[11]

We now proceed to the analysis of trade policies in the main OECD and emerging markets. We will chiefly focus on tariffs and domestic support in China, India, Brazil, the European Union (EU), and the United States (US).

Trade and agricultural policies of OECD and emerging countries

As has been shown, the lack of competitiveness in main cereals and cassava, vegetable oils, and sugar can be chiefly explained by a lack of comparative advantage, especially when African countries are compared to other agricultural producers. However, looking at the demand side and especially trade policy in main destinations will help us develop a more comprehensive analysis of the three chains.

To do so, we will focus on four main markets, namely China, India, Brazil, the EU, and the US, for three reasons. First, these are in general large producers of agricultural products and hence have a comparative advantage in many of them. Second, they are also large importers of agricultural products and thus represent an important destination for African countries' products. Third, at the world level, they tend to have more protectionist policies for agricultural products, when compared to non-agriculture products or when compared to other markets.

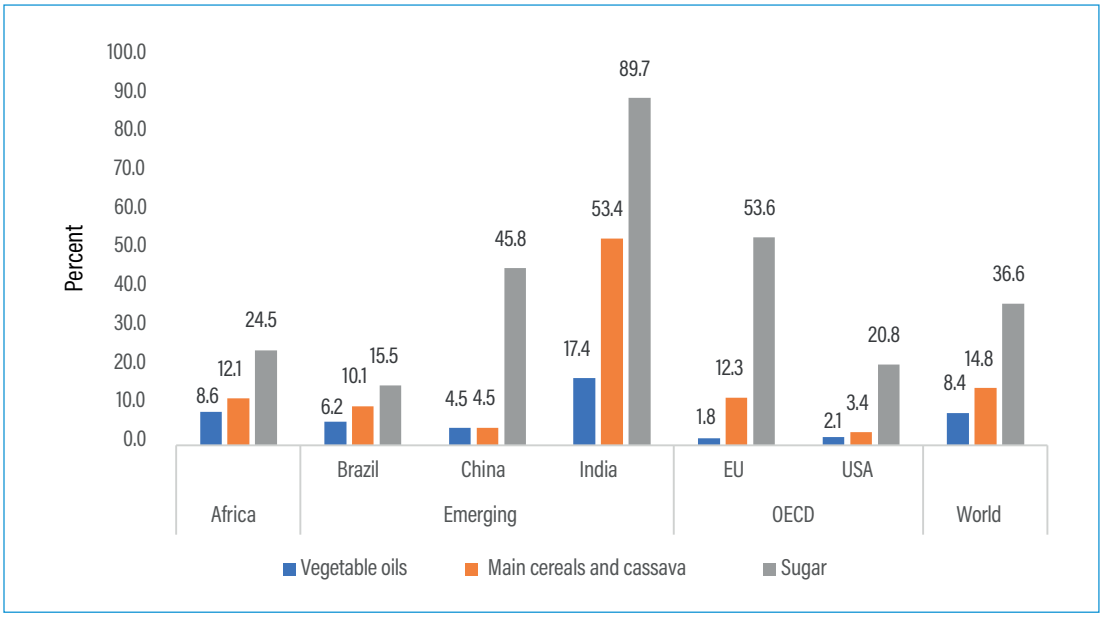
In terms of trade policies, this section primarily analyzes tariffs and domestic support that remain a significant impediment for agricultural products in the largest markets.[12]

11 See for example Conway et al. (2019), Bouët et al. (2017), GRO Intelligence (2016), IFPRI (2019), Odjo et al. (2019), and Wiggins (2019). See also Chapters 2 and 3 of this report.
12 While sanitary and phytosanitary (SPS) measures are also frequently used, we prefer to focus on these two dimensions as they are less studied in the literature on agricultural trade. For the effect of SPS and conformity assessment, see Chapter 2.

Tariff structure and tariff escalation

When analyzing trade policy and value chains, it is indispensable to analyze both tariff structure and tariff escalation. Figure 4.29 presents the weighted average tariff rate applied to our main products of interest. On average, sugar tariffs (36.6 percent) are higher than cereals and cassava (15 percent) and vegetable oils (8.4 percent) in all countries. The difference is pronounced in both emerging and developed countries since, in China, sugar tariffs are 9 times higher than tariffs on the main cereals and cassava and on vegetable oils; in India, 2 and 5 times respectively; in the EU, 4 and 25 times; and in the US, 7 and 10 times respectively. The smallest difference is observed for Africa and Brazil. Among the OECD countries, the EU is more protectionist than the US for sugar and main cereals and cassava. Among emerging countries, while India is the most protectionist for all products, Brazil has higher tariffs than China on vegetable oils and the main cereals and cassava.

Figure 4.29 Weighted average tariff rate applied to selected group of agricultural products, 2016

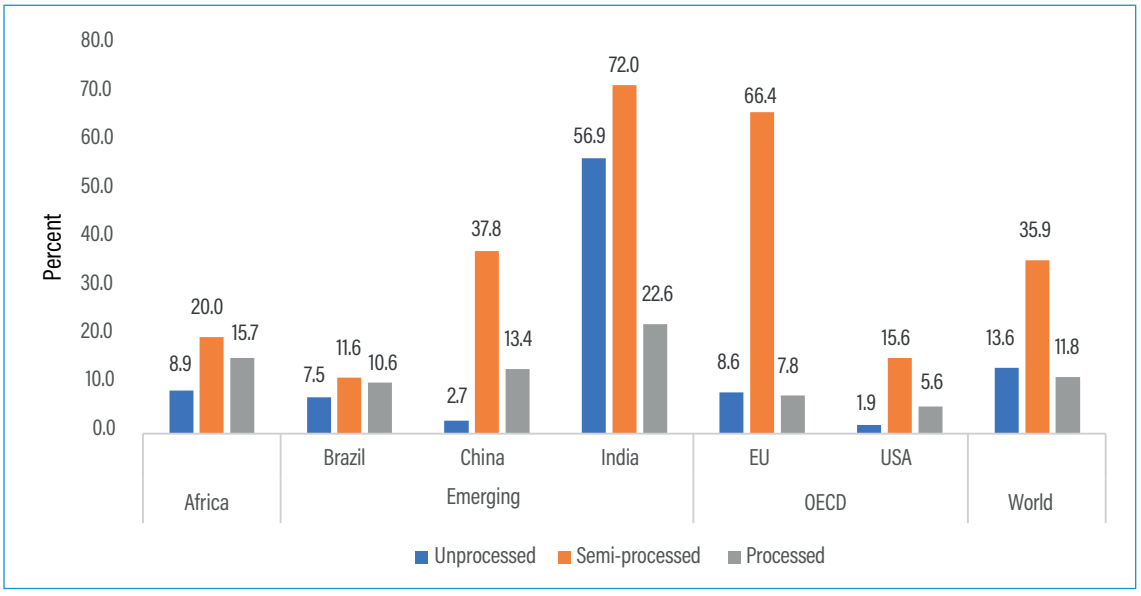


Source: Authors' elaboration using MAcMap-HS6.

After examining the tariff structure, it is important to analyze tariff escalation when analyzing the nexus between trade policy and value chains. Tariff escalation prevails when tariffs are zero or low on primary products and increase as products are processed. When a country escalates its tariffs, prices of processed imports relative to raw products increase, which augments value-added at the processing stage and decreases the demand for processed products in the importing country. Thus, exporters (African countries in our case) will be obliged to export more unprocessed products than processed ones, leading to a low level of diversification, lower value-added, and less employment (Hoekman et al. 2002). Indeed, Elamin and Khaira (2003) found that tariff escalation is, generally, more pronounced for meat, sugar, fruit, coffee, cocoa, and hides and skins, most of which are of export interest to many of the poor developing countries. Some studies have examined the effect on particular products. For instance, Narayanan and Khorana (2014), using a general equilibrium model, found that the elimination of tariff escalations generates potential global gains, especially for the cotton sector. Yet, Aziz et al. (2017) showed that the US and the EU do not effectively protect their cocoa industries, and hence no tariff escalation on applied tariffs against cocoa imports from Ghana can be observed. This is why a complete liberalization of trade barriers impeding Ghanaian cocoa exports does not necessarily lead to an increase in the exports of value-added cocoa from Ghana.

As it is shown in Figure 4.30, tariff escalation is observed for semi-processed products compared to unprocessed ones. However, on average, tariffs imposed on processed products, though higher than those imposed on unprocessed ones, are generally lower than those on semi-processed products. Yet, it is important to note that, in our set of value chains, this is chiefly due to high tariffs on semi-processed sugar and cassava. The remainder of the products are either unprocessed or processed. At the country level, while China and the EU have the largest difference between tariffs on semi-processed and unprocessed products, India is still ranked first in terms of the level of tariffs.

Figure 4.30 Weighted average tariff rate applied to selected group of agricultural products, by degree of processing, 2016

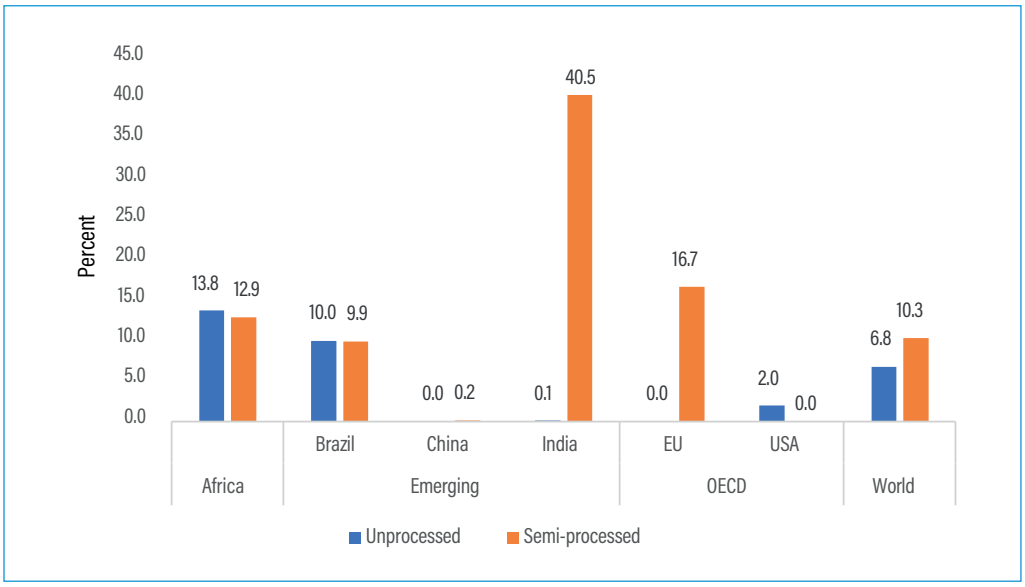


Source: Authors' elaboration using MAcMap-HS6.
Note: Figures show averages for the products related to the three value-chains under study.

After presenting general trends in the three products of interest, we will proceed to a deeper look at tariff hikes and escalations at a more specific level.

For the main cereals and cassava, it is difficult to claim that tariff escalations are the rule. First, while Brazil and China have equal tariffs on unprocessed and semi-processed cassava (see Figure 4.31), tariff escalations characterize both India and EU, since they impose significantly high tariffs on semi-processed cassava (41 percent and 17 percent respectively) and zero tariffs on unprocessed cassava. The US market exhibits a different pattern, with an average tariff of 2 percent on unprocessed cassava and zero tariffs on semi-processed cassava.

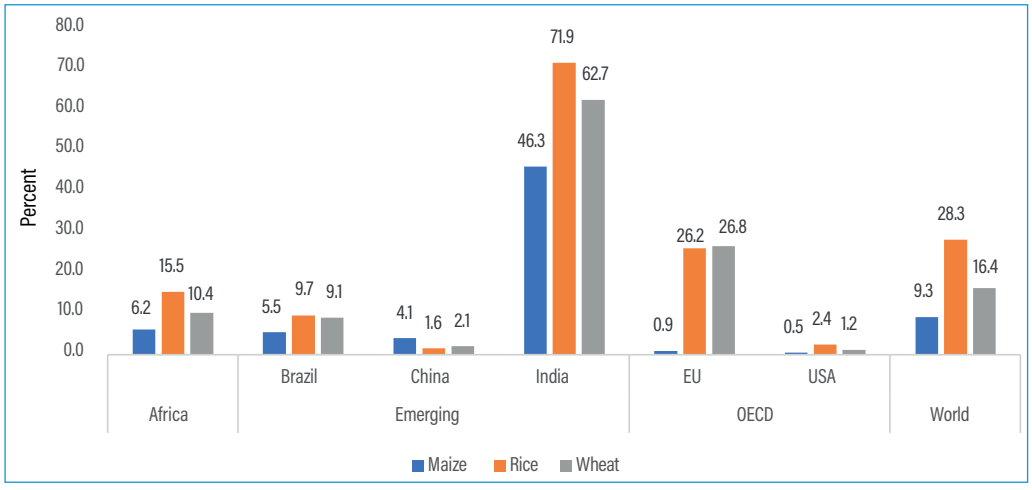
Figure 4.31 Weighted average tariff rate applied to cassava, by products and degree of processing, 2016



Source: Authors' elaboration using MAcMap-HS6.

Second, Figure 4.32 displays tariffs applied by different countries on other main cereals (rice, wheat, and maize). While rice is heavily protected (28 percent) with the highest tariffs observed in India (72 percent) and the EU (26 percent), maize faces lower tariffs in most of the destinations though slightly higher in Brazil and India. Wheat is much more protected in the EU (27 percent) than in the US (1 percent).

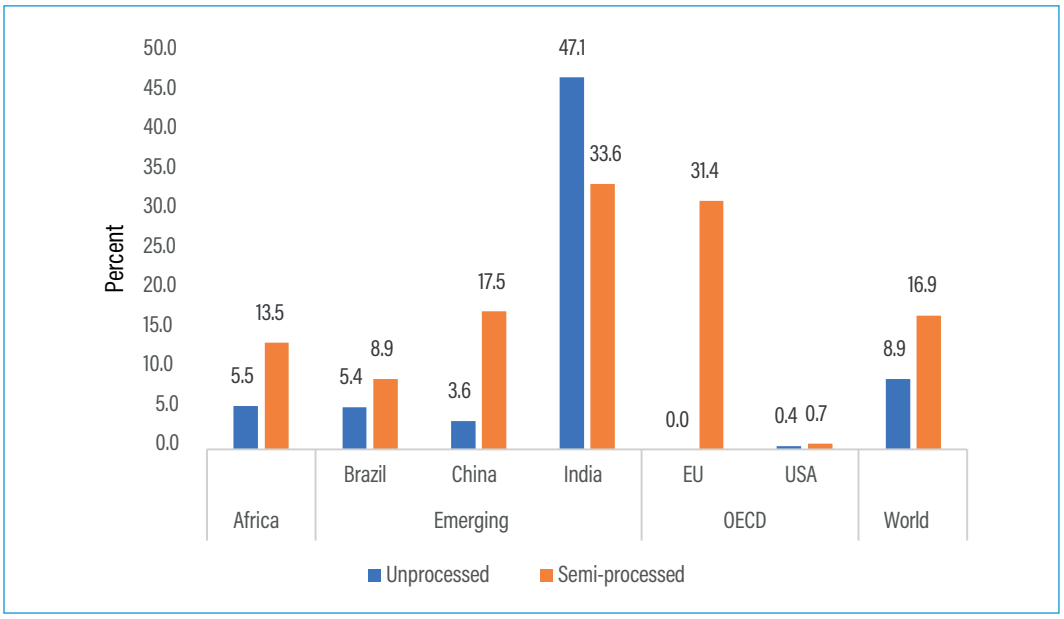
Figure 4.32 Weighted average tariff rate applied to maize, rice, and wheat, 2016



Source: Authors' elaboration using MAcMap-HS6.

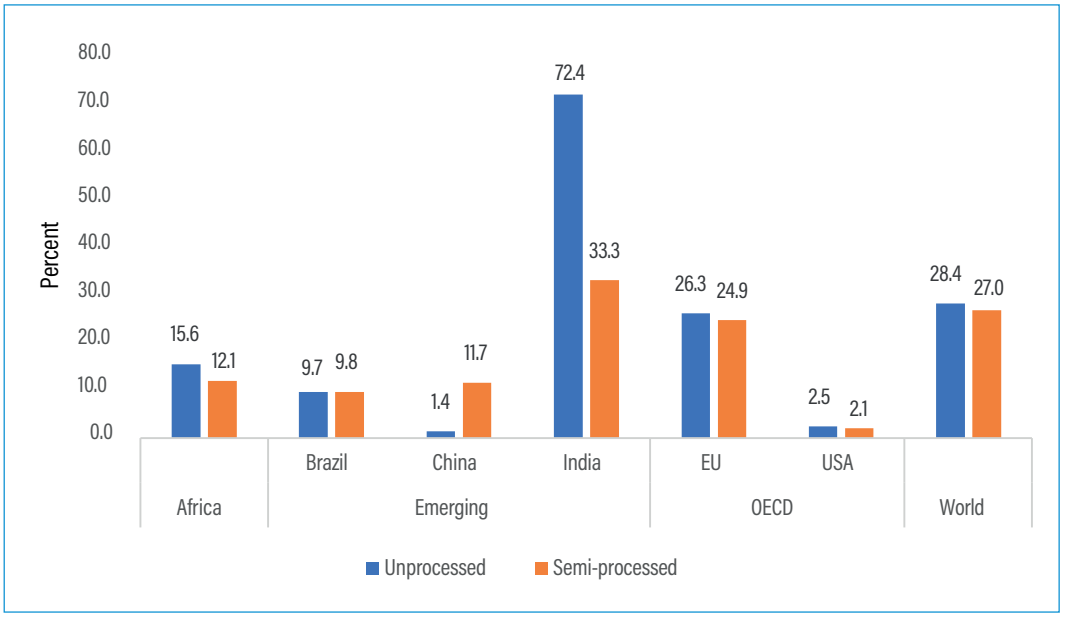
When unprocessed and processed products are compared, tariff escalation holds for maize in Brazil, China, and the EU (Figure 4.33); for rice in China (Figure 4.34); and for wheat in China and the EU (Figure 4.35). It is worth noting that India, in general, imposes a higher tariff on unprocessed cereals than on processed ones. This holds for maize (47 percent and 34 percent respectively for unprocessed and processed), for rice (72 percent and 33 percent respectively) and for wheat (70 percent and 30 percent respectively). These high tariffs are coupled with several nontariff measures, especially domestic support, as will be shown below.

Figure 4.33 Weighted average tariff rate applied to maize, by degree of processing, 2016



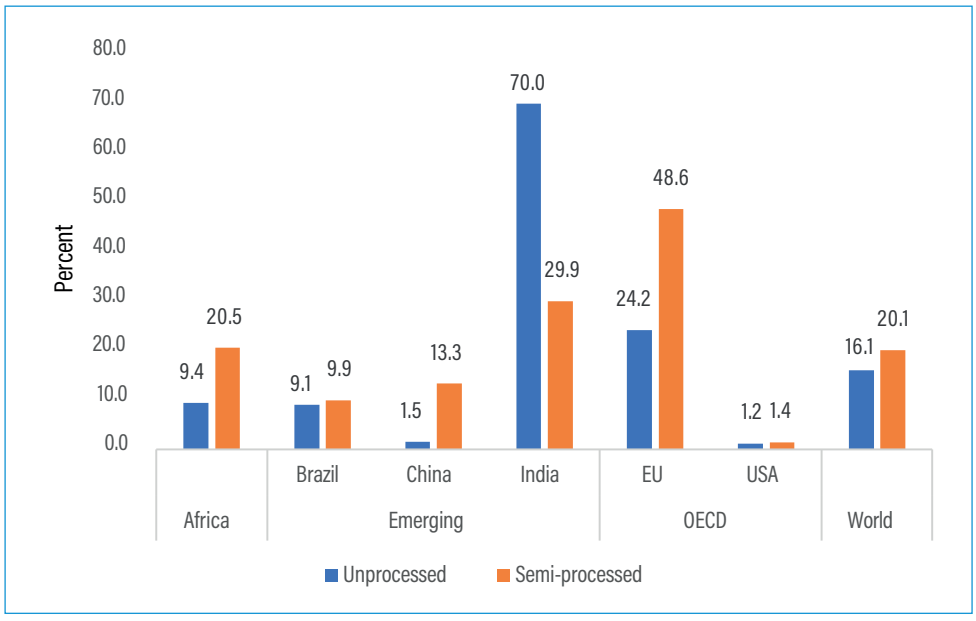
Source: Authors' elaboration using MAcMap-HS6.

Figure 4.34 Weighted average tariff rate applied to rice, by degree of processing, 2016



Source: Authors' elaboration using MAcMap-HS6.

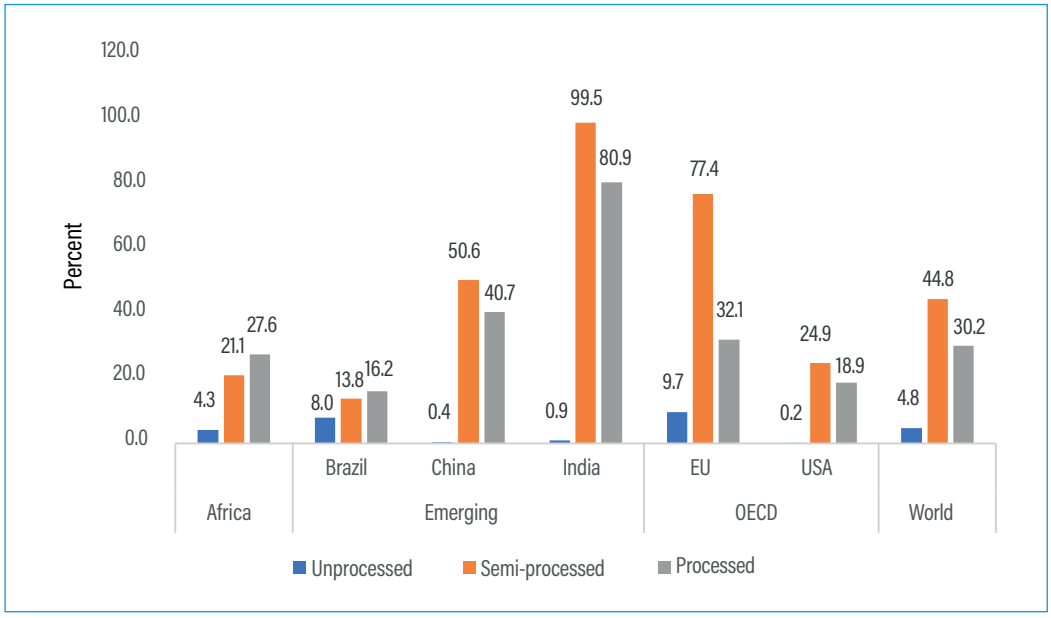
Figure 4.35 Weighted average tariff rate applied to wheat, by degree of processing, 2016



Source: Authors' elaboration using MAcMap-HS6.

Tariff escalation in the sugar value chain is much more pronounced in both OECD and emerging markets. In fact, while tariffs on unprocessed sugar are low in China (0.4 percent), India (1 percent), the US (0.2 percent), and the EU (10 percent), those on semi-processed sugar are remarkably high, ranging from 25 percent in the US to 51 percent in China, 77 percent in the EU, and 99 percent in India. As was observed in the cassava case, tariffs on processed sugar are generally lower than those on semi-processed, except in Brazil where the tariff is 8 percent on unprocessed sugar, 14 percent on semi-processed, and 16 percent on processed sugar (Figure 4.36).

Figure 4.36 Weighted average tariff rate applied to sugar, by degree of processing, 2016

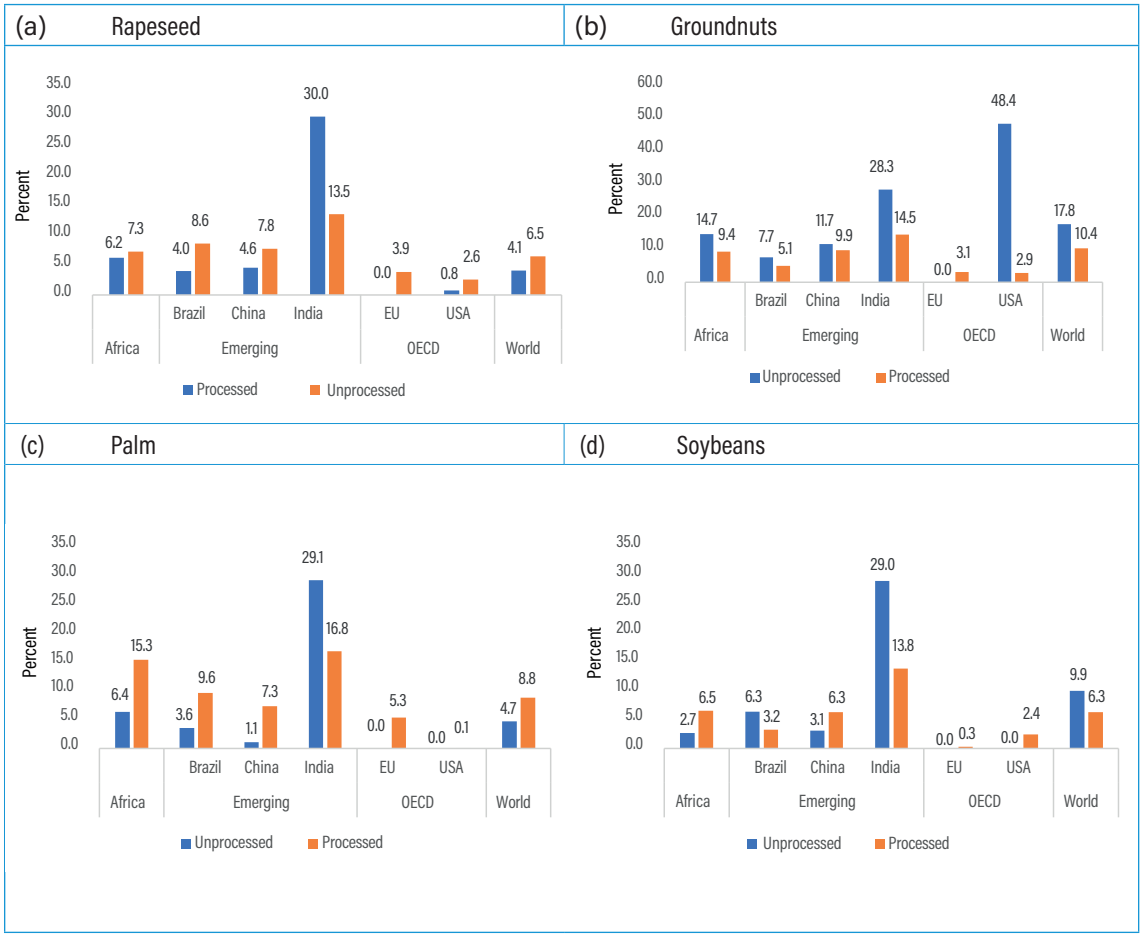


Source: Authors' elaboration using MAcMap-HS6.

For the vegetable oils value chain, Figure 4.37 shows an important heterogeneity at both the country and the product levels. First, for rapeseed, tariff escalation is observed for all countries except India. In fact, whereas unprocessed rapeseed is weakly protected in most of the markets (with an average tariff of zero in the EU, 1 percent in the United States, 4 percent in Brazil, and 5 percent in China), India's tariff on unprocessed rapeseed is 30 percent. Furthermore, even though tariff escalation is not observed in India, its tariff on rapeseed (14 percent) remains higher than other markets (3 percent in the US, 4 percent in the EU, 8 percent in China, and 9 percent in Brazil). For groundnuts, Figure 4.37b shows a significantly different pattern for two reasons. First, it shows a tariff abatement (the inverse of tariff escalation) for all countries, meaning tariffs on processed groundnuts are lower than those on unprocessed groundnuts. Second, when different markets are compared, the US ranks first in terms of protecting unprocessed groundnuts, followed by India; but India imposes the highest tariff on unprocessed groundnuts followed by China. Tariff escalation is partially observed for palm oil in Brazil, China, and the EU. Again, India is an exception as it has the highest levels of tariffs, which are higher on unprocessed than processed palm oil (Figure 4.37c). Finally, soya oil exhibits tariff escalations (at low levels) in China and the United States.

Hence, to sum up, substantial heterogeneity can be observed for different markets and different value chains, with tariff escalation mainly in sugar, rapeseed, and cassava; to a lesser extent in palm oil and soya; and tariff abatement in groundnut oil.

Figure 4.37 Weighted average tariff rate applied to vegetable oils, by products and degree of processing, 2016



Source: Authors' elaboration using MAcMap-HS6.

Domestic support

The agriculture sector is not only characterized by high tariffs and tariff escalations in the main markets, but it also faces several nontariff measures, as highlighted in Chapter 2. These nontariff measures range from sanitary and phytosanitary measures to technical barriers to trade to export-related measures, including domestic support (Dimaranan et al. 2004; Anderson and Martin 2005; Hertel and Keeney 2006). We focus in this section on the domestic support provided in the same set of OECD and emerging countries. First, domestic support is high in general and includes several tools such as production quotas, producer price guarantees, processing loans, regulated consumer prices, and state protection and/or intervention through ownership or investment in domestic industries. Given this heterogeneity in tools, we will adopt the World Trade Organization (WTO) classification that uses a traffic light analogy for categorizing measures as trade distorting or not trade distorting (Box 4.1). Using the most recent WTO notifications, we compiled the domestic support data for each product and for different boxes.

Generally speaking, the largest domestic support is provided in China followed by the US and the EU. The lion's share of this support is provided through the "green box," which includes programs that are non-trade-distorting, since there is no limit on this spending. This includes, among other measures, budget allocations for research programs and research activities at agricultural institutes, training services, and infrastructure services. Spending under the green box represents 90 percent of total agricultural support for China and the US and 83 percent for the EU. These figures are lower for India and Brazil, with shares amounting to 41 percent and 58 percent, respectively. Most of the sectors can benefit from this spending because it deals with cross-cutting issues. Yet, in some cases, these measures can be specific such as, in China, where outlays on public stockholdings of wheat, maize, rice, vegetable oils, and sugar for food security purposes equivalent to US$17.5 billion are categorized as green box measures.

Table 4.5 shows that only two countries have notified outlays under the "blue box," namely China and the EU. Outlays under this box include programs that are market-distorting but production-limiting. While the share of support under the blue box amounts to 2 percent for China, it represents 6 percent for the EU. The EU supports sugar with US$201 million and cereals with US$108 million. Indeed, the EU sugar market had been one of the most heavily regulated markets in the agrifood sector for 50 years (Poonyth et al. 2005), until the EU quota regime ended in September 2017. It is important to note that the EU, being a large importer of cane sugar, grants duty-free access to the EU market to developing countries under the Everything but Arms agreement.

As for product-specific support, different schemes are observed. First, it is important to note that most of our countries of interest support several products in a *de minimis* way. For developed countries, this means that spending is less than 5 percent of the value of production. The de minimis threshold is 10 percent for most developing countries, except for China where it is 8.5 percent of the value of agricultural production. This is the case of rice and wheat in China; rice, maize, soybean, and sunflower in the US; sugar in the EU; coarse cereal and rice in Brazil; and coarse cereal, groundnut, rapeseed, soybean, and sunflower in India. Beyond these limits, China provides substantial support for maize (US$8.7 billion) and soybean (US$1.1 billion); the US for wheat (US$0.9 billion) and sugar (US$1.5 billion); the EU for wheat (US$2.4 billion); and India for rice (US$5 billion). Yet, it is also important to note that such interventions can significantly distort prices. Indeed, Elobeid and Beghin (2006), using a partial equilibrium international sugar model calibrated on 2002 data, found that the removal of trade distortions alone induces a 27 percent price

increase, while the removal of all trade and production distortions induces a 48 percent increase in 2011/2012 relative to the baseline.

The remaining part of the total support includes development programs for India and Brazil (44 percent and 4 percent of total support, respectively). These outlays are exempt from the reduction commitment given their special and differential treatment. They can include, among others, input and investment subsidies. Finally, a smaller share (1.8 percent in China, 1 percent in the EU, 6 percent in the US, and 6 percent in India, but 38 percent in Brazil) is allocated to nonspecific product outlays. This category is mainly used to finance subsidies to the purchase of agricultural machinery and tools, debt restructuring, and insurance programs (which is the case of Brazil).

Box 4.1: Domestic support at the World Trade Organization

The World Trade Organization (WTO) uses a traffic light analogy for domestic support programs.

- **Green box** programs are minimally or nontrade distorting and are not subject to any spending limits.
- **Blue box** programs are described as market-distorting but production-limiting. Payments are based on either a fixed area or yield or a fixed number of livestock and are made on less than 85 percent of base production. Thus, blue box programs are not subject to spending limits.
- **Amber box** programs are the most market-distorting programs and are subject to strict aggregate annual spending limits. They are cumulatively measured by the aggregate measure of support (AMS) subject to the *de minimis* exemption.
- **De minimis exemptions** are spending that is sufficiently small (less than 5 percent of the value of production for developed countries, less than 10 percent for developing countries, and less than 8.5 percent for China) — relative to either the value of a specific product or total production — to be deemed benign.
- **Prohibited programs** include certain types of export and import subsidies and nontariff trade barriers that are not explicitly included in a country's WTO schedule or identified and accepted in the WTO legal texts.

Source: WTO website.

To conclude, this chapter shows that (un)competitiveness of some value chains in Africa can be explained either by supply-side factors (lack of comparative advantage) or demand-side factors (tariff escalation and domestic support for some products). In fact, African economies are still not well-positioned in agrifood value chains. While a very few of them are able to move up the value chains and become competitive at stages of product processing, the majority appear to be competitive only in the export of raw products. Clearly, unprocessed products face a lower rate of protection as tariff escalation is most pronounced in sugar, rapeseed, and cassava, followed by palm oil and soybeans.

Table 4.5. Domestic support in different markets

	China		EU		USA		India		Brazil	
Issued	14-12-18		12-04-19		24-09-18		31-03-20		19-02-20	
Period	2016		2016		2016		2018		2018	
Green box	198,962.10		70,915.10		119,492.00		22,481.60		1,590.70	
Blue box	5,915.20		5,334.70		0		0		0	
Cereals	0		108		0		0		0	
Oilseeds	0		2.2		0		0		0	
Sugar beet	0		200.9		0		0		0	
Development programs	0		0		0		24,184.50		108.3	
Current Total AMS	12,327.30		7,982.20		3,830.00		5,005.00		0	
Product-specific										
Cereals										
Coarse cereal	0	de minimis	0	de minimis	0	de minimis	9.6	de minimis	91.5	de minimis
Rice	4,210.60	de minimis	0	de minimis	86.2	de minimis	5,005.00	5,005.00	9.5	de minimis
Maize	8,662.10	8,662.10	0	de minimis	2,344.80	de minimis	0	de minimis	0	de minimis
Wheat	2,960.60	de minimis	2,461.50	2,461.50	911.5	911.5	-30.5	de minimis	0	de minimis
Sugar	0	de minimis	2.8	de minimis	1,517.30	1,517.30	0	de minimis	0	de minimis
Vegetable oils										
Groundnut	0	de minimis	0	de minimis	0	de minimis	133	de minimis	0	de minimis
Rapeseed /Mustard	0	de minimis	0	de minimis	0	de minimis	76.3	de minimis	0	de minimis
Soyabean Yellow	1,113.60	1,113.60	0	de minimis	1,207.20	de minimis	5	de minimis	0	de minimis
Sunflower	0	de minimis	0	de minimis	32.7	de minimis	0.7	de minimis	0	de minimis
Non-product-specific AMS	3,903.03		1,211.15		7,405.1		3,317.1		1,046.5	
Total domestic support	221,107.58		85,443.1		130,727.1		54,988.1		2,745.5	

Source: Authors' elaboration using the WTO notification system.
Note: All figures are in millions of US dollars.

Concluding remarks

The objective of this chapter is to examine the defensive trade interests of African economies. Hence, we analyzed three value chains where African economies have a defensive interest: the cereals value chain with the three major cereals (wheat, maize, rice) plus cassava, the sugar value chain, and the vegetable oils value chain. Our main findings show a lot of heterogeneity for the revealed comparative advantage of the three value chains among African countries. Generally speaking, the comparative advantage of unprocessed products is higher than that of semi-processed and processed ones. In terms of trade policy, a lot of heterogeneity can be observed for different export markets and different value chains, with tariff escalation mainly in sugar, rapeseed, and cassava; to a lesser extent in palm oil and soya; and tariff abatement in groundnut oil. Domestic support is particularly important for maize and soybeans in China, for wheat and sugar in the US, for wheat in the EU, and for rice in India.

It is important to note that addressing trade barriers is not sufficient because many African countries still face several bottlenecks in their own value chains (limited technology, unskilled and informal labor, lack of infrastructure). Hence, helping African countries improve their production capacities to raise the productivity of the agriculture sector, make it more modern, and hence more able to export processed products, is indispensable. More specifically, at the trade policy level, reducing tariff escalation and domestic support is crucial since it will add to the export potential of commodity-exporting African countries. Indeed, as shown by Bouët and Laborde (2018), progress in tackling trade barriers is crucial in preventing a severe reduction in trade volumes and income levels. With the de facto failure of the multilateral negotiations in the WTO's Doha Development Round, such negotiations can take place at the plurilateral level (under Article IX:3). Hoekman and Sabel (2019) argue that an open plurilateral agreement allows groups of countries to explore and develop their potential common interests on regulatory matters.

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Chapter 5

Informal Cross-Border Trade in Africa

Antoine Bouët, Brahima Cissé, and Fousseini Traoré

Introduction

Enhancing intra-African trade in agricultural products is today considered a priority objective by African governments and the African Union. It is seen as an engine for development and important for food security and self-reliance.

The trade database designed for this report shows that, on average over the past decade (2009–2018), only about 22 percent of African agricultural trade took place among African nations. The same statistic is 38 percent in North America, 60 percent in Asia, and 70 percent in the European Union.[1] It is true that this statistic is not a good measure of regional integration, as the share of intraregional trade depends on the geography of each continent and the gross domestic products (GDP) of each member. But it seems abnormally low for Africa.

However, intra-African trade, especially agricultural trade, is in fact much larger than the official statistic alone suggests. The gap is due to informal trade, a major phenomenon in Africa.

Several studies provide a statistical evaluation of informal cross-border trade (ICBT) and conclude that its value is quite large as compared with formal trade.

The National Bank of Rwanda initiated a survey of ICBT between Rwanda and its four neighboring countries (Burundi, Democratic Republic of the Congo [DRC], Tanzania, and Uganda) at 53 border posts, both official and unofficial, and concluded that in 2011, Rwanda's informal exports to these four countries were 51 percent higher than formal exports (Republic of Rwanda, 2018). Ogalo (2010) collected statistics from the Bank of Uganda and the Uganda Bureau of Statistics and estimated that, in 2006, the value of informal exports from Uganda to its five neighboring countries (Republic of Congo, Kenya, Rwanda, South Sudan, Tanzania) was around 86 percent of the value of official exports to these countries. Smuggling — that is, trade of licit products at border posts not covered by customs officials — is known to be substantial between Benin and Nigeria (Bouët et al. 2019): a survey initiated by the National Institute of Benin concluded that the value of smuggled products between the two countries was five times higher than officially recorded exports (INSAE 2011).

Informal trade is an important source of income for many poor rural African households. Ama et al. (2014) interviewed 520 informal traders in 2012 at Botswana's borders with Namibia, South Africa, Zambia, and Zimbabwe and found income is the main motivation behind ICBT. Afrika and Ajumbo (2012) estimate that ICBT provides a source of income for approximately 43 percent of Africa's population. ICBT also plays an important role in terms of food security: in West Africa, a food-deficit region, ICBT in staple foods accounts for about 30 percent of total trade in the region (USAID 2015).

ICBT is also known to have a significant gender bias. Ama et al. (2014) estimate that the share of women participating in ICBT was 61 percent in 2012 in Botswana. This share is estimated at 70 percent in the South African Development Community (SADC) region (UN Development Fund for Women, 2009) and 60 percent in western and central Africa (Afrika and Ajumbo 2012). According to Lesser and Moisé-Leeman (2009, 16), for women, "informal trade often constitutes the sole source of earnings and economic empowerment."

So, in Africa, ICBT is widespread and heavily linked to food security and development. Improving measurement of this trade is important for designing better policies. First, obtaining more accurate trade data means enhancing the measurement of balance of payments and external accounts, an important element for the design of macroeconomic policy. It may also contribute to better

1 With the European Free Trade Area (Iceland, Liechtenstein, Norway, Switzerland) included.

economic modeling of the impact of trade agreements. The omission of this type of trade from economic data is likely to considerably bias the intraregional trade indicators frequently used by African policy decision-makers and analysts.

Second, evaluating ICBT more precisely can facilitate the development of more accurate domestic food balance sheets, which are key for food security.

Third, measurement of this type of trade can provide a more accurate picture of aspects related to informal trade, including informal labor markets and movement of staple foods during periods of crisis; these are particularly relevant issues in the current COVID-19 pandemic.

Fourth, the measurement of informal trade is fundamental in view of the Malabo Declaration, in which African states committed themselves to tripling the level of intra-African agricultural trade by 2025, and to the establishment of an African Continental Free Trade Area. In order to measure the success of this project, an accurate measure of the totality of cross-border trade is obviously needed.

This chapter aims to propose an assessment of the reality of informal trade in Africa, particularly in agriculture: How is it defined? What are its determinants? What is its magnitude, both in terms of traded products and countries involved? We present two interesting initiatives that are intended to assess the phenomenon of ICBT in African regions: (1) an initiative coordinated by the Permanent Interstate Committee for Drought Control in the Sahel (Comité permanent Inter-État de Lutte contre la Sécheresse au Sahel, abbreviated as CILSS) and implemented by the West African Association for Cross-Border Trade in Agro-forestry-pastoral and Fisheries Products - (AOCTAH, Association Ouest Africaine du Commerce Transfrontalier des produits Alimentaires, Agro-sylvo-pastoraux et Halieutiques) that measures informal/unrecorded trade in agricultural commodities in West Africa; and (2) an initiative designed by the Uganda Bureau of Statistics (UBoS) and Bank of Uganda (BoU) which assesses informal/unrecorded trade in agricultural and industrial commodities at Uganda's borders with its neighboring countries.

The current sanitary situation, related to COVID-19, is of utmost importance as it may increase poverty and food insecurity in Africa. Therefore, we also provide in this chapter a preliminary analysis of border policies adopted in March 2020 in Africa, with a look at preliminary data on ICBT in eastern Africa. We conclude by addressing some issues related to the policies related to ICBT and to the African Continental Free Trade Area.

The next section defines ICBT. The third and fourth sections identify the main reasons underlying this trade in Africa and present the methods adopted to measure it. The following section offers some statistics about the magnitude of ICBT in Africa, with a detailed presentation of the two initiatives mentioned. The final sections address the role of ICBT during the 2020 pandemic, with a presentation of preliminary statistics, and offer some conclusions.

What is informal cross-border trade?

There is much confusion about what ICBT is, and definitions differ from one institution to another.

For UNCTAD, "informal cross-border trade is trade between neighboring countries conducted by vulnerable, small, unregistered traders. Typically, it is proximity trade involving the move of produce between markets close to the border. The informality refers to the status of the trader (unregistered), not necessarily to the trade itself (captured or unrecorded by the official customs system)."[2]

Afrika and Ajumbo define ICBT as "trade in processed or non-processed merchandise which may be legal imports or exports on one side of the border and illicit on the other side and vice-versa, on account of not having been subjected to statutory border formalities such as customs clearance" (2012, 2).

For Lesser and Moisé-Leeman, ICBT is "trade in legitimately produced goods and services, which escapes the regulatory framework set by the government, as such avoiding certain tax and regulatory burdens" (2009, 9).

The main point of contention is whether the term "informal" applies to trade or to traders. UNCTAD considers that ICBT is cross-border trade operated by the informal sector, while Afrika and Ajumbo (2012) and Lesser and Moisé-Leeman (2009) consider that ICBT is trade that escapes statutory border formalities.

It is easier to understand what these definitions imply if we consider the different categories of trade that we intend to include in this phenomenon. Lesser and Moisé-Leeman (2009) established the following classification:

- *Informal unregistered traders or firms operating entirely outside the formal economy* (**ICBT definition A**). This is unrecorded trade operated by informal traders or informal firms. An example given is trade in small quantities conducted by individuals carrying sufficiently small quantities of a good through a border crossing such that this passage is not subject to control, whether or not this lack of control is legal. In Uganda, UBoS has been tracking this type of trade for 15 years. Another example is informal traders or informal firms making cross-border shipments of a good or several goods but avoiding official customs posts: this activity is illegal.

- *Formal (registered) firms fully evading trade-related regulations and duties* by, for instance, avoiding official border crossing points (**ICBT definition B**). This is smuggling of licit products by formal firms, which transport their shipment avoiding official border points.[3] The specificity here is that total shipment is not registered by customs officials, unlike the next type of ICBT.[4] A recurring example is given by Nigeria: due to restrictions (bans, high import duties, and so on) adopted by its government, price differences on either side of the border are such that firms in the formal sector are ready to take the risk of illegality by bringing their goods across borders not covered by the customs authorities.

2 UNCTAD, accessed February 18, 2020, https://unctad.org/en/Pages/DITC/Gender-and-Trade/Gender-Project-1617J.aspx.
3 Smuggling of illicit products like drugs or arms is not considered in this study.
4 ICBT definition B could also be called the "Bhagwati-Hansen" type of smuggling (Bhagwati and Hansen 1973). More precisely, in the economic literature, the "Bhagwati-Hansen" type of illegal trade is trade through illegal border posts, and the "Pitt" type of illegal trade is trade through legal border posts (Pitt 1981; Martin and Panagariya 1984).

- *Formal (registered) firms partially evading trade-related regulations and duties by resorting to illegal practices*, such as under-invoicing or misclassifying (**ICBT definition C**). This corresponds to trade by formal firms which partly avoid the payment of customs duties by either underreporting the volume of trade, by underpricing the shipment, or by misclassifying the product to benefit from a lower import duty levied on a substitute. This activity is also illegal. Evidence of this type of ICBT is often given by comparing trade flow reported by the exporting country with trade flow reported by the importing country (mirror trade flows). In Africa, the empirical literature points out that this type of trade is common in countries like Nigeria and Kenya (see Bouët and Roy 2012). The level of import duties and quality of institutions are important factors affecting the magnitude of these trade flows (Jean, Mitaritonna, and Vatan 2018).

In this chapter we survey all types of ICBT. Each time we present statistics, we carefully define which type of ICBT these statistics refer to.

Why do we observe informal cross-border trade?

As stated by Golub and Mbaye, ICBT "in Africa is a natural outcome of the combination of economic, ethnic, and cultural connections transcending artificially-demarcated national borders with lack of coordination of trade policies across countries and weak state enforcement capabilities" (2009, 597). In this section we emphasize the role not only of historical and cultural factors, but also of economic determinants.

Historical and cultural determinants

A major factor explaining the importance of informal trade in Africa is historical and cultural. Colonization involved the establishment of largely artificial borders in Africa, notably at the Berlin Conference in 1884–1885, and the post-colonization period reinforced this trend. As a result, African states are defined by these borders, rather than cultural factors. The consequences noted by many historians are, on the one hand, the multiplication of interstate conflicts linked to the delimitation of borders and, on the other hand, the development of ICBT.

Trade in Africa has traditionally taken place between people of the same clan or ethnic group. However, these communities are distributed on both sides of these borders because of this historical factor. Little et al. (2010) and Tegegne et al. (1999) give the example of Ethiopia–Kenya transborder trade or trade between Uganda and the DRC, Sudan, Kenya, Tanzania, and Rwanda as an illustration of ICBT conducted between people of the same ethnic group. Golub and Mbaye (2009) cite the case of trade between Gambia and Senegal (Mourides ethnic group); Bouquet (2003) the case of trade of cocoa between Ghana and Côte d'Ivoire; and Golub and Hansen-Lewis (2012) the case of Yoruba trading between Benin and Nigeria.

Market failures may explain why informal trade takes place within ethnic groups. For example, in the southern and southeastern borders of Ethiopia, there is almost no access to credit. In this Ethiopian region, informal trade consists mostly of exports of livestock. Traders buy animals on credit and repay lenders when the animals are sold. Because trust is more solid within ethnic groups, informal trade prioritizes exchange between people of the same group.

Ethnic groups also play this role because of insufficient provision of public goods. Ethnic groups can substitute for governments in providing hospitals, safety nets, and access to culture and economic information (Golub and Hansen-Lewis 2012).

ICBT definition A corresponds to this determinant. This trade is operated by informal traders, either with small quantities through official border posts or with larger quantities and avoiding border posts.

Poverty

An important determinant of ICBT is poverty. This concerns ICBT definition A and, in particular, informal trade in small quantities operated by individuals.

Africa has the world's highest poverty rates, both in absolute and relative terms. According to World Bank estimates,[5] among all regions, in 2015, sub-Saharan Africa has by far the highest poverty headcount ratio (41.1 percent for an International Poverty Line of US$1.90 per day, in 2011 PPP) and the largest number of poor people (413.3 million).

Many studies have been conducted based on interviews of informal cross-border traders. They often show that the primary motivation for ICBT is to provide a source of income, food security, and a way to overcome poverty (Ama et al. 2014). In Rwanda, a majority of ICBT participants live on more than US$2 per day, a sum they would never achieve with formal employment (Charalambides and Parker 2016). For traders and small-scale producers, ICBT contributes to poverty alleviation and provides a way to meet their basic needs (food, education, housing).

Degree of law enforcement and price differences across borders

Some microeconomic models (Pitt 1981; Martin and Panagariya 1984; Sheikh 1989; Métivier and Bouët 2018) have developed a theory of informal trade that is simple but explains the problem well.

To simplify the understanding of existing models, one can first understand the behavior of a smuggler who sees an import prohibition as the opportunity to make a profit: the prohibition raises the domestic price in the importing country above the world price.[6] It corresponds to ICBT definition A where such smuggling is carried out by agents operating in the informal sector, and to definition B when it is carried out by agents in the formal sector.

Smuggling is a risky business. The probability of being caught depends positively on the degree of law enforcement in the importing country (Métivier and Bouët 2018), but in some models it depends positively on the smuggled amount, and negatively on the amount of money the smuggler spends to avoid being caught (Martin and Panagariya 1984).

If caught, the smuggler loses his entire shipment and may be subject to a penalty from the customs authorities. If he is not caught, he makes a profit equal to the quantity transported times the difference between the domestic and world price, minus the amount of money spent for not being caught, minus the traditional transportation costs. Smuggling will occur as long as it generates a positive expected profit.[7]

5 See World Bank News, September 19, 2018, https://www.worldbank.org/en/news/press-release/2018/09/19/decline-of-global-extreme-poverty-continues-but-has-slowed-world-bank.
6 It is worth mentioning that in Africa, there are also many export bans. In this case the domestic price is lower than the foreign price and it is beneficial to avoid border posts in order to sell the commodity abroad.
7 It is important for economists to understand that this literature assumes that smuggling of agricultural products is described as an activity with increasing costs, either because the probability of being caught increases with the quantities diverted, or because the smuggler has to commit increasingly large sums of money in order not to be caught. As the demand for this illegally transported good decreases with the selling price of the contraband, there is an equilibrium quantity in this market.

So with this simple model in mind, we understand that smuggling depends positively[8] on the price difference between the two sides of the border, which is a function of import duties or a prohibition put in place on the importing side, or an export ban on the other side, or a quota which can be more or less restrictive.[9]

The implementation of complex regulations, especially sanitary or phytosanitary norms or technical barriers to trade, not aligned with international or regional standards, leads to a higher price on the importing side. Inefficiency of customs procedures also augments the price of imported goods, especially when it concerns time-sensitive products (fresh agricultural commodities). Foreign exchange controls also raise trade costs and consumer prices.

According to Bouët, Cosnard, and Laborde (2017), in terms of import duties, Africa is the most protectionist continent in the world. Africa's average import duty on all merchandise is 9.67 percent, with higher protection in the agricultural sector (19.58 percent). Africa also has the highest average duty on its overall (including both agricultural and nonagricultural) intracontinental trade (8.62 percent) and is second only to Asia for agricultural products. Despite the success of certain regional agreements (ECCAS, EAC, and SACU) in suppressing duties, African countries still impose high duties on trade between regional economic communities (RECs). This appears to be a major disincentive for intra-African trade, particularly for agricultural products; these products face a 15.23 percent duty inside the continent, compared with 9.86 globally (Bouët, Cosnard, and Laborde 2017). However, most RECs in Africa do not have high tariff levels on their intraregional imports (Odjo, Traoré, and Zaki 2019). Econometric studies have shown that ICBT definition C (customs duty evasion) increases with the level of import duties (Bouët and Roy 2012; Jean, Mitaritonna, and Vatan 2018).

Export taxes are also common in Africa. Kim (2010) mentions that of over 35 African countries that are members of the World Trade Organization (WTO), and whose trade policy was assessed by a WTO Trade Policy Review between 2003 and 2009, 30 were imposing export duties.

African governments apply export duties to generate public revenues, sometimes on all exported products — on this issue, Kim (2010) cites the case of Chad, Gambia, and Niger — or in specific value chains, using a Differential Export Tax scheme[10] to make the processing stage more competitive. Bouët and Odjo (2020) give the example of DRC in the wood value chain and Tanzania in the cashew nut and the wet blue leather industries.

Even within a REC, trade can be impeded by prohibitions implemented by governments that do not respect the trade liberalization scheme imposed by the agreement. Evidence of import or export bans is difficult to ascertain as there is no initiative aimed at systematically collecting information on these policy instruments and the notifying scheme at WTO is far from perfect. However, there are many case studies proving their prevalence in African agriculture. In ECOWAS, Nigeria often implements import bans, even on merchandise originating within ECOWAS (Bouët et al. 2019). Porteous (2017) cites the case of 13 short-term export bans on maize implemented by 5 countries in East and Southern Africa. Schulz (2019) collects information on 32 sub-Saharan African countries that have implemented export prohibitions on raw commodities including cashews, raw hides, and timber, among others.

8 Other forms of ICBT can be more or less explained by a similar economic model.
9 Price elasticities of demand and supply may play a role, especially in case of a quantitative restriction or a tariff with imperfect substitution between local and foreign goods.
10 A Differential Export Tax scheme is a system of export taxation with higher taxes on unprocessed goods and lower taxes on semi-processed and processed goods. The objective is to reduce more the price of the unprocessed good such that the entire system makes the processing stage of transformation more competitive thanks to a comparatively low input price. For example in Tanzania, raw hides and skins are chargeable to an export tax at the rate of 80% of FOB value of exports or US$ 0.52 per kg whichever is greater, while exports of wet blue leather are levied at the rate of 10% on FOB value (Tanzania Revenue Authority 2020). The scheme implemented by the Tanzanian government intends to give more support to exports of wet blue leather while contributing simultaneously to public revenues.

Complex regulations and standards

The development of any form of informal trade often responds to price differences. Many African countries have implemented Price Stabilization Boards, which often create price differences. Bouquet (2003) cites the example of informal trade in cocoa between Ghana and Côte d'Ivoire. This informal trade is a response to the price board in Côte d'Ivoire, which guarantees higher prices for cocoa in Côte d'Ivoire than in Ghana. Import licenses and other administrative procedures, for example concerning currency convertibility, can also create significant price differences.

For Bouët and Odjo (2020), the implementation of regional trade agreements in Africa has entailed significant changes in African trade policies, especially the removal of impediments to cross-border trade such as import licenses and other procedural barriers.

Sanitary and phytosanitary (SPS) measures have a complex impact on the potential split between formal and informal trade. On one side, they represent a supplementary cost that has a negative impact on trade flows. On the other side, an SPS norm can act as a signal of quality for consumers and as such, increase trade. When regional trade agreements lead to the harmonization of SPS regulations, it can facilitate trade between member countries but impede trade with nonmember countries.

In the African case, let us mention two important points. First, there is a lack of empirical evidence about the impact of African SPS regulations on intra-African trade. Second, in many African regions, the demand of consumers for food safety may be low, as illustrated by a recent impact evaluation project concerning maize and aflatoxin in Nigeria (Narayan et al. 2019).

Inefficiency of customs procedures

There is strong evidence of inefficient customs procedures in Africa. Inefficient customs procedures waste transporters' time. This cost might be transmitted into final consumer prices. Customs officers may demand bribes: either there is no import duty at the border and a bribe represents a supplementary cost for the transporter, or there is an import duty to be paid and the bribe may (or may not) serve as a way of paying less taxes. In West Africa, the CILSS initiative, in collaboration with WACTAF, collects data on road harassment by customs officers, police, gendarmerie, civil servants from city halls, and sanitary and phytosanitary institutes. For example, in June 2017, the average number of checkpoints was five controls per 100 km in Côte d'Ivoire. Along the livestock corridor between Mauritania and Senegal, recorded illegal payments per 100 km averaged $24 in the same month, while delays in the delivery of cola caused by road harassment averaged 231 minutes per 100 km.

Inefficiency of customs procedures encourages smuggling (ICBT definition B): smuggling may allow traders to save time and money. In the case of lengthy customs procedures, smuggling may be greater when traded products are fresh agricultural commodities. The Institut National de la Statistique et de l'Analyse Economique (INSAE – National Institute for Statistics and Economic Analysis) conducted a survey on ICBT at many (unofficial) border points over a short period in 2011 (INSAE 2011). This survey, the Enquête sur le Commerce Extérieur Non Enregistré (ECENE), covered only illegal border posts and thus provides a direct measurement of smuggling. Using the ECENE survey, Bensassi et al. (2016a) empirically analyze the determinants of smuggling and conclude that agricultural products, goods facing higher tariffs or an import ban,

and time-sensitive[11] products are commonly smuggled, while other goods are legally traded. Bensassi et al. (2016b) confirm these results in Benin, Togo, and Nigeria.

The Doing Business group (World Bank 2016) constructs well-known indicators to measure the cost in both time and money, excluding tariffs and border taxes, of exporting and importing a specific shipment of goods to and from a country's main trading partner. Time to export and time to import include documentary compliance, border compliance, and domestic transport (all in hours). Cost to export and cost to import include documentary compliance, border compliance, and domestic transport (all in US dollars). Regarding the eight components of the trading-across-borders indicator from Doing Business 2020 (World Bank 2020), that is, the two components (documentary compliance and border compliance) of time and cost to export and to import, for six of these eight indicators, sub-Saharan Africa has the worst performance of any region. For one of the eight indicators, the Middle East and North Africa region is the worst. Clearly, the time required to export and the time to import are still very high for many African countries. For example, in Sudan, the time to export (border compliance and documentary compliance) is estimated at 15.4 days in 2019. In Tanzania, the time to import (border compliance and documentary compliance) is estimated at 26.7 days in 2019.

Geography and border markets

It is often argued that Africa's borders are naturally porous. Often, there are few geographical obstacles the passage from one side of the border to the other. This facilitates the development of ICBT. In Benin, there are more than 170 informal border points but only a small number of official border posts. It is obviously difficult and costly for African governments to control so many informal border crossings. Porosity of borders greatly facilitates ICBT definitions A and B.

Large open markets have been developed close to border points. In Africa, there are many examples of market-shed centers accessed by traders from contiguous countries: the market of Mbeya in Tanzania, accessed by citizens from Zambia and Malawi, or the Mazabuka market-shed in Zambia accessed by citizens from Zimbabwe (Stuart 2020). In West Africa, CILSS has listed three regional border markets in Benin, seven in Burkina Faso, seven in Côte d'Ivoire, and seven in Ghana, among others.

11 Time-sensitiveness is a measure of sensitiveness of products to time spent in transportation. It was provided by Hummels and Schaur (2013) who exploit a rich database of the premium paid by US exporters on expensive and rapid air cargo as compared to slow and cheap ocean cargo to identify time-sensitiveness of products.

Box 5.1 GENDER ASPECTS OF ICBT

The gender dimension is important in ICBT. The presence of women in ICBT activities reflects their participation in informal activities in general because of lack of access to finance and productive capital. Many studies have concluded that the majority of informal cross-border traders in Africa are women. According to Brenton and Isik (2012), 80 percent of cross-border traders in the Great Lakes region are women, and Njiwa et al. (2011) find that 75 percent of informal cross-border traders between Malawi and Zambia are women. In Botswana, 61 percent of informal cross-border traders are women (Ama et al. 2014) and 74 percent of informal traders in Rwanda are women (Republic of Rwanda 2012). Women are particularly present in the agricultural sector, linking areas in surplus to localities in short supply but also in agricultural processed goods and light manufacturing commodities not requiring complex certificates (Gagera and Bhan 2016; Ama et al. 2014). ICBT seems to play a role in alleviating poverty (Cagatay and Ozler 1995) and contributes to women's empowerment, family and child support,[12] and employment[13] (Chen et al. 2006; Yussuf 2014).

Women experience specific situations not observed for men, such as harassment and extorsion at the border. It is well documented that women engaged in ICBT are subject to discrimination. Women traders are very often subject to harassment, extortion, time-consuming procedures, and documentary requirements at border crossing points (Brenton et al. 2013). In East Africa, Higgins and Turner (2010) have shown that female cross-border traders pay larger bribes than their male peers and must often provide sexual favors to avoid detention by the border guards or confiscation of their goods. However, the time-consuming procedures women face are often related to the nature of products they carry. Indeed, there is often a gender-based specialization for the products being traded. For instance, in the ECOWAS region, some of the procedures faced by women reflect the fact that they are more specialized in products that do not always originate from the region, are subject to rules of origin, and not subject to duty-free trade.

Measuring ICBT

Over the years, various methods have been proposed to measure the "missing" part of trade in Africa, including ICBT. These can be broadly divided into indirect and direct methods. Indirect methods involve using mirror data and econometric techniques while direct ones build upon surveys at border points and strategic markets.

Indirect methods for measuring missing trade and their limitations

The use of mirror data is one of the most widely used methods analysts employ when measuring the missing part of trade for a given country. The method consists of comparing the declarations of the two trading partners and filling the gap in the data with the declaration of the reporting partner. Using this methodology could help improve the quality of trade data, particularly in Africa.

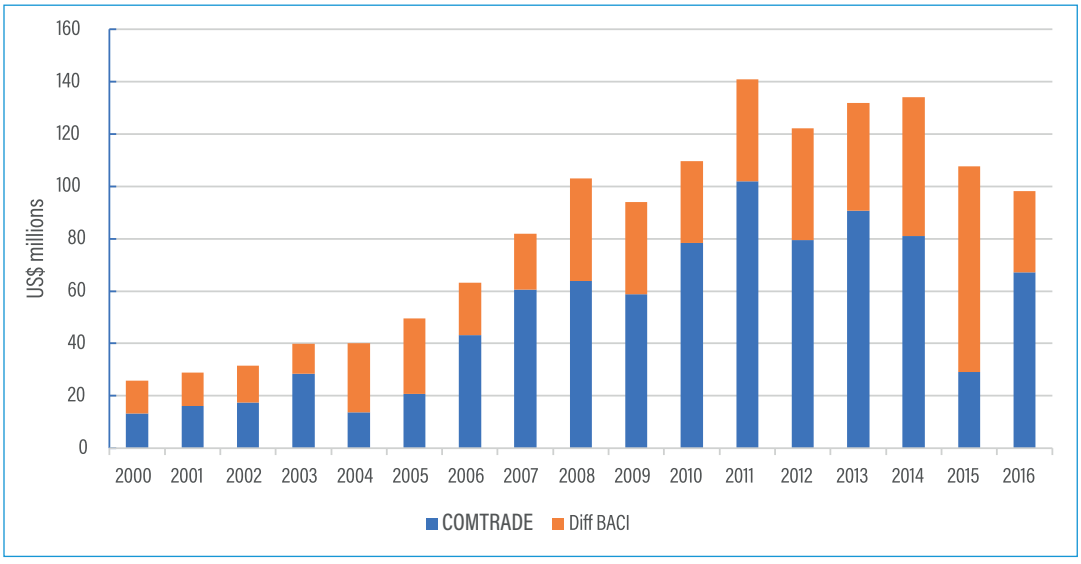
12 School fees and health expenditure.
13 UNIFEM surveys in West and Central Africa report that women informal cross-border traders employ on average 1.2 people, and support 3.2 children and 3.1 dependents who were not children or spouses (UN Women 2008).

This methodology clearly addresses the issues raised by the existence of ICBT definition C (formal firms partially evading trade-related regulations and duties by resorting to under-invoicing or declassifying) but does not address issues raised by smuggling and trade in small quantities.

The Base pour l'Analyse du Commerce International (BACI – database for the Analysis of International Trade) built by CEPII is based on the methodology of mirror flows, with additional treatments to improve the quality of declarations and increase the number of countries for which trade data are available. Using econometric (gravity) techniques to properly measure the CIF/FOB (cost insurance freight/free on board: this ratio is an estimate of the cost of the insurance and transportation) ratios and weight the quality of declarations,[14] the database brings additional information and comes up with a unique flow. Performing this treatment significantly increases the level of trade data for Africa.

Figure 5.1 below presents the difference between BACI and UN COMTRADE data for ECOWAS countries from 2000 to 2016. We use the COMTRADE database for the comparison and not the database we created for this report. Indeed, the essential point here is that this comparison illustrates the limitations of official international data. Depending on the year, the difference between the two databases ranges from one third to two thirds (as in 2015). Thus, using mirror data can help fill a significant gap in trade data and capture part of the missing trade.

Figure 5.1 ECOWAS total imports, all products, BACI and COMTRADE databases



Source: BACI and COMTRADE.

Note: Diff BACI = difference between BACI data and COMTRADE data.

Table 5.1 presents the main characteristics of the difference between the two databases in more detail, and provides useful information for the African case. It is worth noting that the difference is much greater for intraregional trade compared to extraregional flows. Indeed, on average the ratio is 1.90 for intraregional trade compared with 1.45 for extraregional trade, primarily because declarations for extraregional partners are of better quality than intraregional ones, which suffer from underreporting on both sides. As shown in Table 5.2, African countries do not always report to COMTRADE or their declarations are subject to issues so that they are available only with significant delays or even not included. This is the main limitation of relying on mirror data — when declarations are absent or bad on both sides, one cannot retrieve the "missing" part of trade. It is then necessary to call for direct methods.

14 See Gaulier (2010) for a full description of the methodology.

Table 5.1. ECOWAS intraregional and extraregional trade, all products

	Intraregional trade (US$ millions)			Extraregional trade (US$ millions)		
Year	COMTRADE	BACI	BACI/COMTRADE	COMTRADE	BACI	BACI/COMTRADE
2000	2.4	2.7	1.1	10.9	23.1	2.1
2001	2.0	2.7	1.3	14.1	26.1	1.8
2002	1.7	2.9	1.7	15.8	28.8	1.8
2003	3.3	4.2	1.3	25.1	35.6	1.4
2004	3.2	4.6	1.4	10.4	35.4	3.4
2005	4.5	6.5	1.4	16.2	43.0	2.7
2006	4.3	6.5	1.5	38.9	56.7	1.5
2007	5.9	7.4	1.2	54.6	74.5	1.4
2008	8.0	10.9	1.4	55.9	92.0	1.6
2009	3.8	6.4	1.7	54.9	87.7	1.6
2010	6.2	8.6	1.4	72.1	101.1	1.4
2011	7.4	9.8	1.3	94.6	131.1	1.4
2012	8.3	11.7	1.4	71.1	110.5	1.6
2013	9.2	13.9	1.5	81.5	118.1	1.4
2014	7.5	12.1	1.6	73.6	121.9	1.7
2015	4.4	7.5	1.7	24.8	100.2	4.0
2016	4.3	7.0	1.6	62.8	91.2	1.5

Source: Mitaritonna and Traoré (2017).

Table 5.2 Declaration to COMTRADE

	2010	2011	2012	2013	2014	2015	2016
Nigeria	Y	Y	Y	Y	Y		Y
Ghana	Y	Y	Y	Y			Y
Côte d'Ivoire	Y	Y	Y	Y	Y	Y	Y
Mali	Y	Y	Y				Y
Senegal	Y	Y	Y	Y	Y	Y	Y
Burkina Faso	Y	Y	Y	Y	Y	Y	Y
Benin	Y	Y	Y	Y	Y	Y	Y
Togo	Y	Y	Y	Y	Y	Y	Y
Liberia							
Guinea				Y	Y	Y	
Sierra Leone					Y	Y	Y
Cabo Verde	Y	Y	Y	Y	Y	Y	Y
Guinea-Bissau							
Gambia	Y	Y	Y	Y	Y		Y
Niger	Y	Y	Y	Y	Y	Y	Y

Source: COMTRADE (2019).
Note: Y stands for the availability of the declaration of commodities trade data by the country's national statistical institute to COMTRADE.

Econometric approaches

Analysts have also used econometric methods in their attempts to fill the gap of missing trade data and thus the informal component. The econometrics methods used are largely based on gravity equations. In other words, this approach establishes a norm of trade, that is, what trade volumes should be given the characteristics of the country. The norm of trade (the predicted value from the gravity equation) is then compared to actual (observed) flows and the difference is the "missing" trade, which could include informal transactions. The variables used in the gravity equations are the GDP of trade partners, distance, and trade policy variables (tariffs and nontariff measures).[15] In a study involving African countries using a gravity equation in manufacturing trade, Villoria (2008) estimates missing intra-African exports at approximately US$300 million, the highest value being in Central and West Africa. It is worth noting that the gravity approach is based on a theoretical model estimated with econometric methods and has its own limitations. Also, for cases when missing trade is available from both gravity estimates and direct surveys, the former always underestimated the real flows observed (Mitaritonna and Traoré 2017).[16] This again suggests the value of using direct methods to measure ICBT and missing trade.

15 Other variables are used as well, such as dummy variables for common language or former colony and more technical ones such as the so-called multilateral resistance terms (Anderson and van Wincoop 2003).
16 This is the case for Benin for instance. Villoria (2008) predicts that missing exports represent 5 percent of Benin's exports, which is quite low compared to both mirror flows and direct surveys.

National accounts data

Although not widely used, it would be possible to use macroeconomic identities between supply and uses and the system of national accounts to retrieve trade flows. However, this is a very challenging task. Estimates of production are available, but there are measurement errors, particularly in agriculture. On the other hand, estimating the uses of production (consumption, stocks, feed, etc.) is also highly challenging and subject to measurement errors. This calls again for direct methods of measurement.

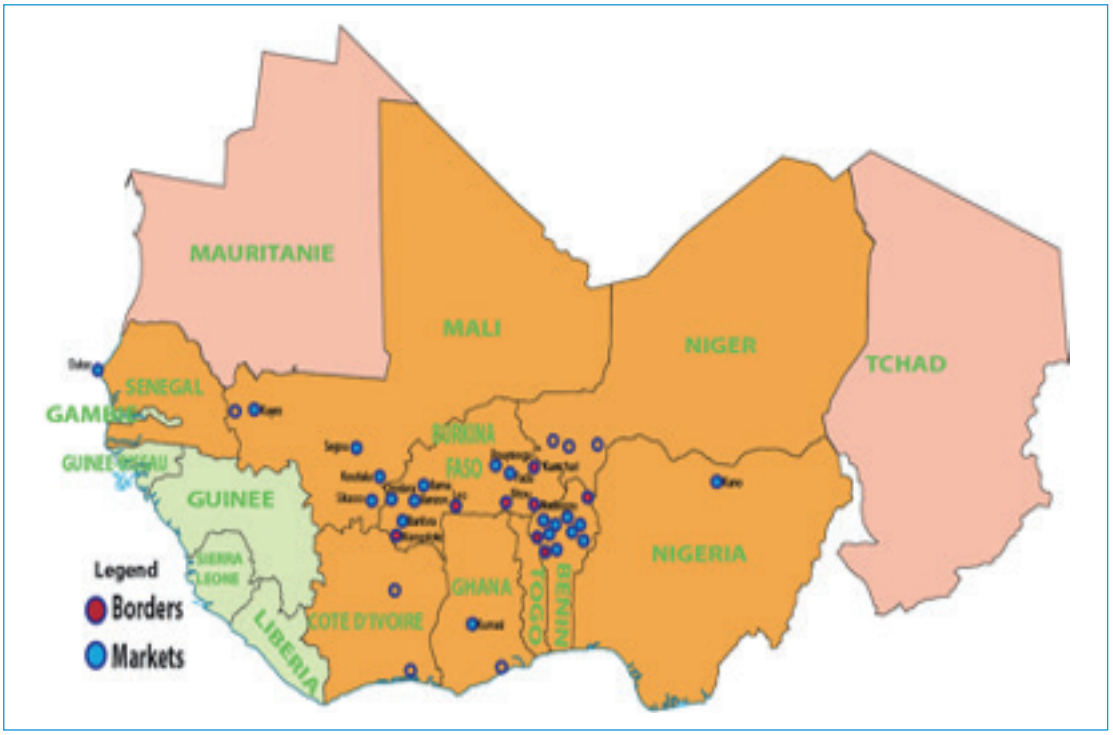
Direct methods

As using mirror flows and indirect methods to assess ICBT are not sufficient, different initiatives have been developed to monitor informal (or "unregistered") trade in recent years in Africa. In this section, we first present the two main initiatives to monitor informal trade in Africa, namely the CILSS and WACTAF initiative in western Africa and UBoS in Uganda, and then we briefly review the others.

The CILSS and WACTAF initiative

In West Africa, CILSS and WACTAF have the only permanent ICBT monitoring system for agro-sylvo-pastoral products and fisheries under its Regional Support Program of Market Access funded by USAID. The data collection activities started in April 2013. Data on 57 products are collected on value and volume of intraregional agricultural trade on strategic markets and along the major commercial corridors linking Senegal, Mali, Burkina Faso, Benin, Togo, Ghana, Côte d'Ivoire, and Nigeria (Figure 5.2).

Figure 5.2 Trade data collection points



Source: CILSS.

This initiative is aimed at collecting information on unrecorded trade flows along trade corridors in West Africa. It aims at monitoring the exact value of transactions along trade corridors.[17] Therefore, comparing these data to formal borders data allows us to have an idea of the magnitude of informal trade.

The CILSS approach is characterized by collaboration with professional partner organizations/ national apex associations to conduct the work. Data are collected by 10 apex associations from 17 countries (15 ECOWAS, Chad, and Mauritania), which have jointly created the West African Association for Cross-Border Trade in Agro-forestry-pastoral and Fisheries Products (WACTAF). Each partner organization/association has a focal point per value chain/commodity per country, and two data collectors per association per commodity and per strategic market or exit point are selected. Data collection is done in the strategic markets and exit points every market day. The data collected are the following:

- Date of departure of truck/train/tractor
- Country of origin
- Truck registration number
- Export volume (number of bags)
- Export price (FOB) per unit in local currency
- Type of commodity
- Variety (cereals)/Category (livestock)
- Data collection point/Loading point (in country of origin)
- Destination country
- Unloading point (in country of destination)
- Trader contact information

The CILSS approach (working with apex associations) has many advantages. First, it helps increase the coverage of the monitoring and involves the cooperation of actors (traders). Second, and more importantly, the fact that data are collected daily avoids seasonality issues that are significantly present in agriculture. With this kind of coverage, there is no need to extrapolate the data collected to have annual flows as is always done with usual surveys. However, some issues remain unresolved. Not all areas in West Africa are covered, in particular, the east and west production and commercialization basins[18] are yet to be properly included. Also, certain means of transportation (transportation through lagoons for instance) are not fully considered or are neglected.

17 Indeed CILSS, as indicated in their cross-border trade data collection methodological document, monitors both "formal cross-border trade" in which the trader has submitted documentation at the border and "informal cross-border trade," which is defined as unregistered and/or unregistered trade not subject to formal written border procedures.
18 CILSS intervention areas are divided into three production and trade basins: the eastern basin includes Benin, Chad, Niger, and Nigeria; the central basin is composed of Burkina Faso, Côte d'Ivoire, Ghana, Mali, and Togo; the western basin includes Cabo Verde, Gambia, Guinea, Guinea-Bissau, Liberia, Mauritania, Senegal, and Sierra Leone.

UBoS approach

Surveys of ICBT in Uganda started in 2005 and are still being carried out. They are operated and financed by the Uganda Bureau of Statistics (UBoS) and the Bank of Uganda (BoU).

According to the definition adopted by UBoS and BoU, ICBT refers to "trade transactions between residents and non-residents across the economic boundaries of two or more countries that are not recorded by Customs Authorities" (UBoS and BoU 2013, v). This definition is largely consistent with ICBT definition A and the methodology used to measure it confirms this point.

The UBoS survey aims to assess the volume and value of informal trade between Uganda and its neighbors (DRC, Kenya, Rwanda, South Sudan, and Tanzania). The goal is to provide an estimation of informal cross-border exports, primarily of agricultural and food commodities. Ugandan trade has clear regional patterns, with high levels of trade (imports and exports) with Kenya and the DRC. The country also exports large amounts to South Sudan, where demand for food imports is high because of low agricultural productivity exacerbated by drought and political unrest.

Because of the magnitude of informal trade between these countries, accurate measurement of ICBT has important implications for Uganda. Beyond traditional balance of payments and food balance sheet concerns, the surveys address recommendations by the Eastern African Community (EAC) Council for regular monitoring of ICBT within the region.

By 2013, the Uganda survey covered 19 border posts and 4 bus terminals; one to two enumerators were stationed at each point to observe trade and, when necessary, to interview traders, clearing agents, and revenue officers. Exports are valued FOB, that is, without inclusion of taxes, transportation, and insurance costs, while imports are valued CIF, that is, cost of insurance and freight included. The selection of the monitoring sites was primarily based on the significance of trade flows through the border post. Moreover, data collection is limited to two weeks per month to reduce costs, with the weeks randomly chosen. In a recent annual report (2014), UBoS and BoU recognized that this survey does not cover all border points and as such likely underestimates total informal trade, but it was felt the underestimation was likely minimal.[19]

Collected data at the monitored posts include merchandise into/out of the country carried on foot, bicycles, pushcarts, motorcycles, vehicles, wheelchairs, donkeys, and boats, both in large and small quantities, that is not recorded by customs authorities, and undeclared or under-declared merchandise from traders on formal customs declaration documents.

Data collection does not cover trade reported to customs officials, nor goods transiting into and out of the country at any border post being monitored, nor goods smuggled into or out of the country (including nighttime cross-border transactions).

Other initiatives

Monitoring informal trade at the border is not an easy task. It requires significant means to be done properly and is very expensive. This explains why many initiatives conducted in Africa, summarized in Table 5.3, have been of short duration or the monitoring has been conducted at few border points.

While some are the work of researchers and performed only at one point in time and for some border points (Achello and Echessassh 1997; Bensassi et al. 2015), others are more institutionalized (ECENE 2010) or operated on a continuous basis (FEWSNET). In terms of methodology, the FEWSNET initiative is probably the closest one to CILSS and WACTAF.

19 The report notes that the survey is only conducted between 7 am and 6 pm and thus may miss trade occurring outside of those hours.

In collaboration with local partners, FEWSNET conducts regular analysis of markets and trade of food commodities in southern and eastern Africa. In eastern Africa, within the Food Security and Nutrition Working Group regional platform, the network participates in the monitoring of cross-border trade of 88 food commodities and livestock in 26 cross-border markets. The countries covered are Burundi, Djibouti, DRC, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania, and Uganda; the commodities covered are cash crops like maize, beans, wheat, rice, sorghum, and sesame. In southern Africa, in partnership with the Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA, a specialized agency of COMESA) and the World Food Programme, it monitors 29 borders points. The countries covered are DRC, Malawi, Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe.

The other permanent initiative worth mentioning is Rwanda's. Since a pilot survey done in 2009, the Rwandan government has been conducting regular assessment of ICBT at 53 border crossings with its four neighboring countries (Burundi, DRC, Tanzania, and Uganda).

Table 5.3 Main studies and initiatives to track informal trade collecting data

Initiatives	Geographical area	Goods	Main limitations
LARES (Laboratoire d'Analyse Regionale et d'Expertise Locale) - 1991-2004	Nigeria and neighboring countries	Agricultural and manufactured products	Comprehensiveness
Achello and Echessassh (1997)	Uganda and Tanzania	All goods	Important crossing points were omitted due to security reasons
Lesser and Moisé-Leeman, (2009)	Uganda and 5 neighbors countries	All goods	Study based on other sources
Bensassi et al. (2013)	Tunisia and Libya	All goods	Small part of the frontiers
Bensassi et al. (2015)	Algeria and Mali	All goods	Small part of the frontiers
CILSS (2013 ongoing)	West Africa Collection started in 2013, on a daily basis	Agriculture and food products	Financial constraints, which often stopped the work
ECENE (2010 and 2011)	Benin with all its neighbors	All goods entry/exit the country Products are very detailed and codified using the HS rev2 nomenclature, at 8 digits.	Financial constraints, which limited the work: only 10 days (in January for 2010) and 10 days in September 2011. Need to extend the period of the survey to nighttime (different goods exchanged and problem of security), and different time of the year (seasonality)
FEWSNET (2005 ongoing)	Eastern Africa Southern Africa	88 food commodities and livestock	Extrapolation problems to wider areas
Uganda Bureau of Statistics (2005 ongoing)	Uganda and its neighbors	All goods	Trade occurring at night not covered Difficulty in accurately estimating the quantities of some traded items
Regional Agricultural Trade Intelligence Network –RATIN (Eastern Africa Grain Council)	Eastern Africa (7 countries)	19 agricultural commodities in Southern Africa	Methodology not available

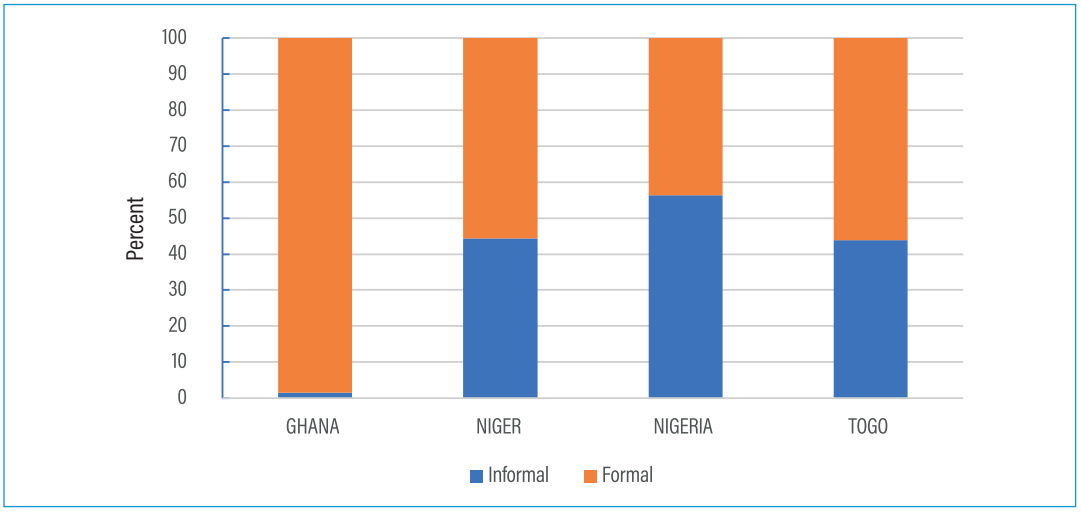
Source: Authors.

Magnitude of ICBT in Africa

Review of previous studies

Although many studies aimed at assessing the magnitude of ICBT in Africa are partial (conducted on a particular border, for selected goods, or for a limited period of time), they all suggest the importance of unrecorded trade and the figures are large in all surveys. In the case of Benin with all its neighbors (ECENE 2010), informal trade represented 40 percent of total trade in 2010 (Figure 5.3). For its main partner (Nigeria), informal trade represented more than 50 percent of export flows. The same figures hold for imports (57 percent of total import flows were informal).

Figure 5.3 Benin exports (selected partners), 2010



Source: INSTAT (ECENE 2010).

In a comprehensive review, Bouët et al. (2018) arrive at similar figures from the literature. In Rwanda, in 2014, 59 percent of the country's exports to its four neighboring countries were informal flows. The main products exported through the informal channels are agro-pastoral products, mainly maize and livestock. In Kenya, the 2011 survey conducted by the Kenya National Bureau of Statistics revealed that 25 percent of trade flows with Ethiopia took place through informal channels. Similar figures are found in the other studies mentioned in Table 5.3. We focus here on two examples that are particularly detailed and complete. While the CILSS example focuses on agricultural commodities, UBoS covers all products.

It is worth noting that while the initiatives by CILSS and WACTAF started with agricultural products, in 2020 they began covering all products through the creation of the Informal Trade Regulation Support Programme in the ECOWAS Region (ITRSP), for which a secretariat, the ITRSP Technical Secretariat (ECOWAS TS-ITRSP), was set up.[20]

20 Jointly set up by CILSS, WACTAF, UEMOA, and ECOWAS.

Two examples

Agricultural products in the West Africa region with CILSS and WACTAF data

As previously mentioned, CILSS and WACTAF specialized in monitoring ICBT for agro-sylvo-pastoral products in Africa until recently, while from 2020 onward, data have been collected on all types of products. The dataset, built daily, is a consistent source of information that gives an accurate view of transactions.

First, one can observe the significant amount of the transactions. Table 5.4 presents maize trade flows between selected West African countries. Total maize imports for all countries range from US$49,000 to US$7.5 million. When compared to formal transactions as recorded by COMTRADE, the difference is significant for most cases. For all cases, CILSS and WACTAF records are far above official statistics. The ratio between CILSS and WACTAF figures and official ones ranges from 1.27 for Ghana to 137 for Mali. This clearly raises the question of the reliability of official statistics for agricultural products in the region.

For cattle, we observe a pattern similar to maize. Table 5.5 presents trade flows for cattle between selected West African countries. As for maize, trade flows here observed by WACTAF are always significantly higher than those observed by customs. The ratio between the two ranges from 1.06 for Senegal to 47 for Ghana for total imports.

One should be cautious here with the figures, however. Not all trade flows recorded by CILSS and WACTAF are informal and some of them are likely to be also recorded by customs. Therefore, we do not have a pure dichotomy between formal and informal flows, but rather recorded and unrecorded trade: the latter can be evaluated by examining its difference from COMTRADE data.

Table 5.4 Maize bilateral flows in 2016 (US$ thousands)

	UN COMTRADE						CILSS					
	Burkina Faso	**Ghana**	**Mali**	**Niger**	**Togo**		**Burkina Faso**	**Ghana**	**Mali**	**Niger**	**Togo**
Benin	0.54			2845.58	1.34	**Benin**	1440.85			8.91	
Burkina Faso		38.41	36.61	31.99		**Burkina Faso**		900.64	48.03	7761.08	45.88
Côte d'Ivoire	58.39	81.27		3.947		**Côte d'Ivoire**	3254.73	24.48	4990.69	65.06	
Ghana				13.77		**Ghana**	2204.47			626.38	0.04
Mali	0.74					**Mali**					
Nigeria		0.55		134.32		**Nigeria**				5285	
Togo		727.92				**Togo**	679.92	154.74			
Total	59.68	848.16	36.61	3029.63	1.34	**Total**	7579.98	1079.85	5038.72	13746.43	45.92
						Ratio CILSS/ COMTRADE	127.0	1.3	137.6	4.5	34.3

Source: CILSS and COMTRADE.

Note: Exporter in row, Importer in column; this is trade in commodity 1005 according to the Harmonized System 4.

Table 5.5 Livestock bilateral flows in 2016 (US$ thousands)

		COMTRADE				CILSS			
	Côte d'Ivoire	**Ghana**	**Nigeria**	**Senegal**		**Côte d'Ivoire**	**Ghana**	**Nigeria**	**Senegal**
Burkina Faso	67.195	1107.601	15.134		**Burkina Faso**	20783.69	5254.749	14927.88	
Mali	50144.87			25,551.29	**Mali**	39645.3			27339.29
Niger			3285.54		**Niger**			7585.245	
Total	50212.06	1107.601	3300.674	25,551.29		60428.99	5254.749	22513.13	27339.29
					RatioCILSS/ COMTRADE	1.2	47.4	6.8	1.1

Source: CILSS and COMTRADE.

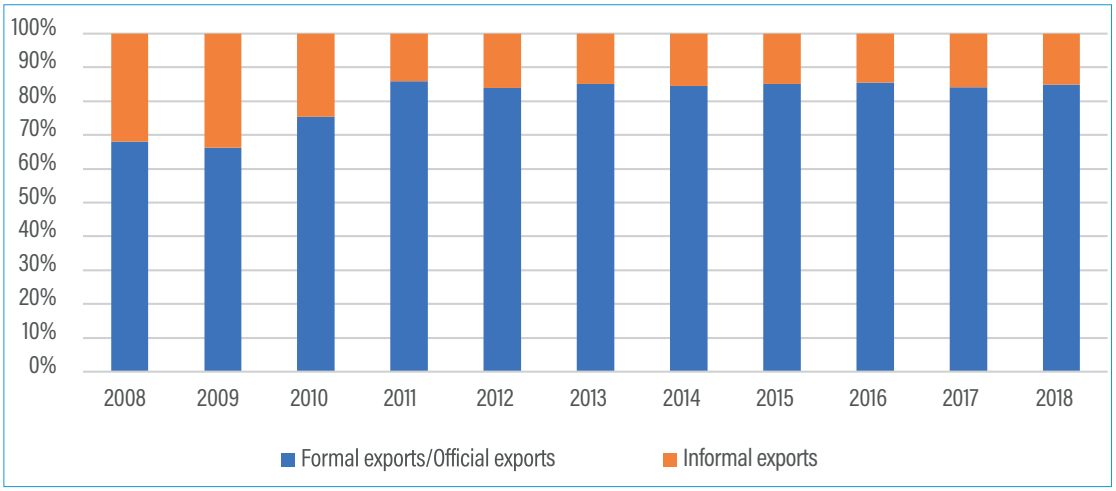
Note: Exporter in row, Importer in column; this is trade in commodity 0102 according to the Harmonized System 4.

Uganda and its neighbors for all products covered by UBoS[21]

Now we present some features of ICBT surveyed by UBoS at Ugandan borders.

Over the 2008–2018 period, informal cross-border exports represented between 14.1 percent and 33.7 percent of total Ugandan exports (see Figure 5.4). This share has decreased since 2011, and now ranges between 14 percent and 16 percent of total exports each year.

Figure 5.4 Share of official and informal exports in total exports, Uganda, all products, 2008–2018

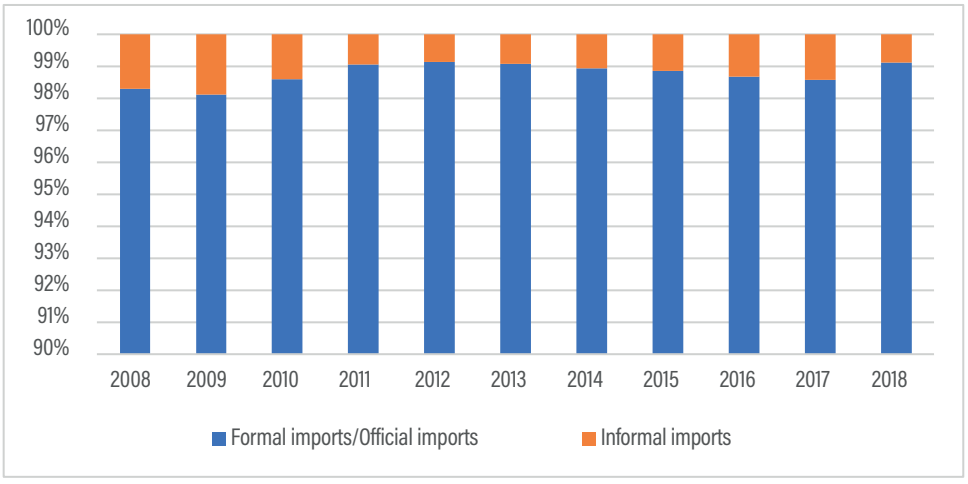


Source: UBoS and BoU.

In contrast, informal imports in Uganda, as recorded by UBoS, represent only a fraction of total imports: between 1 percent and 2 percent (see Figure 5.5). Compared to export flows, import flows are more reliably recorded by customs administrations due to the collection of taxes.

21 Makochekanwa and Matchaya (2019) conduct an interesting survey of initiatives tracking ICBT in eastern and southern Africa.

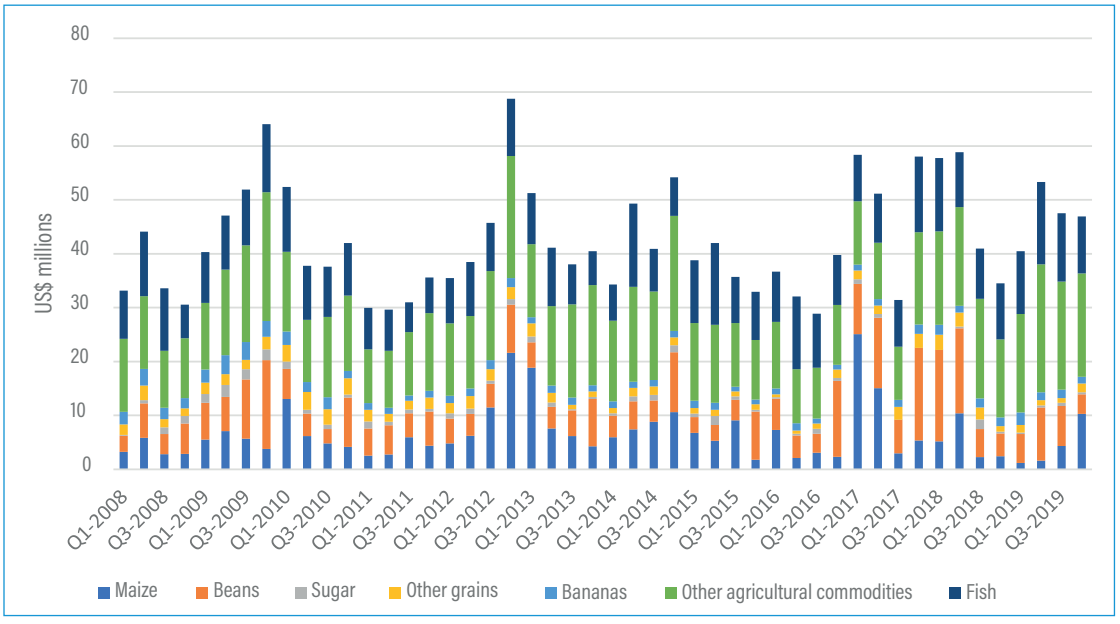
Figure 5.5 Share of official and informal imports in total imports, Uganda, all products, 2008–2018



Source: UBoS and BoU.

Over the 2008–2019 period, the share of agricultural and fish products in Uganda's total informal exports has varied in a range of 21 percent to 50 percent, rising to a peak in 2014, and then falling slightly: it is now between 33 percent and 40 percent. Among them, fish, beans, and maize are the most exported commodities (see Figure 5.6).[22]

Figure 5.6 Informal cross-border exports by agricultural products, Uganda, 2008–2019

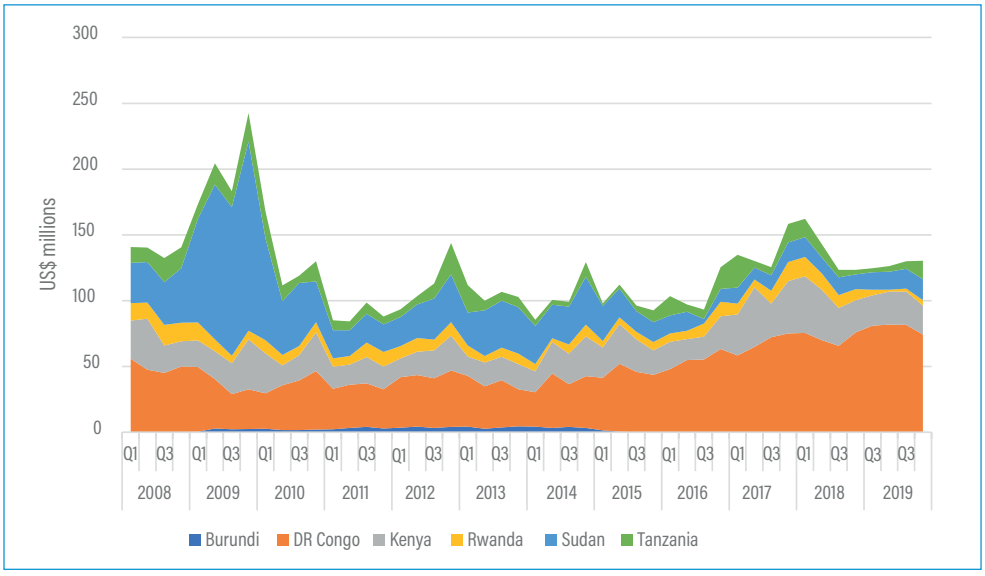


Source: UBoS and BoU.

The primary destination of Uganda's informal exports is the DRC, which now absorbs more than 60 percent of these exports (see Figure 5.7). The other important destination is Kenya, which receives around 20 percent of these exports.

22 Unfortunately, data on informal cross-border imports of agricultural products are not available.

Figure 5.7 Informal cross-border exports by destination, all products, Uganda, 2008–2019



Source: UBoS and BoU.

Informal cross-border trade in the time of COVID-19

At a time when Africa is losing its first victims to the coronavirus, health issues are of particular concern on the continent. But food security could also become a priority.

Africa is dependent on world trade for its food security. World production and stocks of staple food products were, in April 2020, at a satisfactory level. But a local food shortage may occur in eastern Africa because of the outbreak of locusts.

However, some producing countries, in a somewhat irrational panic, have applied export restrictions and even export bans. During March and April 2020, many countries took decisions to ban or suspend agricultural exports on world markets. This includes Armenia, Belarus, Cambodia, Egypt, Honduras, Kazakhstan, Kyrgyzstan, Russia, Serbia, Thailand, and Viet Nam.[23] These decisions lead to an increase in international prices, clearly penalizing most African countries, which are net importers.

All these elements point to a risk of growing food insecurity. Indeed, today in Africa, all food supplies must be encouraged. This includes ICBT, given its important role as a source of revenue and a source of food accessibility.

But another piece of bad news comes from the African countries themselves. Many of them (Burkina Faso, Cameroon, Republic of Congo, Côte d'Ivoire, Ethiopia, Gambia, Ghana, Libya, Mali, Niger, Rwanda, Sudan, Uganda, and Zimbabwe among others)[24] have opted to close land borders. Measures are more or less restrictive, but in countries like Cameroon, Republic of Congo, Côte d'Ivoire, Ethiopia, Gambia, Ghana, and Zimbabwe, land borders are strictly closed. In most cases, these interdictions concern movement of persons, while traffic of trucks shipping goods is authorized.

23 At IFPRI, David Laborde developed a tracker in 2020 to follow the adoption of export restrictions. See: https://public.tableau.com/profile/laborde6680#!/vizhome/ExportRestrictionsTracker/FoodExportRestrictionsTracker?publish=ye

24 This list has been set up thanks to the Al Jazeera website (accessed April 22, 2020): https://www.aljazeera.com/news/2020/03/coronavirus-travel-restrictions-border-shutdowns-country-200318091505922.html

The decision to close borders has already been criticized by epidemiologists, who fear it creates an incentive for people to use borders not covered by customs authorities and thus an encourages the movement of people without health controls.

In economic terms, it jeopardizes ICBT in agricultural products, especially trade in small quantities operated by individuals (ICBT definition A). This trade often makes it possible to meet the basic needs of daily life and can represent, as we have shown in this chapter, not only substantial amounts of a country's food supply, but also an essential source of income, particularly for women, and a margin of flexibility in terms of food security. When an African area finds its food supply under pressure, this trade makes it possible to meet these needs quickly and spontaneously.

In addition, these border closure measures make it more difficult for people at risk of famine to access international food aid, as in South Sudan, where local harvests over the last two years have been severely affected by locusts and floods. These same measures can also prevent or slow livestock transhumance and affect farmers' access to quality inputs or to pesticides.

Containment measures and curfews in many countries make daily access to food markets even more difficult. These measures can slow port activity, as in Abidjan (Côte d'Ivoire). Uncoordinated curfew hours can make it difficult for transporters of fresh food, as in West Africa, where shipments of fresh food have been stopped, leading to food wastage in a region that has been food insecure for many years. Perishable products (tomatoes, onions, bananas, and colas, among others) constitute an important part of the value of cross-border trade. The peculiarity of these products is that, due to their highly perishable nature and the high temperatures in the region, these products are generally moved at night to benefit from the cooler temperatures and so minimize losses. The introduction of curfews has forced those involved in cross-border trade to move only during the day, increasing the risk of loss and damage. Curfews also lengthen transport times for these products as traders are forced to park all night until the end of curfew hours. According to CILSS, in April 2020, all these factors caused significant losses and waste of agricultural commodities in the logistics chain for traders.

It should also be noted that in the wake of the measures relating to COVID-19, illicit collections by gendarmes, customs officers, and police officers along West African trade corridors increased by almost 50 percent in April 2020 compared to the same period of the previous year.

Sanitary measures along the road corridors and at the borders also lengthen the transport and transit times of these products.

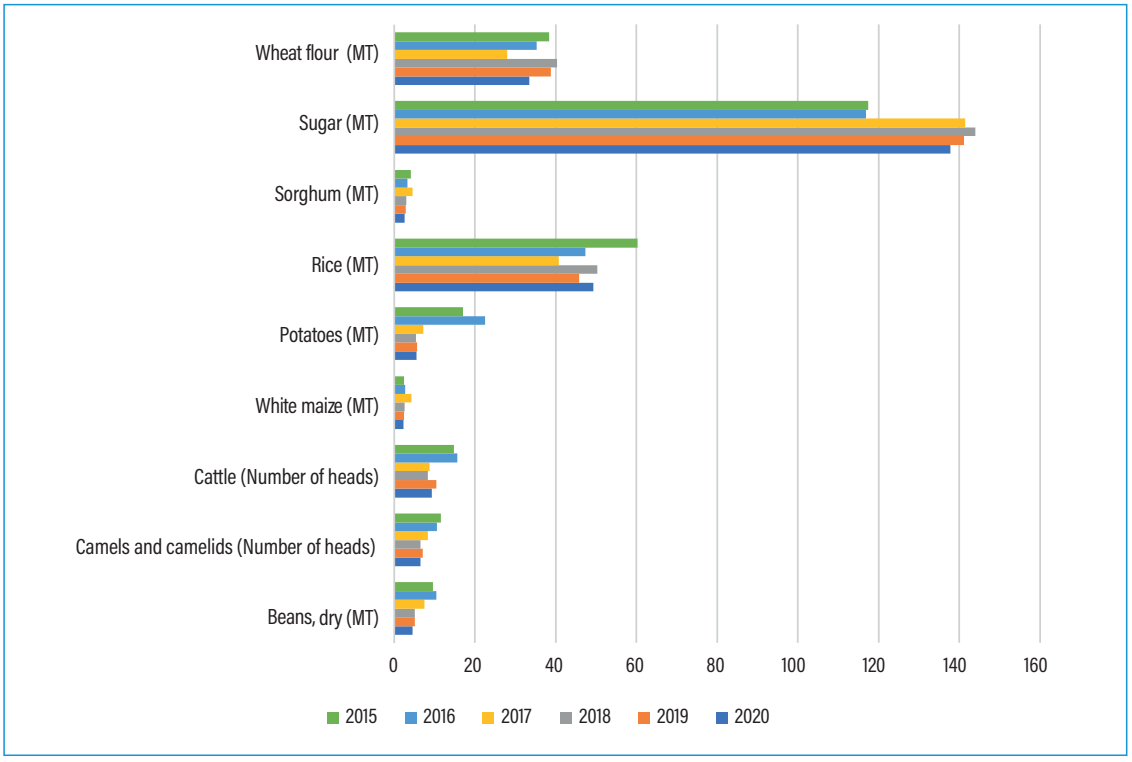
Lastly, we can expect that closing land borders may stimulate smuggling.

All in all, in Africa, the international health situation is likely to lead to a serious deterioration in food security if measures restricting the movement of people continue to be applied and significantly affect informal trade in agricultural products, whether domestic or international.

The impact on ICBT flows in eastern Africa is illustrated by the data collected daily by the Food Security and Nutrition Working Group (FSNWG) Market Analysis on cross-border trade (both formal and informal), as presented in Figure 5.8 for ICBT at Bula Hawo (Somalia), in Figure 5.9 for ICBT at Matema (Ethiopia), in Figure 5.10 for ICBT in Isebania (Kenya), and in Figure 5.11 for ICBT in Jabalain (Sudan).[25]

25 The authors of this chapter thank Thomas Awuor (Food Security and Nutrition Working Group – FSNWG) for his support.

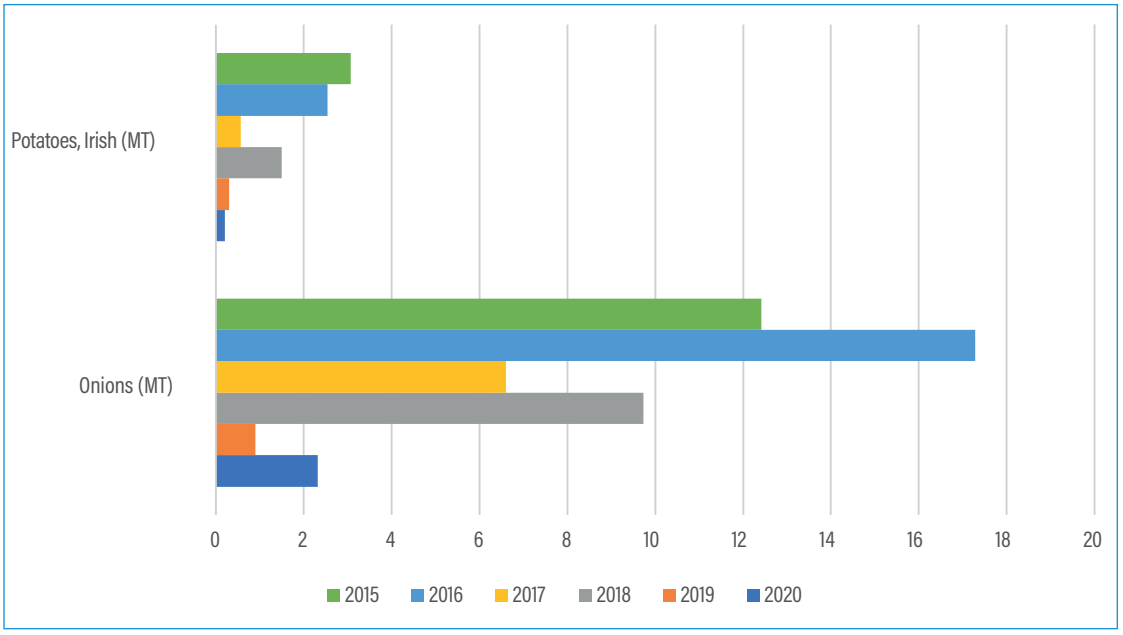
Figure 5.8 Informal cross-border trade at Bula Hawo (Somalia–Ethiopia border), average of weekly data, January to May, 2015–2020



Source: Food Security and Nutrition Working Group (FSNWG).

Note: MT = metric tons.

Figure 5.9 Informal cross-border trade at Matema (Ethiopia–Sudan border), average of weekly data, January to May, 2015–2020



Source: Food Security and Nutrition Working Group (FSNWG).

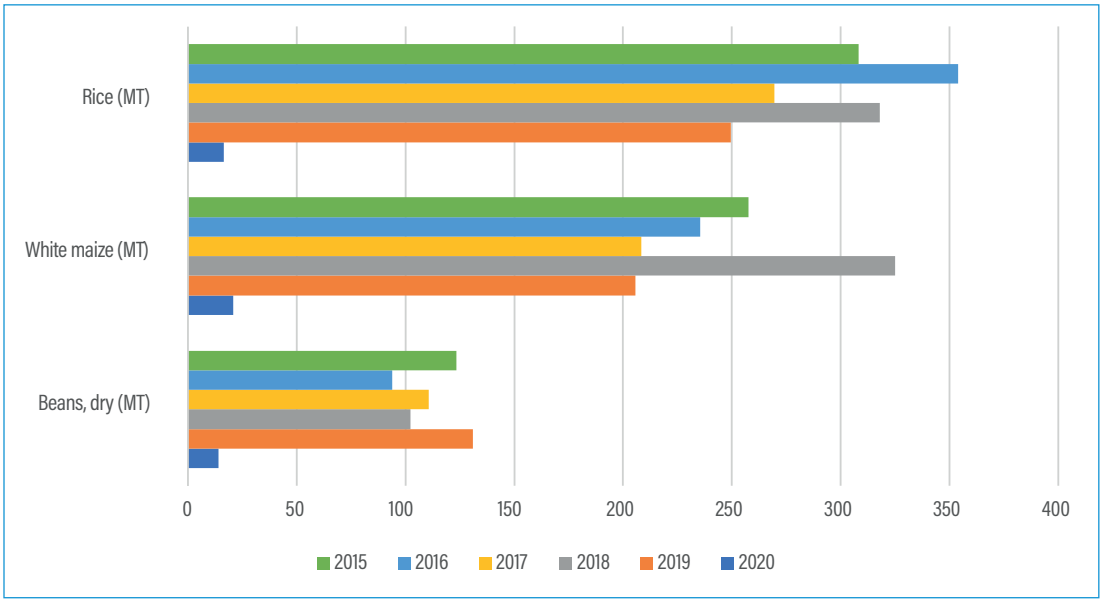
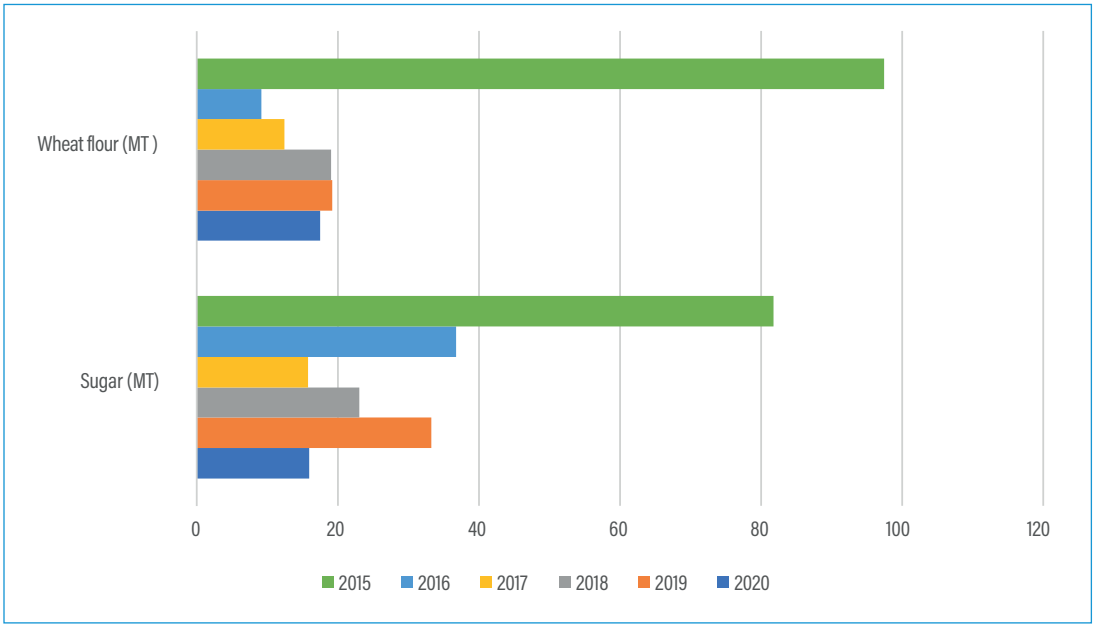


Figure 5.10 Informal cross-border trade at Isebania (Kenya–Tanzania border), average of weekly data, January to May, 2015–2020



Source: Food Security and Nutrition Working Group (FSNWG).

Figure 5.11 Informal cross-border trade at Jabalain (Sudan–South Sudan border), average of weekly data, January to May, 2015–2020

Source: Food Security and Nutrition Working Group (FSNWG).

The Food Security and Nutrition Working Group collects data on informal and formal cross-border trade of 88 food commodities and livestock in eastern Africa. These figures compare the averages of weekly data collected during the first five months of each year from 2015 to 2020.

The magnitude of these trade flows is significant: in 2019, at Isebania for example, informal flows of beans represented 63 percent of formal flows for beans, 62 percent for rice, and 53 percent for white maize.

There may be some evidence of a negative impact of the COVID-related border restrictions on ICBT in Isebania (Figure 5.10): ICBT of rice, white maize, and beans has been significantly lower during the first five months of 2020 than during previous years. An explanation may be that customs officers must now record commodities passing through the borders as part of the COVID-19 screening of traders. So it has become difficult to not document trade which previously counted as informal. But the diminution of this trade might also have been caused by other factors, such as less monitoring by enumerators. Moreover, these data do not point to a significant decrease of ICBT in Bula Hawo (Figure 5.8), Matema (Figure 5.9), or Jabalain (Figure 5.11).

Conclusion

This chapter aimed to assess the reality of informal trade in Africa, particularly in agriculture: How should it be defined? What are its determinants? What is its nature, both in terms of traded products and countries connected?

Behind the concept of informal trade, there are several realities: cross-border trade conducted by informal traders crossing at official border posts with small quantities or crossing borders at points not covered by officials to avoid controls, and cross-border trade conducted by formal traders who reduce the cost of import duties at the border by under-declaration or misclassification, or who smuggle merchandise by avoiding customs officials.

ICBT is a product of a specific culture and history. But economic factors are predominant: high costs of formal trade, a relatively low level of enforcement of laws and regulations in African countries, and poverty are key determinants of the magnitude of the phenomenon.

There are many initiatives to measure ICBT. These cover the entire African continent. They are initiated either by governments (central bank or national statistical institutes), development agencies, or regional or international institutions. But there is currently no permanent and continentwide system for monitoring and quantifying ICBT in Africa, although such an initiative would be quite useful.

The FARM-TRAC project, financed by the International Fund for Agricultural Development and implemented by the CILSS consortium, IFPRI, and WACTAF, is exemplary in this respect. It is based on two essential pillars: (1) improving the quality of data on informal trade and trade barriers in the Sahel and West Africa, and (2) promoting intraregional trade in agro-sylvo-pastoral and fishery products to stimulate regional growth, reduce poverty, and improve food security in the Sahel and West Africa. These data on informal cross-border flows, collected by CILSS through private socio-professional organizations, have been recognized by the National Statistical Institutes and are in the process of being integrated into the official databases of these Institutes and the regional institution (ECOWAS). So, the official registration of trade in agricultural products in West Africa, mostly unrecorded until now, is expected to improve significantly in the medium term.

From a political point of view, the objective of African authorities is now to "formalize" informal trade.[26] Their objective is not, or is no longer, to discourage this trade. In the eyes of decision-

26 This point reflects many discussions that the authors of this chapter have had with experts and policymakers whose professional interest is largely related to African cross-border informal trade. In addition, one of the authors of this chapter is the originator of one of the two initiatives presented in this chapter (CILSS/WACTAF) and has been in charge of it for more than a decade. With support from USAID, IFPRI economists launched a research program on informal cross-border trade in agricultural products in Africa beginning in 2016. The

makers, it is necessary to reduce the costs associated with formal trade. Political momentum has been growing for several years now to establish regional trade agreements or deepen

existing relations: lowering trade barriers, improving the efficiency of customs procedures, trade facilitation, and so on. These are policies that have also been implemented to enhance regional trade in general, not only to reduce incentives for ICBT. Trade integration at the continental level should facilitate the reduction of ICBT definitions B (smuggling) and C (fiscal evasion).

For example, Togo has been identified as a "good pupil" by the Doing Business unit in its 2020 report. This report has noted that in "2017 Togo made trading across borders easier by implementing an electronic single-window system, which reduced the time for border compliance and documentary compliance for both exporting and importing", and in "2016 Togo reduced the time for documentary and border compliance for importing by implementing an electronic platform connecting several agencies for import procedures and payments."

As another example, in West Africa, CILSS and WACTAF are multiplying communication initiatives around the information collected on red tape and road harassments in order to put pressure on police, military, and customs authorities to reduce, or even eliminate, the security check-points set up on regional trade corridors.

There may be costs associated with the formalization of informal trade: formalizing trade implies a cost related to administrative documents, such as sanitary and phytosanitary inspections. For example, in Tanzania, the concern of government authorities and the EAC Secretariat is to facilitate the access of informal trade actors to sanitary and phytosanitary documents when exporting to Kenya. Another example is provided by the Ugandan authorities, who have initiated the formation of associations of informal trade actors to assist their illiterate members in completing export declarations.

It is also crucial to address the issue of harassment and extortion carried out by customs officials to the detriment of trading women. In Rwanda, a specific program aimed at this objective has been implemented since 2012: it enhances cooperation between border institutions at posts on the DRC–Rwanda and Uganda–Rwanda frontiers, and conducts an annual training for customs officials that focuses on gender issues. This effort also includes a program aimed at improving border management and infrastructure.[27]

The African Continental Free Trade Area is moving forward today and aims to be the largest free-trade area in the world. The implementation of this free trade zone should boost regional trade and reduce ICBT, in particular smuggling and fiscal evasion, thanks to the elimination of import duties on most products and the simplification or removal of nontariff measures and customs procedures. If this continental integration favors economic growth and a reduction of poverty, it should indirectly reduce ICBT (definition A). Finally, it will be important to take informal trade into account in order to accurately assess the impact of this agreement.

program has resulted in three workshops, and 10 countries and 38 organizations visited across Africa.
27 See Republic of Rwanda Ministry of Industry and Trade (2012).

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Chapter 6

Regional Integration in Southern Africa

Busani Moyo, Marko Kwaramba, and Mamello Nchake

Introduction

Southern Africa has many regional economic communities (RECs), which are experiencing varied success in promoting trade. These include the Southern African Development Community (SADC), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), and Southern African Customs Union, (SACU), with many countries having overlapping membership in different regional communities. The Southern African Development Coordinating Conference (SADCC) — the precursor to SADC — was established in 1980 with the specific aim of lessening dependence on apartheid-era South Africa. In 1992, the Southern African Development Community Treaty was signed, transforming SADCC into SADC. SADC graduated to become a free trade area in 2008 but has not yet transitioned to the next regional integration stage for various reasons, including lack of political will, proliferation of regional groupings, and lack of experienced human resources and funding. In addition, regional indicators show that SADC countries are at different levels of trade integration. South Africa is the predominant economy in SADC — the largest in terms of gross domestic product (GDP), the most diversified, and the overall best-performing country in terms of integration, scoring highest on trade, financial, and macroeconomic integration (especially among SACU countries), and is also the only country that scores above average on all five regional integration dimensions (AUC 2016).

Southern Africa is failing to diversify away from primary commodities. SADC mainly trades commodities, especially primary products. In this chapter, we focus on trade in agricultural products. Agriculture is a key sector in most Southern African economies and plays a crucial role in trade and regional integration. Agriculture contributes 15 percent of total GDP in Africa, however, its contribution ranges from less than 3 percent in Botswana and South Africa to more than 30 percent in Malawi (World Bank 2016). Trade of agricultural products is low (Bouët and Odjo 2019). There is heterogeneity in agricultural exports across SADC countries, with South Africa dominating exports to SADC countries. SADC countries export similar products (tobacco, maize, sugar) — which may explain why intraregional trade is low. The top 10 intra–SADC exported products include sugar, live animals, maize, and tobacco, with the most traded products by value being maize from South Africa, followed by sugar from Eswatini, and cattle from Namibia. Most RECs in Southern Africa (SADC, SACU, COMESA, and EAC) have a comparative advantage in vegetable products, though for SADC it has been declining. Agricultural trade at the intensive margin[1] has been declining for Zambia, Malawi, Zimbabwe, and Mozambique; however, for South Africa, the intensive margin index of all products has been increasing. The ability to trade new agricultural products (extensive margin) varies across SADC countries, with Malawi, Democratic Republic of the Congo (DRC), Lesotho, and Zimbabwe showing a declining trend.

South Africa dominates participation in various commodity value chains among SADC member states. Most of the intermediate goods exported and imported within the SADC region are from South Africa, in terms of averaged values for the period 2003–2017. This trend is also observed by Black et al. (2019), who find that South Africa is the main source of foreign value-added exports within the SADC region. Of the SADC countries, Zimbabwe, Tanzania, South Africa, and Zambia produce many agricultural goods, including tea, tobacco, maize, and sugar, but despite this advantage, SADC countries, with the exception of South Africa, have failed to accelerate industrialization through processing and value addition. Onoja, Achike, and Ajibade (2017) find that many SADC countries risk being trapped in producing low-skill, low-value products and services, and struggling to obtain a significant value-added share in global trade.

1 Economists describe variations in trade flows along two different margins. If trade changes in existing trade flows (increase, decrease, or extinction), this is the intensive margin. If trade changes because of the introduction of a new product, export to a new destination, or product diversification with an existing partner, this is the extensive margin.

Intra–SADC agricultural trade and participation in both regional and global value chains is inhibited by high tariff and nontariff barriers. Bouët et al. (2017) show that Africa, in general, is the least open continent in the world. Its import duty on all merchandise is 9.7 percent; protection is particularly high for the agricultural sector, with tariff levels of about 19.6 percent, compared to 8.3 percent imposed on non-agricultural sectors. At the country level, five SADC countries — Malawi, Seychelles, Tanzania, Zambia, and Zimbabwe — have average agricultural duties above the regional (SADC) average, which inhibits trade in agricultural goods. Nontariff barriers affecting intra–SADC trade include trade licensing, quotas and bans, price controls, competition policies, rules of origin, technical barriers to trade, and poor infrastructure. Kalaba et al. (2016) find that nontariff barriers have been increasing over time, inhibiting intra–SADC agricultural trade. Fall and Gasealahwe (2017), Novy (2012), and Arvis et al. (2016) argue that poor infrastructure, policy factors, and nontariff barriers contribute to the high costs of trade in SADC. Regional infrastructure integration is limited among SADC countries, and the low quality of infrastructure in the region adds to intraregional trade friction. Customs inefficiency is generally high, but these costs of cross-border trade vary widely across countries in the region. Tanzania and the DRC are the worst performing countries in terms of customs efficiency.

This chapter examines agricultural trade integration in Southern Africa, focusing on SADC. We begin with a brief description of the evolution of SADC, followed by a detailed description and analysis of SADC agricultural trade flows and patterns and of possible drivers of the observed trade patterns. The next section discusses the evolution of regional trade agreements in Southern Africa with particular focus on SADC, and the following sections discuss trade integration in SADC, focusing on agricultural trade and possible explanations for the observed trade patterns and flows.

Evolution of regional trading blocs in Southern Africa

Southern African regional trading blocs have evolved over time. We focus in this chapter on SADC, with little reference to SACU and COMESA. The present and future of regionalism in Southern Africa can be, to some extent, approached and understood in the context of the past (Hwang 2007).

Evolution of trade agreements

Regional integration in Southern Africa dates back as far as 1910, when the Southern African Customs Union (SACU) was formed by South Africa, Botswana, Swaziland (Eswatini), and Lesotho before being joined by Namibia in 1990. In 1980, in Lusaka, nine states — namely Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Tanzania, Zambia, and Zimbabwe — formed the Southern Africa Development Coordination Conference (SADCC). SADCC was formed with four principal objectives, including the reduction of member states' dependence particularly, but not only, on apartheid-era South Africa (du Plessis, Smit, and McCarthy 2000). The Common Market for East and Southern Africa (COMESA) was formed in 1994, replacing a preferential trade area (PTA) that had existed since 1981. COMESA became a free trade area in 2000. The problem of overlapping membership, which is widespread in the continent, is also common in Southern Africa.

The evolution of SADC began with the transformation of SADCC into a development community — the Southern African Development Community (SADC) — in 1992, in which member states agreed

and committed to shifting the region from economic cooperation toward economic integration. The SADC Protocol on Trade, which was passed on August 24, 1996,[2] but came into force in 2000, resulted in progressive elimination of trade barriers and thereby the establishment of a SADC free trade area (SADC-FTA) by 2008. The SADC integration agenda involved promotion of agriculture. The Declaration on Agriculture and Food Security of May 15, 2004, set out SADC member states' commitment to enhancing agriculture as a means of improving access to food for people in the region.

New member countries have expanded SADC over the years, from the seven Frontline States in 1975, to a nine-member coalition in 1980. Today, SADC has 16 member states: Angola, Botswana, Eswatini, DRC, Comoros (joined in 2017), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia, and Zimbabwe.

SADC, however, has failed to meet the regional integration milestones it set out. The initial Regional Indicative Strategic Development Plan (RISDP) (2005–2020) was formulated in March 2001 and was adopted and approved by the SADC Summit in August 2003, with the objective of deepening regional integration. The RISDP outlines a series of milestones to be achieved within the context of the SADC Common Agenda, for which it seems largely off-track and which may be superseded by Africa-wide initiatives such as the African Continental Free Trade Agreement (AfCFTA).[3] The targets and timeframes for the integration milestones as endorsed by SADC include formation of a free trade area by 2008; a customs union by 2010; a common market by 2015; a monetary union by 2016; and, finally, adopting a single currency and becoming an economic union by 2018. To date, SADC has only achieved the first of these milestones; the SADC-FTA was officially launched on August 28, 2008. Maximum tariff liberalization was only attained in January 2012, when the tariff phase-down process for sensitive products was completed (Behar and Edward 2011). The revised SADC Regional Indicative Strategic Development Plan (RISDP 2015–2020) marks industrial development and market integration as a top priority, with the overall goal of facilitating competitive and diversified industrial development for deeper regional integration and poverty eradication.

Constraints facing Southern African regional trade agreements

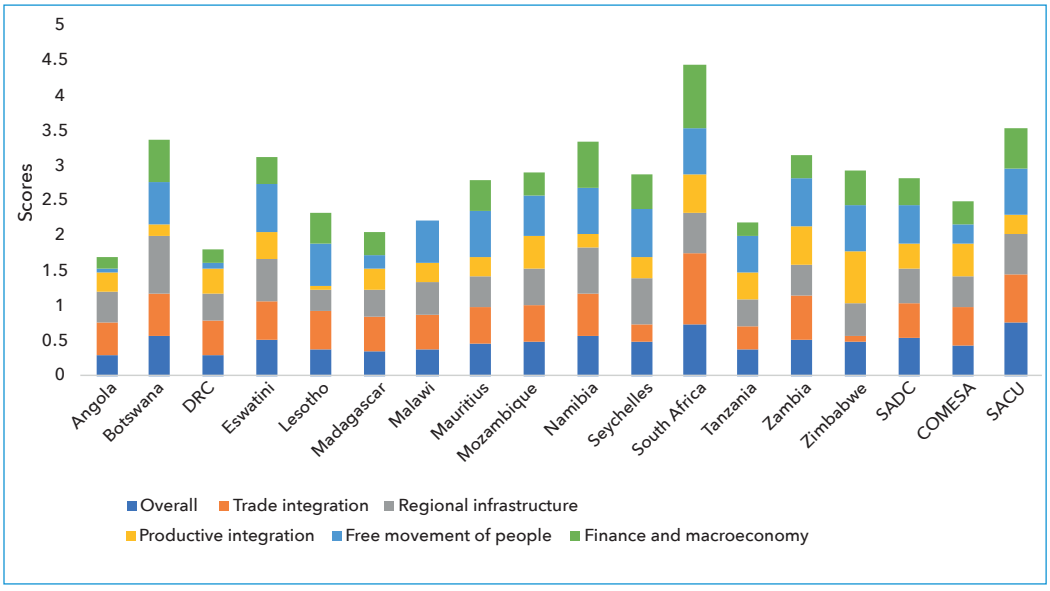
A number of challenges have prevented SADC from moving beyond the free-trade-area stage to the next regional integration stage. To become a customs union, the region must establish a single common external tariff, which is challenging in SADC given the many different individual tariff policies that must converge into a single and uniform tariff regime. Overlapping membership across various regional groupings as well as differences in development interests affect the transition to a common market. All SADC countries, with the exception of Mozambique, belong to more than one regional trading bloc. In addition, experienced human resources (skills) are in short supply. Also in short supply is the investment needed to facilitate cooperation and harmonization in the banking sector, a critical prerequisite for forming a monetary union. This problem is compounded by the prevailing weak monetary and fiscal variables in many member states. For the period 2003 to 2018, inflation levels in 8 of the 16 countries were above the region's convergence target of 7 percent, with public sector debt-to-GDP ratios very high and above the recommended 60 percent threshold in countries including Mauritius (63 percent), Mozambique (100 percent), and Zimbabwe (66 percent) (AfDB 2019). Botswana is the only country with foreign reserves sufficient to cover six months of imports. In addition, the harmonization of the SADC banking sector has been affected

2 Available on SADC website: https://www.sadc.int, accessed on February 18, 2020.
3 The Agreement for establishing the African Continental Free Trade Agreement (AfCFTA) came into effect on May 30, 2019, for the 24 countries that had deposited their instruments of ratification.

by asymmetric external shocks and challenges in harmonizing different country regulations governing the sector.

The African Union Commission (AUC), African Development Bank (AfDB), and United Nations Economic Commission for Africa (UNECA) highlight five regional integration dimensions: trade integration, regional infrastructure, free movement of people, financial and macroeconomic integration, and productive integration.[4] In terms of individual countries, South Africa is the overall best-performing country on these five dimensions, has the highest scores on trade and on financial and macroeconomic integration, and is the only country that performs above average on all five dimensions. The poorest performing country across the five indicators is Angola. In terms of the RECs, SACU has the highest overall score compared to SADC and COMESA (see Figure 6.1).

Figure 6.1 Integration scores for Southern Africa, 2016



Source: AUC (2016).

Note: Scores range from a low of zero to a high of 1. The higher the score, the greater the integration.

Trade integration in Southern Africa

This section discusses trade integration in Southern Africa, with a specific focus on SADC, agricultural trade, and regional value chains. Agriculture is a key sector in African economies and plays a crucial role in trade and regional integration. On average, agriculture's contribution to GDP is high at 15 percent of total GDP (FAO 2016). However, trade of agricultural products continues to be low. This means that Africa has a huge scope to strengthen agro-industries and agro-processing and to promote intraregional trade through regional value chains. The Malabo Declaration of 2014 clearly articulates the need to boost agricultural productivity and intra-African trade in agricultural commodities.

4 Productive integration is measured using the share of regional intermediate goods exported and imported in total intraregional trade as well as the merchandise trade complementarity index. Trade in intermediate goods is more important for productivity, improving resilience to shocks, and diversification.

Profile of agricultural products exported by the SADC regional members

Africa's resolution to triple intra-African trade in agriculture commodities and services[5] by the year 2025 is facing many obstacles. This is because of the continent's failure to diversify away from primary commodities, coupled with insufficient trade infrastructure and the high cost of trade, as well as continued prevalence of nontariff measures (NTMs) (Bouët et al. 2008). Kalaba et al. (2016) find that most of the NTMs are applied on fruits, meat, dairy, vegetables, and cereal products — key products traded by the SADC members. Recent literature shows that Africa's agricultural trade has increased over time and that intraregional trade is increasing though still below potential (Bouët and Odjo 2019). The share of agricultural products exported within SADC by member countries is low compared to SADC exports to other regions. Intraregional trade in SADC of agricultural commodities is also far less than in other regions.

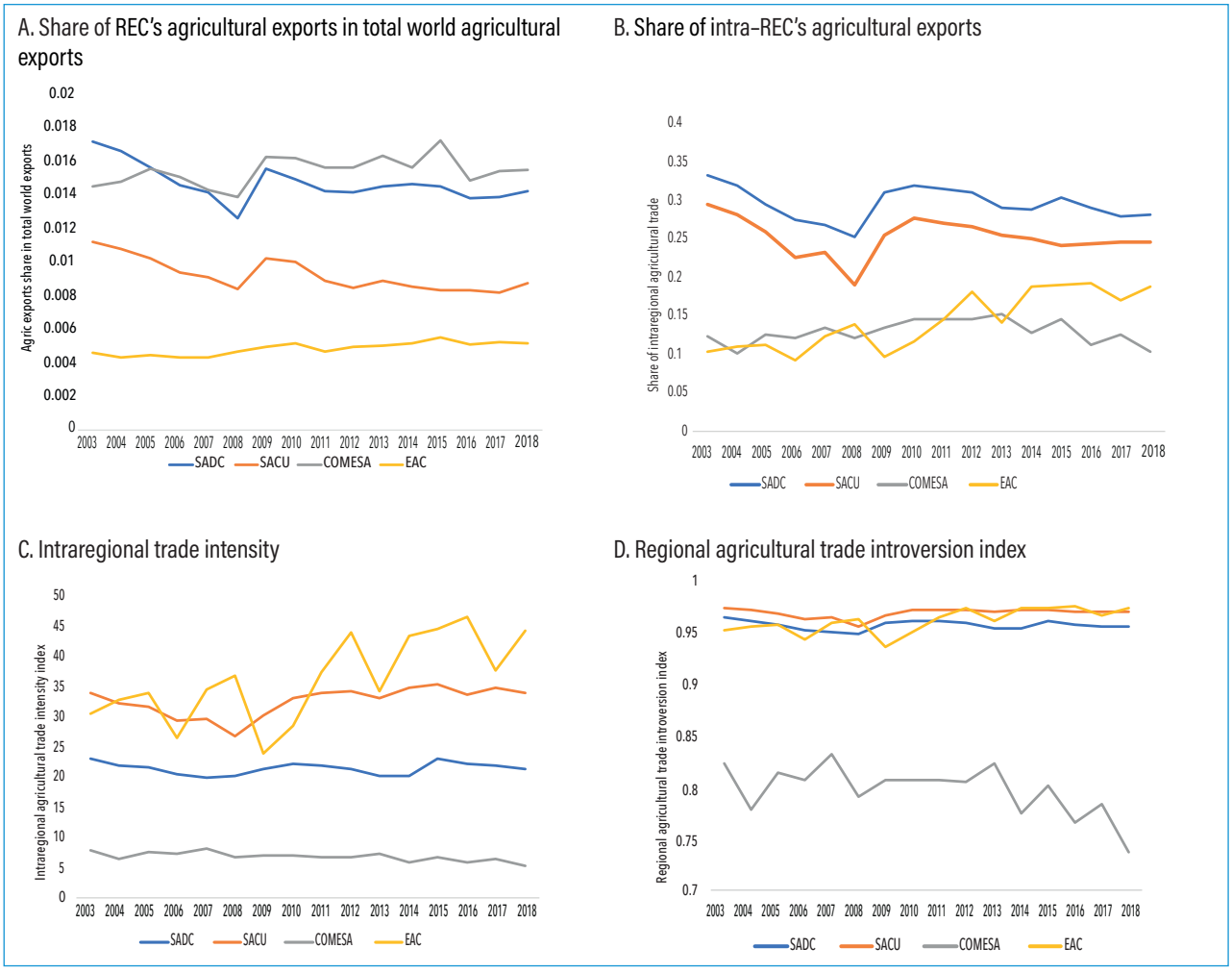
Figure 6.2A shows that the share of Southern African agricultural exports in total world agricultural exports has remained almost constant across the region's four RECs. All RECs show a drop in trade during the 2007/2008 economic crisis. The trend is also reflected in the share of intra–REC agricultural exports (Figure 6.2B), where EAC's upward trend and the downward trend for COMESA are amplified. Intra–REC agricultural exports increased after the 2007/2008 crisis and then started to decline after 2012, with the exception of EAC which showed a persistent upward trend, and of COMESA with its clear downward trend. Of the total agricultural exports, only 30 percent are exported within SADC while the rest go to other countries (Figure 6.2B). A similar trend is shown by the intraregional trade intensity index (Figure 6.2C) and the regional trade introversion index.[6] Figure 6.2D shows that all four RECs are introverted, but introversion is decreasing for COMESA while increasing for EAC. SADC and SACU show a higher and constant degree of introversion — that is, the level of regional trade as a share of total trade is relatively high.

The above results support the findings of the existing literature. Data from ITC TradeMap (2017) show that intra-African agricultural exports account for only 26 percent of Africa's global agricultural exports, as only a few products are traded among countries within the same RECs. Sandrey et al. (2018) show that intra–SADC agricultural exports represent 47 percent of the total agricultural trade, with South Africa and Zimbabwe the largest exporters. In general, intra-African trade is minimal, and SADC is no exception. Some of the trade-limiting factors identified by Sandrey et al. (2018) include a mismatch in supply and demand; supply-side bottlenecks such as input shortages, obsolete technology, and lack of knowledge transfer; inefficient infrastructure in transportation, communications, electricity, and warehousing facilities; and trade barriers and nontrade barriers.

5 This was adopted at an Africa Union high-level meeting through the Malabo Declaration on Accelerated Agriculture Growth and Transmission for Shared Prosperity and Improved Livelihoods (AUC 2014)

6 See Bouët and Odjo (2019) for more detailed explanation of the index. The regional trade introversion index addresses some of the shortcomings that arise from using the share of intraregional trade as a measure of integration. The introversion index is based on modifications of both intra- and extraregional trade intensity indices, and compares a region's share in trade with the rest of the world. It is the ratio of the difference between intra- and extraregional intensity indexes to their summation. A positive figure shows that the region is more introverted than extraverted.

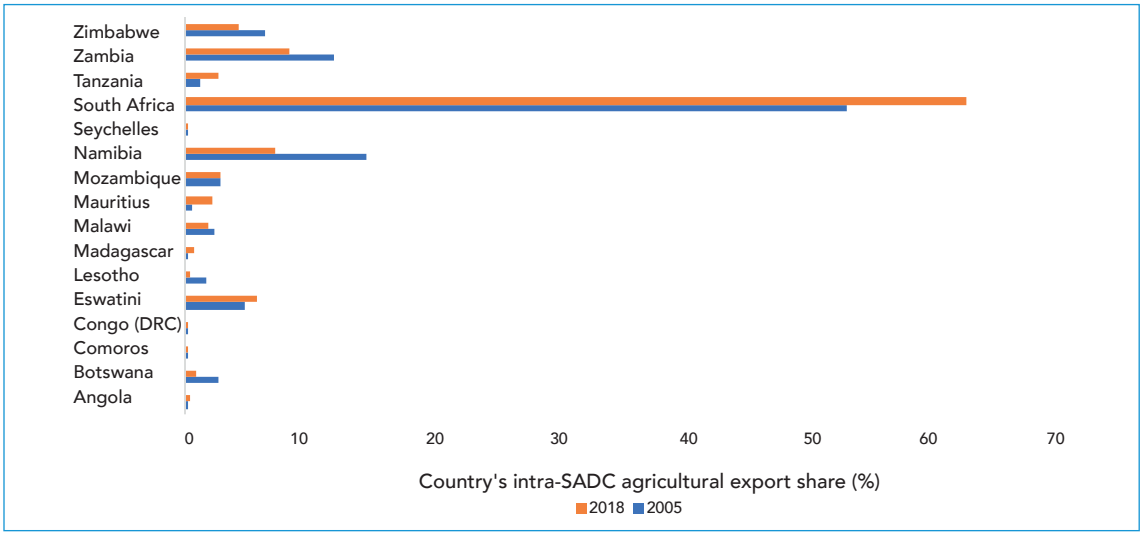
Figure 6.2 Trade indicators for agricultural exports



Source: 2020 AATM database and authors' calculation.

However, there is heterogeneity in agricultural exports across SADC countries. South Africa dominates other countries in exporting to SADC (Figure 6.3), accounting for over 60 percent of intra–SADC exports in 2018, up from 50 percent in 2005 (South Africa's GDP is larger than the GDP of the rest of SADC together). Oluwatabo et al. (2014) find that the SADC free trade agreement (SADC-FTA) has a net trade-creating effect on South African agricultural trade and has increased intra–SADC trade. Despite predominance in agricultural products, South Africa exports a highly diversified range of products, from agricultural products to high-value manufactured goods that are much needed by other SADC countries. Some SADC countries, including Botswana, Namibia, Zambia, and Zimbabwe, have decreased their intra–SADC agricultural exports over time. However, Eswatini, Mauritius, and Tanzania have increased their trade share within the region, though it remains below 7 percent.

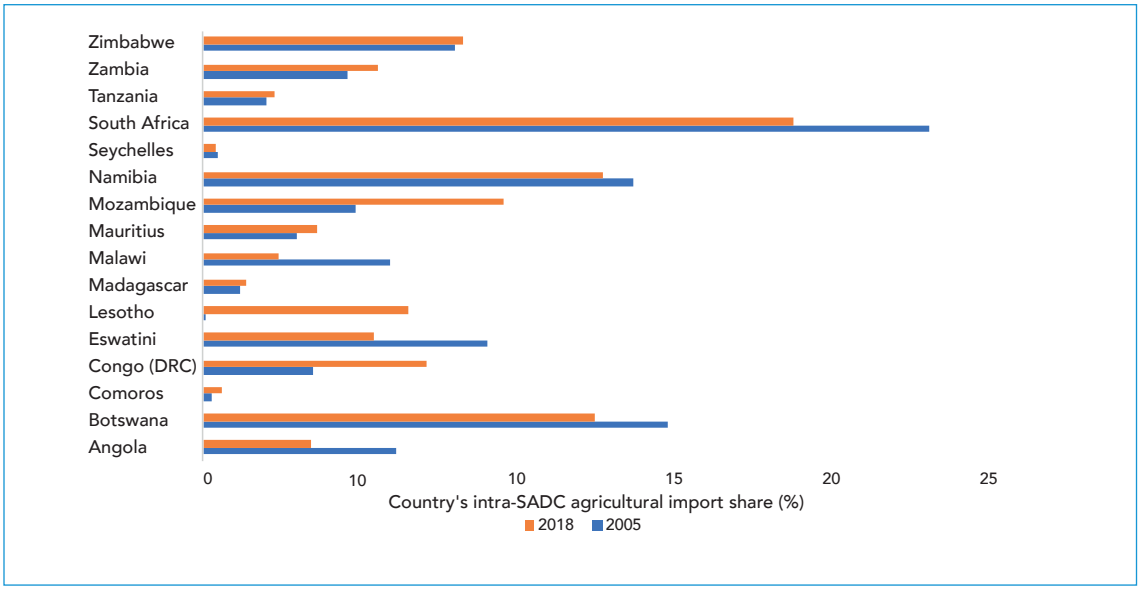
Figure 6.3 Intra-SADC agricultural export share, by country



Source: 2020 AATM database and authors' calculation.

Intra-SADC agricultural imports are also dominated by South Africa (Figure 6.4). But at less than 25 percent, South Africa's share of imports is far lower than its export share.

Figure 6.4 Intra-SADC agriculture import share, by country



Source: 2020 AATM database and authors' calculation.

SADC countries export similar products (tobacco, maize, sugar, live animals), which may explain why intraregional trade is low. Table 6.1 shows the top three products exported within SADC by each SADC country. The products range from live animals to maize to tobacco. The highest intra-SADC traded products by value (average for 2016–2018) are maize from South Africa, followed by sugar from Eswatini and cattle from Namibia. South Africa generally dominates agricultural exports by value across regions (average for 2016–2018), be it to SADC (maize), Africa (maize), or the world (edible fruits). Existing literature shows that intraregional trade in maize has been stimulated by the implementation of the SADC-FTA agreement and has benefited South Africa. Despite maize

dominance by South Africa, Mmaduabuchukwu (2013) confirms Southern Africa's fifth position among major exporters of maize in the world. The arable land and climatic endowment suggest SADC has potential to produce and export more maize.

Table 6.1 Top agricultural products exported within SADC

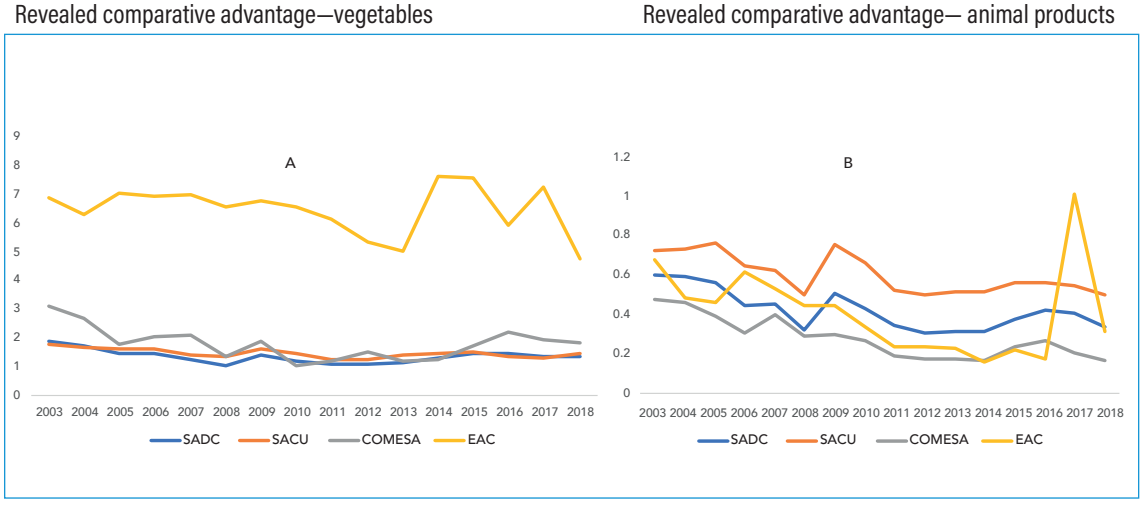
Country	Top Products Exported within SADC
Angola	Sugars: sucrose, chemically pure; Beer: made from malt; Waters: including mineral and aerated
Botswana	Meat: of bovine animals; Vegetables, leguminous: beans of the species; Cigarettes: containing tobacco
Congo (DRC)	Cattle: live, other than pure-bred breeding animals; Coffee: not roasted or decaffeinated: Cereals: maize (corn)
Comoros	Spices: cloves (whole fruit, cloves and stems); Meat preparations: of swine, hams, and cuts; Sugar confectionery
Lesotho	Bran, sharps and other residues: of maize (corn); Wool: (other than shorn); Hair: fine animal hair, not carded or combed, other than of kashmir (cashmere) goats
Madagascar	Vegetables, leguminous: broad beans; Spices: vanilla, crushed or ground; Cotton: not carded or combed
Mozambique	Fruit, edible: bananas, other than plantains; Bran, sharps and other residues: of wheat; Tobacco
Mauritius	Cereals: maize (corn); Vegetable oils: soya-bean oil and its fractions; Vegetable oils: palm oil and its fractions
Malawi	Tea, black: (fermented) and partly fermented tea; Groundnuts: other than seed; Sugars: sucrose
Namibia	Cattle: live, pure-bred breeding animals; Sheep: live; Meat: of sheep, carcasses
Eswatini	Sugars: cane sugar, raw, in solid form; Sugars: sucrose, chemically pure, in solid form
Seychelles	Animal products: of fish or crustaceans; Fruit, edible: bananas, other than plantains; Food preparations
Tanzania	Tea; black; Wheat or meslin flour; Waters: other than mineral and aerated
South Africa	Cereals: maize (corn), other than seed; Vegetable oils: soya-bean oil and its fractions; Sugars: sucrose, chemically pure
Zambia	Cereals: maize (corn), other than seed; Oil-cake and other solid residues; Tobacco: partly or wholly stemmed or stripped
Zimbabwe	Tea: black (fermented) and partly fermented; Sugars: cane sugar, raw, in solid form; Tobacco; Cotton: not carded or combed

Source: 2020 AATM database.

International competitiveness and market diversification

For trade intensification, countries need to show a comparative advantage. Figure 6.5 shows that all four RECs have a comparative advantage in vegetable products, with a revealed comparative advantage (RCA) greater than 1. However, SADC shows a consistent, declining, and low RCA for vegetable products. Most RECs do not have a comparative advantage in animal products, with the exception of EAC, which showed a spike only in 2017. The comparative advantage for animal products declined during the 2007/2008 crisis, followed by a recovery and another decline from 2012 to 2014. The figure shows that RCA started to decline again in 2016, possibly because of drought conditions that prevailed during that time.

Figure 6.5 REC revealed comparative advantage, agricultural products



Source: 2020 AATM database.

SADC countries show greater heterogeneity in comparative advantage. The data show that Botswana, Mauritius, and Namibia have a comparative advantage in animal products, while eight SADC countries, including Comoros, Madagascar, Mozambique, Mauritius and Malawi, show consistent RCA in vegetable products.

Table 6.2 shows that despite low comparative advantages in animal products, some countries show growth in this comparative advantage over the years, including Angola, Zambia, and Tanzania. RCA for animal products decreased in 10 of the 16 SADC countries between 2013 and 2018. RCA in vegetables is low, but 8 of the 16 SADC countries show marginal increases in comparative advantage.

Table 6.2 SADC countries' revealed comparative advantage (RCA) for exports, 2013 and 2018

	Animal products			Vegetables products		
	2003	2013	2018	2003	2013	2018
Angola	0.01	0.00	0.01	0.01	0.00	0.01
Botswana	1.32	1.09	0.95	0.07	0.03	0.06
Congo (DRC)	0.11	0.00	0.00	0.49	0.14	0.11
Comoros	0.04	0.06	0.07	32.33	22.31	21.94
Lesotho	0.06	0.12	0.07	0.53	0.99	0.37
Madagascar	0.07	0.04	0.04	11.17	5.62	12.50
Mozambique	0.14	0.01	0.01	1.18	1.39	1.46
Mauritius	0.98	1.21	1.50	0.43	0.68	1.30
Malawi	0.01	0.30	0.04	5.74	5.39	5.94
Namibia	5.74	3.44	2.84	0.86	0.59	0.42
Eswatini	0.67	0.25	0.13	0.72	0.57	0.39
Seychelles	0.02	0.16	0.15	0.09	0.46	0.82
Tanzania	0.68	0.24	0.32	6.88	5.00	4.77
South Africa	0.53	0.34	0.34	1.99	1.56	1.64
Zambia	0.47	0.07	0.14	2.30	0.76	0.34
Zimbabwe	0.55	0.14	0.05	3.99	1.26	1.10

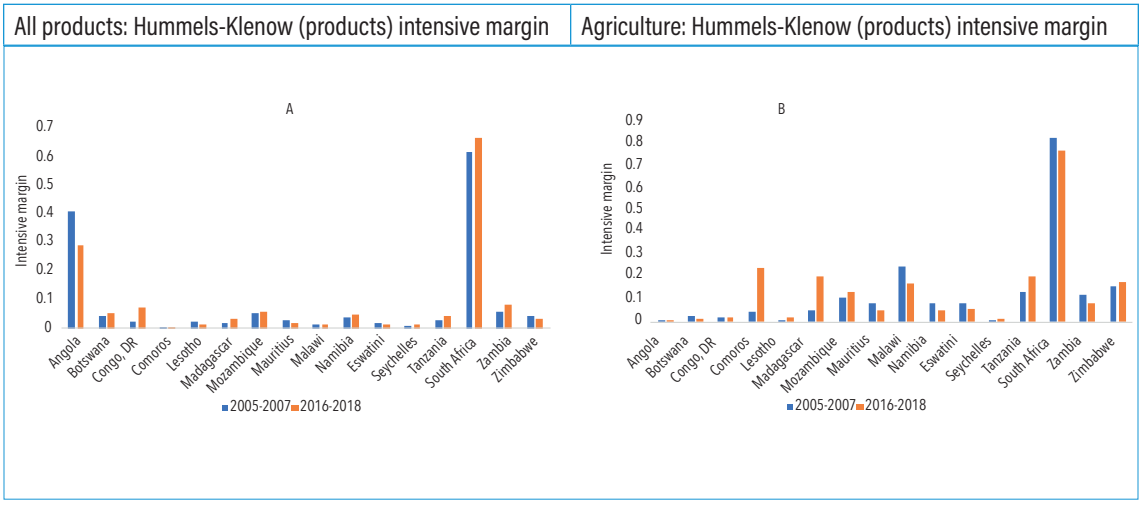
Source: 2020 AATM database.

Note: Green shading indicates countries with RCA.

Diversification is critical to facilitate regional integration. African trade is less diversified both in terms of products and markets compared to the rest of the world (Bouët et al. 2017). Furthermore, most African countries have been found to export a smaller number of agricultural products compared to non-African countries. Most SADC countries appear less diversified based on the number of agricultural products exported across countries. We use Hummels and Klenow (2005) measures of extensive and intensive margins to capture diversification. The extensive margin involves trading new products that were not previously traded to either existing trading partners or to new trading partners; the intensive margin is the trading of already existing products to already existing trading partners. We report the results at product level — the aggregated trade values or the number of products that are newly traded. The results show that South Africa, Tanzania, and Zambia's, intensive margin of all products has been increasing over the two periods (using averages for 2005–2007 and 2016–2018) while it declined for Angola, Eswatini, Mauritius, and Zambia (Figure 6.6). For agricultural products, Tanzania, Madagascar, and Zimbabwe have an increasing intensive margin, while it has decreased for South Africa, Zambia, and Mauritius.

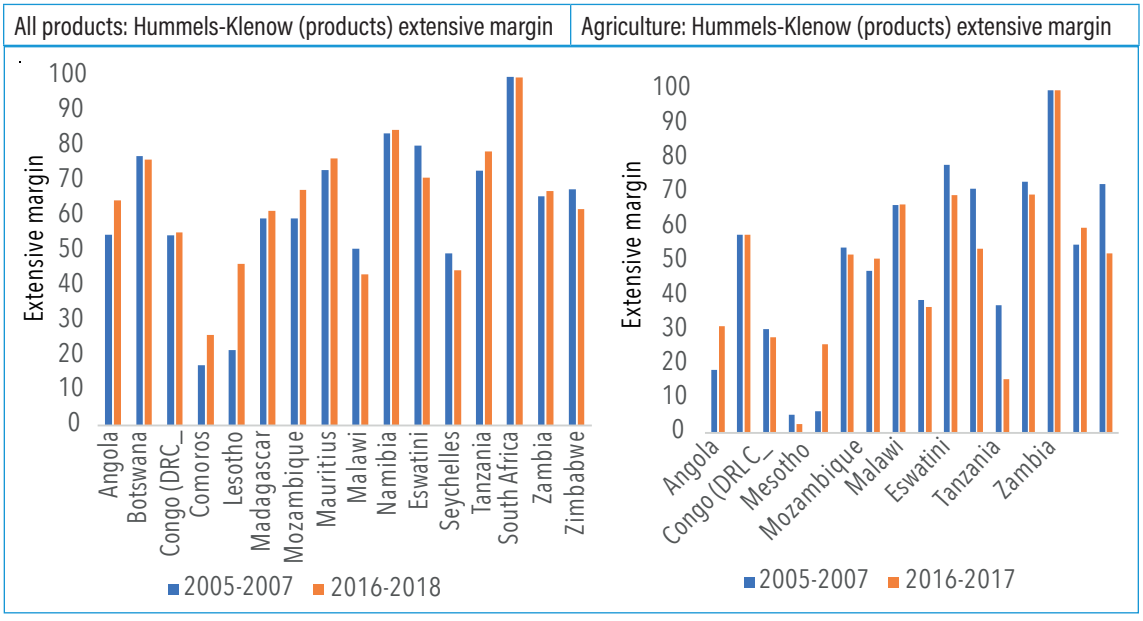
The ability of SADC countries to trade new agricultural products varies. Results show an increase in the number of agricultural products (extensive margin) over the two periods (using averages for 2005–2007 and 2016–2018) for Angola, Lesotho, Mauritius, Mozambique, and Zambia. In contrast, Madagascar, Malawi, Seychelles, and Zimbabwe all show a decrease in the extensive margin (Figure 6.7). For both periods, South Africa has the highest level of trade at both the intensive and extensive margins for both agricultural products and all products.

Figure 6.6 Hummels and Klenow intensive margins



Source: 2020AATM database and author calculations.

Figure 6.7 Hummels and Klenow extensive margins



Source: 2020 AATM database and author calculations.

Regional value chain development in agro-processing

There is a strong correlation between the extent of regional integration and global value chains trade. Most trade agreements in Africa are still "shallow," which hampers development of regional value chains. They are shallow because they impose a high tariff on manufactured and agricultural goods, as well as export taxes and many nontariff barriers. Bilateral trade protection among African countries affects backward and forward participation in regional agriculture and food value chains. The immediate challenge facing SADC negotiations on regional value chains integration is to address the distortions created by traditional barriers to trade within Africa (World Bank 2020b). With the progress of AfCFTA, there is widespread optimism throughout the continent that increased trade integration will strengthen the emerging regional value chains and enable firms throughout Africa to participate in global value chains.

Participation in regional value chains is critical to SADC countries' export growth. Value chains are increasingly important as a source of investment and exports, but also as a channel to access knowledge and technology to support productivity growth. SADC countries should identify their comparative advantages to fully participate backward and forward in global value chains (World Bank 2020b). SADC's industrialization policy framework emphasizes the need for processing and value addition.

Southern Africa's participation in global value chain trade is limited by various constraints. The World Bank's 2020 *World Development Report* finds that, in 2014, agricultural exports accounted for 2 percent of world exports in contrast to 60 percent for manufacturing exports and 20 percent for services exports. The report identifies sluggish economic growth, slow pace, and reversal in trade reforms, as well as reduced incentives to outsource and increased production at home by China and the United States as major barriers to regional value chain development. SADC countries continue to be net importers of food despite being endowed with agriculture goods. UNECA (2018) points out that Zambia and Zimbabwe have agriculture value chain potential, but low technological investment, and policy misalignments have limited their capacity to add value. The *World Development Report* identified the SADC countries DRC, Namibia, Tanzania, and Zimbabwe as countries that could derive higher welfare gains from reductions in tariffs and NTMs.

South Africa dominates again in value chains, accounting for most of the intermediate goods exported and imported within SADC. Black et al. (2019) find that while SADC has very limited forward linkages into regional value chains, South Africa is by far the main source of value-added exports. Table 6.3 is a country-level matrix showing the total amount (in millions of US dollars) of intermediate products exported and imported by each SADC country over the period 2003–2017. Angola appears to export a large share of intermediate goods to the DRC ($5.6 million) and Namibia ($2.9 million), but it also imports a lot of these products from South Africa ($744.6 million) and Namibia ($160.7 million). South Africa is the only country that exports and imports significant amounts of intermediate goods to all the SADC member countries, followed by Zimbabwe, Tanzania, and Zambia. Trade in intermediate goods in SADC appears to be agglomerated and inversely related to distance. For example, South Africa exports a lot to its neighbors Zimbabwe, Botswana, Namibia, and Lesotho and imports a lot from Eswatini, Namibia, and Zimbabwe. DRC also imports a lot from Tanzania and Zambia. Trend analysis shows that South Africa has managed to increase its trade of intermediate products in SADC.

Table 6.3 Matrix of total exports and imports of intermediate goods traded in the SADC region (2003–2017), US$ millions

2003–2017		EXPORTING COUNTRIES															
IMPORTING COUNTRIES		AGO	BWA	COM	COD	SWZ	LSO	MDG	MUS	MWI	MOZ	NAM	SYC	ZAF	TZA	ZMB	ZWE
	Angola (AGO)	-	0.4	0	0.1	0.01	0.8	0	0.7	0.3	3.2	160.7	0	744.6	19.1	18	4.3
	Botswana (BWA)	1.03	-	0	0.05	8.8	3.5	0	23.7	14.4	0.3	8	0	2330.2	0.2	79.1	132.9
	Comoros (COM)	0	0	-	0	0	0	3.5	16.4	0	1.4	0.01	0	13.6	10.8	0	0.04
	DRC (COD)	5.6	2.5	0	-	0.06	0	0	0	13.8	0	24.1	0	247.2	604.9	1060.5	10.3
	Eswatini (SWZ)	0	2	0	0.2	-	0.7	1.5	0.7	33.5	32.1	0.1	0.5	1405.2	20.4	46.2	1.8
	Lesotho (LSO)	0	6.1	0	0	0.8	-	0.04	6.3	7.3	1.6	0.01	0	1642.7	0	42.5	31.6
	Madagascar (MDG)	0	0	0	0.4	47.1	0.2	-	135.8	11.5	19.5	0	0.02	250.4	5.6	4.6	2.1
	Mauritius (MUS)	0.03	0.1	6.4	0	2.2	0.3	187	-	23.4	130.9	0.8	0.8	319.6	45.4	385.4	51.7
	Malawi (MWI)	0	0.7	0.2	0.2	14.6	0	0	5.2	-	430.5	0.1		291.3	79.9	748.2	54.4
	Mozambique (MOZ)	0.01	0.3	0	0	108.7	0.1	1.4	103.4	145.5	-	0.1	10	1126.4	15.2	58.9	960
	Namibia (NAM)	2.9	10.9	0	0.01	2.4	0	0	2.7	0.3	2.5	-	0	1886.5	0.5	143.6	30.2
	Seychelles (SYC)	0	0	0	0	0.01	0	2.5	38.4	1.6	0	0	-	20.5	14.9	0	0.7
	South Africa (ZAF)	1.3	185.3	0.04	8.5	1992.6	458.6	10.6	81.4	361.0	448.7	2246.4	0.2	-	117.6	794.4	1198.6
	Tanzania (TZA)	0	0.7	0	0.6	28.6	0	0	23.3	116.4	35.6	0.01	0	211.2	-	260.5	9.8
	Zambia (ZMB)	0	5.5	0	4.2	5.5	0.02	0	53.3	135.2	34	18.1	6.3	1068.1	55.5	-	143.8
	Zimbabwe (ZWE)	0	69	0	1.4	4.2	0.02	0.1	119.4	469.2	299.1	5.7	14.4	3012.1	14.9	1770	-

Source: 2020 AATM database.

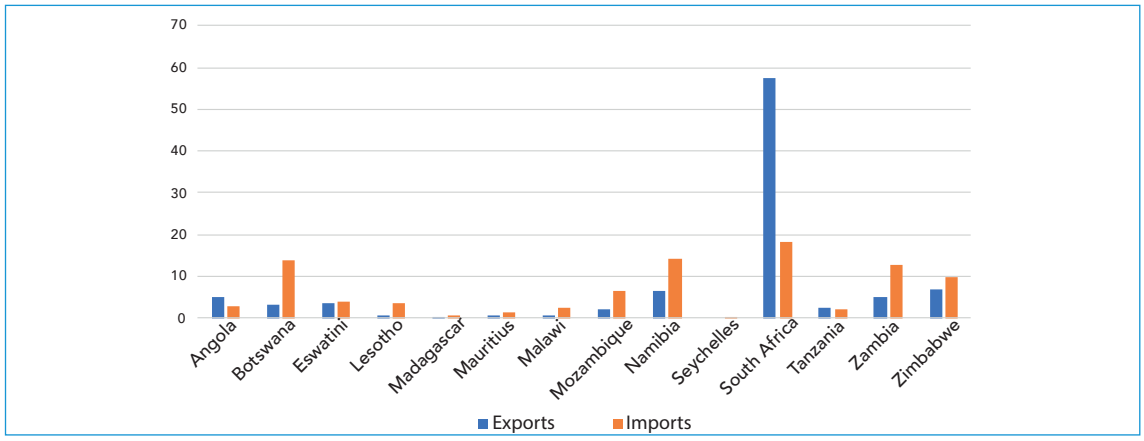
Potential explanation of SADC intraregional trade flows

For the period 2010-2018, the level of intraregional trade in Southern Africa has not changed much, and the graduation of SADC and COMESA[7] into free trade areas in 2008 and 2000, respectively, has done little to spur intraregional trade growth. SADC intraregional trade as a percentage of the region's world trade was 19 percent in 2008 and rose only to 19.4 percent in 2019 (ITC 2020). SACU intraregional trade has never exceeded 16 percent since 2000, but intraregional exports jumped from a low of 4.5 percent in 2009 and have remained above 13 percent since 2010. This is the case even though SACU is the most integrated regional bloc in terms of trade in Africa south of the Sahara (SSA).

At the country-level, intraregional trade is heavily skewed toward South Africa and the country has consistently enjoyed a positive trade balance with the regional member states (Figures 6.2, 6.3, 6.8, and 6.9). South Africa is by far the biggest economy in the SADC region, contributing more than 60 percent of regional GDP; its huge appetite for intermediate goods may also be partly explained by the size of its manufacturing sector, which accounts for around 68 percent of the regional manufacturing output (World Bank 2020c). The country also contributes on average 27 percent of the region's agricultural output and its supermarkets chains, Pick n Pay and Shoprite, are found in 10 of the 16 SADC countries, exporting a large variety of retail products (World Bank 2020c; Das Nair 2018). Countries including the Seychelles, Tanzania, Angola, Madagascar, and Malawi trade and export the least within the region. Economic size, industrial development, tariffs, and nontariff barriers to trade could be some of the factors influencing the magnitude, shape, and direction of trade flows in SADC.

7 Nine SADC countries are members of COMESA.

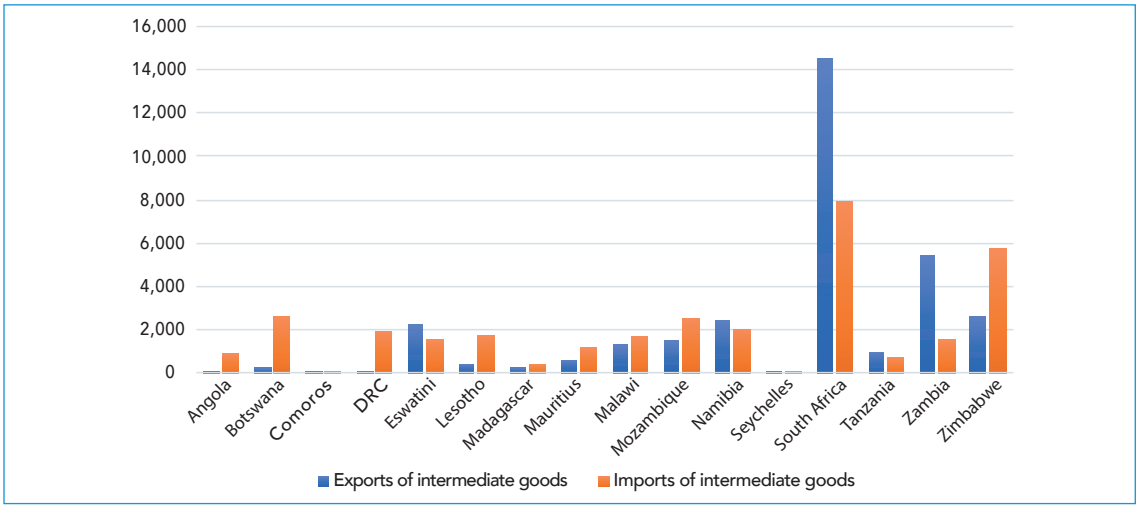
Figure 6.8 Country intra-SADC total export and import shares (percent), 2010–2018



Source: ITC TradeMap 2020.

Note: No data available for DRC and Comoros.

Figure 6.9 Exports and imports of intermediate goods within SADC (US$ millions), 2003–2018



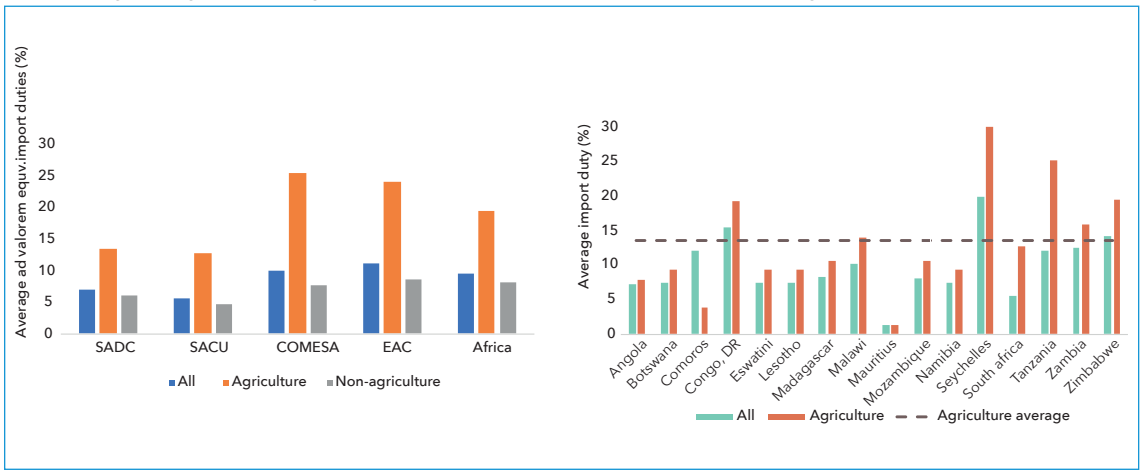
Source: 2020 AATM database.

South Africa's large size may partly explain why trade is skewed toward the country, but size does not explain why the region's next three biggest economies — Angola,[8] Tanzania, and Mozambique — are faring badly and worse than smaller regional countries like Namibia, Zambia, and Zimbabwe. However, the growing manufacturing sector in Zambia (third largest in the region after Angola) is probably driving its exports of intermediate goods, while Zimbabwe's economic crisis increases its dependence on imported products.

Although Africa is sometimes considered to be the least open continent (see above), SADC and SACU have ad valorem equivalent tariff levels lower than the African average and are the least protected compared to other selected regional blocs (Figure 6.10). At the country level, data show that DRC, Seychelles, Tanzania, Zambia, and Zimbabwe have higher than average agriculture ad valorem tariff equivalents, which may partly explain the relatively low intra-SADC agricultural import shares in these countries (Figure 6.10). Seychelles has the highest average tariff level on agriculture, which could explain why the country has the lowest agriculture import share (Figure 6.9).

8 Civil war in Angola ended after 27 years in 2002 and the country has been on a rebuilding journey. This probably partly explains why the country refused to join the SADC-FTA.

Figure 6.10 Average ad valorem equivalent of import duties applied, 2011



Source: Bouët et al. (2017) using MacMap HS6 (CEPII 2011).

Athough Mauritius appears to have the lowest general tariff rates, its share of intraregional imports of finished and intermediate goods is very low. Countries including Zimbabwe and DRC charge relatively higher tariff rates but import a large share of these products from other SADC countries. Madagascar and Malawi also have a smaller share of intra–SADC imports than Zambia and Zimbabwe, although Zambia and Zimbabwe impose relatively higher average tariffs. Ackah and Morrissey (2013) found little aggregate evidence that the trade policy reforms in SSA have produced a significant export response, arguing that trade has not increased consistently nor in tandem with the magnitude of liberalization. Babatunde (2009) found similar results using average tariff rates of 20 SSA countries.

The environment in which production decisions are made may also constrain the supply response. Infrastructure and trade facilitation are important components of trade costs and may affect trade growth (Shepherd 2016). The 2019 integration indices calculated by the African Union together with AfDB and UNECA show that the SADC infrastructure integration index dropped from 0.5 in 2016 to 0.2 in 2019. This decline may explain not only the fall in productive integration from 0.35 to 0.24 but also the decrease in trade integration from 0.5 to 0.34. The decreasing quality of hard infrastructure such as highways, railroads, water, electricity as well as soft infrastructure like customs and port efficiency could be another source of intraregional trade friction.

Transportation infrastructure development across the region is the most visible face of integration, especially given that seven countries in the SADC region are landlocked and even countries with seaports also have large interiors. Improving the quality of roads, rail, seaports, and airports will reduce trading costs and possibly increase the volume of trade. Shepherd (2016, 20) argues: "*There is a strong positive association between infrastructure and trade facilitation improvements in neighbouring countries, and therefore it is not just what a country does that matters for its connectivity, but also what its neighbours do*."

Because the SADC region exports several bulky minerals and agricultural products (cotton, tobacco, tea, coffee, beef, sugar, horticultural products, etc.) and is a large importer of oil, machines, vehicles, and consumer goods, the region needs functioning, well-maintained, and integrated transport systems (Peters-Berries 2010). However, the quality of infrastructure varies markedly within the region. The *Global Competitiveness Reports*, which rank countries in terms of the quality of their infrastructure, show that Seychelles has maintained its number one ranking in Africa since 2016, while the performance of other SADC countries is erratic. Angola is the only country whose

ranking has improved since 2017, and the number of SADC countries ranked in the top ten has fallen from three in 2016 to two in 2017–2019 (World Economic Forum 2016–2019).

When we look specifically at the quality of roads, electricity supply, and water, the infrastructure scores of most countries, including Seychelles, are very low (Table 6.4). For the period 2014–2019, the quality of roads in Seychelles is lower than that of Mauritius, Namibia, and South Africa, and the quality of electricity supply is lower than that of Namibia and Mauritius. The low quality of infrastructure may partly explain the relatively high levels of intraregional trade in South Africa (38 percent) and Namibia (10 percent) (Figure 6.8). Namibia and Mauritius are the only SADC countries whose infrastructure scores are closer to those of the world's top performers in the infrastructure category (Table 6.4). The relatively high scores of countries like South Africa, Botswana, and Namibia partly explain why intraregional trade appears concentrated in these countries (Figure 6.8 and Table 6.4).

Table 6.4 Comparison of infrastructure quality between SADC and top performing countries

	Quality of road infrastructure				Quality of electricity supply				Reliability of water supply
	2012	**2014**	**2016**	**2019**	**2012**	**2014**	**2016**	**2017**	**2019**
Angola	2.5	2.3	---	2.2	1.4	1.7	---	--	2.1
Botswana	4.4	4.0	4.0	3.8	3.5	2.4	2.7	3.7	3.9
Eswatini	5.0	4.9	4.4	4.0	3.8	4.1	4.0	3.7	4.5
Lesotho	2.7	3.3	3.6	2.7	3.9	3.7	3.7	2.9	3.2
Madagascar	2.7	2.6	2.2	2.0	2.3	2.3	1.9	1.9	2.3
Malawi	3.7	3.3	3.2	2.8	1.9	2.9	2.7	1.9	3.0
Mauritius	4.1	4.8	4.8	4.7	5.1	5.5	5.4	5.5	4.3
Mozambique	2.3	2.1	2.3	2.4	3.3	3.1	2.9	3.0	2.6
Namibia	5.4	5.2	5.2	5.3	5.6	5.4	5.4	5.5	5.3
Seychelles	---	4.2	4.2	4.0	---	4.8	4.8	5.0	4.9
South Africa	4.8	4.9	5.0	4.5	3.7	3.6	2.9	3.9	4.4
Tanzania	3.2	3.0	3.3	4.1	2.2	2.5	2.6	3.1	3.6
Zambia	2.9	3.6	3.7	3.4	3.5	3.3	3.3	2.5	3.3
Zimbabwe	3.3	3.3	3.3	2.8	1.7	2.1	1.9	3.1	2.3
Top five best performing countries in the world (2012)									
Hong Kong	6.3	6.0	6.2	6.1	6.8	6.8	6.8	6.8	6.8
Singapore	6.5	6.1	6.3	6.5	6.7	6.7	6.8	6.9	6.8
Germany	6.1	5.9	5.6	5.3	6.4	6.1	6.4	6.2	6.1
France	6.5	6.2	6.0	5.4	6.7	6.5	6.7	6.8	6.5
Switzerland	6.4	6.0	6.0	6.3	6.8	6.8	6.9	6.9	6.9

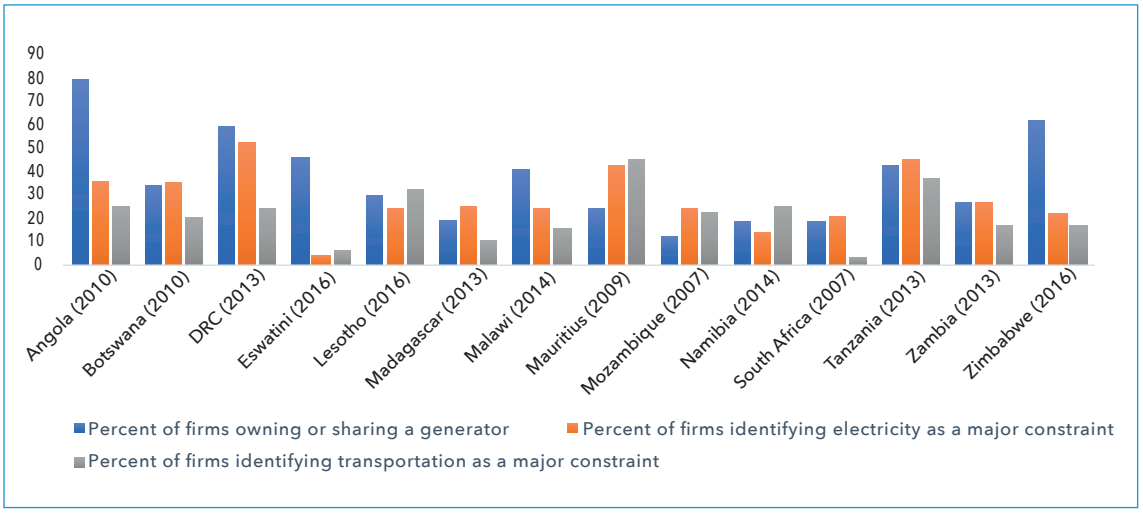
Source: World Economic Forum, Global Competitiveness Index (2012–2019).
Note: A high score means good quality. For example, in the case of water, 1 means water supply is extremely unreliable while 7 means extremely reliable. SADC countries not covered have no data. Although the rankings change every year, the top five best performing countries have always remained in the top ten.

The relatively poor quality of infrastructure in SADC is confirmed in part by the World Bank Enterprise Surveys (2020a), which show that more than a quarter of firms surveyed identified transport as a major constraint to doing business in Mauritius, Lesotho, Angola, and Namibia (Figure 6.11). Electricity challenges, proxied by percentage of firms that own and operate generators, appear to be severe in Angola, DRC, Eswatini, Tanzania, and Zimbabwe, while firms that identified electricity as a major challenge are primarily in DRC, Mauritius, and Tanzania.[9] However, in Botswana,

9 Unfortunately some of these survey statistics are not up to date and may not reflect current status quo.

Namibia, South Africa, Zambia, and Zimbabwe, countries with relatively high levels of intraregional trade, very few firms complained about infrastructure quality (Figures 6.8 and 6.11).

Figure 6.11 Firms identifying infrastructure as a major constraint in the SADC region
Source: World Bank Enterprise Surveys (2020a).



Customs infrastructure also plays a crucial role in facilitating trade and regional integration, and we proxy it using border compliance hours. These costs of trading across borders vary widely among countries (Table 6.5). Of the 16 countries, only 6 are ranked in the top 10 (that is, have the lowest border compliance hours) in the whole of SSA; Angola, DRC, and Tanzania are the worst performers. Although time to export appears to be declining or constant, it generally takes less time to both export and import in the small countries of the region, probably because of the relatively small flow of goods in these countries. Namibia is the only country where there is a big divergence between border compliance hours for exports and border compliance hours for imports — it takes about 120 hours to export but twenty times less to import. This disparity partly explains why Namibian regional imports far outweigh exports (Table 6.5). In Angola, DRC, Namibia, Tanzania, Zambia, and Zimbabwe, it generally takes more than 100 hours to either export or import, which may explain why the share of traded agricultural, intermediate, and finished goods is low and, in some instances, declining. Long border crossing hours translate into high trade costs and a serious hindrance to trade. These SADC member countries need to learn from the experience of other countries in the region, like Botswana, Eswatini, Lesotho, and Mauritius, and improve conditions for trading across borders.

Table 6.5 Customs infrastructure: Trading across borders

	Ranking (out of 48)	Time to export (border compliance hours)				Time to import (border compliance hours)			
	2019	**2016**	**2017**	**2018**	**2019**	**2016**	**2017**	**2018**	**2019**
Angola	38	312	312	192	164	276	276	96	72
Botswana	3	8	8	5	5	4	4	4	4
Comoros	13	51	51	51	51	70	70	70	70
DRC	47	515	515	515	296	588	588	588	336
Eswatini	1	3	3	2	2	5	5	3	3
Lesotho	2	4	4	4	4	5	5	5	5
Madagascar	21	70	70	70	70	105	99	99	99
Malawi	18	85	85	78	78	64	55	55	55
Mauritius	4	48	48	38	24	51	51	41	41
Mozambique	6	78	78	66	66	14	14	14	9
Namibia	20	120	120	120	120	6	6	6	6
Seychelles	8	84	82	82	82	99	97	97	97
South Africa	24	92	92	92	92	87	87	87	87
Tanzania	42	96	96	96	96	402	402	402	402
Zambia	26	148	148	120	120	163	163	120	120
Zimbabwe	29	88	88	88	88	60	228	228	228

Source: World Bank Doing Business (2016–2019).

One approach that is being used to minimize the amount of time lost at the border posts are One-Stop Border Posts (OSBP). SADC has included the creation of these joint customs control facilities in its core mandate and in 2011 issued Draft Guidelines on Coordinated Border Management. Although plans are underway to convert the region's busiest border — between Zimbabwe and South Africa (Beitbridge) — into a one-stop facility, there is still no OSBP in the region (Tralac 2018). The United Nations Conference on Trade and Development (UNCTAD) is also helping to streamline customs clearance with development of an automated system for customs data (ASYCUDA) to reform customs-clearing procedures, and the World Customs Union has developed standard nomenclature that customs officials can use to code traded goods. However, some SADC countries, including Angola, South Africa, Mauritius, Namibia, Madagascar, and Mozambique, have not yet adopted either the ASYCUDA system or the harmonized commodity description and coding system, which may be one of the factors derailing the implementation of OSBP and impeding border efficiency.

The future of the AfCFTA and Southern Africa

Given that SADC became a fully-fledged free trade zone in 2012 and has the lowest internal tariffs among the regional blocs, elimination of unnecessary nontariff barriers should be the next step in fostering integration. The signing and ratification of the AfCFTA on May 30, 2019, makes this more important than ever before. Simulation results on the AfCFTA show that benefits from liberalization are very high when nontariff barriers are minimal. Kalaba (2014) documents that, in 2010, most SADC countries applied more than 300 NTMs on imports of agricultural goods, with South Africa having the most at 600. Eighty percent of these NTMs were in the form of sanitary and phytosanitary standards, followed by licensing and quantitative restrictions as well as technical

barriers to trade. Most of the NTMs were on products such as beverages, spirits, vinegar, fruits, meat, and dairy products.

Although all the SADC countries have signed the AfCFTA, only 5 of the 16 countries have ratified the agreement. The remaining 11 SADC countries should speed up their ratification of the agreement, and countries should develop strategies for minimizing NTMs and exploiting the new trade opportunities. In the future, SADC's intraregional trade growth should no longer be restricted by its 203 million people but expand to the continent's more than 1.2 billion people. Although intra–SADC tariff levels are generally lower than those in other RECs, the gradual reduction of tariffs through the AfCFTA will help lessen SADC's external export tariffs. To maximize welfare benefits from the AfCFTA, SADC member countries need to liberalize in a way that promotes trade creation and should therefore consider what other regional blocs are doing.

Conclusions and the way forward

Regional integration in Southern Africa dates back as far as 1910, when the SACU was formed. The SADC was formed in 1980, achieved free trade area status in 2008, and became a fully-fledged free trade area in 2012. All SADC countries are part of the SADC-FTA, except Angola, DRC, and the Comoros, which joined the bloc only in 2017. Of the five stages of regional integration, SADC has achieved only one, and most of the region's integration milestone deadlines have been missed. Harmonization of different common external tariff lines levied by member countries should be expedited so that SADC can graduate into a customs union. The problem of overlapping membership, which is widespread in the continent, is common in Southern Africa, with all of the Southern Africa countries except Angola and Mozambique belonging to more than one REC. Implementation of the AfCFTA may help to harmonize these regional integration arrangements and boost the smooth flow of traded goods.

Since 2010, intraregional trade in Southern Africa has not changed much, and the graduation of SADC and COMESA into free trade areas in 2008 and 2000 respectively has done little to spur trade growth. The trade integration indices calculated by the African Union, AfDB, and UNECA in 2016 also confirm that intraregional trade is low in SADC, just over 20 percent of SADC world exports. The picture is likewise disappointing at the country level. Excluding South Africa, intraregional trade accounts for less than 10 percent of trade in all the SADC countries, with the Seychelles being the smallest importer and exporter. Thus, SADC like Africa as a whole still trades very little with itself as compared to the rest of the world. This suggests that the formation of the FTA has not translated into huge trade benefits. The predominance of South Africa in the region crowds out and dwarfs the benefits that other member countries enjoy. It is of concern for integration that South Africa accounts for over 60 percent of intra–SADC total exports and agricultural exports, indicating that trade benefits are skewed. Although this predominance is justified by the country's economic size, equitable distribution of integration benefits is important for garnering the political will and support needed to improve intraregional trade conditions.

The extent of regional integration is related to participation in global value chains. Increased trade integration strengthens emerging regional value chains and enables firms throughout the region to participate in global value chains as well. SADC countries need to identify their comparative advantages, especially in agriculture, in order to fully participate in both backward and forward value chains in line with the region's industrialization strategy. Limited investment in technology and policy misalignments discourage value addition. A recent review of industrialization policies

in the region (UNECA 2018) identified several production areas, in both mining and agriculture (cotton, fruits, marine products), where there are immense investment opportunities available to the private sector for processing and value addition within a regional value chain.

Although SADC and SACU show higher levels of introversion compared to other African RECs, only 30 percent of total agricultural exports are traded within the region and intra–SADC agricultural trade is around 47 percent of total trade. Supply-side bottlenecks including input shortages and use of obsolete technology together with inefficient infrastructure are some of the constraints that need addressing. Given that 25 percent of the SADC land mass is arable and only 6 percent is currently being farmed (SADC 2012), relatively good climatic conditions should help the region exploit this untapped agricultural potential to produce and export large quantities of agricultural goods, ideal for promoting agricultural value chains. However, climate change poses some risks. Some countries are now experiencing lower than normal rainfall, and the 2019 cyclone Idai caused catastrophic damage that created a humanitarian crisis in Malawi, Mozambique, and Zimbabwe. Climate change threatens lives and livelihoods, and measures must be developed to mitigate the impact of these changes. Agricultural trade growth is also affected by the higher average ad valorem equivalent import duties imposed by countries including DRC, Seychelles, Malawi, Zambia, and Zimbabwe. Overprotection of the agriculture sector is uncompetitive and works against its productivity, negatively affecting food security, livelihoods, and welfare.

Understanding the major frictions impeding intraregional trade growth is very important in designing effective trade strategies. Poor quality of transport, electricity, and customs infrastructure constitute NTMs. This infrastructure needs to be improved to deepen integration in the region. Implementation of both hard and soft infrastructure projects identified in the 2012 SADC Regional Infrastructure Development Master Plan as well as rapid implementation of the SADC Industrialisation Strategy and Road Map (2015–2063) will not only increase and smooth the flow of goods but also help to increase local competitiveness and expand regional value chains. Improving infrastructure quality is also key to achieving higher intraregional trade levels. Although the Protocol on Transport, Communications and Meteorology was signed by SADC member states in 1996, there is still much that needs to be done to improve infrastructure in the region. Although several public-private partnership (PPP) projects have been implemented in some countries, there have been no PPP projects in Eswatini, Lesotho, or Malawi since 2010, and the governments continue to fund all infrastructure-related projects (WDI 2020). Mozambique, South Africa, and Zambia are the only countries that have partnered with the private sector and invested billions of US dollars in infrastructure development. Thus, effective implementation of the 2011 SADC Guidelines on Coordinated Border Management and the SADC Regional Infrastructure Development Master Plan is important to improve the quality of the region's infrastructure.

The SADC Industrialisation Strategy launched in 2015 provides useful guidance on what structural reforms and enhanced competitiveness measures countries need to implement to maximize benefits from free trade and the AfCFTA. This strategy is anchored on industrialization as a driver of economic and technological transformation and makes industrialization the fulcrum of regional integration. Agro-processing, mineral beneficiation, and downstream processing are some of the potential growth paths identified. The strategy recognizes that improving agricultural productivity, as proposed in SADC's Regional Agricultural Policy, is important for the development of agro-industries and agricultural value chains. Rural industrialization support to locate agro-processing industries in rural areas, facilitate rural industrial clusters, and make agriculture and agro-processing attractive professions is the modus operandi proposed by the region.

A look at the SADC website shows a number of promising strategies for ramping up trade and integration in the region, ranging from the SADC Industrialisation Strategy and Roadmap (2015), Regional Infrastructure Development Master Plans (2012) that cover water, information and

communications technologies (ICT), transport, and meteorology, SADC Resources Mobilization Strategy (2012), Private Sector Involvement Strategy in Customs Matters (2013), Regional Indicative Strategic Development Plan (2001), Customs ICT Strategy of 2013, and Regional Agricultural Policy (2014). What is needed is strong political will and leadership from regional member states to effectively implement all the measures agreed upon in these strategies.

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Summary and Conclusions

The 2020 AATM presented an overview of trade in agriculture products in Africa and highlighted the main impediments that affect intra- and extra-African trade. This final chapter summarizes the major findings of this report and offers some policy recommendations for improving agricultural exports performance, especially in the context of the unprecedented uncertainty the world is facing with the COVID-19 pandemic.

Chapter 1 provided a general overview of African agricultural exports, regional integration, and informal trade in Africa. It also indicated the various impacts of the pandemic in terms of food security and production. While global production levels of essential food commodities in 2020 are satisfactory, there are various channels through which the pandemic negatively affects the continent. Among these are the decline in remittances; the loss of tourism receipts with the total or partial restrictions imposed on travelers; the potential decrease in international aid due to the recession in advanced economies; and the historic decrease in prices of major commodities (which represent a significant amount of Africa's exports).

The main trends in agricultural trade were presented in **Chapter 2,** which analyzed both trade flows and trade policies. Generally speaking, African agriculture is characterized by low productivity when compared to other developing regions, and African agricultural exports account for only a small share of the world's exports. A closer look at the destination of trade flows shows that African countries export chiefly to traditional markets (such as the United States and Europe) but have also diversified their exports to some emerging markets. In terms of export composition, Africa's exports are still relatively concentrated in a few products; the top 10 export products represent 39 percent of Africa's agricultural exports (cocoa beans, cashew nuts, tobacco, coffee, oranges, cotton, sesame seeds, black tea, cocoa paste, and fresh grapes). In regards to trade policies, although tariffs are low, nontariff measures (NTMs) substantially hinder African trade. Among these NTMs, sanitary and phytosanitary standards, administrative barriers, and domestic support in major exporters are most significant.

Chapter 3 focused on intra-African trade integration. SADC and COMESA are notably the largest players, followed by ECOWAS, then AMU and ECCAS. At the country level, South Africa remained the predominant trader, with exports amounting to nearly a third of all intra-Africa formal exports, and imports accounting for roughly a tenth of all agricultural goods. It is crucial to note that current export patterns within the different African regions are sufficiently dissimilar to suggest there is room to expand intraregional trade within the continent. To achieve this, more coordinated efforts must be deployed to promote a more integrated market and reduce the negative effects of NTMs and behind-the-border barriers.

In the 2019 AATM, Chapter 4 examined the evolution of competitiveness in key commodity value chains in Africa, showing that Africa's comparative advantage in agriculture has strengthened in very recent years. This year's **Chapter 4** focused on the lack of competitiveness of African value chains that are fundamental to food security: cereals and cassava, sugar and related products, and vegetable oils. The chapter first examined indicators of trade and comparative advantage at different levels, continental or by country, by degree of processing, and by crop at the source of this value chain; it then assessed the degree of distortion introduced by the policies of large (rich and emerging) countries. On the one hand, the chapter found that while the African continent has a significant comparative *disadvantage* in these three value chains, some African countries may have a comparative *advantage* at certain stages of processing in these value chains. But too often the advantage is concentrated at the unprocessed stage. On the other hand, it showed that

while the policies of the European Union, the United States, China, and India are highly distorting for certain products or at certain stages of processing, most African countries still suffer from structural weaknesses in their supply capacities in these value chains: poor access to the most recent technologies; insufficient infrastructure in transport, customs, telecommunications, and energy; and insufficient labor skills.

Informal cross-border trade (ICBT) was the subject of **Chapter 5**. In Africa, ICBT is fundamental in terms of income generation, food security, and the inclusion of women in economic life. The chapter began by clearly defining this economic activity, as different definitions of the term are used. Then it identified the causes of ICBT, which include historical, cultural, and economic factors. It is the product not only of the largely arbitrary formation of African states, but also of the many prevailing barriers to formal trade. Two initiatives to measure ICBT were presented: those implemented by CILSS[1] in West Africa and by UBoS and BoU[2] in Uganda. Indeed, the lack of accuracy in African agricultural trade statistics is an important issue often highlighted in the 2020 AATM, as in previous editions.

Chapter 6 looked at regional integration experiences in Southern Africa, focusing on SADC. Trade integration in this part of Africa has a long history: SACU is the oldest customs union still in existence today. The birth of SADC was the result of the political will of nine countries in the region to reduce their dependence on apartheid-era South Africa. SADC has since accepted new members and now comprises 16 countries. However, the initial political will has not sparked a real economic evolution: the free trade area has not been transformed into a customs union; NTMs affecting intraregional trade are still numerous; and customs, electricity, transport, and telecommunications infrastructure have not significantly improved. Current trade among the SADC countries reveals a number of weaknesses that have not been resolved in recent years, most notably the overly large share of primary goods exports, with a high concentration in a few products (tobacco, corn, sugar, live animals) that are similar in all countries. Moreover, participation of Southern African countries in global value chains is low: only South Africa exports and imports intermediate goods in a significant way. The authors concluded by pointing to the need for genuine political will to emerge to advance trade integration in the region.

At the beginning of July 2020, the main concern of Africans is the COVID-19 crisis and its potential impact on food security on the continent. A large part of Africa's food supply is provided through "transitional chains," where it is very difficult to organize social distancing. Many African countries have banned people from crossing borders but accept the crossing of freight with tighter health controls. This restriction will slow, if not stop, ICBT and slow down recorded trade. The introduction of curfews also increases the loss and waste of food. Add to this crop losses caused by locusts, mainly in East Africa, and the potential impact on food security is worrying.

In view of this crisis, strengthening regional integration in Africa is therefore increasingly important, particularly to improve food security. Increasing integration will require lowering or even removing tariff barriers and NTMs and improving transport, customs, telecommunications, and electricity infrastructure. While many African regional agreements, such as SADC, are disappointing in this regard, the African Continental Free Trade Area is today the focus of hope. Due to the health situation, its launch has been postponed until January 1, 2021. It is hoped that the current crisis will increase the scope of this agreement and strengthen the motivation of African governments to implement it effectively.

1 Comité Permanent Inter-état de Lutte contre la Sècheresse au Sahel.
2 Uganda Bureau of Statistics and Bank of Uganda.

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