ReSAKSS
Regional Strategic Analysis and Knowledge Support System
by AKADEMIYA2063

AGRODEP
African Growth & Development Policy
modeling consortium
by AKADEMIYA2063

Africa Agriculture Trade Monitor 2022

Edited by Antoine Bouët, Sunday Pierre Odjo, and Chahir Zaki

AKADEMIYA 2063

IFPRI
INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

Editors

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ACRONYMS AND ABBREVIATIONS

AATM	Africa Agriculture Trade Monitor
AEC	African Economic Community
AfCFTA	African Continental Free Trade Area
AMU	Arab Maghreb Union
ASEAN	Association of Southeast Asian Nations
AUC	African Union Commission
AVE	ad valorem equivalent
BRICS	Brazil, Russia, India, China, and South Africa
CAADP	Comprehensive Africa Agriculture Development Programme
CEMAC	Communauté Economique et Monétaire de l'Afrique Centrale (Economic and Monetary Community of Central Africa)
CEPGL	Communauté Economique des Pays des Grands Lacs (Economic Community of the Great Lakes Countries)
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CES	constant elasticity of substitution
CET	common external tariff
CGE	computable general equilibrium
CIF	cost insurance freight
CILSS	Comité Permanent inter-États de lute contre la sécheresse dans le Sahel (Permanent Interstate Committee for Drought Control in the Sahel)
COMESA	Common Market for Eastern and Southern Africa
DRC	Democratic Republic of the Congo
DVA	domestic value added
DVX	indirect value-added export
EAC	East African Community
EBA	Everything but Arms
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of Western African States
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment

FEWS NET	Famine Early Warning Systems Network
FOB	free on board
FVA	foreign value added
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GSP	Generalized System of Preferences
GTAP	Global Trade Analysis Project
GVC	global value chains
HHI	Herfindahl-Hirschman Index
HS2	Harmonized System 2
ICBT	informal cross-border trade
IFPRI	International Food Policy Research Institute
IOT	input–output table
ITC	International Trade Centre
JRC	Joint Research Centre
LAC	Latin America and the Caribbean
LDC	least developed countries
LES-CES	linear expenditure system–constant elasticity of substitution
MAcMap	Market Access Map
MENA	Middle East and North Africa
MFN	most favored nation
MRIO	multi-region input–output
NAFTA	North American Free Trade Agreement
NCD	noncommunicable disease
NTB	nontariff barrier
NTM	nontariff measure
OECD	Organisation for Economic Co-operation and Development
PPML	Poisson pseudo maximum likelihood
RCA	revealed comparative advantage
REC	regional economic community
RIP	Regional Indicative Program
RoO	rules of origin

SAARC	South Asian Association for Regional Cooperation
SACU	South African Customs Union
SADC	South African Development Community
SME	small and medium enterprises
SPS	sanitary and phytosanitary
SSA	sub-Saharan Africa
TBT	technical barriers to trade
TEI	trade expansion indicator
TFA	trade facilitation agreement
TI	trade introversion index
TII	trade intensity index
TiVA	trade in value-added
UBoS	Uganda Bureau of Statistics
UDEAC	Union Douanière et Economique de l'Afrique Centrale (Customs and Economic Union of Central Africa)
UN Comtrade	United Nations Commodity Trade Statistics Database
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
USAID	United States Agency for International Development
USMCA	United States-Mexico-Canada Agreement
VAX	value-added export
WACTAF	West African Association for Cross-Border Trade
WIOD	World Input–Output Database
WTO	World Trade Organization

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FOREWORD

Agricultural trade and global food security have been dramatically affected by a series of unusual events. While the global economy is recovering in 2022 from the COVID-19 pandemic, the Russian invasion of Ukraine has aggravated challenging problems. In a context where agricultural prices were already high due to climate change and policies such as export restrictions and support for biofuels, the war has amplified the increase in food prices and inflationary pressures during the first half of 2022 and increased volatility throughout the year. The combination of these shocks affects agricultural trade and food security throughout Africa, especially in countries that are highly dependent on food imports. The role of trade in creating resilience in this volatile environment is crucial and has been much discussed.

From this perspective, the 2022 *Africa Agriculture Trade Monitor* (AATM) contributes to our understanding of African agricultural trade and its relationship with food and nutrition security in several important ways. First, it provides a thorough analysis of regional and continental trade in agriculture and selected value chains using accurate statistics developed for this report. This year, it adds an analysis of the nutritional content of African trade and looks closely at the trade in processed products. Second, it examines the potentially transformative impact of the African Continental Free Trade Area (AfCFTA) on the region's economies. Third, at the regional level, it analyzes the evolution of intra- as well as extra-regional trade flows and the trade policy of one of Africa's regional economic communities (RECs), namely the Economic Community of Central African States (ECCAS).

As in prior editions, this fifth AATM provides improved trade statistics and uses consistent indicators to monitor trends in Africa's participation in global trade as well as the status of intra-African trade. The report highlights three main findings. First, the insertion of African countries in global and regional value chains is low but has recently improved. Indeed, both forward participation in value chains (that is, provision of inputs to other countries' processing sectors) and backward participation (incorporation of imported intermediates into African traded products) have increased, although forward links have grown faster than backward links. Second, intra-African trade increased significantly prior to the pandemic in most RECs, especially in processed products. Yet, this trend was halted by the COVID-19 shock, especially in ECCAS and the Arab Maghreb Union (AMU). Third, in terms of nutritional content, extra-African trade is concentrated in high-value products with a low caloric content. In comparison, intra-African flows are more intensive in calories, fat, and protein.

The report also examines a number of special topics. One chapter is devoted to modeling the impacts on trade, growth, and welfare of several potential approaches to AfCFTA implementation. The results confirm that there is a high opportunity cost associated with weak AfCFTA implementation, which is why it is crucial to take a more ambitious approach that fully liberalizes tariffs and reduces nontariff measures. The 2022 AATM also conducts a detailed analysis of trends and policy issues in value chains for stimulants (cocoa, coffee, and tea), demonstrating that trade in these sectors is still concentrated in unprocessed products. Finally, the report examines in depth the patterns of trade integration within ECCAS. One important finding is that intraregional trade is still impeded by many tariffs, nontariff measures, and poor transport infrastructure.

AKADEMIYA2063 and the International Food Policy Research Institute (IFPRI) are pleased to present this collaborative report, which provides an insightful review of Africa's progress in trade development, within and beyond the continent, and new analysis on critical topics for trade in Africa's agrifood sector.

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EXECUTIVE SUMMARY

The world's agricultural markets are still unsettled in 2022 for several reasons, with prices of wheat, corn, soybeans, coffee, and cotton particularly volatile and vegetable oil prices at high levels, especially soybean, sunflower, and rapeseed oils. Moreover, fertilizer prices soared in the first half of 2022 as oil prices rose, leading to fears of reduced fertilizer use and lower yields for future harvests. Thus, the prospect of a global food crisis has taken hold, with particular concerns for African countries that rely heavily on food imports. Against this background, the *Africa Agriculture Trade Monitor 2022* (AATM) analyzes continental and regional trends in African agricultural trade flows and policies, with focuses on the potential impact of the African Continental Free Trade Area (AfCFTA) and on the Economic Community of Central African States (ECCAS). The major findings from the report's six chapters are summarized below.

The volatility of agricultural and food prices is linked to climate change and to political reactions to the rise in the price of oil and agricultural goods. Over the past 12 months, numerous climatic events have continued to affect global harvests, while demand remains strong due to global population growth and urbanization. Faced with rising food prices, many governments have adopted export bans or export taxes on cereals (Russia, Moldova, Serbia, Hungary, Kazakhstan), palm oil (Indonesia), or fertilizers (China). These noncooperative policies amplify the rise in world agricultural and food prices. In addition, support programs for biofuel industries are diverting agricultural products from food and fodder use, further contributing to the increase in their price on world markets. Russia's invasion of Ukraine has added to this problem, pushing up the price of oil and affecting production and exports from Ukraine, Russia, and Belarus of wheat, sunflower seeds and oil, corn, and barley.

Faced with this rise in world agricultural prices, African countries may fear the emergence of a food crisis, but their potential exposure to this crisis varies significantly from one country to another. North African countries such as Egypt, but also Mauritania, Sudan, and the Republic of Congo, appear particularly vulnerable, notably because of their diet based on wheat and their dependence on imports of cereals, vegetable oils, and fertilizers. Other regions including Central Africa, Eastern Africa, and Western Africa appear less vulnerable.

Today, Africa's contribution to global value chains is small, but it is growing at a significant pace. The African continent is positioned upstream in global value chains, meaning it contributes more value added that is used as inputs in the exports of other regions than these other regions contribute to African exports through their intermediate goods incorporated into African exports. This is more true in the agriculture sector than in industry. Currently, the share of African domestic value added exported as intermediate goods used in exports from foreign countries to other countries is as high as 40 percent of gross exports. This is characteristic of countries with a weak manufacturing base but with abundant natural resources, such as land and mines. African countries export intermediate goods that are used in third-country agricultural exports, particularly the European Union countries, such as the Netherlands, Germany, and France.

The backward participation of African countries in global value chains (use of foreign intermediates in national exports), while lower than in other continents, is increasing. Between 2015 and 2019, Africa's gross exports incorporated 15 percent of foreign value added, compared to a world average of 30 percent. While this share is 18 percent in the Southern African Development Community (SADC), Arab Maghreb Union (AMU), and ECCAS, it is only 8 percent in the Common Market for Eastern and Southern Africa (COMESA) and 6 percent in the Economic Community of West African States (ECOWAS). China, Germany, and the United States are the main providers of foreign intermediate goods used in the agricultural exports of African countries.

In value terms, intra-African trade in agricultural products declined by 3.5 percent in 2020 compared to 2019. This poor performance is mainly explained by the COVID-19 pandemic. Intra-African trade declined significantly in ECCAS and AMU, but increased significantly in the East African Community (EAC), thanks to the performance of Uganda and Tanzania. In 2018–2020, 46 percent of intra-African agricultural exports were processed products compared to 41 percent in 2003–2005. Over these two decades, intra-African agricultural exports of processed products grew strongly in ECOWAS, COMESA, and EAC. Processed agricultural products that are frequently traded between African countries include sugar, palm oil, cigars and cigarettes, tea, and wheat flour. Trade in such processed agricultural products predominates within regional economic communities (RECs), while trade in raw or semi-processed products is predominant between RECs.

Assessment of the nutritional content of intra-African food and agricultural trade shows that, between 2003–2005 and 2018–2020, trade in calories increased by an average of 4.4 percent each year, trade in fats by 4.9 percent, and trade in proteins by 4.6 percent. Intra-African trade accounts for a larger share of African trade when expressed in terms of calories, fats, and proteins than when expressed in value. This reflects the fact that higher-value products with lower caloric content (for example, coffee, cotton, tea, and cut flowers) are typically exported outside of Africa. Trade in calories is mostly intraregional, with the exception of a significant flow from the Southern African region to the Eastern African region. In 2019, there were still significant tariffs on intra-African agricultural trade, and nontariff measures (NTMs) are numerous.

Concerning African trade in stimulants (cocoa, coffee, tea), Africa's exports are concentrated in unprocessed cocoa and coffee and semi-processed tea. African shares in world exports of cocoa and coffee exhibit a decreasing trend in the long term, while the share of tea exports is stable. Many African countries are under-trading cocoa, coffee, and tea across all three levels of processing, and thus have substantial potential to trade more both in volume and in terms of product variety and sophistication. Tariff escalation – that is, tariff rates that increase with the level of product processing – is among the main reasons for Africa's lack of export processing and diversification. Although escalating tariffs have declined over time, they remain relatively high in cocoa, tea, and coffee, especially in emerging economies like Brazil and China. Moreover, there are still tariffs on intra-African trade all along the value chains of cocoa, coffee, and tea, even if they have decreased. Finally, African countries also impose NTMs on imports of coffee, tea, and cocoa, which have a restrictive effect on imports as large as those imposed by non-African countries.

The African Continental Free Trade Area (AfCFTA) is a historic opportunity for the African continent. This agreement will establish the largest free trade agreement in terms of the number of countries involved. While the negotiations point to an ambitious agreement, its implementation should follow through on this beginning. In fact, most tariffs on intra-African trade will be eliminated, but a clause on sensitive and excluded products allows countries to implement the agreement with flexibility. Since NTMs are numerous and significantly reduce intra-African trade, the success of the agreement will lie in the elimination of unnecessary ones. If the agreement effectively includes a liberalization of trade in services and trade facilitation, the economic and trade benefits could be huge.

Many studies have assessed the potential impact of the AfCFTA on African trade and economic activity. Differences in the results of these studies stem mainly from the fact that they test different scenarios: lower or higher tariffs on intra-African trade, more or less ambitious reductions of NTMs, and agreements on services or trade facilitation. A new evaluation estimates that the AfCFTA tariff agreement will increase African exports of agrifood goods by only 1.6 percent in

volume, whereas a complete elimination of tariffs on intra-African trade would increase these exports by 6.2 percent. Thus, the opportunity cost of the sensitive and excluded products clause is significant. Negotiating a reduction of NTMs is also a key issue: the AfCFTA tariff scenario has a small impact on Africa's gross domestic product (GDP), whereas adding an 80 percent reduction in NTMs would increase African GDP by 0.2 percent. This assessment is based on trade and NTM data that are unfortunately incomplete; as in prior editions, this year's AATM report highlights the key issue of the low quality of African economic data.

Trade integration in the ECCAS region remains limited. Eleven countries are ECCAS members: Angola, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of Congo, Equatorial Guinea, Gabon, Republic of Congo, Rwanda, and Sao Tome and Principe. Agriculture accounts for 19 percent of ECCAS's GDP. Rwanda is the main intraregional exporter of unprocessed and semi-processed agricultural products, accounting for 69 percent of total exports of unprocessed and 40.7 percent of semi-processed agricultural products in the ECCAS region. The top exporter of processed agricultural products within the ECCAS region is by far Cameroon (46.4 percent). However, over the 2018–2020 period, less than 1 percent of the region's total agricultural exports were exported within ECCAS, and only 1.7 percent of the region's total agricultural imports were sourced from within ECCAS. There are still many tariffs and NTMs on intra-ECCAS trade. Moreover, the quality of regional transport infrastructure is particularly low. Finally, overlapping trade agreements complicate integration – six ECCAS countries belong to at least one other REC recognized by the African Union. An analysis of trade potential in ECCAS countries shows that there is untapped trade potential within ECCAS based on natural resources, though it is limited to a narrow range of products, namely fish, wheat or meslin flour, soups and broths, natural gum Arabic, palm oil, beans, and raw cane sugar.

In 2022, the volatility of world agricultural prices remains high. The factors behind this increased volatility are structural (climate change) and political (support programs for the biofuel industry; export restrictions). Russia's invasion of Ukraine has further aggravated this volatility. Faced with this situation, the vulnerability of African countries is particularly varied. The strengthening of trade links between African countries, thanks to the establishment of the AfCFTA, may make it possible to decrease the risk of food insecurity in the long term through diversification of supply sources and increased ease of access for all farmers to a larger market.

CHAPTER **ONE**

Overview and the Current Crisis

Antoine Bouët,
Sunday Pierre Odjo, and
Chahir Zaki

OVERVIEW

This is the fifth Africa Agriculture Trade Monitor (AATM), an annual flagship publication of AKADEMIYA2063 and the International Food Policy Research Institute (IFPRI). The AATM provides an overview of trade in agriculture in Africa, including analysis of short- and long-term trends and drivers behind Africa's global trade, intra-African trade, and trade within Africa's regional economic communities. The AATM is supported by the United States Agency for International Development (USAID). The six chapters of the 2022 AATM cover a range of agricultural trade issues in Africa, including participation in global value chains, intraregional trade in processed agricultural products, and the potential benefits of the African Continental Free Trade Area Agreement (AfCFTA), and include focused chapters on value chains for cocoa, coffee, and tea and on trade integration in Central Africa.

This first chapter looks at the impact of the ongoing Russia-Ukraine war and the potential risk of food crisis for Africa. We begin with an exploration of the supply chain disruptions induced by the war and the importance of Russia, Belarus, and Ukraine in food, energy, and fertilizer markets. We then analyze price evolution for these essential goods, beginning from 2019, and consider the range of factors that may explain the observed price trends as well as the likely implications of rising world prices for Africa's import-dependent countries.

Chapter 2 provides an overview of Africa's participation in global value chains, using a methodology that decomposes a country's gross exports into its value-added components, including exports of value added, domestic value added that is re-imported, foreign value added, and other double-counted terms. The chapter traces the sources and destinations of the value-added content of Africa's gross exports at both the economywide and sectoral levels, shedding light on Africa's backward and forward linkages with other world regions as well as its position in global agricultural value chains.

Chapter 3 looks at intra-African agricultural trade at a disaggregated level, with an emphasis on trade in processed food products and the nutritional content of traded goods. Detailed analyses are provided for five major processed products (sugar, palm oil, cigars and cigarettes, tea, and wheat flour) along with an examination of barriers to intraregional trade in those five products. The chapter compares Africa with other benchmark regions, including the Asia-Pacific and Latin America and Caribbean regions, to better identify gaps and opportunities.

Chapter 4 provides a comprehensive analysis of the performance of African countries in the value chains for coffee, tea, and cocoa. The authors set the scene with a brief historical overview of these three value chains and the roles played by Africa's colonial heritage, post-independence policies, and trade liberalization in shaping their development. They then use findings from a gravity model to assess whether African countries are trading above or below their potential in cocoa, coffee, and tea, and discuss major barriers to Africa's upgrading in these three global value chains.

As in previous reports, Chapter 5 focuses on a specific emerging issue in Africa's agriculture trade. This year the chapter offers a comprehensive assessment of the potential trade and economic consequences of the implementation of the AfCFTA Agreement. The authors use a dynamic multisectoral computable general equilibrium (CGE) model to simulate five alternative AfCFTA implementation schemes with an innovative treatment of tariff data and nontariff measures. The findings from these scenarios are compared with previous assessments of the potential impact of the AfCFTA Agreement; the results highlight the importance of taking an ambitious approach to implementation in order to derive the greatest benefits for African countries.

Each year the AATM also looks in depth at integration within one of Africa's regional economic communities. This year, Chapter 6 is dedicated to an analysis of trade integration in the Economic Community of Central African States (ECCAS). Starting with a historical background, the authors then focus on the status of agricultural trade integration and an analysis of the challenges and opportunities for a successful trade integration in this region.

A NEW FOOD CRISIS?

Last year, this report focused on the consequences of the COVID-19 pandemic for agricultural trade and food security in Africa. We showed that the policy reactions to the pandemic have had far-reaching impacts on African food value chains and the livelihoods of many households. In 2022, Africa may face a new food crisis. While many observers attribute this impending crisis to Russia's invasion of Ukraine, in fact the recent war has amplified a process that has been underway for several quarters.

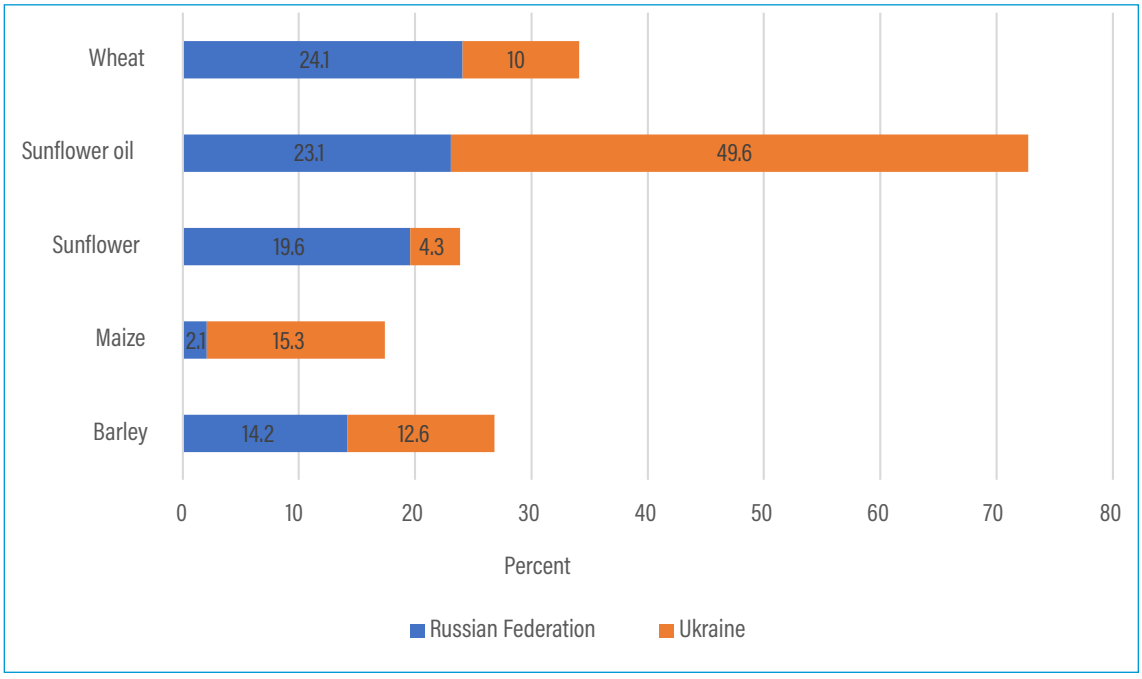
Recent developments

Since February 24, 2022, when Russia invaded Ukraine, the two countries have been at war. Many Ukrainians are assigned to the country's military defense, and many others have fled to the west of the country, to neighboring countries, or farther. In addition to the resulting loss of available labor, crops have been destroyed along with infrastructure needed for transporting agricultural products. Maritime transport in the Black Sea has been significantly disrupted, especially the export of grain from Ukraine. International sanctions have been imposed on Russia and Belarus, a supporter of Russia. Trade in grains and vegetable oils is seriously affected in 2022, both directly by boycotts of Russian and Belarusian products, the blockade of Ukrainian ports by the Russian navy, and damage to the country's transport infrastructure, and also indirectly by the financial difficulties faced by Russian exporters (namely sanctions against Russian banks).

Ukraine, Russia, and Belarus are all major players in the world's food, energy, and fertilizer markets. Russia and Ukraine control a major share of global exports of wheat, corn, sunflower seeds and oil, and barley (Figure 1.1). To give an aggregate view of the problem, it is estimated that Russia provides 5.8 percent of the world's calories and Ukraine provides 6.0 percent – thus, the trade of about 12 percent of the world's calories used for food and feed is at risk.

In the first half of 2022, as the Russia-Ukraine war was underway, world agricultural prices increased. Thus, an important question arises: does the Russia-Ukraine war explain this rise in world agricultural prices? Here, we conclude that the conflict has not caused this price increase, but it has amplified tensions in these markets. These tensions emerged in agricultural, fertilizer, and energy markets in 2020, and are related to both structural factors and policy reactions. We start by looking at the evolution of prices.

Figure 1.1 Share of Russia and Ukraine in world exports of five agricultural commodities, 2020



Source: Bouët, Laborde, and Traoré (2022).
Note: Intra-EU trade is excluded.

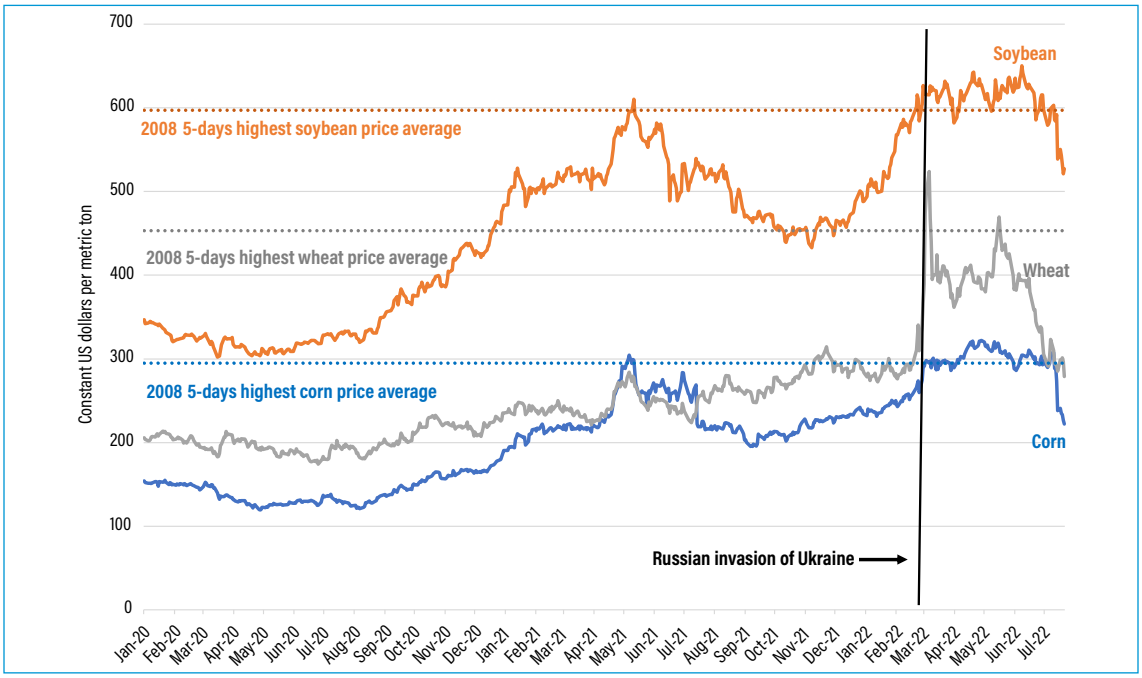
The evolution of prices

Grain prices

Since the beginning of 2020, grain prices have shown slightly different trends (Figure 1.2). On the one hand, the price of soybeans has been rising since November 2021 and the price of corn since September 2021, while the price of wheat was fairly stable between May 2021 and mid-February 2022. The rise in grain prices (corn and soybeans) therefore began before the Russian invasion of Ukraine, but since that date, wheat prices have also been rising. On the other hand, if we compare the price situation in March and April 2022 with that of the 2008 food crisis, we see that price levels at the beginning of the second quarter of 2022 are similar to the highest levels reached in 2008 for corn and soybeans. Grain prices were therefore very high in March and April 2022.

Finally, grain prices have decreased since April 2022. By the end of July 2022, wheat prices are at the level prevailing before the Ukrainian crisis; corn prices are below the 2021 average; and soybean prices are about 5 percent above the 2021 average.

Figure 1. 2 Commodity prices in constant US dollars per metric ton, 2019–2022



Source: Bouët, Laborde, and Traoré (2022).

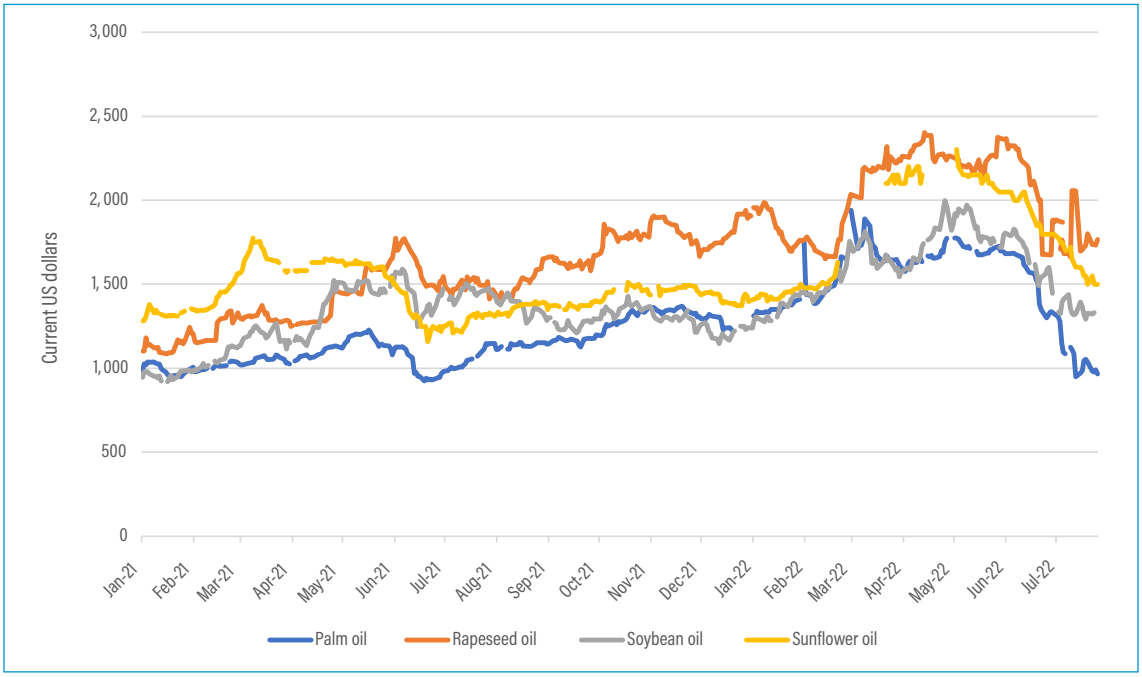
Vegetable oils

Figure 1.3 shows the evolution of vegetable oil prices since the beginning of 2021. Vegetable oils are an essential nutritional element, in terms of both calories and vitamins. We can clearly see that prices of the four most important vegetable oils at the global level began to increase before Russia's invasion of Ukraine: in the last quarter of 2021 for palm oil, soybean oil, and sunflower oil, and in early February 2022 for rapeseed oil. Since the invasion, the price of sunflower oil has risen the most, as the conflict directly affects the production potential of this oil (Figure 1.1). But overall, the prices of these four oils vary relatively synchronously, revealing significant substitutability. More recently, these prices have decreased significantly, since early May for sunflower oil, mid-May for soybean oil, and early June for rapeseed oil and palm oil. At the end of July, the prices of soybean oil and sunflower oil are slightly above their average prices in 2021 (around +4 percent), while the price of palm oil is significantly below its 2021 average (−14.6 percent). The price of rapeseed oil remains relatively high. Over the longer term, since early 2021, world prices of vegetable oils are relatively high, especially those of soybean oil, sunflower oil, and rapeseed oil.

Fertilizer prices

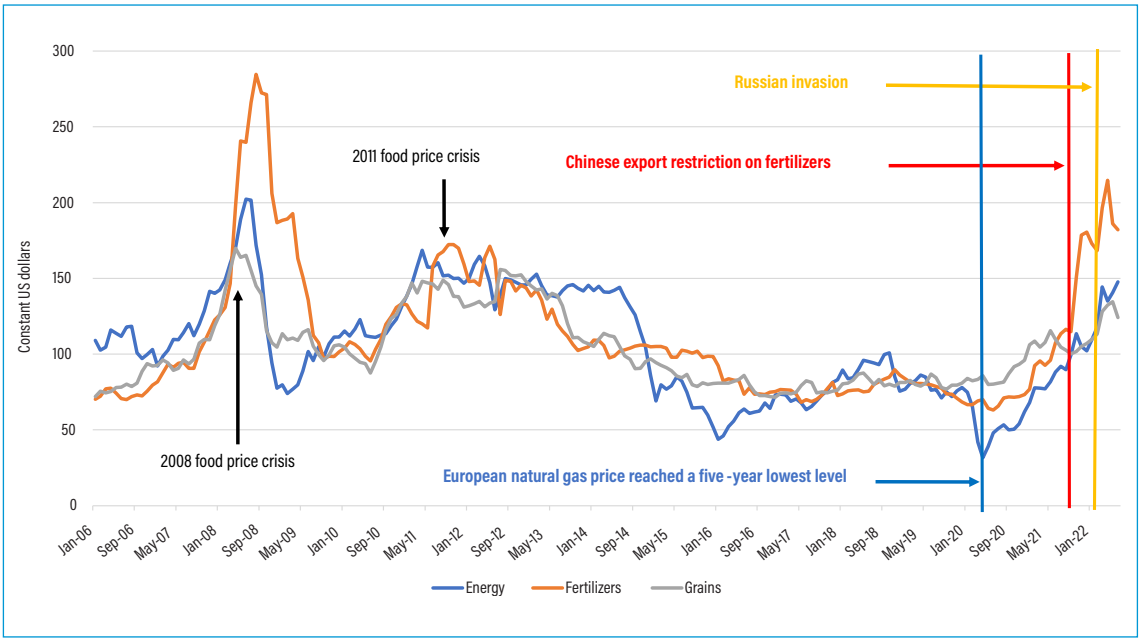
Fertilizer prices began to move upward in early 2020, well before February 2022. Comparing the long-term evolution of fertilizer prices with a synthetic index of food and energy prices (Figure 1.4) is instructive.

Figure 1.3 Daily prices of vegetable oil, 2021–2022



Source: Glauber, Laborde, and Mamun (2022b).

Figure 1.4 Real prices for food, fertilizer, and energy, 2006–2022



Source: Bouët, Laborde, and Traoré (2022).

Fertilizer prices rise when energy prices rise because natural gas is an important input for the manufacture of mineral fertilizers. Energy prices began to increase in early 2020, mirrored by fertilizer prices. In 2021, the increase in the real price of fertilizers accelerated in response to restrictions on fertilizer exports imposed by China, which is a major player in this market. An export ban or an export tax, especially when implemented by a large country, is a negative shock on the supply of a product on the world market, thus contributing to raising its price. The invasion of Ukraine has amplified this phenomenon, as Russia and Belarus are major global exporters of key fertilizer components, namely nitrogen, phosphate, and potash. In 2019, Russia accounted for 15 percent of global nitrogen exports, 14 percent of phosphate exports, and 19 percent of potash exports, while Belarus accounted for 18 percent of global potash exports. Figure 1.4 also shows that the price of fertilizers tends to overreact to the price of food; this is related to the greater concentration of fertilizer production and its less elastic demand.

Why are these prices rising?

Several factors are driving this increase in prices for essential goods. These include the relatively high and growing demand for cereals and vegetable oils; negative climatic and political shocks on the supply of these products; and rising production costs. The Russia-Ukraine war has aggravated this inflationary pattern.

Climate change significantly affects global cereal and vegetable oil production every year. In 2021, drought events significantly reduced soybean crops in South America (Brazil, Paraguay) and wheat crops in North America (Canada) and the Middle East and North Africa. In addition, Typhoon Rai[1] significantly reduced palm oil production when it hit Malaysia and the Philippines in December 2021.

Also in 2021, *global grain demand remained strong,* including import demand from China. Globally, the world population continues to grow and urbanize, which favors meat-heavy diets and thus strong demand for grain for animal feed. The demand for vegetable oils to make biodiesel is also strong, in part because of government policies, with 15 percent of vegetable oil production now supplying the biodiesel industry compared with 1 percent 20 years ago.

Countries including Russia, Moldova, Serbia, Hungary, and Kazakhstan imposed *export restrictions* and even bans on wheat exports, beginning in late 2021. In Southeast Asia, export restrictions have affected trade in palm oil and rice. Since February 24, 2022, 23 countries have imposed export restrictions, affecting 16 percent of global agricultural trade in calorie terms. Today, export restrictions affect between 45 and 79 percent of the world's vegetable oil trade (Glauber, Laborde, and Mamun 2022b; see also IFPRI's Export Restrictions Tracker[2]).

Shortages in agricultural markets are generally observable from statistics on world grain stocks. At the beginning of 2022, before the invasion of Ukraine, world stocks of the most important grains were at historically low levels for wheat, corn, and soybeans; for rice, stocks were at a much safer level. In addition, *production costs* in the agriculture sector have been increasing since the beginning of 2020, including costs for energy, fertilizers, and labor. Labor scarcity has been aggravated by pandemic containment policies, which brutally slowed the cross-border migrations that are essential for the agriculture sector. International transportation costs also remain high, which further raises the price of imported agricultural goods.

Finally, the *current crisis could affect future agricultural production* through the increase in fertilizer prices. Will increased fertilizer prices reduce future production of grains and oilseeds? Although a priori this would seem likely, in this case the increase in the price of fertilizer may

1Typhoon Rai (also known as Typhoon Odette) hit the Philippines in December 2021, killing several hundred people, and caused extensive damage in Southeast Asia, including the loss of many crops.
2 See https://www.ifpri.org/project/covid-19-food-trade-policy-tracker

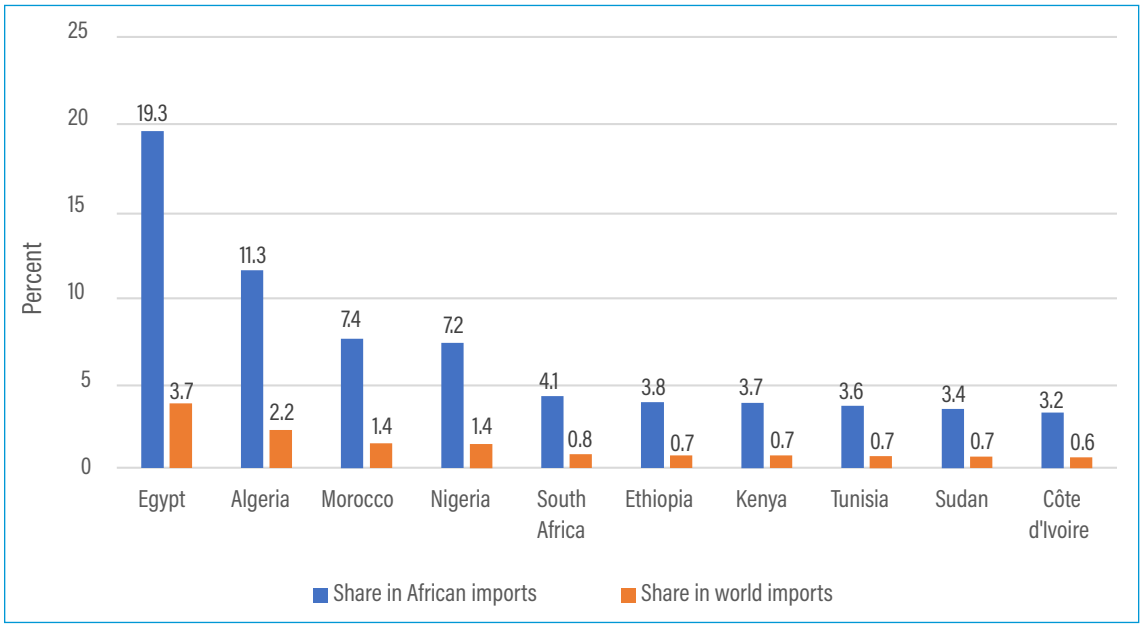
be offset by the increase in the price of outputs (wheat, soybeans, corn, vegetable oils). Even if the increase in fertilizer prices is greater than the increase in crop prices, farmers' unitary margin can be preserved, thus maintaining their profitability and their incentive to produce. Here's a simple example: if a farmer needs one unit of input (fertilizer) to produce one unit of output (wheat, for example), and the price of the output is 100 and the price of the input is 50, the farmer's unitary margin is 50. If the price of output increases by 50 percent and the price of input increases by 100 percent, the unit margin remains at 50: 150 − 100, that is, 100*(1+50%) − 50*(1+100%). More generally, we can say that for the unitary margin to be constant, the ratio of the rate of change in the price of output to the rate of change in the price of input must be greater than the value share of the input in the output. On average over the past two years, fertilizer prices have risen by 233 percent and grain prices by 65 percent. This indicates a ratio of 28 percent (65 percent divided by 233 percent). However, the value of fertilizer costs in the price of cereals is generally less than 28 percent. Thus, the unit margin of cereal farmers should be preserved.

Unfortunately, these are average trends, which are far from the real experience of many farmers. In Africa, while the price of cereals not traded on the world market (fonio, teff, and so on) is relatively stable, the price of fertilizer is increasing, reducing their unitary margin. In North America, farmers are increasing the area allocated to soybeans, because this crop is not intensive in fertilizers, to the detriment of wheat, which is very fertilizer intensive. The price of rice has risen little recently, and the area allocated to this crop is expected to decline as a result. These sharp increases in fertilizer prices are therefore raising fears of future imbalances in the grain markets.

Bad news for African countries?

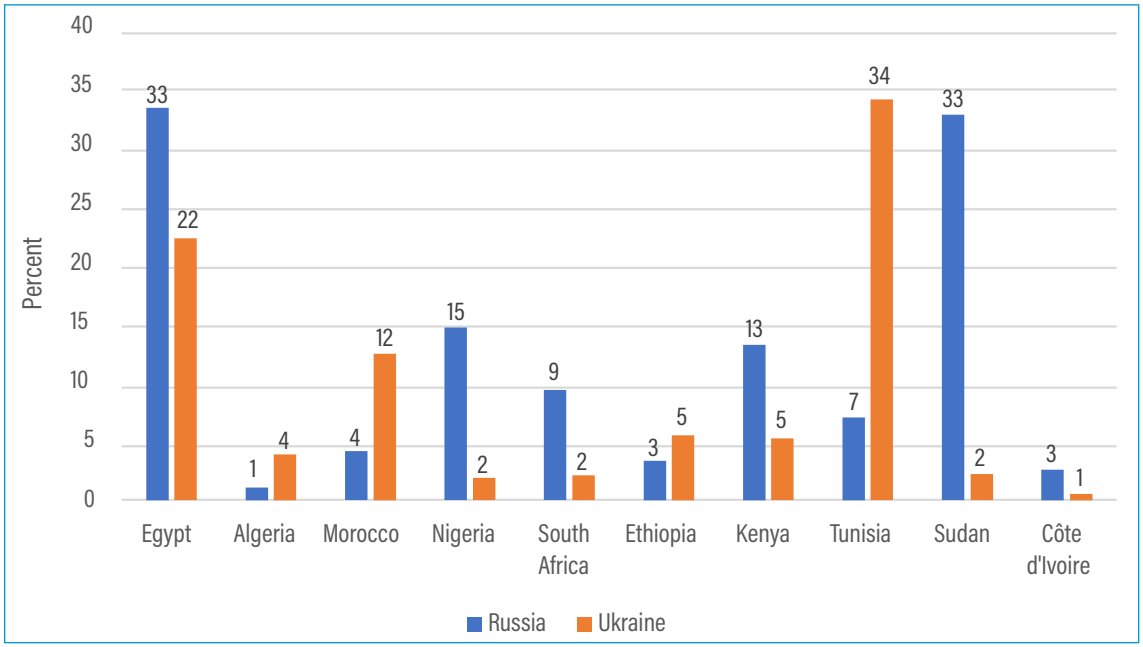
Rising grain prices are very bad news for some African countries, such as Egypt (Abay et al. 2022). Figure 1.5 shows that, on average, Egypt accounts for 19.3 percent of African imports of cereals and 3.7 percent of world imports. Egypt is Africa's largest importer of cereals, followed by Algeria, Morocco, and Nigeria. Africa's top 10 importers account for more than two-thirds of the continent's imports of cereals, adding to the vulnerability of these countries. Moreover, Figure 1.6 shows that both Russia and Ukraine are major exporters of cereals to these countries, especially Egypt and Sudan, which import 33 percent of their cereals from Russia. Likewise, Ukraine supplies Tunisia with 34 percent of its cereal imports and Egypt with 22 percent of its imports. Clearly, the larger the share of African countries' imports from these two countries, the larger their exposure to price hikes, and thus to a food crisis and food security problems.

Figure 1.5 Share of major African importers in African and global cereal imports, 2017–2021



Source: Authors' elaboration, based on ITC website.
Note: Figures are averages over the period 2017–2021.

Figure 1.6 Share of cereal imports from Russia and Ukraine in national cereals imports



Source: Authors' elaboration, based on ITC website.
Note: Figures are averages over the period 2017–2021.

This is confirmed by Laborde (2022), who constructed a vulnerability index of developing countries for this crisis. It is based on several indicators: the direct exposure of each country to imports from the Black Sea; food dependence on imports and therefore exposure to rising world prices; macroeconomic vulnerability, and in particular whether or not each country is able to compensate for rising import prices by increasing the price of exports; dependence on fertilizer imports; and the positive or negative dynamics of local agricultural markets. This

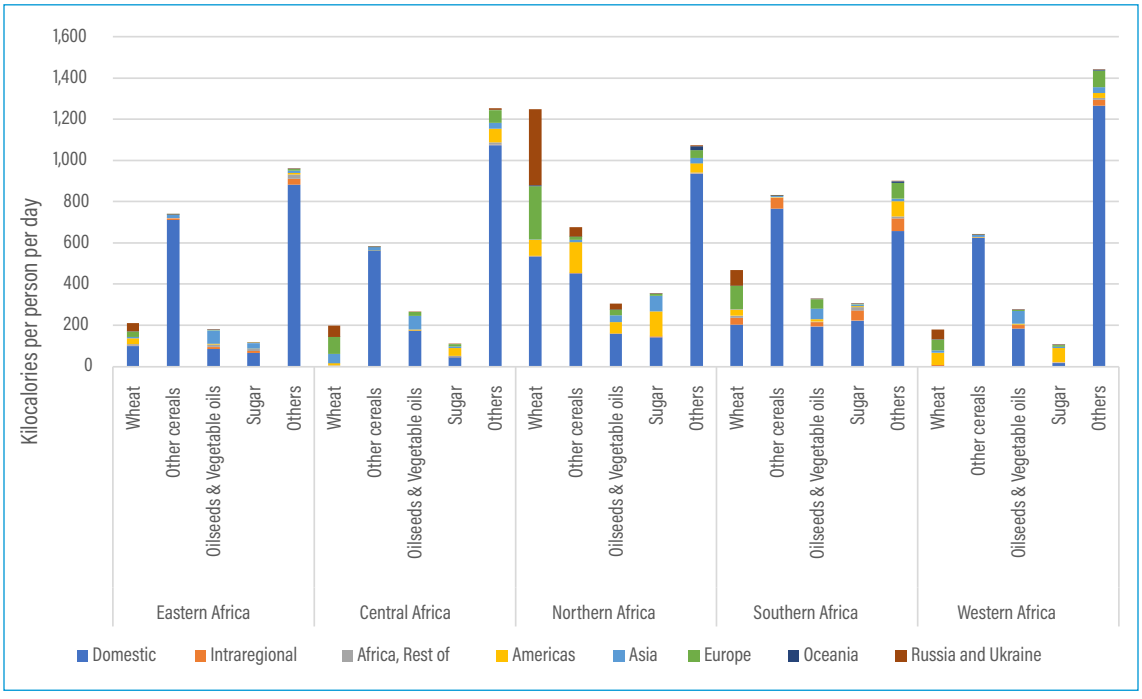
index highlights extremely perilous food situations in Mauritania, Sudan, Republic of Congo, and Egypt, among African countries. It is crucial today to monitor the state of food security in these countries.

The rising price of vegetable oils is also a major problem for many African countries. Botswana, Mauritania, and Namibia import 100 percent of their total vegetable oil consumption; and the share of imports is 91 percent in Madagascar, 89 percent in Gabon, and 82 percent in Ethiopia. For fertilizers, imports also play an overwhelming role. Cameroon imports all of its fertilizers, with 58 percent imported from Russia and the Ukraine; Côte d'Ivoire is in a similar situation.

Figure 1.7 shows the origin of calories consumed (per capita per day) by African region. The worst impacts of the crisis are likely to be in Northern Africa, where the diet is based on wheat, much of it imported from Russia and Ukraine. In Egypt, the average diet is based largely on wheat, which provides between 35 and 39 percent of the caloric intake per person. Egypt's wheat imports represent 62 percent of its total wheat consumption, and 86 percent of these wheat imports came from Russia and Ukraine in 2020. In Sudan and several other North African countries, the situation is similar.

Other African regions should suffer less harm. Western African countries, for example, are generally only marginally affected by the crisis. They trade little with Russia and Ukraine, and above all, most of the caloric intake in these countries comes from local production. Only Nigeria may experience difficulties, as the country is a major importer of wheat.

Figure 1.7 Origin of calories consumed in African region, 2020



Source: Laborde (2022).

The Egyptian case is of particular interest for three reasons. First, as mentioned, Egypt is the largest importer of wheat and cereals in Africa and worldwide. This leaves it highly exposed to the current shock. Second, bearing in mind the importance of Egypt's tourism sector and the fact that Russians and Ukrainians account for almost a third of tourists visiting Egypt, the ongoing war in Ukraine is likely to harm that sector. This clearly puts further pressure on Egypt's foreign reserves (and thus its ability to pay its rising import bills), which are already under pressure from the decrease in foreign direct investment and increase in external debt in recent years.

Third, despite the currency devaluation in 2016, Egypt's currency continued to be managed (as per the de facto classification of the IMF), leading to its overvaluation. A second devaluation in March 2022 has led to higher inflation, especially in the food sector, where it reached 26 percent in April 2022. From a social perspective, this could further increase poverty, which was already above 29 percent in 2020. Therefore, it is crucial to work at the regional level and to diversify Egypt's food import sources. In the longer term, it will be essential to boost domestic production and improve agricultural productivity, as well as to address water shortages that limit agricultural production.

Two mechanisms may temper the severity of the food crisis for some poor countries. First, as noted, the diet of some countries is based primarily on local or regional inputs that are not widely traded on the world market. Such crops may play a fundamental role in local food security, for example teff for Ethiopia and Eritrea, fonio for West Africa, and other traditional crops such as cassava or manioc in many African countries. The relatively stable prices for these products contribute to food security in these countries. Second, countries that import cereals, vegetable oils, and fertilizers can sometimes compensate for the increase in the price of their imports by increasing the price of their exports (oil, natural gas, metals). Nigeria, for example, is heavily reliant on wheat imports, but may also benefit from opportunities created by the crisis because it is an important producer of oil and natural gas, and recently of fertilizers. In such cases, redistribution mechanisms need to be put in place so that the gains received by exporting companies compensate for the losses that households incur on the import side.

In conclusion, the Russia-Ukraine war cannot be held solely responsible for the current global food crisis. Climate change plays an important role, and certain questionable economic policies, notably support for the biofuel industry and restrictions on food exports, also contribute. Moreover, the situation differs among poor countries. In Africa, for example, the continent's 55 countries are extremely diverse in terms of their diets, local agricultural dynamics, and foreign trade structure; thus, the impact of the crisis on these countries is very heterogeneous. In addition, although many observers are focused on the cereals market, the dynamics of the vegetable oils and fertilizer markets are at least equally important. Finally, it is essential to accelerate the fight against climate change, using policies that do not jeopardize global food security.

AATM DATA AND METHODOLOGY

To monitor trade in agriculture, the chapters of the AATM rely heavily on trade statistics. High-quality statistics are fundamental for good policy recommendations. Quality data are particularly needed for agricultural trade in Africa, where international statistics are often inaccurate and do not include informal trade. For this reason, the establishment of a high-quality trade database was considered essential for the preparation of the AATM. Here we discuss issues related to the statistical approach we have adopted to ensure rigorous analysis.

Like the 2021 AATM report, the 2022 release is based on an original dataset constructed to provide better statistics on global and African trade. This analytical database is based 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 2022 edition of the dataset).

In the first step, the data are harmonized and cleaned. Trade flows of less than 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, all data are converted to the HS 2012.

The second step aims to reconstruct unique trade flows 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 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 are 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 cost insurance freight (CIF) value. When the exporter's free on board (FOB) 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 relationship as explanatory variables.

The annual AATM aims to provide a thorough analysis of Africa's trade in agriculture. Yet, despite the accuracy of the data we use, informal trade remains an important data gap that must be addressed to better assess and monitor recent trade developments. This is of particular importance for Chapter 5, which assesses the impact of the AfCFTA on African economies. In addition, a more detailed analysis will be needed of the impact of the Russia-Ukraine war on trade, growth, and welfare for different African economies. Finally, from a multilateral perspective, one of the most important outcomes of the World Trade Organization's 12th Ministerial Conference, held this year, was the adoption of the Agreement on Fisheries Subsidies, which supports ocean sustainability by prohibiting harmful fisheries subsidies that promote depletion of the world's fish stocks. Given the importance of fisheries for the agriculture sector and for African countries, the impact of this fisheries agreement should be assessed.

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CHAPTER **TWO**

Africa in World Agricultural Trade: Participation in Global Value Chains

Sunday Pierre Odjo
and Mariam A. Diallo

INTRODUCTION

The world economy is increasingly organized through global value chains (GVC) that result from the fragmentation of production processes across countries. A GVC consists of the series of stages involved in producing a product or service that is sold to consumers, with each stage adding value and with at least two stages carried out in different countries. A firm, country, or region participates in a GVC if it contributes to at least one stage in the production process (Antràs 2020). GVCs reflect the growing interconnection between developed and developing economies, including African countries, despite the continent's apparent low participation in global trade.

Conventional statistics on international trade report the gross value of transactions between partners (exporting and importing countries). It is assumed that each country produces goods and provides services that are shipped as finished goods to consumers in other countries. However, production and export involve complex interactions among domestic and foreign suppliers of intermediate goods at different stages of GVCs. All countries participating in this process add some value and benefit from the export of the final product. However, conventional trade statistics simply credit the total value of a good or service to the last country in the chain, where the production process was completed – they do not reflect the breakdown of the value added created along the GVC. In addition, conventional trade statistics provide a poor assessment of the value a country contributes to global trade, as intermediate goods that cross an international border more than once are often double-counted.

Participation in GVCs brings economic benefits in terms of productivity, sophistication, and diversification of exports (Raei et al. 2019; Antràs and De Gortari 2020; De Loecker et al. 2016). The ability to disperse production across borders leads to a sharper international division of labor and more specialization gains (Fort 2017). GVCs allow resources to flow to their most productive use, not only between countries and sectors, but also across production stages within sectors. As a result, GVCs amplify the effects of traditional trade on growth, employment, and distribution (Antràs 2020). According to the World Bank (2020), a 1 percent increase in GVC participation translates into a 1 percent gain in per capita income. This is five times the gain associated with traditional trade (0.2 percent). Furthermore, some studies find that integration into GVCs decreases poverty more than traditional trade. The World Bank (2020) presents evidence that in Viet Nam, poverty reduction was greater in regions with a higher presence of GVC activity. Thus, GVCs provide various economic benefits to countries. Nonetheless, not all countries or regions, nor all sectors within countries, participate in and benefit equally from GVCs.

While Africa's trade in goods and services rose gradually from 2005 to 2019, its global share has remained constant at just 3 percent of global imports and exports (WTO 2021). In 2019, intra-African trade accounted for 19.7 percent of Africa's total agricultural exports. The corresponding share is larger for processed agricultural products, at 22.9 percent for semi-processed products and 52.9 percent for fully processed products, compared to only 9.7 percent for unprocessed products (Goundan and Tadesse 2021). GVCs provide opportunities for Africa's economy to transform through the development and expansion of new activities and the development of dynamic and competitive manufacturing, agriculture, and service sectors.

This chapter presents an overview of Africa's GVC participation using an analytical framework introduced by Koopman et al. (2010) for tracing value added by country in international trade. The framework provides a complete decomposition of a country's gross exports into its value-added components, including exports of value added, domestic value added that returns home, foreign value added, and other double-counted terms. These value-added components

– expressed as shares of gross exports – are used to measure various dimensions of a country's involvement in global value-added trade, including the strength of a country's backward and forward linkages to GVCs, the intensity of the country's participation in GVCs, and the positioning of the country in GVCs. Using the UNCTAD-Eora GVC database (2019), we apply this analytical framework to African countries' trade relationships with the rest of the world, both at the economywide level, where a country's gross aggregate exports are decomposed, and at a sectoral level, where its gross sectoral exports are decomposed.

Our analysis is conducted at the continental and country levels and for five of Africa's regional economic communities (RECs), namely 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).[1] Sub-Saharan Africa (SSA) and the Middle East and North Africa (MENA) are also considered to improve our understanding of the patterns observed in Africa. The results obtained for Africa are compared to those of other world regions, including the Association of Southeast Asian Nations (ASEAN), the European Union (EU), the United States-Mexico-Canada Agreement (USMCA) countries, Latin America and the Caribbean (LAC), and the South Asian Association for Regional Cooperation (SAARC). Lists of the member countries of these regional groupings are provided in Table A2.1 in the appendix to this chapter.

Our results reveal that Africa contributes only a tiny portion of the global trade in value added, but the continent's value-added trade is growing fast compared to other world regions. Africa's weak manufacturing sector means that the continent lies upstream in GVCs, contributing more inputs into exports from other regions than other regions contribute to Africa's exports. While these trends are general to the economy as a whole, they are more marked in agriculture than in sectors such as textiles and wearing apparel or food and beverages, where Africa is endowed with some manufacturing capabilities. Hence, our results highlight the importance of enlarging Africa's manufacturing sector in order to increase the continent's share of the global value-added trade.

The chapter is organized as follows. The next section explains the key concepts used in gross exports decomposition along with the database and indicators used to analyze the intensity and form of Africa's integration into GVCs. We then examine Africa's GVC participation at the economywide level, exploring the continent's backward and forward participation in GVCs and comparing the continent to other world regions. The following section looks at sectoral and cross-country differences in GVC participation, contrasting agriculture with five other key sectors and with the rest of the economy. We then analyze Africa's major partners in global value-added trade before concluding.

GVC ANALYSIS: CONCEPTS, DATA, AND MEASUREMENTS

A significant amount of double-counting is included in conventional trade statistics. To illustrate the issue, imagine a world of three countries: A, B, and C. Country A exports $100 of goods, produced entirely within A, to country B, which further processes them before exporting them to country C, where they are consumed. B adds value of $10 to the goods and so exports $110 to C. Conventional measures of trade show total global exports and imports of $210, but only $110 of value-added has been generated in their production. Conventional trade measures also show that C has a trade deficit of $110 with B, and no trade at all with A, despite the fact that A is the chief beneficiary of C's consumption. If instead we track flows in value-added, C's

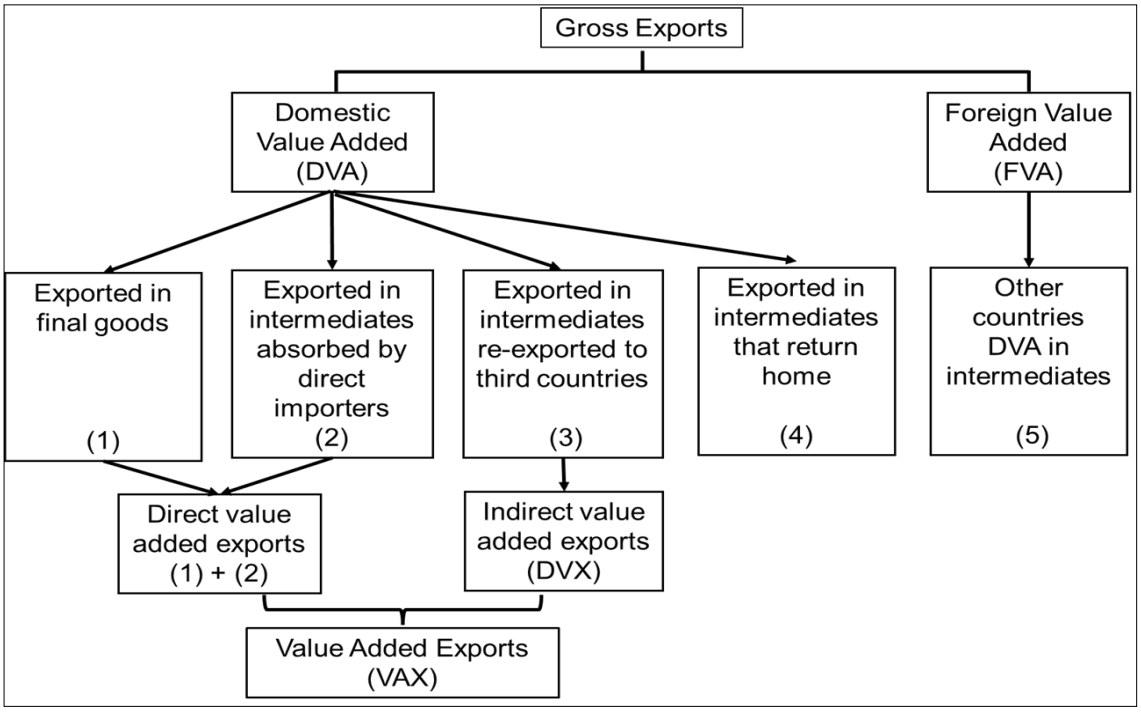
1 These five RECs were chosen out of eight recognized by the African Union and other unrecognized groupings in order to cover all African countries and explore geographic differences, for example, between northern, western, central, eastern, and southern Africa.

trade deficit with B falls to $10 and it now runs a deficit of $100 with A (Ahmed 2015, 167). In this example, the value of country A's production is counted twice in the global exports of $210 – in the exports of raw materials from A to B and in the exports of the processed product from B to C – but just once in A's gross domestic product (GDP).

This section presents a nontechnical overview of a widely accepted approach to addressing the double-counting issue. Interested readers are referred to Koopman et al. (2010; 2014), De Backer and Miroudot (2013), or Marko and Camacho (2015) for a mathematical presentation of the procedure.

Through a detailed algebraic elaboration, Koopman et al. (2010; 2014) proposed a decomposition of a country's gross exports into various value-added components and additional double-counted terms. As depicted in Figure 2.1, they first divide gross exports according to where the embodied value added is created, identifying a domestic value-added (DVA) component and a foreign value-added (FVA) component. The DVA content is the part of exports that is domestically produced. It is a measure of the extent to which a country's exports contribute to its GDP. The FVA content is the part of a country's gross exports that consists of intermediate goods that have been imported from other countries, and is thus the part of the country's exports that does not add to its GDP (UNCTAD 2013).

Figure 2.1 Decomposition of gross exports: Concepts



Source: Koopman et al. (2010). Reproduced with the authors' permission.

The DVA content of gross exports is, in turn, broken down into value-added exports (VAX) and the re-imported domestic value added. The former is the value added produced at home and absorbed abroad while the latter is the DVA embodied in intermediates exports that finally return home through imports. The latter component, term (4) in Figure 2.1, is referred to as the "reflected domestic value added" (Koopman et al. 2010). As an illustration, part of the DVA content of Senegal's groundnut exports finally returns home through imports of groundnut oil, while the rest is absorbed abroad.

Value-added exports are the income a country actually generates by exporting. It is a better indicator of the contribution of exports to income than the whole DVA content, which

encompasses some double-counting, represented by component (4). Therefore, as argued by Koopman et al. (2014), a country's value-added exports are necessarily smaller than its gross exports. Value-added exports — also known as trade in value added — are derived from gross exports by netting out both the FVA content and the part of DVA that is imported back home. Both components involve some value added that crosses national borders at least twice, and are the sources of multiple counting in official trade statistics.

In the next step, a country's value-added exports are split into three specific value-added terms: (1) the domestic value added embodied in direct final good exports, (2) the domestic value added embodied in intermediates exports that are absorbed by their direct importers, and (3) the domestic value added embodied in intermediates that are re-exported to third countries, where they are finally absorbed. The first two value-added terms, (1) and (2) in Figure 2.1, which are absorbed by their direct importers, form the direct value-added exports while the third term — which are exports to third countries via direct importers — comprise the indirect value-added exports (DVX).

It is worth noting that the domestic content in a country's indirect value-added exports is another country's foreign value-added content. For example, as illustrated in Koopman et al. (2014, 36), "the Japanese content in the form of Japanese-made computer chips used in China's exports of electronic toys to the United States represents foreign content in China's exports, and it is also simultaneously Japan's indirect exports of its domestic content to the United States." Hence, what each country contributes to all the others in terms of indirect value-added exports has to be equal at the world level to what each country sources from all the others in terms of foreign value added — that is, at the world level, FVA equals DVX (UNCTAD 2013; Casella et al. 2019).

This gross exports accounting procedure is implemented in the UNCTAD-Eora GVC database, which is generated from a global multi-region input-output (MRIO) table, developed by the Eora Project at the University of Sydney, Australia.[2] The database presents the results of gross exports decomposition for 189 countries, including 52 African countries, and a Rest of World region over the period from 1990 to 2019. Due to limited data quality, the following countries are excluded from our analysis: Belarus, Benin, Burkina Faso, Republic of Congo, Eritrea, Ethiopia, Guinea, Guyana, Libya, Moldova, Serbia, Sudan, Yemen, Zimbabwe, and the former USSR. The database is disaggregated across countries to differing degrees, and a 26-sector disaggregation can be used for all countries. In the present analysis, we identify the first 6 sectors, namely agriculture, fishing, mining and quarrying, food and beverages, textiles and wearing apparel, and wood and paper, while the remaining 20 sectors are aggregated as "other sectors" (see Table A2.2 for the list of 26 sectors). Agriculture includes crop production, livestock, hunting, and forestry. Other multiregion input–output databases, such as the OECD-WTO Trade in Value Added (TiVA) initiative, the EU-funded World Input-Output Database (WIOD), and the Global Trade Analysis Project (GTAP), offer more limited country, industry, and time coverage, in particular for developing countries (UNCTAD 2013). The UNCTAD-Eora GVC database (henceforth Eora database) is used in this chapter for its coverage of African countries. While OECD-WTO TiVA is recognized as the most reliable government-approved source, sacrificing some coverage for statistical rigor, comparisons made in the literature indicate that the Eora database and OECD-WTO TiVA statistics are generally consistent (Aslam et al. 2017; Casella et al. 2019).

The Eora MRIO table is constructed from national supply and use tables (SUTs) for a limited number of countries where such tables are available and traditional input–output tables (IOTs) for the remaining countries. National SUTs and IOTs are linked through international trade statistics using import tables to obtain an unbalanced initial MRIO table for the world, which is

2 See http://www.worldmrio.com/

then balanced through a constrained optimization problem, ensuring total output produced by each sector equals the sum of the inputs used by that sector at the world level along with a variety of macroeconomic constraints.

In addition to a global input–output table, the computation of the value-added components of gross exports in the Eora database, as in other projects, relies on a couple of assumptions. First, across all industries, production technology takes the form of a Leontief function. Hence, inputs are employed in fixed proportions and constant returns to scale apply – doubling of outputs requires doubling of inputs. Second, the output of a given industry is homogenous, irrespective of the target market (domestic or foreign), and the required inputs are the same for intermediate goods as for final goods. While these proportionality and homogeneity assumptions are quite restrictive and implausible for some industries, they are necessary to make the analysis possible (UNCTAD 2015). In addition, the UNCTAD-Eora GVC database uses a nowcasting procedure to extend the time period covered to include the most recent years (Aslam et al. 2017).

The Eora database provides estimates of the DVA, FVA, and DVX components of gross exports but not of the re-imported DVA, because of the computational complexity arising from the large number of countries and industries covered in this database (UNCTAD 2013). However, the literature shows that the re-imported DVA component is relatively small at the world level. According to results presented by Koopman et al. (2012) using a global intercountry input–output table based on the GTAP 7 database, re-imported DVA accounted for 4 percent of global gross exports in 2004. The results obtained by Stehrer (2012) using the WIOD database suggest that, at the world level, this double-counting term ranged from a minimum of 2.6 percent in 1995 to a maximum of 3.3 percent in 2008. The OECD-WTO TiVA estimated it at only 0.6 percent of world gross exports in 2009 (UNCTAD 2013).

Therefore, the FVA estimate may be considered as a lower bound of all double-counting of value added in world trade. By equating FVA with all double-counting in gross exports, the VAX estimate, and hence the trade in value-added estimate, is proxied by the DVA estimate in the Eora database. In contrast, the re-imported DVA component is netted out in the OECD-WTO value-added trade calculations. This difference in the treatment of double-counting explains in part why estimates of the same indicator differ, sometimes significantly, between the two databases.

Based on the estimates of DVA, FVA, and DVX reported in Eora database, we calculate various GVC participation indicators by country and/or world region at both the economywide and sectoral levels. First, the share of a region in the global trade in value added is calculated to assess the relative importance of the benefit the region reaps from its participation in GVCs. This share is calculated as the ratio of the DVA in the region's gross aggregate exports to the DVA in the world's gross aggregate exports.

Second, the DVA, FVA, and DVX estimates for a country or region are expressed as shares in gross exports to analyze various dimensions of GVC participation. The share of DVA in gross exports indicates the extent to which a country relies on domestic resources to generate its exports. In contrast, the share of FVA in gross exports – known as the backward GVC participation index – indicates the extent to which a country's exports depend on imported inputs. The share of DVX in gross exports – known as the forward GVC participation index – measures the extent to which a country's DVA serves as an intermediate input in the value added exported by other countries.

Finally, the backward and forward participation indexes are combined into two summary indexes: the *GVC participation index* measures the intensity of a country's overall involvement in

GVCs through both backward and forward linkages, while the *GVC position index* characterizes the relative "upstreamness" of a country's participation in a particular GVC. The next section discusses the outcomes of the computation of these indicators at the economywide level in Africa and compares them with other world regions.

GVC PARTICIPATION: ECONOMYWIDE PERSPECTIVE

In this economywide analysis of GVC, we consider the value-added content of a country's gross aggregate exports of all goods and services in the economy as a whole. The measure of Africa's participation in GVCs at this aggregate level will serve in the following sections as a reference in assessing its engagement in GVCs at the sectoral level. In this section, we first examine Africa's share in the global trade in value added, and then assess the intensity of the continent's involvement in GVCs.

The world's aggregate trade in value added is concentrated within and between the developed regions in Europe, America, and Asia. Figure 2.2 shows that the European Union was involved in around 36 percent of the global trade in value added, on average, in the 2015–2019 period. The North American Free Trade Agreement (NAFTA) – recently renamed the United States-Mexico-Canada Agreement (USMCA) – and the Association of Southeast Asian Nations (ASEAN) regions are engaged in about 15 and 6 percent of this trade, respectively.[3] These three regional blocs together make up 58 percent of the world's trade in value added. Africa's participation is small, at around 2 percent, but growing faster than that of other world regions. Between 1990 and 2019, Africa's trade in value added increased almost sevenfold compared to a sixfold increase at the world level. In recent years, growth in value-added trade has decelerated across the world, and more so in Africa than in other regions. While it was growing at 8 percent at the world level and 9 percent in Africa between 1990 and 2008, growth was reduced in the decade following the 2008 financial crisis (2010–2019) to 1.2 percent at the world level and −0.7 percent in Africa. In sum, Africa still reaps a tiny portion of global trade in value added despite an increasing level of participation. An exploration of the intensity and form of Africa's involvement in value-added trade will provide some insight into Africa's GVC participation.

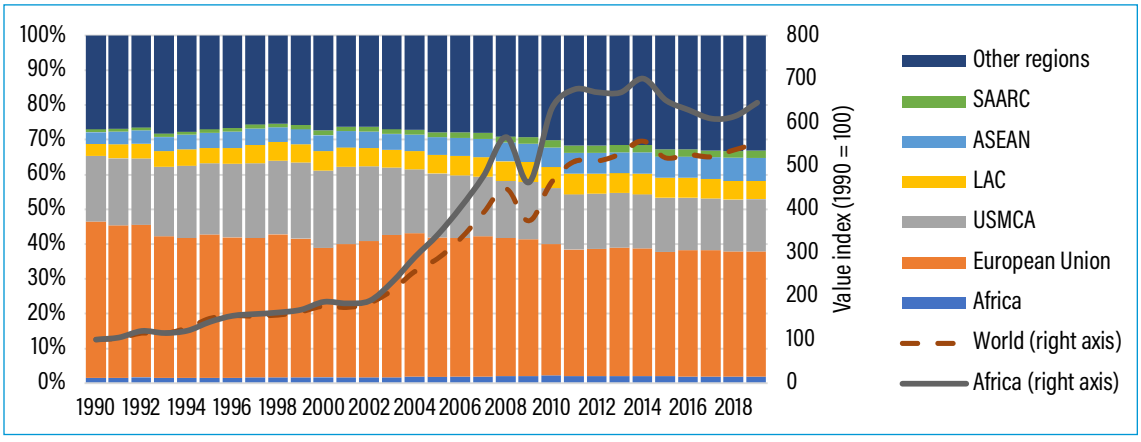


Figure 2.2 Breakdown of world aggregate trade in value added by region, 1990–2019

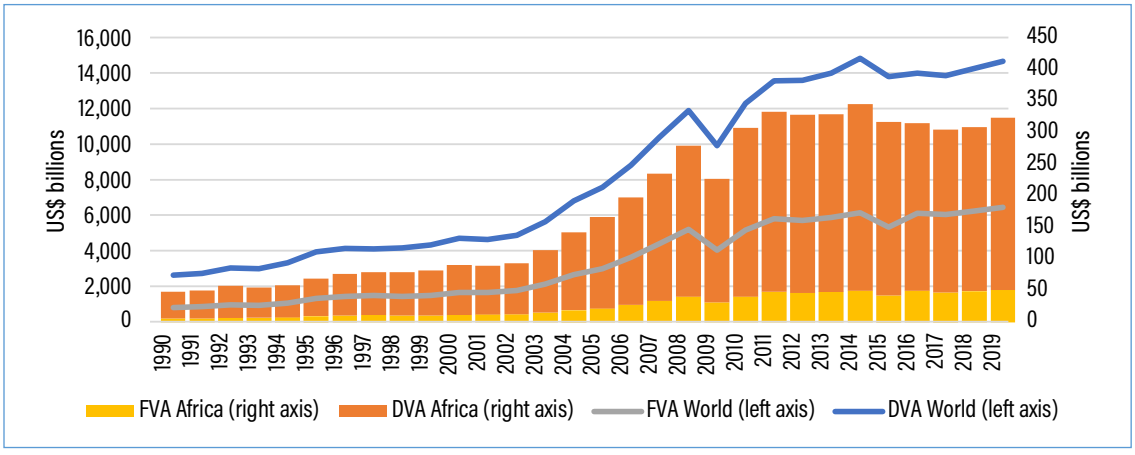
Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: ASEAN = Association of Southeast Asian Nations; USMCA = United States-Mexico-Canada Agreement; LAC = Latin America and the Caribbean; SAARC = South Asian Association for Regional Cooperation.

3 As explained in the previous section, a small fraction of double-counting remains in the measure of trade in value added used in the UNCTAD-Eora GVC database compared with OECD-WTO TiVA initiative. Thus, estimates presented here may be higher than those obtained in studies using the OECD-WTO database.

The bulk of Africa's gross exports consists of domestic value added as opposed to foreign value added. Figure 2.3 below and Table A2.3 in this chapter's appendix show that this is true for all world regions. In recent years (2015–2019), gross exports from Africa as well from MENA and SAARC incorporated around 85 percent of DVA compared to 70 percent at the world level. The share of DVA in exports is lower in ASEAN and the European Union, accounting for 62 percent and 59 percent of gross exports, respectively. Foreign value added, that is, imports of foreign intermediate inputs embodied in exports, accounted for 15 to 41 percent of gross exports across world regions. FVA was around 15 percent in Africa, MENA, and SAARC, about 21 percent in USMCA and Latin America and the Caribbean (LAC), 38 percent in ASEAN, and 41 percent in the European Union. Thus, compared to developed economies with their large manufacturing sectors, African economies "over-rely" on domestic production resources and incorporate fewer foreign intermediate inputs into their exports. As a result, resource endowments currently determine African countries' participation in GVCs. Moving downstream in GVCs by incorporating more foreign value added and manufacturing in their exports will help these countries capture a higher share of the benefits of GVCs.

Within Africa, the FVA share in gross exports differs among RECs – it is around 18 percent in SADC, AMU, and ECCAS, and lower in COMESA at 8 percent and ECOWAS at 6 percent. Differences in the size of the RECs' manufacturing sectors help explain these regional disparities (AfDB et al. 2014); SADC and AMU are endowed with larger manufacturing sectors than the continent's other subregions.

Figure 2.3 Comparison of DVA and FVA content of gross aggregate exports from Africa and the world, 1990–2019



Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: DVA = domestic value-added content of gross exports; FVA = foreign value-added content of gross exports.

While foreign intermediate inputs have accounted for a small share of Africa's gross aggregate exports, this share increased rapidly between 1990 and 2010, growing 10 percent annually in Africa and 9.7 percent in the world (Table A2.4). However, growth has stagnated over the past decade, with the annual growth rate reduced to 1.4 percent in Africa and 1.7 percent in the world. Despite this slowdown, which followed the 2008 financial crisis, FVA has continued to grow faster than DVA in the most recent years, especially in the more developed world regions.

Foreign value-added content of exports expressed as a share of gross exports – known as an index of backward linkages – increased between 2006 and 2019 by 1.3 percentage points in Africa and in LAC, compared to 1.5 percentage points in USMCA and 2.5 points in the European Union. Over the same period, FVA's share in gross exports decreased in ASEAN. Hence, Africa is experiencing an increasing level of backward participation in GVCs, though

its current level is below that of other world regions. This trend suggests that some African countries are succeeding in upgrading to greater incorporation of foreign intermediate inputs into their exports through an expansion of their manufacturing capabilities.

Within Africa, backward participation increased more notably in AMU than in SADC and ECCAS between 2006 and 2019, and decreased more markedly in ECOWAS than in COMESA. Again, differences in the pace of development of the manufacturing sector may help explain these regional disparities.

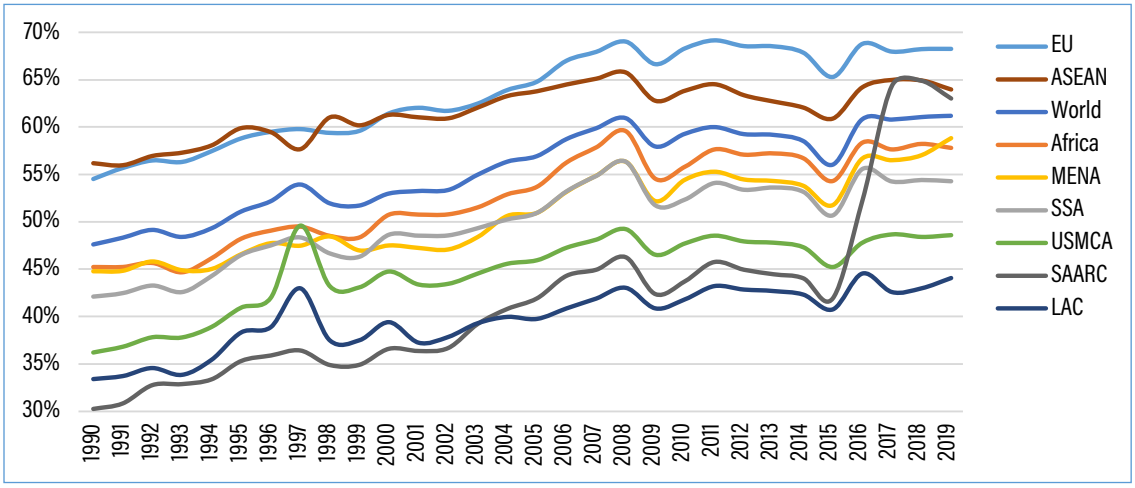
Part of a given country's DVA content of exports is embodied as an intermediate input in its partner countries' exports. Firms in partner countries use this fraction as inputs into the production of their own exports. Koopman et al. (2014) have coined the phrase "indirect value-added exports (DVX)" to name this component of a country's gross exports. The share of DVX in gross exports – known as the forward GVC participation index – is higher in Africa than in other world regions. In recent years, it was around 40 percent in sub-Saharan Africa and in MENA, compared to 43 percent in South Asia; around 26 percent in the more industrialized regions of the European Union, USMCA, and ASEAN; and 22 percent in LAC. A high DVX share is typical of countries with a limited manufacturing sector and abundant land or extractive resources, that is, countries that largely export raw materials for processing by their trade partners located further downstream in the GVCs (World Bank 2020).

Within Africa, forward participation in GVCs is lowest in SADC and COMESA, with DVX shares in gross exports at 35 and 36 percent, respectively, in the 2015–2019 period. In contrast, ECOWAS shows the highest level of forward participation, with a DVX share of gross exports of 52 percent, followed by AMU (48 percent) and ECCAS (41 percent). Thus, participation in GVCs as a supplier of raw commodities to foreign partners located further downstream is more important in ECOWAS, AMU, and ECCAS than in SADC and COMESA.

Table A2.2 shows that forward participation in GVCs is declining in SADC and AMU, which have the largest manufacturing sectors in Africa, consistent with the trend observed in the European Union and USMCA. This decline may reflect a structural transformation process that is leading to an expansion of the manufacturing sector and a reduction in outsourcing of the downstream stages of production. The reverse trend – an increase in forward participation – is observed in MENA and more markedly in SAARC, as well as in ECOWAS and COMESA.

The ratio of the sum of FVA and DVX to gross exports – known as the GVC participation index – provides a combined measure of a given country's backward and forward GVC linkages. The larger the ratio, the greater the intensity of the country's involvement in GVCs (Koopman et al. 2010; Aslam et al. 2017). Figure 2.4 presents the trend in GVC participation by region. Across all regions, GVC participation increased over time before stagnating since the 2008 crisis. GVC participation has been more intensive in sub-Saharan Africa (SSA) and MENA than in LAC, SAARC, and USMCA but less intensive than in ASEAN and the EU. In addition to differences in the intensity of participation, Africa differs from advanced world regions with respect to the form of GVC participation.

Figure 2.4. Trends in GVC participation index by world region, 1990–2019



Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: ASEAN = Association of Southeast Asian Nations; EU = European Union; MENA = Middle East and North Africa; USMCA = United States-Mexico-Canada Agreement; LAC = Latin America and the Caribbean; SAARC = South Asian Association for Regional Cooperation; SSA = sub-Saharan Africa.

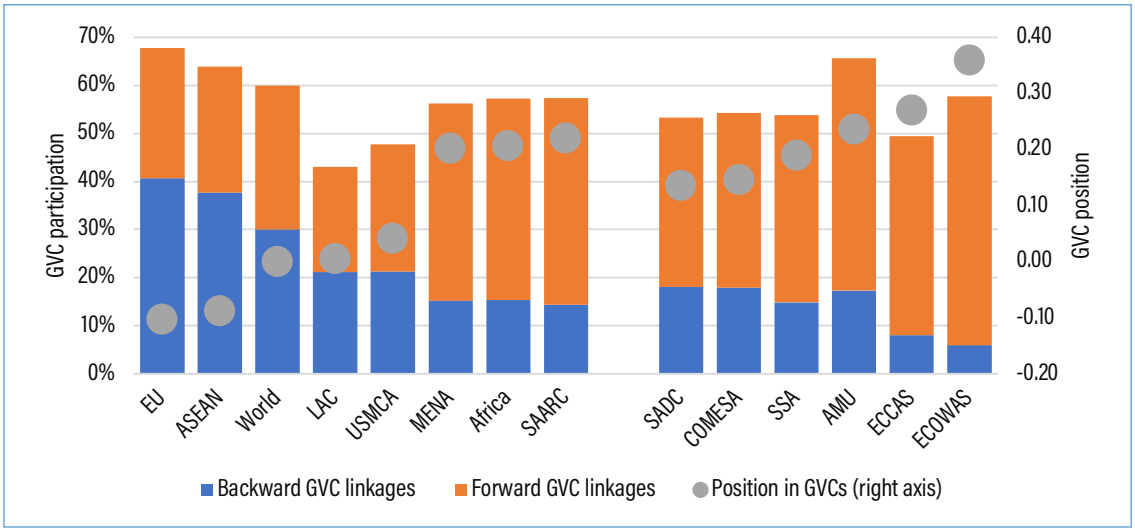
Figure 2.5 shows the respective contributions of the two components of GVC participation across world regions along with the average position of each region in GVCs in recent years (2015–2019). Notably, SSA, MENA, and SAARC exhibit significantly greater forward linkages than backward linkages to GVCs, while the reverse holds with ASEAN and the European Union, due to differences in endowments in natural resources and manufacturing capacities between these two groups of regions. Hence, SSA, MENA, and SAARC countries are typically positioned upstream in GVCs, while ASEAN and EU countries are typically involved in downstream GVC stages. LAC and USMCA have a more balanced position, with backward and forward linkages to GVCs that are almost equal owing to the availability of both natural resources and large manufacturing sectors. This more balanced position reduces a country's exposure to supply chain disruptions caused by trade policy reforms or shocks occurring in partner countries.

In Figure 2.5, regions are presented in ascending order of the upstreamness (upstream position) of their involvement in GVCs, which is calculated following Koopman et al. (2010) as the log ratio of forward to backward participation indexes.[4] Within Africa, ECOWAS appears to be positioned as the most upstream in GVCs, followed by ECCAS and AMU, while SADC is the least upstream, followed by COMESA. More insights into these regional differences are sought below through the analysis of sectoral and cross-country differences, focused on a comparison of agriculture with other primary sectors and the rest of the economy.

4 More formally, Koopman et al. (2014) suggest to calculate a country's position in a particular GVC as follows:

$GVC\ Position\ index = ln\left(1+\frac{DVX}{Gross\ Exports}\right) - ln\left(1+\frac{FVA}{Gross\ Exports}\right)$. By construction, the GVC position index is equal to 0 at the world level, as the sum of DVX is equal to the sum of FVA at that level. As interpreted by Aslam et al. (2017), countries with a larger position index are relatively more upstream, that is, they contribute more value added to other countries' exports than other countries contribute to theirs.

Figure 2.5. Participation and position in GVCs by world region, 2015–2019



Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: AMU = Arab Maghreb Union; ASEAN = Association of Southeast Asian Nations; COMESA = Common Market for Eastern and Southern Africa; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; EU = European Union; MENA = Middle East and North Africa; USMCA = United States-Mexico-Canada Agreement; LAC = Latin America and Caribbean; SAARC = South Asian Association for Regional Cooperation; SADC = Southern African Development Community; SSA = sub-Saharan Africa.

SECTORAL AND CROSS-COUNTRY DIFFERENCES IN GVC PARTICIPATION

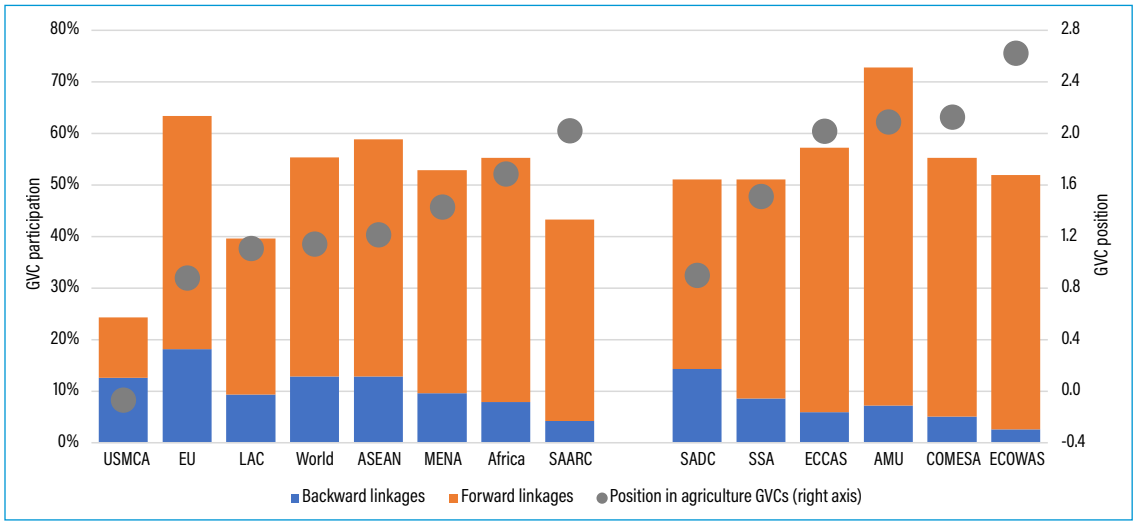
In this section, we investigate the involvement of Africa and other regions in GVCs in agriculture (production, livestock, hunting, and forestry) and in other sectors. Figure 2.6 summarizes the extent to which agricultural exports from a region embody some foreign value-added content used domestically as intermediate inputs (backward agriculture linkages), and the extent to which domestic value-added content of agricultural exports from the same region serves as intermediate inputs in other regions' exports production (forward agriculture linkages) in 2015–2017. In the figure, the height of a bar – the sum of forward and backward linkages – measures the participation in agriculture GVCs in the corresponding region; the different regions are presented in ascending order of the upstreamness of their participation. Several insights can be derived from comparing Figure 2.6 with Figure 2.5.

First, we see that GVC participation tends to be more intensive in the economy as a whole than in the agriculture sector, not only in Africa but also in other world regions. For instance, in Africa, economywide participation in GVCs is estimated at 57 percent of gross aggregate exports from the continent, while participation in agriculture GVCs involves 55 percent of gross agricultural exports from the continent. The difference is more marked elsewhere, in particular in USMCA and SAARC where participation in GVCs is more intensive at the economywide level than in agriculture by 23 and 14 percentage points, respectively. This general pattern suggests that GVC participation is less intensive in agriculture than in some other sectors. While this pattern is observed in ECOWAS and SADC, it is reversed in ECCAS, AMU, and COMESA, suggesting that in these subregions, agriculture performs better in GVC participation than other sectors.

Second, for Africa as a whole and for subregions, participation in GVCs in agriculture and in the economy as a whole has more forward than backward linkages. Of course, we know that

Africa's exports contribute more agricultural intermediates goods and natural resources (raw and semi-processed products) into its partners' exports than the latter contribute to Africa's exports (fertilizers and machinery). ECOWAS, COMESA, AMU, and ECCAS are ranked among the most heavily upstream participants in agriculture GVCs, while SADC is among the least upstream participants along with the European Union, USMCA, LAC, and ASEAN. It is worth comparing SADC with COMESA and ECOWAS. While the three subregions have fairly similar GVC participation in agriculture, their position (upstreamness) is quite different. The higher share of backward linkages of SADC's agriculture explains this difference. The same can be said of ECCAS compared with ASEAN.

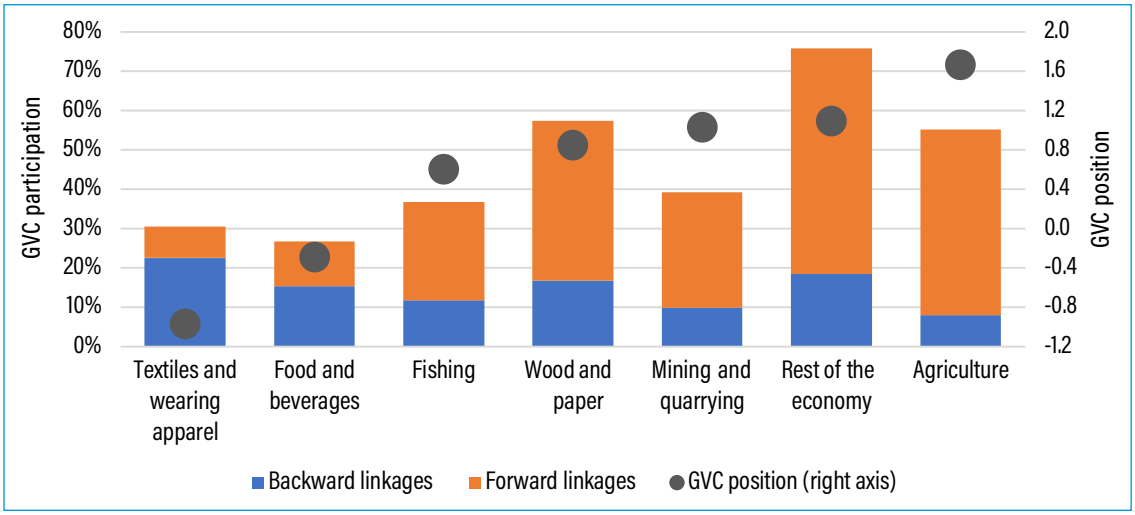
Figure 2.6 Participation and position in agriculture GVCs by world region, 2015–2017



Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: Agriculture covers crop production, livestock, hunting, and forestry. AMU = Arab Maghreb Union; ASEAN = Association of Southeast Asian Nations; COMESA = Common Market for Eastern and Southern Africa; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; EU = European Union; MENA = Middle East and North Africa; USMCA = United States-Mexico-Canada Agreement; LAC = Latin America and the Caribbean; SAARC = South Asian Association for Regional Cooperation; SADC = Southern African Development Community; SSA = sub-Saharan Africa.

Figure 2.7 shows that Africa's participation in agriculture GVCs is relatively more intensive but also more upstream compared to other sectors. The continent combines a relatively high participation index of 55 percent with a high position index at 1.7 in agriculture GVCs. This reflects the predominance of Africa's involvement in agriculture GVCs as an input supplier, rather than foreign input user, due to poor manufacturing capacities. Though Africa's participation in agriculture GVCs is the most upstream, other sectors that supply raw products for the production of other regions' exports – the fishing sector, wood and paper sector, and mining and quarrying sector – also exhibit more forward than backward linkages. In contrast, Africa's involvement in the GVCs of textiles and wearing apparel is significantly less intensive and less upstream, with a participation index of 30.5 percent and a position index of −0.96. This result reflects the fact that Africa's textiles and wearing apparel sector exhibits greater backward GVC linkages, as a user of foreign inputs, than forward linkages, with only a small portion of Africa's exports from this sector further processed outside Africa. The same is observed for Africa's involvement in the GVCs related to food and beverages.

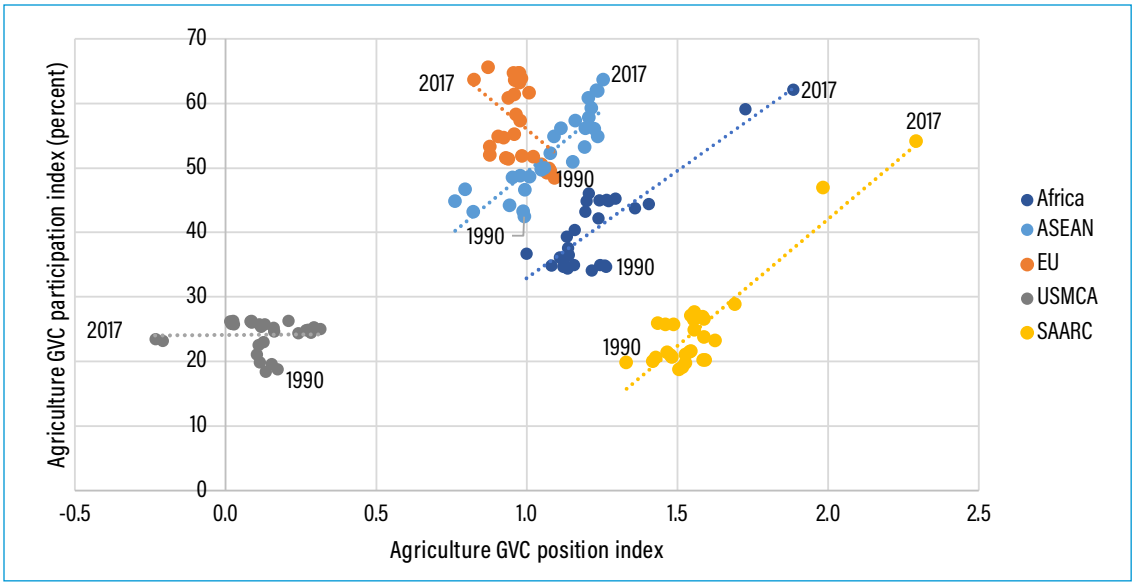
Figure 2.7 Africa's GVC participation and position, by sector, 2015-2017



Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: Agriculture includes crop production, livestock, hunting, and forestry.

Figure 2.8 compares Africa with other world regions with respect to the evolution of their involvement in agriculture GVCs since 1990. In the figure, each dot represents the GVC participation and position of a specific region in a particular year from 1990 to 2017. We can see that the intensity of involvement in agriculture GVCs has been increasing over time in Africa as in other regions. A notable difference is that Africa, SAARC, and ASEAN are moving further upstream in agriculture GVCs, while the European Union and USMCA are moving downstream. Moving further upstream in these global production chains will further reduce the small benefits Africa currently reaps from GVCs. To benefit more from GVCs, African countries need to upgrade from being commodity suppliers toward manufacturing while incorporating more foreign inputs into their exports to the rest of the world.

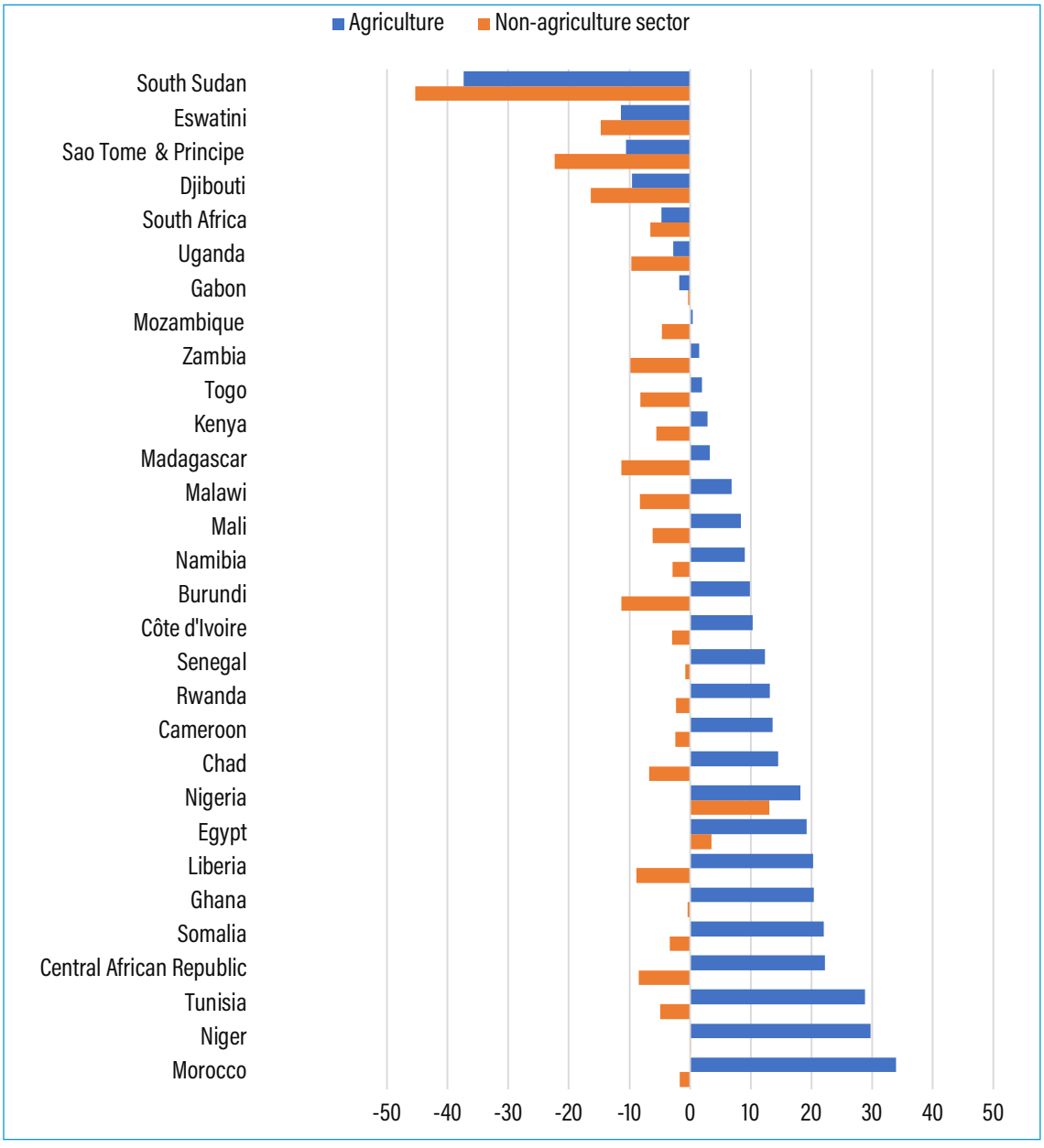
Figure 2.8 Trends in agriculture GVC participation and position in Africa compared with other world regions, 1990–2017



Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: Agriculture includes crop production, livestock, hunting, and forestry. ASEAN = Association of Southeast Asian Nations; EU = European Union; USMCA = United States-Mexico-Canada Agreement; SAARC = South Asian Association for Regional Cooperation.

The general patterns of Africa's involvement in agriculture GVCs described above hide some differences across countries that deserve consideration. Figure 2.9 compares changes in country-level GVC participation in agriculture and the non-agriculture sector between 2006–2008 and 2015–2017. Two opposite trends can be observed. First, most countries intensified their participation in agriculture GVCs in 2015–2017 compared to 2006–2008. The few exceptions (out of 30 countries plotted) where participation has diminished include South Sudan, Eswatini, Sao Tome and Principe, Djibouti, South Africa, Uganda, and Gabon. Second, most countries have reduced the intensity of their participation in non-agriculture GVCs in 2015–2017 compared to 2006–2008. Here, exceptions are fewer, including Nigeria, Egypt, and Niger, where GVC participation in the non-agriculture sector has recently been strengthened or remained unchanged in the case of Niger.

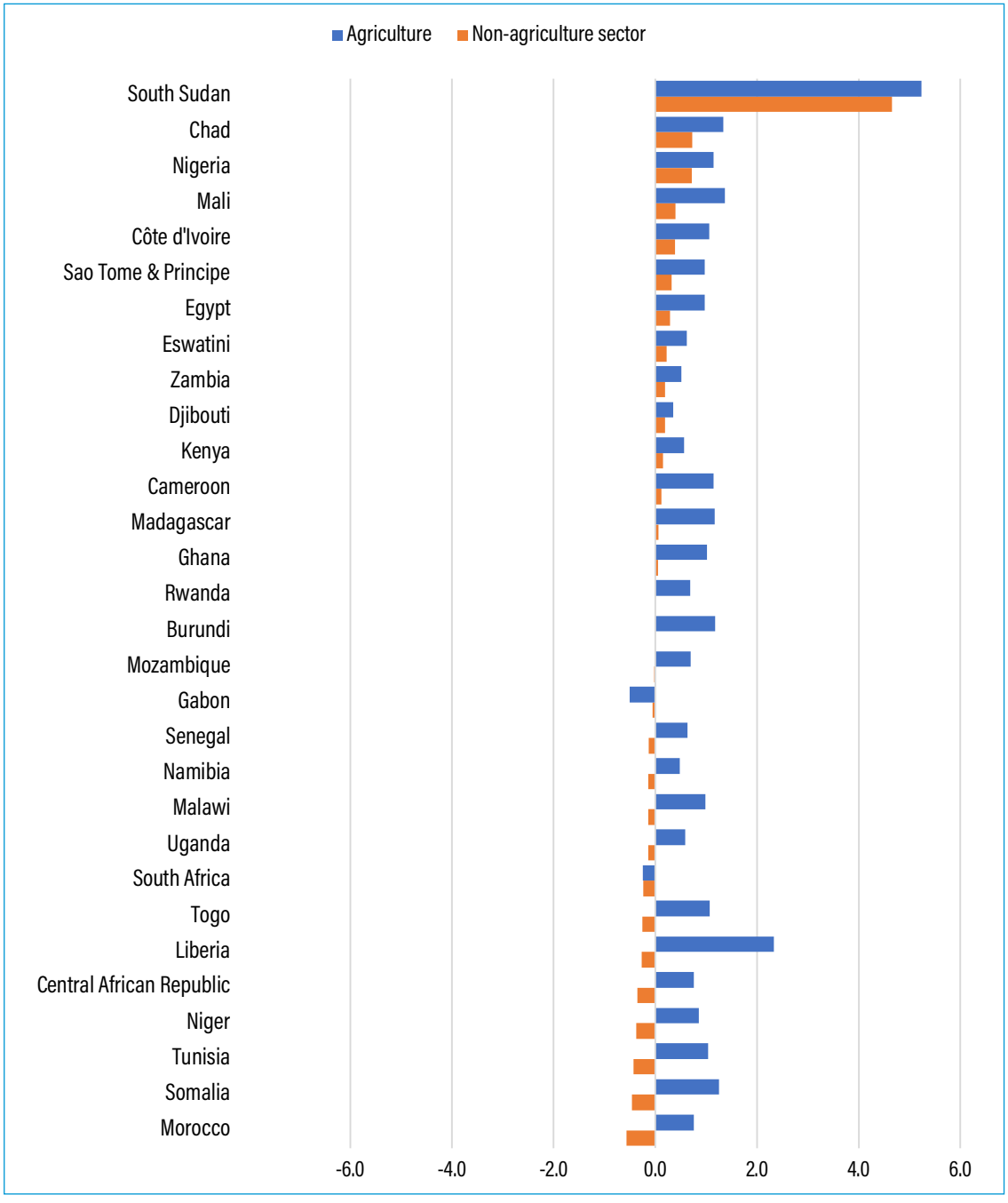
Figure 2.9 Change in GVC participation in agriculture compared with the non-agriculture sector by country, 2006–2017



Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: Agriculture includes crop production, livestock, hunting, and forestry.

To complement the figure above, Figure 2.10 compares changes in country positions in GVCs in agriculture and the non-agriculture sector between the two periods of analysis. It shows that all countries except Gabon and South Africa moved more upstream in agriculture GVCs in 2015–2017 compared to 2006–2008. In the GVCs of the non-agriculture sector, half of the countries under analysis moved more upstream while the other half moved more downstream between the two periods. However, for every country except Gabon and South Africa, the general movement further upstream is stronger in agriculture GVCs than in non-agriculture GVCs.

Figure 2.10 Change in GVC position in agriculture compared with the non-agriculture sector by country, 2006–2017



Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: Agriculture includes crop production, livestock, hunting, and forestry.

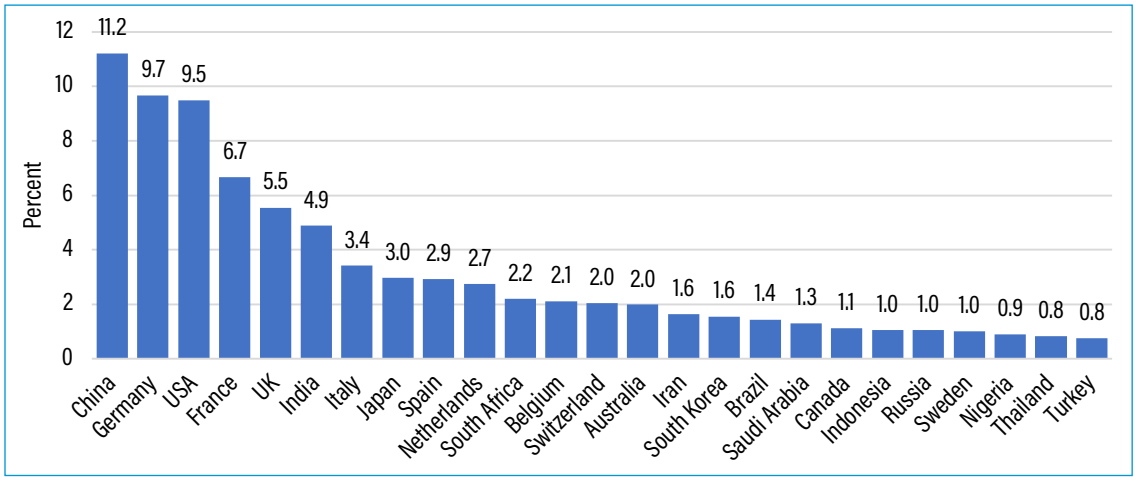
AFRICA'S MAJOR VALUE-ADDED TRADE PARTNERS

The preceding analysis has demonstrated that Africa participates in agriculture GVCs through both backward and forward linkages with other world regions. This section examines which countries are Africa's main GVC partners, distinguishing between upstream and downstream trade partners.

Major upstream partners

Africa's leading upstream partners in agriculture are depicted in Figure 2.11. These are countries with which Africa exhibited the strongest backward GVC linkages in agriculture in 2015–2017. For instance, 11 percent of the foreign value added embedded in Africa's agricultural exports originated in China, while 0.8 percent was sourced in Turkey. Together, the 25 partners listed (out of 174 countries ranked) supplied 80 percent of the FVA content of Africa's gross agricultural exports. Thus, Figure 2.11 illustrates Africa's exposure to supply chain disruptions in a few countries that supply agricultural inputs into Africa's agriculture exports. Any shock in those partner countries would reverberate downstream to African countries at least in the agriculture sector, for example through disruptions in agricultural input supplies. The BRICS countries – Brazil, Russia, India, China, and South Africa – are all major upstream trade partners, accounting for 21 percent of foreign inputs into Africa's agriculture exports. European countries account for 34 percent. Notably, China accounts for more inputs than Africa's traditional import partners, namely Germany, the United States, France, and the United Kingdom. Similarly, India is a larger source of intermediate inputs into Africa's agriculture exports than Italy, Japan, Spain, or Netherlands; and South Africa accounts for more intermediate inputs than Belgium, Switzerland, Austria, or Canada. Middle Eastern and Asian countries are also among the list of top input suppliers into Africa's agricultural exports.

Figure 2.11 Average share of the FVA content of Africa's gross agriculture exports by source country, 2015–2017.



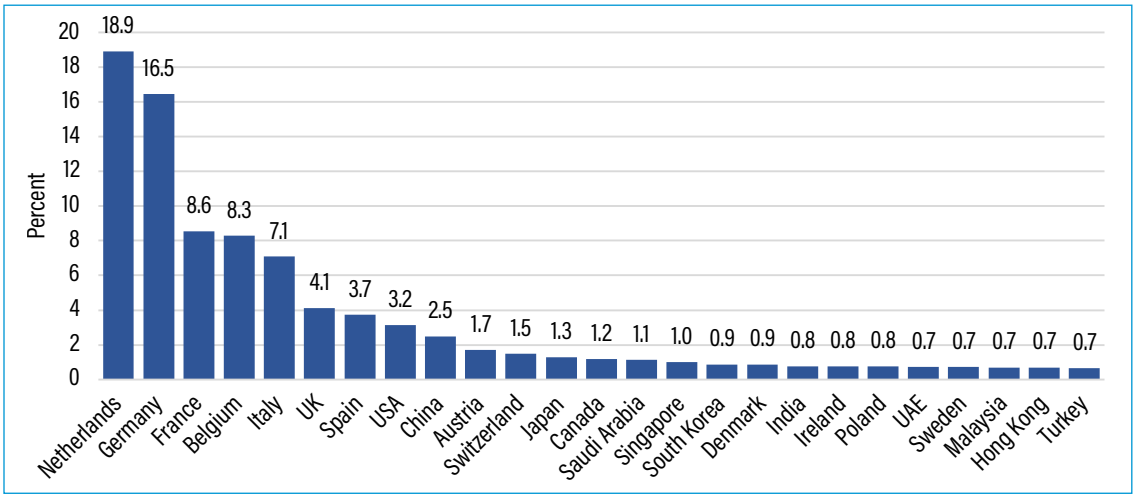
Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: Source countries of the foreign value-added (FVA) content of Africa's gross agricultural exports are not limited to those listed on the horizontal axis. Only the top 25 of 174 sources are listed.

Major downstream partners

Africa's main downstream partners are depicted in Figure 2.12. These countries imported the largest shares of the indirect value-added (DVX) content of Africa's gross agricultural exports in 2015–2017. In other words, these countries have incorporated the largest shares of Africa's agricultural exports as intermediate inputs into their own exports to third countries. For instance, 19 percent of the DVX content of Africa's gross agricultural exports are incorporated

in the Netherlands' exports to other countries. Together, the 25 countries plotted (out of 174 ranked) embed up to 88 percent of the DVX content of Africa's agricultural exports into their own exports. These are countries with which Africa has exhibited the strongest forward GVC linkages. The top seven partners — the Netherlands, Germany, France, Belgium, Italy, United Kingdom, and Spain — were EU members in 2015–2017. They incorporate into their own exports 67 percent of the intermediate inputs embodied in Africa's gross agriculture exports. The United States and China are the next two major partners, but together they absorb only 6 percent of Africa's exports of intermediate inputs.

Figure 2.12 Average share of the DVX content of Africa's gross agricultural exports by importing country, 2015–2017



Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: Importing countries of the DVX content of Africa's gross agricultural exports are not limited to those listed on the horizontal axis. Only the top 25 out of 174 importing countries are listed.

CONCLUSION

Africa's participation and position in GVCs has been the focus of this chapter. Conventional trade statistics do not provide details on the domestic and foreign value-added content of bilateral trade flows. They simply attribute the total gross value of trade transactions in a value chain to the country that operates last in the chain, thus double-counting the value of intermediate goods that may cross an international border multiple times. It is therefore useful to re-assess Africa's contribution to global trade in value added. The analytical framework we used for this purpose is widely accepted for decomposing a country's gross exports, as reported in traditional trade statistics, into its value-added components by source and destination countries and removing all double-counted terms. However, the decomposition method relies on restrictive assumptions that limit the accuracy of its estimates of trade in valued added. In addition, because of data availability concerns, this research has not included a detailed analysis of the dominant products and services in Africa's participation in GVCs. Future research will have to cover this issue along with that of the "servicification" of manufacturing in GVCs — that is, the increasing reliance of manufacturing sectors on services, whether as inputs, as activities within firms, or as output sold bundled with goods, which is further blurring the distinction of goods and services used in conventional trade statistics (Miroudot 2017).

Our results indicate that Africa captures only a small share of the global trade in value added despite an increasing level of participation in GVCs. Compared to developed economies, which have large manufacturing sectors, African economies exhibit stronger forward than backward linkages both in the economy as a whole and in agriculture in particular. Within Africa, SADC,

AMU, and ECCAS exhibit more backward linkages than COMESA and ECOWAS, reflecting regional differences in the size of manufacturing sectors.

African countries are positioned more upstream than downstream in GVCs in agriculture as in the rest of the economy. In particular, they lie more upstream and participate more intensely in agriculture GVCs compared to GVCs related to textiles and wearing apparel, food and beverages, fishing, and mining and quarrying sectors. Over the last decade, African countries have intensified their involvement in agriculture GVCs more than in the non-agricultural sector while also moving further upstream over time. The BRICS countries and Western developed countries are Africa's major upstream partners, and EU countries are Africa's main downstream partners.

These results suggest that Africa should broaden its manufacturing sectors in order to upgrade to a more balanced position in agriculture GVCs. Upgrading could take four different forms according to the GVC literature (Humphrey and Schmitz 2002). *Product upgrading* consists of producing higher-quality and more sophisticated products. *Process upgrading* entails reorganizing production processes to improve efficiency and productivity. *Functional upgrading* requires incorporating additional stages of production. *Chain upgrading* refers to diversifying activities into higher-value sectors or end products (Goger et al. 2014; Ahmad and Primi 2017).

Africa has numerous assets that can aid in its manufacturing transition. It has access to natural resources, namely minerals, as well as agricultural and forestry resources. Its young and active population represents one of the world's most dynamic labor reserves. Given the abundance of natural and agricultural resources, attracting foreign direct investment (FDI) will be the fastest way to raise the capital required to acquire new production and processing technologies. Indeed, FDI can advance technological progress, because multinationals typically introduce superior technology (machines, production procedures, marketing, and management practices) that can spread to local firms. Attracting FDI in turn requires eliminating restrictions in factor markets and improving the continent's business climate. The latter includes workforce development, support for innovation and R&D, higher standards, incentives for firms targeting upgrading, reductions in logistical costs, and investment in infrastructure and special economic zones. The continent must also improve its human resources for the management of local small and medium enterprises and seize the opportunity offered by the large domestic market created by the African Continental Free Trade Area (AfCFTA). Successful implementation of the AfCFTA can facilitate the broadening of the manufacturing sector that would lead to a more balanced position in GVCs, given Africa's rich endowment in natural resources. Indeed, strengthening regional value chain integration through the AfCFTA will help African countries participate more effectively in GVCs. Improving regional integration is the best way to make Africa a more dynamic and competitive region capable of driving the process of GVC development.

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APPENDIX

Table A2.1 Lists of member countries by regional grouping

Africa	SSA	MENA	EU
Algeria	Angola	Algeria	Austria
Angola	Botswana	Bahrain	Belgium
Botswana	Burundi	Egypt	Bulgaria
Burundi	Cameroon	Iran	Croatia
Cameroon	Cabo Verde	Iraq	Cyprus
Cabo Verde	Central African Republic	Israel	Czech Republic
Central African Republic	Chad	Jordan	Denmark
Chad	Côte d'Ivoire	Kuwait	Estonia
Côte d'Ivoire	DR Congo	Lebanon	Finland
DR Congo	Djibouti	Morocco	France
Djibouti	Eswatini	Oman	Germany
Egypt	Gabon	Qatar	Greece
Eswatini	Gambia	Saudi Arabia	Hungary
Gabon	Ghana	Syria	Ireland
Gambia	Kenya	Tunisia	Italy
Ghana	Lesotho	UAE	Latvia
Kenya	Liberia	Lithuania	Malta
Lesotho	Madagascar	Luxembourg	Netherlands
Liberia	Malawi		Poland
Madagascar	Mali		Portugal
Malawi	Mauritius		Romania
Mali	Mozambique		Slovakia
Mauritania	Namibia		Slovenia
Mauritius	Niger		Spain
Morocco	Nigeria		Sweden
Mozambique	Rwanda		United Kingdom
Namibia	Sao Tome and Principe		
Niger	Senegal		
Nigeria	Seychelles		
Rwanda	Sierra Leone		
Sao Tome and Principe	Somalia		
Senegal	South Africa		
Seychelles	South Sudan		
Sierra Leone	Togo		
Somalia	Uganda		
South Africa	Tanzania, United Rep.		
South Sudan	Zambia		
Togo			
Tunisia			
Uganda			
Tanzania, United Rep.			
Zambia			

Table A2.1 Lists of member countries by regional grouping (continued)

USMCA	LAC	ASEAN	SAARC	AMU
Canada	Antigua	Brunei	Bangladesh	Algeria
Mexico	Argentina	Cambodia	Bhutan	Mauritania
USA	Bahamas	Indonesia	India	Morocco
	Barbados	Lao PDR	Maldives	Tunisia
	Belize	Malaysia	Nepal	
	Bolivia	Myanmar	Pakistan	
	Brazil	Philippines	Sri Lanka	
	Chile	Singapore		
	Colombia	Thailand		
	Costa Rica	Viet Nam		
	Cuba			
	Dominican Republic			
	Ecuador			
	El Salvador			
	Guatemala			
	Haiti			
	Honduras			
	Jamaica			
	Mexico			
	Nicaragua			
	Panama			
	Paraguay			
	Peru			
	Suriname			
	Trinidad and Tobago			
	Uruguay			
	Venezuela			

Table A2.1 Lists of member countries by regional grouping (continued)

COMESA	ECCAS	ECOWAS	SADC
Burundi	Angola	Cabo Verde	Angola
DR Congo	Burundi	Côte d'Ivoire	Botswana
Djibouti	Cameroon	Gambia	DR Congo
Egypt	Central African Republic	Ghana	Eswatini
Eswatini	Chad	Liberia	Lesotho
Kenya	DR Congo	Mali	Madagascar
Madagascar	Gabon	Niger	Malawi
Malawi	Rwanda	Nigeria	Mauritius
Mauritius	Sao Tome and Principe	Senegal	Mozambique
Rwanda	Sierra Leone	Seychelles	Namibia
Seychelles	Togo	South Africa	Tanzania, United Rep.
Somalia			Zambia
Tunisia			
Uganda			
Zambia			

Note: AMU = Arab Maghreb Union; ASEAN = Association of Southeast Asian Nations; COMESA = Common Market for Eastern and Southern Africa; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; EU = European Union; MENA = Middle East and North Africa; USMCA = United States-Mexico-Canada Agreement; LAC = Latin America and the Caribbean; SAARC = South Asian Association for Regional Cooperation; SADC = Southern African Development Community; SSA = sub-Saharan Africa.

Table A2.2 Eora 26-sector structure

Code	Description	Code	Description
1	Agriculture	14	Construction
2	Fishing	15	Maintenance and repair
3	Mining and Quarrying	16	Wholesale trade
4	Food and Beverages	17	Retail trade
5	Textiles and wearing apparel	18	Hotels and restaurants
6	Wood and paper	19	Transport
7	Petroleum, chemical, and non-metallic mineral products	20	Post and telecommunications
8	Metal products	21	Financial intermediation and business activities
9	Electrical and machinery	22	Public administration
10	Transport equipment	23	Education, health, and other services
11	Other manufacturing	24	Private households
12	Recycling	25	Others
13	Electricity, gas, and water	26	Re-export and Re-import

Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).

Table A2.3 Gross exports and its value-added components, by world regions, 2006–2019

Gross exports (billion US$)			Share in gross exports (%)					
			Domestic value added		Foreign value added		Indirect value added	
	2006–2010	2015–2019	2006–2010	2015–2019	2006–2010	2015–2019	2006–2010	2015–2019
World	15,223	20,233	70.3	70.0	29.7	30.0	29.7	30.0
AMU	76	88	87.1	82.7	12.9	17.3	52.1	48.4
COMESA	40	52	80.5	82.1	19.5	17.9	34.5	36.3
ECCAS	24	32	92.6	92.0	7.4	8.0	42.1	41.4
ECOWAS	37	45	91.6	94.0	8.4	6.0	37.7	51.6
SADC	110	145	83.0	81.9	17.0	18.1	39.8	35.2
Africa	250	314	85.9	84.6	14.1	15.4	42.8	41.9
SSA	160	205	85.3	85.1	14.7	14.9	39.0	38.9
MENA	462	620	84.9	84.8	15.1	15.2	39.3	41.0
EU	6,876	8,636	61.3	59.2	38.7	40.8	29.2	27.0
USMCA	2,233	2,711	80.1	78.7	19.9	21.3	28.0	26.4
LAC	768	1,000	80.1	78.8	19.9	21.2	21.9	21.8
ASEAN	944	1,451	61.2	62.3	38.8	37.7	25.6	26.2
SAARC	218	329	86.0	85.6	14.0	14.4	30.4	42.6

Source: Authors' calculations based on UNCTAD-Eora GVC database (2019).
Note: AMU = Arab Maghreb Union; ASEAN = Association of Southeast Asian Nations; COMESA = Common Market for Eastern and Southern Africa; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; EU = European Union; MENA = Middle East and North Africa; USMCA = United States-Mexico-Canada Agreement; LAC = Latin America and the Caribbean; SAARC = South Asian Association for Regional Cooperation; SADC = Southern African Development Community; SSA = sub-Saharan Africa.

Table A2.4 Yearly growth of gross aggregate exports and value-added components by exporting region, 1990–2019 (percent)

	Gross aggregate exports		Domestic value-added exports		Foreign value-added exports		Indirect value-added exports	
	1990–2008	2010–2019	1990–2008	2010-2019	1990–2008	2010–2019	1990–2008	2010-2019
World	8.3	1.4	7.8	1.2	9.7	1.7	9.7	1.7
AMU	10.7	-0.7	10.8	-1.5	10.4	3.8	12.6	-2.1
COMESA	9.3	0.0	9.3	0.2	9.3	-0.6	11.7	0.7
ECCAS	11.4	-1.4	11.5	-1.6	10.7	1.2	12.7	-1.0
ECOWAS	9.5	-0.2	9.6	0.3	8.1	-6.2	11.3	4.8
SADC	8.4	-0.4	8.1	-0.8	10.1	1.4	10.2	-2.2
Africa	9.3	-0.4	9.2	-0.7	9.9	1.4	11.3	-0.7
SSA	8.6	-0.5	8.5	-0.6	9.6	0.2	10.4	-0.3
MENA	9.3	0.7	9.3	0.6	9.4	0.9	11.0	1.6
EU	8.0	1.4	7.3	0.8	9.3	2.1	9.2	0.0
USMCA	7.5	0.5	7.1	0.2	9.8	1.7	8.8	-0.2
LAC	10.4	0.3	10.1	0.0	12.2	1.8	11.2	-0.5
ASEAN	10.1	2.8	10.0	2.8	10.3	2.9	12.6	3.2
SAARC	12.4	0.4	12.0	0.5	16.0	-0.3	14.4	7.5

Source: Authors' calculations based on UNCTAD-EORA GVC database (2019).
Note: AMU = Arab Maghreb Union; ASEAN = Association of Southeast Asian Nations; COMESA = Common Market for Eastern and Southern Africa; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; EU = European Union; MENA = Middle East and North Africa; USMCA = United States-Mexico-Canada Agreement; LAC = Latin America and the Caribbean; SAARC = South Asian Association for Regional Cooperation; SADC = Southern African Development Community; SSA = sub-Saharan Africa.

CHAPTER **THREE**

Intra-African Agricultural Trade

Anatole Goundan,
Leysa M. Sall,
Julia Collins, and
Joseph W. Glauber

INTRODUCTION

Economic integration has been a key goal on the agenda of African governments for several decades. The road to African integration began in 1991, when the African heads of state and government signed the Treaty Establishing the African Economic Community (Abuja Treaty), setting out the guiding principles and objectives to strengthen integration. In 2014, the Malabo Declaration made tripling intra-African trade in agricultural products and services by 2025 a central objective. More recently, in 2018, the agreement to form the African Continental Free Trade Area (AfCFTA) was signed at the 10th Extraordinary Session of the African Union in Kigali. The AfCFTA, launched on January 1, 2021, is the largest free trade area in the world in terms of the number of countries covered, with a market of 1.2 billion consumers. It has great potential to boost intra-African trade by eliminating import duties and reducing nontariff barriers (UNCTAD 2019), but maximizing the agreement's positive impacts will require significant efforts to both liberalize and facilitate trade (Laborde 2020; Maliszewska 2020).[1]

Previous AATM reports show that agricultural trade within Africa is still struggling to recover from a sharp decline suffered from 2013 through 2016 (Goundan and Tadesse 2021). The 2021 Comprehensive Africa Agriculture Development Programme (CAADP) Biennial Review report found that Africa is not on-track to achieve the tripling of intra-African trade between 2015 and 2025: the score in 2021 is estimated at 2.44 against a target of 5.0 (African Union 2022). In addition, growth in the intra-African export shares of processed products compared with unprocessed products suggests that African markets are more attractive for processed products than primary products, and the gap between the two has been expanding. In 2019, intra-African trade accounted for 22.9 percent of total African exports of semi-processed agricultural products, while the corresponding share for fully processed products was estimated at 52.9 percent; the intra-African share of unprocessed agricultural exports was significantly lower at less than 10 percent (Goundan and Tadesse 2021).

In this chapter, we look at intra-African agricultural trade at a disaggregated level, with a focus on trade in processed food products. To enrich our discussion, we examine the nutritional content of these traded goods as well as trade barriers they face. We include detailed analyses of trade in five major processed products and provide a comparative analysis with other benchmark regions such as the Asia-Pacific and Latin America and Caribbean (LAC) regions[2] to better identify gaps and opportunities for African trade.

The analysis in this chapter is based on recorded trade data only, and therefore does not account for unrecorded or informal trade. This is an important limitation, as informal trade is thought to constitute a large share of intra-African trade, particularly trade in agricultural products. Observational studies on informal cross-border trade in several countries and regions summarized in Bouët, Cissé, and Traoré (2020) suggest that informal trade may account for 10 to 60 percent of total trade flows. Another recent study estimated that the magnitude of informal cross-border trade reaches 7 to 16 percent of formal trade at the continental level, and 30 to 72 percent of formal trade between countries that share a border (Gaarder, Luke, and Sommer 2021). Thus, intra-African trade flows discussed in this chapter should be assumed to be underestimated compared to actual trade flows, especially for neighboring countries. Significant efforts will be required to formalize and mainstream informal trade flows by lowering financial and logistical barriers to formal trade. In addition to trade facilitation measures, it is important to invest in data collection efforts to better understand the magnitude of informal flows and provide a more complete picture of intra-African trade.

1 For a detailed analysis of the potential impacts of AfCFTA implementation, see Chapter 5 in this volume.
2 These regions are used as comparators because, like Africa, their agricultural GDP shares are higher than the global average and their levels of GDP per capita are lower.

The next section of this chapter provides an overview of intra-African trade in agricultural goods by stage of processing, followed by an overview of the nutritional content of intra-African trade. We then provide country-level and product-level analyses of intra-African trade and explore trends in trade of processed agricultural products by focusing on trade performance and networks in sugar, palm oil, cigars and cigarettes, tea, and wheat flour. The following section analyzes barriers to intraregional trade in these five processed products, and the final section concludes.

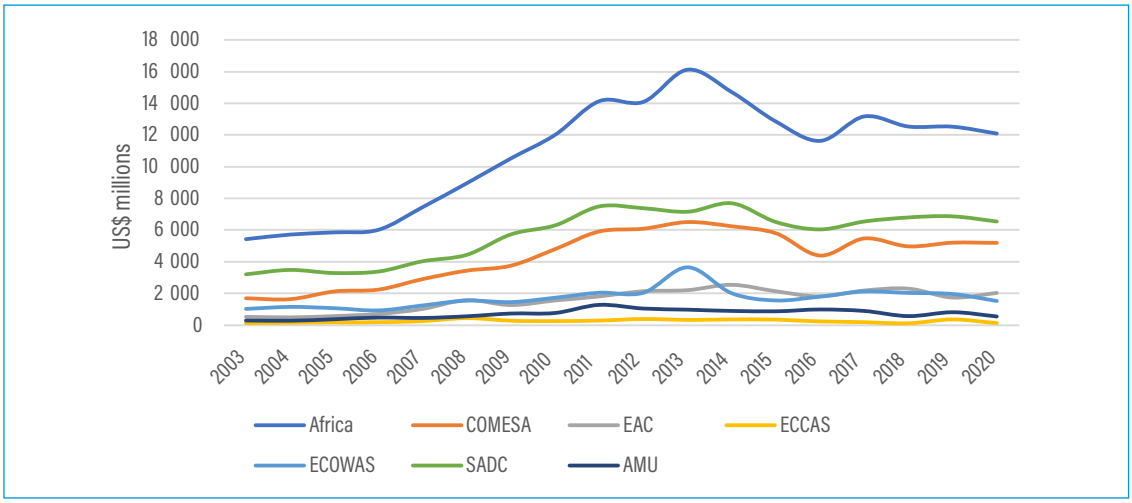
TRENDS AND PATTERNS OF INTRA-AFRICAN AGRICULTURAL TRADE BY STAGE OF PROCESSING

The analysis of the intra-African trade of agricultural products in the previous editions of this report have shown the importance of processed agricultural products in contributing to trade among African countries. This edition, in addition to commenting on the change in overall intra-African trade observed in 2020 (the latest year for which data are available) compared to previous years, takes an in-depth look at processed agricultural products traded between African countries.[3] In this section, we provide an overview of trends in intra-African agricultural trade at the continental and regional economic community (REC) levels, measured in terms of value. The subsequent sections focus on trade measured in terms of nutritional content and on trade trends and performance at the country and product level.

Trends in intra-African agricultural trade by regional economic community

Figure 3.1 shows the trends of total intra-African exports of agricultural products.[4] Two aspects are of interest: (1) the role of different RECs in the intracontinental trade of agricultural products, and (2) how trade flows changed between 2019 and 2020, since from March 2020 onward the COVID-19 pandemic emerged as a serious health crisis and sparked various policy interventions that affected trade worldwide.

Figure 3.1 Trends of intra-African agricultural trade by REC, 2003–2020

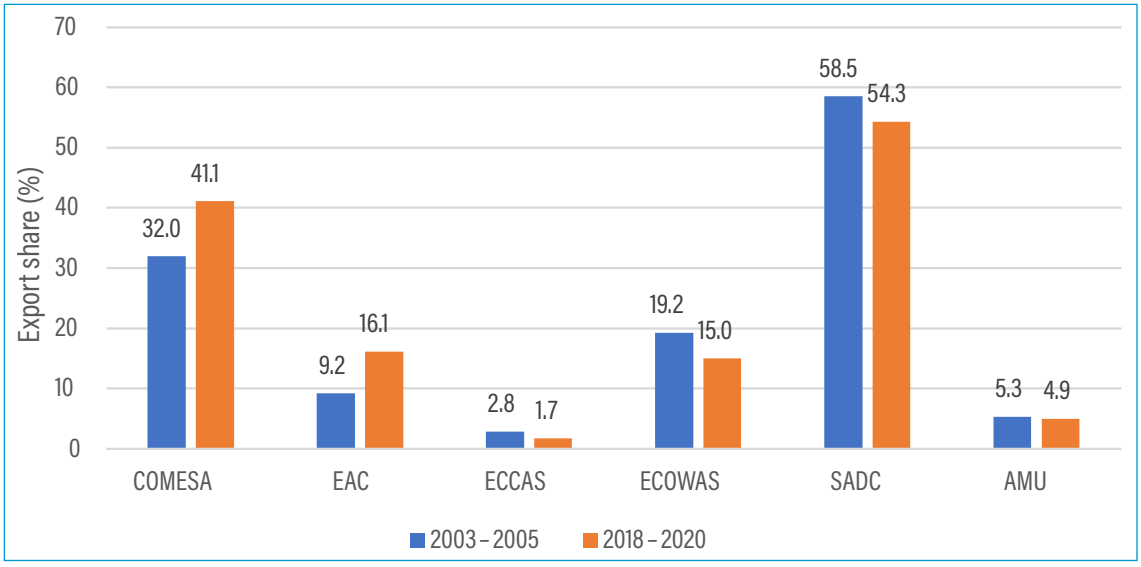


Source: Constructed from the 2022 AATM database.
Note: COMESA = Common Market for Eastern and Southern Africa; EAC = East African Community; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

3 It should be noted that export data from UN Comtrade include countries' re-exports of foreign goods. Therefore, it is important to clarify whether the trends in processed goods within Africa are driven by foreign goods or domestic goods. Even though findings may vary from one group of products to another, Comtrade data show that re-exports of agricultural products between African countries account for less than 2 percent on average. Consequently, it is likely that most intra-African processed exports were processed on the continent.
4 We use the World Trade Organization (WTO) definition of agricultural products, with the addition of fishery products. The full list of agricultural products and fishery products is available in Pene and Zhu (2021).

In terms of the contribution of RECs to the continental trade in agricultural products, the Southern African Development Community (SADC) and Common Market for Eastern and Southern Africa (COMESA) countries have played increasing roles over time, with more than 50 percent of total intra-African trade originating from SADC countries (Figure 3.2). In fact, South Africa alone contributed about 62 percent of total SADC exports to African countries in 2020. The export share of this REC has, however, decreased over time from 58 percent in 2003–2005 to 54 percent in 2018–2020. The contribution of COMESA countries has increased, from 32 percent of this trade in 2003–2005 to 41 percent in the more recent period. It is worth noting that there is substantial overlap between these two RECs – nine countries belong to both COMESA and SADC. The Economic Community of West African States (ECOWAS) and the East African Community (EAC) countries each account for less than 20 percent of intra-African exports of agricultural products, while the Arab Maghreb Union (AMU) countries represent only about 5 percent, and the Economic Community of Central African States (ECCAS) countries less than 3 percent.

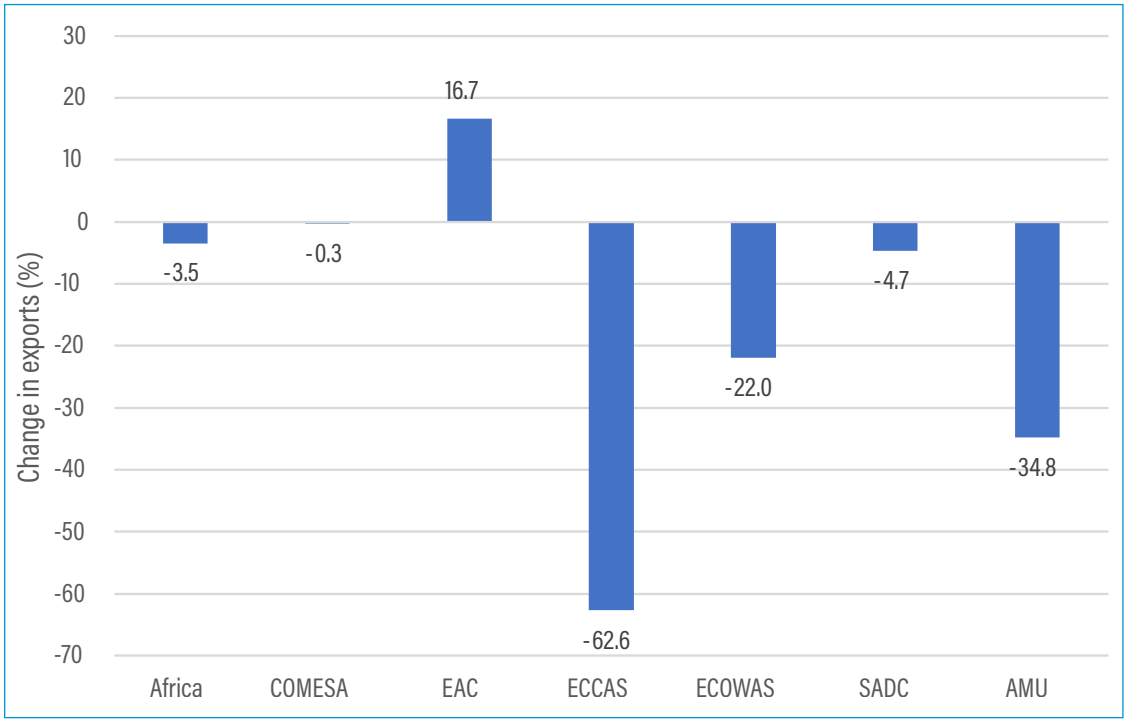
Figure 3.2 Average share of RECs in the intra-African total exports of agricultural products



Source: Constructed from the 2022 AATM database.
Note: Trade shares of the RECs sum to over 100 percent due to overlapping country membership. 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; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

Between 2019 and 2020, overall intra-African trade of agricultural products decreased by 3.5 percent, likely because of the COVID-19 pandemic (Figure 3.3). Except for EAC, the trade contraction is observed for all RECs covered here. Trade by COMESA countries decreased just 0.3 percent, while the participation of ECCAS countries dropped by almost 63 percent. The participation of ECOWAS and AMU countries was also seriously affected. It is clear that the COVID-19 crisis has had a negative impact on intra-African trade of agricultural products. Since a large share of intra-African trade is informal, various COVID-related measures like border closures are likely to have caused more severe limitations for informal trade flows across countries, which are not captured in this analysis (Bouët, Laborde, and Seck 2021; FAO 2021).

Figure 3.3 Changes in intra-African exports of agricultural products during the COVID-19 crisis (2019–2020)

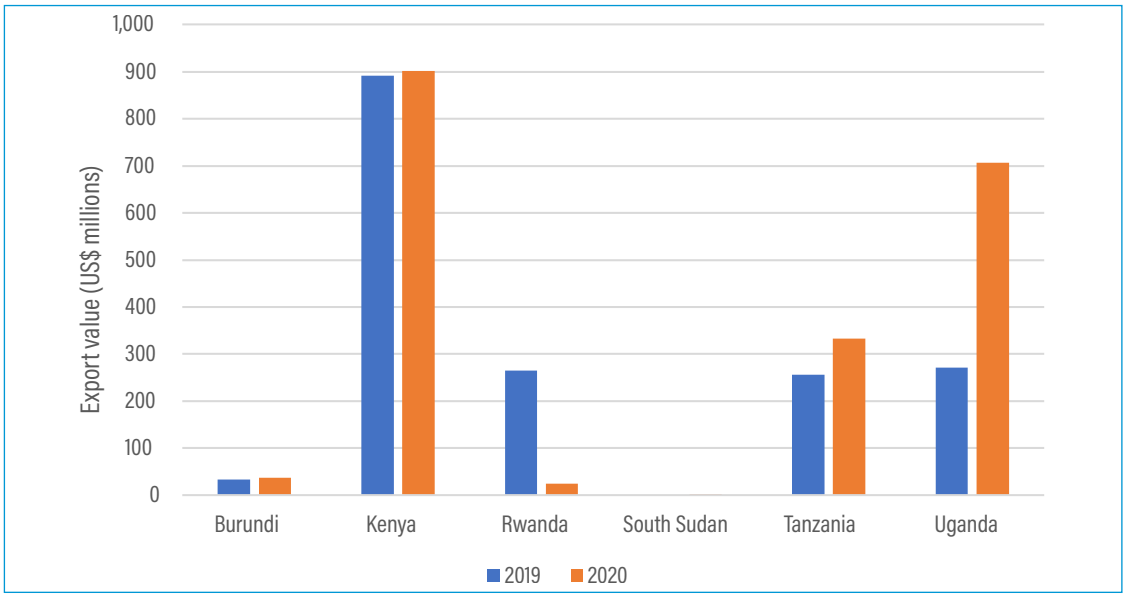


Source: Constructed from the 2022 AATM database.
Note: COMESA = Common Market for Eastern and Southern Africa; EAC = East African Community; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

EAC countries, unlike other RECs under consideration, increased their overall exports to Africa by 16 percent in 2020 compared to 2019. Looking at country-specific exports to African countries, we found that, except for Rwanda, where exports decreased by 90 percent, other EAC countries showed higher participation in intra-African trade. Figure 3.4 shows that exports from Uganda increased by around 160 percent between 2019 and 2020, growing from US$270 million in 2019 to $706 million in 2020. The overall export growth observed at the EAC level is mainly due to the great performance by Uganda and Tanzania.

Trade rebounded across Africa in the second half of 2020 following the initial steep declines in the early months of the pandemic (Torero 2021). It is possible that EAC's relatively strong trade facilitation measures as well as concerted efforts to overcome pandemic-related logistical barriers helped that region recover faster than others. Notably, EAC scored the highest of all RECs on the 2021 CAADP Biennial Review sub-theme on Intra-African Trade Policies and Institutional Conditions, which measures the enabling environment for trade (AUC 2022). A common EAC COVID-19 test certificate developed for truck-drivers helped to speed clearance and reduce border-crossing times, and EAC's electronic cargo-tracking system and simplified trade regime also helped to facilitate trade during the pandemic (UNECA 2020).

Figure 3.4 EAC countries' intra-African exports during the COVID-19 crisis, 2019–2020



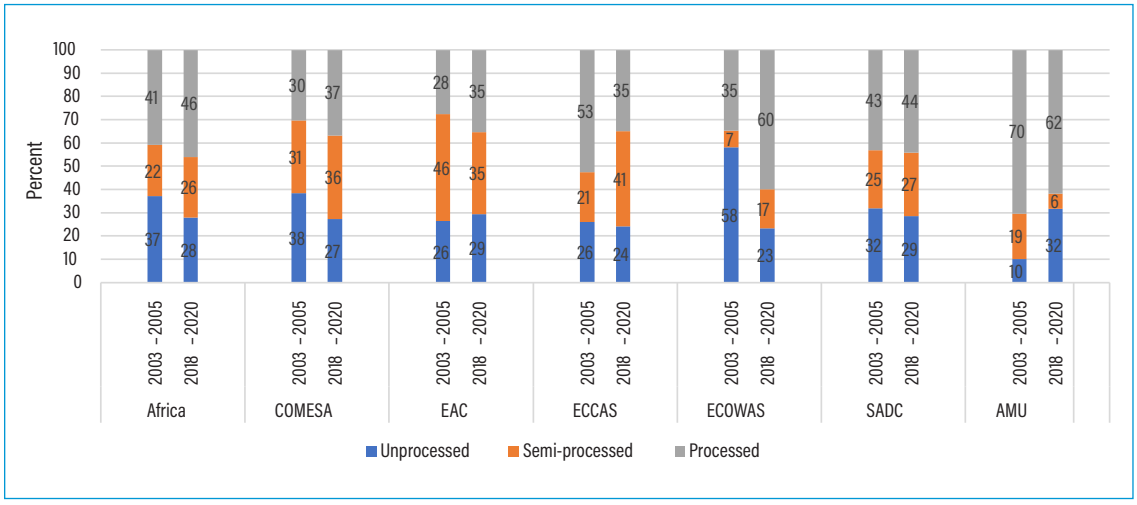
Source: Constructed from the 2022 AATM database.

Role of processed products in intra-African agricultural trade

Here, we analyze the contribution of processed agricultural products in the intra-African trade of different RECs.[5] The first indicator we consider is the share of processed agricultural products in the RECs' total exports of agricultural products to Africa (Figure 3.5) for two subperiods (2003–2005 and 2018–2020). In the first period, 41 percent of intra-African exports of agricultural products were processed products, and the share of processed products for ECCAS, SADC, and AMU counties was above the continental average, while for COMESA, EAC, and ECOWAS the share of processed products was below the continental average. More recently, in 2018–2020, 46 percent of intra-African agricultural exports were processed products. The share of processed agricultural products has increased for EAC and ECOWAS countries but decreased for ECCAS and AMU countries. In the 2018–2020 period, the RECs with the highest share of processed agricultural products in their exports to Africa were ECOWAS (60 percent) and AMU (61 percent). For ECOWAS, the increase in its average share of processed agricultural products was quite large between the two time periods (+25 percentage points). The largest decrease in the average share of processed products in intracontinental trade was seen for ECCAS countries (−18 percentage points), followed by the AMU countries (−9 percentage points). The important role of processed products in intracontinental trade may be explained by the fact that agro-industries in most African countries are specialized in products adapted to regional demand and by the possibility that African food industries are less competitive outside Africa (Iapadre and Luchetti 2010; Bouët, Cosnard, and Laborde 2017).

5 Bouët and Sall (2021) categorized agricultural products at the HS6 level as unprocessed, semi-processed, and processed commodities, based on a careful reading of the HS6 labels; 276 were classified as unprocessed, 236 as semi-processed, and 227 as processed agricultural products.

Figure 3.5 Composition of RECs' agricultural exports to Africa by processing stages



Source: Constructed from the 2022 AATM database.
Note: 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; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

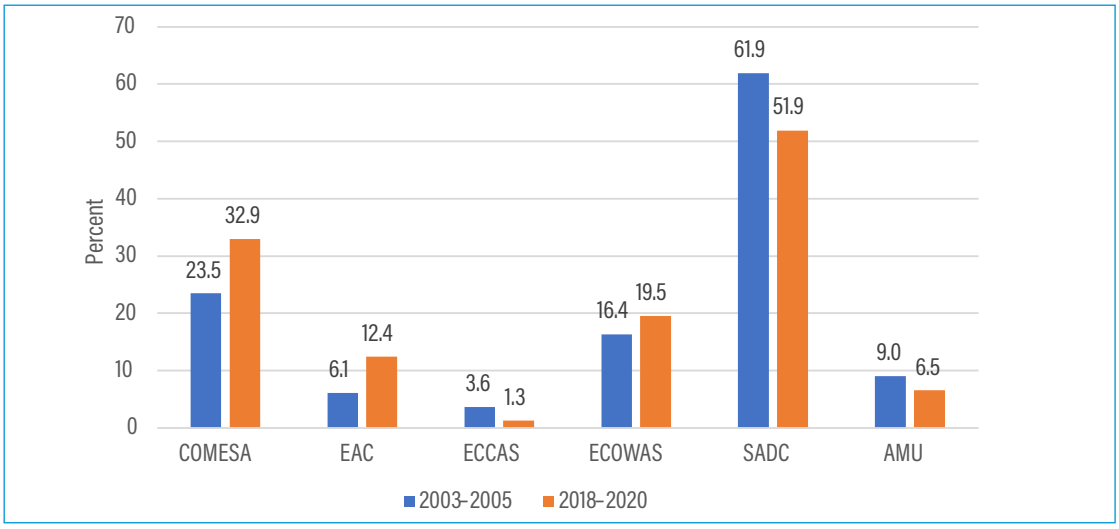
The second factor of interest here is the importance of each REC in the overall intra-African trade of processed agricultural products. Before moving to the findings, it is worth noting that most RECs, except ECCAS, saw an increase of their intra-African exports of processed agricultural products over the second period (2018–2020) from the first period (2003–2005). Compared to the total intra-African exports of processed agricultural exports (146 percent increase), ECCAS (−11 percent), AMU (+79 percent), and SADC (+108 percent) performed below the continental average, while ECOWAS (+194 percent), COMESA (+243 percent), and EAC (+393 percent) were the top performers.

Figure 3.6 shows the participation of each REC in the total intracontinental trade of processed agricultural products (total exports of REC divided by the total intra-African exports of processed agricultural products). We can see that SADC, especially South Africa, is the leading REC in the intra-African trade of processed agricultural products. However, SADC's lead has diminished – its share dropped from 62 percent to 52 percent between the two periods. The decline in SADC's share reflects the more rapid increase in total intra-African trade over time, from 108 percent to 146 percent. For this REC, the most positive absolute export gains were observed for cane or beet sugar (HS4 code 1701) and food preparations not elsewhere specified (code 2106), with a net gain of more than US$100 million.

Three RECs have increased their participation in intra-African trade of processed agricultural products (COMESA, EAC, and ECOWAS). On average, COMESA countries have increased their contribution to processed agricultural products trade by 9 percentage points, while there is an increase of 6 percentage points for EAC countries and 3 percentage points for ECOWAS countries. Several products explain the performance of these RECs over time. For ECOWAS, exports of three products increased between the two periods by more than US$100 million: palm oil and its fractions (code 1511), soups and broths and preparations therefor (code 2104), and cigars, cheroots, cigarillos, and cigarettes (code 2402). For COMESA, cane or beet sugar (code 1701), cigars, cheroots, cigarillos, and cigarettes (code 2402), and manufactured tobacco and manufactured tobacco substitutes n.e.c (code 2403) recorded net export gains, respectively, of $209 million, $91 million, and $90 million. For EAC countries, the highest net export gains were observed for cigars, cheroots, cigarillos, and cigarettes (code 2402), food

preparations not elsewhere specified or included (code 2106), and cane or beet sugar (code 1701) with respective gains of $94 million, $53 million, and $51 million.

Figure 3.6 Participation of RECs in total intra-African exports of processed agricultural products

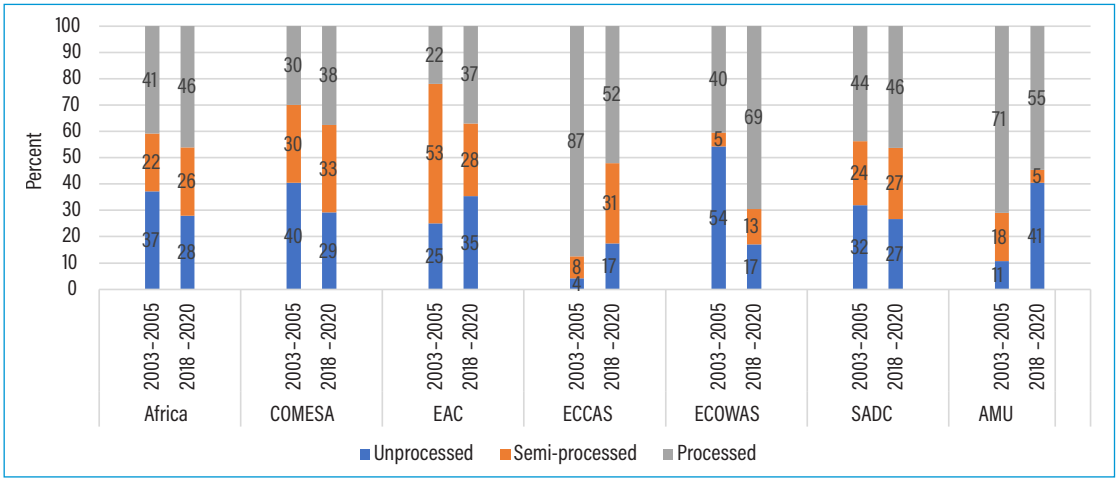


Source: Constructed from the 2022 AATM database.
Note: Trade shares of RECs sum to over 100 percent due to overlapping country membership. COMESA = Common Market for Eastern and Southern Africa; EAC = East African Community; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

Trade within and between RECs by level of processing

It is interesting to study the composition of intra- and extra-REC trade by level of processing. Figure 3.7 shows the dynamics of intra-REC trade by level of processing over our two sub-periods (2003–2005 and 2018–2020); Figure 3.8 shows the same information for REC trade with African countries outside the REC. For most of the RECs, the composition of trade changed significantly for both intra- and extra-REC trade.

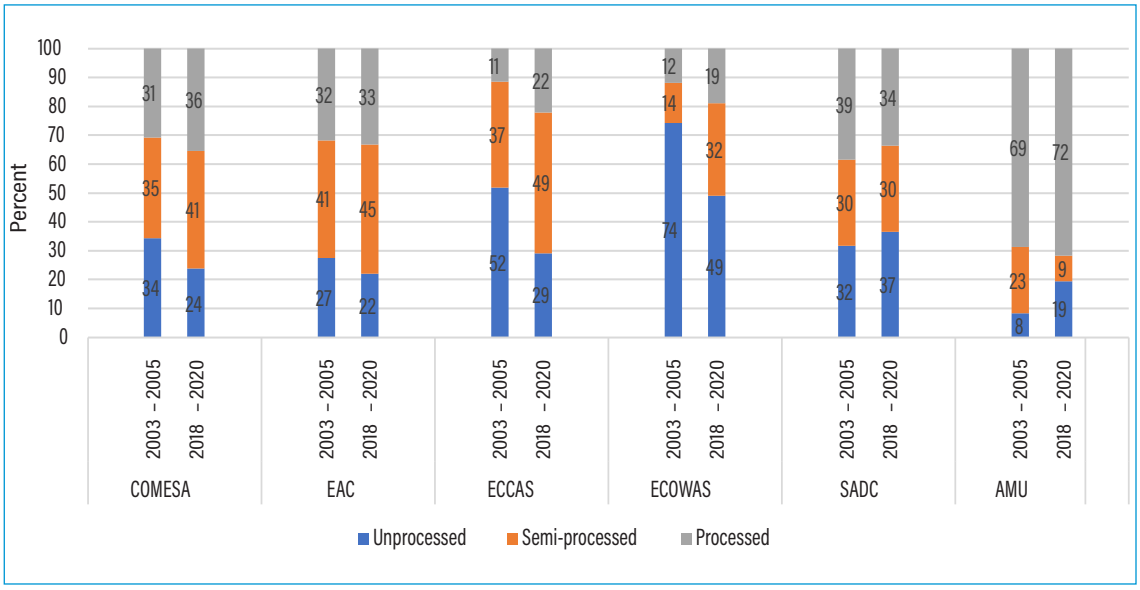
Figure 3.7 Composition of intra-REC agricultural trade by processing stages



Source: Constructed from the 2022 AATM database.
Note: Trade shares of RECs sum to over 100 percent due to overlapping country membership. 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; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

In 2003–2005, almost 90 percent of intra-ECCAS agricultural trade was in processed products. However, in the more recent period, the share of processed products has fallen to only 52 percent. In terms of ECCAS countries' extra-REC trade, the first period was dominated by raw products (52 percent), but these fell to 29 percent in the second period, with semi-processed agricultural products playing the largest role (49 percent). Among ECOWAS countries, raw products, which constituted the largest part of their trade over the first period (54 percent), were replaced by processed products (69 percent) during the second period. However, ECOWAS continued to export raw agricultural products to other African counties, with a very small share of processed products. For the Maghreb countries, the share of processed products traded within AMU decreased considerably, while exports of raw products have become more significant in the second period. For COMESA, EAC, and SADC, the composition of their intra- and extra-REC trade of agricultural products remained stable in terms of the levels of product processing.

Figure 3.8 Composition of extra-REC agricultural trade by processing stages



Source: Constructed from the 2022 AATM database.
Note: Trade shares of RECs sum to over 100 percent due to overlapping country membership. 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; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

This analysis of intra-REC and extra-REC exports reveals that (1) within RECs, the greatest share of trade consists of processed agricultural products; and (2) for most RECs, unprocessed or semi-processed agricultural products account for most extra-REC exports of agricultural products. These findings raise questions about the competitiveness of African countries beyond their regional communities. The only REC with a substantial share of processed agricultural products in its extra-REC intra-African exports is AMU. The overall low level of sophistication of Africa's manufacturing sector likely explains the low content of processed agricultural products in extra-regional trade within Africa (Iapadre and Luchetti 2010).

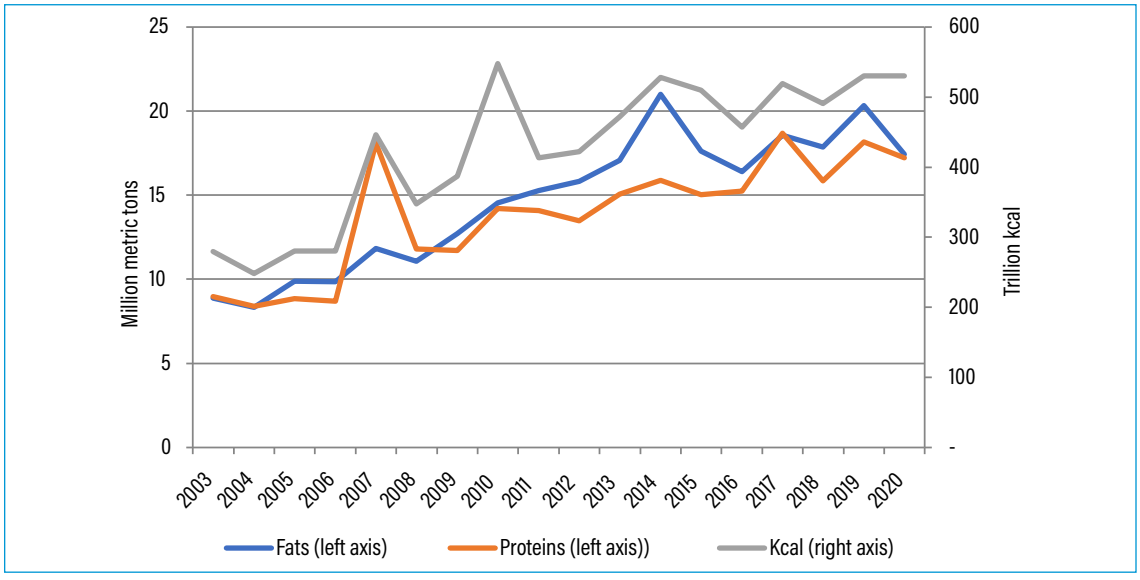
NUTRITIONAL CONTENT OF INTRA-AFRICAN TRADE

In this section, we complement the previous analysis of trade in terms of value by examining trade patterns in terms of nutritional content, including caloric, fat, and protein content of traded goods. Trade patterns in nutritional terms may echo or contrast with patterns in value terms, depending on changes in commodity prices and trade composition. From a food security perspective, looking at trends in calorie terms offers a clearer picture of the contribution of intra-African trade to food availability in the continent. In addition, changes in the composition of trade, including the increasing share of processed products in intra-African trade, are likely to have implications for nutrition. Our methodology draws on research by Laborde and Deason (2015) that converts trade data at the HS6 product level to its nutritional content using published nutrition tables from the United States Department of Agriculture and nutrient content data from the Food and Agriculture Organization of the United Nations (FAO), as well as other sources. The nutrient contents of the trade are then converted to calories (kcal), grams of protein, and grams of fat. A detailed explanation of the coefficients can be found in Laborde and Deason (2015).

Trends in nutritional content of intra-African trade

Figure 3.9 shows the growth in intra-African agricultural trade by nutrient content from 2003 to 2020. Intra-African agricultural trade expressed in calories and fat and protein content by weight grew at similar rates over the period. Total calories traded in 2018–2020 was 92 percent more than in the 2003–2005 period, with an implied annual growth rate of 4.4 percent. The fat content of average intra-African trade in the second period was 106 percent higher than in the first period, showing an annual growth rate of 4.9 percent, and protein content was 95 percent higher, with an annual growth rate of 4.6 percent. Unlike the value of intra-African trade (see Figure 3.1), the nutritional content of intra-African trade continued an upward trend throughout the 2003–2020 period. This suggests that despite the 2013 economic downturn, growth in the nutritional content of intra-African trade remained unaffected.

Figure 3.9 Evolution of intra-African trade by nutritional content, 2003–2020

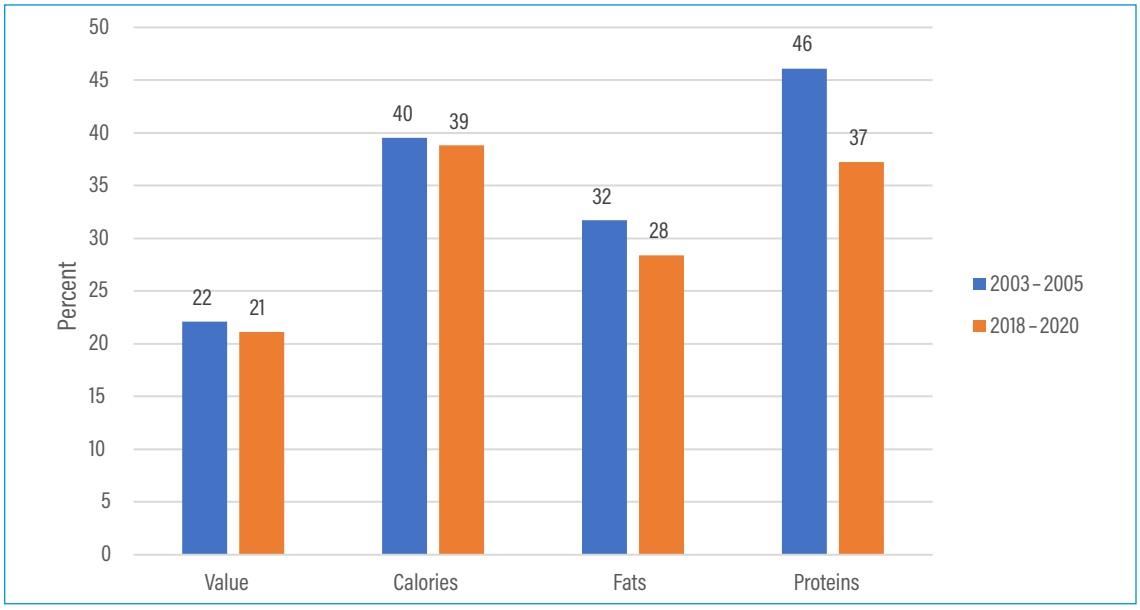


Source: Constructed from the 2022 AATM database.

Figure 3.10 compares intra-African agricultural trade as a share of total African agricultural trade in the periods 2003–2005 and 2018–2020 by both value and nutritional content. In value

terms, intra-African trade accounted for about 21 percent of African agricultural exports in the second period, compared with 22 percent in the first period. When expressed in terms of calories, fats, and proteins, intra-African trade accounts for a larger share of Africa's total agricultural trade. This reflects the fact that higher-value products with lower caloric content are typically exported outside of Africa (for example, coffee, cotton, tea, and cut flowers). While the share of total agricultural trade accounted for by intra-African trade expressed in caloric content was similar between the two periods, the share of intra-African trade expressed in terms of fat and protein content fell over this time.

Figure 3.10 Intra-African agricultural trade as share of total African agricultural trade

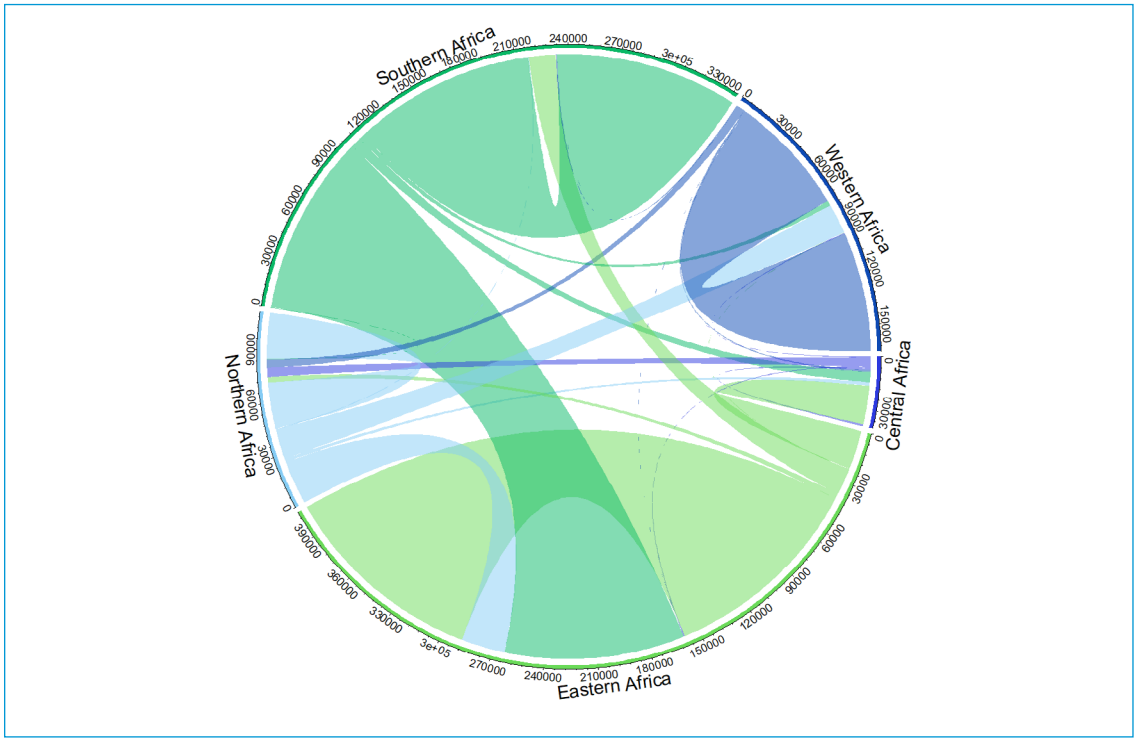


Source: Constructed from the 2022 AATM database.

Trade in nutritional content at the regional and REC levels

Figure 3.11 shows intra-African agricultural trade in 2020 among Africa's geographic regions, expressed in billion kilocalories. Each region is represented by a portion of the circle proportional to its share in intra-African exports. Arcs depicting trade flows are drawn between each region, with the size of the arc indicating the magnitude of the flow and its color corresponding to the exporting region. Flows that originate from and return to a single region represent trade within the region (regional aggregations are drawn from FAO). The numbers on the outside of the circle correspond to the magnitude of the trade flow in billion kilocalories. For example, the green arc between Southern and Eastern Africa represents exports from Southern to Eastern Africa, which amounted to around 101 trillion kcal. The green flow originating from and returning to Southern Africa represents exports from Southern African countries to others within the region, which totaled 102 trillion kcal. In 2020, total intra-African trade totaled 530 trillion kcal. Southern Africa was the largest exporting region, accounting for 41 percent of the total exports in calories (Table 3.1). Eastern Africa is the second-largest exporting region on a calorie basis, accounting for 29.9 percent of total intra-African agricultural exports. In terms of imports, Eastern Africa is the largest importer of agricultural goods from other African countries, accounting for 46 percent of total calories.

Figure 3.11 Intra-African exports by region, 2020 (billion kcal)



Source: Constructed from the 2022 AATM database.
Note: Regions are represented by portions of the circle corresponding to their share in intra-African agricultural exports. Arcs represent trade flows between and within regions, with the width of the arc corresponding to the magnitude of the flow and its color corresponding to the exporting region. The numbers around the circle indicate the magnitudes of trade flows in billion kilocalories.

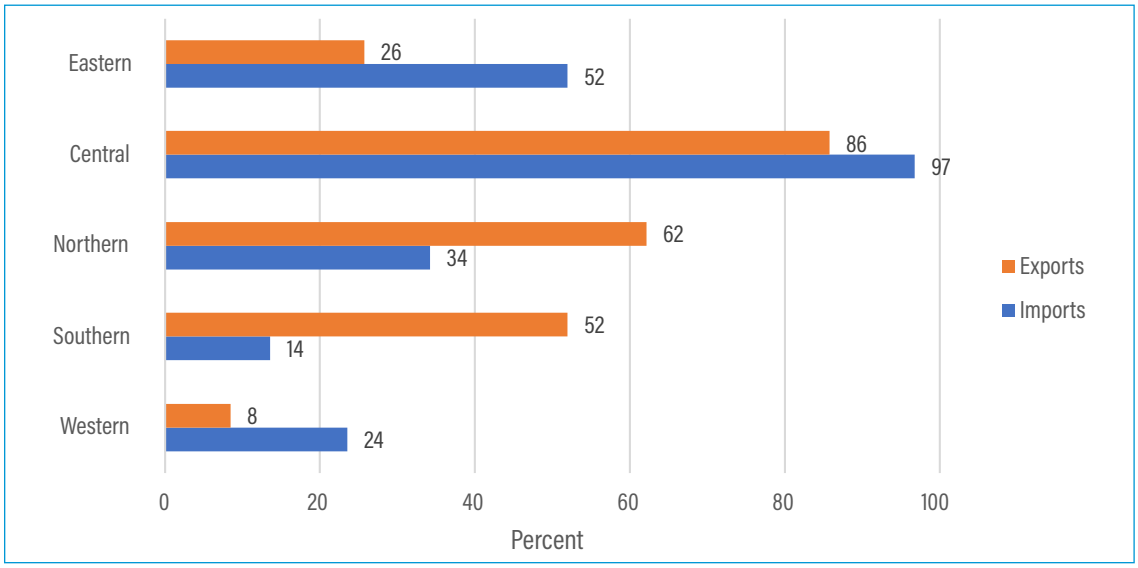
Table 3.1 Share of intra-African trade in calories by region, 2020 (percent)

Importing region	Exporting region					
	Western	Southern	Northern	Central	Eastern	Total
Western	13.0	0.6	3.3	0.1	<0.0	17.0
Southern	0.1	19.7	0.1	<0.0	2.9	22.8
Northern	0.9	0.1	5.0	1.0	0.6	7.6
Central	0.2	1.1	0.4	0.2	4.2	6.1
Eastern	<0.0	19.5	4.4	0.1	22.2	46.2
Total	14.2	41.0	13.2	1.4	29.9	99.7

Source: Constructed from the 2022 AATM database.
Note: Totals do not sum to 100 due to rounding.

Western Africa accounts for 14.2 percent of total intra-African trade in calories, but of that total, over 90 percent is accounted for by exports to other Western African countries. Likewise, this region accounts for about 17 percent of total African agricultural imports of calories from other African countries, but over 76 percent of those imports originated from other Western African countries (Figure 3.12). The Central African region accounts for the smallest share of intra-African trade in calories, with just 1.4 percent of total intra-African exports and 6.1 percent of imports.

Figure 3.12 Share of intra-African agricultural trade (in calories) destined for, or originating from, outside of the region, 2020



Source: Constructed from the 2022 AATM database.

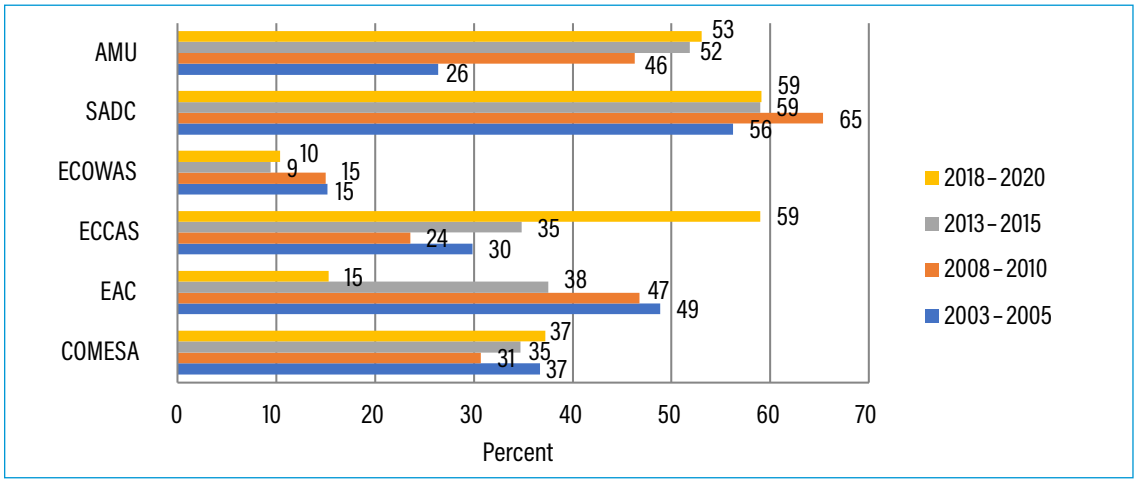
Figure 3.13 considers the portion of intra-African trade exported outside of selected RECs in terms of nutrition content. About 59 percent of the intra-African exports (expressed in calories) from SADC members went to African countries outside of SADC in 2018–2020 (Figure 3.13a). Of total ECOWAS exports of calories to African partners, only about 10 percent went to countries outside of ECOWAS during the same period. These figures support the regional trade flow data presented in Figure 3.11, confirming the relatively low level of regional trade with ECOWAS as well as the importance of SADC as an important supplier of calories (largely grains) for African countries outside of SADC.

For EAC countries, extra-REC exports declined in terms of calories, from 50 percent of their total intra-African exports in 2003–2005 to 15 percent in 2018–2020. In contrast, ECCAS members saw a significant increase in extra-REC exports as a share of intra-African trade, in calories, over the past five years, up from 35 percent in the 2013–2015 period to 59 percent in the 2018–2021 period. In part, this reflects increased grain exports from Rwanda and Burundi (which are members of both EAC and COMESA).

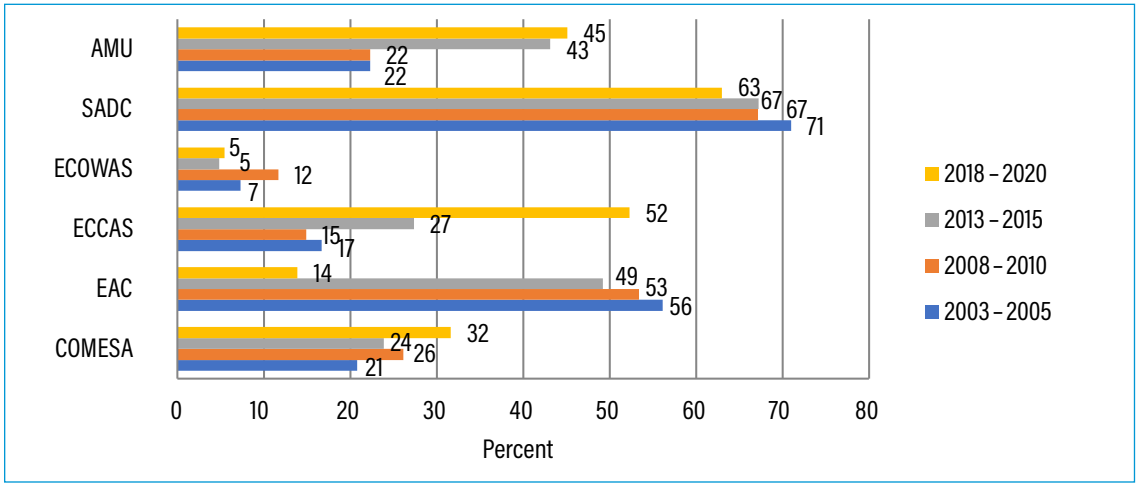
Exports expressed in terms of fat content (Figure 3.13b) and protein content (Figure 3.13c) largely mirror the results for calories. However, ECOWAS exports of protein to non-ECOWAS African countries account for a larger share (25 percent of total ECOWAS intra-African trade) during the 2018–2020 period than either calories (10 percent) or fats (5 percent) during the same period. This reflects the relative importance of livestock product exports from ECOWAS partners to non-ECOWAS African countries.

Figure 3.13 Share of intra-African trade to African countries outside of the REC

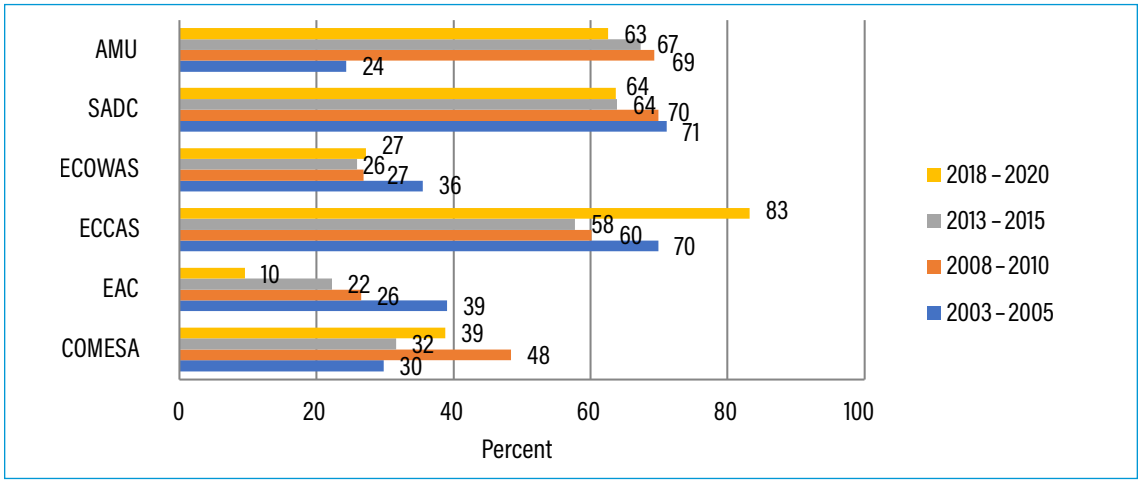
(a) Calories



(b) Fats



(c) Proteins



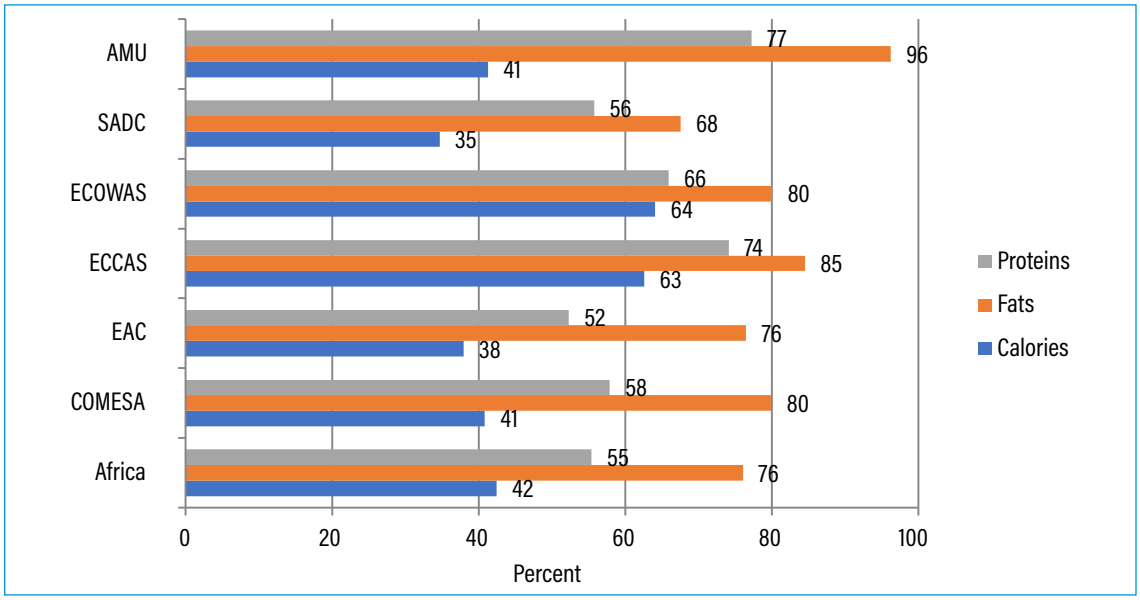
Source: Constructed from the 2022 AATM database.
Note: Trade shares of RECs sum to over 100 percent due to overlapping country membership. COMESA = Common Market for Eastern and Southern Africa; EAC = East African Community; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

Role of processed products in intra-African trade in nutrients

Lastly, we examine the share of nutrient content in intra-African exports of processed agricultural products in total intra-African agricultural exports for selected RECs over the three-year period 2018 to 2020 (Figure 3.14). In this analysis, intra-African exports include exports both within the RECs as well as exports to extra-REC African countries. Generally, processed products account for less than 50 percent of total calories exported by RECs, with the exception of ECOWAS and ECCAS. Not surprisingly, processed products account for proportionately larger shares of protein and fat content. Overall, processed products accounted for 42 percent of calories, 76 percent of fats, and 55 percent of proteins traded within Africa from 2018 to 2020 (compared to 46 percent of trade value; see Figure 3.5). Since the greatest share of processed agricultural products are traded within RECs or within Africa, these results suggest that products rich in fat, such as palm oils, and those rich in protein, such as meat and dairy products, are the most traded processed agricultural products between African countries.

Growing intraregional trade in processed agricultural products has potential implications for nutritional outcomes. Figure 3.14 shows that traded processed products differ in nutritional content from unprocessed products, but further analysis is required both to identify the broad differences between processed and unprocessed traded products for a wider set of nutrients and to differentiate categories of processed food products according to nutritional content. Each processing category comprises a wide range of products of varied nutritional quality. Some processed products may increase the shelf-life of nutrient-rich foods and help to combat undernutrition, while others contribute to overnutrition and noncommunicable diseases (NCDs) (Reardon et al. 2021). However, there has been very little research on the impacts of trade composition on diets and nutrition. Thow et al. (2015) show that trade liberalization in SADC in the past decades was accompanied by increased imports of products associated with NCDs – particularly soft drinks and processed snack foods – both from within SADC and from outside the region and continent.

Figure 3.14 Share of processed products in intra-African agricultural trade, 2018–2020, measured in nutrient content



Source: Constructed from the 2022 AATM database.
Note: Trade shares of RECs sum to over 100 percent due to overlapping country membership. 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; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

The trends in trade in nutritional content described in this section mirror trends in value terms to some extent. For example, the predominant roles of Southern and Eastern Africa in intra-African exports in calorie terms (Figure 3.11, Table 3.1) reflect the roles of SADC and COMESA as leading intra-African exporters in value terms (Table 3.2). However, there are some contrasts, including the steady growth of trade in nutritional content over the past two decades, which does not reflect the decline in trade in value terms that began in 2013. The growing role of processed agricultural products in intra-African agricultural trade reflects increasing consumption of these products in part because of surging demand from urban markets (Sabwa and Collins 2018). The impacts of dietary change on health and nutrition need to be further assessed. The analysis presented here is only a first step; these findings suggest that traded processed agricultural products are relatively rich in protein but also in fat, which underlines concerns that processed food may lead to increased risk of obesity and NCDs related to diet.

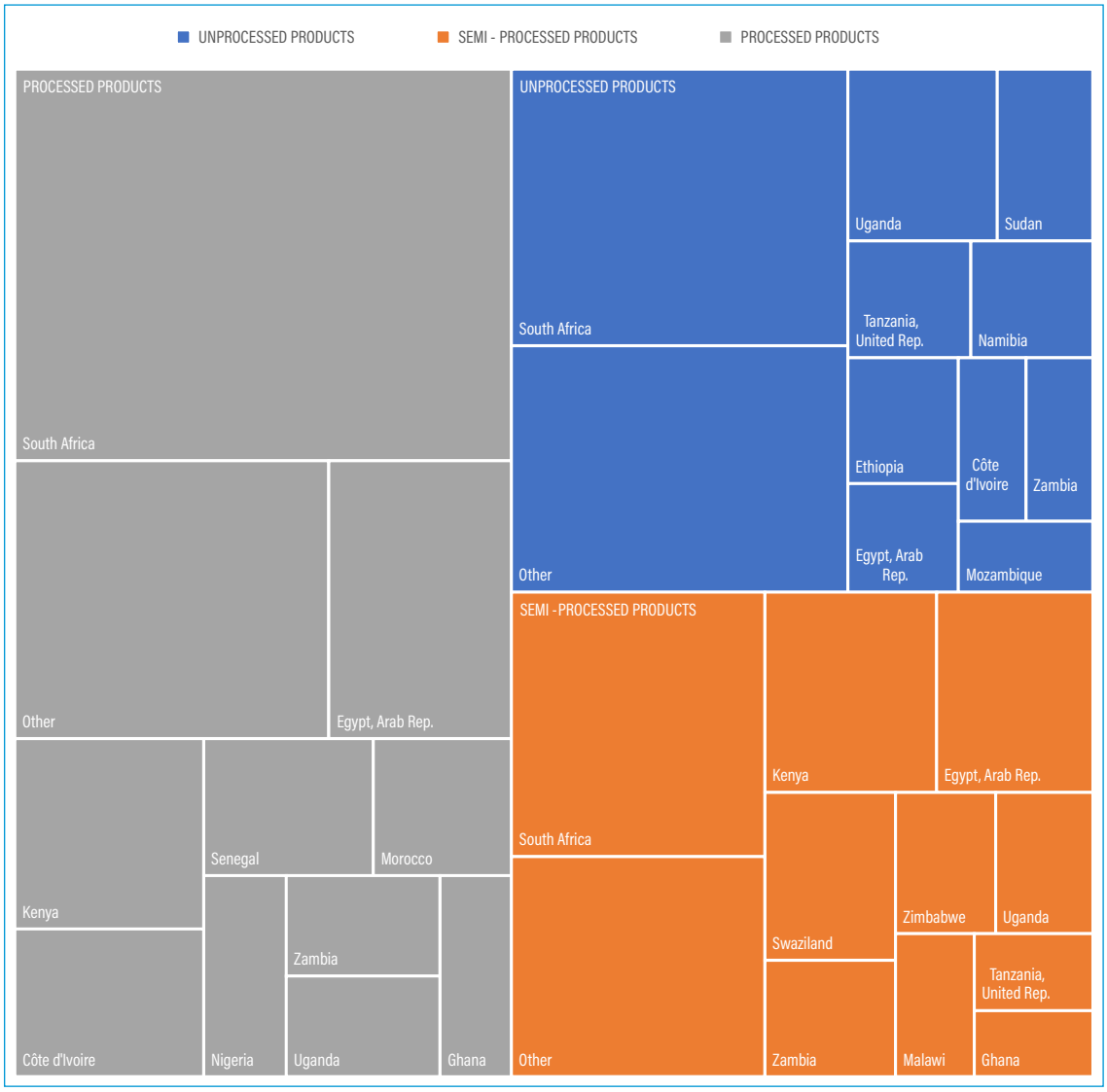
PROCESSED FOOD TRADE AT THE COUNTRY AND PRODUCT LEVEL

Our exploration of aggregate trends in Africa's intraregional agricultural trade, in terms of value and of nutritional content, points to an increasing role of trade in processed food, which can have important impacts on health and nutrition. In this section, we delve deeper into intra-African trade in processed agricultural products, exploring how the trends identified above play out at the country and product level. First, we review countries' roles and performance in intra-African trade in processed products, including their ability to diversify their processed export basket. Then, we identify the top processed and semi-processed products traded within the continent, in terms of value, and examine market dynamics and trade networks for five major products. While the focus is on exploring trends in trade of processed agricultural products, we include some discussion on trade of unprocessed products for comparison purposes.

Country performance in processed food trade

Figure 3.15 shows the top 10 countries that accounted for the largest value of intra-African agricultural exports of unprocessed, semi-processed, and processed products during the 2018–2020 period. South Africa dominates in all categories, accounting for 39 percent of intra-African agricultural exports of processed products, 24 percent of semi-processed exports, and 31 percent of unprocessed exports. Uganda, Egypt, and Zambia also figure among the top 10 exporters in all three categories. Most of the major exporters of unprocessed and semi-processed products are Eastern and Southern African countries, while several Western African countries play leading roles in exports of processed products. In addition to South Africa, other top exporters of processed food products include Egypt, Kenya, Côte d'Ivoire, Senegal, Morocco, and Nigeria.

Figure 3.15 Intra-African agricultural exports by country and processing level, 2018–2020



Source: Constructed from the 2022 AATM database.

Another measure of countries' performance in trade of processed products is their ability to diversify their export baskets. Countries with greater capabilities are expected to competitively produce and export a wider range of products (Bouët and Sall 2021). To assess countries' competitiveness in regional markets for processed agrifood products, we calculate diversity index values. The diversity index shows the number of agricultural products a country exports competitively, measured by revealed comparative advantage (RCA). For this purpose, we use Balassa's (1965) definition of RCA, which is calculated by dividing the share of a product in a given country's intra-African agricultural exports by the share of that product in total intra-African agricultural exports. The RCA thus measures a country's performance in intra-African trade of that product relative to other products and other African countries.

Let X_{rs}^{k} be the intra-African trade flow of product k from country r to country s. With a dot meaning a summation, $X_{r\cdot}$ is the total intra-African exports of country r and $X_{\cdot\cdot}$ the total intra-African agricultural exports. Thus, the RCA of country r for product k, RCA_{r}^{k}, is measured by the share of the product in the country's intra-African exports compared to its share in intra-African agricultural trade as in equation (1):

$$RCA_r^k = \frac{X_{r.}^k / X_{\dot{r}.}}{X_{..}^k / X_{\dot{.}.}} \quad (1)$$

$X_{r.}^k$ and $X_{..}^k$ are the values of country $r's$ intra-African exports of product k and intra-African agricultural exports of product k.

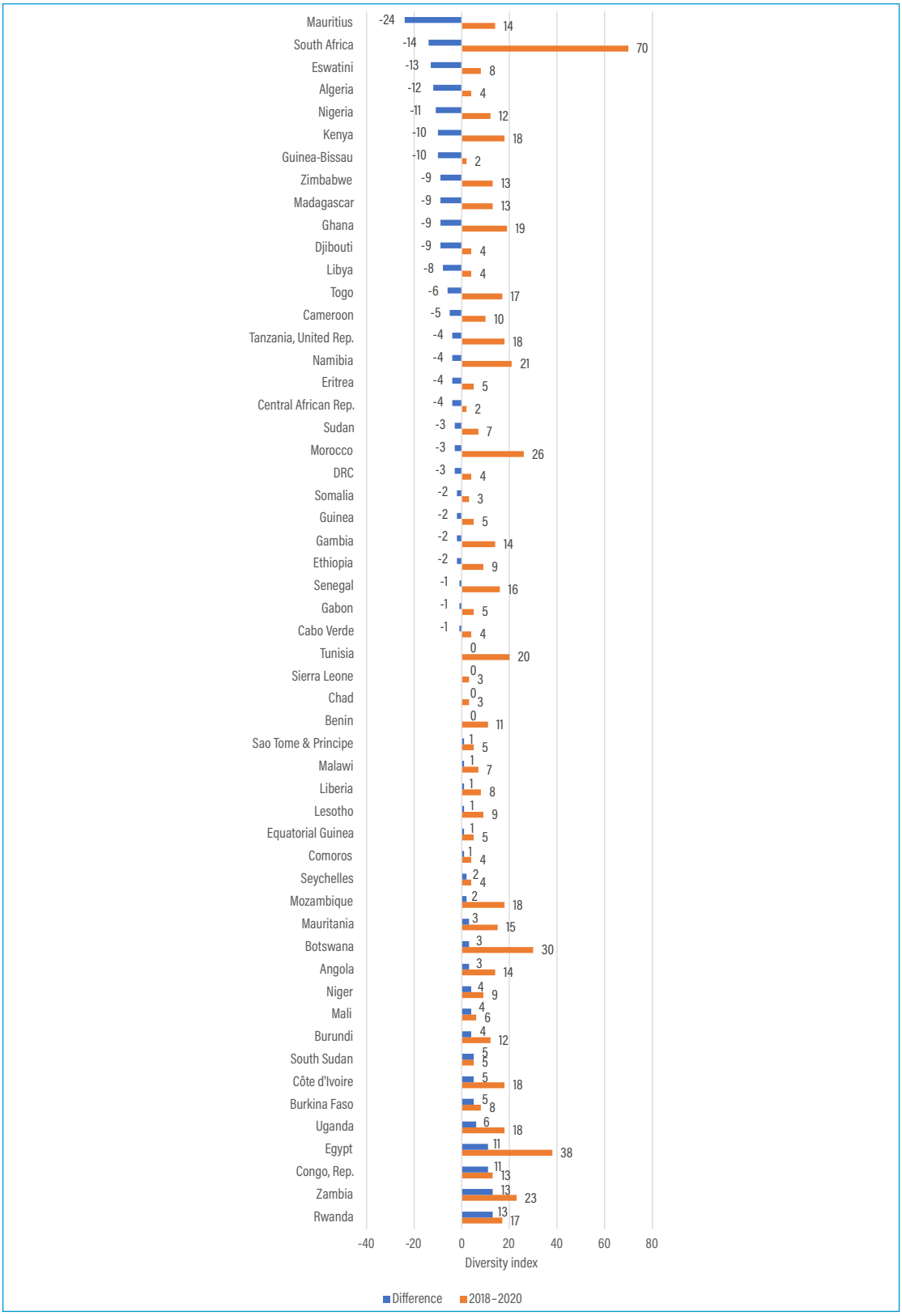
RCA scores greater than one indicate that a country has a revealed comparative advantage in the product within Africa. RCA is used to assess which products a country or a region is best at producing and exporting, relative to other products it could export and to other countries or regions. The measurement of RCA is based on observed trade patterns and therefore reflects all factors that contribute to these patterns, including differences in endowments and productivity as well as the impacts of trade policies.

The diversity index counts the number of agricultural products a country exports competitively, that is the number of products for which a given country has a revealed comparative advantage. A higher diversity index indicates that the country has a relatively large group of products that it exports competitively. Diversification of exports is advantageous because it can help countries overcome export instability or the negative impact of a deterioration in terms of trade in primary products, and thus contributes to their resilience. In 2018–2020, South Africa, Egypt, Botswana, Morocco, Zambia, and Namibia (in decreasing order) had the most diversified intra-African agricultural export baskets, all with more than 20 competitive products out of 122 products (Figure 3.16).

The countries that diversified their exports of agricultural processed goods the most between the two periods (2003–2005 and 2018–2020) are Zambia, Rwanda, Egypt, and Republic of Congo, which all saw an increase in the diversity index of processed agricultural products of more than 10 products. In contrast, countries including Mauritius, South Africa, Eswatini, Algeria, Nigeria, Kenya, and Guinea-Bissau experienced a decline in the diversity index by more than 10 processed products (Figure 3.16).

Not surprisingly, several countries that play leading roles in terms of the value of exports also have high diversity index values, displaying competitiveness across a range of products. South Africa, in particular, has by far the highest diversity index value for processed products. However, its diversity index value has deteriorated somewhat since the early 2000s. Egypt and Zambia, in contrast, are major intra-African exporters that have increased the diversity of their processed agricultural exports since 2003–2005.

Figure 3.16 Diversity index in processed agricultural products, change between 2003–2005 and 2018–2020



Source: Constructed from the 2022 AATM database.

Top processed products in intra-African agricultural trade

After analyzing export trade structure at the country level, we now identify key traded products and examine their trade networks in detail. Table 3.2 shows the most important unprocessed products and semi-processed and processed products[6] traded among African countries. The top 20 processed products account for 48 percent of intra-African agricultural exports by value, while the top 20 unprocessed agricultural products account for 29 percent. Sugar products, oils, and stimulants are prominent among traded processed products, with sugar, palm oil, cigars and cigarettes, and tea accounting for around 20 percent of intra-African agricultural exports. The position of palm oil as a major traded processed product reflects our findings above that intra-African trade in processed agricultural products shows higher fat content than trade in unprocessed products.[7] Among unprocessed products, cereals (including maize), rice, cattle, coffee, and oilseeds play the largest role, together accounting for over 14 percent of total exports.

Table 3.2 Top unprocessed and semi-processed and processed products in intra-African agricultural trade, 2018–2020

Unprocessed			Semi-processed and processed	
Rank	Description	Intra-African export share (%)	Description	Intra-African export share (%)
1	Maize (corn)	4.8	Sugar	5.6
2	Rice	2.5	Palm oil	5.1
3	Bovine animals; live	2.3	Cigars and cigarettes	4.5
4	Coffee	2.1	Tea	4.0
5	Oilseeds and oleaginous fruits	1.8	Wheat flour	3.5
6	Milk and cream	1.7	Fruit juices	2.4
7	Cotton; not carded or combed	1.6	Tobacco	2.2
8	Dates, figs, pineapples, avocados, guavas, mangoes, and mangosteens	1.6	Legumes, shelled	2.2
9	Tobacco, unmanufactured	1.6	Soya-bean oil	2.2
10	Apples, pears, and quinces; fresh	1.6	Sugar confectionery	2.1
11	Vegetables; n.e.c. in chapter 07	1.4	Bread, pastry, cakes, biscuits	1.9
12	Wheat and meslin	0.9	Malt extract	1.8
13	Bananas, including plantains	0.9	Pasta	1.8
14	Onions, shallots, garlic, leeks, and other alliaceous vegetables	0.8	Miscellaneous edible preparations	1.6
15	Citrus fruit	0.7	Sunflower oil	1.5
16	Potatoes; fresh or chilled	0.6	Milk and cream	1.4
17	Nuts, edible	0.6	Chocolate and cocoa products	1.1
18	Groundnuts	0.5	Meat and edible offal of poultry	1.1
19	Grain sorghum	0.5	Beverages, spirits, and vinegar	1.1
20	Seeds, fruit, and spores	0.5	Margarine	1.1
	All	29.3	All	48.3

Source: Constructed from the 2022 AATM database.

6 For the remainder of this section, we use "processed products" to refer to both processed and semi-processed products. Most products listed in Table 3.3 correspond to HS4 product codes; we group processed and semi-processed categories together in this discussion because some HS4 codes combine both processed and semi-processed products. In some cases, we combine several HS4 codes into one product category to improve clarity. HS4 codes corresponding to each product are provided in Appendix Table A3.1.

7 Clearly, several of the top-traded processed products are not important contributors to healthy diets. High intake of sugars and fats is associated with increased risk of NCDs, while cigarettes and cigars carry clear and serious health risks. Trade in these products is economically important and contributes to food security through impacts on incomes of producers, processors, and other value chain actors, but overconsumption of these products has notable costs. Strategies to promote intra-African trade in processed agricultural products should thus consider trade-offs in terms of impacts on nutrition and health.

The remainder of this chapter focuses on the five processed products with the largest export shares (sugar, palm oil, cigars and cigarettes, tea, and wheat flour). To better understand the dynamics of Africa's growing intraregional trade in processed agricultural products, we examine patterns of competitiveness, market dynamics, and network structures and identify tariff measures and other barriers impeding this trade.

First, we characterize the structure of intra-African exports of the top processed agricultural products using the ubiquity index. This index is measured as the number of countries that export a product in which they have an RCA of greater than one. It provides a measure of the relative sophistication of products, with more sophisticated, less easily produced products showing lower ubiquity values. Table 3.3 shows that for the most regionally traded agricultural goods, processed products have slightly higher ubiquity values than unprocessed products during the 2018–2020 period. The average ubiquity index for processed agrifoods is estimated at 10 countries, while for unprocessed products, the ubiquity index is around 9 countries. Wheat flour, sugar, and palm oil have ubiquity scores indicating that over one-fifth of African countries have a revealed comparative advantage in the product. This suggests that the most commonly traded products are still relatively accessible to a number of African countries. ECOWAS has the greatest advantage for wheat flour and palm oil, among these key products, with respectively 5 and 7 countries. In addition, 50 percent of SADC countries have a revealed comparative advantage in sugar. Tea and cigars and cigarettes appear to be the most sophisticated products, accessible to fewer countries, the majority of which are in the Eastern and Southern regions.

Table 3.3 Ubiquity index for selected processed products

Products		2018–2020								
		Africa	ECOWAS	ECCAS	COMESA	SADC	AMU	EAC	CEMAC	SACU
Processed	Cigars and cigarettes	5	2	1	2	1	0	2	0	1
	Palm oil	16	7	4	7	3	0	3	2	0
	Sugar	13	1	2	7	8	2	0	1	1
	Tea	5	0	2	5	2	0	3	0	0
	Wheat flour	13	5	3	3	3	2	3	0	1
	Average ubiquity	10	3	2	5	3	1	2	1	1
Unprocessed	Bovine animals	7	1	1	4	2	0	1	0	2
	Coffee,	11	4	4	5	2	0	4	1	0
	Maize (corn)	5	0	0	3	4	0	2	0	1
	Oilseeds	12	6	3	3	0	0	0	2	0
	Rice	9	2	3	2	3	1	2	2	0
	Average ubiquity	9	3	2	3	2	0	2	1	1
	Total number of countries	54	15	11	21	16	5	6	6	5

Source: Constructed from the 2022 AATM database.
Note: Ubiquity index values measure the number of countries showing revealed comparative advantage (RCA) in a product. The sum of values shown for RECs exceeds the African total due to overlapping REC membership. 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; SADC = Southern African Development Community; AMU = Arab Maghreb Union; CEMAC = Communauté Economique et Monétaire de l'Afrique Centrale; SACU = Southern African Customs Union."

Dynamics of key players and network structure of selected processed agricultural products

Although only a limited number of countries (fewer than 16) are competitive in trading sugar, palm oil, cigars and cigarettes, tea, or wheat flour, a look at the region's trade networks shows that at least 30 countries are actively participating in trade in these products. In this section, we provide more detailed analysis of intra-African trade networks for the top five traded processed products. Table 3.4 summarizes African countries' participation in these trade networks. Participation as exporters was widespread, with well over half of African countries exporting each product during both the 2003–2005 and 2018–2020 time periods. Import participation was even broader – nearly all African countries imported these products during both periods. For all products except palm oil, the number of exporting countries decreased moderately between the two periods. Exporters became most concentrated for tea, with the number of exporters decreasing from 40 to 31. For all products and in both periods, a majority of countries participated as both exporters and importers.

The final two columns of Table 3.4 report network density – calculated as the number of realized trade links in the network divided by the number of possible links among participating countries. For example, in the sugar network, there were 2,756 possible trade flows during the first period (or 53 × 52, as the 53 participating countries each had 52 potential trade partners); of these, 492 trade flows were observed, or 17.9 percent of possible flows. The density values are between 10 and 20 percent for most products, somewhat higher than the density values reported for unprocessed agricultural products in the 2021 AATM (Goundan and Tadesse 2021), but still indicative of relatively sparse trade networks. The low densities reflect the analysis of De Benedictis and Tajoli (2010), who found that trade network density values for Africa are lower than those of all other continents. These findings may also reflect the low quality of trade data in Africa, with large shares of informal and unrecorded trade not included. Most density values did not vary significantly between the 2003–2005 and 2018–2020 periods, and in both periods the network density of sugar is noticeably higher than that of the other products.

Table 3.4 Intra-African trade network properties for top processed products, 2003–2005 and 2018–2020

	Number of active countries								Total trade links		Network density (%)	
	All		Exporters		Importers		Both					
Period	1	2	1	2	1	2	1	2	1	2	1	2
Sugar	53	54	45	41	52	54	44	41	492	540	17.85	18.87
Palm oil	53	53	39	40	51	52	37	39	354	330	12.84	11.97
Cigars and cigarettes	53	51	40	36	52	50	39	35	376	356	13.64	13.96
Tea	50	52	40	31	50	51	40	30	314	324	12.82	12.22
Wheat flour	51	53	39	35	50	47	38	29	332	270	13.02	9.80

Source: Constructed from the 2022 AATM database.
Note: Period 1 = 2003–2005; Period 2 = 2018–2020.

Table 3.5 shows indicators on market concentration, including the share of trade in each product accounted for by the top 10 flows and the shares of the top exporter–importer pairs. For nearly all products examined, more than half of intra-African trade occurs among a limited group of partners: the share of the top 10 trade flows ranges from 47 to 84 percent during the 2003–2005 period and from 55 to 87 percent during the 2018–2020 period.[8] In both periods,

8 This degree of concentration is comparable to that observed among LAC countries, for which the top 10 trade flows accounted for 53–81 percent of intraregional trade in the selected products in 2003–2005 and 55–87 percent in 2018–2020, but higher than that observed in the European Union region, where shares of the top 10 flows span from 47 to 64 percent and 38 to 64 percent during the two time periods, respectively.

trade in sugar was the least concentrated and trade in tea was the most concentrated; the tea trade network also became more concentrated over time. In the second period, the top trade flow – Kenyan tea exports to Egypt – accounted for a full 57 percent of intra-African tea trade.

The top importer–exporter country pairs shown in the last three columns of Table 3.5 reflect the importance of REC membership in intra-African trade. All country pairs for all products and both time periods represent within-REC trade. Most country pairs are also members of the same geographic region; exceptions include trade between Egypt and other members of COMESA located in Eastern Africa. About half of the top country pairs share a border.

Table 3.5 Largest intra-African trade flows for top processed products, 2003–2005 and 2018–2020

Product	Period	Share of top 10 flows (%)	Top 3 country pairs (exporter-importer) and trade shares					
			Pair 1		Pair 2		Pair 3	
Sugar	2003–2005	47.0	SWZ – ZAF	13.7	ZMB – COD	4.7	ZAF – BWA	4.5
	2018–2020	54.6	SWZ – ZAF	23.5	ZAF – MOZ	5.4	ZAF – NAM	4.8
Palm oil	2003–2005	66.2	CIV – NER	15.1	ZAF – ZMB	10.5	CIV – SEN	9.3
	2018–2020	61.2	KEN – UGA	14.0	GHA – SEN	11.2	CIV – MLI	8.3
Cigars and cigarettes	2003–2005	58.9	KEN – SOM	13.5	ZAF – BWA	10.6	ZAF – NAM	7.9
	2018–2020	56.9	KEN – SOM	9.9	KEN – MUS	8.0	NGA – NER	7.6
Tea	2003–2005	83.8	UGA – KEN	20.7	KEN – SDN	18.8	KEN – EGY	11.8
	2018–2020	87.3	KEN – EGY	57.1	KEN – SDN	10.1	MWI – ZAF	4.6
Wheat flour	2003–2005	53.7	MAR – LBY	9.5	TUN – LBY	7.5	ZAF – BWA	7.4
	2018–2020	51.4	EGY – ERI	14.8	EGY – MDG	12.3	EGY – SOM	11.5

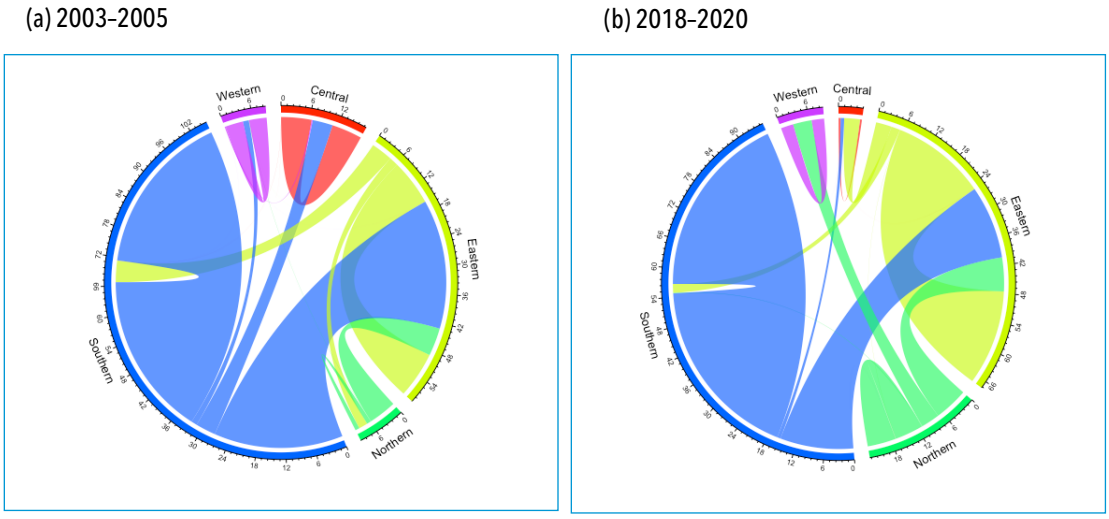
Source: Constructed from the 2022 AATM database.
Note: BWA = Botswana; CIV =Côte d'Ivoire; COD = Democratic Republic of the Congo; EGY = Egypt; ERI = Eritrea; GHA = Ghana; KEN = Kenya; LBY = Libya; MAR = Morocco; MDG = Madagascar; MLI = Mali; MOZ = Mozambique; MUS= Mauritius; MWI = Malawi; NAM = Namibia; NER = Niger; NGA = Nigeria; SDN= Sudan; SEN = Senegal; SOM = Somalia; SWZ = Eswatini; TUN = Tunisia; UGA = Uganda; ZAF = South Africa; ZMB = Zambia.

Figures 3.17–3.21 depict trade in selected products among geographic subregions of Africa. As in Figure 3.11, each region represents a portion of the outside of the circle. The thickness of a trade flow and the numbers on the scale surrounding the figure correspond to the share of the trade flow in total intra-African trade in the product, and its color corresponds to the exporting region. For example, Figure 3.17 illustrates the trade in sugar during the 2003–2005 period, and the blue flow between Southern Africa and Eastern Africa represents exports from Southern to Eastern Africa, which account for 27 percent of total intra-African sugar exports during the period.

For nearly all products and time periods, the majority of trade takes place within geographic regions. This reflects multiple factors facilitating trade among neighboring countries, including lower transport costs, language and cultural similarities, and the existence of trade agreements. The five products show contrasting patterns of change over time, with the share of intra-African trade that is within regions increasing for palm oil and sugar and decreasing for tea and wheat flour. The most dramatic changes in geographic concentration occurred for tea, for which the share of intra-African trade taking place within geographic regions declined from 69.1 to 15.6 percent, largely due to increased flows from Eastern to Northern Africa; this reflects the major Kenya–Egypt trade relationship shown in Table 3.5.

Southern Africa is the largest sugar exporter by far, accounting for 66.8 percent of total intra-African sugar exports in the first period and 54.8 percent in the second period (Figure 3.17). These exports are largely directed within its region and to Eastern African countries. Eastern Africa – which largely exports within the region – and Northern Africa increased their shares in intra-African sugar trade between the two periods. Northern African sugar exports were mainly directed to Eastern Africa during both periods, although the share traded within Northern Africa increased over time. Western and Central Africa decreased their shares in intra-African sugar trade between the two periods.

Figure 3.17 Intra-African sugar trade, regional shares

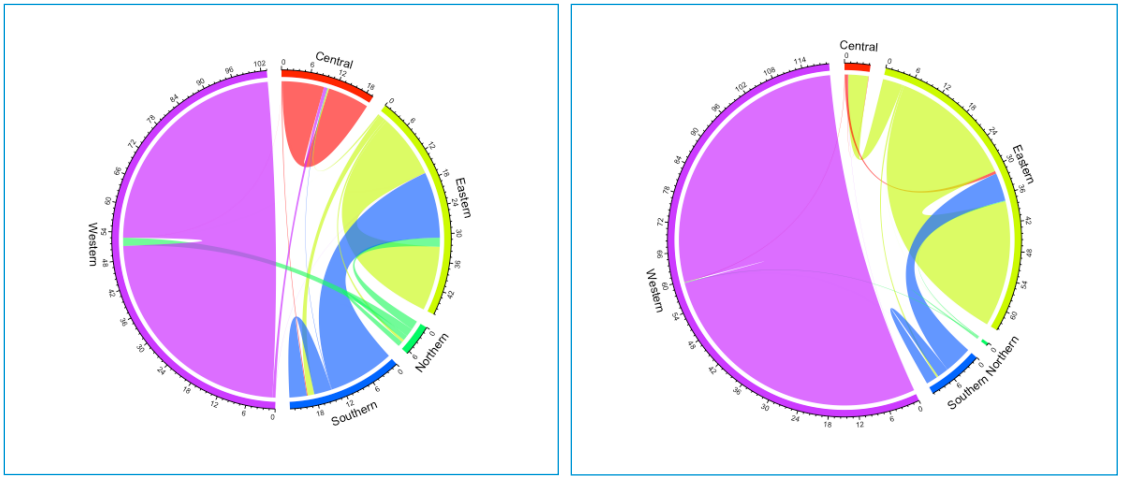


Source: Constructed from the 2022 AATM database.
Note: Regions are represented by portions of the circle corresponding to their share in intra-African agricultural exports of the product. Arcs represent trade flows between and within regions, with the width of the arc corresponding to the magnitude of the flow and its color corresponding to the exporting region. The numbers around the circle indicate the share of a trade flow in total intra-African exports of the product.

Intra-African trade in palm oil is dominated by Western Africa, particularly in the 2018–2020 period, when Western Africa accounted for 59.6 percent of intra-African exports (Figure 3.18). Virtually all Western African palm oil exports are directed to other countries in the region. Eastern Africa significantly increased its share in intra-African palm oil trade over time, providing 31.0 percent of intra-African exports in the second period; again, the majority of these exports are to other Eastern African countries. Southern, Northern, and Central Africa saw their trade shares decrease between the two periods. The share of exports traded within geographic regions during the second period – 88.5 percent – is the largest of the five products examined. This reflects a very high geographic concentration of trade in Western and Eastern Africa. The other regions broke the pattern by directing more palm oil exports to Eastern Africa than to their own regions in one or both periods.

Figure 3.18 Intra-African palm oil trade, regional shares

(a) 2003–2005 (b) 2018–2020

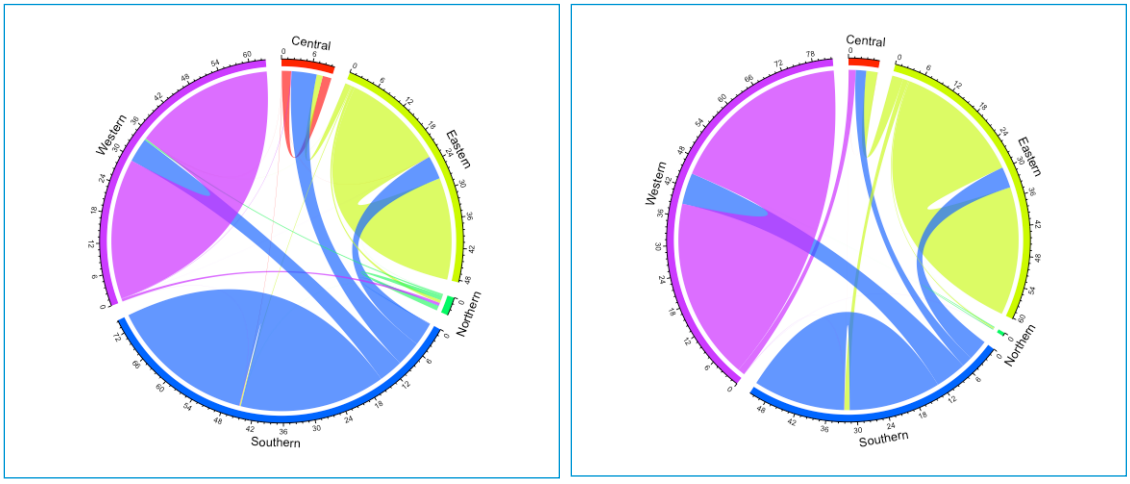


Source: Constructed from the 2022 AATM database.
Note: Regions are represented by portions of the circle corresponding to their share in intra-African agricultural exports of the product. Arcs represent trade flows between and within regions, with the width of the arc corresponding to the magnitude of the flow and its color corresponding to the exporting region. The numbers around the circle indicate the share of a trade flow in total intra-African exports of the product.

Western, Eastern, and Southern Africa are major players in intra-African trade in cigars and cigarettes, but between the two time periods, Western Africa increased its share at the expense of the other regions and displaced Southern Africa as the leader in cigar and cigarette exports (Figure 3.19). Trade in cigars and cigarettes is highly regional, with only minor trade flows between geographic regions. Southern Africa is the only region that directs over a quarter of its exports outside its own region, mostly to Western and Eastern Africa.

Figure 3.19 Intra-African trade in cigars and cigarettes, regional shares

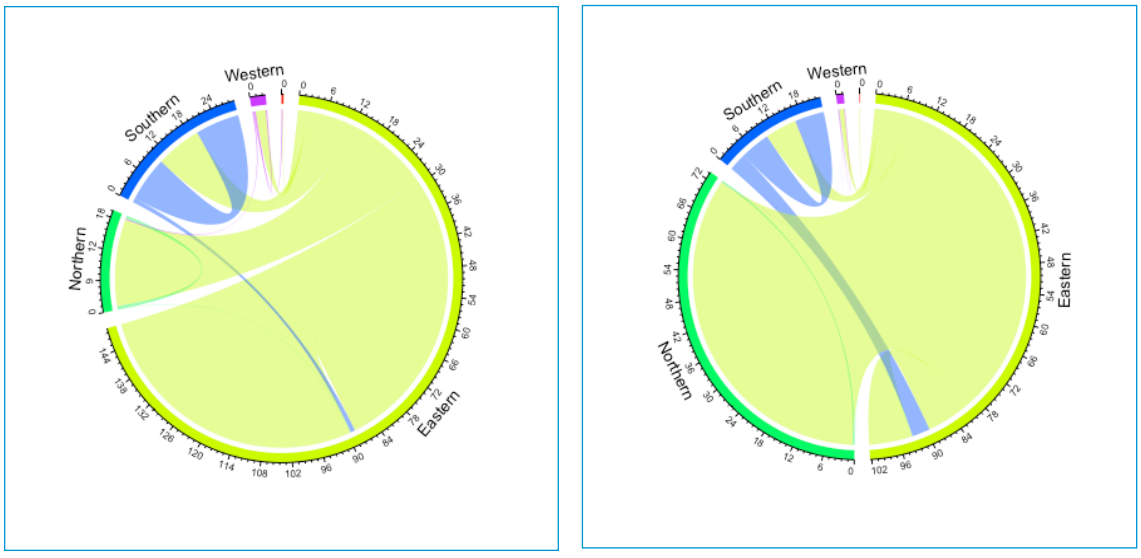
(a) 2003–2005 (b) 2018–2020



Source: Constructed from the 2022 AATM database.
Note: Regions are represented by portions of the circle corresponding to their share in intra-African agricultural exports of the product. Arcs represent trade flows between and within regions, with the width of the arc corresponding to the magnitude of the flow and its color corresponding to the exporting region. The numbers around the circle indicate the share of a trade flow in total intra-African exports of the product.

Of the five products examined here, tea shows by far the highest concentration of exports from a single region (Figure 3.20). Nearly 90 percent of intra-African tea exports originate from Eastern Africa. During the 2003–2005 period, Eastern Africa was also the largest importer of tea, accounting for around 60 percent of total intra-African tea imports (nearly all from other Eastern African countries). However, Northern Africa greatly increased its tea imports over time, accounting for over 70 percent of intra-African tea imports during the 2018–2020 period (again, with nearly all imports originating from Eastern Africa). The major trade flows between Eastern and Northern Africa during this period reflect the high volume of trade between Kenya and Egypt (Table 3.5) and give tea the distinction of being the only product examined for which less than half of intra-African trade took place within geographic regions. In addition to Eastern Africa, the only other region with substantial tea exports is Southern Africa, which provided around 10 percent of intra-African tea exports during both periods.

Figure 3.20 Intra-African tea trade, regional shares



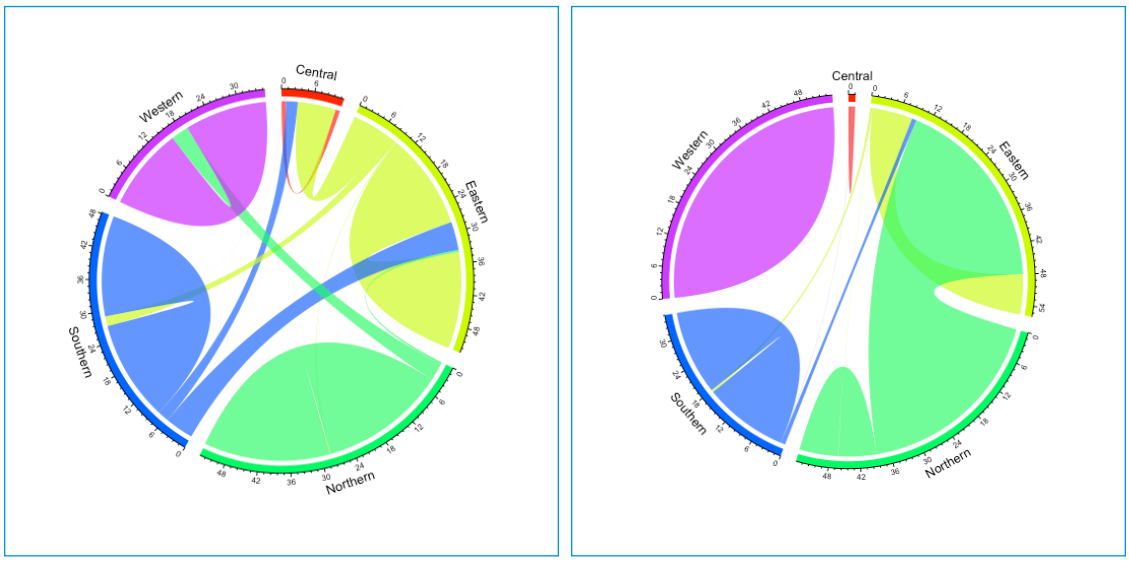
Source: Constructed from the 2022 AATM database.
Note: Regions are represented by portions of the circle corresponding to their share in intra-African agricultural exports of the product. Arcs represent trade flows between and within regions, with the width of the arc corresponding to the magnitude of the flow and its color corresponding to the exporting region. The numbers around the circle indicate the share of a trade flow in total intra-African exports of the product.

Of the five processed products examined, wheat flour is the only one for which Northern Africa plays the predominant role in intra-African exports (Figure 3.21). During the 2003–2005 period, Northern, Eastern, and Southern Africa participated equally, each accounting for 27–28 percent of intra-African wheat flour exports. However, Northern Africa increased its share to 46 percent during the 2018–2020 period. Although Northern Africa's wheat flour exports were largely intra-regional during the first period, most of its exports were directed to Eastern African countries during the second period; this reflects the high volume of wheat flour exports from Egypt to Eritrea and Somalia (Table 3.5). This Northern Africa–Eastern Africa flow represented nearly 40 percent of intra-African trade in wheat flour during that period.

Figure 3.21 Intra-African trade in wheat flour, regional shares

(a) 2003–2005

(b) 2018–2020



Source: Constructed from the 2022 AATM database.
Note: Regions are represented by portions of the circle corresponding to their share in intra-African agricultural exports of the product. Arcs represent trade flows between and within regions, with the width of the arc corresponding to the magnitude of the flow and its color corresponding to the exporting region. The numbers around the circle indicate the share of a trade flow in total intra-African exports of the product.

TRADE BARRIERS BY STAGE OF PROCESSING

Trade policies are important determinants of regional integration. Africa has significantly reduced trade tariffs in recent years, and further reduction is expected under the AfCFTA schemes. Yet, tariffs are only one way of limiting trade. Nontariff measures (NTMs) are of particular concern to exporters and importers in developing countries as they can potentially affect trade in goods, changing quantities traded or price or both. In this section, we examine the prevalence of barriers to intraregional trade, focusing on the five processed products discussed in the preceding section: cigars and cigarettes, palm oil, sugar, tea, and wheat flour. For comparison, we will also examine tariffs and NTMs in Africa's main trade partner regions and in other world regions for these goods, as well as tariff barriers for unprocessed products.

Africa's main partner regions

Before discussing barriers to intraregional trade in Africa and other regions, we briefly review trade patterns in the five selected products, including the role of imports from outside of Africa and intra-African trade in supplying African markets. Table 3.6 shows Africa's main partner regions for imports of the selected products. The Asia-Pacific region is Africa's top partner for most of these products. African countries import 54 percent of cigars, 89 percent of palm oil, and 38 percent of wheat flour from Asia, and 50 and 66 percent of sugar is imported respectively from Latin America and the Caribbean (LAC) and from the BRICS (Brazil, Russia, India, China, and South Africa). Tea and wheat flour are predominantly traded within the African continent (77 percent and 45 percent respectively), and the Asia-Pacific region is the main external partner for tea and wheat flour imports.

Table 3.6 Distribution of African imports of selected processed products by origin, 2018–2020

Product	Africa	Asia-Pacific	BRICS	Eastern Europe	EU	LAC
Cigars and cigarettes	22.1%	54.0%	6.9%	6.2%	8.6%	0.5%
Palm oil	9.8%	89.3%	1.1%	0.0%	0.2%	0.0%
Sugar	18.2%	23.8%	65.9%	1.2%	6.7%	50.4%
Tea	76.5%	21.6%	13.0%	0.5%	1.3%	0.0%
Wheat flour	45.3%	38.2%	5.0%	3.2%	12.7%	0.1%

Source: Constructed from the 2022 AATM database.
Note: BRICS = Brazil, Russia, India, China, and South Africa; EU = European Union; LAC = Latin America and the Caribbean. Values do not sum to 100 percent because regions overlap. Brazil is in both BRICS and LAC, while India and China are in both BRICS and Asia-Pacific.

Table 3.7 presents the share of intraregional trade in total trade of the five processed products for Africa, major RECs, and other world regions. Of these products, intra-African trade plays the largest role for tea – over three-fourths of African countries' tea exports are directed within the continent. The next largest intraregional trade share is for wheat flour, at 45 percent. For most of the products, intraregional trade in other world regions generally accounts for a much larger share of their total trade than it does in Africa. Tea is the exception – Africa's intraregional trade share of 76.5 percent is the highest of the regions examined. The European Union shows the highest intraregional trade shares for three products (cigars and cigarettes, sugar, and wheat flour).

Table 3.7 also shows the share of intra-REC imports in total imports of each REC. AMU and ECCAS have the lowest intra-REC trade shares for most products. A large share of tea trade occurs not only within Africa but within RECs, with over 75 percent of tea imported from countries in the COMESA, EAC, and SADC regions coming from countries within the same REC.

Table 3.7 Share of intraregional imports in total imports of selected processed products, Africa, and other regions, 2018–2020

	Africa	COMESA	EAC	ECCAS	ECOWAS	SADC	AMU	Asia-Pacific	Eastern Europe	EU	LAC
Cigars and cigarettes	22.1%	9.8%	72.9%	0.4%	45.5%	40.3%	0.1%	65.0%	71.9%	88.4%	48.0%
Palm oil	9.8%	4.9%	8.0%	3.5%	22.3%	4.8%	0.1%	99.8%	8.4%	25.9%	68.7%
Sugar	18.2%	13.5%	8.7%	3.1%	2.3%	57.3%	4.0%	43.0%	45.3%	78.3%	49.6%
Tea	76.5%	80.8%	90.4%	0.7%	0.9%	77.5%	0.1%	55.9%	12.9%	35.5%	20.6%
Wheat flour	45.3%	50.5%	40.1%	9.4%	33.2%	24.4%	6.5%	88.2%	64.5%	95.0%	63.4%

Source: Constructed from the 2022 AATM database.
Note: 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; SADC = Southern African Development Community; AMU = Arab Maghreb Union; EU = European Union; LAC = Latin America and the Caribbean.

Analysis of tariff measures for selected processed products

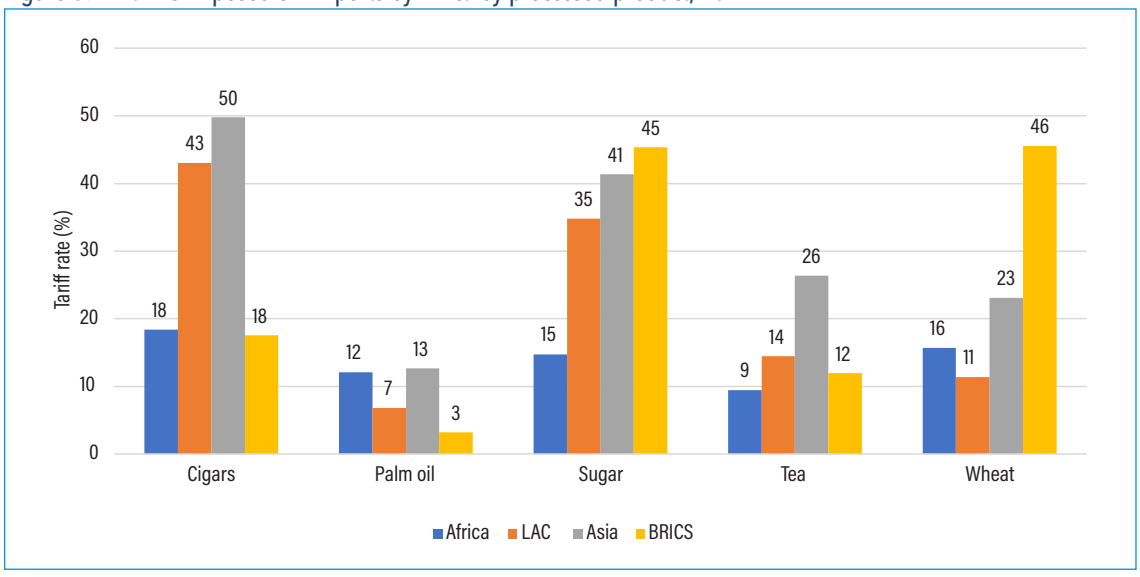
Tariffs have multiple functions, including providing revenue for governments and shielding domestic industries from competition (METI 2002). At the global level, since 1947, the General Agreement on Tariffs and Trade (GATT), which led to the creation of the World Trade Organization (WTO), has been central to an ongoing process of tariff reductions. In Africa, the AfCFTA

aims to reduce tariffs among member states and to address related policy areas such as trade facilitation, services, and regulatory measures. AfCFTA countries have between 5 and 10 years to reduce tariffs on 90 percent of products traded under this regional trade agreement.

Comparison between tariffs imposed and faced by Africa

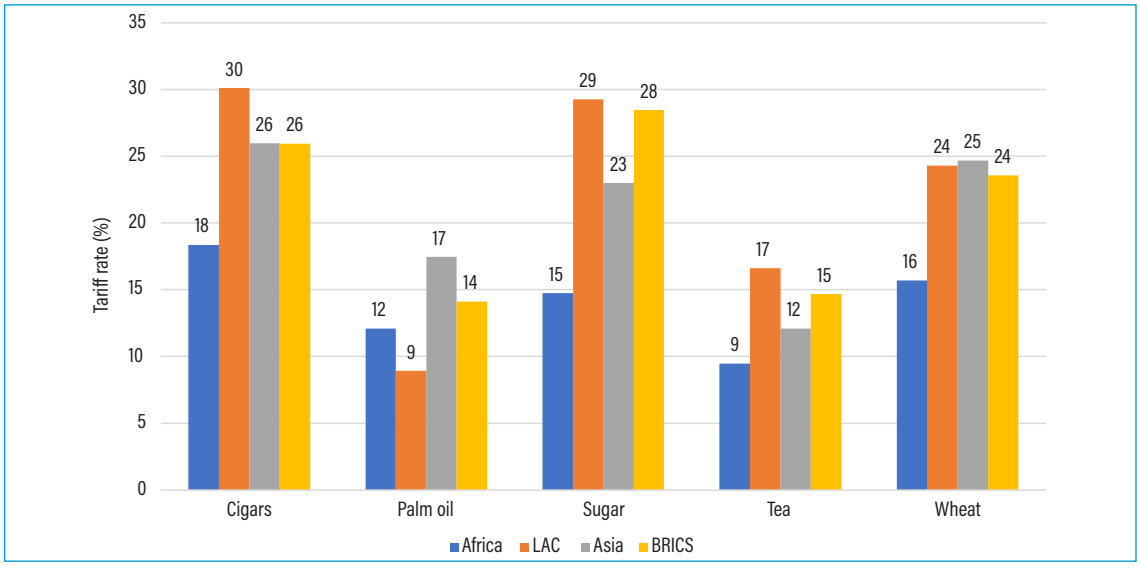
African countries are imposing fewer tariff constraints on their African counterparts than the Asia-Pacific, LAC, and BRICS regions for most of the products (Figure 3.22). (Of the five products, palm oil imported to Africa from LAC is the only one that faces a lower tariff rate than intra-African imports, 9 versus 12 percent.) This should facilitate Africa's regional integration. Africa both faces relatively high tariff barriers on its exports to Asia of these five major processed products (Figure 3.23) and imposes high tariff barriers on its imports from Asia (Figure 3.22). Despite this, the continent depends heavily on imports from Asia of several of the selected products.

Figure 3.22 Tariffs imposed on imports by Africa by processed product, 2019



Source: Constructed from the MAcMap-HS6 database. We thank Houssein Guimbard from CEPII for access to this database

Figure 3.23 Tariffs faced by African exports by processed product, 2019

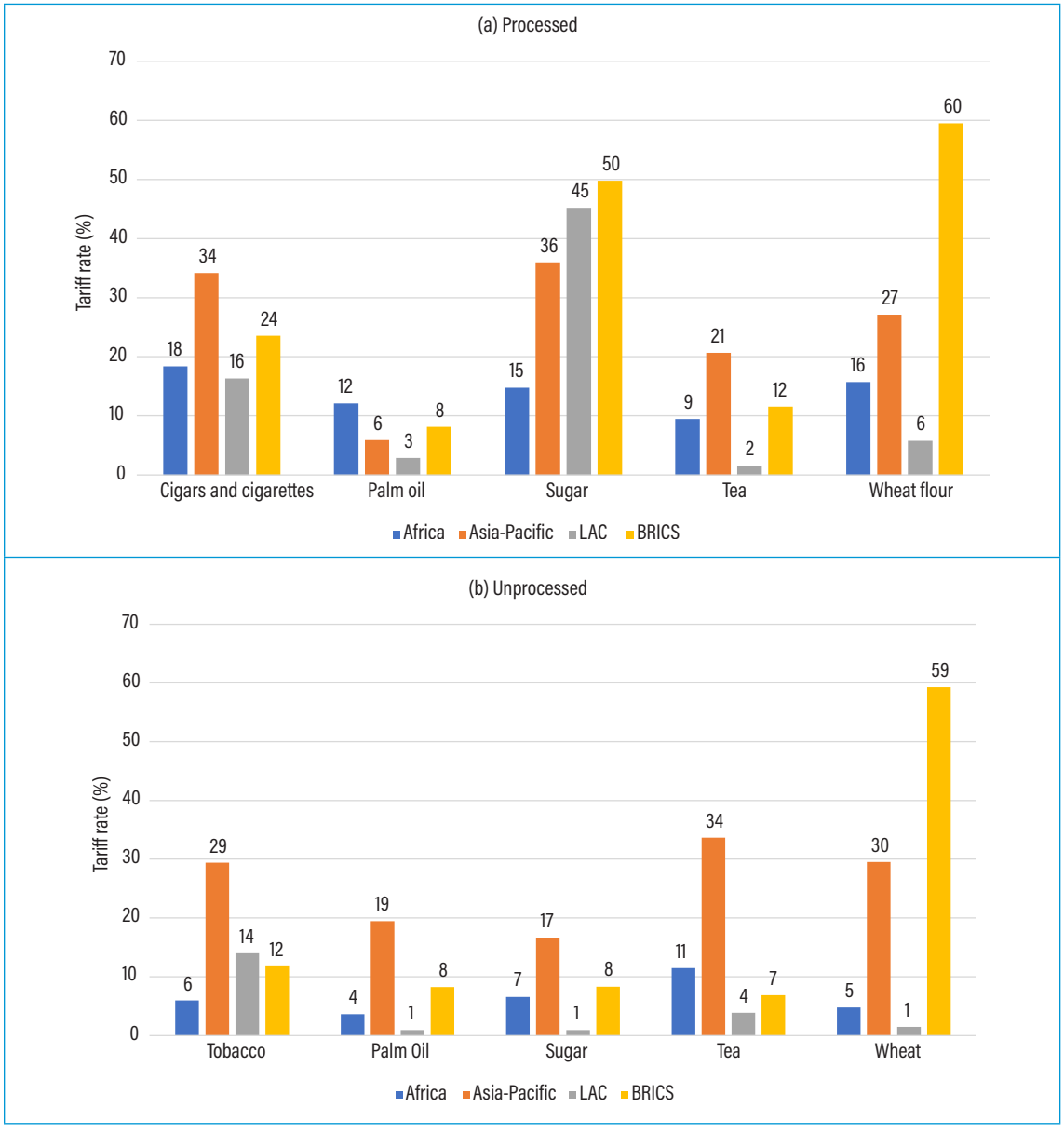


Source: Constructed from the MAcMap-HS6 database.
Note: BRICS = Brazil, Russia, India, China, and South Africa; LAC = Latin America and the Caribbean.

Intraregional tariffs (Africa compared to Asia, LAC, and BRICs)

Figure 3.24a compares the intraregional tariffs imposed in Africa, Asia-Pacific, LAC, and the BRICS on processed products. It shows that Africa applies lower intraregional tariff rates than Asia does to cigars and cigarettes, sugar, tea, and wheat flour. However, compared to total imports, intraregional trade is smaller in Africa than other regions. Using LAC as a benchmark, we see that countries from Africa, Asia-Pacific, and BRICS on average apply a higher intraregional tariff to these processed products, except sugar, than LAC does (Figure 3.24a). Overall, intraregional trade plays a less prominent role in Africa than in LAC for most of the selected products, while other groups including the Asia-Pacific region trade more within their regions than LAC (Table 3.7). The stronger intraregional trade performance of Asia-Pacific despite higher tariffs than LAC suggests that, beyond the impact of tariff barriers in intraregional trade performance, external non-tariff factors can also restrict intraregional trade.

Figure 3.24 Intraregional tariffs for processed and unprocessed products, 2019



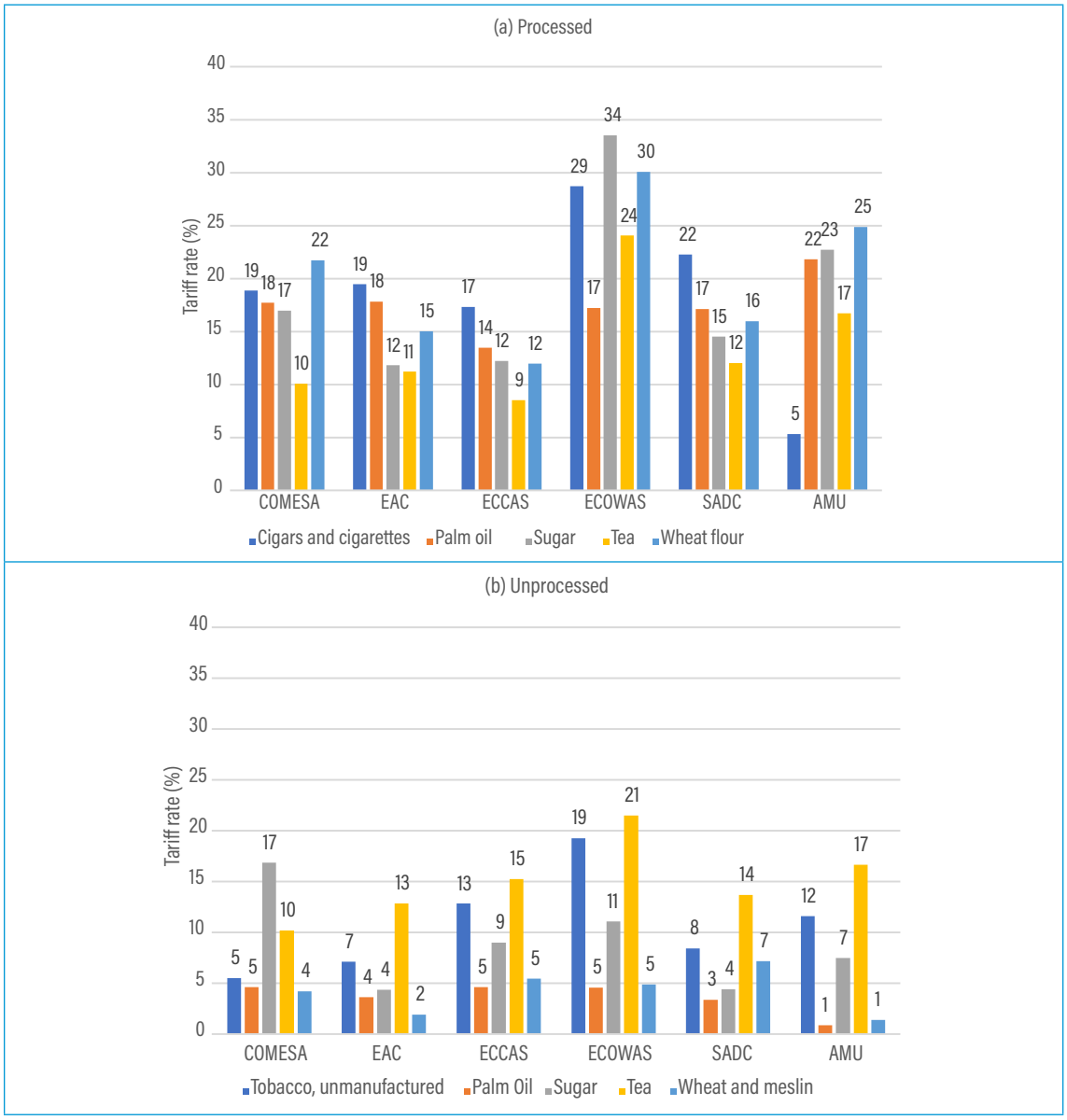
Source: Constructed from the MAcMap-HS6 database.
Note: BRICS = Brazil, Russia, India, China, and South Africa; LAC = Latin America and the Caribbean.

Tariffs faced by RECs (intra-REC and extra- REC trade)

Figure 3.25 shows the level of protection for the five processed products and their unprocessed sources using the average tariff rates imposed by African countries on different RECs. All products face average intra-African tariff rates ranging from a low of 9.5 percent for tea to around 18.4 percent for cigars and 15.7 percent for wheat flour (Figure 3.24a).

The share of intraregional trade in total imports is higher for tea where tariffs are lower. When we compare tariffs faced by RECs, tariffs imposed on tea are lower in ECCAS, COMESA, SADC, and EAC where tea is exported primarily within RECs (Figure 3.25). In contrast, AMU and ECOWAS face greater tariff constraints to exporting tea within Africa. Looking across all these products, ECOWAS countries can trade freely within the region but face higher tariff barriers outside of the REC, with higher tariff rates for all the processed products except palm oil.

Figure 3.25 Tariffs imposed by Africa to RECs for selected processed products, 2019



Source: Constructed from the MAcMap-HS6 database.
Note: 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; SADC = Southern African Development Community; AMU = Arab Maghreb Union.

Tariff escalation

As trade in processed agricultural products is growing faster than in primary agricultural products, it is interesting to look at the impact of trade policies on tariff escalation (that is, an increase in tariffs along processing chains). For example, Figure 3.25 shows that in Africa, average tariffs for cigars and cigarettes are three times higher than for unmanufactured tobacco. The same holds for palm oil, sugar, and wheat, for which processed products are subject to much higher tariffs (two to three times those on unprocessed products). The disparity is even greater at the REC level for palm oil and wheat, where tariffs are six and seven times higher on average. AMU shows the greatest impact: processed palm oil and wheat flour face tariffs 26 and 18 times higher, respectively, than palm oilseeds and unprocessed wheat.

At the regional level, Figure 3.24b also highlights lower tariffs on unprocessed products within regions or blocs. However, as was the case Africa-wide (recall Figure 3.22), tea is a different case and does not face escalating tariffs in Asia and LAC. Lessons could be learned from the experience of Asia, where unprocessed products are more protected in order to promote value addition and export diversification.

In summary, tariff escalation prevails for most of the products selected. It is more pronounced in commodity sectors like palm oil and wheat, which are largely imported. Therefore, reducing tariff escalation is considered critical, especially for countries dependent on exports. Some evidence shows that tariff escalation has the potential to hinder the growth of agricultural processing in exporting countries. It reduces demand for more processed imports from exporting countries, and hence limits the expansion of their processing industries and export diversification (Elamin and Khaira 2003; Cheng 2007; Antràs et al. 2022).

Analysis of NTMs for major processed products

In addition to tariffs, nontariff measures (NTMs) present serious barriers to intra-African trade. NTMs comprise a range of trade-related policy measures that can be broadly classified as import-related measures — including sanitary and phytosanitary (SPS) measures, technical barriers to trade (TBTs), pre-shipment inspections and other formalities, and nontechnical measures such as subsidies and rules of origin — or export-related measures. NTMs can serve important goals, such as SPS measures put in place to ensure food safety and protect human, plant, and animal health. They can facilitate trade in some cases. For example, Bouët and Sall (2021) found that SPS regulations related to meat in Burkina Faso and Côte d'Ivoire had a positive impact on trade, likely due to the importance of sanitary certificates in informing consumers about product quality. However, many studies have found NTMs to be strongly trade-reducing on balance, with more severe impacts than tariffs (Cissé, Kurtz, and Odjo 2020; Nguyen, Bouët, and Traoré 2022). Reducing the negative trade impacts of NTMs is considered key to realizing the potential benefits of the AfCFTA (UNCTAD 2019; Bouët and Sall 2021; also see Chapter 5 in this volume).

For each of the five selected processed products, Table 3.8 shows the number of NTMs imposed by and affecting reporting countries in Africa, the Asia-Pacific region, and Latin America and the Caribbean. The table focuses on two of the most common categories of import-related NTMs — SPS measures and TBTs — that create challenges of compliance for exporting countries. It should be noted that the number of NTMs does not indicate the actual impact of NTMs on trade; in addition, the numbers reported in the table only reflect NTMs imposed by countries that reported their policy measures to the United Nations Conference on Trade and Development (UNCTAD). However, the table can be instructive in comparing the incidence of NTMs across products and types of measures. It shows that sugar and palm oil are affected by far higher numbers of NTMs — over 4,000 — than the other three products, for which NTMs number in the hundreds. The majority of NTMs imposed on sugar and palm oil, as well as tea and wheat flour, are SPS measures; cigars and cigarettes are the only product that do not face SPS measures.

Although the incidence of NTMs has some relevance, the impacts of NTMs are better assessed by estimating their ad valorem equivalents (AVEs) — that is, the tariff rate that would have an equal impact on trade to that of the NTM. Table 3.8 also shows average AVEs for each NTM-imposing region (Nguyen, Bouët, and Traoré 2020).[9] The estimated AVEs are similar to, or in several cases higher than, the tariff rates shown in Figures 3.22–3.25, suggesting that NTMs may reduce trade to a greater extent than tariffs for some products. For several of the selected products, SPS measures imposed by Africa and the Asia-Pacific region present similar burdens, while those imposed by LAC countries have higher AVEs than those of the other regions. TBTs imposed by countries in the Asia-Pacific region for tobacco products, sugar, and milled cereals have high AVEs of around 70 percent or more, while those imposed by African countries for sugar have the lowest AVEs at 36 percent.

Photo by AMISOM via Iwaria

9 The AVEs presented are calculated at the HS2 product level, and thus refer to products at a more aggregated level and include both processed and unprocessed products. AVEs listed for cigars and cigarettes correspond to tobacco products; those listed for palm oil correspond to fats and oils; those listed for sugar correspond to sugar and confectionary; those listed for tea correspond to coffee, tea, mate, and spices; and those listed for wheat flour correspond to milled cereals.

Table 3.8 Number of bilateral NTMs in Africa, Asia, and Latin America, selected products

		Partner facing									
		Sanitary and phytosanitary (SPS) measures					Technical barriers to trade (TBT)				
		Africa	Asia-Pacific	LAC	Total	AVE (%)	Africa	Asia-Pacific	LAC	Total	AVE (%)
Country imposing	Cigars and cigarettes						165	121	84	370	
	Africa										
	Asia-Pacific						165	121	84	370	79
	LAC										
	Palm oil	1,867	1,386	977	4230		162	123	84	369	
	Africa	649	493	336	1,478	54	162	123	84	369	0.55
	Asia-Pacific	1,218	893	641	2,752	49					
	LAC										
	Sugar	2,338	1,865	1,289	5,492		478	377	248	1103	
	Africa	1,081	823	560	2,464	40	324	246	168	738	36
	Asia-Pacific	1,257	1,042	718	3,017	44	99	89	61	249	70
	LAC			11	11	67	55	42	19	116	46
	Tea	108	84	140	332						
	Africa	108	82	56	246	42					
	Asia-Pacific		2	84	86	46					
	LAC					68					
	Wheat flour	108	294	56	458			1		1	
	Africa	108	82	56	246	45					
	Asia-Pacific		212		212	47		1		1	69
	LAC										

Source: Numbers of NTMs are constructed from the UNCTAD TRAINS database. Data on AVEs are constructed from Nguyen, Bouët, and Traoré (2020).
Note: A bilateral nontariff measure (NTM) is a measure imposed by one country on another. The same NTM imposed on more than one country will be recorded in the table as more than one bilateral NTM. The year of data collection on NTM incidence ranges from 2012 to 2021; most NTM data reported in the table were collected in 2020. Ad valorem equivalents (AVEs) are average values for all countries in the listed region with available data; products are at the HS2 level.

For most products, reporting countries in the LAC region both impose and face fewer NTMs than reporting African and Asia-Pacific countries. However, the NTMs imposed by LAC countries pose particularly high burdens in some cases, as suggested by high AVEs associated with SPS measures. The NTMs imposed by Africa tend to have lower AVEs than those imposed by countries in other regions. However, with the exception of wheat flour, African countries are affected by more NTMs than countries in the Asia-Pacific and LAC regions. Countries from all regions – Africa as well as the Asia-Pacific and LAC regions – impose more NTMs on African countries than on other regions. This underlines the fact that NTMs not only pose challenges for Africa's global exports but also constitute a major barrier to intra-African trade.

Beyond the NTMs discussed above, others such as customs and documentary related procedures, processing time at border posts, quality of roads, and efficiencies at ports can raise the cost of trade. Figure 3.26 focuses on the time and cost associated with border and documentary compliance within the overall process of exporting or importing goods. Border compliance includes compliance with customs regulations, regulations relating to other required inspections, and handling taking place at borders. Documentary compliance captures the time and cost associated with compliance with the paperwork requirements of all government agencies of the origin economy, the destination economy, and any transit economies.

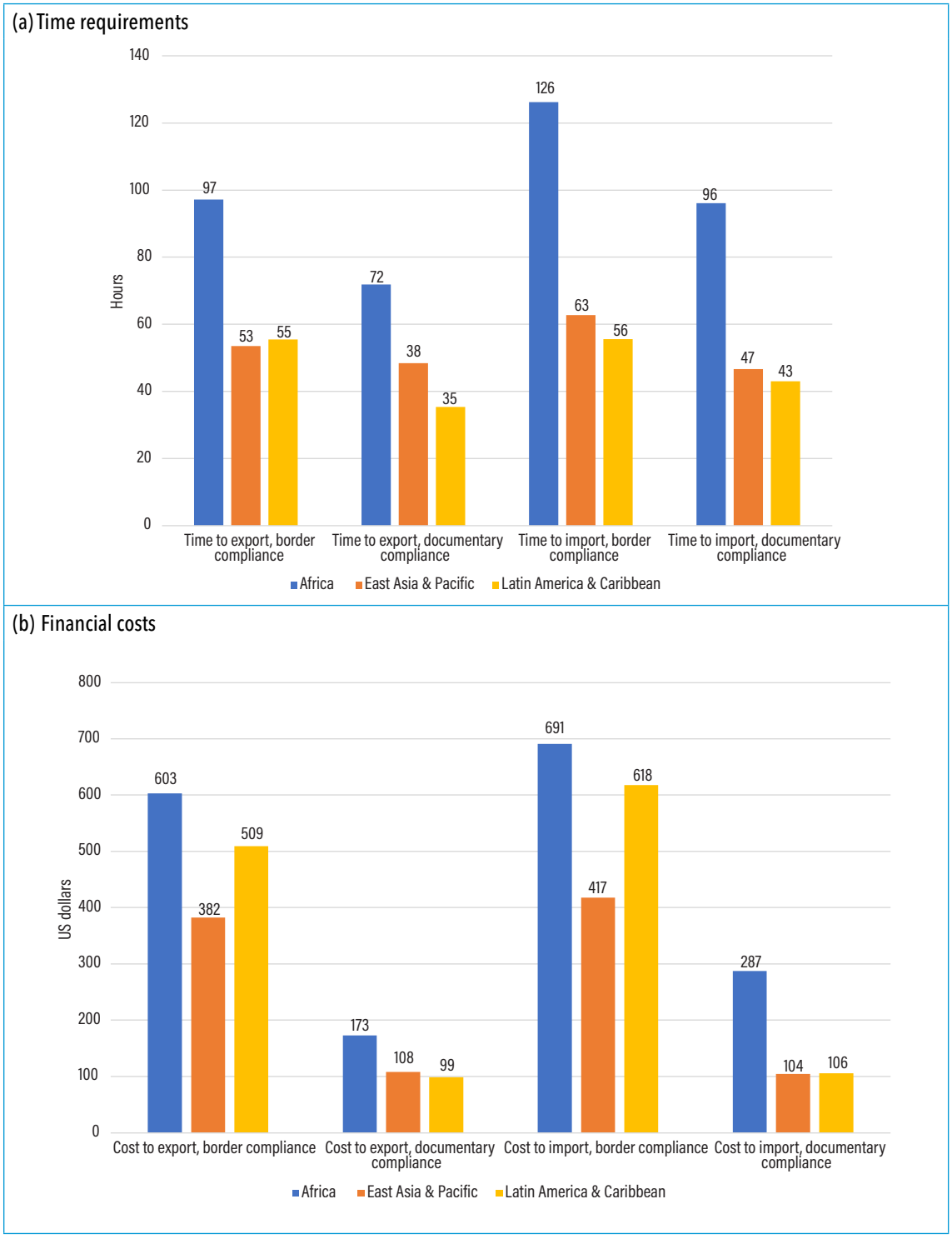
Time allocated for documentary and border compliance is clearly higher in Africa than in other regions. Time to import was around 126 hours for border compliance and 96 hours for documentary compliance in 2019. Compared with 2014, this was a decrease of around 8 percent for border compliance and 22 percent for documentary compliance. The same pattern holds on the export side, where time to export is estimated at 97 and 72 hours for border and documentary compliance, respectively.

Costs to import and export – for obtaining, preparing, presenting, and submitting documents – is much higher in Africa than other regions. Costs in Africa range from an average of US$173 for costs related to documentary compliance for exports to nearly $700 for costs related to border compliance for imports.

Therefore, facilitating and coordinating cross-border trade within the region through mutual administrative assistance and reduction of the costs associated with NTMs is important to promote the free movement of goods and increased intra-African trade.

Photo by Emmanuel via Iwaria

Figure 3.26 Time and cost of imports and exports in Africa, East Asia and Pacific, and LAC, 2019



Source: World Bank (2022).

CONCLUSION

In this chapter, we assessed trends and patterns in intra-African trade, with a focus on processed agricultural products. In addition to analyzing intra-African trade flows in values, the chapter looked at the caloric, protein, and fat content embedded in trade flows. We also examined five regionally traded processed products, including their level of competitiveness and trade networks, and assessed the level of tariff and nontariff barriers using the Asia-Pacific and LAC regions as benchmarks.

Our findings show a decline in the intra-African trade of agricultural products in 2020. In addition, we note the heterogeneous contribution of RECs to the overall intracontinental trade of processed products. SADC countries lead in this area, with more than half of the total processed exports. In terms of processing stage, processed products predominate in intra-REC trade, while unprocessed and semi-processed products are the most traded outside the REC countries. The exception is AMU, which primarily trades processed products with other RECs. We conclude that food industries may be less competitive outside the region of production, especially for ECOWAS and ECCAS countries.

The analysis of the nutritional content in trade shows that the share of total intra-African agricultural trade in terms of caloric content was similar between the two periods (2003–2005 and 2018–2020). However, the fat and protein content fell over time. This is consistent with the declining share of fats and oils and livestock products in trade. Results also reveal that processed products accounted for 42 percent of calories, 76 percent of fats, and 55 percent of proteins traded within Africa over the three-year 2018–2020 period. Processed products account for higher shares of protein and especially of fats than of calories or of trade value in total intra-African trade, suggesting that the most commonly traded processed products are rich in proteins and fats.

As we have seen in previous AATM reports, at the country level, trade competitiveness in semi-processed and processed products varies among RECs. For most RECs, their highest levels of competitiveness are in niche products that account for very small trade shares. An exception is tea, which plays an important role in intra-African processed trade and for which EAC is highly competitive.

Although participation in intra-African trade networks for key processed products is widespread, limited numbers of partners and transactions account for a large share of trade values. Trade in tea is especially concentrated. Most of the trade in key processed products takes place within geographic regions, reflecting the importance of geographic proximity and REC memberships in trade relationships. For most of the processed products examined, Southern Africa is the most successful at exporting outside its geographic region.

Finally, we looked at some external factors, including tariffs and NTMs, that are limiting trade within the continent. Findings show that intra-African imports are subject to lower tariff rates compared to tariffs imposed by the Asia-Pacific, LAC, and BRICS regions for most of the focus products. Although African imports from Asia face higher tariff barriers on all selected products, the continent depends heavily on imports of cigars and cigarettes and palm oil from Asia. This tariff structure should serve as a foundation for homegrown industries by inducing African countries to buy goods produced regionally.

We noticed also that tariff escalation prevails in most of the selected products, especially for palm oil and wheat, which are largely imported. Therefore, reducing tariff escalation is considered critical, especially for countries dependent on exports. While this practice can afford significant protection to processed products in importing countries, it can reduce demand for processed agricultural products.

NTMs, despite contributing to important goals in many cases, tend to be trade-limiting to a greater extent than tariffs. Countries from all the regions we examined – Africa as well as Asia-Pacific and LAC – impose more NTMs on African countries than on other regions. This underlines the fact that NTMs not only pose challenges for Africa's global exports but also constitute a major barrier to intra-African trade. Other factors such as costs and time required for border and documentary compliance are also significantly higher in Africa than in other regions and present additional constraints for intra-African trade. Overcoming these barriers can facilitate formal trade and also contribute to efforts to formalize informal trade flows.

With increasing incomes and urbanization, demand for processed food products in Africa will continue to expand. Increasing intra-African trade in processed products represents an important channel through which producers and processors on the continent can access rapidly growing African markets. Implementation of the AfCFTA agreement and other efforts to boost intra-African trade must address both tariffs and NTMs that impede trade in processed agricultural products, as well as other limiting factors such as the quality of trade and transport infrastructure. At the same time, it will be important to assess the impacts of increased trade and consumption of processed agricultural products on nutrition. Processing can preserve and even enhance the nutritional content of food, for example, through fortification. However, in other cases key nutrients may be lost during processing, and some processed agricultural products have unhealthy levels of sugar, fat, and sodium. Notably, several of the top-traded semi-processed and processed agricultural products in Africa are strongly associated with increased risks of noncommunicable diseases. While this chapter carried out an initial analysis, more detailed research is required to understand the nutritional quality of processed agricultural products and identify the opportunities and challenges related to trade in processed agricultural products and nutrition.

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APPENDIX

Table A3.1 HS4 codes and full names of selected processed products

Rank	Short Name	HS4	HS4 Long Name
1	Sugar	1701	Cane or beet sugar and chemically pure sucrose, in solid form
		1702	Sugars, including lactose, maltose, glucose or fructose in solid form; sugar syrups without added flavouring or colouring matter; artificial honey, whether or not mixed with natural honey; caramel
2	Palm oil	1511	Palm oil and its fractions; whether or not refined, but not chemically modified
3	Cigars and cigarettes	2402	Cigars, cheroots, cigarillos and cigarettes; of tobacco or of tobacco substitutes
4	Tea	902	Tea
5	Wheat flour	1101	Wheat or meslin flour
6	Fruit juices	2009	Fruit juices (including grape must) and vegetable juices, unfermented, not containing added spirit; whether or not containing added sugar or other sweetening matter
7	Tobacco	2403	Manufactured tobacco and manufactured tobacco substitutes n.e.c; homogenised or reconstituted tobacco; tobacco extracts and essences
		2401	Tobacco, unmanufactured; tobacco refuse
8	Legumes, shelled	713	Vegetables, leguminous; shelled, whether or not skinned or split, dried
9	Soya-bean oil	1507	Soya-bean oil and its fractions; whether or not refined, but not chemically modified
10	Sugar confectionery	1704	Sugar confectionery (including white chocolate), not containing cocoa
11	Bread, pastry, cakes, biscuits	1905	Bread, pastry, cakes, biscuits, other bakers' wares, whether or not containing cocoa; communion wafers, empty cachets suitable for pharmaceutical use, sealing wafers, rice paper and similar products
12	Malt extract	1901	Malt extract; flour/groats/meal/starch/malt extract products, no cocoa (or less than 40% by weight) and food preparations of goods of headings 04.01 to 04.04, no cocoa (or less than 5% by weight), weights calculated on a totally defatted basis, n.e.c.
13	Pasta	1902	Pasta; whether or not cooked or stuffed with meat or other substance, or otherwise prepared, egg spaghetti, macaroni, noodles, lasagne, gnocchi, ravioli, cannelloni; couscous, whether or not prepared
14	Miscellaneous edible preparations	2106	Food preparations not elsewhere specified or included
		2104	Soups and broths and preparations therefor; homogenised composite food preparations
		2102	Yeasts (active or inactive); other single-cell micro-organisms, dead (but not including vaccines of heading no. 3002); prepared baking powders
		2103	Sauces and preparations therefor; mixed condiments and mixed seasonings, mustard flour and meal and prepared mustard
		2101	Extracts, essences, concentrates of coffee, tea or mate; preparations with a basis of these products or with a basis of coffee, tea or mate; roasted chicory and other roasted coffee substitutes and extracts, essences and concentrates thereof
		2105	Ice cream and other edible ice; whether or not containing cocoa
15	Sunflower oil	1512	Sun-flower seed, safflower or cotton-seed oil and their fractions; whether or not refined, but not chemically modified

16	Milk and cream	402	Milk and cream; concentrated or containing added sugar or other sweetening matter
17	Chocolate and cocoa products	1806	Chocolate and other food preparations containing cocoa
18	Meat and edible offal of poultry	207	Meat and edible offal of poultry; of the poultry of heading no. 0105, (i.e. fowls of the species Gallus domesticus), fresh, chilled or frozen
19	Beverages, spirits and vinegar	2204	Wine of fresh grapes, including fortified wines; grape must other than that of heading no. 2009
		2208	Ethyl alcohol, undenatured; of an alcoholic strength by volume of less than 80% volume; spirits, liqueurs and other spirituous beverages
		2205	Vermouth and other wine of fresh grapes, flavoured with plants or aromatic substances
		2209	Vinegar and substitutes for vinegar obtained from acetic acid
		2207	Ethyl alcohol, undenatured; of an alcoholic strength by volume of 80% vol. or higher; ethyl alcohol and other spirits, denatured, of any strength
		2203	Beer made from malt
		2206	Fermented beverages, n.e.c. in chapter 22; (e.g., cider, perry, mead)
		2202	Waters, including mineral and aerated waters, containing added sugar or sweetening matter, flavoured; other non-alcoholic beverages, not including fruit or vegetable juices of heading no. 2009
		2201	Waters, including natural or artificial mineral waters and aerated waters, not containing added sugar or other sweetening matter nor flavoured; ice and snow
20	Margarine	1517	Margarine; edible mixtures or preparations of animal or vegetable fats or oils or of fractions of different fats or oils of this chapter, other than edible fats or oils of heading no. 1516

Source: Authors' own elaboration.

CHAPTER **FOUR**

The Three Great Stimulants: An Analysis of the Cocoa, Coffee, and Tea Value Chains in Africa

Nora Aboushady,
Devesh Roy, and
Chahir Zaki

INTRODUCTION

Monocrop cultivation of cocoa, coffee, and tea, the world's three great stimulants,[1] emerged in Africa in the 19th century as colonizing countries sought to cater to European consumers. Following independence, African countries continued to export agricultural commodities, with little change in the established production and trade structures. As post-colonial governments adopted industrialization and import substitution policies in the 1970s, heavy state intervention and taxation of export crops became the norm, particularly for cocoa, coffee, and tea, and little attention was given to agricultural diversification.

In the 1980s and 1990s, agricultural markets and trade were liberalized under the umbrella of structural adjustment programs. However, African agricultural exports remained concentrated in traditional tropical products, with Europe as their main market. Today, the cocoa, coffee, and tea value chains are still characterized by the concentration of domestic producers in unprocessed, typically low value-added upstream activities. The nature of the three crops in part explains why processing into final or semi-final products is likely to take place in or near consumer countries, rather than in Africa. Nevertheless, persistent technical, infrastructural, and institutional barriers in Africa also hinder advances and diversification in production and limit the region's potential to move up the value chain and offer final products in the large global markets for these products.

This chapter assesses the participation of African countries in cocoa, coffee, and tea value chains and considers whether African countries are trading above or below their potential at various processing levels. Our findings show that Africa's exports are concentrated in unprocessed cocoa and coffee and semi-processed tea, with a significant proportion of these exports involving little or no processing. In addition, many African countries are undertrading cocoa, coffee, and tea across all three levels of processing, and thus have substantial potential to trade more both in volume and in terms of product variety and sophistication. Our findings also highlight the importance of the emerging trade flows with developing countries as well as the importance of expanding intra-African trade, as a first step toward international competitiveness.

The chapter is organized as follows: First, we provide a brief historical overview of the production of these three crops and the determinants of value-chain participation rooted in the continent's colonial heritage and post-independence policies. In the next section, we analyze trade in cocoa, coffee, and tea by processing level. We identify Africa's top exporters and main market destinations by commodity, and calculate the revealed comparative advantage of different African countries. We then present our main findings from a gravity model used to estimate differences between actual and predicted levels of trade. These estimates show us whether African countries are over- or under-trading in the three commodity chains. This analysis is followed by a discussion of major institutional, technical, and infrastructural barriers to greater participation in global value chains for cocoa, coffee, and tea. The chapter's conclusion offers key policy recommendations for more diversified and higher value-added trade within these three value chains.

THE HISTORY OF TRADE IN STIMULANTS

The structure of African agriculture and the degree of participation in value chains today has been largely shaped by the continent's colonial trade relations. Before the arrival of the first European maritime traders to the west coast of Africa in the 15th century, trade within Africa

1 Cocoa, coffee, and tea are the best-known edible plant species containing caffeine. Chocolate, coffee, and tea are therefore known as stimulant foods and beverages.

was based on specialization and complementarity. For example, the savannah region south of the Sahel produced cereals, the Sahara specialized in rock salt, the Sahel provided livestock and leather products, West Africa was rich in gold, and North Africa was famous for textiles (Akyeampong 2015). Beyond the continent, Arab traders facilitated exchange with Asia. Trade caravans exported goods from inland locations in Africa and imported Asian goods (such as textiles, silks, spices, and glass) to the continent (Bjornlund et al. 2020).

With the establishment of European trading companies, increasing trade flows between Africa and the European colonial powers were accompanied by large-scale land-intensive agriculture. Production of export crops such as cocoa, cotton, peanuts, palm oil, and rubber expanded at the expense of traditional food and fiber crops. Two main events drove this evolution: On the supply side, the abolition of the slave trade by the British Empire in the 19th century increased the labor available for agriculture. On the demand side, industrialization raised European living standards and preference for luxury goods, such as sweets. In the case of chocolate, for example, the mechanization of chocolate-making increased the demand for cocoa significantly (Akyeampong 2015). Africa's growing concentration in export commodities increased the exposure of African communities to fluctuations in global demand and prices for exported goods. Not only did volatility increase but also emerging industries were eroded as export-oriented agriculture expanded, a trend that would continue even after African countries gained independence.

Following the division of Africa into colonial territories at the Berlin Conference of 1884, African colonies were transformed into monocrop, export-oriented producers catering to markets in the northern hemisphere. For example, cocoa was grown in Ghana and Nigeria, coffee in Kenya and Tanzania, and tea in Kenya and Malawi. Colonizers established marketing boards that controlled prices and exports of these commodities, with just a small fraction of the consumer price passed on to the farmers. The absence of domestic profit margins and lack of local wealth accumulation left little room for upgrades, investment, or development in the agriculture sector (Bjornlund et al. 2020).

African countries acquired their independence between the mid-1950s and the mid-1970s. However, most countries continued to specialize in colonial-era export crops. Post-colonial political structures favored the status quo in agriculture as those who held power were often the same people who had benefited from colonial rule, and foreign aid to the newly independent governments was initially granted to maintain the interests of donor countries in crops, raw materials, and natural resource extraction (Bjornlund et al. 2020). In the 1970s, African countries adopted import-substitution and industrialization policies. To fund these development policies, agricultural production and exports were heavily taxed and further burdened by pervasive state intervention in agricultural markets. In West Africa, for example, state boards controlled prices,[2] marketing, and exports of cocoa and coffee beans (Westlake 2014). In addition, overvalued exchange rates, put in place to make imports of industrial inputs artificially cheaper, made crop exports less competitive. These heavy distortions of the agriculture sector acted as disincentives for local growers to diversify production or upgrade their traditional exports of cocoa, coffee, and tea to more sophisticated products.

In the 1980s and 1990s, declining economic performance forced African countries to resort to repeated structural adjustment programs. Under the umbrella of liberalization, privatization, and deregulation, most restrictions and distortionary interventions were lifted from the agriculture sector. However, trade liberalization also led to increased volatility through exposure to external shocks and declining global commodity prices.

2 Yet, it is important to note that Boratav (2001), based on 20 sub-Saharan countries, finds that deregulation and the elimination of marketing boards has not been associated with improvements in real producer prices or in the terms of trade.

Although African countries failed to diversify and upgrade their exports, they did diversify their export destinations slightly. Indeed, while preferential access granted to European markets encouraged the continued concentration of African exports in the European Union (EU) and OECD countries – especially under the Everything but Arms (EBA) and the Generalized System of Preferences (GSP) schemes with Europe and the African Growth and Opportunity Act (AGOA) scheme with the United States – China became an important buyer of African exports. Based on UNCTAD data, the EU is now the export destination for 33 percent of Africa's total exports and China is the destination for 14 percent. Moreover, tariff escalation (tariffs that increase with the product's level of processing) led to a deeper specialization in unprocessed products. For instance, the EU tariff imposed on coffee beans under the GSP is 0 percent, while roasted beans face a 2.6 percent tariff. The same applies to cocoa beans (0 percent), cocoa butter (4.2 percent), and cocoa paste (6.1 percent). Consequently, this concentration in trading partners acted as a disincentive to moving away from traditional exports like cocoa, coffee, and tea and exploring new opportunities in new markets. In addition to these trade policy factors, the processing stages in value chains for cocoa, coffee, and tea are dominated by a small number of multinational firms. This concentration of power in downstream activities makes it difficult for domestic firms in Africa to compete and market their products internationally. Together these factors have led to the specialization of African countries in unprocessed products. The following section provides an overview of trade in stimulants by processing level.

OVERVIEW OF TRADE IN COCOA, COFFEE, AND TEA

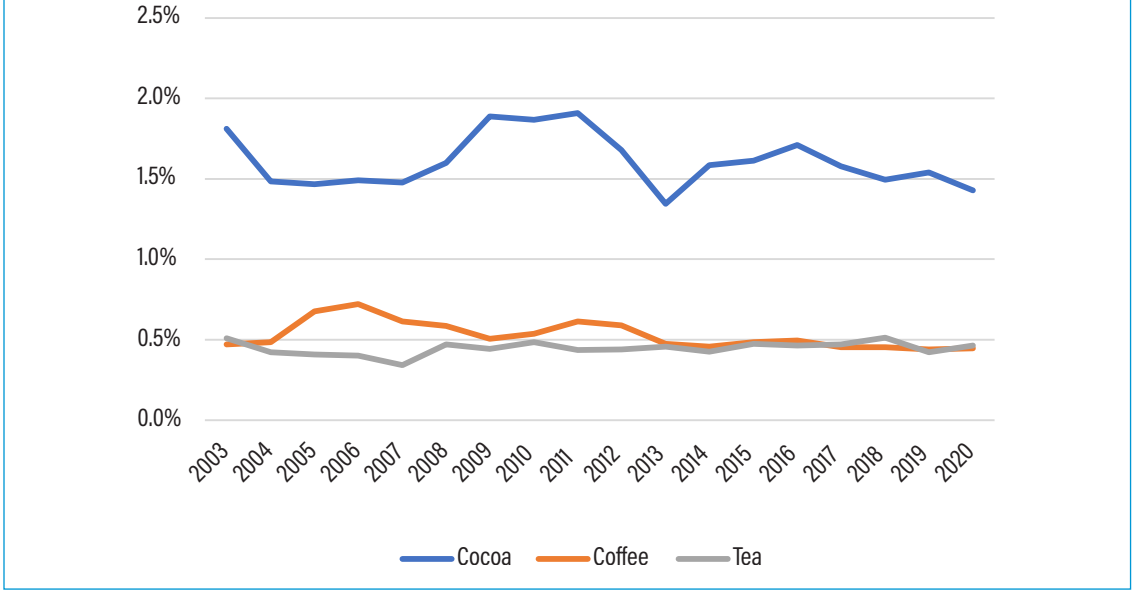
Trade flows

To analyze Africa's trade performance in the cocoa, coffee, and tea value chains, we begin by looking at the evolution of Africa's total exports of the three commodities and then at trade in each commodity by processing level. Next, we assess the position of African countries among the world's top exporters of these commodities and calculate Africa's revealed comparative advantage for each by level of processing. Finally, we look at the evolution of Africa's major export destinations. Throughout the analysis, we compare the average trade performance in two periods: 2006–2010 and 2016–2020.[3]

Figure 4.1 depicts the evolution of the share of cocoa, coffee, and tea exports in total African agricultural exports by value between 2003 and 2020. The share was relatively stable over time for coffee and tea, at about 0.5 percent, and has slightly declined for coffee, from 1.8 percent in 2003 to 1.4 percent in 2020.

3 We adopt these two periods in order to include the most recent years and compare Africa's performance over an entire decade.

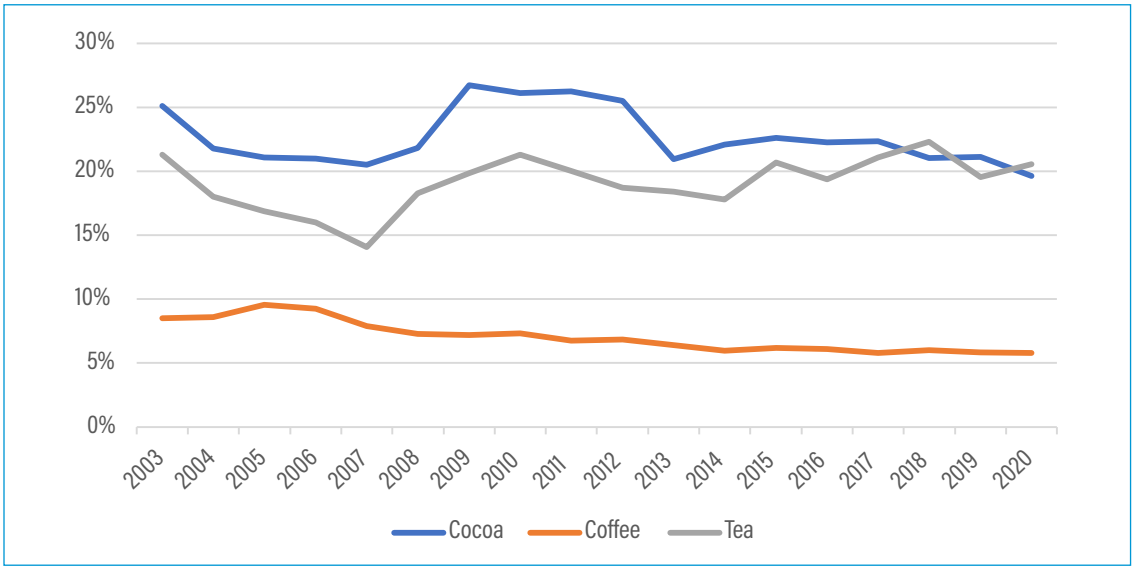
Figure 4.1 Share of African exports of cocoa, coffee, and tea in total African agricultural exports



Source: 2022 AATM database.

Africa's share in the world's total exports of the three commodities is illustrated in Figure 4.2. Clearly, Africa is a major producer and exporter of cocoa, providing nearly one-fifth of the world's cocoa exports. This share has decreased over time, however. Following its recovery from a drop during the global crisis, Africa's share of cocoa exports remained above 25 percent between 2009 and 2013, but fell to 19.6 percent in 2020. The same declining trend during the crisis can be observed for tea exports, with Africa's share in world exports reaching a low of 14.1 percent in 2007. African tea exports recovered to 21.3 percent in 2010, and by 2020 accounted for 20.6 percent of the world's exports. Africa's significant share of global tea exports is explained by Kenya's contribution, as one of the world's major tea producers and exporters and by the role of the Mombasa Tea Auction in marketing African tea. African coffee exports comprise a much smaller share of global exports, with a steady decline from 8.5 percent in 2003 to 5.8 percent in 2020.

Figure 4.2 Share of African exports in world exports of cocoa, coffee, and tea



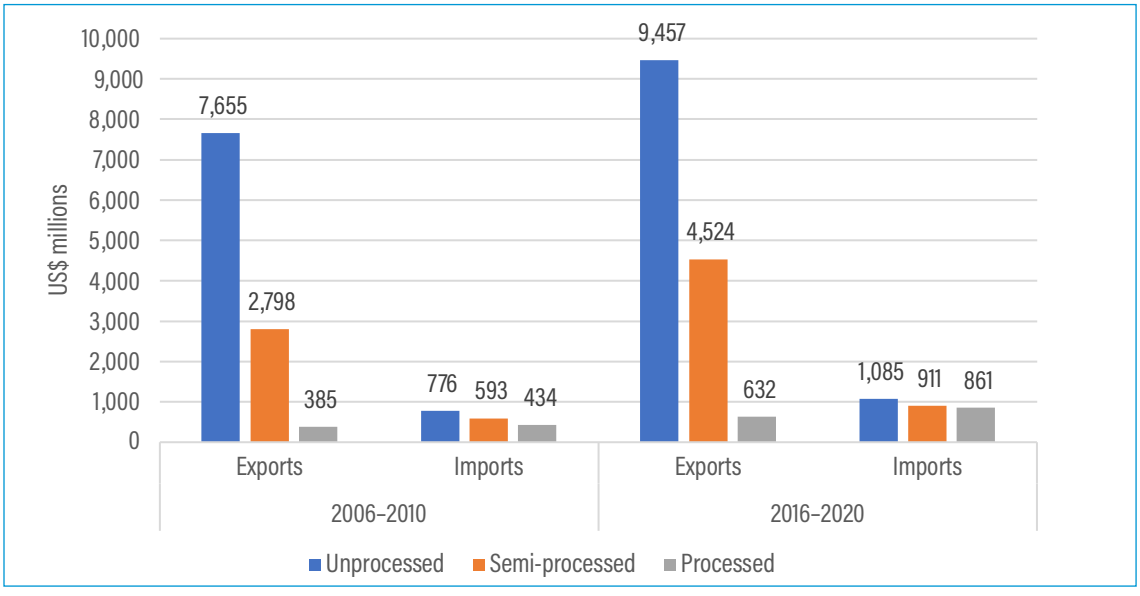
Source: 2022 AATM database.

Trade by level of processing[4]

Figure 4.3 depicts the average value of exports and imports of cocoa, coffee, and tea by level of processing during two periods, 2006–2010 and 2016–2020. African exports of the three goods are typically dominated by unprocessed commodities. During the first period, the average value of unprocessed exports of cocoa, coffee, and tea was US$7.655 billion[5], which constituted more than 70 percent of Africa's total exports of the three goods. During the second period, this concentration appears to diminish slightly, as the average value of unprocessed exports ($9.457 billion) dropped to 64.7 percent of the total value of exports. The value of semi-processed commodities increased from $2.798 billion to $4.524 billion between the periods, with an increase in share from 25.8 to 30.9 percent. The share of processed goods remains modest, with an increase from 3.5 to 4.3 percent between the two periods.

Imports of the three commodities by value are relatively small compared to the exports. Unprocessed imports of cocoa, coffee, and tea rose from $776 million during the first period to $1.085 billion during the second. Total African imports of unprocessed and semi-processed goods include intra-African imports that are likely imported for the purpose of processing and re-exporting. For example, Egypt is a major importer of semi-processed tea not only for domestic consumption but also for packaging, marketing, and re-export. Apart from Ethiopia's consumption of coffee and Egypt's consumption of tea, Africa is not a major consumer of these three products. This is in line with the historical concentration of African agriculture in export cash crops. Income levels and the market size in Africa could also explain the limited imports of processed products, which suggests low variety of imports and low consumption. In addition, regional value chains for these commodities are underdeveloped. According to 2022 AATM data, the shares of intra-African exports in total African exports were stable at around 0.02 percent for cocoa, 0.15 percent for coffee, and 0.2 percent for tea between 2006 and 2020. As will be explained later in this chapter, differences in trade policy among Africa's regional economic communities, especially in tariffs and nontariff measures, hinder the development of value chains within Africa and undermine the potential for the development of locally manufactured products.

Figure 4.3 African exports and imports of cocoa, coffee, and tea, by level of processing

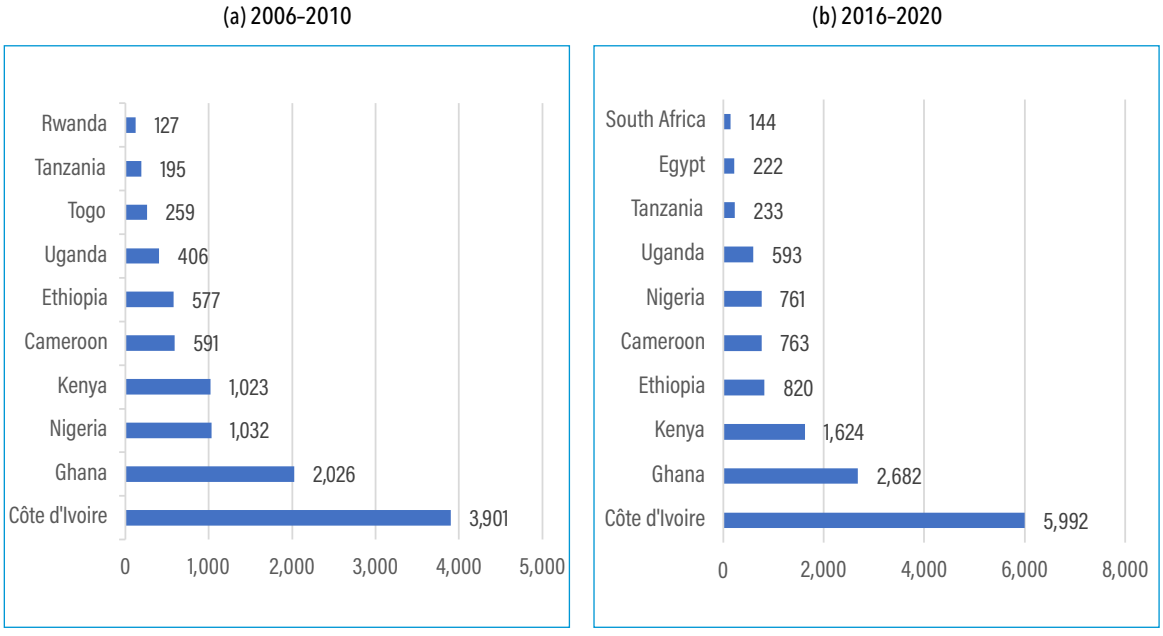


Source: 2022 AATM database.

4 For an explanation of the levels of processing of cocoa, coffee, and tea, see Appendix Table A4.1.
5 Throughout this chapter, $ refers to US dollars.

Figure 4.4 shows the top 10 African exporters of the three commodities for both periods. It is important to note that total African exports of these products increased from $10.8 billion in 2006–2010 to $14.6 billion in 2016–2020. Côte d'Ivoire is the top exporter, followed by Ghana, Kenya, and Ethiopia. Côte d'Ivoire's share of exports among the top 10 exporters rose from 38.4 percent on average to 43.3 percent between the two periods. Together, Côte d'Ivoire and Ghana account for more than 62 percent of the total exports of the top 10 countries. Egypt is the only North African country ranking among the top 10 exporters, and only in the second period; its entry among the top 10 may be explained by the re-exports of Kenyan tea after packaging and marketing.

Figure 4.4 Top 10 exporters of cocoa, coffee, and tea (US$ millions)



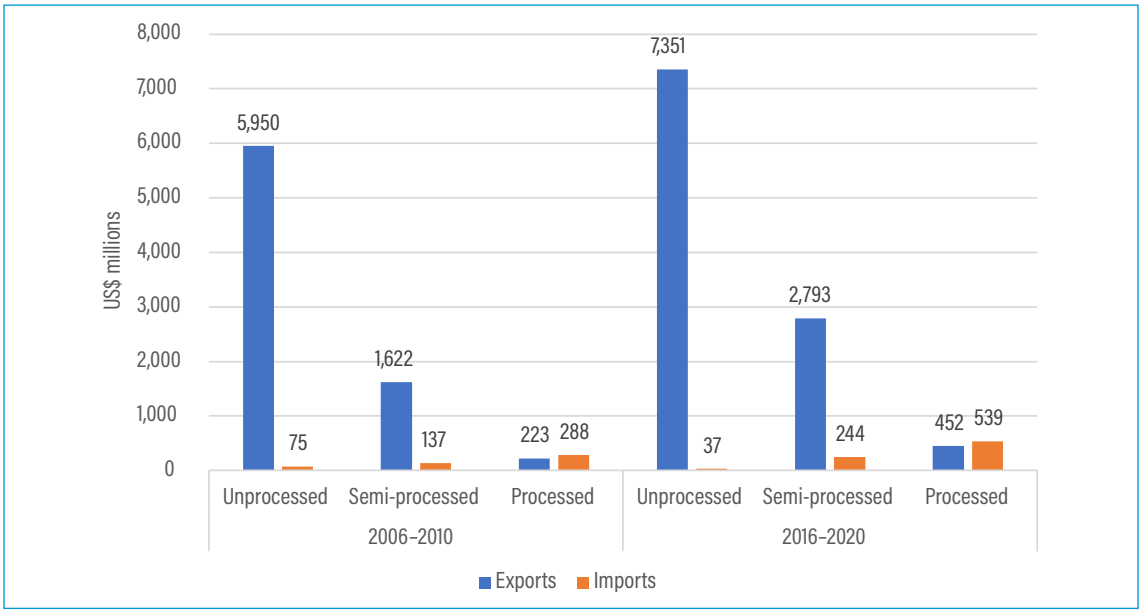
Source: 2022 AATM database.

For a better understanding of trade patterns by level of processing, we look at each commodity separately (Figures 4.5, 4.6, and 4.7).

Figure 4.5 shows cocoa exports and imports by level of processing. Cocoa trade is concentrated in unprocessed exports. These increased by 23.5 percent (from $5.95 billion to $7.35 billion) between the two periods. Much of this increase occurred in the first period, when the price of cocoa beans rose from $1.57 to $3.07 per kilo, while during the second period, the price remained relatively stable, at about $2.50 per kilo.[6] Exports of semi-processed and processed cocoa increased faster (by 72.3 and 108 percent respectively) yet continue to constitute a minor share of total cocoa exports. Imports of processed cocoa are only slightly larger than Africa's processed cocoa exports ($539.16 million and $451.5 million respectively), suggesting limited variety of chocolate and other food preparations containing cocoa available for domestic consumption, as well as limited consumption overall.

6 The International Cocoa Organization (ICCO)'s daily prices of cocoa beans can be found at: https://www.indexmundi.com/commodities/?commodity=cocoa-beans&months=240.

Figure 4.5 Cocoa exports and imports, by level of processing

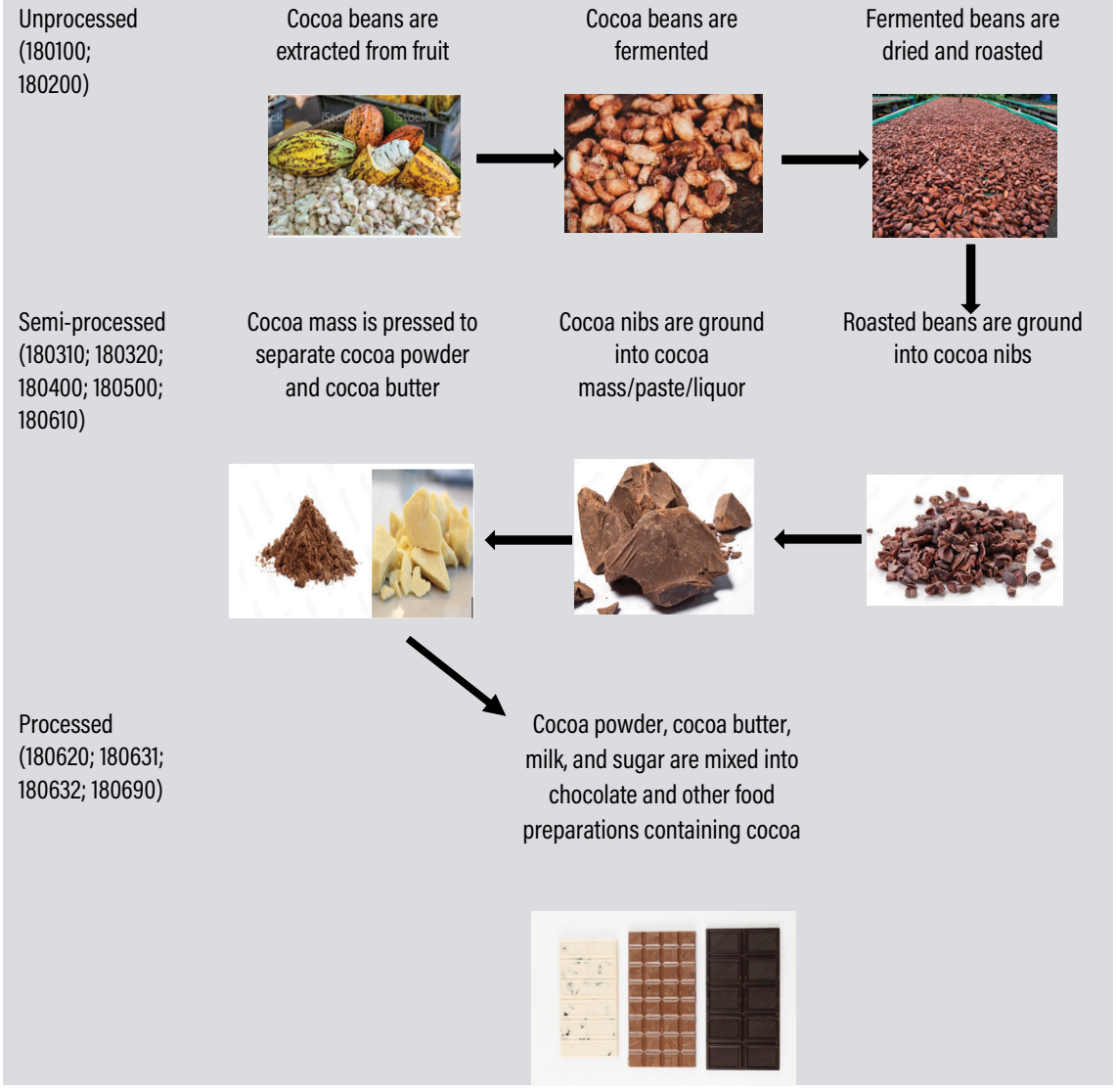


Source: 2022 AATM database.

The cocoa value chain is complex and capital intensive. On the upstream end, about 90 percent of cocoa is grown by geographically dispersed smallholders (UNCTAD 2019). On the downstream end, cocoa processing and chocolate manufacturing are concentrated among a small number of large and increasingly vertically integrated multinational firms (Fold and Neilson 2016). Chocolate manufacturing is characterized not only by advanced technology and logistical requirements but also by fierce differentiation, branding, and marketing strategies. Box 4.1 depicts the processing levels in the cocoa value chain. After the beans are extracted from cocoa buds, fermented, and dried, they are typically exported to undergo the next steps. These include roasting and shelling the beans and then grinding the cocoa nibs into cocoa mass. The cocoa mass is then treated chemically and pressed to separate cocoa butter and cocoa powder, before both products are processed with other ingredients to produce chocolate.[7] African producers face several obstacles to entering into cocoa processing. First, adequate ventilated storage with cool temperatures is required to deal with the region's warm and humid weather conditions. Second, in addition to the lack of efficient logistics, high marketing costs and the difficulties many African countries encounter in meeting quality requirements at competitive costs undermine the potential for African producers to increase their exports of processed cocoa products.

7 International Cocoa Organization, https://www.icco.org/processing-cocoa/

Box 4.1 The cocoa value chain



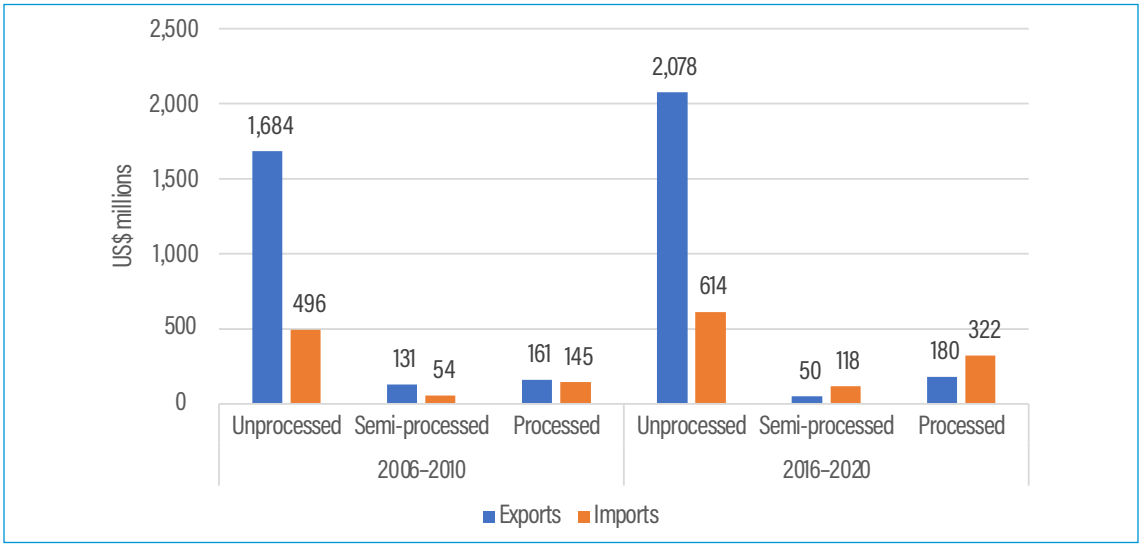
Source: Elaborated by authors. Images are from freepik.com. Numbers refer to Harmonized System 6 (HS6) codes.

Two countries offer notable success stories in product upgrading and exports of chocolate: South Africa and Egypt. Both countries engage in chocolate manufacturing and cater to regional markets – South African Development Community (SADC) countries in the case of South Africa and Middle East and North African markets in the case of Egypt. These two countries also serve as regional hubs for confectionery multinationals. Other large cocoa producing countries, including Ghana and Côte d'Ivoire, have also succeeded in upgrading along the cocoa value chain by investing in grinding and exporting cocoa paste and cocoa butter to developed countries (UNCTAD 2019).

Coffee exports and imports by processing level are shown in Figure 4.6. Although the coffee value chain is less complex than that of cocoa, little coffee processing is done in Africa. African exports are concentrated in unprocessed (fermented, dried, and unroasted) coffee beans. These are collected from farmers by cooperatives and traders and shipped abroad. For the

coffee to keep its quality and aroma, the next step (roasting coffee beans) is better performed near the consumer market. Exports of unprocessed coffee increased by 23.5 percent (from $1.683 billion to $2.078 billion) between the two periods. At the same time, exports of semi-processed coffee (including roasted coffee beans) dropped substantially from $131.4 million to $50.2 million but exports of processed coffee (including but not limited to extracts, essences, and concentrates of coffee) increased slightly from $161 million to $180 million. Globally, coffee processing (especially roasting) is dominated by a small number of large firms. The concentration of multinational firms in the roasting industry allows them to capture a substantial share of the difference between international and retail prices (Slob 2006; Ghoshary and Mohan 2021). As in the case of cocoa, the processing of coffee into final products (such as coffee concentrates) requires a level of technical sophistication that many African countries cannot provide on a competitive basis. To compete with famous brands, some African producers try to differentiate their coffee by offering certified organic beans. Imports of unprocessed coffee rose from $496.4 million to $613.7 million between the two periods, perhaps as a result of increased intra-African imports, and imports of both semi-processed and processed coffee more than doubled.

Figure 4.6 Coffee exports and imports, by level of processing



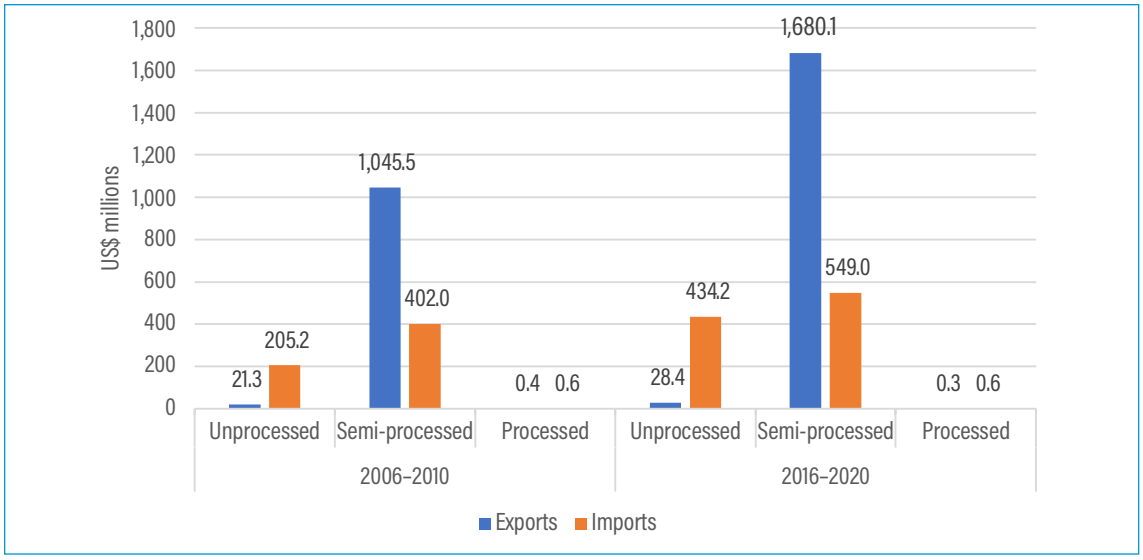
Source: 2022 AATM database.

While the African trade structure for coffee and cocoa is characterized by the concentration of exports in unprocessed commodities, Figure 4.7 shows that trade in tea is different.[8] Exports of unprocessed tea were negligible throughout the study period. The tea value chain is relatively short because the tea leaves require rapid processing. The harvested (green) tea leaves must be picked and transported to the processing factory on the same day to begin the process of fermentation and drying. When the leaves dry, they are cut into smaller pieces (rolled) to promote further oxidization. The leaves are then dried again before being sold to suppliers for packaging and marketing purposes. Given the need for rapid processing, Africa's trade in unprocessed tea may be explained by intra-African trade, especially bulk tea imports by Kenya from neighboring countries for processing, blending, and re-export purposes. Kenya has the largest tea auction in the world (the Mombasa Tea Auction), where a significant proportion of African-grown tea is blended and sold — more than 90 percent of Uganda's and Rwanda's tea exports and more than 40 percent of Tanzania's and Burundi's tea exports are sent to Kenya to be auctioned (UNCTAD 2019).

8 African trade in unprocessed maté tea is negligible, as this herb is mainly grown, consumed, and exported by South American countries.

Africa's exports of semi-processed (black/fermented) tea rose from $1.045 billion to $1.68 billion between the two periods, while imports within the same category rose from $402 million to $549 million. African imports of semi-processed tea may be explained by intra-African trade and by North African imports of tea from Asia for blending, consumption, and re-export (Sandrey 2017). According to UNCTAD (2019), the intra-African market accounts for nearly 25 percent of total African tea exports. Egypt and Morocco alone account for nearly half of the continent's tea imports, which are primarily sourced from China, India, and Sri Lanka. There is an increasing trend in differentiation of African tea, as producers offer organic products or certification such as carbon offset labeling as a potential means to generate additional revenue for African firms (FAO 2015).

Figure 4.7 Tea exports and imports, by level of processing



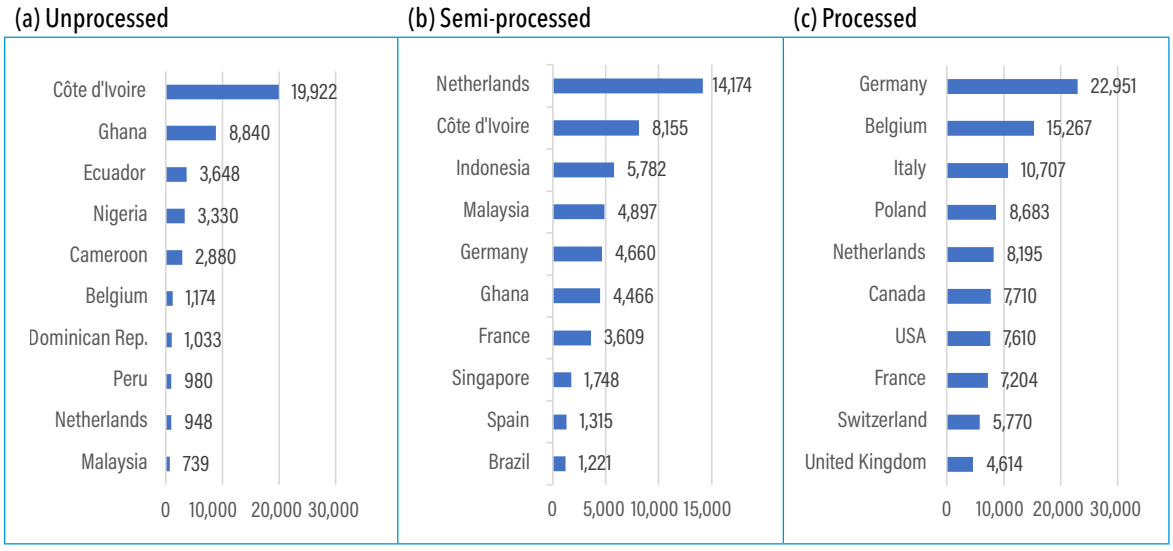
Source: 2022 AATM database.

Leading exporters of cocoa, coffee, and tea

As a result of the colonial agricultural policy favoring monocropping and Africa's post-independence policies, Africa's export structure remains concentrated, with each country exporting a narrow set of commodities. In line with West Africa's historical leading role in exports of unprocessed cocoa, Côte d'Ivoire and Ghana are the two top exporters, as shown in Figure 4.8. In fact, West and Central Africa was the world's top regional exporter in the early 20th century, and by the early 2000s accounted for over 70 percent of global cocoa exports (Traoré 2009). Belgium and the Netherlands, two of the largest cocoa bean re-export hubs in Europe, appear among the top 10 exporters of unprocessed cocoa. Three South American countries — Ecuador, Dominican Republic, and Peru — are also ranked among the top 10 exporters. Malaysia, the only Asian country on this list, ranks tenth among exporters of unprocessed cocoa worldwide.

The group of top 10 exporting countries of semi-processed cocoa is quite different from that of unprocessed cocoa (Figure 4.8). Only a couple of African countries are among the top 10 exporters: Côte d'Ivoire in second place and Ghana in sixth. The Netherlands dominates the exports within this category, and several other European countries are also ranked among the top 10. Three Asian countries also appear in this ranking as major exporters, likely reflecting the growing chocolate industry in Asia and the related processing of cocoa for re-export and for domestic chocolate production. Exports of processed cocoa (including chocolate) are dominated by European countries, the United States, and Canada.

Figure 4.8 Top 10 exporters of cocoa (US$ millions), 2016–2020

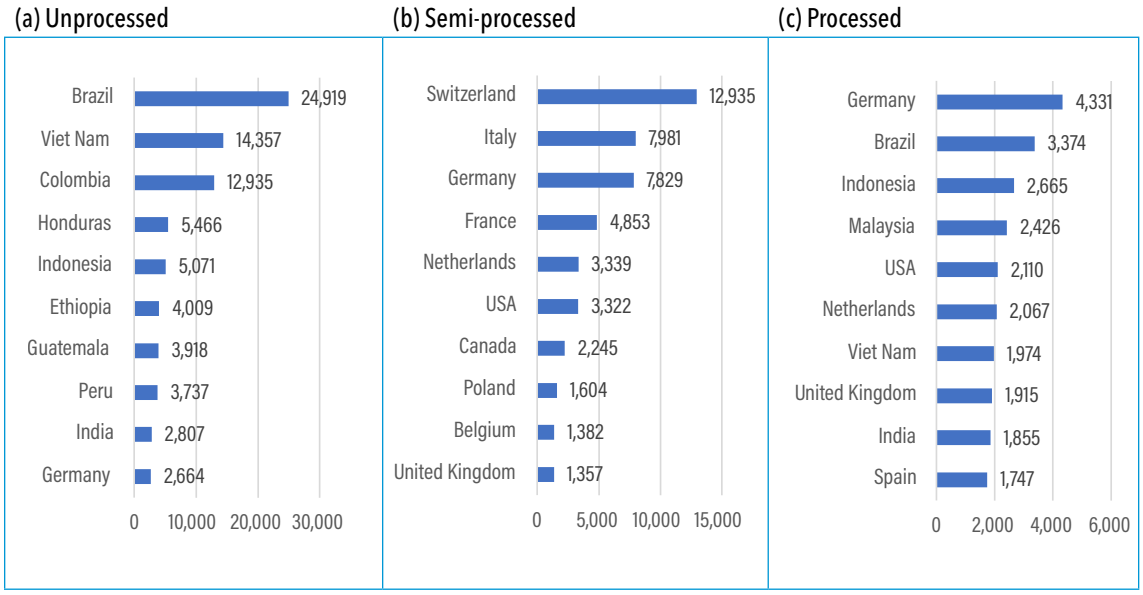


Source: 2022 AATM database.

In the case of coffee, African countries play a smaller role in global markets. Coffee originated in Ethiopia before its consumption spread to Yemen, Asia, and the rest of the world. It was the main export commodity of Ethiopia by the late 19th and early 20th century, and today, Ethiopia is both the leading coffee producer and consumer in Africa (UNCTAD 2018). As shown in Figure 4.9, Ethiopia is among the top 10 exporters of unprocessed (dried) coffee beans worldwide. However, South American and Asian countries dominate the export market: Brazil is ranked first, followed by Viet Nam and Colombia.

Processing and consumption of coffee is concentrated in Europe, Canada, and the United States, and much of the value is captured in roasting, branding, and marketing activities in these countries. Asian and African countries are absent from the list of top 10 exporters of semi-processed (roasted) coffee. As for processed coffee products, African countries are also absent, while four Asian countries (Indonesia, Malaysia, Viet Nam, and India) appear in the ranking.

Figure 4.9 Top 10 exporters of coffee (US$ millions), by level of processing (2016–2020)



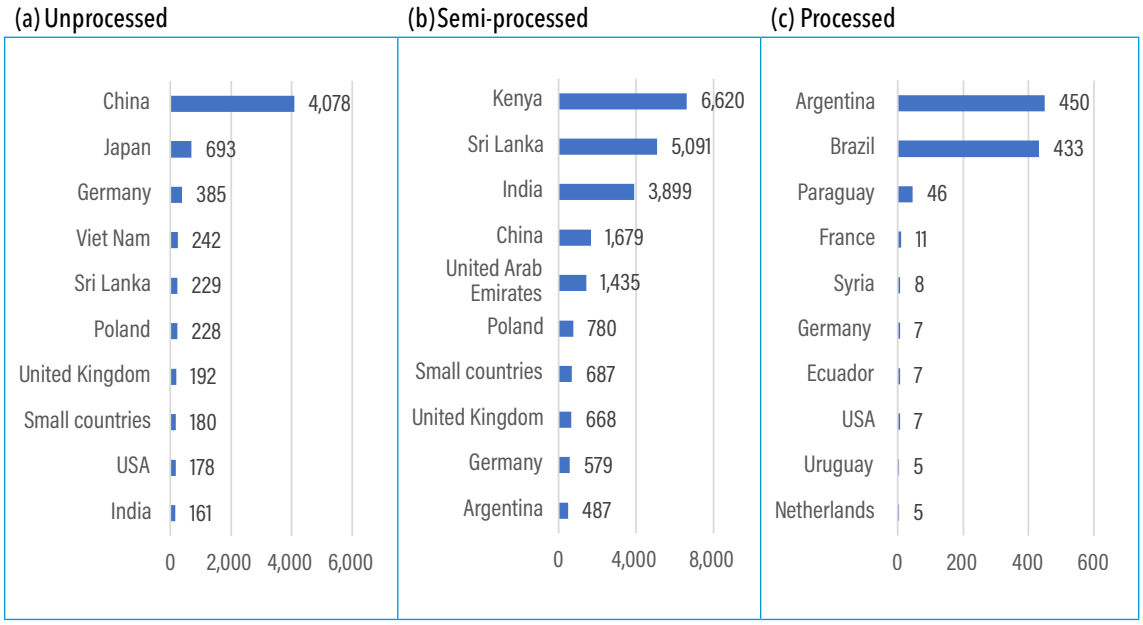
Source: 2022 AATM database.

As for exports of tea, unsurprisingly, China, where tea originated, is by far the largest exporter of the unprocessed commodity (Figure 4.10). For semi-processed (black, fermented) tea, Kenya is the top exporter, followed by several Asian countries (Sri Lanka, India, China, and the United Arab Emirates). In Africa, tea was first commercially grown in 1880 in Malawi, before British settlers brought it from India to Kenya (Sandrey 2017).[9] Under colonial rule, tea growing expanded to other African countries such as Uganda, Tanzania, Zimbabwe, and in the West, Cameroon (Dufrêne 2019). Kenya's predominance as a major global and African exporter of tea can be explained by the role of the Mombasa tea auction. Tea grown in neighboring countries is imported by Kenya, blended, and re-exported through the auction. African production constitutes a vital part of the global tea trade with 33 percent, the largest regional share. As for processed tea (maté), the export market is dominated by Brazil and Argentina, as the *yerba maté* plant is native to South America. The presence of European countries, the United States, Canada, and Syria[10] among the top 10 exporters can only be explained by re-exports of imported maté.

9 Commercialization of tea began in Kenya in 1924 (FAO 2015) when the tea companies Brooke Bond and Finlay acquired fertile land areas of Mount Kenya and the Rift Valley for large-scale tea growing. The companies strictly controlled prices and quantities in favor of Asian-grown tea and applied tea restriction schemes. Later, they controlled the market through an international tea agreement (Ndege 2021). In the late 1950s, the Kenya Tea Board was established to regulate tea production. After Kenyan independence in 1963, land reforms enabled small farmers (previously prohibited from growing tea) to enter the sector (FAO 2015).

10 Maté tea was first introduced to the Middle East with the return of Syrian and Lebanese migrants from South America who brought the herb and the necessary tools to prepare it. Since then, it has become one of region's established drinks (especially among Alawite and Druze communities). Syria is the second-largest importer of maté tea (Sulaiman et al. 2021). This ranking could indicate that Syria re-exports maté tea regionally (especially to Lebanon). For more information, see Sulaiman et al. (2021).

Figure 4.10 Top 10 exporters of tea (in US$ millions), by level of processing (2016–2020)



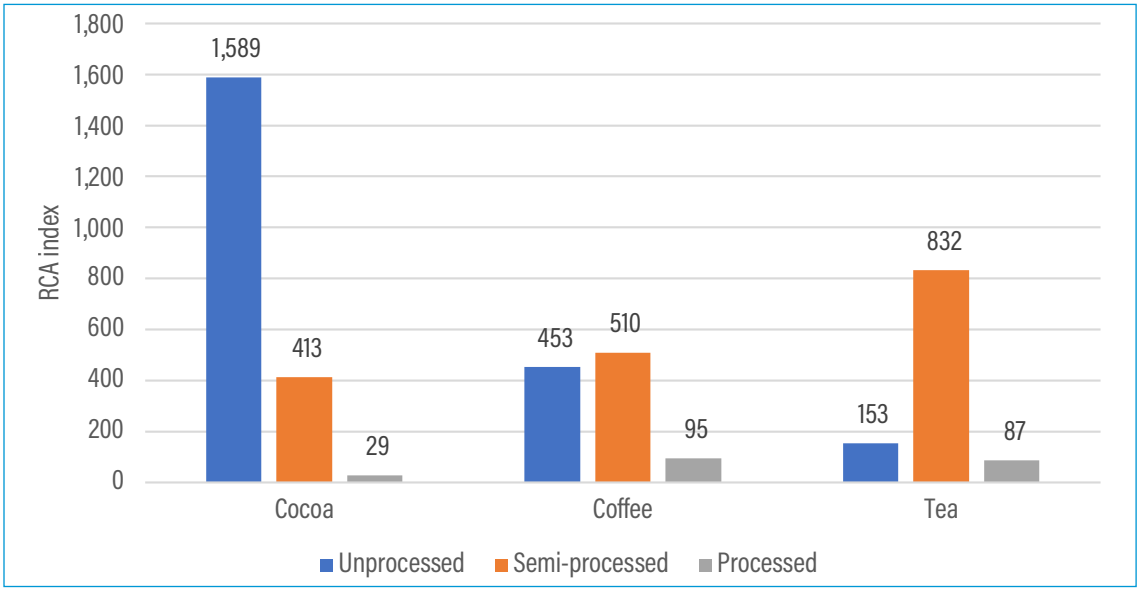
Source: 2022 AATM database.
Note: "Small countries" is an aggregation of small economies and undesignated zones not explicitly specified in the database (such as Andorra, Saint Maarten, etc.).

Revealed comparative advantage

Figure 4.11 shows the average revealed comparative advantage (RCA) index[11] for African exports of the three commodities by level of processing (an index greater than 1 indicates a comparative advantage). Unprocessed cocoa has the highest RCA index. This is not surprising, given the dominant role of West African countries (such as Côte d'Ivoire and Ghana) in the trade of unprocessed cocoa beans. Thanks to Kenya's leading role in tea exports, the region's RCA index is particularly high for semi-processed (black/fermented) tea. In line with African countries' global ranking in the exports of unprocessed coffee and semi-processed cocoa, these RCA indices are also high. The RCA index is also high for semi-processed coffee despite the absence of Africa from the top 10 global exporters. For processed products, African countries also have a relatively high RCA index. However, given Africa's modest processed exports, the values of the index are significantly lower than those for unprocessed and semi-processed goods.

11 The revealed comparative advantage (RCA) index 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 *r* for product *k* is measured by the product's share in the country's exports in relation to its share in world trade. Let X_{rs}^{k} be the trade flow of product *k* from country *r* to country *s*. With a dot meaning a summation, $X_{r.}^{k}$ is total exports of country *r* and $X_{..}^{k}$ total world exports. Thus, the RCA of country *r* for product *k*, RCA_{r}^{k}, is measured by the share of the product in the country's exports compared to its share in world trade as: $RCA_{r}^{k} = \frac{X_{r.}^{k}/X_{r.}}{X_{..}^{k}/X_{..}}$, with $X_{r.}^{k}$ and $X_{..}^{k}$ as the values of country *r*'s exports of product *k* and world exports of product *k*.

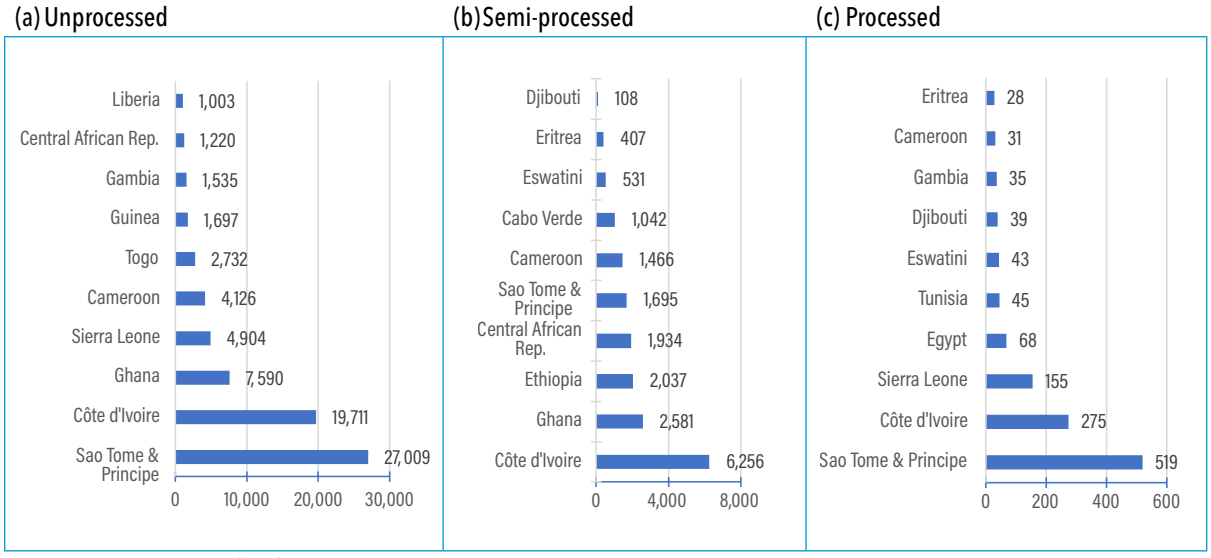
Figure 4.11 African revealed comparative advantage, by level of processing



Source: 2022 AATM database.
Note: Figures are the average over 2003–2020. An RCA greater than 1 indicates a revealed comparative advantage (RCA).

At the country level, countries with the highest RCA scores for exports of unprocessed cocoa are primarily West African countries, with Sao Tome and Principe ranked first, followed by Côte d'Ivoire and Ghana (Figure 4.12). In semi-processed cocoa, West African countries, including Côte d'Ivoire and Ghana, and also East African countries including Ethiopia, have high RCA scores. Finally, in processed cocoa, West African countries (Sao Tome and Principe, Côte d'Ivoire, and Sierra Leone) occupy the top ranks. Two North African countries, Egypt and Tunisia, also appear among the 10 countries with the highest RCA scores for processed cocoa, likely explained by their production and export of chocolate and food preparations containing cocoa to regional markets in the Middle East and North Africa and in sub-Saharan Africa. It is worth noting that the RCA scores for cocoa are significantly lower at higher processing levels, reflecting the concentration of African exports in unprocessed cocoa. Recently, the International Cocoa Council announced that Nigeria, Côte d'Ivoire, Ghana, and Cameroon produced more than 70 percent of the global cocoa supply, but that less than 1 percent of chocolate comes from Africa (Davis 2020).

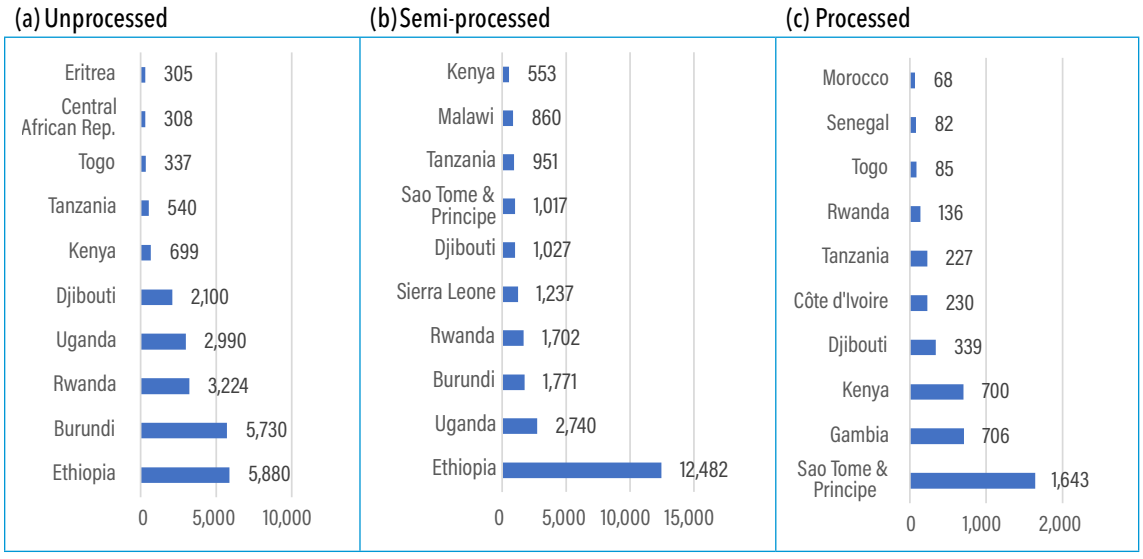
Figure 4.12 Revealed comparative advantage of top 10 countries for cocoa, by level of processing



Source: 2022 AATM database.
Note: Figures are the average over 2003–2020. An RCA greater than 1 indicates a revealed comparative advantage.

In the case of coffee (Figure 4.13), Ethiopia has the highest RCA index in unprocessed and semi-processed products, reflecting its leading role in the production, consumption, and export of coffee. Other countries in East Africa, such as Burundi, Rwanda, Uganda, and Djibouti, also have a high RCA index at these processing levels. For processed coffee, Sao Tome and Principe has the highest RCA in Africa, followed by Gambia and Kenya.

Figure 4.13 Revealed comparative advantage of top 10 countries for coffee, by level of processing

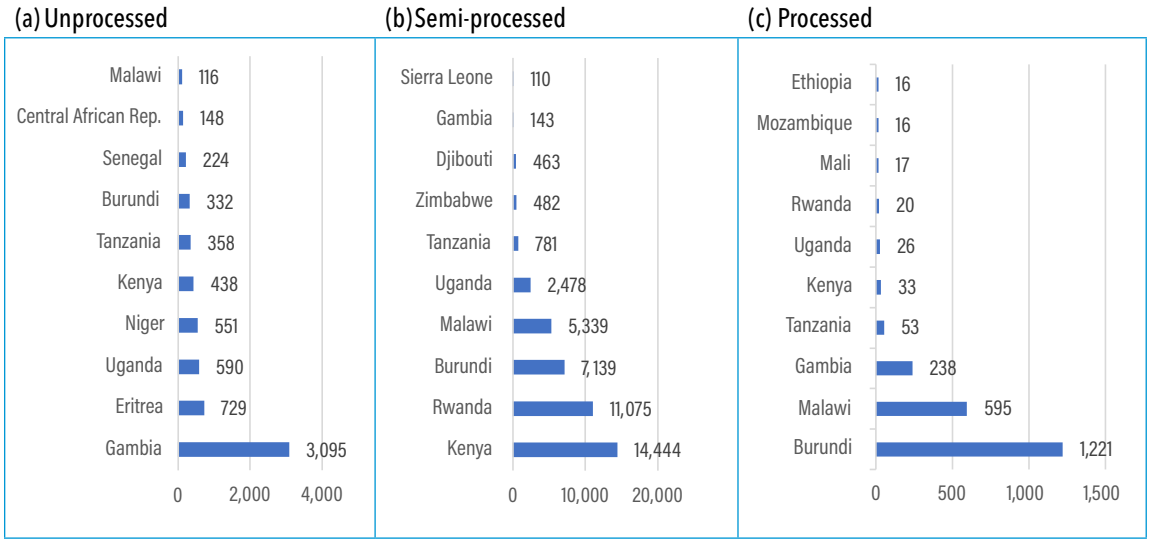


Source: 2022 AATM database.
Note: Figures are average over 2003–2020. An RCA greater than 1 indicates a revealed comparative advantage.

The RCA index for tea exports, depicted in Figure 4.14, shows that Gambia has the greatest RCA for unprocessed tea, followed by Eritrea and Uganda. The RCA scores are generally lower in unprocessed tea than for semi-processed tea. This is because tea requires immediate

processing, leaving little room for unprocessed exports. The indicator reveals a comparative advantage for Kenya at the three processing levels, as well as the highest RCA for semi-processed tea. Other East African and Southeast African countries, including Rwanda, Burundi, Malawi, and Uganda, also have high RCA scores. For processed (maté) tea, Burundi has the highest RCA score, followed by Malawi and Gambia.

Figure 4.14 Revealed comparative advantage of top 10 countries for tea, by level of processing



Source: 2022 AATM database.
Note: Figures are average over 2003–2020. An RCA greater than 1 indicates a revealed comparative advantage.

Major Trade Partners

Figure 4.15 shows the share of the top 10 export destinations for unprocessed, semi-processed, and processed cocoa. These top 10 markets account for more than 80 percent of African exports of unprocessed and semi-processed cocoa beans and more than 66 percent of processed cocoa products. The Netherlands, home to one of the world's largest cocoa-grinding industries (CBI 2021) is the leading export destination for unprocessed cocoa, accounting for 20.6 percent on average during the first period and 28.1 percent on average during the second period. Top European importers include Germany, Belgium, and France. The United States is also among the top importers of unprocessed African cocoa, with a share of 10.8 percent on average in the first period and 11.9 percent in the second period. One of the emerging export destinations among Asian markets is Malaysia, whose share in unprocessed cocoa exports increased from 4.0 to 7.5 percent between the two periods.

For Africa's semi-processed cocoa, the top 10 export destinations are European countries, the United States, and Canada. The Netherlands is again the top destination for African exports (with more than 24.0 percent of Africa's exports during both periods), followed by France (16.1 percent), the United States (9.0 percent), and Germany (7.1 percent).

The market for processed cocoa products (chocolate) has a different, more diversified structure that includes OECD and non-OECD countries. While the main importer is France (with a share of 26.8 percent), several Arab countries also import processed cocoa products from Africa. These include Saudi Arabia (11.6 percent), the United Arab Emirates (7.2 percent), and Kuwait, Jordan, and Iraq with smaller shares. The leading exporter of processed cocoa products to the Middle East and North Africa region is Egypt (UNCTAD 2019). Poland and the United States

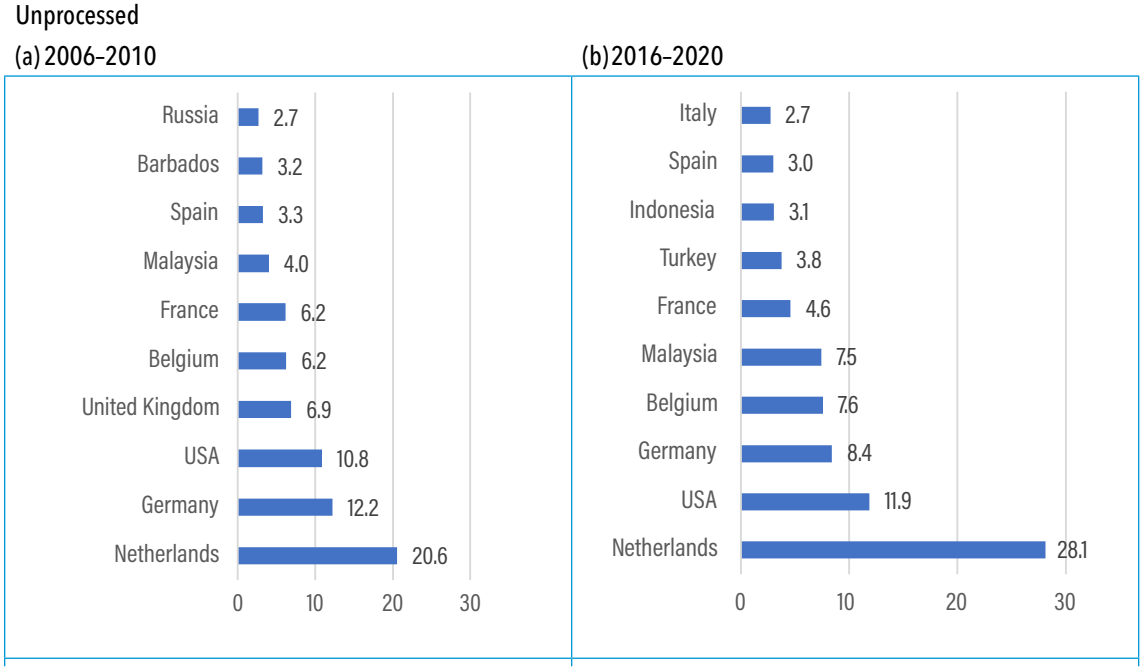
are also among the top 10 importers, though with relatively minor shares. Overall, the top 10 importers of chocolate account for two-thirds of African processed cocoa.

As for the coffee export market (Figure 4.16), Germany is the top importer of unprocessed (unroasted) coffee beans. Its average share decreased from 18.6 percent in the first period to 14.1 percent in the second period. The United States moved up from third to second ranked with an increase of its share from 8.3 percent to 12.9 percent. Italy's share increased from 8.9 to 9.2 percent between the two periods. Together the top 10 importers account for 66.3 percent of total African exports of unprocessed coffee.

The export destinations for semi-processed and processed coffee are more diverse, with Saudi Arabia as the leading importer of semi-processed coffee (16.2 percent), followed by Namibia and Botswana (9.1 and 8.9 percent respectively). The changes in the top 10 list of importers between the two periods reflect reduced concentration in OECD countries and a larger presence of developing countries.

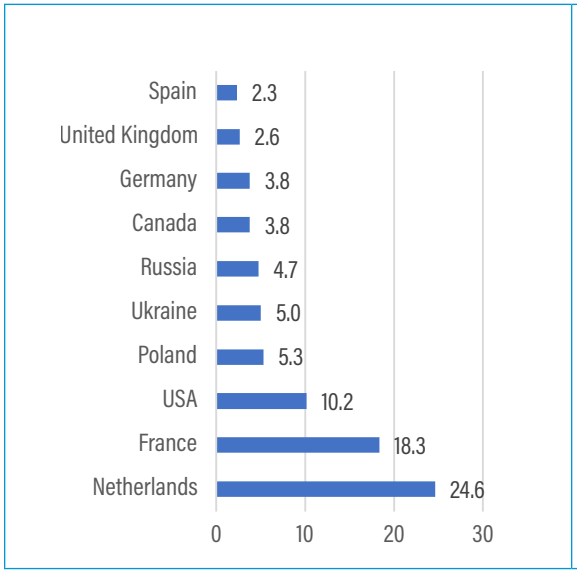
The export destinations for processed coffee exports also differ, with minimal presence of OECD countries. During the first period, Greece was the leading importer of processed coffee from Africa, with a share of 21.8 percent, but during the second period, the top 10 market destinations are all African and Middle Eastern countries. This may indicate the challenges facing African exporters in accessing OECD markets. Standards are less stringent in developing countries, which opens the door for export destinations beyond Africa's traditional trade partners.

Figure 4.15 Destination of African cocoa (%), by level of processing

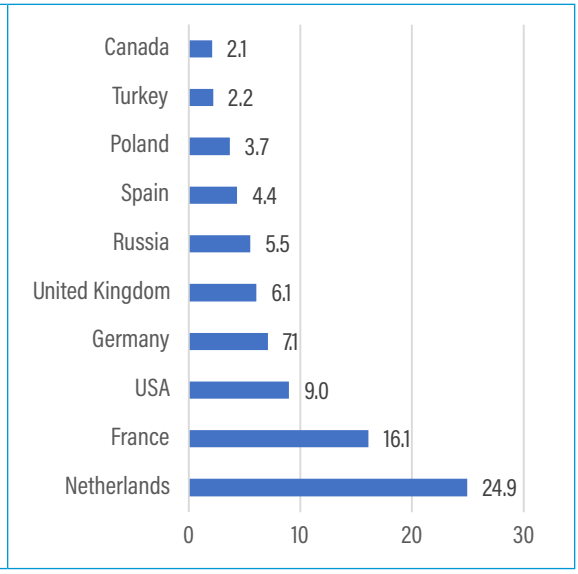


Semi-processed

(c) 2006–2010

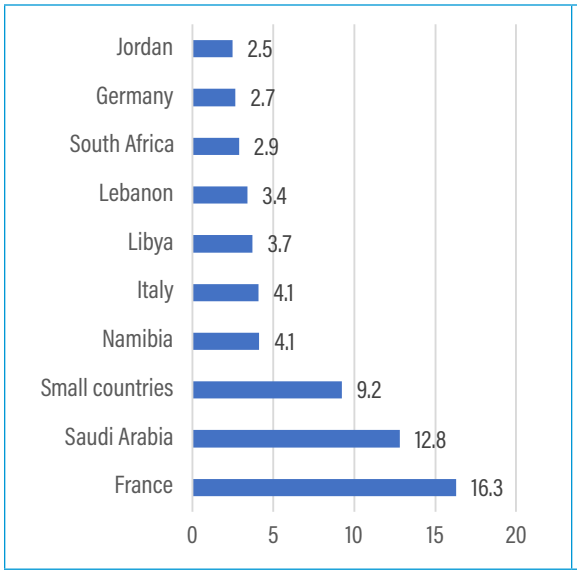


(d) 2016–2020

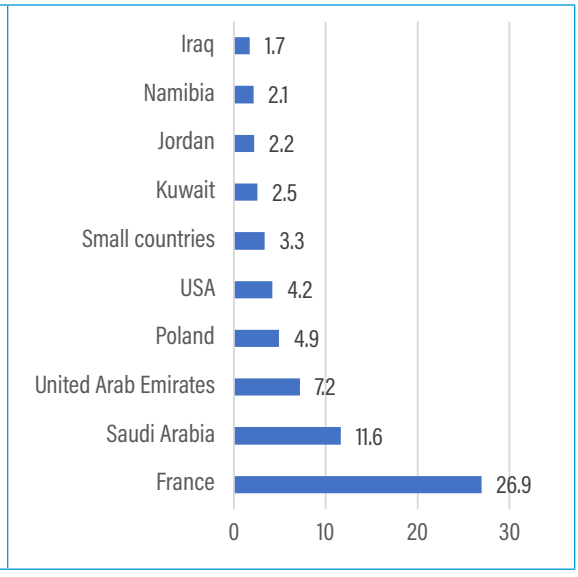


Processed

(e) 2006–2010



(f) 2016–2020

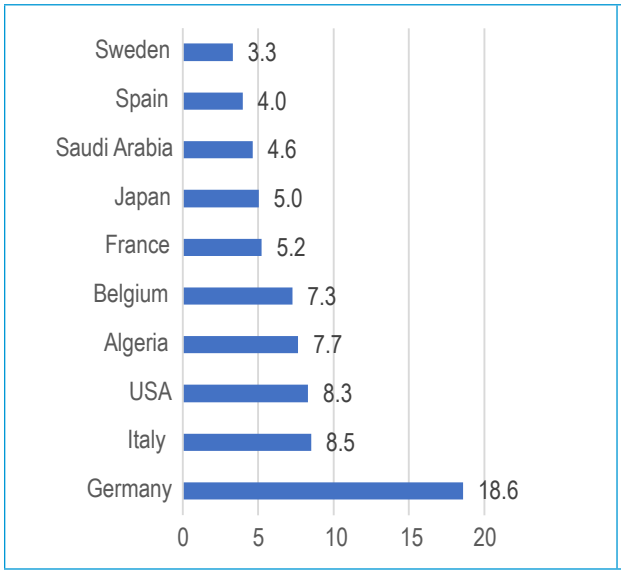


Source: 2022 AATM database.
Note: "Small countries" is an aggregation of small economies and undesignated zones not explicitly specified in the database (such as Andorra, Saint Maarten, etc.).

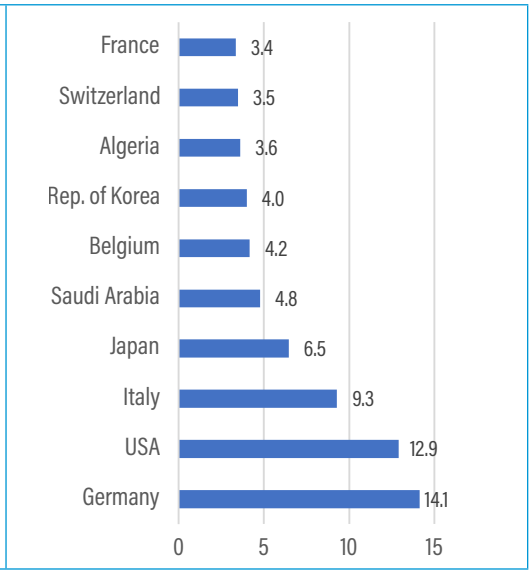
Figure 4.16 Destination of African coffee (%), by level of processing

Unprocessed

(a) 2006–2010

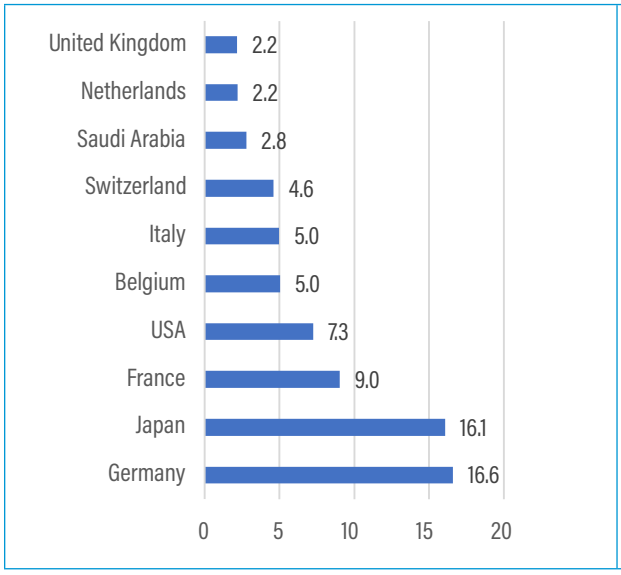


(b) 2016–2020

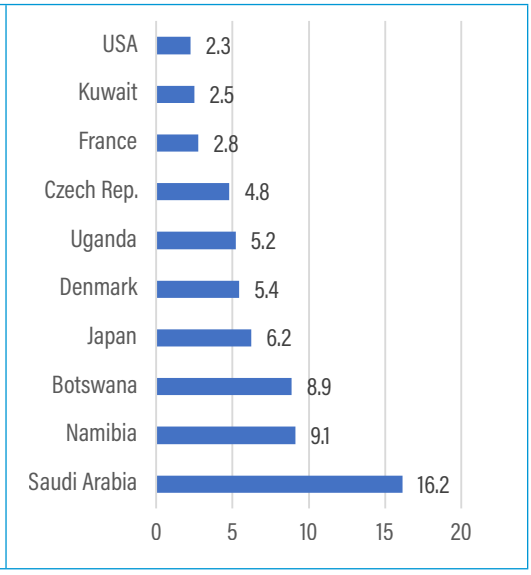


Semi-processed

(c) 2006–2010

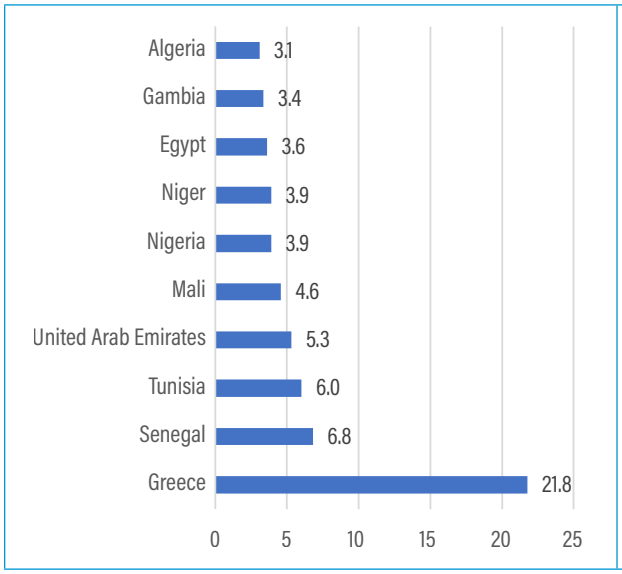


(d) 2016–2020

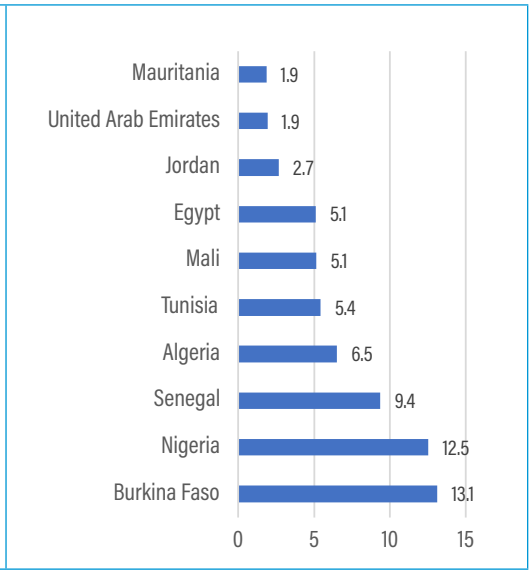


Processed

(e) 2006–2010



(f) 2016–2020



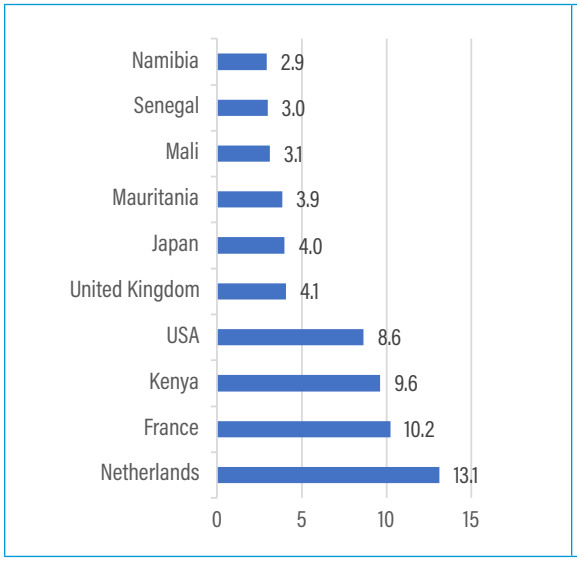
Source: 2022 AATM database.

Market destinations for African tea exports are more diversified than those of coffee and cocoa (Figure 4.17). Between 2006 and 2010, leading importers were the Netherlands, France, Kenya, and the United States. By the 2016–2020 period, China became the major importer of unprocessed tea from Africa, followed by the United States, Kenya, and several European, African, and Middle Eastern countries. For semi-processed tea, the first period was marked by the leading role of the United Kingdom, which imported more than 20 percent of Africa's total tea exports, followed by Pakistan (18.1 percent) and Egypt (11.7 percent). During the second period, Pakistan became the major export destination, accounting for almost one-third of Africa's total tea exports. Egypt's share also increased, up from 11.7 to 14.1 percent, while the UK share dropped from 20.2 to 13.1 percent. Finally, markets for Africa's processed tea exports are concentrated in the United States, Japan, Ireland, and other OECD countries.

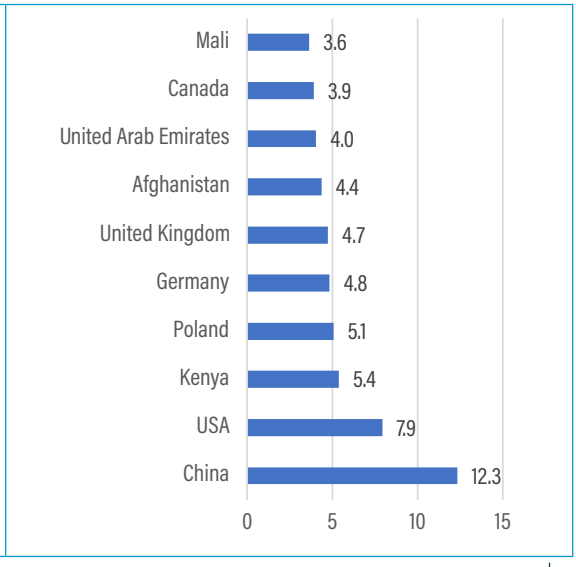
Figure 4.17 Destination of African tea (%), by level of processing

Unprocessed

(a) 2006–2010

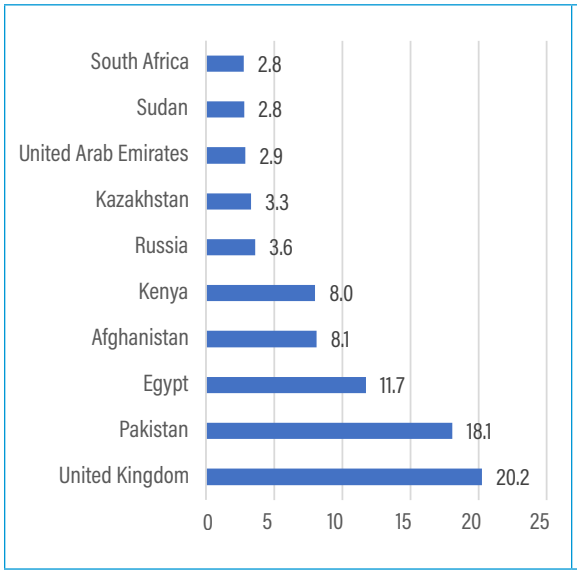


(b) 2016–2020

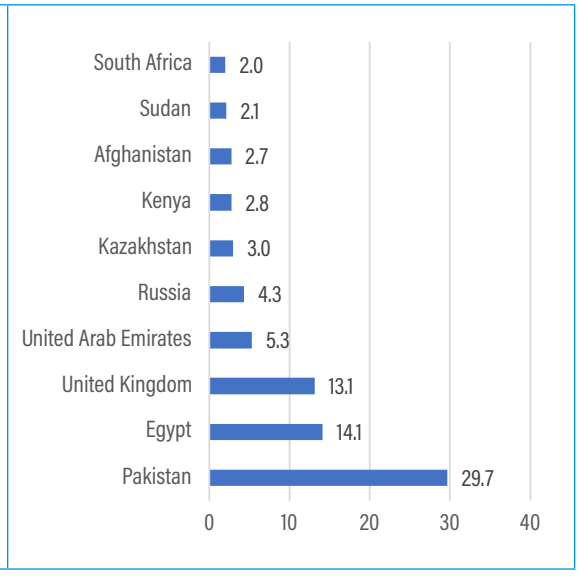


Semi-processed

(c) 2006–2010

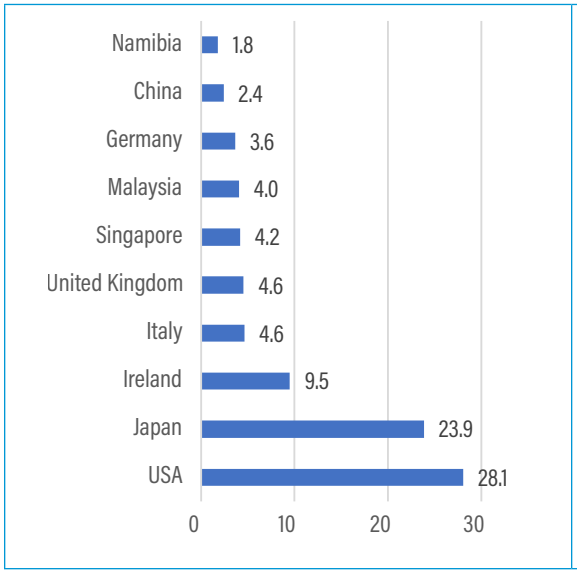


(d) 2016–2020

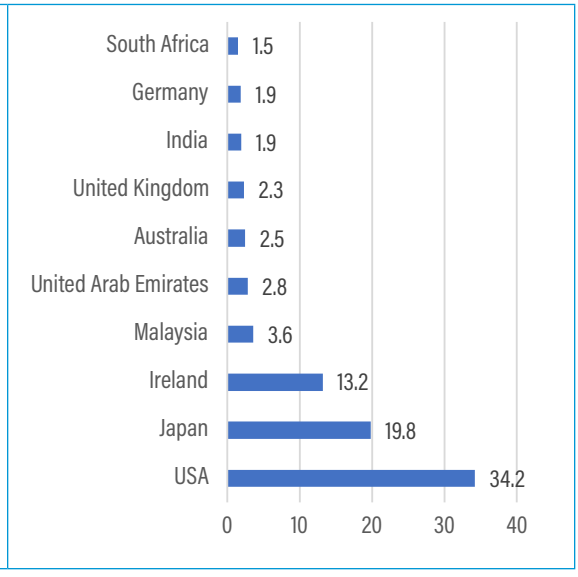


Processed

(e) 2006–2010



(f) 2016–2020



Source: 2022 AATM database.

Following this presentation of the main trends in export composition and destinations for cocoa, coffee, and tea, it is important to consider to what extent African countries are under-trading or over-trading. This will allow us to assess their actual trade performance relative to their export potential.

DO AFRICAN COUNTRIES FULLY EXPLOIT THEIR POTENTIAL?

To answer this question, the trade literature uses models to estimate the predicted trade (based on countries' economic fundamentals) for comparison with the actual trade between countries. If predicted trade is more than actual trade, then the country is said to be under-trading and there is untapped trade potential. Here we compare actual trade in cocoa, coffee, and tea with what it should be (given its determinants) to evaluate trade performance.

As discussed above, African exports are concentrated in tropical commodities like cocoa, coffee, and tea. Historically, the beverages sector has played a very significant role among Africa's food exports. According to 2022 AATM data, the African share of global cocoa exports has averaged 70 percent, coffee exports have averaged 12 percent, and tea, 30 percent. Yet despite these substantial shares in global trade, some important concerns about Africa's international trade remain. These interrelated themes relate to:

Level of trade relative to the potential. This is the issue of under-trading mentioned above. Trade potential is estimated based on determinants of trade, including factors such as a country's incomes, infrastructure, institutions, remoteness, and most importantly, international, global, and domestic policies, referred to collectively as the "fundamentals." Trading below potential calls for policy actions to close the gap between actual and potential trade to maximize the gains from exports of these commodities. Trading above potential, however, may not mean that trade performance is adequate. Trade potential is itself determined based on fundamentals like infrastructure, institutions, other trade facilitators and inhibitors. If these fundamentals are weak, then the assessed potential trade can be low, and the actual trade could well exceed the trade potential. In such a case, the level of exports in absolute terms should also be considered.

Share of value accruing to exporter. When processing, packaging, and branding are done largely by the importer, then a comparatively small share of the final value goes to the exporter. Pairing actual trade with the estimated potential across products by level of processing gives an idea of how much value accrues to the exporter relative to the potential. Cocoa, specifically, is the essential ingredient for chocolate. In tea and coffee also, there are region-specific quality premiums that accrue at the level of final product sales after processing (Gautier 2006). As the discussion above shows, the level of processing in traded products also reflects the persistence of colonial links. Hence, there is reason to look at both trade potential and performance of African trade with ex-colonizers in Europe separately from other traders.

Market shifts across countries and regions. With socioeconomic, technology, and demographic changes, changes have also occurred in the demand and supply centers, their levels, and composition. The rapid economic growth in emerging economies necessitates assessment of trade in those country groups and regions. As shown above, this is reflected in high or rising trade with regions like the Middle East and Southeast Asia (particularly Malaysia). Among exporters as well, there are changes, as illustrated by market reallocation in the case of coffee, with the reemergence of Côte d'Ivoire, the sustained dominance of Ethiopia, and fluctuations in Uganda's exports. Market shifts are also occurring because of compositional changes, like greater demand for specialty and certified organic coffee beans. In the face of global price fluctuations for cocoa, coffee, and tea, developing Africa's internal market for these products is also important and requires an assessment of intra-African trade.

Assessing actual trade relative to potential trade

As discussed above, the first step in assessing the trade performance of an exporter for a particular product is to estimate the trade potential; estimated trade potential provides a benchmark or scale for measuring performance. When a country exports less of the product than its predicted potential, this is termed under-trading. If the reverse, then it is over-trading. The technical appendix to this chapter describes the methodology employed for assessing trade performance relative to trade potential, and discusses the inclusion of multilateral trade frictions and accounting for zero trade within the model to ensure accurate measurement of potential.

Coffee trade

Table 4.1 identifies under- and over-exporting of African countries in coffee products. Considering exports of processed coffee, Ethiopia is under-exporting to Europe and other rich countries. South Africa, a comparatively high-income African country, also exports processed coffee below its potential. In coffee, there is generally no under-trading of the unprocessed product and even some evidence of trading above the predicted potential.

For processed coffee, however, quite a few significant producers export below their potential. Apart from the predominance of primary production in the global South and processing in the global North, coffee is among the tropical products where there is substantial competition because many countries are engaged in production and trade. Liberia, for example, used to be the primary producer of Liberica coffee; now Robusta is Liberia's primary coffee crop but with almost no exports, because is outcompeted in this variety by Southeast Asian countries. Nigeria and Sierra Leone had traditional coffee sectors that, for different reasons, never recovered from past downturns.[12] Even for large African producers like Rwanda and Ethiopia, when it comes to processed coffee and intra-African trade, trading is below potential.

Table 4.1 shows a clear stratification, with African countries exporting at their potential level or more in the case of unprocessed commodities, particularly to the rich countries. As the level of processing increases, it becomes more likely that trading is below potential.

12 Many reasons have been proposed for the decline of coffee in Nigeria, including the emergence of oil that made many farmers abandon coffee. In addition, lack of market access including branding and product differentiation have led to low investments in coffee that have left coffee plants vulnerable to aging and diseases and have further reduced the prospects for coffee. In Sierre Leone, the long civil war disrupted coffee production and many farmers had to abandon their fields.

Table 4.1 Coffee trade performance of Africa

Processed coffee		
OECD	Europe	Africa
Under-trading		
1. Côte d'Ivoire 2. Ethiopia 3. Ghana 4. South Africa	1. Côte d'Ivoire 2. Ethiopia 3. Ghana 4. South Africa	1. Djibouti 2. Ethiopia 3. Rwanda 4. Malawi
Over-trading		
1. Madagascar	1. Madagascar	1. Botswana 2. Rep. of Congo 3. Ghana 4. Zimbabwe
Semi-processed coffee		
OECD	Europe	Africa
Under-trading		
1. Burundi 2. South Africa 3. Algeria 4. Egypt 5. Ghana 6. Gambia 7. Niger	1. Gambia 2. Burundi 3. Kenya 4. Rwanda	1. Rep. of Congo 2. Djibouti 3. Ethiopia 4. Kenya 5. Nigeria 6. Sierra Leone
Over-trading		
		1. Kenya
Unprocessed coffee		
OECD	Europe	Africa
Over-trading		
1. Burundi 2. Rep. of Congo 3. Ethiopia 4. Kenya 5. Mozambique 6. Tanzania 7. Zambia	1. Burundi 2. Rep. of Congo 3. Ethiopia 4. Kenya 5. Mozambique 6. Tanzania 7. Zambia	
Under-trading		
1. Senegal	1. Senegal	

Source: Authors' elaboration using regression results from estimates of the gravity model.
Note: This table shows the African countries that are under- and over-exporting to the OECD, Europe, and Africa. For example, Côte d'Ivoire is under-trading processed coffee with the OECD and Europe, while Madagascar is over-trading processed coffee with these regions.

Cocoa trade

Africa's cocoa trade, like its coffee trade, is characterized by subpar performance in processed products (Table 4.2). Among the big producers of cocoa, Cameroon trades below potential in processed cocoa and its trade performance is relatively weak in unprocessed cocoa in OECD markets. Apart from Cameroon, the other three big cocoa producers in Africa are either trading at the expected level or over-exporting unprocessed cocoa.

Recall that in the case of processed products like chocolate, a country need not be a producer of the raw material (cocoa in this case) to be an exporter. However, the largest cocoa producers, Côte d'Ivoire and Ghana, have been crushing, roasting, and grinding cocoa beans into the unsweetened cocoa mass used to manufacture chocolate for some time and exporting this semi-processed cocoa. Ghana has raised its cocoa processing capacity, reaching 400,000 tons in 2019 (Van Huellen and Abubakar 2021). In Madagascar, where cocoa exports now surpass $20 million (with a government target of $35 million), the emphasis on processed and semi-processed cocoa exports may lead to trade at or above the estimated potential.

Rwanda exports very little processed cocoa and is clearly under-trading even with African partners. As part of the government effort to increase value capture in the cocoa value chain, Ghana is collaborating to establish a chocolate processing plant in Rwanda, which is intended to boost trade and investment between the two countries (Farmers Review Africa 2021). As part of the partnership established in 2021, Ghana will supply processed organic cocoa in the form of cocoa nibs or cocoa liquor, which will be made into chocolate in Rwanda. Arrangements like this can exploit trade opportunities and reduce under-trading within Africa.

Though cocoa is Uganda's fourth largest export (after coffee, tea, and fish), the country tends to under-export processed cocoa, and exports mainly cocoa beans. Côte d'Ivoire, Africa's biggest cocoa producer with 40 percent of the world market, established its first industrial-scale chocolate factory in 2015. Sierra Leone, where the cocoa sector was adversely affected by the civil war, remains an under-trader and trade with Europe remains subpar despite attempts to revive the sector. Sierra Leone opened its first cocoa processing factory in 2021, which has the capacity to process up to a quarter of the country's output. Indeed, in the case of semi-processed cocoa, the incidence of trading below potential is low for African exports in European and OECD markets.

Table 4.2 Cocoa trade landscape

Processed cocoa		
OECD	Europe	Africa
Under-trading		
1. Cameroon 2. Senegal 3. Eswatini 4. Tunisia 5. Zambia 6. Egypt	1. Cameroon 2. Egypt 3. Morocco 4. Sierra Leone 5. Eswatini 6. Tunisia 7. Zimbabwe	1. Côte d'Ivoire 2. Rep. of Congo 3. Madagascar 4. Rwanda 5. Uganda
Over-trading		
1. Côte d'Ivoire 2. Rep. of Congo 3. Madagascar		1. Senegal
Semi-processed cocoa *(including inter alia cocoa liquor, cocoa butter, and cocoa powder)*		
OECD	Europe	Africa
Under-trading		
1. Uganda 2. Eswatini	1. Egypt	
Over-trading		
1. Côte d' Ivoire 2. Cameroon 3. Rep. of Congo 4. Nigeria 5. Ghana	1. Cameroon 2. Nigeria	
Unprocessed cocoa		
OECD countries	Europe	Africa
Under-trading		
1. Cameroon 2. Central African Republic 3. Nigeria	1. Cameroon 2. Central African Republic 3. South Africa 4. Nigeria	1. Sierra Leone
Over-trading		
	1. Rep. of Congo	1. Madagascar 2. Gambia 3. Nigeria 4. Eswatini

Source: Authors' calculations based on gravity model estimates.
Note: This table shows the African countries that are under- and over-exporting to the OECD, Europe, and Africa. For example, Cameroon is under-trading processed cocoa with the OECD and Europe, while Côte d'Ivoire is over-trading processed cocoa with the OECD countries.

Tea trade

Most of Africa's tea production is black tea, as the composition of exports reflects. Africa exports black tea to Asia and Europe and more recently to North America. The top three African producers of tea are Kenya, Uganda, and Malawi. Through branding and dedicated supply to high-end marketers like Marks & Spencer for Kenyan tea, there have been attempts to move up the value chain. Uganda is Africa's second largest tea producer; however, its tea production was badly affected by the period of political turmoil (mostly in the 1970s, with continued effects in 1980s), and has been recovering since political normalcy returned.

Table 4.3 shows Africa's trade performance in unprocessed, semi-processed, and processed tea. Several of Africa's tea exporters under-export. Kenya stands out as exporting more than expected in both unprocessed and semi-processed tea products. The intra-Africa trade performance is below potential for many African countries in the case of semi-processed tea. As much of Africa consumes tea, the main form in which tea is traded matters. For both Uganda and Tanzania, where attempts are being made to revive the tea sector, the under-trading within Africa can be quite significant, reflecting considerable untapped potential.

Table 4.3 Tea trade landscape

Processed tea		
Europe	**OECD**	**Africa**
Under-trading		
1. Ethiopia 2. Ghana 3. Egypt 4. Tanzania 5. Zimbabwe	1. Senegal 2. Sierra Leone 3. Zimbabwe	
Over-trading		
	1. South Africa	
Semi-processed tea		
Europe/OECD		**Africa**
Under-trading		
No sizable exporter		1. Djibouti 2. Rep. of Congo 3. Egypt 4. Kenya 5. Ethiopia 6. Morocco 7. Sierra Leone
Over-trading (low levels)		
1. Kenya 2. Mozambique 3. Tanzania 4. South Africa 5. Malawi		

Unprocessed tea		
Europe	**OECD**	**Africa**
Under-trading		
1. South Africa 2. Niger 3. Senegal 4. Uganda 5. Tanzania	1. South Africa 2. Gambia 3. Senegal 4. Uganda	
Over-trading		
	1. Kenya 2. Mauritius	

Source: Authors' calculations based on gravity model estimates.
Note: This table shows the African countries that are under- and over-exporting to the OECD, Europe, and Africa. For example, Ethiopia is under-trading processed tea with Europe, while South Africa is over-trading processed tea with the OECD countries.

THE DETERMINANTS OF UNDER-TRADING

Is under-trading cause for concern, and over-trading a mark of good trade performance? In the assessed under-trading scenario, relatively weaker economic characteristics such as domestic infrastructure and an unfavorable investment climate may predict a lower trade level for a country. Further, over-exporting may indicate the importance of focusing on policies that enhance the country's trade potential. Yet, as highlighted in this chapter, trade in these three commodities is characterized by greater value capture by the importing countries. Thus, steps are needed to allow African exporters to accrue a greater share of the value through processing and other forms of product differentiation.

Beyond the deep impact of Africa's colonial heritage on its present structure of exports, internal and external challenges limit Africa's participation in higher value-added activities in the cocoa, coffee, and tea global value chains. These include restrictive trade policies, challenges related to the quality of institutions and infrastructure, and limited access to technology and know-how. These challenges are briefly discussed below.

External factors

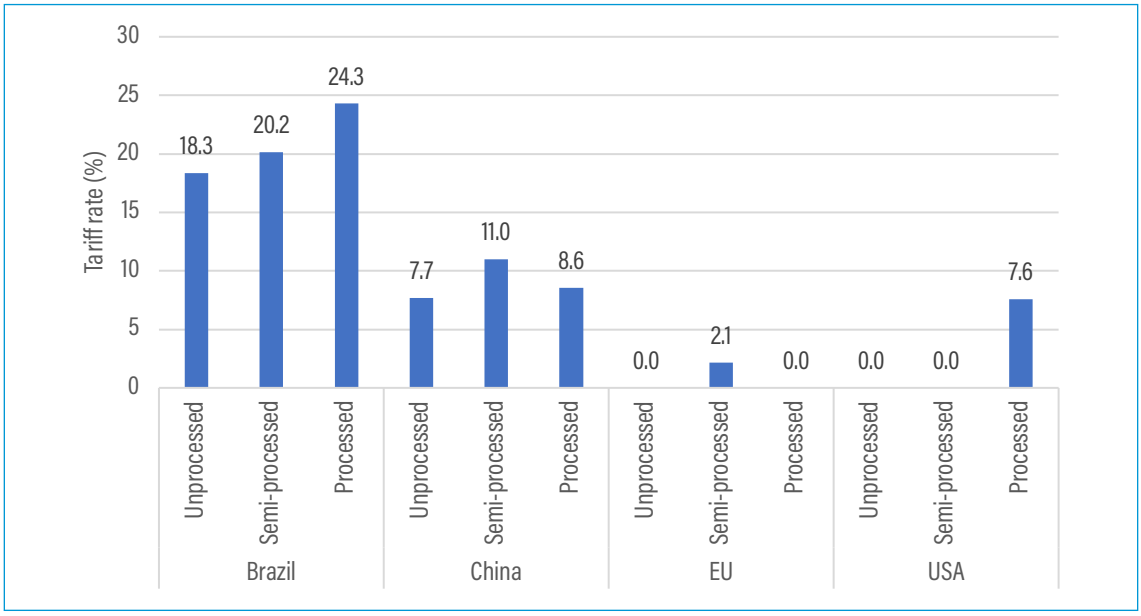
Tariff escalation

Escalating tariffs — that is, tariff rates that increase with the level of product processing — are among the main reasons for Africa's lack of export processing and diversification. Although escalating tariffs have declined over time, they remain relatively high in value chains for tropical produce, including cocoa, tea, and coffee.

Figure 4.18 compares tariffs imposed by the EU, the United States, China, and Brazil on cocoa imported from Africa. According to MAcMap-HS6[13] data, unprocessed and processed cocoa exports enjoy a tariff-free entry to EU markets but semi-processed cocoa (cocoa mass, butter, and powder) is subject to a 2.1 percent tariff. The United States, another major trade partner for Africa, imposes a 7.6 percent tariff on processed cocoa imports from Africa. Tariffs imposed by Brazil (a major competitor in cocoa growing and processing) are typically high and escalating (18.3, 20.2, and 24.3 percent for unprocessed, semi-processed, and processed cocoa respectively). China's tariffs on cocoa imports are also relatively high, with a rate of 11 percent on semi-processed cocoa.

13 The authors thank Houssein Guimbard for providing access to MAcMap-HS6 2019.

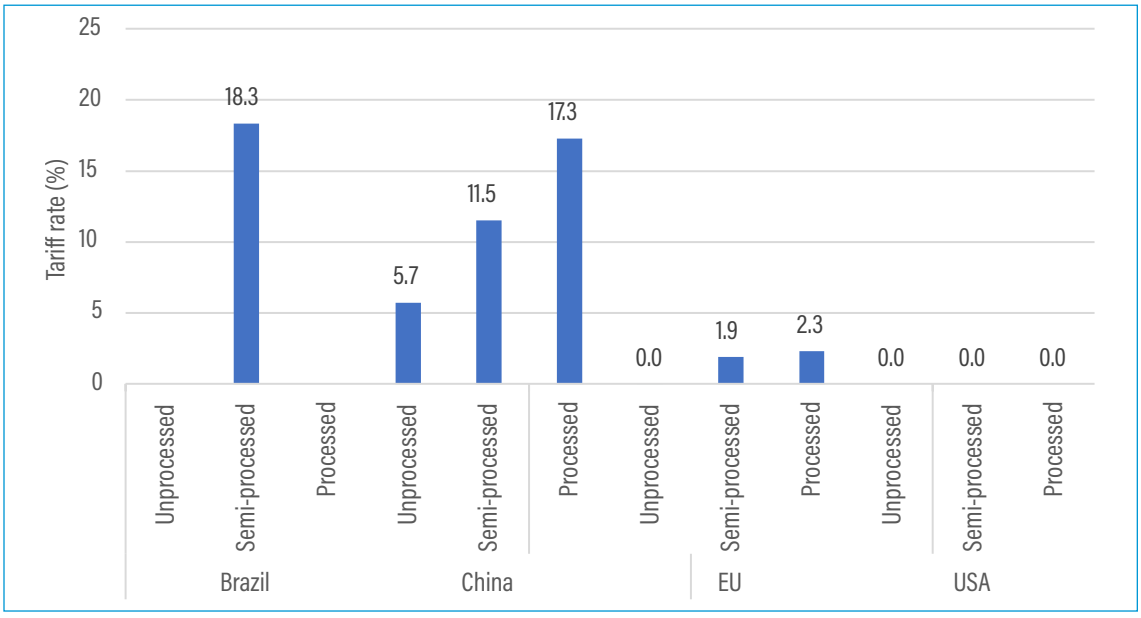
Figure 4.18 Tariff faced by African countries on cocoa, by level of processing, 2019



Source: Authors' elaboration using MAcMap dataset.

Tariffs on coffee (Figure 4.19) are highest on semi-processed exports to Brazil (18.3 percent). As in the case of cocoa, China applies escalating tariffs on the imports of African coffee, reaching 17.3 percent for processed goods. Major coffee-importing countries have eliminated tariffs on unprocessed coffee imports but maintain most-favored nation (MFN) tariffs on imports of semi-processed and/or processed coffee. For example, the EU imposes a 1.9 percent tariff on semi-processed coffee and a 2.3 percent tariff on processed coffee. Some African countries have privileged partnership agreements with the EU that allow for tariff-free imports of processed coffee – these include Cameroon, Côte d'Ivoire, Kenya, Tanzania, and Uganda (UNCTAD 2018).

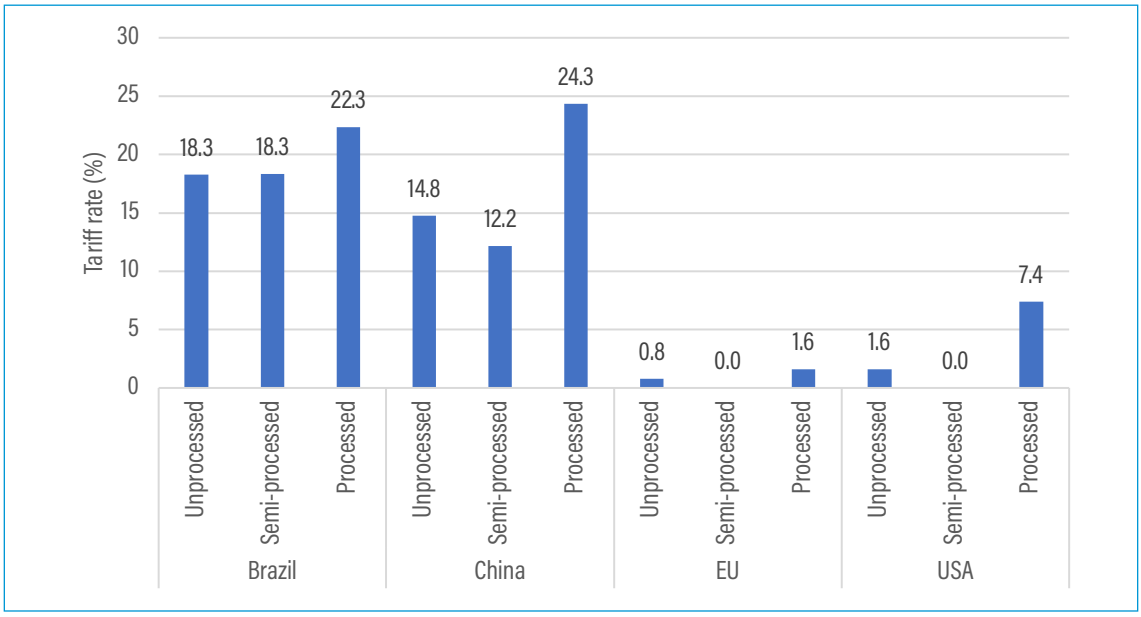
Figure 4.19 Tariff faced by African countries on coffee, by level of processing, 2019



Source: Authors' elaboration using MAcMap dataset.

For tea (Figure 4.20), import tariffs are strikingly high in Brazil (18.3 percent on unprocessed and semi-processed tea and 22.3 percent on processed tea). Surprisingly, China, the top importer of unprocessed tea from Africa, sets import tariffs at 14.8 percent. China's tariff rates are also high for semi-processed tea (12.2 percent), and more substantial for processed tea (24.3 percent). The EU imposes a tariff rate of 1.6 percent and the United States 7.4 percent on processed tea. Finally, semi-processed tea enjoys tariff-free entry in EU and US markets.

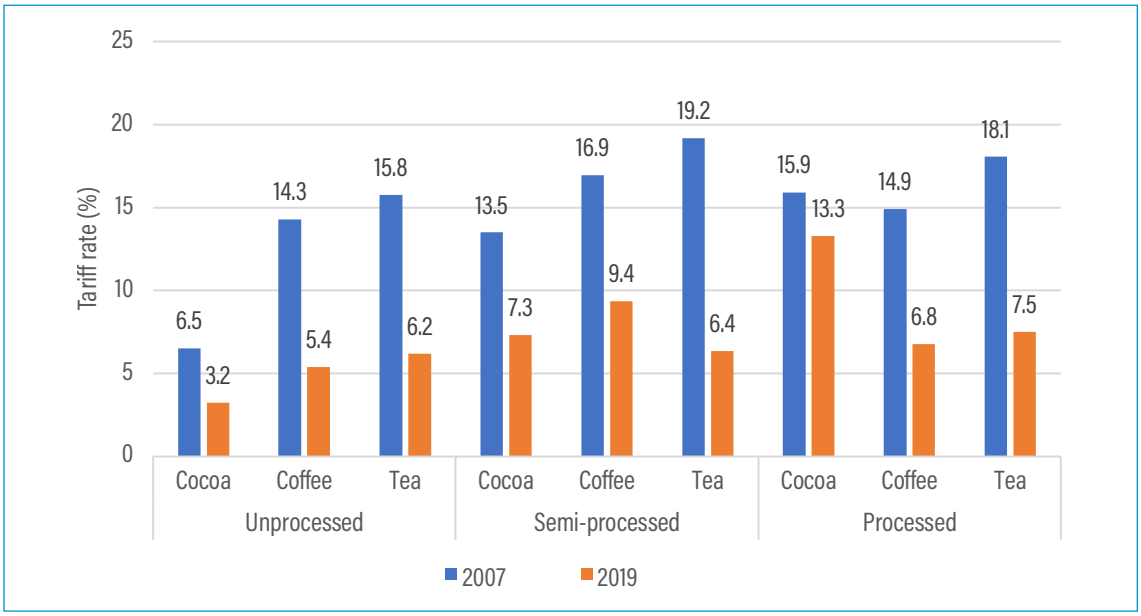
Figure 4.20 Tariff faced by African countries in tea, by level of processing, 2019



Source: Authors' elaboration using MAcMap dataset.

African countries impose high and escalating tariffs on regional trade. Figure 4.21 shows average intra-African tariffs on cocoa, coffee, and tea. In general, tariffs have been lowered over time but remain comparatively high and escalating. For example, tariffs on semi-processed tea are above 6 percent. For cocoa, tariffs increase from 7.3 percent on semi-processed cocoa to 13.3 percent on processed cocoa products. In the case of coffee, semi-processed (roasted) beans are subject to the highest tariff rate in the value chain (9.4 percent). Restrictive intra-African trade policy contributes to the relatively low intra-African trade levels. It also undermines the potential to develop regional value chains with a larger variety of semi-processed and processed products as a stepping-stone to integrating with global chains and competing internationally. In the case of tea, for example, the intra-African market accounts for nearly 25 percent of the continent's total exports. However, the potential to develop regional tea value chains is constrained by the persistence of escalating intra-African tariffs and the different levels of protection maintained by the multiple regional economic communities. Similarly, the cocoa value chain is fragmented. Large cocoa producers export outside of Africa, and countries engaged in chocolate processing source their inputs from outside the continent to benefit from lower preferential tariffs (UNCTAD 2019). In this regard, liberalizing intra-African trade under the umbrella of the African Continental Free Trade Area (AfCFTA) is a necessary step to help African producers increase their competitiveness by accessing a large regional market and "practicing" processing and producing a larger variety of products. Yet, while intra-African tariffs will be removed on most of the products under the AfCFTA, nontariff measures will still need to be addressed, including the simplification of nontariff measures, especially those relating to rules of origin.

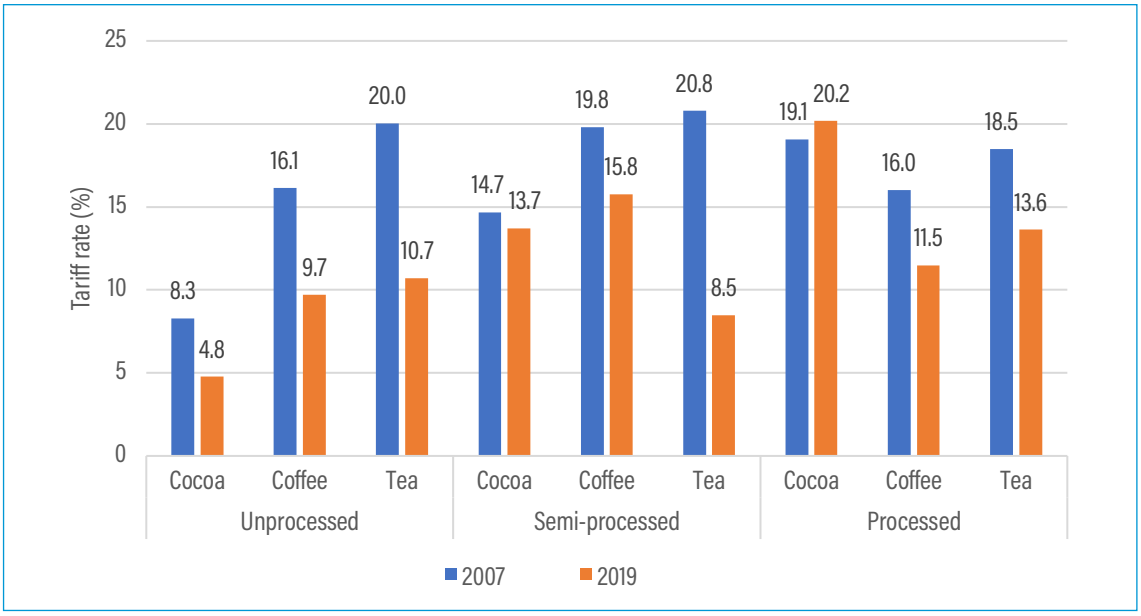
Figure 4.21 Intra-African tariffs, 2007 and 2019



Source: Authors' elaboration using MAcMap datasets.

African countries also impose high import tariffs on products of non-African origin (Figure 4.22). While high tariffs may be justified by the desire to protect local industries from foreign competition, consumers enjoy little product variety as a consequence. Tariffs on imports of cocoa and coffee remain particularly high. For example, tariffs on semi-processed and processed cocoa are as high as 13.7 percent and 20.2 percent, respectively. Moreover, import tariffs on processed cocoa increased by nearly 1 percentage point between the two periods. For coffee, tariffs on semi-processed (roasted) beans and processed coffee products remain high (15.8 and 11.5 percent respectively). Compared to cocoa and coffee, imports of tea are subject to relatively lower tariffs (8.5 percent on the imports of semi-processed tea).

Figure 4.22 Tariffs imposed by African countries on non-African countries, 2007 and 2019



Source: Authors' elaboration using MAcMap dateset.

Nontariff measures

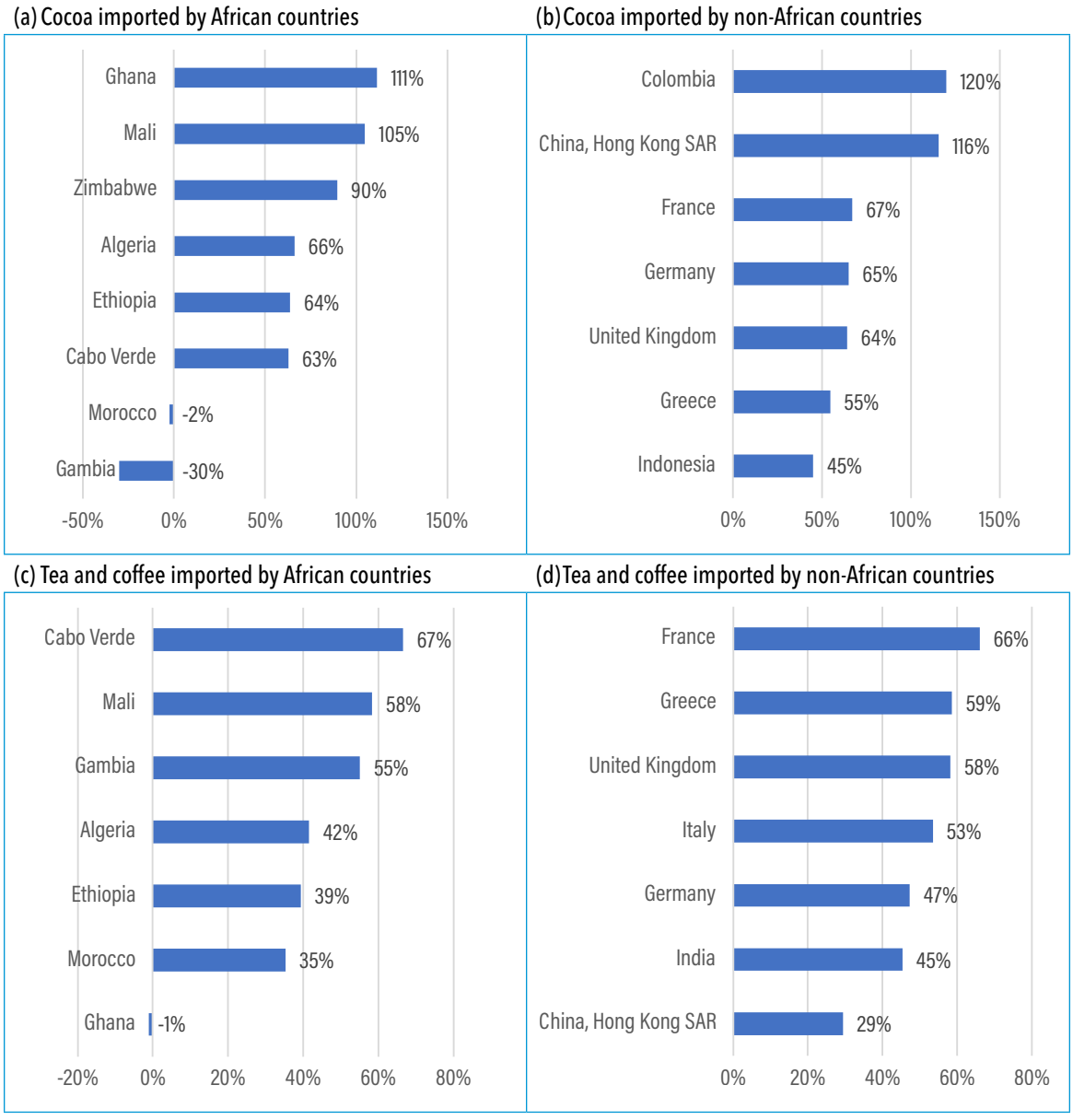
The past two decades witnessed a proliferation of public and private standards in the EU. Although many developing countries, including African countries, are now adopting many of these standards, they still hinder market access and discourage investment in African processed goods for the purpose of exporting. Smaller firms are more likely to encounter difficulties in meeting exports requirements, especially those related to compliance with standards and certification.

African countries also impose nontariff measures on imports of coffee, tea, and cocoa. While these measures are intended to promote consumer safety, they often provide an implicit means of protecting domestic industries from foreign competition. We focus here on sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT), which are the most important technical measures that might affect trade. SPS measures refer to regulations related to food safety and animal and plant health. TBT measures include technical regulations, standards, and conformity assessment procedures.

Figure 4.23 compares the ad valorem equivalent (AVE)[14] of SPS measures in African and non-African countries. In Africa, Ghana is one of the top producers and exporters of cocoa and has the highest AVE of SPS measures, followed by Mali and Zimbabwe. In the case of non-African countries, Colombia imposes the most restrictive SPS measures. In addition to its high and escalating tariffs, China also has stringent SPS measures resulting in a high AVE on cocoa imports. In Europe, France, Germany, the United Kingdom, and Greece are among the countries with the highest AVE of SPS measures imposed on cocoa imports from Africa. For tea and coffee, Cabo Verde, Mali, and Gambia have the highest AVE of SPS measures on imports. In non-African markets, the highest AVEs are in European countries.

14 Ad valorem equivalents measure the impact of nontariff trade restrictions by estimating an economically equivalent tariff rate. AVEs will be negative in cases where SPS and TBT measures facilitate trade.

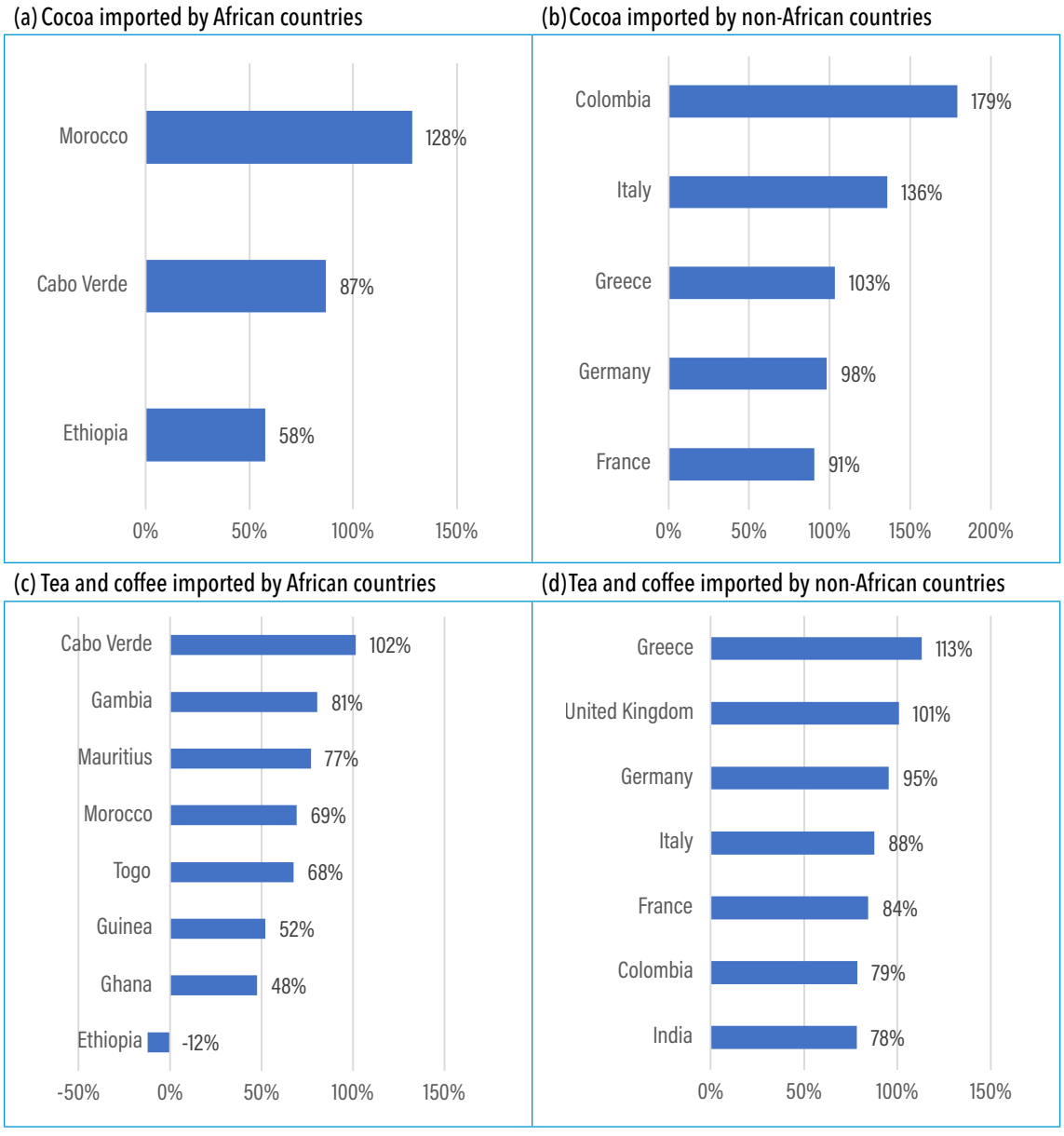
Figure 4.23 AVE of SPS measures in African and non-African countries, 2018



Source: Authors' elaboration based on Nguyen, Bouët, and Traoré (2020).

As for TBT, Figure 4.24 shows that the highest AVEs of TBT measures in cocoa are in Morocco, Cabo Verde, and Ethiopia. Among non-African countries, Colombia and the European countries are the most restrictive. In the case of tea and coffee, Cabo Verde, Gambia, and Mauritius are among the most restrictive countries. Among non-African economies, European countries, India, and Colombia impose the most restrictive TBT measures.

Figure 4.24 AVE of TBT in African and non-African countries, 2018



Source: Authors' elaboration based on Nguyen, Bouët, and Traoré (2020).

Domestic factors

Domestic demand for cocoa, coffee, and tea could play an important role in increasing intra-African trade and in fostering African exports. A large African market could foster domestic competitiveness as firms benefit from economies of scale, and increased competitiveness at the regional level could increase African products' competitiveness at the international level over time. Thus, domestic producers could benefit from the liberalization of the African market under the AfCFTA to "learn" and realize productivity gains that gradually allow them to compete internationally.

Nevertheless, market liberalization and harmonization of trade-related regulations at the African level are unlikely to promote significant shifts in countries' competitiveness if trade policy is not consistent with industrial policy (UNCTAD 2019). Most importantly, a poor business

climate will continue to undermine Africa's potential to increase production and exports of processed products. In the sections below, we focus on several internal challenges that reduce the attractiveness of African markets to domestic and foreign investments, which will need to be addressed to increase competitiveness.

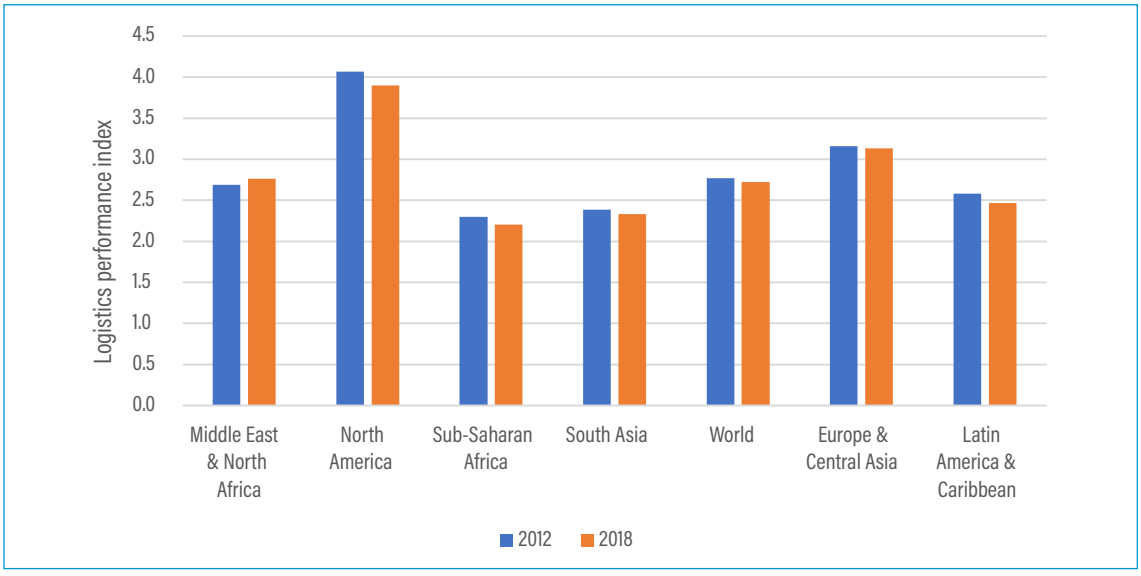
Underdeveloped infrastructure

Figure 4.25 depicts the logistics performance index for several regions. This index quantifies the quality of trade- and transport-related infrastructure, with a lower index value indicating poor quality of trade-related infrastructure (for example, ports, railroads, road, and information technology) and vice versa. North America has by far the highest score at the global level, followed by Europe and Central Asia. Sub-Saharan Africa has the lowest score in both years (2012 and 2018), with an index value of 2.3 in 2012, dropping to 2.2 in 2018.

The low quality of trade infrastructure in Africa can be traced back to colonial times when colonizers focused on developing infrastructure that served the export-oriented economies. Only roads connecting to ports were developed, while other traditional continental trade routes were ignored and deteriorated over time.

Underdeveloped regional roads are a fundamental problem for intra-African trade. At the country level, the absence of adequate transport and storage services and weak information and technology (IT) infrastructure are all major problems facing production and trade of tropical crops like cocoa, coffee, and tea. Value chains for fresh produce require swift and appropriate transport and storage to avoid damage. Poor infrastructure and hot and humid weather conditions contribute to significant commodity spoilage. Together, stringent SPS and TBT measures, underdeveloped infrastructure, and poor logistics act as barriers facing African industries wishing to compete internationally. There are also significant disparities between small-scale farmers and multinationals in access to and use of technology and efficient management practices. This affects competitiveness of small-scale farmers and small and medium enterprises (SMEs) and is one of the major barriers to their engagement in international trade.

Figure 4.25 Quality of trade and transport-related infrastructure



Source: Logistics performance index, https://lpi.worldbank.org/.
Note: Logistics professionals' perception of a country's quality of trade- and transport-related infrastructure (e.g., ports, railroads, roads, information technology), on a scale ranging from 1 (very low) to 5 (very high). Scores are averaged across all respondents.

Institutional barriers

Colonialism also left African countries with diverse legal infrastructure and institutions. Official languages, laws, business practices, and overall economic traditions differ across the continent, which hinders trade integration (Bjornlund et al. 2020). In addition, high transaction costs from poorly functioning legal and judicial systems, slow and costly export and import procedures, and lack of access to finance all compound the institutional challenges that African producers face every day. For small-scale farmers, access to credit is a major obstacle. In the absence of contract enforcement in the ownership of land, many small firms and small-scale farmers lack the collateral needed to access credit. For firms (especially SMEs), access to credit is necessary to invest in processing technology and equipment. In the special case of cocoa, for example, where the value chain is complex and processing activities are capital intensive, access to credit is essential for domestic firms to engage successfully in downstream activities.

CONCLUSION

In this chapter, we have analyzed African participation in global value chains for coffee, cocoa, and tea. We have examined African trade in the three products by level of processing and export destination and have estimated over-trading and under-trading by African countries compared with their potential. We also discussed possible causes of under-trading and low participation in downstream processing.

Our findings suggest that a significant proportion of African exports of cocoa, coffee, and tea involve little or no processing. Exports of the three commodities are concentrated in unprocessed coffee and cocoa and semi-processed tea. Our gravity estimations suggest that many African countries are under-trading cocoa, coffee, and tea across the three levels of processing and that there is strong potential not only to trade more in volume but also to trade "better" in terms of more sophisticated products.

Several factors explain both under-trading and the concentration of exports in unprocessed commodities. The first relates to the structure of these value chains at the global and regional levels. At the global level, cocoa and coffee processing, for example, are characterized by chain fragmentation due to concentration of downstream activities among a few large multinational firms in consumer markets. In some cases, as for coffee, technical aspects and cost-efficiency considerations mean that processing is better done near the consumer. The predominance of ex-colonial powers as major trade partners and their use of escalating tariffs contribute to the stagnation of trade relations. African exports of semi-processed and processed products also face difficulty accessing EU and US markets because of stringent SPS measures. While some of these measures are justified based on health and safety concerns, others are highly protective and have a negative impact on African exports. To resolve this impasse, more transparency is needed from the EU and US trade rules and better-quality products are needed from the African side.

Arguably, compliance with EU standards may generate benefits that extend beyond better access to EU markets, as compliance could facilitate access to other markets with similar standards. Moreover, an increasing proportion of consumers in developing countries are demanding organic, sustainable, and ethical products; meeting the standards needed for this growing market could provide an opportunity for Africa to increase its global market share (Woolfrey and Karkare 2021). However, the more transparent the rules are, the easier it will be for African countries to comply and thus increase exports.

At the regional level, the lack of trade-related regulatory convergence leads to fragmented and underdeveloped value chains. Notably, intra-African tariffs are often higher than the preferen-

tial tariffs imposed on African exports by wealthier regions (under the GSP or the EBA Initiative, for example). Thus, despite the availability of high-quality African-grown cocoa, coffee, and tea, many African countries continue to source a substantial share of these inputs from outside the continent for purposes of processing and manufacturing of final goods.

Yet, intra-African trade offers another opportunity to develop regional value chains through forward integration and upgrading of products to serve the growing regional market. Processing agricultural crops like cocoa, coffee, and tea would reduce the concentration of exports in primary commodities and reduce African countries' vulnerability to global price shocks (UNCTAD 2019). Consumption of cocoa, coffee, and tea is relatively low in the region but is increasing with rising income levels. However, promotion of intra-African trade will require serious tariff dismantlement and elimination of burdensome nontariff measures. Poor trade-related infrastructure and high transport costs also would need to be addressed (Bouët and Odjo 2019).

In this context, the full implementation of the AfCFTA can contribute to development of regional value chains, allowing African countries to benefit from trade complementarities and economies of scale as they access a larger (free) market (UNCTAD 2019). With greater regional trade, African firms — especially SMEs — can "learn" to process and upgrade their products. They can benefit from regional integration and investments to build capacity and share know-how before competing in international markets. Finally, internal challenges, especially those related to access to technology and credit must be addressed, as these are two key determinants of the success of African countries in upgrading along regional and global value chains.

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APPENDIX

Table A4.1 Classification of coffee, tea, and cocoa by level of processing (HS6 level)

HS6	Product	Stage	Description
90111	Coffee	Unprocessed	Coffee; not roasted or decaffeinated
90112	Coffee	Unprocessed	Coffee; decaffeinated, not roasted
90121	Coffee	Semi-processed	Coffee; roasted, not decaffeinated
90122	Coffee	Semi-processed	Coffee; roasted, decaffeinated
90190	Coffee	Semi-processed	Coffee; husks and skins, coffee substitutes containing coffee in any proportion
210111	Coffee	Processed	Extracts, essences, and concentrates of coffee; and preparations with a basis of these extracts, essences, or concentrates or with a basis of coffee
210112	Coffee	Processed	Preparations with a basis of extracts, essences, or concentrates or with a basis of coffee
210120	Coffee	Processed	Extracts, essences, and concentrates of tea or mate; and preparations with a basis of these extracts, essences, or concentrates or with a basis of tea or maté
210130	Coffee	Processed	Chicory, roasted and other roasted coffee substitutes; extracts, essences and concentrates thereof
90210	Tea	Unprocessed	Tea, green; (not fermented), in immediate packings of a content not exceeding 3 kg
90220	Tea	Unprocessed	Tea, green; (not fermented), in immediate packings of a content exceeding 3 kg
90230	Tea	Semi-processed	Tea, black; (fermented) and partly fermented tea, in immediate packings of a content not exceeding 3 kg
90240	Tea	Semi-processed	Tea, black; (fermented) and partly fermented tea, in immediate packings of a content exceeding 3 kg
90300	Tea	Processed	Maté
180100	Cocoa	Unprocessed	Cocoa beans; whole or broken, raw or roasted
180200	Cocoa	Unprocessed	Cocoa; shells, husks, skins and other cocoa waste
180310	Cocoa	Semi-processed	Cocoa; paste, not defatted
180320	Cocoa	Semi-processed	Cocoa; paste, wholly or partly defatted
180400	Cocoa	Semi-processed	Cocoa; butter, fat, and oil
180500	Cocoa	Semi-processed	Cocoa; powder, not containing added sugar or other sweetening matter
180610	Cocoa	Semi-processed	Cocoa; powder, containing added sugar or other sweetening matter
180620	Cocoa	Processed	Chocolate and other food preparations containing cocoa; in blocks, slabs, or bars weighing more than 2 kg or in liquid, paste, powder, granular or other bulk form in containers or immediate packings, content exceeding 2 kg
180631	Cocoa	Processed	Chocolate and other food preparations containing cocoa; in blocks, slabs, or bars, filled, weighing 2 kg or less
180632	Cocoa	Processed	Chocolate and other food preparations containing cocoa; in blocks, slabs, or bars, (not filled), weighing 2 kg or less
180690	Cocoa	Processed	Chocolate and other food preparations containing cocoa; n.e.c. in chapter 18

Technical Discussion

The first step in assessing trade performance of an exporter for a product is to establish the trade potential, which provides a benchmark or scale to measure success. If the country exports less than its potential for a product, then it is under-trading. If it exports more than its potential, then it is over-trading.

Economists have developed robust models that determine predicted or expected trade based on a country's fundamentals. The workhorse model of international trade, called the gravity model, is used to measure trade potential. We employ this model to estimate the trade potential of African countries with different trading partners for cocoa, coffee, and tea. This analytical framework for international trade, proposed by Tinbergen (1962) and inspired by Newton's law of gravity, states that the volume of trade between two countries is proportional to their economic mass and a measure of their relative trade frictions. The present structure of the gravity model is built on this basic construct, with some theoretical reconstructions to lend better predictive abilities to the model described below.

We assess the trade potential, that is expected or potential trade, at each level of processing. On the importer side, we look at country groups including European countries, rich OECD countries, and countries in the African continent. As the estimate of trade potential is based on a model, having the correct model is of paramount importance. A reliable estimate of trade potential provides an essential benchmark for measuring a country's actual trade performance.

Measuring trade barriers in a multilateral way

Bilateral trade depends not only on bilateral trade barriers but also on average trade barriers across all trade partners, termed multilateral resistance. The identification and explanation of multilateral resistance helps estimate one nation's costs of overseas trade when estimating a gravity model. Multilateral resistance matters for both countries in a trading pair (exporter and importer) and can vary over time. For example, multilateral resistance explains the substantial trade between Australia and New Zealand — not only are these two countries close to each other but they are also far away from the rest of the world. A properly specified model that accounts for time varying multilateral resistance gives a truer prediction of trade. Olivero and Yotov (2012) recommend the use of exporter x time and importer x time dummy variables to account for time varying multilateral resistance.

Properly accounting for zero trade

The standard (logarithmic) gravity model ignores the prevalence of zeros in the bilateral trade flows. Trading relationships are replete with zeros, which a good model should be able to explain. Helpman, Melitz, and Rubinstein (2008) argue that the zeros in trade flows may be due to fixed costs of exporting, which cause firms to self-select into exporting. They highlight the importance of accounting for zero trade values due to selection bias in the gravity model. Only the more productive firms export since exporting is costly. When no firm that is productive finds it profitable to export, there is no trade. A properly specified gravity model should account for these differences based on firm characteristics.

Use of nonlinear models

Given the inability of linear gravity models to efficiently account for zeros, the emphasis has moved to nonlinear estimators of the gravity models. Silva and Tenreyro (2006) propose an easy to implement strategy due to inconsistency of the linear gravity model. The inconsistency arises because the validity of the linearized model depends on the strong assumption that the error terms (unobserved factors) are statistically independent of the variables used in the estimation (homoscedasticity assumption). They propose a method (Poisson pseudo maximum likelihood estimation, or PPML) that not only provides consistent estimates in the presence of

violation of this assumption but also provide a natural way to deal with zero trade values. Hence, we employ the most recent developments in the panel data gravity model to gauge trading relative to the potential, considering time varying multilateral resistance (Olivero and Yotov 2012), zero trade (Helpman, Melitz, and Rubinstein 2008), and heteroscedasticity leading to inconsistent estimates (Silva and Tenreyro 2006).

The following PPML equation (1) is used to estimate the bilateral trade flows for cocoa, coffee, and tea, estimated separately for unprocessed, semi-processed and processed items. The gravity model that we estimate takes the following form

$$X_{ijt} = \exp\left(\beta_0 + \pi_{it} + \pi_{jt} + \alpha_h D_{iS} + \theta_g Z_{ij}\right) U_{ijt} \qquad (1)$$

Where X_{ijt} denotes exports from country i to country j measured in current dollars at time t. π_{it} and π_{jt} are the time varying exporter and importer dummies to account for unobservable multilateral resistance and potentially any other observed and unobserved country-specific and time-varying characteristics: changes in national policies, quality of institutions and infrastructure, and accession of countries into arrangements such as the European Union (EU) and the WTO. Z_{ij} represents the country pair factors likely to affect trade. D_{iS} represents the category S to which country i's trading partner belongs (Europe, OECD, or Africa). It thus represents the membership group of j. Different α_h comprise the relevant coefficients to be estimated to assess under-trading (estimated < 0) and over trading (estimated value > 0).

Tables A4.3, A4.4, and A4.5 present the results of PPML estimation of the gravity model for processed, semi-processed, and unprocessed cocoa, coffee, and cocoa for the period 2003–2020.

Some small producers and inconsistent exporters tend not to under-export processed cocoa. Yet commonly, the comparatively large producers are under-exporting or are normal exporters based on the fundamentals, as coefficients in Table 3A indicate. Sierra Leone, a traditional cocoa producer, tends to export above normal given the fundamentals, despite being a small exporter overall.

Table A4.2 Country names and acronyms

AGO	Angola
BDI	Burundi
BEN	Benin
BFA	Burkina Faso
BWA	Botswana
CAF	Central African Republic
CIV	Côte d'Ivoire
CMR	Cameroon
COD	Congo, Dem. Rep.
COG	Congo, Rep.
COM	Comoros
CPV	Cabo Verde
DJI	Djibouti
DZA	Algeria
EGY	Egypt, Arab Rep.
ERI	Eritrea
ETH	Ethiopia (excludes Eritrea)

GAB	Gabon
GHA	Ghana
GIN	Guinea
GMB	Gambia
GNB	Guinea-Bissau
KEN	Kenya
LBR	Liberia
LBY	Libya
LSO	Lesotho
MAR	Morocco
MDG	Madagascar
MLI	Mali
MOZ	Mozambique
MRT	Mauritania
MUS	Mauritius
MWI	Malawi
NAM	Namibia
NER	Niger
NGA	Nigeria
RWA	Rwanda
SDN	Sudan
SEN	Senegal
SLE	Sierra Leone
SWZ	Eswatini
SYC	Seychelles
TCD	Chad
TGO	Togo
TUN	Tunisia
TZA	Tanzania, United Rep.
UGA	Uganda
ZAF	South Africa
ZMB	Zambia
ZWE	Zimbabwe

Table A4.3 PPML gravity model estimates for level of trading, 2003–2020: Cocoa

Commodity-Processed cocoa Importer – OECD countries	Coefficient Standard error	Commodity-Processed cocoa Importer – Europe	Coefficient Standard error	Commodity-Processed cocoa Importer – Africa	Coefficient Standard error
BWA - OEC	-3.212 (2.05)*	CMR - EUR	-3.423 (2.64)**	BWA - AFR	3.201 (2.06)*
CAF - OEC	-10.875 (10.76)**	CIV - EUR	2.606 (2.76)**	CIV - AFR	-6.407 (5.72)**
CMR - OEC	-3.931 (3.62)**	COG - EUR	2.790 (2.54)*	COG - AFR	-4.516 (3.70)**
CIV - OEC	5.183 (5.08)**	EGY - EUR	-4.659 (3.77)**	GIN - AFR	-3.967 (2.40)*
COG - OEC	3.501 (3.07)**	GHA - EUR	1.825 (2.00)*	GMB - AFR	9.166 (9.60)**
EGY - OEC	-2.885 (2.79)**	KEN - EUR	2.971 (1.98)*	MAR - AFR	2.886 (2.31)*
MAR - OEC	-3.987 (4.09)**	MAR - EUR	-2.370 (2.46)*	MDG - AFR	-3.872 (2.66)**
MDG-OEC	4.149 (3.07)**	SLE - EUR	5.038 (3.93)**	RWA - AFR	-5.008 (3.15)**
SEN - OEC	-2.769 (3.17)**	SWZ - EUR	-4.980 (3.12)**	SEN - AFR	2.610 (2.77)**
SEN - OEC	-2.769 (3.17)**	SWZ - EUR	-4.980 (3.12)**	SEN - AFR	2.610 (2.77)**
SLE - OEC	5.342 (4.25)**	TUN - EUR	-3.195 (3.31)**	SLE - AFR	-5.609 (3.85)**
SWZ - OEC	-2.987 (2.43)*	ZWE - EUR	-4.673 (3.00)**	TUN - AFR	2.831 (2.37)*
TUN - OEC	-4.252 (4.61)**	log distance	-1.488 (9.03)**	UGA - AFR	-3.112 (2.32)*
ZMB - OEC	-3.506 (2.16)*	Constant	11.353 (7.86)**	log distance	-1.730 (8.31)**
Log distance	-1.595 (11.87)**	*N*	51,623	Constant	13.980 (8.80)**
Constant	11.188 (9.54)**			*N*	51,652
N	51,384				

Commodity- Semi- processed cocoa Importer – OECD	Coefficient Standard error	Commodity- Semi-processed cocoa Importer – Europe	Coefficient Standard error	Commodity- Semi- processed cocoa Importer – Africa	Coefficient Standard error
CMR - OEC	4.508 (4.33)**	CMR - EUR	2.557 (2.19)*		
CIV - OEC	2.795 (3.46)**	DZA - EUR	3.422 (2.85)**		
COG - OEC	8.613 (6.95)**	EGY - EUR	-4.131 (3.28)**		
DZA - OEC	4.549 (4.18)**	NGA - EUR	2.542 (2.70)**		
EGY - OEC	-3.499 (3.67)**	SEN - EUR	2.282 (2.00)*		
ETH - OEC [15]	6.643 (5.09)**	UGA - EUR	2.351 (2.15)*		
GHA - OEC	2.348 (2.87)**	Log distance	-0.263 (0.29)		
MDG - OEC	3.942 (3.30)**	Constant	3.985 (0.51)		
NGA - OEC	2.016 (2.34)*	*N*	43,665		
SWZ - OEC	-5.267 (3.39)**				
UGA - OEC	3.062 (2.89)**				
Log distance	-0.177 (0.40)				
Constant	1.647 (0.43)				
N	43,430				

15 Ethiopia has a very low level of processed cocoa exports (on average less than US$5,000) and is an importer of cocoa beans. With no domestic production, a fundamental factor, very little exports show up as above potential.

Commodity-Unprocessed cocoa Importer – OECD/Europe	Coefficient Standard error		Commodity-Unprocessed cocoa Importer – Africa	Coefficient Standard error
CAF - EUR	-2.412 (2.39)*		BDI - AFR	4.334 (2.73)**
CMR - EUR	-2.047 (2.47)*		BWA - AFR	13.466 (9.98)**
COG - EUR	1.649 (1.98)*		CAF - AFR	5.099 (5.02)**
EGY - EUR	-3.317 (2.55)*		DJI - AFR	13.963 (10.40)**
ETH - EUR	3.861 (3.09)**		DZA - AFR	4.509 (3.19)**
MWI - EUR	5.082 (3.59)**		EGY - AFR	5.556 (3.74)**
NGA - EUR	-1.324 (2.07)*		GMB - AFR	20.159 (18.89)**
SEN - EUR	-3.019 (2.79)**		MDG - AFR	2.342 (2.28)*
ZAF - EUR	-4.157 (3.04)**		MUS - AFR	5.251 (3.28)**
Log distance	0.167 (0.16)		NGA - AFR	1.924 (2.81)**
Constant	3.075 (0.34)		SLE - AFR	-5.923 (4.69)**
N	24,084		SWZ - AFR	14.859 (11.04)**
			TZA - AFR	3.014 (2.81)**
			ZAF - AFR	3.126 (2.51)*
			ZMB - AFR	9.008 (5.92)**
			ZWE - AFR	13.406 (11.19)**
			Log distance	0.041 (0.04)
			Constant	3.739 (0.46)
			N	23,929

Note: * $p<0.05$; ** $p<0.01$. PPML = Poisson pseudo maximum likelihood estimate. All regressions include exporter x time, importer x time fixed effects and pair fixed effects. In semi-processed cocoa for African importers, all trading pairs show normal trading. For unprocessed cocoa, OECD and Europe as importer show similar results, only OECD countries as importer presented.

Table A4.4 PPML gravity model estimates for level of trading, 2003–2020: Coffee

Commodity-Processed coffee Importer – OECD countries/Europe	Coefficient Standard error			Commodity-Processed coffee Importer – Africa	Coefficient Standard error
CIV - EUR	-6.242 (6.83)**			BWA - AFR	8.841 (6.96)**
ETH - EUR	-6.376 (4.45)**			COG - AFR	3.881 (2.27)*
GHA - EUR	-4.667 (4.60)**			DJI - AFR	-3.697 (2.29)*
MAR - EUR	-4.098 (4.04)**			EGY - AFR	-3.397 (2.13)*
MDG - EUR	3.989 (2.78)**			ETH - AFR	-5.732 (4.30)**
ZAF - EUR	-3.670 (3.86)**			GHA - AFR	2.968 (2.63)**
Log distance	-1.288 (4.69)**			MWI - AFR	-3.596 (2.81)**
Constant	10.162 (4.92)**			RWA - AFR	-3.447 (2.64)**
N	37,213			SLE - AFR	-5.081 (3.52)**
				SWZ - AFR	-3.410 (2.55)*
				ZWE - AFR	5.922 (3.87)**
				log distance	-1.379 (6.05)**
				Constant	10.868 (6.20)**
				N	37,197

Commodity-Semi-processed coffee Importer – OECD		Commodity-Semi-processed coffee Importer – Europe		Commodity-Semi-processed coffee Importer – Africa	Coefficient Standard error
BDI - OEC	-1.879 (2.29)*	BDI - EUR	-2.135 (2.75)**	BDI - AFR	2.459 (2.94)**
COG - OEC	4.927 (3.98)**	CAF - EUR	5.001 (4.43)**	BWA - AFR	11.384 (9.31)**
DZA - OEC	-2.164 (2.02)*	COG - EUR	6.231 (6.09)**	COG - AFR	-4.045 (3.10)**
EGY - OEC	-1.785 (2.15)*	EGY - EUR	-2.580 (2.78)**	DJI - AFR	-4.872 (2.84)**
GHA - OEC	-1.813 (2.35)*	GMB - EUR	-1.645 (2.04)*	ETH - AFR	-2.487 (3.59)**
GMB - OEC	-2.539 (3.13)**	KEN - EUR	-1.680 (2.61)**	GHA - AFR	1.848 (2.46)*
KEN - OEC	1.656 (1.97)*	MAR - EUR	-4.378 (4.57)**	GMB - AFR	2.525 (2.89)**
MAR - OEC	-5.182 (6.02)**	NGA - EUR	-3.843 (2.99)**	KEN - AFR	-2.325 (2.38)*
NER - OEC	-6.508 (4.93)**	RWA - EUR	-1.625 (2.15)*	LBR - AFR	11.962 (9.86)**
SLE - OEC	3.619 (2.95)**	TGO - EUR	3.422 (2.25)*	MAR - AFR	3.936 (4.18)**
ZAF - OEC	-1.733 (2.26)*	log distance	-1.820 (11.78)**	NGA - AFR	-3.320 (2.34)*
Log distance	-1.813 (12.31)**	Constant	15.680 (11.88)**	SLE - AFR	-3.768 (3.00)**
Constant	15.314 (10.55)**	*N*	44,512	ZAF - AFR	2.279 (2.99)**
N	43,157			log distance	-1.651 (12.13)**
				Constant	13.883 (12.69)**
				N	44,673

Commodity-Unprocessed coffee Importer – OECD	Coefficient Standard error	Commodity-Unprocessed coffee Importer – Europe	Coefficient Standard error	Commodity-Unprocessed coffee Importer – Africa	Coefficient Standard error
BDI - OEC	2.057 (2.35)*	AGO - EUR	4.540 (3.49)**		
COG - OEC	2.585 (2.16)*	BDI - EUR	1.770 (2.32)*		
ETH - OEC	2.048 (2.53)*	CMR - EUR	1.986 (2.57)*		
KEN - OEC	3.400 (3.80)**	COG - EUR	2.549 (2.90)**		
MAR - OEC	3.088 (1.97)*	ETH - EUR	1.430 (2.00)*		
MOZ - OEC	4.012 (3.01)**	LBR - EUR	2.503 (2.66)**		
MUS - OEC	9.609 (3.38)**	MWI - EUR	1.613 (2.07)*		
MWI - OEC	2.261 (2.21)*	UGA - EUR	2.007 (2.76)**		
SEN - OEC	-2.555 (2.46)*	ZWE - EUR	2.170 (2.55)*		
SWZ - OEC	8.956 (3.27)**	Log distance	-2.942 (4.75)**		
TZA - OEC	2.548 (2.80)**	Constant	26.878 (4.94)**		
ZMB - OEC	2.252 (2.31)*	*N*	62,021		
ZWE - OEC	3.707 (2.46)*				
Log distance	-3.095 (6.53)**				
Constant	27.466 (6.47)**				
N	61,646				

Note: * $p<0.05$; ** $p<0.01$. PPML = Poisson pseudo maximum likelihood estimate. All regressions include exporter x time, importer x time fixed effects and pair fixed effects. Unprocessed coffee all Africa and trading group pair shows normal trading (not presented).

Table A4.5 PPML gravity model estimates for level of trading, 2003–2020: Tea

Commodity- Processed tea Importer – OECD countries	Coefficient Standard error	Commodity- Processed tea Importer – Europe	Coefficient Standard error	Commodity- Processed tea Importer – Africa	Coefficient Standard error
CAF - OEC	8.487 (4.90)**	EGY - EUR	-4.283 (2.98)**		
CMR - OEC	10.024 (5.92)**	GHA - EUR	-3.491 (2.14)*		
DZA - OEC	10.164 (5.56)**	TZA - EUR	-4.298 (2.80)**		
SEN - OEC	-3.357 (1.96)*	ZWE - EUR	-5.359 (3.29)**		
ZWE - OEC	-6.101 (3.22)**	log distance	-1.996 (3.53)**		
Log distance	-1.491 (3.71)**	Constant	18.981 (3.70)**		
Constant	13.126 (3.45)**	*N*	12,875		
N	12,812				
Commodity- Semi- processed tea Importer – OECD	**Coefficient Standard error**	**Commodity- Semi- processed tea Importer – Europe**	**Coefficient Standard error**	**Commodity- Semi- processed tea Importer – Africa**	**Coefficient Standard error**
CAF - OEC	10.226 (8.00)**	CIV - EUR	-5.441 (2.99)**	BWA - AFR	2.890 (2.17)*
CIV - OEC	-4.045 (2.77)**	DJI - EUR	4.130 (3.61)**	CIV - AFR	4.509 (3.23)**
DJI - OEC	2.452 (2.24)*	ETH - EUR	2.272 (2.11)*	COG - AFR	-3.175 (2.31)*
MAR - OEC	4.585 (3.43)**	KEN - EUR	2.847 (2.86)**	DJI - AFR	-2.968 (2.16)*
MOZ - OEC	3.109 (2.67)**	MAR - EUR	3.582 (2.18)*	EGY - AFR	-4.230 (2.13)*
MUS - OEC	5.067 (3.33)**	MOZ - EUR	3.549 (2.81)**	ETH - AFR	-2.858 (2.20)*
MWI - OEC	2.822 (2.92)**	MUS - EUR	5.785 (3.33)**	KEN - AFR	-2.918 (2.82)**
NGA - OEC	2.703 (2.39)*	MWI - EUR	3.425 (3.28)**	MAR - AFR	-5.958 (4.32)**
ZAF - OEC	2.571 (2.76)**	NER - EUR	0.020 (0.02)	MUS - AFR	-4.146 (2.87)**
ZWE - OEC	2.897 (2.93)**	NGA - EUR	3.136 (2.94)**	SLE - AFR	-3.247 (2.29)*
Log distance	-0.060 (0.11)	TUN - EUR	3.618 (2.09)*	Log distance	-0.468 (0.98)
Constant	2.979 (0.68)	TZA - EUR	3.091 (2.92)**	Constant	7.361 (1.81)

N	54,273	ZAF - EUR	3.676 (3.53)**	*N*	54,666
		ZWE - EUR	3.762 (3.44)**		
		Log distance	-0.145 (0.29)		
		Constant	3.635 (0.87)		
		N	54,915		
Commodity-Unprocessed tea Importer – OECD/ Europe	Coefficient Standard error	**Commodity-Unprocessed tea Importer – Europe**	Coefficient Standard error	**Commodity-Unprocessed tea Importer – Africa**	Coefficient Standard error
		DZA - EUR	-2.487 (2.24)*		
		MUS - EUR	3.211 (2.88)**		
		NER - EUR	-6.654 (5.22)**		
		SEN - EUR	-5.488 (5.67)**		
		UGA - EUR	-3.594 (3.24)**		
		TZA - EUR	-2.427 (2.03)*		
		Log distance	-1.500 (8.97)**		
		Constant	9.787 (7.20)**		
		N	37,584		

Note: * $p<0.05$; ** $p<0.01$. PPML = Poisson pseudo maximum likelihood estimate. All regressions include exporter x time, importer x time fixed effects and pair fixed effects

CHAPTER **FIVE**

The AfCFTA: The Need for Ambitious Implementation

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INTRODUCTION

Trade integration has been a priority strategy for Africa's economic development since the Abuja Treaty was adopted in 1991, and the African Union member states agreed to fast-track regional integration when they met in Kigali in 2011. To this end, the African heads of state launched the African Continental Free Trade Area (AfCFTA) in Niamey, Niger, in July 2019, and implementation of this trade reform began on January 1, 2021.

From an economic viewpoint, this initiative is justified for several reasons. First, the costs associated with intra-African trade are particularly high — these include customs duties and nontariff measures (NTMs) as well as costs related to customs procedures, transport and communication infrastructure, insurance and credit, foreign exchange risk management, security, and administrative harassment and corruption.[1] Second, intra-African trade comprises only a small share of total African trade and, more importantly, has not increased in the past 15 years. In terms of agricultural trade, the share of intra-African agricultural exports in total African agricultural exports was stable between 2005 and 2020 at 19.5 percent, but intra-African agricultural imports fell from 17.3 to 13.5 percent of total African agricultural imports over this period. Third, the product structure of African exports is heavily weighted toward unprocessed commodities. Extra-African exports, especially in the agriculture sector, are mainly unprocessed products, while Africa's imports from the rest of the world are mainly semi-processed or processed goods. However, intra-African trade shows a growing trend toward processed products, particularly in the agriculture and food sectors.[2] Thus, continental trade integration could support increased production of high value-added products and the emergence of regional value chains within Africa. Fourth, the creation of a continentwide free trade area could expand market access for competitive African producers beyond the country or regional economic community (REC) level, which is interesting given Africa's rapid growth in population and economic activity. At the same time, the free trade area could improve African households' access to cheaper products and to more variety.

Initial assessments of the AfCFTA have reached positive conclusions about the potential benefits of this reform, especially if the negotiations focus on NTMs, services, and trade facilitation. Studies have been conducted by the World Bank, the United Nations Economic Commission for Africa (UNECA) in collaboration with the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), the International Food Policy Research Institute (IFPRI), and the Joint Research Centre (JRC).[3] These ex ante assessments are optimistic about the AfCFTA's potential for trade creation and its likely contribution to economic activity and African households' welfare. However, this optimism is conditioned on whether a reduction of NTMs and trade costs is effectively implemented.

In this chapter, we provide a new assessment of the potential trade and economic consequences of implementation of the AfCFTA Agreement. We use MIRAGRODEP, a dynamic multisectoral computable general equilibrium (CGE) model, to simulate five scenarios. The first one reflects the tariff liberalization plan described in official texts as closely as possible; it includes a gradual agenda of liberalization starting in 2021, a distinction made between least developed countries (LDCs) and non-LDCs in the reform's implementation, and a list of sensitive and excluded products. The second scenario considers a complete tariff liberalization among African economies. The third builds on the first scenario with a gradual linear reduction of

1 See Bouët, Cosnard, and Laborde (2017) and Bouët et al. (2021a).
2 Evidence for the assertions in this paragraph can be found in Dedehouanou, Dimaranan, and Laborde (2019) or Bouët and Sall (2021).
3 UNECA is located in Addis-Ababa; CEPII in Paris; IFPRI in Washington, DC; and JRC in Brussels.

NTMs[4] by 25 percent and the fourth scenario increases the reduction of NTMs to 80 percent, both over a 10-year period. These two NTM-reduction scenarios were chosen to estimate the consequences of a "low ambition" scenario (25 percent) and a "high ambition" scenario (80 percent). The fifth scenario is the most ambitious: it combines complete elimination of tariffs on intra-African trade with an 80 percent reduction in NTMs. These scenarios were designed to measure how ambition or a lack of ambition in implementation could alter the economic and commercial impact of the AfCFTA.

The new evaluation of the AfCFTA we offer here is interesting because of the special attention it gives to the treatment of tariff data and its assessment of the restrictive impact of NTMs. The economic literature has shown that the use of consistent tariff aggregators is a crucial issue for measuring their impact (Anderson and Neary 1994; Anderson 2009). For this study, we first use optimal tariff aggregators (Laborde, Martin, and van der Mensbrugghe 2017). In addition, because the lists of sensitive and excluded products from liberalization are not yet known, we create a list of such products using a political economy model recognized by the theoretical literature (Jean, Laborde, and Martin 2010). Second, we use an estimate of the restrictive impact of NTMs (ad valorem equivalents, AVEs) that corrects for a statistical bias present in previous estimates.[5] Third, we incorporate the NTMs in the MIRAGRODEP model in a more realistic way by modeling them as costs borne by firms when they export, instead of fictitious customs duties.

Our analysis shows that the AfCFTA can benefit African economies, but the benefits are expected to be significant only if the agreement is implemented ambitiously. In this regard, excluding products from liberalization and reducing the effectiveness of the planned NTM liberalization could significantly reduce the welfare and trade gains from the free trade area.

The next section of this chapter provides a comprehensive overview of the status of the AfCFTA negotiations and progress in implementation. In the following section, we review the literature on previous evaluations of the AfCFTA. We then present our five scenarios, followed by the results of this evaluation. The conclusion discusses Africa's informal cross-border trade — a crucial element missing from all these evaluations — and identifies the economic mechanisms through which this omission affects our study results.

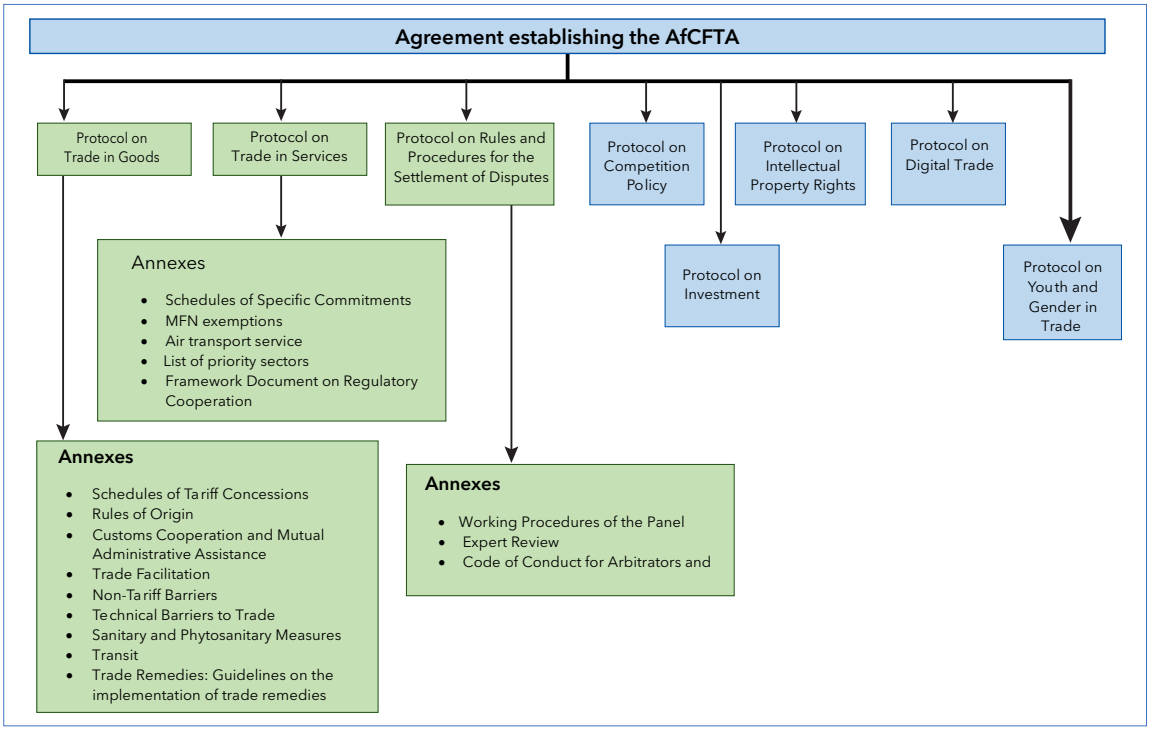
STATUS OF AfCFTA IMPLEMENTATION

Global perspective on the AfCFTA

The AfCFTA is an ambitious project — it aims to create the world's largest free trade area in terms of the number of member states. The AfCFTA Agreement establishes three implementation phases and includes a series of protocols and annexes. Phase I negotiations cover trade in goods, trade in services, and the procedures for dispute settlement. Phase II includes investment policy, competition policy, and intellectual property rights. Phase III addresses e-commerce. Negotiations officially started in June 2015, and involved a dedicated Continental Task Force, the Negotiating Forum, the Senior Trade Officials, and the African Union Ministers of Trade. These institutions were supported by technical working groups on the topics covered in the Agreement annexes (rules of origin, sanitary and phytosanitary measures, and so on). Figure 5.1 presents the architecture of the AfCFTA Agreement as well as the main phases.

4 We consider only sanitary and phytosanitary measures and technical barriers to trade, whether these measures are considered as actionable or not. The reduction of these NTMs is linear from 2021 to 2030.
5 In all the studies evaluating the ad valorem equivalent (AVE) of NTMs based on a gravity equation and conducted before Bao, Bouët, and Traoré (2020), Jensen's inequality is not considered. This omission leads to a significant underestimation (or sometimes an overestimation, depending on the standard error of the coefficient) of the restrictive impact of NTMs and can even change the sign of the AVE.

Figure 5.1 Architecture of the AfCFTA agreement



Source: Adapted by the authors from TRALAC (2021).
Note: Green boxes correspond to Phase I; blue boxes correspond to Phase II (previously Phases II and III).

While significant progress has been made in the Phase I negotiations, its operationalization and Phase II talks both suffered a major delay, due partly to the COVID-19 pandemic. To make up for the lost time, it was decided to merge the Phase II and Phase III negotiations. The AfCFTA entered into force on May 30, 2019. As of May 2022, 54 countries[6] had signed the agreement and 43 had deposited their instruments of ratification with the Chairperson of the African Union Commission (AUC).[7] Soon thereafter, the operational phase of the agreement was launched at the 12th Extraordinary Session of the Assembly of the African Union in Niamey, Niger, on July 7, 2019. The operational phase comprises five initiatives and operational instruments: (1) the product-specific rules of origin covering 90 percent of tariff lines; (2) the online negotiating forum; (3) the monitoring and reduction of NTMs; (4) the digital Pan-African Payments and Settlement System; and (5) the African Trade Observatory. The Secretariat in charge of the implementation is hosted by Ghana: the headquarters were officially inaugurated in August 2020. Although the Secretary-General was sworn in during March 2020, the Secretariat is not yet fully operational. There are also outstanding budgetary issues that need to be resolved. As to the Trade Observatory, which is intended to be the main repository of African trade data, only the beta version of the dashboard has been released (in December 2020), with technical support from the International Trade Center and funding from the European Union.

The schedule for liberalization is presented in Table 5.1. There are two groups of countries: LDCs and non-LDCs. Non-LDCs have five years to liberalize 90 percent of their tariff lines and 10 years for sensitive products, which can constitute up to 7 percent of tariff lines. Each country can exclude up to 3 percent of its tariff lines provided that this does not represent more than 10

6 With the signatures of Nigeria and Benin at the 12th Extraordinary Summit of Heads of State and Government of the African Union in Niamey on July 7–8, 2019. Eritrea is the only country yet to sign the agreement.
7 The agreement was set to enter into force 30 days after the twenty-fourth country had deposited its instrument of ratification. This happened on April 29, 2019.

percent of intra-African import value.[8] LDCs are allowed a longer period for dismantling their tariffs: 10 years for the first phase (90 percent of tariff lines) and 13 years to liberalize sensitive products. It is worth noting that, during the negotiations, a group of six countries (the so-called G6) consisting of five LDCs (Ethiopia, Madagascar, Malawi, Sudan, and Zambia) plus Zimbabwe called for differential treatment, primarily a 15-year period for the first phase of liberalization, due to specific development challenges they face. However, these countries withdrew their reservations in 2020 and joined the rest of the parties in implementing the tariff liberalization process.[9]

Table 5.1 Schedule of liberalization

	LDCs	Non-LDCs
Full liberalization	90% of tariff lines 10-year phase down	90% of tariff lines 5-year phase down
Sensitive products	7% of tariff lines 13-year phase down	7% of tariff lines 10-year phase down
Excluded products	3% of tariff lines	3% of tariff lines

Source: UNECA and TRALAC.

Current state of negotiations

Details of the tariff negotiation

As of May 1, 2022, 43 countries have deposited their instruments of ratification with the AUC Chairperson, but only 29 tariff offers are in line with the agreed modalities, according to the Secretariat.[10] Countries that have already submitted their market access offers include those of the Economic Community of Western African States (ECOWAS), East African Community (EAC), Communauté Economique et Monétaire de l'Afrique Centrale (CEMAC, the Economic and Monetary Community of Central Africa), and the Southern African Customs Union (SACU), as well as Malawi and Mauritius. In the initial plan, trade under the rules of the AfCFTA should have begun on July 1, 2020. However, this step was postponed because of the COVID-19 pandemic. Eventually, at the 13th Extraordinary Session, held in Johannesburg on December 5, 2020, the African Union decided to start trading under the AfCFTA on January 1, 2021, based on the approved schedules of tariff concessions, with agreed rules of origin and customs documentation. However, negotiations are still ongoing for rules of origin. According to the Secretariat, as of January 1, 2022, member countries have agreed on 87.8 percent of tariff lines. Outstanding issues remained for dairy products, automotive products, clothing and textiles, sugar, and edible oils. As of June 2022, the rules of origin issue for edible oils had been resolved. For sugar, the only outstanding issue concerns sugar confectionery. Issues concerning manufactured tobacco have now largely been resolved. However, as of May 3, 2022, "no trade has as yet taken place under the AfCFTA regime."[11] The next important step expected is the publication of the AfCFTA tariff book. This book will allow traders to identify the associated tariffs and the rules of origin that apply to each product.

8 These two criteria are referred to as "the double qualification approach."
9 In February 2020, at the Assembly of the African Union, the G6 heads of state withdrew their reservations. Special and differential treatment no longer features in the tariff regime (TRALAC 2021), but "variable geometry" does: differential treatment is treated as an exception, and not as a rule, and it consists in recognizing that some African countries may have special circumstances that make implementation difficult or even impossible. Under such circumstances, African countries may be allowed to implement a particular decision at a "suitable certain future time or simply at a different speed" (Erasmus 2021).
10 As of May 1, 2022, the countries that have not ratified are Benin, Botswana, Comoros, Guinea Bissau, Liberia, Libya, Madagascar, Mozambique, South Sudan, and Sudan, and Eritrea has not signed the agreement.
11https://www.tralac.org/resources/infographic/13795-status-of-afcfta-ratification.html#:~:text=Ghana%2C%20Kenya%2C%20Rwanda%2C%20Niger,Guinea%2C%20Gabon%2C%20Mauritius%2C%20Central; accessed July 19, 2022.

Details of the NTM negotiations

In addition to removing tariffs, one of the main objectives of the AfCFTA is to reduce nontariff barriers among countries. These barriers are primarily regulatory measures that often hinder trade more than tariffs do in Africa, as elsewhere. Seven categories of NTMs have been defined under the AfCFTA: government participation in trade and restrictive practices tolerated by government; customs and administrative entry procedures; technical barriers to trade (TBTs); sanitary and phytosanitary (SPS) measures; specific limitations; charges on imports; and others. The AfCFTA objective regarding NTMs is twofold: reduce existing barriers and do not introduce new ones. To meet these goals, an online reporting, monitoring, and eliminating mechanism has been put in place. With this facility (available at https://tradebarriers.africa/home), both the formal private sector and informal traders are encouraged to report any obstacle they may encounter when trading goods, such as excessive delays, illegal fees, and document requirements. Countries are expected to establish plans (matrices) for the elimination of NTMs, prioritized based on their impact on intra-African trade. Negotiations are also ongoing for services, though also with a delay. Five priority sectors have been defined: transport, communications, tourism, financial services, and business services. As of April 30, 2022, 46 countries had submitted their initial offers on trade in services.

LITERATURE REVIEW

We now give a rapid *tour d'horizon* of the previous economic studies that have assessed the potential impact of the AfCFTA. To the best of our knowledge, eight ex ante assessments have already been conducted using CGE models. Table 5.2 compares the results of four of these assessments – conducted at the World Bank (World Bank 2020), by UNECA and CEPII (UNECA 2021), by IFPRI (Bouët et al. 2021b), and by JRC (Simola et al. 2021). We have excluded those assessments that did not incorporate sufficient details of the final agreements: UNECA (2012), Jensen and Sandrey (2015), Saygili et al. (2018), and Abrego et al. (2019) are worth mentioning, but they evaluate the complete removal of import tariffs on intra-African trade, as the details of the reform were not known at the time of their study design.

It is important to understand the similarities and differences among the assessments in Table 5.2. The four CGE models, especially MIRAGE and MIRAGRODEP, are similar on the production side: competition is perfect, returns to scale are constant, and production is modeled based on a nest of constant elasticity of substitution (CES) functions. However, they differ on the functional forms adopted to represent the consumer's utility,[12] the labor market assumptions,[13] the public closure, and the baseline. In ENVISAGE, the value added in crop production includes a capital-energy-fertilizer-land bundle that is a distinctive feature of this model. The behavioral parameters adopted in these models are close if not identical.[14]

MIRAGRODEP is distinguished by its careful treatment of tariff information. In ENVISAGE and MAGNET, tariffs are aggregated from the HS6 lines to the model disaggregation according to a trade-weighted scheme. This significantly underestimates the true cost of the average tariff, but the procedure is consistent with tariff revenues. The MIRAGE model adopts a better weighting

12 MIRAGE and MIRAGRODEP are based on a linear expenditure system–constant elasticity of substitution (LES-CES) utility function, ENVISAGE on an extended linear expenditure system (ELES) function, and MAGNET, which is an extension of the GTAP model, on a constant difference in elasticity (CDE) function.
13 Within a given region or country, in MIRAGE and MIRAGRODEP, skilled labor is perfectly mobile whereas unskilled labor is imperfectly mobile between urban and rural activities based on a constant elasticity of transformation (CET) function; in ENVISAGE, there is a migration function from rural activities to urban activities and labor is perfectly mobile within each set of activities; MAGNET includes three types of factor markets – unsegmented with perfect mobility, segmented with imperfect mobility according to a CET function, and segmented with a dynamic migration function.
14 In ENVISAGE, MIRAGE, and MIRAGRODEP, key elasticities are drawn from the GTAP database. A distinctive feature of MAGNET is that substitution elasticities of the production nesting tree are recalculated after each run depending on the value of cost shares. On the demand side, in MIRAGRODEP and MAGNET, income and price elasticities are recalibrated to account for the long-term evolution of real GDP per capita.

scheme for evaluating average protection and its distortive impact; the aggregation is based on reference groups' trade weights, which reduces the endogeneity bias. In this regard, MIRAGRODEP is even better as it implements a consistent aggregator approach (Laborde, Martin, and van der Mensbrugghe 2017).

Table 5.2 Four CGE assessments of the AfCFTA

	World Bank	UNECA-CEPII	IFPRI	JRC
Model	**ENVISAGE**	**MIRAGE**	**MIRAGRODEP**	**MAGNET**
Institution	World Bank	CEPII	IFPRI	LEI (Wageningen)
Geographic and sector disaggregation	34 countries/ regions and 28 sectors	29 countries/ regions and 30 sectors	29 countries/ regions and 40 sectors	36 countries/ regions and 40 sectors
Tariff aggregator	Trade-weighted	Reference groups' trade weights	Consistent aggregator	Trade-weighted
Share of excluded products	3% of tariff lines and less than 10% of imports with LDCs clause	3% of tariff lines and less than 10% of imports with LDCs clause	3% of tariff lines and less than 10% of imports with LDCs clause	3% of tariff lines and less than 10% of imports with LDCs clause
Criteria for selection of excluded products	Minimize tariff revenue losses	Political economy approach + Promotion of industrialization + Green industrialization	Political economy approach	Minimize tariff revenue losses
Degree of ambition	Tariffs + NTMs + Services + TFA	Tariffs + NTMs + Services	Tariffs + NTMs	Tariffs + NTMs + Services
Impact in 2035				
African trade	+29%	+4.9% (2045)	+1.3%	+3.7%
Intra-African trade	+81%	+33.8% (2045)	+15.3%	+22%
African welfare	+7%	+0.4% and 1% (GDP) (2045)	+0.1%	+0.3%/+0.6% (GDP)
African tariff revenue	-0.5%	-7.8%	-1.1%/+0.3%	-8.2%

Source: Authors' own elaboration.

In MIRAGRODEP, the careful treatment of tariff information also extends to the selection of excluded and sensitive products. Whereas ENVISAGE and MAGNET identify these products based on minimization of tariff revenue losses, MIRAGRODEP selects sensitive and excluded products using a political economy approach that assumes a government considers both the lobbying activities of interest groups and national welfare in the selection process. The MIRAGE study combines three approaches: political economy, promotion of industrialization, and green industrialization.

At first glance, the results of these four evaluations appear to differ significantly. The World Bank model predicts a welfare gain of 7 percent for Africa;[15] the IFPRI model predicts a 0.1 percent welfare gain; for UNECA, Africa's GDP would increase by 1 percent; for JRC, Africa's GDP increases by 0.42 percent, ranging from 0.33 to 0.59 percent across the RECs. Regarding trade, the World Bank's study concludes that the AfCFTA would significantly boost intraregional trade, particularly in manufacturing, estimating that total exports would increase by 29 percent by 2035 relative to the baseline and intra-African exports would increase by 81 percent. At the sectoral level, intra-African trade in manufactured products would increase by 110 percent, while agricultural trade would increase by 49 percent. For services, the gains would be limited: total trade would increase by 4 percent while intra-African trade would increase by 14 percent.

15 According to the World Bank, by 2035, the agreement would contribute to lifting an additional 30 million people from extreme poverty and 68 million people from moderate poverty. When fully implemented, the AfCFTA would lead to real income gains of 7 percent, or nearly US$450 billion. The maximum gains are observed in Côte d'Ivoire and Zimbabwe (14 percent). The biggest gains come from the reduction in NTMs and the implementation of the trade facilitation agreement.

The three studies by UNECA-CEPII, IFPRI, and JRC give relatively similar results: intra-African trade grows by 15.3 percent in the IFPRI study in 2035, and by 22 percent for JRC. For UNECA-CEPII, the increase is 33.8 percent, but this is by 2045. Tariff revenue losses are very close for UNECA-CEPII and JRC, and a bit less for IFPRI, though still comparable. The World Bank finds that the impact on tax revenues would be small: for 49 of the 54 countries included in the analysis, the short-term impact would be less than 1.5 percent, and at the level of the continent, total tax revenues would decline by less than 0.5 percent. The significant divergence in these results stems from the fact that they assess different shocks. Although tariff reforms are relatively comparable in the four studies,[16] they include different reforms for the remaining elements of the agreement.

Results of the World Bank evaluation are significantly different because it includes: tariff liberalization, removal of trade barriers resulting from NTMs, liberalization of measures adopted in the services sector, and an efficient trade facilitation agreement (TFA). The reduction in NTMs within Africa modeled by the World Bank facilitates African exports to the rest of the world, which is equivalent to some multilateral reduction of NTMs. The World Bank's modeling of the TFA is based on an estimate by de Melo, Sorgho, and Wagner (2021) of the impact of full implementation of the agreement on trade costs, which is the result of an econometric model regressing the time spent in customs on structural variables, policy variables, and trade facilitation variables, particularly the efficiency of customs procedures. This estimate concludes that full implementation of the TFA would reduce the time spent in customs by 31.8 percent for Nigeria, 10.9 percent for Kenya, but only 2.6 percent for South Africa and 0.3 percent for Senegal. With this reform, African countries would see a 7 percent reduction in trade costs on average, with no implementation cost in return. This constitutes a significant shock that largely explains the difference between the World Bank's estimate and the other three evaluations.

The methods for including NTMs in the CGE models also differ greatly across the four evaluations. The ENVISAGE and MAGNET models use AVEs of NTMs; these are drawn from the World Bank[17] based on the approach of Kee, Nicita, and Olarreaga (2009). The MAGNET model makes a distinction between technical measures, considered to be cost-generating and modeled as an iceberg cost,[18] and nontechnical measures, considered to be rent-generating and modeled as ad valorem tariff equivalents.[19] In the ENVISAGE model, NTMs are modeled as ad valorem tariff equivalents. MIRAGE also uses data from Kee, Nicita, and Olarreaga (2009), with NTMs implemented as a uniform mix (one-third each) of tariff equivalent, iceberg costs, and costs borne by the exporter. As far as services are concerned, NTMs consist only of iceberg costs. In MIRAGRODEP, AVEs of NTMs are evaluated following Bao, Bouët, and Traoré (2021) and are implemented within the model as a cost borne by the exporting sector: first, complying with the NTM requires additional value added from the exporter, and second, it leads to payment of an additional intermediate consumption to the local sector of business services. The MIRAGRODEP evaluation also differs in that it assumes NTMs only impede trade in goods, whereas the other three evaluations assume NTMs impede trade in both goods and services.

The MAGNET model assumes that the AfCFTA reduces NTMs by 50 percent for trade in goods and services between African countries, and also reduces NTMs between African and non-African countries by 25 percent because the AfCFTA is expected to result in a greater standardization and harmonization of African products. The ENVISAGE model makes a similar assumption, but the reduction of trade costs benefiting African exporters to non-African markets

16 Details may be requested from the authors (a.bouet@cgiar.org).
17 https://datacatalog.worldbank.org/dataset/ad-valorem-equivalent-non-tariff-measures
18 A modelling of transport costs according to the iceberg cost hypothesis implies that a fraction of the goods shipped "melts" in transit.
19 Technical measures are SPS measures and TBTs. Nontechnical measures are non-automatic licenses, price-control measures, financial measures, rules of origin, and so on.

is only 20 percent. The MIRAGRODEP model reduces NTMs between African countries by 50 percent but does not assume that the AfCFTA will lead to any reduction of trade costs borne by African exporters to non-African markets. This is a significant difference, as African exports to non-African markets are much larger than exports to African markets. Under the simulation conducted with the MIRAGE model, AVEs of NTMs are reduced by 25 percent (it is supposed that only 50 percent of NTMs are actionable and that these NTMs are reduced by 50 percent).

Concerning services, the MIRAGRODEP model does not include a liberalization of trade in services. The MAGNET model simulates a 50 percent reduction in the costs of NTMs on services for all trade between African countries. The MIRAGE study evaluates a first scenario with liberalization of trade in goods, and two other scenarios adding liberalization of trade in services: a 50 percent reduction and a 100 percent reduction in actionable trade barriers in the five priority service sectors and in health and education services. The World Bank models two scenarios, both including a 50 percent reduction of NTMs that impede the trade of services; the first scenario facilitates African exports to Africa and to the rest of the world, the second facilitates only intra-African trade.

In a nutshell, the results of these previous evaluations are comparable when we take into consideration the nature and scope of the reforms modeled in each one. These studies conclude that (1) the AfCFTA reform will be beneficial for African countries in terms of GDP and trade, with small diversion effects for non-African countries; (2) tariff revenue losses will be relatively small; and (3) the tariff reform will not deliver substantial benefits, but reforming NTMs and trade facilitation will bring larger benefits.

SCENARIOS

With the MIRAGRODEP model and a disaggregation based on 40 sectors (16 agricultural or food) and 29 countries or groups of countries (16 African), we simulate five scenarios.[20] (The appendix to this chapter provides details on the model and on the sectors and countries included.)

The first scenario is entitled AfCFTA. It simulates the tariff liberalization between African countries as described in the official texts of the AfCFTA with the schedule of tariff reductions along with two lists, one of sensitive products and one of products excluded from liberalization. In May 2022, the official lists of excluded and sensitive products were not yet available, so to simulate the agreement, we used political economy criteria to select the excluded and sensitive products. Our list reflects a reduced form of a model where each government tries to maximize the welfare of its economy while taking into account the interests of the most influential lobbies (see Jean, Laborde, and Martin 2010).

Table 5.3 shows the decline in average tariffs on imports and exports by 2035 for the baseline case (no reforms implemented), scenario 1 (AfCFTA), and scenario 2 (AfCFTA Full, see below). It shows both the average protection implemented by each region at its borders (left columns) and the average duty faced by exports of each region (right columns) – for Africa as a whole and for the five African regions[21] – at the end of the liberalization process. Note that in Table 5.3, the average tariff applied on imports for each region includes not only tariffs from other African countries but also from non-African countries. Likewise, the average duty faced by exports reflects protectionism in the rest of the world. Thus, although tariff reduction occurs only within Africa under the AfCFTA, this table shows average tariffs between African regions and *all* their partners.

20 We do not simulate any reduction of trade barriers in services.
21 The five regions presented in this chapter follow a geographic breakdown that is frequently adopted (see, for example, https://www.datawrapper.de/_/0ED2c/), except that in our study, Mauritania is included in Northern Africa rather than Western Africa.

Table 5.3 Average tariff applied on imports and faced by exports in 2035

	Average tariff on imports (%) in 2035			Average duty faced by exports (%) in 2035		
	Baseline	AfCFTA	AfCFTA Full	Baseline	AfCFTA	AfCFTA Full
Africa	6.75	6.62	6.57	1.95	1.77	1.72
Central Africa	7.13	6.94	6.87	1.62	1.41	1.36
Eastern Africa	7.36	7.24	7.19	1.45	1.29	1.26
Northern Africa	6.31	6.21	6.17	2.59	2.44	2.40
Southern Africa	3.96	3.92	3.87	2.93	2.72	2.66
Western Africa	7.84	7.66	7.64	1.78	1.62	1.53

Source: MAcMAP-HS6 and authors' calculation.

The AfCFTA will be a shock on both imports and exports of African countries. Table 5.3 allows us to see the macroeconomic magnitude of this shock by evaluating the variation in total average protection applied on African imports and total average protection faced by African exports.

Concerning average duties applied on imports, comparison of the rates under the AfCFTA scenario with the baseline rates shows that the tariff liberalization implied by the AfCFTA is small. It ranges from 4 basis points (Southern Africa) to 19 basis points (Central Africa), which is a relative decrease in the rate of protection of 1.0 to 2.7 percent. The reason for this small effect is clear: most of African countries' trade today is with non-African countries.

Concerning average protection faced by exports, the variation in basis points is generally greater than for average protection on imports (except in the case of Western Africa). This means that, as a result of the AfCFTA reform, the gains that African regions see in access to foreign markets are greater than what they offer to competition from imports. This is especially true in the case of Southern Africa, which gains 21 basis points in access to external markets, while decreasing the average protection of its economy by only 4 basis points.

The second scenario is entitled AfCFTA Full. To illustrate how a lack of ambition in terms of tariff liberalization can be costly for the effectiveness of this trade agreement, this scenario entails a complete cancellation of all tariffs on trade in goods between African countries, with no products excluded. A comparison with the first scenario allows us to assess the cost of the sensitive and excluded products clause. In Table 5.3 the AfCFTA Full columns show the average tariff applied by each African region in 2035 if tariffs on intra-African trade are all removed. This reform obviously lowers tariff protection more than the AfCFTA reform, but the difference remains small. For Africa as a whole, the protection applied on imports decreases by 18 basis points with a complete removal of tariffs on intra-African trade, as compared to 13 basis points in case of the AfCFTA; the protection faced by exports decreases by 23 basis points under the AfCFTA Full scenario, compared to 18 basis points under the AfCFTA scenario.

The next two scenarios, AfCFTA NTM-25% and AfCFTA NTM-80%, increase the scope of the reform. In addition to the tariff reform established in the official texts of the AfCFTA, these scenarios include an agreement that reduces the AVEs of NTMs, by 25 and 80 percent, on trade flows in goods between African countries.[22] Again, these scenarios were chosen to assess the cost of a lack of ambition in trade reform. Table 5.4 shows the change in the average AVE of

22 NTMs are included in MIRAGRODEP as costs borne by firms when they export, with half of this cost in additional value added, half in additional intermediate consumption to the "Business Services nec" GTAP sector, included in the model. They are modeled in a way that they affect all imports going into countries implementing these measures, but the trade reform only reduces the cost of African imports from African countries. The levels of these rates of variation of NTMs (25 and 80 percent) may be questioned. It is possible to simulate other rates of variation. Details from a reform with a 50 percent reduction of NTMs between African countries may be requested from the authors.

NTMs applied to imports from each region under the baseline, AfCFTA NTM-25%, and AfCFTA NTM-80% scenarios. This average uses weights that reflect bilateral trade in the products covered by these measures. The declines in these average barriers are small, again reflecting the weakness of intra-African trade.

Table 5.4 Average ad valorem equivalents of nontariff measures on goods (%) in 2035

	Baseline	AfCFTA NTM-25%	AfCFTA NTM-80%
Africa	4.34	4.31	4.25
Central Africa	4.26	4.23	4.17
Eastern Africa	4.18	4.16	4.11
Northern Africa	4.56	4.53	4.47
Southern Africa	4.39	4.36	4.28
Western Africa	4.50	4.47	4.39

Source: Bao, Bouët, and Traoré (2020), and authors' calculations.
Note: These are the ad valorem equivalents of NTMs before and after the reform; these are not rates of variation.

Our final scenario reflects a maximumly ambitious trade reform. This scenario, AfCFTA Full NTM-80%, includes the complete elimination of tariffs on intra-African trade in goods plus an 80 percent reduction in NTMs on trade in goods between African countries. It combines the decrease in average customs duties indicated by the last columns of Table 5.3 (AfCFTA Full) and the reduction in NTMs in the last column of Table 5.4 (AfCFTA NTM-80%).

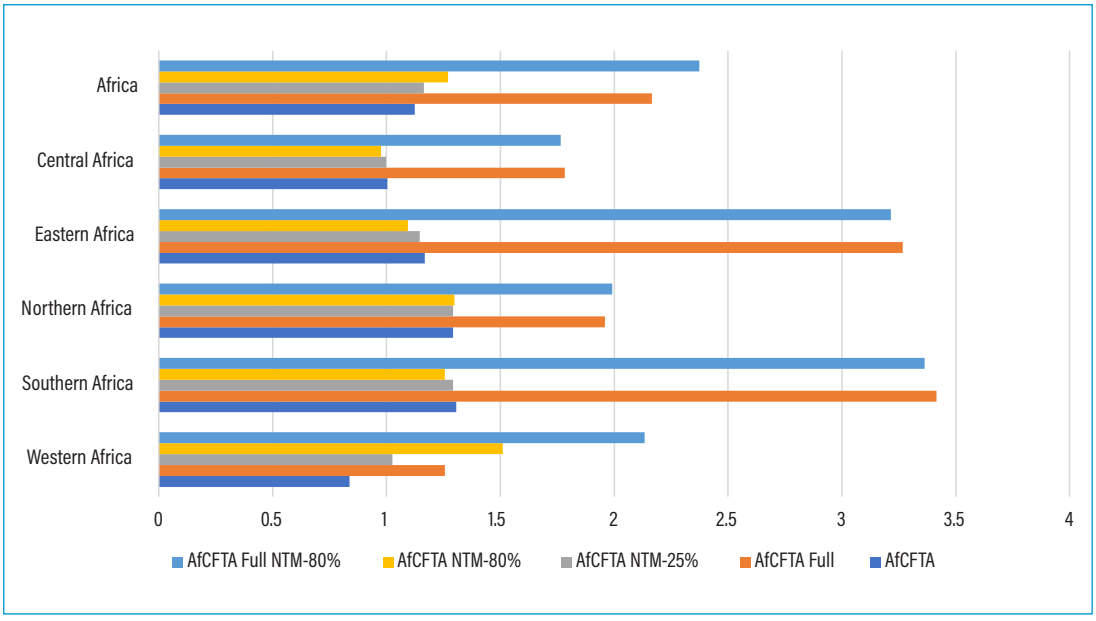
RESULTS

Results derived from these five scenarios include the impacts on trade, on macroeconomic variables (GDP and welfare), on value added by major sector, and on the remuneration of production factors. All results are presented for the year 2035 for five African regions (Central Africa, Eastern Africa, Northern Africa, Southern Africa, and Western Africa). This is a counterfactual analysis, meaning each impact is measured by the difference between the baseline and one of the five scenarios in 2035.

Impact on trade

Figure 5.2 shows the impact of each of the five scenarios on total volume of African exports of goods and services to the world.

Figure 5.2 Impact on African exports of goods and services to the world in volume: Rate of variation (%), 2035



Source: MIRAGRODEP and authors' calculations.

The AfCFTA tariff agreement (AfCFTA scenario) increases the volume of African exports of goods and services by only 1.1 percent, whereas a complete elimination of tariffs on intra-African trade (AfCFTA Full) leads to a 2.2 percent increase. For the agriculture and agribusiness sector alone, these figures are 1.6 percent and 6.2 percent (not shown in Figure 5.2). If NTMs are also reduced, the impact on export volumes of goods and services is greater: +1.2 percent with a 25 percent reduction in AVEs of NTMs and +1.3 percent with an 80 percent reduction, compared with +1.1 percent when there is no reduction of NTMs. Yet, this gain in trade creation from the reduction in NTMs is small. Several plausible explanations can be advanced. First, the reduction of NTMs is not modeled here as a reduction of simple barriers to trade, but rather as greater efficiency in the production of exports: it requires less value added and less intermediate consumption. This efficiency gain is reflected in lower domestic prices and higher incomes, and thus in a simultaneous increase in domestic sales and exports. Second, unlike the World Bank's assessment of the reform, this negotiation concerns only the NTMs affecting intra-African trade, and not the trade of African countries with non-African countries. Finally, the estimate of NTMs is based on a dataset that gives AVEs of NTMs for only 14 African countries (out of a possible 55). This estimate of AVEs is limited because, first, it is based on information on NTMs provided by the WTO Integrated Trade Intelligence Portal and the UNCTAD Trade Analysis Information System; these databases only cover 21 African countries. Second, it relies on an estimation of elasticities of import demand at the HS6 level (Ghodsi, Grübler, and Stehrer 2016) that also does not cover all African countries. Third, we do not keep AVEs of NTMs if either the elasticity of import demand or the coefficient of the NTM is not significantly different from zero. We also do not keep negative AVEs of NTMs, because their integration in the model would be difficult to interpret (a negative cost for exporters).[23] At the end of this process, we are only able to include AVEs of NTMs in the model for 14 African countries.[24] As a result, our assessment may underestimate the impact of an NTM reform. However, this approach was the best option, given that the methodology adopted by Bao, Bouët, and Traoré (2021) is the only one that does not bias the trade impact of NTMs.[25]

23 These 14 African countries are Algeria, Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, Ethiopia, Gambia, Ghana, Mali, Mauritius, Morocco, Niger, Senegal, and Tunisia.
24 It is worth noting that the data from Kee, Nicita, and Olarreaga (2009) is also incomplete and includes only 21 countries.
25 See Bao, Bouët, and Traoré (2021) for a detailed explanation.

What are the effects of these different reforms on intra-African trade and on African countries' trade with the rest of the world? Notably, these trade reforms "boost" intra-African trade (Table 5.5). The AfCFTA tariff reform alone more than doubles exports of goods and services between Western and Eastern African, between Central and Western Africa, between Northern and Central Africa, and between Northern and Western Africa. Overall, under the AfCFTA reform, intra-African trade of goods and services by value increases by 15.2 percent. If the reform allowed for the complete elimination of intra-African tariffs, this trade in goods and services would increase by 29.1 percent. Also noteworthy is that a complete tariff elimination would greatly benefit exports of goods and services from Southern and Eastern Africa.

Table 5.5 Impact on intra-African trade in goods and services in value: Rate of variation (%), 2035

Exporter	Importer	AfCFTA	AfCFTA Full	AfCFTA NTM-25%	AfCFTA NTM-80%	AfCFTA Full NTM-80%
Africa	**Africa**	**15.2**	**29.1**	**15.3**	**15.6**	**29.7**
Africa	Central Africa	30.9	49.7	31.2	31.8	51.1
Africa	Eastern Africa	16.0	42.3	15.9	15.6	42.0
Africa	Northern Africa	9.2	14.7	9.2	9.4	15.1
Africa	Southern Africa	0.9	6.2	0.9	0.8	6.1
Africa	Western Africa	35.2	47.7	36.0	37.8	50.7
Central Africa	**Africa**	**8.0**	**11.7**	**7.6**	**6.6**	**10.4**
Central Africa	Central Africa	-1.4	-5.4	-1.5	-1.6	-5.6
Central Africa	Eastern Africa	4.7	9.4	3.4	-0.3	4.5
Central Africa	Northern Africa	15.1	36.8	14.9	14.5	36.0
Central Africa	Southern Africa	1.3	3.2	1.3	1.4	3.4
Central Africa	Western Africa	100.4	126.1	100.1	99.5	125.5
Eastern Africa	**Africa**	**7.3**	**12.1**	**7.4**	**7.5**	**12.3**
Eastern Africa	Central Africa	5.8	4.4	6.3	7.8	5.9
Eastern Africa	Eastern Africa	9.3	18.5	9.3	9.6	18.9
Eastern Africa	Northern Africa	4.5	1.2	4.5	4.4	1.0
Eastern Africa	Southern Africa	1.4	4.7	1.3	1.0	4.4
Eastern Africa	Western Africa	80.3	90.6	80.4	80.9	91.4
Northern Africa	**Africa**	**35.5**	**54.8**	**35.6**	**35.8**	**55.2**
Northern Africa	Central Africa	111.5	121.5	111.3	110.5	121.2
Northern Africa	Eastern Africa	34.3	59.2	34.6	35.1	59.9
Northern Africa	Northern Africa	7.1	7.6	7.2	7.2	7.7
Northern Africa	Southern Africa	38.1	306.5	38.0	37.9	304.4
Northern Africa	Western Africa	114.8	151.7	115.0	115.4	153.6
Southern Africa	**Africa**	**15.1**	**34.8**	**15.0**	**14.7**	**34.4**
Southern Africa	Central Africa	26.0	42.1	25.9	25.5	41.2
Southern Africa	Eastern Africa	14.3	52.4	14.1	13.6	51.7
Southern Africa	Northern Africa	49.1	76.0	49.1	49.2	76.0
Southern Africa	Southern Africa	-1.1	-3.6	-1.1	-1.1	-3.6
Southern Africa	Western Africa	95.0	138.5	94.7	94.3	138.2
Western Africa	**Africa**	**4.7**	**17.0**	**5.6**	**7.7**	**20.7**
Western Africa	Central Africa	53.2	126.0	54.5	57.9	133.7
Western Africa	Eastern Africa	102.7	318.5	104.4	108.9	332.8
Western Africa	Northern Africa	15.5	75.9	16.4	18.8	81.8
Western Africa	Southern Africa	1.4	2.8	1.4	1.3	2.8
Western Africa	Western Africa	-4.4	-5.9	-3.3	-0.4	-1.5

Source: MIRAGRODEP and authors' calculations.
Note: Africa refers to the entire African continent

To gauge the significance of these rates of change, it is useful to look at the value change in trade flows (goods and services) between the different regions. Table 5.6 shows the change in trade flows in dollar terms resulting from the AfCFTA scenario alone. The AfCFTA reform implies a

contraction of trade of goods and services within three of the regions – Central, Southern, and Western Africa – in comparison with the baseline. This means that these trade flows actually increase *less* between 2021 and 2035 under AfCFTA than they do without the reform (not that there is an actual decline). This is explained by the fact that trade flows within some regions are already duty free. Thus, for example, as the reform reduces customs duties between each Western Africa country and non-Western African countries, producers reallocate the sale of their production outside Western Africa and consumers make more purchases outside Western Africa. From the work of Anderson and van Wincoop (2003), we know that the relative costs of trade determine the size of trade flows. In other words, lowering protection between Senegal and Morocco, for example, without changing protection between Senegal and Mali, should increase trade between Senegal and Morocco and decrease trade between Senegal and Mali, all other things being equal, and in particular with constant output and income. In all other cases, the reform implies an increase in trade of goods and services within African regions. Concerning trade between African regions, there are eight cases in which trade increases by more than US$1 billion[26] (in bold in Table 5.6). The largest increase occurs in exports from Northern Africa to Western Africa, which increase by $5.2 billion.

Table 5.6 Variation of intra-African trade in value between large regions (US$ millions): AfCFTA scenario, 2035

		Importing region				
		Central Africa	Eastern Africa	Northern Africa	Southern Africa	Western Africa
Exporting region	Central Africa	-40	142	107	60	682
	Eastern Africa	114	**1,216**	213	112	430
	Northern Africa	**1,488**	**2,270**	**1,150**	302	**5,236**
	Southern Africa	950	**2,756**	488	-218	**3,009**
	Western Africa	**1,249**	388	256	104	-688

Source: MIRAGRODEP and authors' calculations.

Note: Variations greater than US$1 billion in absolute value are bolded.

Table 5.7 provides an overview of the impact of the five reform scenarios on extra-African trade. We focus on Africa's trade with the three largest trading powers: China, the European Union plus the United Kingdom (EU+UK), and the United States.

The AfCFTA causes some trade diversions: reduced exports from China to Western, Eastern, and Central Africa; reduced exports from the EU+UK to Western and Eastern Africa; and reduced exports from the United States to Western and Eastern Africa. These trade diversions were theorized by Jacob Viner (1950): they are explained by the changes in relative costs discussed above. There is also trade creation in more than a third of the cases in Table 5.7. Trade creation is most notable in cases where the GDP of the African region or country is positively impacted by the reform, implying an increase in households' incomes and thus an increase in their demand and imports of the country. As we shall see, the GDP of the Southern and Northern Africa regions is affected positively by these reforms, which is not the case for Western Africa.

26 Throughout this chapter, $ refers to US dollars.

Table 5.7 Impact on extra-African trade in goods and services in value: Rate of variation (%), 2035

Exporter	Importer	AfCFTA	AfCFTA Full	AfCFTA NTM-25%	AfCFTA NTM-80%	AfCFTA Full NTM-80%
Africa	**China**	**-0.5**	**-0.9**	**-0.5**	**-0.5**	**-0.9**
Africa	**EU + UK**	**-0.9**	**-1.7**	**-0.9**	**-0.8**	**-1.5**
Africa	**US**	**-0.7**	**-1.4**	**-0.7**	**-0.7**	**-1.4**
Central Africa	China	0.1	0.4	0.1	0.2	0.4
Central Africa	EU + UK	1.0	1.7	1.0	1.0	1.8
Central Africa	US	0.7	1.9	0.8	0.8	2.0
China	**Africa**	**-1.2**	**-2.0**	**-1.1**	**-1.1**	**-1.9**
China	Central Africa	-3.7	-4.8	-3.8	-3.9	-5.0
China	Eastern Africa	-2.0	-4.5	-2.0	-2.0	-4.5
China	Northern Africa	0.8	1.4	0.7	0.7	1.4
China	Southern Africa	2.0	3.0	2.0	1.9	3.0
China	Western Africa	-3.0	-3.7	-2.9	-2.7	-3.3
Eastern Africa	China	-0.1	0.5	-0.1	-0.3	0.4
Eastern Africa	EU + UK	0.0	1.3	0.0	-0.1	1.2
Eastern Africa	US	0.1	1.4	0.1	-0.1	1.2
EU + UK	**Africa**	**-0.2**	**-0.4**	**-0.2**	**-0.1**	**-0.3**
EU + UK	Central Africa	-1.7	-2.7	-1.7	-1.8	-2.9
EU + UK	Eastern Africa	-1.8	-4.8	-1.8	-1.7	-4.8
EU + UK	Northern Africa	0.8	1.3	0.8	0.9	1.3
EU + UK	Southern Africa	1.9	4.2	1.9	1.8	4.2
EU + UK	Western Africa	-2.4	-3.2	-2.2	-1.9	-2.7
Northern Africa	China	-1.4	-2.2	-1.5	-1.7	-2.5
Northern Africa	EU + UK	-1.3	-2.0	-1.3	-1.4	-2.1
Northern Africa	US	-1.4	-2.2	-1.4	-1.4	-2.1
Southern Africa	China	-3.1	-6.7	-3.1	-3.0	-6.6
Southern Africa	EU + UK	-2.8	-6.1	-2.8	-2.8	-6.1
Southern Africa	US	-3.2	-6.6	-3.2	-3.1	-6.6
US	**Africa**	**-0.7**	**-1.1**	**-0.7**	**-0.7**	**-1.1**
US	Central Africa	-1.9	-2.9	-1.9	-2.0	-3.1
US	Eastern Africa	-2.7	-6.1	-2.7	-2.7	-6.0
US	Northern Africa	1.0	1.4	1.0	0.9	1.3
US	Southern Africa	2.1	4.3	2.1	2.0	4.2
US	Western Africa	-3.1	-3.4	-3.0	-2.9	-3.1
Western Africa	China	0.4	-0.2	0.4	0.4	-0.1
Western Africa	EU + UK	0.2	-0.5	0.6	1.4	0.9
Western Africa	US	0.4	-0.4	0.3	0.3	-0.5

Source: MIRAGRODEP and authors' calculations.
Note: Africa refers to the entire African continent.

It is interesting to consider whether the AfCFTA reform significantly modifies the geographic structure of African trade (that is, to the benefit of intra-African trade and to the detriment of traditional trading partners like EU+UK), and also if the evolution of the world economy between 2020 and 2035 would change this structure without the AfCFTA reform (that is, in the baseline scenario). Shifting trade from traditional partners to African countries is clearly at the core of the AfCFTA reform (see Fontagné, Mitaritonna, and Zheng 2022). In Table 5.8, we present the distribution of African trade in goods and services in 2020 prior to the AfCFTA and in 2035, both with and without the reform.

Table 5.8 Geographic distribution of African trade in goods and services, 2022 and 2035

		2035	
	2020	without AfCFTA	with AfCFTA
Africa	11.3%	12.4%	13.9%
China	16.3%	18.8%	18.5%
EU+UK	32.6%	28.7%	28.2%
US	7.7%	6.3%	6.2%
Rest of the World	32.1%	33.8%	33.2%

Source: MIRAGRODEP and authors' calculations.
Note: Africa refers to the entire African continent.

Table 5.8 shows us that even without the AfCFTA reform, between 2020 and 2035 the African trade share within the continent grows and the share with traditional partners such as the EU+UK and the United States declines. The AfCFTA reform accentuates this reorientation, with intra-African trade in goods and services increasing from 11.3 percent of African trade in 2020 to 13.9 percent in 2035. Nevertheless, this intra-African trade remains a minor share of African total trade: the EU+UK remains an important partner, with more than a quarter of African trade, and China increases its share.

Table 5.9 presents the rate of variation in exports under the different scenarios, by value, for large economic sectors.[27] The AfCFTA and AfCFTA Full scenarios for the crops sector for Southern Africa differ substantially: exports by value increase by 0.2 percent in the first scenario and by 35.8 percent in the second. When African countries can exclude products from tariff liberalization, it is often crops that are excluded, especially in countries to which South Africa exports these products. The ability to exclude 3 percent of products from tariff liberalization therefore significantly affects exports from Southern African countries. Differences in the same direction, but of different magnitudes, are seen for processed food in Central Africa and for the crops sector in Eastern Africa. Again, the differences between the two scenarios are explained by the excluded products clause. The political economy model adopted in this study to select the list of excluded products concludes that wheat will regularly be exempted from tariff cuts by African countries and RECs. However, liberalizing NTMs is important for the processed food sector, which is impeded by many SPS measures and TBTs. These NTMs create a cost for exporters but reflect consumer preferences on the importing side. Worldwide African exports of processed food increase by 6.3 percent by value under the AfCFTA Full scenario, but by 12.1 percent under AfCFTA Full NTM-80%. Western Africa would benefit most from this reduction in nontariff barriers, with a 27.9 percent increase in its processed food exports by value.

In the industry sector, the impact of the various reforms is positive, but on a much smaller scale than in agriculture. Overall, in 2035, the AfCFTA reform increases African industrial exports to all destinations by 1.5 percent in value (2.3 percent in the case of the AfCFTA Full reform), while processed food exports increase by 4 percent (6.3 percent) and livestock exports by 3.3 percent (2.6 percent). Exports of services generally increase little or even fall: this is a general equilibrium effect (the increase in activity obtained through tariff liberalization increases factor demand, and thus factor remunerations and production costs) and the consequence of the external closure hypothesis (the current account balance of each region or country must remain constant as a proportion of GDP).

27 It is also interesting to consider the effects of the reform on intra-African trade by sector; we lack space to present them. These results may be requested from the authors (a.bouet@cgiar.org).

Table 5.9 Impact on African exports by large sector in value: Rate of variation (%), 2035

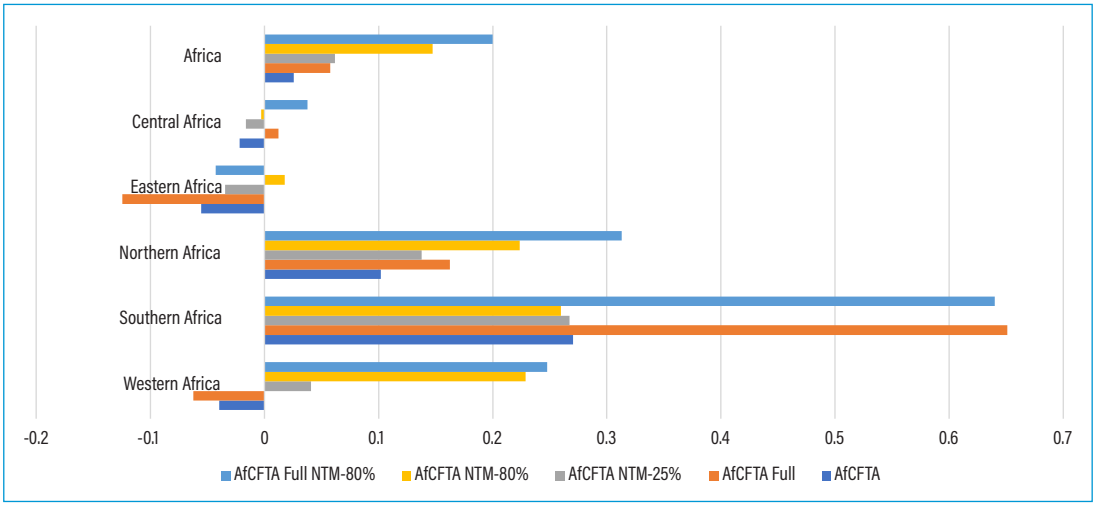
	Sector	AfCFTA	AfCFTA Full	AfCFTA NTM-25%	AfCFTA NTM-80%	AfCFTA Full NTM-80%
Africa	Agrifood	1.7	6.4	2.1	3.2	8.5
	Processed food	4.0	6.3	5.3	8.8	12.1
	Farm	0.7	6.5	0.7	0.8	6.9
	Livestock	3.3	2.6	3.3	3.5	2.8
	Crops	0.7	7	0.7	0.8	7.5
	Industry	1.5	2.3	1.5	1.5	2.2
	Services	-0.6	-1.0	-0.7	-0.9	-1.4
Central Africa	Agrifood	4.0	9.4	3.9	3.9	9.1
	Processed food	3.0	15.7	2.8	2.3	14.7
	Farm	4.3	7.2	4.3	4.4	7.2
	Livestock	3.4	5.7	3.6	3.9	6.3
	Crops	4.4	7.3	4.4	4.6	7.3
	Industry	0.8	1.4	0.8	0.8	1.4
	Services	1.1	1.6	1.1	1.2	1.8
Eastern Africa	Agrifood	0.8	4.4	0.8	0.9	4.5
	Processed food	0.9	3.0	1.2	1.8	4.4
	Farm	0.7	4.8	0.7	0.6	4.6
	Livestock	1.0	3.2	1.0	1.0	3.3
	Crops	0.8	5.1	0.8	0.7	4.8
	Industry	1.9	3.2	1.8	1.7	3.0
	Services	0.3	1.3	0.2	-0.1	1.0
Northern Africa	Agrifood	4.4	5.8	4.8	5.8	7.8
	Processed food	8.9	10.9	9.5	11.2	14.3
	Farm	0.5	1.2	0.6	1	2.1
	Livestock	10.7	9.3	10.8	11	9.6
	Crops	0	0.9	0.2	0.5	1.9
	Industry	1.9	3.0	1.9	1.9	3.0
	Services	-1.2	-1.9	-1.3	-1.6	-2.4
Southern Africa	Agrifood	1.9	18.3	1.9	1.7	18
	Processed food	4.4	6.5	4.3	3.9	5.9
	Farm	0.1	27.1	0.1	0.1	27
	Livestock	1.8	-1.4	1.8	1.8	-1.4
	Crops	0.2	35.8	0.2	0.2	35.7
	Industry	2.5	3.0	2.5	2.4	2.9
	Services	-2.2	-4.8	-2.2	-2.1	-4.6
Western Africa	Agrifood	0.7	1.6	1.9	4.9	7.3
	Processed food	1.3	2.7	7.3	22.7	27.9
	Farm	0.6	1.4	0.7	0.8	2.6
	Livestock	1.2	1.1	1.8	3.0	2.5
	Crops	0.6	1.4	0.6	0.8	2.6
	Industry	0.8	1.3	0.8	0.7	1.1
	Services	0.6	0.6	0.3	-0.3	-0.5

Source: MIRAGRODEP and authors' calculations.
Note: Africa refers to the entire African continent.

Impact on macroeconomic variables

The five reform scenarios affect key macroeconomic variables – the real income (or welfare) of the representative household (Figure 5.3) and real GDP (Figure 5.4). The general profile of the impact of the different scenarios on welfare and GDP is very similar, so that it is possible to make the same comment for both macroeconomic variables.

Figure 5.3 Impact on real income: Rate of variation (%), 2035

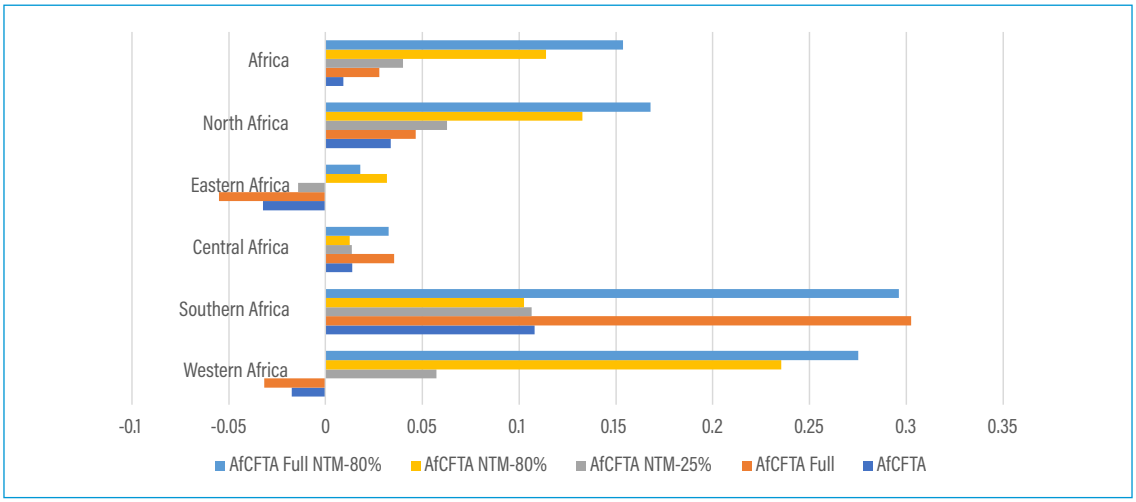


Source: MIRAGRODEP and authors' calculations.
Note: Variation of real income is measured by "Hicksian" equivalent variation, that is, the amount of money needed for the representative consumer in each country, the amount that makes the consumer indifferent between the reform and receiving it, at initial prices.

For Africa overall, the more ambitious the reform, the greater the macroeconomic gains. While the gains from the AfCFTA reform alone are positive but small, the gains from tariff reform accompanied by a significant reduction in NTMs are larger, on the order of 0.15 percent for real income and for GDP. If the ambitious reform of NTMs were accompanied by a complete elimination of tariffs on intra-African trade (AfCFTA Full NTM-80%), the gains would be on the order of 0.2 percent for real household income and GDP.

The profile of the different impacts for Northern Africa is relatively similar to the impacts for the whole continent.

Figure 5.4 Impact on GDP in volume: Rate of variation (%), 2035



Source: MIRAGRODEP and authors' calculations.

For Southern Africa, significant gains are expected from lower tariffs. Comparison of the AfCFTA and AfCFTA Full scenarios shows that the excluded products clause represents a loss of 0.2 percent of GDP and a loss of 0.4 percent of real income for Southern Africa: this clause is therefore significantly costly for this region. NTM reforms, however, have little impact on this region, though it is possible that NTMs affecting exports from this region are not well captured by this study due to the limited database used.

For Western Africa, however, reform of NTMs has macroeconomic benefits but tariff reform is counterproductive. The establishment of a free trade area has two effects, a beneficial effect from trade creation (trade liberalization increases exports and therefore economic activity) and a trade diversion effect (imports from the new free trade area substitute for imports from countries outside the area). This second effect is negative because it implies a deterioration in the terms of trade. For Western Africa, trade creation is lower than the other regions, at just $1.3 billion (based on a calculation of the total increase in exports between regions indicated in Table 5.6). The reform reduces intra-Western Africa trade by $688 million. In addition, the EU+UK is the source of more than a quarter of Western Africa's imports of goods and services in 2020 (28.7 percent), and the reform implies significant reductions in these imports with the share reduced to 24.3 percent in 2035 (compared with 25.1 percent in the baseline). The AfCFTA tariff reform thus creates relatively little trade in this region and diverts a relatively large amount of trade, not only within the region but also from its main source of imports, the EU+UK. The same mechanisms are at work for the tariff reform in Eastern Africa. For Central Africa, all the effects are close to zero.

Impact on economic activity by sector and remuneration of factors of production

Table 5.10 shows the impact of the various reforms on real value added by sector. The gains are heterogeneously shared within each region. For instance, if we consider the AfCFTA scenario, on average (when looking at the Africa aggregate), gains generally occur in industry and losses in other sectors. The AfCFTA Full scenario also benefits services.

This pattern differs in some regions, such as Southern and Northern Africa, where gains also occur in agricultural activities. The processed food sector, which includes all food processing activities, sees a significant increase in activity in Southern Africa (+0.8 percent in case of the AfCFTA scenario; +1.7 percent in AfCFTA Full) and in Northern Africa (+0.4 percent in AfCFTA; +4.7 percent in AfCFTA Full), reflecting the high cost of the sensitive and excluded products clause for the agrifood sector for these regions. In Southern Africa, value added in the crop sector increases only with complete removal of tariffs on intra-African trade. In Northern Africa, activity increases in both food processing and livestock. Across the continent, there is a general decline in activity in the livestock sector, with the most significant declines in Western, Central, and Eastern Africa.

Table 5.10 Impact on African value added by large sector in volume: Rate of variation (%), 2035

		AfCFTA	AfCFTA Full	AfCFTA NTM-25%	AfCFTA NTM-80%	AfCFTA Full NTM-80%
Africa	Agrifood	-0.1	-0.1	-0.1	0.0	0.0
	Processed food	0.0	-0.1	0.1	0.2	0.2
	Farm	-0.1	-0.2	-0.1	-0.1	-0.1
	Livestock	-0.1	-0.4	-0.2	-0.4	-0.7
	Crops	-0.1	-0.1	-0.1	-0.1	0.0
	Industry	0.1	0.2	0.1	0.2	0.3
	Services	0.0	0.1	0.1	0.2	0.2
Central Africa	Agrifood	-0.2	-0.2	-0.2	-0.2	-0.4
	Processed food	-0.2	0.1	-0.2	-0.3	0.0
	Farm	-0.1	-0.4	-0.2	-0.2	-0.5
	Livestock	-0.4	-1.4	-0.5	-0.5	-1.6
	Crops	-0.1	-0.2	-0.1	-0.2	-0.3
	Industry	0.1	0.2	0.1	0.2	0.3
	Services	0.0	0.0	0.0	0.0	0.0
Eastern Africa	Agrifood	-0.1	-0.3	0.0	0.0	-0.3
	Processed food	0.0	-0.2	0.0	0.1	-0.2
	Farm	-0.1	-0.4	-0.1	-0.1	-0.4
	Livestock	-0.2	-0.7	-0.2	-0.2	-0.7
	Crops	-0.1	-0.3	0.0	0.0	-0.3
	Industry	0.1	0.5	0.1	0.2	0.6
	Services	0.0	-0.1	0.0	0.0	0.0
Northern Africa	Agrifood	0.2	0.1	0.2	0.3	0.2
	Processed food	0.4	4.7	0.3	0.3	4.6
	Farm	0.1	-0.2	0.1	0.2	0.0
	Livestock	0.4	0.3	0.4	0.6	0.5
	Crops	0.0	-0.2	0.1	0.2	-0.1
	Industry	0.1	0.2	0.1	0.2	0.4
	Services	0.0	0.0	0.0	0.1	0.1
Southern Africa	Agrifood	0.4	4.7	0.3	0.3	4.6
	Processed food	0.8	1.7	0.7	0.6	1.6
	Farm	0.0	7.4	0.0	0.0	7.3
	Livestock	0.2	-0.1	0.2	0.2	-0.1
	Crops	-0.1	13.6	-0.1	-0.1	13.6
	Industry	0.1	-0.8	0.1	0.1	-0.7
	Services	0.1	0.3	0.1	0.1	0.3
Western Africa	Agrifood	-0.1	-0.1	0.0	0.2	0.3
	Processed food	-0.1	-0.1	0.2	0.8	1.0
	Farm	-0.1	-0.1	-0.1	0.0	0.1
	Livestock	-0.2	-0.3	-0.5	-1.0	-1.1
	Crops	-0.1	-0.1	0.0	0.1	0.2
	Industry	0.1	0.2	0.1	0.1	0.1
	Services	-0.1	-0.1	0.1	0.4	0.4

Source: MIRAGRODEP and authors' calculations.

Table 5.11 shows the impact of the various reforms on real factor remuneration. At the continental level, the variations are close to zero. However, in Southern and Northern Africa, trade reform benefits both skilled and unskilled labor, in both the rural and urban sectors. This clearly indicates a potential positive effect of these reforms on poverty in these two regions, whereas the effect on poverty would be close to zero in the other regions. In the case of the most ambitious reform (AfCFTA Full NTM-80%), the wages of skilled and unskilled workers would increase significantly, especially in Western, Southern, and Northern Africa. Finally, a tariff reform without a sensitive products clause would substantially benefit the remuneration

of land and rural unskilled labor in Southern Africa: these remunerations increase by 3.6 and 2.4 percent respectively in the AfCFTA Full scenario, compared with increases of only 0.04 and 0.4 percent in the AfCFTA scenario.

Table 5.11 Impact on real remuneration of productive factors: Rate of variation (%), 2035

		AfCFTA	AfCFTA Full	AfCFTA NTM-25%	AfCFTA NTM-80%	AfCFTA Full NTM-80%
Africa	Skilled labor	0.1	0.1	0.1	0.2	0.3
	Rural unskilled labor	0	-0.1	0	0.1	0.1
	Urban unskilled labor	0.1	0.1	0.1	0.3	0.3
	Capital	0	0.1	0.1	0.1	0.2
	Land	0	-0.1	0	0	0
Central Africa	Skilled labor	0	0	0	0	0
	Rural unskilled labor	-0.2	-0.3	-0.2	-0.2	-0.3
	Urban unskilled labor	-0.1	0	-0.1	0	0
	Capital	0	0.1	0	0	0.1
	Land	-0.2	-0.3	-0.2	-0.2	-0.4
Eastern Africa	Skilled labor	-0.1	-0.1	0	0.1	0
	Rural unskilled labor	-0.1	-0.3	-0.1	0	-0.3
	Urban unskilled labor	0	0	0	0.1	0.1
	Capital	0	0.1	0	0.1	0.2
	Land	-0.1	-0.4	-0.1	0	-0.4
Northern Africa	Skilled labor	0.1	0.3	0.2	0.3	0.4
	Rural unskilled labor	0.2	0.1	0.3	0.4	0.4
	Urban unskilled labor	0.2	0.3	0.2	0.3	0.5
	Capital	0.1	0.1	0.1	0.2	0.2
	Land	0.1	-0.1	0.2	0.3	0.1
Southern Africa	Skilled labor	0.3	0.5	0.3	0.3	0.5
	Rural unskilled labor	0.4	2.4	0.4	0.4	2.3
	Urban unskilled labor	0.3	0.5	0.3	0.3	0.5
	Capital	0.1	0.3	0.1	0.1	0.3
	Land	0	3.6	0	0	3.6
Western Africa	Skilled labor	-0.1	-0.1	0.1	0.4	0.4
	Rural unskilled labor	-0.1	-0.1	0	0.2	0.3
	Urban unskilled labor	0	0	0.1	0.5	0.5
	Capital	0	0	0.1	0.3	0.3
	Land	-0.1	0	0	0.1	0.2

Source: MIRAGRODEP and authors' calculations.

CONCLUSION

In this chapter, we have re-estimated the potential impact of the African Continental Free Trade Area. This evaluation was carried out with the MIRAGRODEP model, which allows us to better estimate the impact of tariff reductions both because this model uses a consistent aggregator of tariffs and because the selection of sensitive products and excluded products is based on a political economy model with strong microeconomic foundations. As compared to the

UNECA-CEPII study conducted using MIRAGE, the tariff aggregator is indeed an improvement. However, our selection of sensitive products is less in line with the selection criteria agreed under the negotiation. In our MIRAGRODEP study, we did not account for the criteria for promotion of industrialization and green industrialization. These criteria were agreed on at the negotiations.

Our study also simulates a reduction in NTMs based on two innovations. Our evaluation of the magnitude of these measures is stronger econometrically. Even if AVEs of NTMs have not been estimated for a few African countries (the main caveat for this modeling exercise), we think the adoption of a better econometric estimation was useful; however, these NTMs are not integrated as simple costs to international trade, but rather as an additional cost that exporting firms must pay, in terms of factors of production and payments to the commercial services sector.

This evaluation largely confirms the findings of the previous evaluations. The AfCFTA will be a game-changer only if it is ambitious, both for tariff liberalization (important for boosting trade) and NTMs (important for raising GDP). The sensitive and excluded products clause reduces the potential impact of this reform: the AfCFTA tariff agreement (AfCFTA scenario) increases African exports of agrifood goods by only 1.6 percent in volume, whereas a complete elimination of tariffs on intra-African trade (AfCFTA Full scenario) would increase these exports by 6.2 percent. The opportunity cost of this clause is thus significant.

Negotiating a reduction of NTMs is also a critical issue. The AfCFTA tariff scenario has an impact of close to zero on Africa's GDP, and a complete elimination of tariffs on intra-African trade (AfCFTA Full) increases African GDP by only 0.05 percent (almost no impact). However, adding an 80 percent reduction in NTMs would increase African GDP by 0.2 percent. The ambitious AfCFTA Full NTM-80% scenario increases African GDP at market prices by $4 billion more than the AfCFTA Full scenario. Notably, our evaluation of NTMs includes such measures in only 14 of the 55 African countries, so it underestimates the impact of these negotiations.

Our assessment does not account for informal cross-border trade (ICBT), which is a key feature of African trade, particularly agricultural trade. The other evaluations reviewed in this chapter also omit informal trade. ICBT is trade operated by unregistered traders or informally by registered traders. Typically, it is "proximity trade, involving movement of produce between markets close to a 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)."[28] ICBT thus refers to either unregistered traders or firms operating entirely outside the formal economy (trade in small quantities through a border crossing such that this passage is not subject to control and smuggling by traders operating shipments of a good through a border avoiding official custom posts); or registered firms partially evading trade-related regulations and duties by resorting to illegal practices.

Several initiatives have been developed to monitor informal (or "unregistered") trade in recent years in Africa: in West Africa, the Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (CILSS, Permanent Interstate Committee for Drought Control in the Sahel) and West African Association for Cross-Border Trade in Agro-forestry-pastoral and Fisheries Products (WACTAF); in Uganda surveys started in 2005 by the Uganda Bureau of Statistics (UBoS) and the Bank of Uganda; surveys conducted in Eastern and Southern Africa by FEWSNET; and an evaluation conducted by the Rwandan government at 53 border crossings with its four neighboring countries. Although many studies aimed at assessing the magnitude of ICBT in

28 UNCTAD website: https://unctad.org/project/informal-cross-border-trade-empowerment-women-economic-development-and-regional-integration; accessed February 18, 2020.

Africa are partial, they all suggest the importance of unrecorded trade and the figures are large in all surveys. Informal trade is thought to be equal to between 7 and 16 percent of official intra-African trade flows and between 30 percent and 72 percent of official trade between neighboring countries (Gaarder, Luke, and Sommer 2021).

What are the consequences of omitting ICBT from the ex ante evaluation conducted in this chapter? We identify two channels through which the resulting underestimation may affect our assessment of the AfCFTA. First, the implications of a trade agreement, or more generally of a reduction in trading costs, depend on the initial size of trade, including ICBT. Costinot and Rodríguez-Clare (2014) show that the benefit (or welfare, in economic terms) that a nation derives from a variation in international trade costs depends on the variation in the share of national expenditure on local products and the elasticity of trade with respect to trading costs. For the same variation in trading costs, this variation in the share of national expenditure on local products will be smaller for a large country or for a country that initially trades little.[29] If intra-African trade is larger than initially expected (because ICBT was not considered), the share of domestic spending on local products is automatically lower, and the change in this share for some reduction in trade costs should be higher. This suggests that the trade-generating and welfare-enhancing effects of the AfCFTA are larger when ICBT is included.

Second, ICBT also has an effect on trade structure. Informal trade in Africa is essentially between neighboring countries, and generally, neighboring African countries belong to the same REC. There are 212 pairs of contiguous countries on the African continent, among which 160 belong to the same REC, that is 75.5 percent of cases.[30] Informal trade in Africa takes many forms. It can take the form of individuals crossing a border with small quantities that customs officials tolerate without registering; it is then trade between bordering countries that may belong to the same REC (for example, between Uganda and Kenya as recorded by UBoS at the Busia border post)[31] or to two different RECs (for example, between Nigeria and Cameroon). Another illustration comes from West Africa, where a significant portion of trade between ECOWAS countries is not recorded by customs officials because it is not subject to tax collection, whether it is carried out in small quantities by individuals in the informal sector or by trucks of formal sector companies. However, in the same region, a significant portion of trade between Benin and Nigeria is smuggled through border crossings without customs officers, simply because Nigeria levies duties or imposes bans on imports from Benin.[32] This pattern of informal trade is important to the subject of this study – accounting for ICBT will either add trade on borders that impose costs on trade in the form of tariffs or NTMs, and thus the implementation of the AfCFTA will likely lead to even larger welfare and activity gains; or ICBT will add trade on borders between countries that are already trading freely and the effect will be indeterminate

Based on our analysis, policy recommendations concerning the AfCFTA are clear. If the implementation of this trade reform is unambitious, the benefits for the African economy will be minor. However, the data available for our analysis are weak both on NTMs and on informal trade. There are many initiatives targeting improved data collection on trade and trade policies in Africa. Continuing these efforts must be a priority.

29 See also Fontagné, Guimbard, and Orefice (2019).
30 These statistics have been obtained through calculations operated on CEPII data from geo_cepii.xlsx and dist_cepii.xls (http://www.cepii.fr/CEPII/fr/) and Mario Larch's database on regional trade agreements for 2019 (RTA-Data (uni-bayreuth.de)).
31 https://www.ubos.org/explore-statistics/10/
32 Nigeria officially levies duties and imposes import bans on Benin's re-exports, for which Nigerians exhibit a strong demand. In fact, Benin violates ECOWAS regulations through re-export of products that are sensitive for Nigeria. In that context, Nigeria's customs officials find reasons for harassment and corruption.

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APPENDIX

Technical presentation of MIRAGRODEP

Main features

The study is based on the MIRAGRODEP model,[33] which is a multiregion, multisectoral, recursive dynamic computable general equilibrium (CGE) model, based on the MIRAGE model (Modelling International Relations under Applied General Equilibrium). MIRAGE was developed at the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) in the early 2000s to assess the consequences of trade policy reforms (see Bchir et al. 2002). MIRAGRODEP is an improved version of MIRAGE with a government explicitly represented in each country (see Laborde, Robichaud, and Tokgoz 2013). The GTAP database is the main data source; the GTAP10 version was used for this study. The model uses an aggregated version of 40 sectors and 29 countries/regions (see below).

The trade protection data are primarily from the MAcMAP database (Market Access Maps; see Guimbard et al. 2012), but additional sources have been used to complete this information, such as data relating to export taxes.

On the supply side in each sector, the production function is a Leontief function of value added and intermediate inputs. To produce, a production unit needs x percent (x is country and sector specific) of an aggregate of factors of production (labor, both unskilled and skilled; capital; land and natural resources) and (1 - x) percent of intermediate inputs. For intermediate inputs, an aggregate function, with constant elasticity of substitution (CES), of all goods is used. Therefore, there is always substitutability between two intermediate goods, depending on the relative prices of these goods. Value added is a CES function of unskilled labor, land, natural resources, and a composite factor combining skilled labor and capital. This specification makes it possible to introduce less substitutability between capital and skilled labor than between these two factors and other factors such as unskilled labor. In this version, we assume that all sectors operate in perfect competition, that there are no fixed costs, and that price is equal to marginal cost.

The only factor whose supply is fixed over time is natural resources. The supply of capital is variable from year to year in this dynamic version of the model and varies endogenously. Total investment in an economy is determined by macroeconomic equilibrium, which links private savings, public savings, investment, and the current account balance. Investment in a sector depends on the return to capital in that sector, the price of the capital good, and the stock of capital in that sector. The growth rates of the labor supply are set exogenously following the evolution of the labor force. The supply of land is endogenous and varies according to the real remuneration of land.

Skilled labor is the only factor that is perfectly mobile within a region. Installed capital and natural resources are specific to each sector. New capital is allocated among the sectors according to an investment function. Unskilled labor is imperfectly mobile between the agriculture and nonagriculture sectors according to a constant elasticity of transformation function. Land is also imperfectly mobile between agriculture sectors. Capital in a given region, regardless of its origin (domestic or foreign), is assumed to be obtained by assembling intermediate inputs in a specific combination. The capital good is the same regardless of the sector.

33 Our evaluation can be considered as a continuation of the IFPRI study presented in review section of this chapter. No document has been produced on that IFPRI, only a presentation at an IFPRI seminar, January 5, 2021 (https://www.ifpri.org/blog/policy-seminar-prospects-african-continental-free-trade-area).

Demand for final consumption is modeled in each region through a representative agent whose propensity to save is constant. The income from the factors of production provides the

income of this representative agent and allows it to finance final consumption. Its preferences over goods are represented by an LES-CES (linear expenditure system–constant elasticity of substitution) function, which implies that final consumption has a non-unitary income elasticity. The sectoral sub-utility function used in MIRAGRODEP is a nesting of four CES-Armington functions that defines the origin of goods. The Armington hypothesis (Armington 1969) captures product differentiation, assuming a differentiation of goods by country of origin. It is a robust way to represent bilateral and inter-industry trade flows. In this study, the Armington elasticities are taken from the GTAP10 database (Aguiar et al. 2019).

Key closures

The model includes three important assumptions: the external account closure, the government account closure, and the private account closure.

The private account closure hypothesis relates to the savings–investment closure. The MIRAGRODEP model is neoclassical, which means that the marginal propensity to save is constant, so that a change in income leads to a change in savings, which leads to a change in investment.

The closure of the external account concerns the hypothesis on the current account. In the MIRAGRODEP model, the real exchange rate is adjusted such that the current account balance is stable as a percentage of world GDP.

The closure of the public account or the general government account concerns the way in which the public balance is affected when taxes and duties are modified by a reform. The choice made here by the modeler is important and several options are possible. If the public balance is variable, there may be a crowding-out effect on private investment in the event of an increase in the demand for financing from the public sector. If the public balance is constant because public expenditure adjusts, this can affect the supply of public services and therefore impact the welfare of individuals; yet the model does not include the utility function, defined on private consumption, tracing this change. If the public balance is constant and public expenditure per capita is constant, tax compensation is needed for public revenue to be constant. The modeler can then choose a direct tax, which may appear fair but is politically unrealistic, or an indirect tax, which may appear unfair but is politically more realistic.

In this study, we assume that each government keeps the public balance constant. After a shock that modifies customs duties, a variation in the consumption tax (increase or decrease) is established in order to keep real public expenditure per capita constant, the public budget balance being constant as a percentage of GDP. With this assumption, the level of public services in each country is constant and there is no variation in the public budget balance and therefore no associated crowding-out effect on private investment.

A flat per capita tax could have been chosen to achieve this adjustment. Such a tax is efficient in the sense that it does not interfere with market mechanisms. In addition, it is useful for measuring an imperfection associated with the reform: the magnitude of the flat tax measures the cost or gain imposed on each individual to maintain constant real public expenditure per capita, and therefore the constant supply of public goods. Nevertheless, a flat tax is politically unrealistic, while a consumption tax is unfair but more politically realistic.

Nontariff measures

The inclusion of nontariff measures (NTMs) within the MIRAGRODEP model received special attention. First an econometric study, presented in Bao, Bouët, and Traoré (2020), has been conducted to estimate their magnitude. This estimation has been innovative: in previous studies evaluating the ad valorem equivalent (AVE) of NTMs based on a gravity equation, Jensen's inequality is not considered. Yet the issue of estimating the impact of dummy or count variables in semi-log or related equations has been shown since the 1980s to bias the estimation. In Bao, Bouët, and Traoré (2020), this bias is demonstrated and it is shown that when it is not considered, the estimation of AVEs can be significantly biased. This omission leads to a significant underestimation of the restrictive impact of NTMs and can even change the sign of the AVE. With these estimates of the AVE of NTMs available at the HS2 level, a correspondence between HS2 and the GTAP nomenclature, then the sectoral disaggregation of the model was established on the basis of simple averages. Then a correspondence between the geographic aggregation and the nomenclature of the model was established, again based on simple averages. Finally, it was decided to set the negative AVEs to zero. NTMs are included in the MIRAGRODEP as costs borne by firms when they export, with half of this cost in additional value added for the exporting sector, half in additional intermediate consumption to the "Business Services nec" GTAP sector, included in the model.

Sector and geographic correspondences

Table A5.1 Sector correspondence

Model code	Label	GTAP corresp.	Big sectors
AutCereales	Other Cereals	pdr, gro, pcr	Agro-Food, crops, Farm
Ble	Wheat	Wht	Agro-Food, crops, Farm
FruitsLeg	Fruit and Vegetables	v_f	Agro-Food, crops, Farm
Oleagineux	Oilseeds	Osd	Agro-Food, crops, Farm
Sucre	Sugar	c_b, sgr	Agro-Food, Farm
AutCultures	Other crops	pfb, ocr	Agro-Food, crops, Farm
Betail	Livestock	Ctl	Agro-Food, Livestock, Farm
PetitsAnimaux	Small animals	oap, wol	Agro-Food,Livestock, Farm
Lait	Milk	rmk, mil	Agro-Food, Farm
Foret	Forestry	frs	Agro-Food
Peche	Fishing	fsh	Agro-Food, Processed Food
Energie	Energy	coa, oil, gas, p_c	Agro-Food
Mines	Mines	omn, nmm	Agro-Food
ViandeRouge	Red meat	cmt	Agro-Food, Processed Food
ViandeBlanche	White meat	omt	Agro-Food, Processed Food
HuilesVeg	Vegetable oils	vol	Agro-Food, Processed Food
AutreAgro	Other food	ofd	Agro-Food, Processed Food
Boissons	Beverages	b_t	Agro-Food, Processed Food
Textiles	Textiles	tex	Industry
Habilement	Wearing, apparel, and leather	wap, lea	Industry
IndBois	Wood industry	lum, ppp	Industry
ChimieNon-Petro	Chemicals and chemicals products	chm	Industry
Pharma	Pharmacy	bph	Industry
IndCon	Rubber and plastic products	rpp	Industry
Metaux	Ferrous and non-ferrous metals, metal products	i_s, nfm, fmp	Industry
Automobiles	Automobiles	mvh, otn	Industry
Electronique	Electronics	ele	Industry
Industrie	Electrical equipment	eeq	Industry
BiensInvest	Machinery and equipment nec	ome	Industry
AutIndustrie	Furniture and other manufacturing	omf	Services
DistrEauEner	Electricity, gas, and water and their distribution	ely, gdt, wtr	Services
Construction	Construction	cns	Services
Commerce	Trade	trd	Services
ServAlimTour	Accommodation	afs, ros	Services
Transport	Transport	otp, wtp, atp, whs	Services
Communication	Communication	cmn	Services
Finance	Finance	ofi, ins	Services
Logement	Real estate, dwellings	rsa, dwe	Services
AutServices	Other services	obs	Services
ServPublics	Public Services	osg, edu, hht	Services

Table A5.2 Geographic correspondence

GTAP Code	GTAP Label	Aggreg. Code	MIRAGRODEP Label	GTAP Code	GTAP Label	Aggreg. Code	MIRAGRODEP Label
AUS	Australia	AsieR	Asia Rich	PRY	Paraguay	MERCOSUR	MERCOSUR
NZL	New Zealand	AsieR	Asia Rich	PER	Peru	AmLatine	Latin America
XOC	Rest of Oceania	AsieR	Asia Rich	URY	Uruguay	MERCOSUR	MERCOSUR
CHN	China	Chine	China	VEN	Venezuela	AmLatine	Latin America
HKG	Hong Kong	Chine	China	XSM	Rest of South America	AmLatine	Latin America
JPN	Japan	AsieR	Asia Rich	CRI	Costa Rica	AmCent	Central America
KOR	Korea	AsieR	Asia Rich	GTM	Guatemala	AmCent	Central America
MNG	Mongolia	AsieR	Asia Rich	NIC	Nicaragua	AmCent	Central America
TWN	Taiwan	AsieR	Asia Rich	PAN	Panama	AmCent	Central America
XEA	Rest of East Asia	AsieR	Asia Rich	SLV	El Salvador	AmCent	Central America
KHM	Cambodia	AsieP	Asia Poor	HND	Honduras	AmCent	Central America
BRN	Brunei	AsieP	Asia Poor	XCA	Rest of Centr. Amer.	AmCent	Central America
IDN	Indonesia	AsieP	Asia Poor	DOM	Dominican Republic	AmCent	Central America
LAO	Laos PDR	AsieP	Asia Poor	JAM	Jamaica	AmCent	Central America
MYS	Malaysia	AsieP	Asia Poor	PRI	Puerto Rico	USA	USA
PHL	Philippines	AsieP	Asia Poor	TTO	Trinidad and Tobago	AmCent	Central America
SGP	Singapore	AsieP	Asia Poor	XCB	Rest of the Caribbean	AmCent	Central America
THA	Thailand	AsieP	Asia Poor	AUT	Austria	EU28	European Union+UK
VNM	Viet Nam	AsieP	Asia Poor	BEL	Belgium	EU28	European Union+UK
XSE	Rest of Southeast Asia	AsieP	Asia Poor	CYP	Cyprus	EU28	European Union+UK
BGD	Bangladesh	AsieP	Asia Poor	CZE	Czech Republic	EU28	European Union+UK
IND	India	AsieP	Asia Poor	DNK	Denmark	EU28	European Union+UK
PAK	Pakistan	AsieP	Asia Poor	EST	Estonia	EU28	European Union+UK
LKA	Sri Lanka	AsieP	Asia Poor	FIN	Finland	EU28	European Union+UK
NPL	Nepal	AsieP	Asia Poor	FRA	France	EU28	European Union+UK
XSA	Rest of South Asia	AsieP	Asia Poor	DEU	Germany	EU28	European Union+UK
CAN	Canada	Canada	Canada	GRC	Greece	EU28	European Union+UK
USA	United States of America	USA	USA	HUN	Hungary	EU28	European Union+UK
MEX	Mexico	AmCent	Central America	IRL	Ireland	EU28	European Union+UK
XNA	Rest of North America	Canada	Canada	ITA	Italy	EU28	European Union+UK
ARG	Argentina	MERCOSUR	MERCOSUR	LVA	Latvia	EU28	European Union+UK
BOL	Bolivia	AmLatine	Latin America	LTU	Lithuania	EU28	European Union+UK
BRA	Brazil	MERCOSUR	MERCOSUR	LUX	Luxembourg	EU28	European Union+UK
CHL	Chile	AmLatine	Latin America	MLT	Malta	EU28	European Union+UK
COL	Colombia	AmLatine	Latin America	NLD	Netherlands	EU28	European Union+UK
ECU	Ecuador	AmLatine	Latin America	POL	Poland	EU28	European Union+UK

Table A5.2 Geographic correspondence (continued)

GTAP Code	GTAP Label	Aggreg. Code	MIRAGRODEP Label	GTAP Code	GTAP Label	Aggreg. Code	MIRAGRODEP Label	Large African regions
PRT	Portugal	EU28	European Union+UK	EGY	Egypt	AfrN	North Africa	North Africa
SVK	Slovakia	EU28	European Union+UK	MAR	Morocco	MAROC	Morocco	North Africa
SVN	Slovenia	EU28	European Union+UK	TUN	Tunisia	AfrN	North Africa	North Africa
ESP	Spain	EU28	European Union+UK	XNF	Rest of North Africa	AfrN	North Africa	North Africa
SWE	Sweden	EU28	European Union+UK	NGA	Nigeria	CEDEAO	ECOWAS	ECOWAS
GBR	United Kingdom	EU28	European Union+UK	SEN	Senegal	CEDEAO	ECOWAS	ECOWAS
CHE	Switzerland	OEUR	Other Europe	BEN	Benin	CEDEAO	ECOWAS	ECOWAS
NOR	Norway	OEUR	Other Europe	BFA	Burkina Faso	CEDEAO	ECOWAS	ECOWAS
XEF	Rest of EFTA	OEUR	Other Europe	CIV	Côte d'Ivoire	CEDEAO	ECOWAS	ECOWAS
ALB	Albania	OEUR	Other Europe	GHA	Ghana	CEDEAO	ECOWAS	ECOWAS
BGR	Bulgaria	EU28	European Union+UK	GIN	Guinea	CEDEAO	ECOWAS	ECOWAS
BLR	Belarus	CIS	Com. of Ind. States	TGO	Togo	CEDEAO	ECOWAS	ECOWAS
HRV	Croatia	EU28	European Union+UK	XWF	Rest of West. Africa	CEDEAO	ECOWAS	ECOWAS
ROU	Romania	EU28	European Union+UK	CMR	Cameroon	CEMAC	CEMAC	Central Africa
RUS	Russian Federation	CIS	Com. of Ind. States	XCF	Central Africa	CEMAC	CEMAC	Central Africa
UKR	Ukraine	CIS	Com. of Ind. States	XAC	South Central Africa	RAfCent	Rest of Central Africa	Central Africa
XEE	Rest of East. Africa	CIS	Com. of Ind. States	ETH	Ethiopia	ETH	Ethiopia	Eastern Africa
XER	Rest of Europe	CIS	Com. of Ind. States	KEN	Kenya	EAC	Eastern African Com.	Eastern Africa
KAZ	Kazakhstan	CIS	Com. of Ind. States	MDG	Madagascar	RAf Orientale	Rest of East. Africa	Eastern Africa
KGZ	Kyrgyztan	CIS	Com. of Ind. States	MWI	Malawi	RAf Orientale	Rest of East. Africa	Eastern Africa
TJK	Tadjikistan	CIS	Com. of Ind. States	MUS	Mauritius	RAf Orientale	Rest of East. Africa	Eastern Africa
XSU	Rest of FSU	CIS	Com. of Ind. States	MOZ	Mozambique	RAf Orientale	Rest of East. Africa	Eastern Africa
ARM	Armenia	CIS	Com. of Ind. States	RWA	Rwanda	EAC	Eastern African Com.	Eastern Africa
AZE	Azerbaijan	CIS	Com. of Ind. States	TZA	Tanzania	EAC	Eastern African Com.	Eastern Africa
GEO	Georgia	CIS	Com. of Ind. States	UGA	Uganda	EAC	Eastern African Com.	Eastern Africa
IRN	Iran, Islamic Rep.c of	AsiaW	Middle East	ZMB	Zambia	RAf Orientale	Rest of East. Africa	Eastern Africa
TUR	Türkiye	Turquie	Turkey	ZWE	Zimbabwe	RAf Orientale	Rest of East. Africa	Eastern Africa
ISR	Israel	AsiaW	Middle East	XEC	Rest of East. Africa	EAC	Rest of East. Africa	Eastern Africa
JOR	Jordania	AsiaW	Middle East	BWA	Botswana	SACU	SACU	SACU
ARE	United Arab Emirates	AsiaW	Middle East	ZAF	South Africa	SACU	SACU	SACU
BHR	Bahrain	AsiaW	Middle East	NAM	Namibia	SACU	SACU	SACU
KWT	Kuwait	AsiaW	Middle East	XSC	Rest of South Afr. Cust. Un.	SACU	SACU	SACU
OMN	Oman	AsiaW	Middle East	XTW	Rest of the World	Canada	Canada	
QAT	Qatar	AsiaW	Middle East					
SAU	Saudi Arabia	AsiaW	Middle East					
XWS	Rest of Western Asia	AsiaW	Middle East					

CHAPTER **SIX**

Regional Trade Integration in the Economic Community of Central African States

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INTRODUCTION

The Economic Community of Central African States (ECCAS) currently comprises 11 member countries. Established in October 1983, ECCAS began functioning in 1985 but was subsequently inactive for a number of years due to financial difficulties and conflicts in the Great Lakes region. The founding members were Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of Congo (DRC), Republic of Congo (Congo), Equatorial Guinea, Gabon, Rwanda, and Sao Tome and Principe; Angola became a full member in 1999, and Rwanda pulled out in 2007 but returned in 2016.[1] ECCAS was created with the aim of promoting and strengthening harmonious cooperation and balanced self-sustaining development of the region's economic and social activity, with trade and market integration as its core objective.[2]

Among the ECCAS member states, Angola is by far the biggest economy, contributing 38.8 percent of the regional gross domestic product (GDP) on average over the 1993–2020 period. It is followed by Cameroon, contributing 16.9 percent of regional GDP, and the DRC, contributing 15.5 percent. Sao Tome and Principe is the smallest economy in the region, contributing only 0.15 percent of regional GDP. The top performers in terms of recent real GDP growth are Rwanda, DRC, and Cameroon, with average economic growth of 6.1 percent, 5.7 percent, and 4.0 percent, respectively, over the 2011–2020 period. The poorest performers are Equatorial Guinea, Congo, and the Central African Republic, with average economic growth of −2.9, −1.3, and −0.6 percent, respectively, over the 2011–2020 period.

The ECCAS economy is dominated by its industrial sector, which contributes 42.2 percent of regional GDP. The bulk of this contribution is from the extractive industries; the manufacturing sector contributes only about 14 percent (AfDB 2019). The tertiary (services) sector is the second largest contributor, accounting for 40.9 percent of regional GDP, while the primary sector contributes only 16.9 percent (AfDB 2019). On the export side, commodity exports predominate, particularly oil and mining products. The agriculture sector contributes only about 9 percent of export revenues (AfDB 2019).

The Africa Regional Integration Index report (AUC 2019) suggests that ECCAS countries are moderately integrated, ranking third among African regional economic communities (RECs). Among ECCAS countries, Congo, Gabon, Cameroon, and Rwanda are the top performers in terms of integration, with a score above the ECCAS average. Compared to other RECs, ECCAS excels on the macroeconomic dimension, but like most RECs, it trails on the productive dimension of the index. Also important to regional integration is the participation of ECCAS member states in several overlapping regional economic agreements. As the African Development Bank (2019) notes, countries belonging to several RECs are likely to have difficulty honoring their financial obligations to the REC secretariats. They are also likely to face issues in adopting different types of rules of origin (RoOs), different regulations, and other obligations of the different RECs, which make it difficult for firms to adapt. Other consequences, such as low program implementation, duplication, and conflicting program implementation, could also arise from countries' simultaneous membership in more than one customs union.

Despite overlapping membership in other RECs, ECCAS member countries adopted a strategic integration plan in 2007 with the objective of making ECCAS a region of peace, solidarity, balanced development, and the free movement of people, goods, and services.[3] Activities in the trade integration strategy are aimed at the creation of a regional common market. The

1 Rwanda pulled out from ECCAS to focus on its membership in the East African Community (EAC) and COMESA (see https://www.pacci.org/economic-community-of-central-african-states-eccas/).
2 https://www.devex.com/organizations/communaute-economique-des-etats-de-l-afrique-centrale-economic-community-of-central-african-states-ceeac-eccas-52141
3 https://www.devex.com/organizations/communaute-economique-des-etats-de-l-afrique-centrale-economic-community-of-central-african-states-ceeac-eccas-52141

ECCAS free trade area was launched in 2004, with the goal of establishing a customs union with a common external tariff (CET) by 2008. However, the latter has not materialized due to the weak uptake of agreed procedures by member states (AfDB 2019). It should be noted that discussions regarding a harmonized customs union between CEMAC (Communauté Economique et Monétaire de l'Afrique Centrale[4]) and ECCAS as well as a CET for the two RECs are currently at an advanced stage.

It should also be noted that the African Continental Free Trade Area (AfCFTA) was launched in July 2019 in a major effort to improve intra-African integration by eliminating tariff and nontariff measures (NTMs) on goods, while also speeding up customs procedures (Bouët, Odjo, and Zaki 2020). However, the world is currently facing a number of shocks including the COVID-19 pandemic and the Russia-Ukraine war, which could stall these initiatives for African integration.

This chapter focuses on trade integration in the ECCAS region. Over the recent 2018–2020 period, intra-ECCAS exports were just 0.8 percent of total regional exports, and intra-ECCAS imports were 1.7 percent of total imports. Congo, Rwanda, and Angola are the biggest players in intra-ECCAS exports, while DRC, Congo, and Gabon are the main contributors to intra-ECCAS imports. Cameroon and Rwanda are the main exporters of agricultural products within the ECCAS region, while DRC is the main importer of agricultural goods from the ECCAS region. Rwanda is the main exporter of unprocessed and semi-processed agricultural products to the ECCAS region, while DRC is the main importer of unprocessed and semi-processed agricultural products. The top exporter of processed agricultural products to the ECCAS region is Cameroon, followed by Gabon and Rwanda.

This chapter provides an overview of regional trade integration, particularly agricultural trade, in the ECCAS REC. Following this introduction, we review the history of ECCAS. The next section analyzes trade integration in ECCAS with a focus on agricultural products. This is followed by an analysis of intraregional trade in ECCAS in general, including agricultural and non-agricultural products. We then highlight the challenges and potential opportunities for successful trade integration in the region. The final section concludes and offers a way forward.

HISTORICAL BACKGROUND OF ECCAS

Created by treaty on October 18, 1983, ECCAS came into force one year later. It is one of the eight RECs accredited by the African Union and is the pivotal organization for human integration, peace, security, and stability in Central Africa. To this end, ECCAS was named a pillar of the African Economic Community (AEC)[5] and signed the protocol on relations between the AEC and the RECs in October 1999.

At its establishment, it included the countries of several pre-existing communities — those of the Union Douanière et Economique de l'Afrique Centrale (UDEAC)[6] created in 1964 (Cameroon, Congo, Central African Republic, Chad, Gabon, Equatorial Guinea), the Communauté Economique des Pays des Grands Lacs (CEPGL)[7] created in 1976 (Burundi, Rwanda, Zaire today DRC) — as well as Sao Tome and Principe. All UDEAC members are current members of CEMAC. Angola was an ECCAS observer until 1999, when it became a member. Rwanda left ECCAS in 2007 to focus on its participation in the East African Community (EAC) and officially returned in mid-2016.

4 Central Africa Economic and Monetary Community.
5 The AEC is an organization of the African Union, created in 1991 by 51 African countries. According to the treaty instituting the community, its objectives are (art. 4): to promote economic, social, and cultural development, and the integration of African economies; to establish, on a continental scale, a framework for the development, mobilization, and utilization of the human and material resources of Africa; to promote cooperation in all fields of human endeavor; to coordinate and harmonize policies among existing and future economic communities.
6 Customs and Economic Union of Central Africa
7 Economic Community of the Great Lakes Countries.

The overarching objective of ECCAS is the balanced economic and social development of all member states (Preamble; art. 4, para. 1). This objective is supported by nine intermediate objectives (art. 4, para. 2): elimination of customs duties and other taxes with equivalent effect; abolition of quantitative restrictions and other barriers to trade; establishment and maintenance of a common external tariff; establishment of a common trade policy with respect to third parties; and the removal of obstacles to the free movement of goods, services, capital, and persons. To achieve these objectives, it relies on six institutions (Chapter III), namely the Conference of Heads of State and Government, the Council of Ministers, the Court of Justice, the General Secretariat, the Consultative Commission, and the Specialized Technical Committees or bodies.

According to its statutes, ECCAS aims to gradually become a customs union in the sense of Article XXIV of the General Agreement on Tariffs and Trade (GATT) and in accordance with the timetable set out in the 1991 Abuja Treaty.[8] To date, it is not one of the RECs declared to the World Trade Organization (WTO) under Article XXIV,[9] unlike CEMAC or EAC, to which most ECCAS countries also belong.

ECCAS is one of the moderately integrated RECs, as illustrated by the Africa Regional Integration Index in Table 6.1 (AU, AfDB, and UNECA 2019, 2016; UNECA et al. 2021). With scores of 0.454 on the Index in 2016, and 0.442 in 2019, ECCAS falls below the African average in almost all integration dimensions, but nevertheless, it is the third most integrated region among the African RECs (column 2).

Looking at the five subindexes (columns 3 to 7 in Table 6.1), ECCAS has the highest score in macroeconomic integration. This score is based on three indicators: the inflation differential, regional currency convertibility, and the number of bilateral investment treaties in force. ECCAS scores high because of the implementation of macroeconomic convergence criteria in CEMAC, the use of a common currency (CFA francs), and the existence of a common monetary policy in CEMAC. Thus, CEMAC is driving the overall ECCAS score, since such measures are not yet in place for all ECCAS countries or for the CEPGL countries.

For the other dimensions of integration, ECCAS is generally among the four most integrated regions of the continent. However, ECCAS is not among the most integrated for free movement or trade.

8 Recently, ECCAS members held a meeting in Kinshasa, DRC, to continue the ongoing work on a common external tariff in their region (April 11–15, 2022).
9 This is because this GATT article recognizes only two forms of integration, namely free trade agreements and customs unions. In addition, the notification of the integration agreement must come from the REC itself.

Table 6.1 Regional Integration Index in African RECs

	Integration	Productive integration	Infrastructure integration	Macroeconomic integration	Trade integration	Free movement
EAC	0.537	0.434	0.555	0.660	0.440	0.664
AMU	0.488	0.449	0.509	0.571	0.481	0.438
ECCAS	0.442	0.323	0.373	0.684	0.357	0.469
IGAD	0.438	0.321	0.480	0.423	0.444	0.540
ECOWAS	0.425	0.220	0.298	0.469	0.438	0.733
CEN-SAD	0.377	0.256	0.302	0.441	0.377	0.508
COMESA	0.367	0.328	0.317	0.365	0.445	0.385
SADC	0.337	0.239	0.214	0.422	0.340	0.490

Source: AU, AfDB, and ECA (2019).
Note: Red indicates the best-performing REC; blue indicates the second-best performance. EAC = East African Community; AMU = Arab Maghreb Union; ECCAS = Economic Community of Central African States; IGAD = Intergovernmental Authority on Development; ECOWAS = Economic Community of West African States; CEN-SAD = Community of Sahel-Saharan States; COMESA = Common Market for Eastern and Southern Africa; SADC = Southern Africa Development Community.

The integration index and its sub-indexes range from 0 to 1. ECCAS only scores above 0.5 for macroeconomic integration. For all other aspects, it scores below 0.5 (Table 6.1). This pattern is explained by several factors. First, ECCAS suspended its activities between 1992 and 1997. During that period, 7 of the 11 member states were the scene of serious hostilities that disrupted the operation of the subregional institutions. Second, some texts are not yet ratified, or if ratified are not enforced in the region. For example, the decision providing for the free movement of certain categories of persons, adopted in January 1990 and amended in June 2000, is not yet implemented. Similarly, the pact relating to the implementation of a common and shared security, adopted in February 2000, acquired the necessary ratifications for their entry into force in July 2003. The protocol establishing the Central African Parliamentarians' Network, adopted in June 2002, has still not collected the signatures needed for its submission for ratification. Finally, ECCAS is late in its implementation of the Abuja Treaty, as shown in Table 6.2.

Table 6.2 Implementation of the Abuja Treaty in ECCAS

Degree of economic integration envisaged	Degree of economic integration achieved	Deadline for treaty and assembly decision
Economic and social cooperation	yes	1999
Free trade area	yes	2017
Customs union	no	2017
Common market	no	2023
Economic and monetary union	no	2028

Source: African Union (2020).

On May 25, 2015, the Conference of Heads of State and Government ordered an institutional reform of the community to improve its effectiveness and efficiency, with a view to realizing its "vision 2025" (agreed upon in 2007). The first phase of the reform was concluded with the revision of five fundamental ECCAS documents, including the treaty establishing the community. The revised treaty was ratified by 10 members and came into force on August 28, 2020.[10] It recommends, among other things, the establishment of an ECCAS community Parliament, a Community Court of Justice, a Community Court of Auditors, a central bank, and a development bank.

10 Burundi has not yet ratified the revised treaty.

As of 2020, almost 204.5 million people lived within the Community, in an area of 6.7 million sq. km. Its GDP was valued at US$248 billion in constant terms (2015 prices). Since 1998, when ECCAS activities were restarted, the heads of state have prioritized issues of security, peace, and political stability. Thus, various mechanisms and instruments were established, including the Mutual Assistance Pact between member States; the Non-Aggression Pact between member States; and the Central African Peace and Security Council (COPAX), which has two instruments – the Central African Early Warning Mechanism (MARAC) and the Central African Multinational Force (FOMAC). In short, after more than 38 years of existence, much work remains to be done so that ECCAS can pursue its aspirations and meet its own goals.

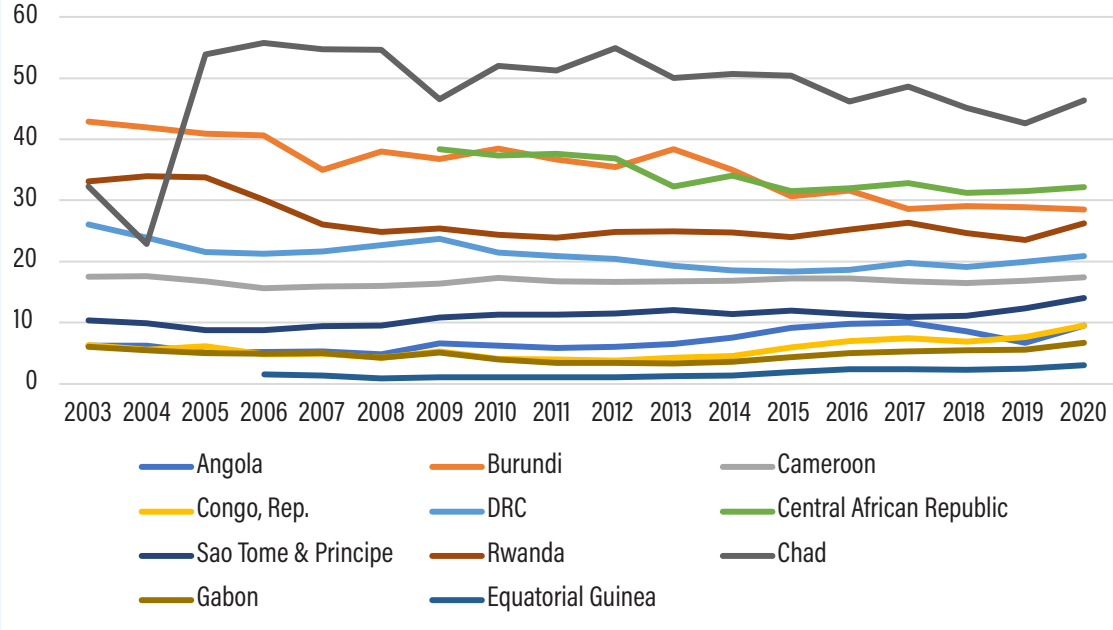
AGRICULTURAL TRADE INTEGRATION IN ECCAS

Profile of agricultural exports from the ECCAS countries

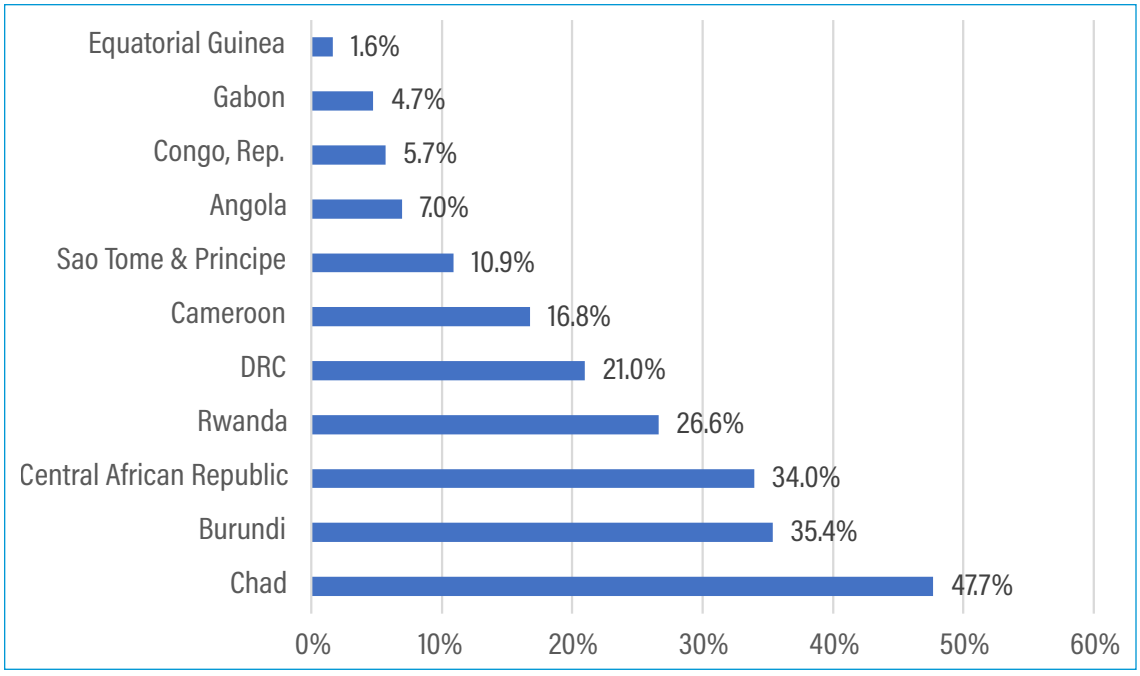
The agriculture sector is profoundly important in most African countries, accounting for approximately 19 percent of ECCAS GDP. Figure 6.1a shows that, during the 2003–2020 period, the agriculture sector's share in the GDP of Equatorial Guinea, Gabon, Congo, Angola, and Sao Tome and Principe ranged between 1 and 15 percent. For Cameroon, DRC, and Rwanda, agriculture's GDP share ranged from 15 to 30 percent. In contrast, in the Central African Republic, Burundi, and Chad, agriculture's contribution was between 30 and 48 percent. On average, over the 2003–2020 period, Chad had the highest agricultural value added (48 percent) and Equatorial Guinea the lowest (1.6 percent) (Figure 6.1b).

Figure 6.1 Agriculture value added in ECCAS countries

(a) Agriculture value added over time, 2003–2020 (% of GDP)



(b) Agriculture value added, 2003–2020 average (% of GDP)

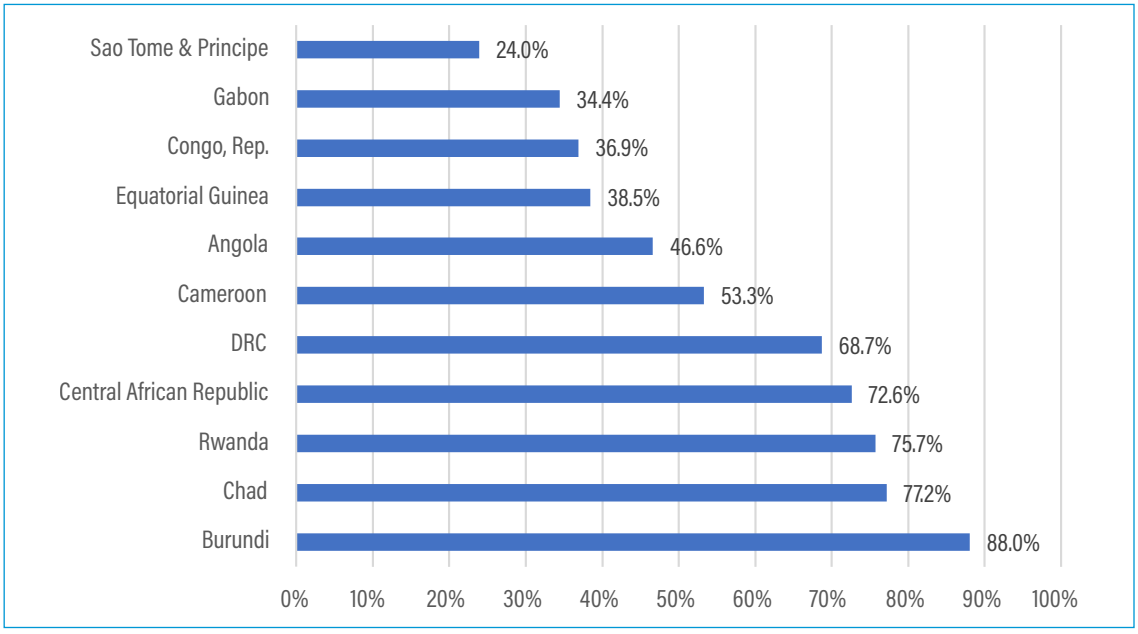


Source: Data from the World Bank's World Development Indicators.

In addition to agriculture's significant contribution to GDP in many ECCAS countries, the sector employs nearly two-thirds of the ECCAS labor force, who work mainly on the small farms that provide a huge share of total production.

Figure 6.2 shows that, on average for 2003–2019, employment in agriculture accounted for about 20–40 percent of total employment in Sao Tome and Principe, Congo, Equatorial Guinea, and Gabon. For Angola and Cameroon, the share of employment in agriculture varied between 40 and 60 percent of total employment; for DRC, Rwanda, Central African Republic, Chad, and Burundi the share was between 60 and 90 percent. The high rates of employment in agriculture are explained by the very low economic diversity of Central Africa's countries and sub-Saharan Africa more broadly, as well as the region's limited structural transformation. The region's economies are still at a very early stage of transformation, which constrains trade integration within the agriculture sector. In this context, many ECCAS countries have promoted industrial and structural transformation of agriculture with a special focus on agribusiness in order to become more competitive in both the international and intraregional market.

Figure 6.2 Employment in agriculture (% of total employment), 2003–2019 average

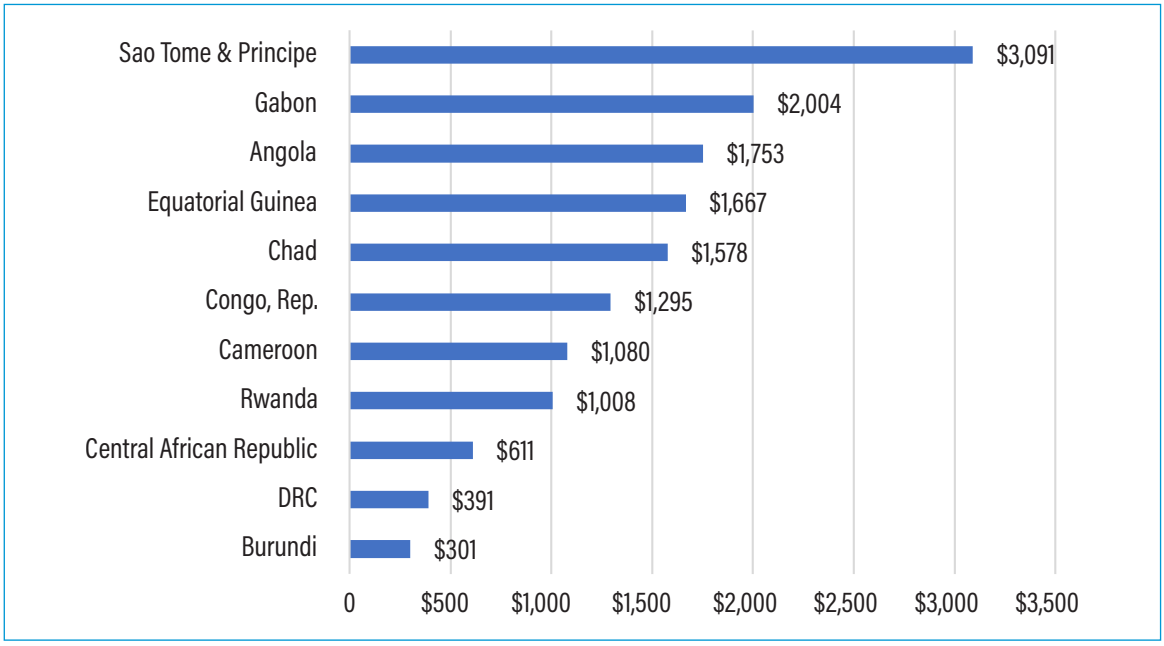


Source: Data from the World Bank's World Development Indicators.

Although agriculture plays a dominant role in employment in Africa and ECCAS member states, the sector's performance is poor. For illustration, we look at agricultural labor productivity. Productivity can be measured by the agricultural value added per worker, which is calculated as a ratio of agricultural value added (constant 2015 US dollars) to the number of people employed in agriculture.[11] Our calculations show that Sao Tome and Principe and Gabon are the top performers, while Burundi and DRC have the lowest labor productivity in agriculture (Figure 6.3). However, these results should be interpreted with caution as the top performers appear to be the countries with the lowest share of employment in agriculture as well as lower agricultural value added.

11 The number of people employed in agriculture is estimated using the following formula: Total population ages 15–64 * Employment to population ratio, 15+, total (%) * Employment in agriculture (% of total employment).

Figure 6.3 Agricultural labor productivity in ECCAS countries (US$ per head), 2003–2019 average



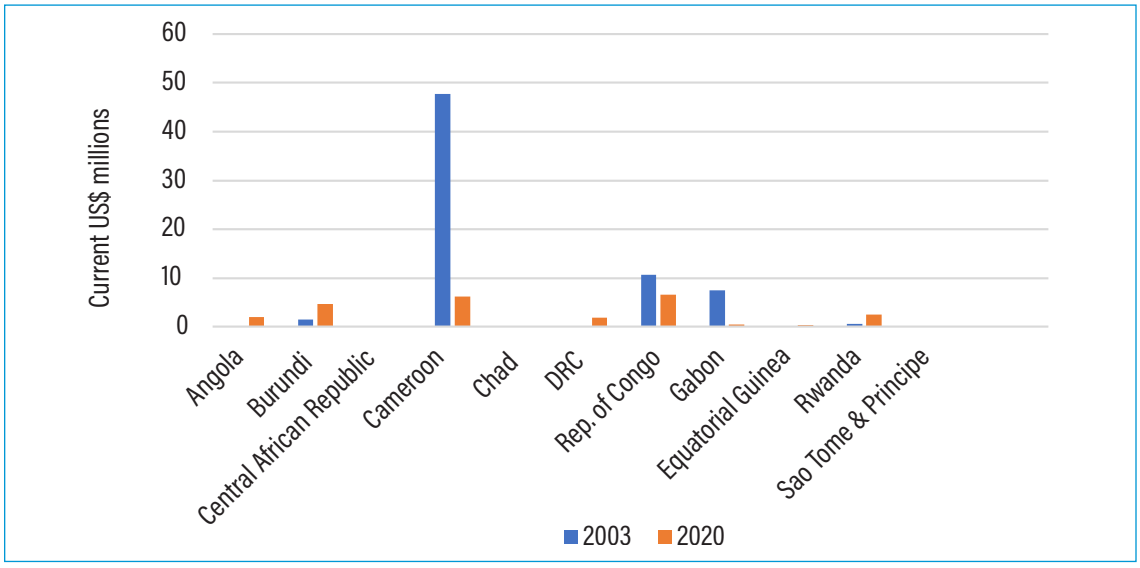
Source: Data from the World Bank's World Development Indicators.

A close look at agricultural trade among ECCAS countries suggests that agricultural export behavior has evolved. For instance, Figure 6.4 shows that Cameroon dominated the other countries in terms of exports to ECCAS in 2003, but in 2020 it was no longer the top exporter – revenues from Cameroon's exports to ECCAS fell from nearly US$50 million in 2003 to $7 million in 2020.

There are several possible reasons for this drop in Cameroon's agricultural export value. Cameroon is an economic engine of the subregion and is more diversified than most of the other CEMAC countries, though it continues to rely heavily on its large oil exports to sustain its economic growth and income. Apart from oil, the principal exports from the CEMAC region are raw materials (stones, minerals, metals) and agricultural unprocessed commodities (wood, cocoa, coffee, plantain, and palm oil), which have been affected by climate change and price volatility in recent years. Further, the development of the service sector in Cameroon, which makes the largest contribution to GDP through small and medium enterprises (SMEs) and local startups, may have distracted attention from the need for structural transformation in the agriculture sector. However, Cameroon remains among the top agricultural exporters of the ECCAS region despite the decline in exports.

Some countries in the region, such as the Central African Republic, Equatorial Guinea, Sao Tome and Principe, and Chad, make little contribution to agricultural exports. However, Angola, Burundi, Congo, and Rwanda have increased their shares of trade within the region, although they remain low.

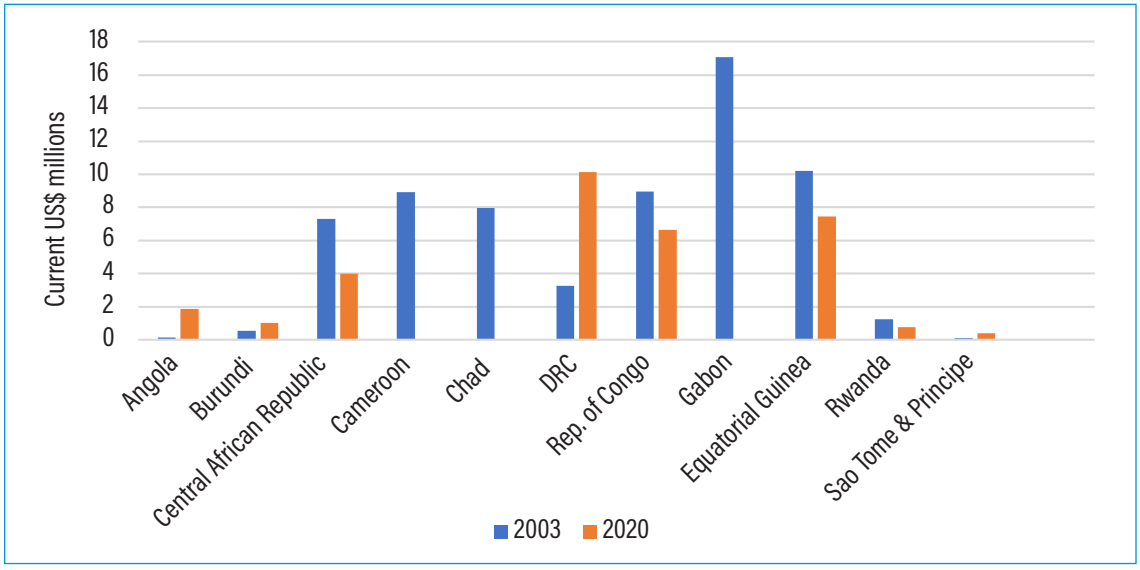
Figure 6.4 Intra-ECCAS agricultural exports by country, 2003 and 2020



Source: 2022 AATM database and authors' calculation.

Intra-ECCAS agricultural imports have been declining over time, with the exception of Angola, Burundi, Chad, and DRC, where agricultural imports more than doubled between 2003 and 2020. This decrease in intra-ECCAS agricultural imports over the years mirrors a broad trend observed in Africa's agricultural trade that can be attributed to the weakening of trade in primary products (Goundan and Tadesse 2021). Figure 6.5 shows that of 11 member countries, only 4 states experienced an increase in intraregional imports in 2003–2020. Compared to other member states, Cameroon and Gabon's intra-ECCAS agricultural imports dropped drastically, from highs of about $9 million and $17 million, respectively, in 2003 to less than $1 million each in 2020. It should be noted that most ECCAS countries' agricultural imports originate from outside the African continent.

Figure 6.5 Intra-ECCAS agricultural imports by country, 2003 and 2020



Source: 2022 AATM database and authors' calculations.
Note: Due to gaps in the data, the period considered for Equatorial Guinea is 2003–2017 and the period considered for Chad is 2003–2019.

If we disaggregate agricultural products by the level of processing (at the HS6 level),[12] we observe that Rwanda is the main exporter of unprocessed and semi-processed agricultural products within the ECCAS region, accounting for 69 percent of total exports of unprocessed agricultural products and 40.7 percent of semi-processed products (Tables 6.3 and 6.4). The DRC is the main importer of unprocessed and semi-processed agricultural products within the ECCAS region, accounting for 58.1 percent of total imports of unprocessed agricultural products and 50.7 percent of semi-processed agricultural products. The top exporter of processed agricultural products within the ECCAS region is by far Cameroon (46.4 percent), followed by Gabon (17.2 percent) and Rwanda (17.1 percent) (Table 6.5).

Processed products play a strong role in intra-ECCAS agricultural trade, accounting for 68.6 percent of total intra-ECCAS agricultural exports. ECCAS markets are a major destination for processed products, absorbing 69.2 percent of total processed agricultural exports from ECCAS countries but only 10.3 percent of semi-processed agricultural exports and 1.4 percent of unprocessed agricultural exports.

Photo by freepik

12 We follow the classification used by Bouët and Sall (2021) to group agricultural products into unprocessed, semi-processed, and processed categories based on a careful reading of HS6 labels.

Table 6.3 Matrix of total exports and imports of unprocessed agricultural products in the ECCAS region (2003–2020), US$ millions

		Importing countries												
		AGO	BDI	CAF	CMR	DRC	COG	GAB	GNQ	RWA	STP	TCD	ECCAS	ROW
Exporting countries	AGO	-	0.00	0.00	0.00	0.31	0.14	0.04	0.00	0.00	0.04	0.00	0.53	43.57
	BDI	0.00	-	0.00	0.00	0.87	0.00	0.00	0.00	14.66	0.00	0.00	15.53	1032.80
	CAF	0.00	0.00	-	2.17	0.00	0.11	0.00	0.00	0.00	0.00	0.05	2.34	301.36
	CMR	0.01	0.02	14.71	-	1.26	3.69	17.62	3.65	0.00	1.25	12.74	54.96	17,465.06
	DRC	0.06	0.29	4.17	0.07	-	1.56	0.02	0.00	11.84	0.00	0.00	18.00	737.02
	COG	0.64	0.00	1.10	0.26	0.54	-	0.47	0.00	0.00	0.00	0.00	3.01	471.45
	GAB	0.00	0.00	0.00	0.24	0.00	0.38	-	0.01	0.00	0.64	0.00	1.27	17.83
	GNQ	0.00	0.00	0.00	0.00	0.00	0.10	0.04	-	0.00	0.13	0.00	0.27	53.99
	RWA	0.02	37.27	0.00	0.00	181.82	0.33	0.00	0.00	-	0.00	0.00	219.45	1,420.83
	STP	1.22	0.00	0.00	0.38	0.00	0.00	0.09	0.00	0.00	-	0.00	1.69	169.11
	TCD	0.00	0.00	0.02	0.58	0.00	0.01	0.00	0.00	0.00	0.00	-	0.60	1,413.58
	ECCAS	1.94	37.59	20.01	3.69	184.81	6.34	18.28	3.66	26.50	2.05	12.79	317.65	23,126.60
	ROW	5,414.00	820.60	111.60	7,533.90	2,281.70	1,615.90	1,589.60	273.00	1,377.10	120.70	156.20	21,295.00	

Source: Authors' calculations using 2022 AATM database.
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad; and ROW = Rest of the World.

In summary, for all ECCAS countries, trade in agricultural products is carried out mainly with the rest of the world (excluding ECCAS) and in a smaller proportion with African countries (excluding ECCAS). ECCAS agricultural trade remains rather limited, despite production capacities and specializations within the region. Indeed, the various free trade agreements and associations signed, for example, between the European Union and the ECCAS countries have been a driving force for the development of extra-regional agricultural trade, despite their primary focus on non-agricultural products. Likewise, constraints related to transport and logistics infrastructure appear to be an obstacle to the development of agricultural trade among ECCAS countries (discussed later in this chapter). Infrastructure and logistics bottlenecks are generally more significant for South–South trade than for North–South trade, as pointed out by Baghdadi, Karray, and Zaki (2021).

International competitiveness and market diversification

Country trade performance can be analyzed by looking at both competitiveness and diversification of products. Diversification can potentially lead to gains in terms of technology and knowledge spillovers that promote growth in the industrial sector and improve terms of trade by increasing competitiveness of a country's exports (Barghouti et al. 2004; Ali and Abedullah 2002; Ali 2001). The diversification process can start at the REC level given budget limitations; however, when resources become available, diversification at the country level can improve the overall competitiveness of agriculture both in international and domestic markets.

There are many ways to assess a country's competitiveness, including through revealed comparative advantages (Bouët, Cosnard, and Laborde 2017; Balassa 1965). We use the index of revealed comparative advantage (RCA) defined by Balassa (1965).

Let X_{rs}^{k} be the trade flow of product *k* from country *r* to country *s*. With a dot meaning a summation, $X_{r.}^{.}$ is total exports of country *r* and $X_{..}^{.}$ total world exports. Thus, the RCA of country for product k, RCA_{r}^{k}, is measured by the share of the product in the country's exports compared to its share in world trade as in equation (1).

$$RCA_{r}^{k} = \frac{\left(\frac{X_{r.}^{k}}{X_{r.}^{.}}\right)}{\left(\frac{X_{..}^{k}}{X_{..}^{.}}\right)} \quad (1)$$

Where, $X_{r.}^{k}$ and $X_{..}^{k}$ are the values of country r's exports of product k and world exports of product k. A value of more than one implies that the country has a revealed comparative advantage for that product; a value of less than one implies a revealed comparative disadvantage.

We note that the RCA reflects the comparative advantage of a country in the current policy environment. A country may have a significant comparative advantage, for example in cocoa production, but if bans prevent the exportation of cocoa, it will not be revealed as a comparative advantage. It is also possible that a comparative advantage, as revealed by this indicator, exists only as a result of domestic support and/or export subsidies. In other words, this indicator reveals a comparative advantage based on observed trade flows, without consideration of the possible cause: competitiveness due either to access to technology, access to specific endowments, or a domestic policy that gives an advantage to local producers.

Table 6.6 shows the three agricultural products with the highest RCA index values by ECCAS country, on average in 2018–2020. For each country, the top-ranking product is the most important agricultural product in the country's exports compared with the world average. The table shows that RCA differs not only between countries but also between agricultural products in ECCAS, when considering countries individually. Further, it appears that ECCAS countries have an RCA in traditional or raw agricultural products, without a high level of processing, reflecting the limited development of agribusiness industries in ECCAS countries.

Table 6.4 Matrix of total exports and imports of semi-processed agricultural products in the ECCAS region (2003–2020), US$ millions

		Importing countries												
		AGO	BDI	CAF	CMR	DRC	COG	GAB	GNQ	RWA	STP	TCD	ECCAS	ROW
Exporting countries	AGO	-	0.00	0.00	0.00	6.60	0.01	0.10	0.00	0.00	0.02	0.00	6.74	104.68
	BDI	0.00	-	0.00	0.00	43.85	0.00	0.00	0.00	12.60	0.00	0.10	56.55	342.63
	CAF	0.00	0.00	-	0.06	0.30	0.15	0.00	0.00	0.00	0.00	0.63	1.13	10.54
	CMR	2.68	0.00	35.26	-	5.86	29.87	17.91	0.94	0.00	0.01	4.99	97.54	1787.47
	DRC	0.62	21.52	1.61	0.00	-	17.05	0.00	0.00	27.01	0.00	0.00	67.82	249.04
	COG	7.01	0.00	6.92	17.91	0.67	-	0.24	0.00	0.01	0.00	7.69	40.46	219.44
	GAB	0.00	0.00	0.00	11.28	0.00	1.19	-	0.00	0.00	0.43	0.02	12.91	68.23
	GNQ	0.00	0.00	0.00	0.01	0.00	0.00	0.00	-	0.00	0.05	0.00	0.06	0.83
	RWA	0.01	9.19	0.00	0.00	186.37	0.30	0.02	0.00	-	0.00	0.01	195.89	1,398.27
	STP	0.09	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	-	0.00	0.14	7.78
	TCD	0.00	0.00	1.17	0.35	0.00	0.03	0.00	0.00	0.00	0.00	-	1.54	10.56
	ECCAS	10.41	30.71	44.97	29.60	243.65	48.60	18.32	0.94	39.62	0.51	13.43	480.79	4,199.48
	ROW	15,916.00	518.60	370.60	2,627.60	5,115.60	3,200.60	2,594.40	1,041.30	812.40	176.40	518.10	3,2891.80	-

Source: Authors' calculations using 2022 AATM database.

Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad; and ROW = Rest of the World.

Table 6.5 Matrix of total exports and imports of processed agricultural products in the ECCAS region (2003–2020), US$ millions

		Importing countries												
		AGO	BDI	CAF	CMR	DRC	COG	GAB	GNQ	RWA	STP	TCD	ECCAS	ROW
Exporting countries	AGO	-	0.00	0.00	0.00	20.26	4.25	0.02	0.00	0.00	0.00	0.00	24.53	37.38
	BDI	0.00	-	0.00	0.00	51.51	0.07	0.00	0.00	7.49	0.00	0.00	59.08	53.96
	CAF	0.00	0.00	-	0.83	0.39	1.55	0.00	0.00	0.15	0.00	0.67	3.59	24.04
	CMR	19.74	0.03	93.32	-	22.59	127.01	274.70	123.99	0.04	1.23	149.33	811.96	360.99
	DRC	3.51	0.77	0.10	7.32	-	8.92	0.00	0.00	21.69	0.00	0.00	42.31	74.23
	COG	23.89	0.1	10.85	135.29	3.79	-	2.41	0.03	0.08	0.00	25.57	202.01	83.63
	GAB	1.11	0.00	47.92	58.96	0.07	152.21	-	0.79	0.00	7.47	33.11	301.62	33.34
	GNQ	0.00	0.00	0.00	0.87	0.00	0.08	0.07	-	0.00	0.21	0.00	1.23	4.24
	RWA	0.00	19.88	0.15	0.00	280.23	0.17	0.16	0.00	-	0.03	0.00	300.61	89.04
	STP	0.07	0.00	0.00	0.19	0.00	0.00	0.05	0.03	0.00	-	0.00	0.34	8.38
	TCD	0.00	0.00	1.08	0.01	0.00	0.12	0.00	0.00	0.00	0.00	-	1.22	7.77
	ECCAS	48.31	20.78	153.42	203.46	378.83	294.38	277.40	124.83	29.46	8.93	208.68	17,48.50	777.01
	ROW	25,386.50	755.60	415.30	5,024.60	6,233.10	3,895.70	3,505.60	2571.60	2,086.70	396.90	977.40	5,1249.10	-

Source: Authors' calculations using the 2022 AATM database.
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad; and ROW = Rest of the World.

Table 6.6 also reveals that "Bran, sharps and other residues" is among the top three agricultural products in terms of RCA for Angola, Burundi, Congo, DRC, Gabon, and Rwanda. Similarly, "Cocoa and cocoa preparations" (beans, paste, shells, husks, skins, and other cocoa waste) is among the top three agricultural products for Cameroon, Central African Republic, Congo, DRC, Equatorial Guinea, and Sao Tome and Principe. This suggests more integrated and global actions are needed at the intraregional level to improve the competitiveness of the ECCAS region for these specific agricultural products in world trade.

Table 6.6 Top three products with the highest RCA index values by country, ECCAS region, 2018–2020

Country	HS6	Description	RCA index	Ranking by country
Angola	010612	Mammals; live	3,828.2	1
Angola	230230	Bran, sharps and other residues	492.2	2
Angola	150430	Fats and oils and their fractions; of marine mammals	82.7	3
Burundi	090240	Tea, black; (fermented) and partly fermented tea	71.2	1
Burundi	090111	Coffee; not roasted or decaffeinated	30.3	2
Burundi	230240	Bran, sharps and other residues	21.4	3
Cameroon	180320	Cocoa; paste, wholly or partly defatted	82.2	1
Cameroon	180100	Cocoa beans; whole or broken, raw or roasted	79.5	2
Cameroon	010612	Mammals; live	32.7	3
CAF	152190	Waxes, other than vegetable	784.9	1
CAF	180320	Cocoa; paste, wholly or partly defatted	353.9	2
CAF	180200	Cocoa; shells, husks, skins and other cocoa waste	311.1	3
Chad	130120	Gum Arabic	846.3	1
Chad	120740	Oil seeds; sesamum seeds, whether or not broken	150.4	2
Chad	230500	Oil-cake and other solid residues	24.5	3
Congo	230240	Bran, sharps and other residues	169.6	1
Congo	170191	Sugars; sucrose, chemically pure, in solid form	163.0	2
Congo	180100	Cocoa beans; whole or broken, raw or roasted	65.0	3
DRC	230230	Bran, sharps and other residues	160.6	1
DRC	121190	Plants and parts (including seeds and fruits)	63.8	2
DRC	180100	Cocoa beans; whole or broken, raw or roasted	60.8	3
Eq. Guinea	200891	Fruit, palm hearts; prepared or preserved	217.6	1
Eq. Guinea	180100	Cocoa beans; whole or broken, raw or roasted	76.0	2
Eq. Guinea	010639	Birds; live, other than birds of prey	69.2	3
Gabon	010631	Birds; live, birds of prey	292.1	1
Gabon	230240	Bran, sharps and other residues	265.2	2
Gabon	230230	Bran, sharps and other residues	207.5	3
Rwanda	230250	Bran, sharps and other residues	168.0	1
Rwanda	090240	Tea, black; (fermented) and partly fermented tea	95.1	2
Rwanda	410390	Hides and skins; raw, of animals	91.7	3
STP	180100	Cocoa beans; whole or broken, raw or roasted	82.9	1
STP	120730	Oilseeds; castor oilseeds, whether or not broken	26.0	2
STP	151110	Vegetable oils; palm oil and its fractions	19.0	3

Source: Authors' calculations using 2022 AATM database.
Note: CAF = Central African Republic; DRC = Democratic Republic of the Congo; STP = Sao Tome and Principe.

In addition to RCA, another indicator of countries' trade performance is their ability to diversify their export baskets. Diversification plays an essential role in building resilience to economic volatility, particularly fluctuations in commodity prices. A country or region whose economic activity is diversified is less sensitive to economic shocks as long as the factors affecting the various sectors are not positively correlated.

The Herfindahl–Hirschman Index (HHI) is used as an inverse measure of diversification. This concentration ratio is the sum of all squared shares of each product in total national exports (imports), and can be expressed as follows (equation 2):

$$H(r) = \sum_{k} \left(\frac{X_{r\cdot}^{k}}{X_{r\cdot}} \right)^{2} \qquad (2)$$

Low values of HHI indicate a diversified set of products, and high values reveal a high degree of concentration or, equivalently, a less diversified export (import) portfolio.

The U.S. Department of Justice[13] has provided a classification of markets into three types depending on the HHI values. More precisely,

- HHI < 0.15 indicates diversified exports (imports) (not concentrated)
- 0.15 ≤ HHI < 0.25 indicates moderately concentrated exports (imports)
- HHI ≥ 0.25 indicates highly concentrated exports (imports)

Table 6.7 shows that agricultural imports are diversified for all ECCAS countries, whereas exports are highly concentrated. HHI for all ECCAS country exports was greater than 0.25 in 2020. This situation makes ECCAS countries vulnerable to shocks from the international market.

Table 6.7 Herfindahl–Hirschman Index of agricultural trade, ECCAS countries, 2018–2020

	Exports HHI			Imports HHI		
	2018	2019	2020	2018	2019	2020
Angola	0.08	0.34	0.36	0.03	0.04	0.05
Burundi	0.33	0.38	0.35	0.06	0.08	0.07
Cameroon	0.31	0.33	0.42	0.08	0.11	0.09
Central African Republic	0.38	0.22	0.38	0.06	0.05	0.04
Chad	0.34	0.49	0.60	0.08	0.07	0.06
Congo, Rep.	0.33	0.29	0.40	0.05	0.04	0.05
DRC	0.17	0.24	0.27	0.03	0.03	0.04
Equatorial Guinea	0.34	0.45	0.57	0.04	0.05	0.04
Gabon	0.21	0.28	0.41	0.04	0.04	0.06
Rwanda	0.30	0.08	0.30	0.09	0.06	0.04
Sao Tome & Principe	0.78	0.67	0.45	0.03	0.04	0.04

Source: Authors' calculations using 2022 AATM database.

The quality of a country's trade integration depends on its degree of diversification. Greater diversification in the number of partners and in the number of products traded can mean greater integration and resilience. Likewise, the concentration of a country's exports in one or a few products is associated with a risk of volatility in export earnings and thus in domestic activity. ECCAS countries have enormous commercial potential in their natural wealth, though it is not fully exploited, for both trade within Africa and with the world. Optimal exploitation of the potential of these natural resources could support diversification and trade-led industrialization

13 The U.S. Department of Justice and the Federal Trade Commission, Horizontal Merger Guidelines (August 19, 2010).

that would contribute to economic resilience and growth. Hence, intra-ECCAS trade diversification and structural transformation, supported by this significant untapped natural resource potential, would improve the region's long-term growth.

ECCAS INTRAREGIONAL TRADE FLOWS

In the previous section, we focused on intraregional trade in agricultural products, examining trade trends over time and patterns of revealed comparative advantage and diversification. In this section, we broaden the discussion to all trade, including both agricultural and non-agricultural products. We provide an overview of intraregional trade at the country and REC levels, followed by an analysis of indicators of intraregional trade intensity.

Intra-ECCAS trade shares

To examine regional trade patterns within ECCAS, we first analyze member countries' intraregional export and import shares. Over the 2003–2005 period, intra-ECCAS exports accounted for about 1.1 percent of the region's total exports. Similarly, only 2.3 percent of the region's total imports were sourced from within the ECCAS region (Table 6.8). The low intra-ECCAS trade share is also observed in the recent 2018–2020 period, when less than 1.0 percent of the region's total exports were exported within ECCAS, and around 1.7 percent of the region's total imports were sourced from within the ECCAS region. It should be noted that this analysis does not include the informal cross-border trade occurring among neighboring countries.

During the 2003–2005 period, the Central African Republic had the largest intra-ECCAS export share, at around 12.2 percent, followed by Cameroon (4.7 percent) and Burundi (3.2 percent). Over the recent 2018–2020 period, Rwanda had the largest intra-ECCAS export share (20.1 percent), followed by Burundi (9.2 percent). On the import side, during the earlier period, the highest intra-ECCAS import shares belonged to the Central African Republic (13.8 percent), Chad (12.1 percent), and Sao Tome and Principe (10.6 percent). In the recent period, Sao Tome and Principe had the highest intra-ECCAS import share at 16.7 percent, followed by the Central African Republic (8.2 percent) and Congo (6.2 percent).

According to the African Development Bank (AfDB 2019), factors underlying low intra-ECCAS trade include the limited production of tradable goods, the embryonic state of its industrial sector, insufficient infrastructure, numerous tariff and nontariff barriers, and countries' reluctance to implement reforms for the free movement of goods and persons.

As Table 6.9 indicates, the intra-ECCAS export share in intra-African exports reached 34.1 percent over the 2003–2005 period, although it fell to 18.4 percent in 2018–2020. The intra-ECCAS import share (in intra-African imports) was 12.3 percent in 2003–2005 but fell to 8.7 percent in 2018–2020.

Table 6.8 Average intra-ECCAS trade share in total trade (%), 2003–2020

	Exports		Imports	
Country/region	2003–2005	2018–2020	2003–2005	2018–2020
Angola	0.06	0.32	0.18	0.39
Burundi	3.17	9.16	1.51	1.60
Central African Republic	12.23	0.26	13.79	8.19
Cameroon	4.68	1.21	2.98	0.65
Chad	0.26	0.01	12.07	0.05
DRC	0.52	0.31	3.46	1.82
Congo, Rep.	0.86	2.76	2.33	6.21
Gabon	1.32	0.41	3.98	4.31
Equatorial Guinea	0.80	0.04	4.46	0.46
Rwanda	2.26	20.15	0.94	1.86
Sao Tome & Principe	2.53	0.77	10.61	16.68
ECCAS	1.10	0.82	2.26	1.75

Source: Authors' calculations using the 2022 AATM database.

Table 6.9 Intra-ECCAS trade share in Intra-African trade (%), 2003–2020

	Export share		Import share	
Country/region	2003–2005	2018–2020	2003–2005	2018–2020
Angola	10.5	16.6	1.5	4.5
Burundi	32.1	39.4	4.3	5.8
Central African Republic	79.5	7.4	80.6	44.9
Cameroon	46.7	37.6	12.8	3.6
Chad	9.5	2.2	66.7	0.7
DRC	9.9	1.9	8.8	5.5
Congo, Rep.	32.7	57.9	16.6	28.1
Gabon	31.7	36.9	39.4	33.3
Equatorial Guinea	83.5	6.0	28.3	6.2
Rwanda	9.0	59.9	2.9	6.6
Sao Tome & Príncipe	44.6	33.0	78.9	82.2
ECCAS	34.1	18.4	12.3	8.7

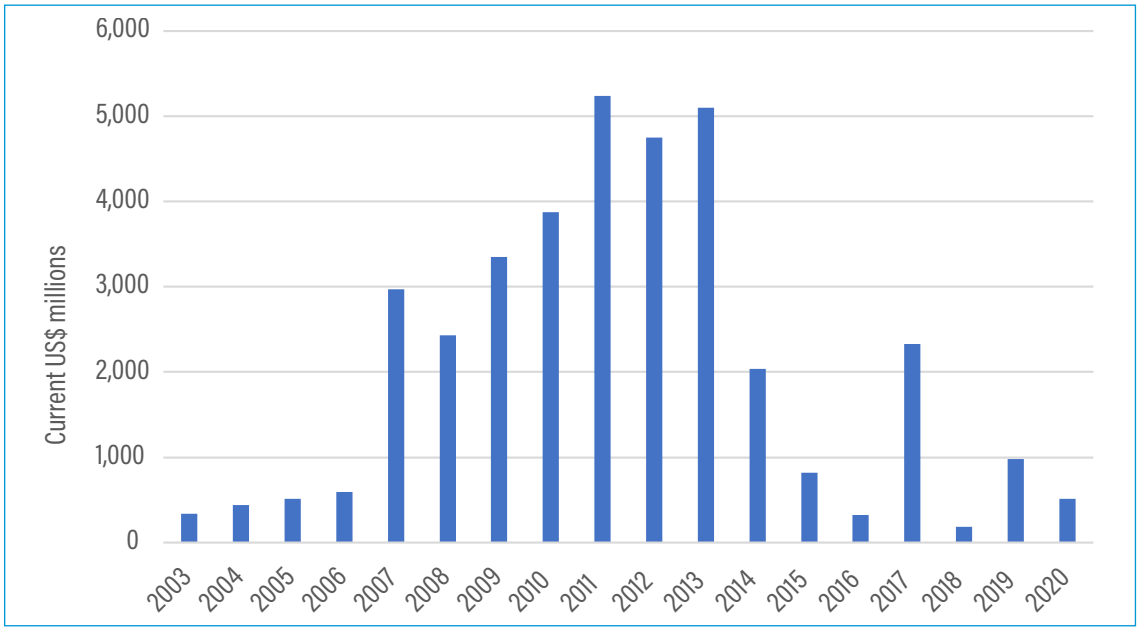
Source: Authors' calculations using the 2022 AATM database.

Trade flow trends in ECCAS

Over the 2003–2020 period, total intra-ECCAS exports are estimated at $37 billion (current US dollars). As Figure 6.6 shows, total intra-ECCAS exports by value followed an upward trend from 2003 until 2013 (with a slight drop in 2008 as a result of the financial crisis), and a downward trend from 2014 onward. This decline was driven by the fall in prices of extractive raw materials, especially oil, that account for most of the region's exports. Global oil prices

collapsed between 2014 and 2016, falling by 70 percent (World Bank 2018), and consequently, intra-ECCAS exports dropped by more than half in 2014, falling from total exports of $5.1 billion in 2013 to $2.0 billion, and then fell further to $322 million in 2016. Intra-ECCAS exports rose in 2017 along with oil prices, which rose by more than 70 percent between mid-2017 and mid-2018, but crashed again in the second half of 2018. In 2020, total intra-ECCAS export value stood at $514 million, above the lowest level observed in 2018 ($187 million) but a far cry from the highest intra-ECCAS exports value recorded in 2011 ($5.24 billion). The effect of the financial crisis of 2007–2008 should also be noted, which reduced intra-ECCAS exports in 2008 compared to 2007.

Figure 6.6 Total intra-ECCAS exports 2003–2020

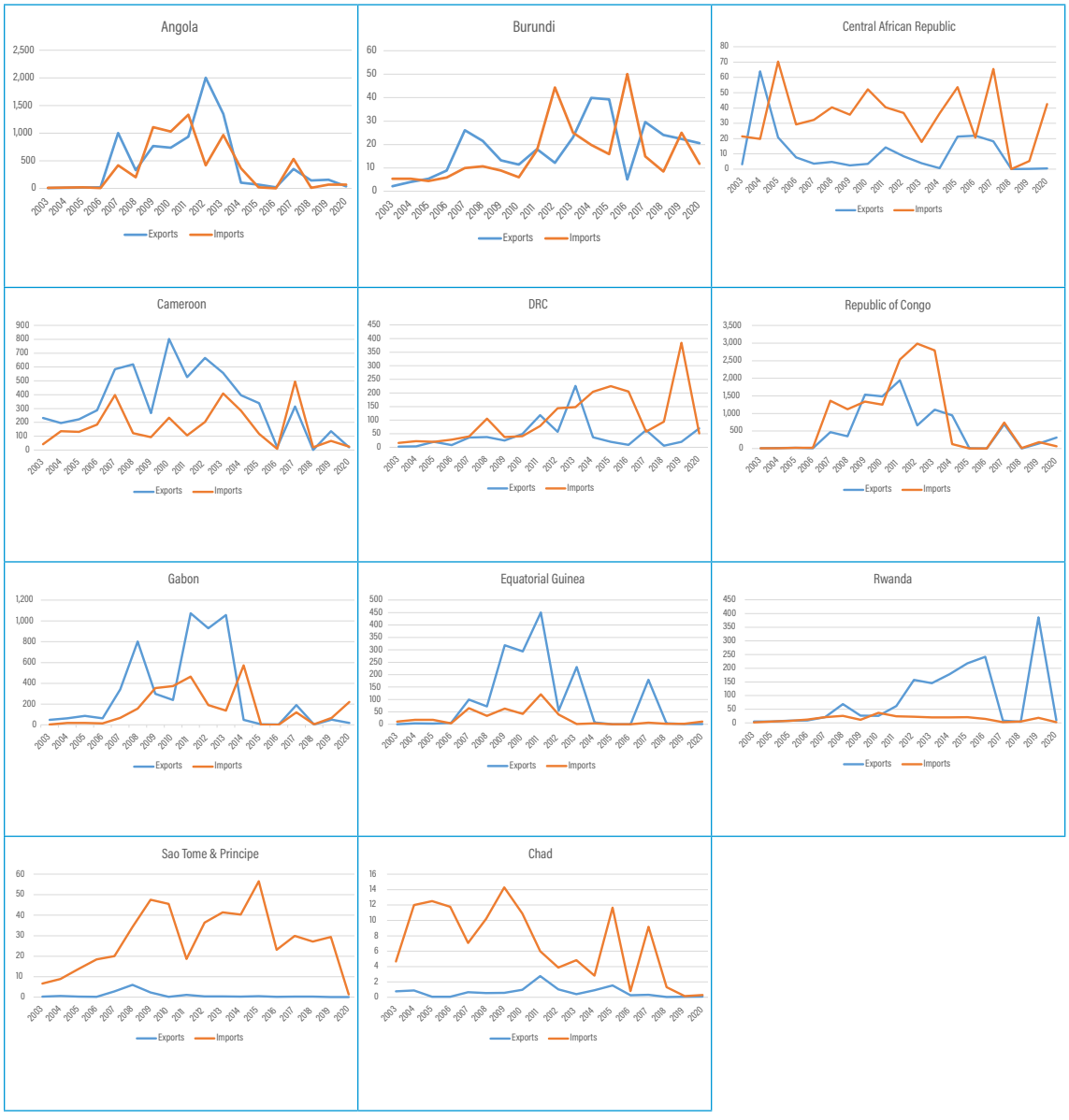


Source: 2022 AATM database.

Figure 6.7 shows the heterogeneity in intraregional trade among ECCAS countries. Equatorial Guinea and Rwanda are primarily exporters in the ECCAS region, and Sao Tome and Principe and Chad are primarily importers, while the other countries are both exporters and importers. Figures 6.8 and 6.9 further explore the trends in intra-ECCAS trade. On average, intra-ECCAS exports decreased significantly between the 2006–2010 and 2016–2020 periods for the oil-producing states – Angola, Cameroon, Congo, Equatorial Guinea, and Gabon – which were likely affected by the fall in oil prices between these periods. Similarly, many countries, including Angola, Central African Republic, Cameroon, Congo, Gabon, Rwanda, and Sao Tome and Principe, saw a fall in their intra-ECCAS imports. It should be noted that the drop in intra-ECCAS trade during the 2016–2020 period may have been caused by the COVID-19 pandemic, which started in 2020.

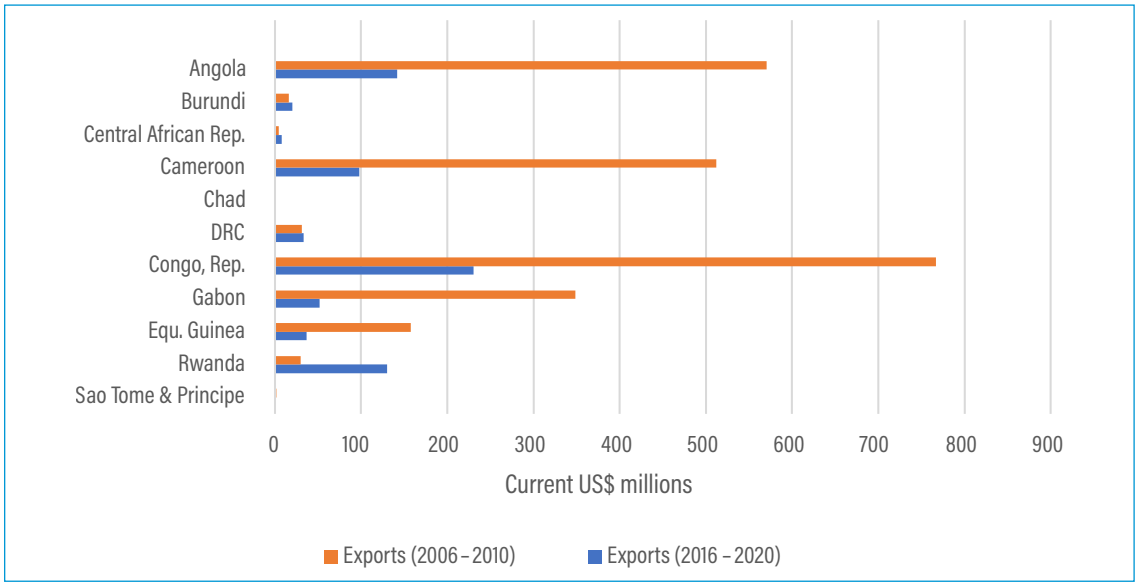
Figure 6.7 also depicts the high volatility observed in both intra-ECCAS exports and imports. This volatility is not surprising, as exports and imports typically rank among the most volatile components of GDP since they are affected by country-specific shocks, and trade connections, as well as product composition (Bennett et al. 2016).

Figure 6.7 Intra-ECCAS trade by country, 2003–2020 (current US$ millions)



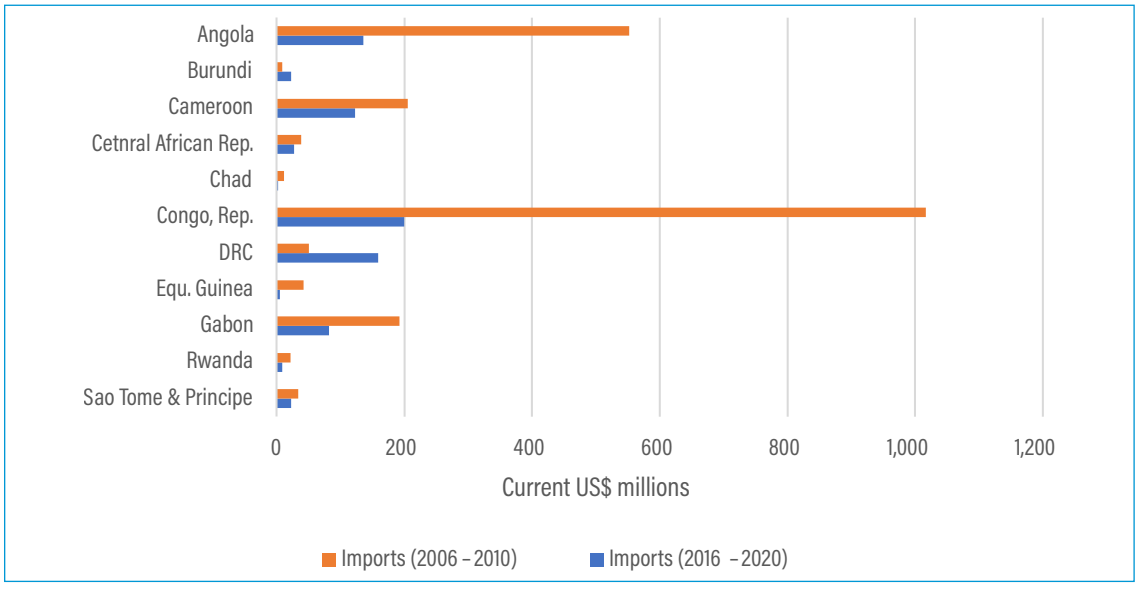
Source: 2022 AATM database.
Note: These countries, with the exception of Angola, have been members of ECCAS since its founding in 1983; Angola joined ECCAS in 1999.

Figure 6.8 Intra-ECCAS average exports by country, 2006–2010 and 2016–2020



Source: 2022 AATM database.

Figure 6.9 Intra-ECCAS average imports by country, 2006–2010 and 2016–2020



Source: 2022 AATM database.

Top exporters and top importers in ECCAS

Over the recent period (2018–2020), the top intra-ECCAS exporters, shown in Table 6.10, were Congo (32.7 percent of total intra-ECCAS exports), Rwanda (23.8 percent), Angola (19.8 percent), and Cameroon (9.3 percent). The top intra-ECCAS importers in 2018–2020 were DRC (31.4 percent of total intra-ECCAS imports), Congo (21.0 percent), Gabon (17.3 percent), and Angola (8.5 percent).

The bulk of intra-ECCAS trade is done with a few trading partners. For instance, on the export side, for Congo, 92.5 percent of its total intra-ECCAS exports went to Gabon, Angola, and Cameroon; 92.4 percent of Rwanda's intra-ECCAS exports went to DRC; 99.5 percent of Cameroon's went to Congo and Rwanda; and 76.0 percent of Angola's went to the Congo and

Table 6.10 Matrix of total exports and imports in the ECCAS region (2018–2020), US$ millions

		Importing countries												
		AGO	BDI	CAF	CMR	DRC	COG	GAB	GNQ	RWA	STP	TCD	ECCAS	ROW
Exporting countries	AGO	-	0.00	0.00	21.29	92.33	181.04	5.47	2.33	0.01	56.09	1.37	359.94	106,109.92
	BDI	0.07	-	0.01	0.00	62.64	0.05	0.03	0.01	9.02	0.00	0.00	71.81	729.60
	CAF	0.00	0.09	-	0.00	0.01	0.50	0.00	0.00	0.01	0.00	0.00	0.60	331.91
	CMR	0.35	0.03	0.00	-	0.25	101.98	0.00	0.00	66.54	0.10	0.00	169.25	14,048.37
	DRC	3.98	17.00	39.44	0.17	-	22.90	0.81	0.00	19.03	0.00	0.13	103.48	39,082.32
	COG	145.91	0.20	12.42	95.75	15.41	-	307.25	14.29	0.07	1.92	0.35	593.58	30,577.35
	GAB	0.31	1.41	0.00	0.00	0.09	69.32	-	0.00	0.08	3.19	0.00	74.40	18,930.10
	GNQ	3.96	0.00	0.00	0.00	0.18	1.95	0.00	-	0.09	0.40	0.00	6.58	14,634.33
	RWA	0.00	29.71	0.00	0.00	398.13	2.97	0.01	0.00	-	0.00	0.01	430.83	2,955.75
	STP	0.36	0.00	0.00	0.02	0.00	0.01	0.01	0.01	0.00	-	0.00	0.41	83.40
	TCD	0.04	0.00	0.00	0.00	0.07	0.08	0.00	0.00	0.02	0.00	-	0.21	4,439.08
	ECCAS	154.99	48.44	51.87	117.24	569.12	380.80	313.58	16.64	94.85	61.70	1.86	1,811.08	231,922.13

Source: 2022 AATM database.
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad; ROW = Rest of World.

DRC. Similarly, on the import side, about 70 percent of DRC's total intra-ECCAS imports were from Rwanda; 92.5 percent of Congo's imports were sourced from Angola, Cameroon, and Gabon; Gabon sourced 97.9 percent of its imports from Congo; and 94.1 percent of Angola's imports came from Congo.

Trade intensity and trade introversion indices

The low shares of intraregional exports and imports in total ECCAS trade do not present a complete picture of the importance of intraregional trade. In this subsection, we examine two other indicators of regional trade integration – the trade intensity index and trade introversion index.

Trade intensity index

Trade intensity measures the extent to which countries in a region trade with each other more intensely than with other countries. On the export side, the trade intensity index (TII) of the trade between two countries *r* and s is given by equation (3).

$$TII_{rs} = \frac{\frac{X_{rs}}{X_{r.}}}{\frac{X_{.s}}{X_{..}}} \quad (3)$$

The same can be done on the import side with the same interpretation. If a TII is greater than one, it shows a bilateral trade flow larger than expected given the partner country's importance in world trade, and if TII is less than one, it means trade flows are smaller than expected. Table 6.11 indicates that for most bilateral trades, trade intensity is greater than one. Overall, trade is intense among the ECCAS economies, with the exception of Chad, with an overall TII of 12.4. An earlier study (Bouët, Odjo, and Zaki 2020) also found that intraregional trade within ECCAS was intense. Some trade ties appear quite strong. Angola seems to be tightly integrated with Congo and Sao Tome and Principe, while its ties with other countries appear to be weak. Burundi has strong ties with DRC, Rwanda, and Chad; the Central African Republic is tightly integrated with Burundi and Cameroon and to some extent with DRC and Congo; Cameroon, Congo, and Gabon show strong ties with most ECCAS countries; DRC has strong ties with Burundi, Central African Republic, Congo, and Rwanda; Equatorial Guinea is tightly integrated with Cameroon and Congo; Rwanda has strong ties mainly with Burundi, Central African Republic, and DRC; Sao Tome and Principe has strong ties with Angola, Cameroon, and Gabon; but Chad seems to be integrated only with the Central African Republic and Cameroon.

Table 6.11 Trade intensity in ECCAS (2003–2020)

		Importing countries											
		AGO	BDI	CAF	CMR	DRC	COG	GAB	GNQ	RWA	STP	TCD	ECCAS
Exporting countries	AGO	-	0.00	0.01	0.33	0.52	41.69	0.14	0.03	0.00	72.14	0.04	5.30
	BDI	0.03	-	3.71	0.95	227.91	0.21	0.43	0.85	315.84	0.00	35.19	42.18
	CAF	0.00	193.52	-	126.44	7.79	9.90	4.21	0.09	0.73	0.00	229.81	29.27
	CMR	1.36	0.19	228.92	-	35.14	69.57	78.03	71.40	9.52	5.68	325.10	32.17
	DRC	0.13	12.96	29.94	1.43	-	20.25	0.19	0.00	19.00	0.00	0.03	3.94
	COG	43.99	0.59	12.11	29.09	3.21	-	105.90	13.90	0.06	33.13	5.18	30.55
	GAB	0.39	0.36	21.20	3.56	2.95	166.77	-	10.20	0.04	48.54	7.26	21.75
	GNQ	0.04	0.00	0.02	24.62	0.01	47.04	1.21	-	0.01	0.52	0.00	9.23
	RWA	0.48	543.96	51.09	0.18	494.90	1.82	0.23	0.00	-	0.36	0.32	72.30
	STP	49.37	0.00	0.00	12.45	0.00	2.62	23.85	2.53	1.92	-	0.00	23.46
	TCD	0.00	0.01	10.16	2.20	0.01	0.28	0.04	0.00	0.03	0.00	-	0.46
	ECCAS	5.62	5.73	20.74	7.05	7.62	45.98	18.36	7.13	2.89	45.45	22.51	12.36

Source: 2022 AATM database.
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad.

Trade introversion index

The trade intensity index is problematic in its use of a country's or a region's weight in world trade and the fact that the index is not symmetric around one (Bouët and Odjo 2019; Bouët, Odjo, and Zaki 2020; Bouët, Tadesse, and Zaki 2021). The trade introversion index (TI) corrects for the weaknesses of the trade intensity index. The TI is given by the following equation (4):

$$TI_{rs} = \frac{\frac{X_{rs}/X_{r.}}{(X_{.s} - X_{rs})/(X_{..} - X_{r.})} - \frac{1 - X_{rs}/X_{r.}}{1 - (X_{.s} - X_{rs})/(X_{..} - X_{r.})}}{\frac{X_{rs}/X_{r.}}{(X_{.s} - X_{rs})/(X_{..} - X_{r.})} + \frac{1 - X_{rs}/X_{r.}}{1 - (X_{.s} - X_{rs})/(X_{..} - X_{r.})}} \quad (4)$$

where X_{rs} ,$X_{r.}$, $X_{.s}$, $X_{..}$ are as previously defined. An index value between −1 and 0 indicates that a country is more extraverted than introverted, that is, it trades more internally than externally, and a value between 0 and +1 shows that the country is more introverted than extraverted. The computed index of trade introversion of ECCAS countries toward their ECCAS regional trading partners is presented in Table 6.12. Most values in the table are positive, indicating that most ECCAS countries are introverted in their trade within ECCAS. Bouët and Odjo (2019) likewise concluded that ECCAS is more introverted than extraverted. However, the negative values in the table reveal that some ECCAS countries trade very little with other ECCAS countries. The extent of trade introversion or extraversion varies from one country to another. For some cases, the trade introversion index is high (for example, for the trade between the Central African Republic and Congo, Congo and Angola, and Gabon and Congo) but it is low for other cases (for example, the trade between Burundi and Congo and between Congo and Sao Tome and Principe).

CHALLENGES AND OPPORTUNITIES

As demonstrated throughout this chapter, integration is weak in ECCAS. The institutional reform promoted by the heads of state and government is an effort to jumpstart integration. However, without a real commitment from all the member countries to investing for integration, this initiative could be ineffective. Thus, with a view to promoting the involvement of all ECCAS countries, we identify some of the challenges on the road to effective integration and the opportunities that could be leveraged by various actors to move integration ahead.

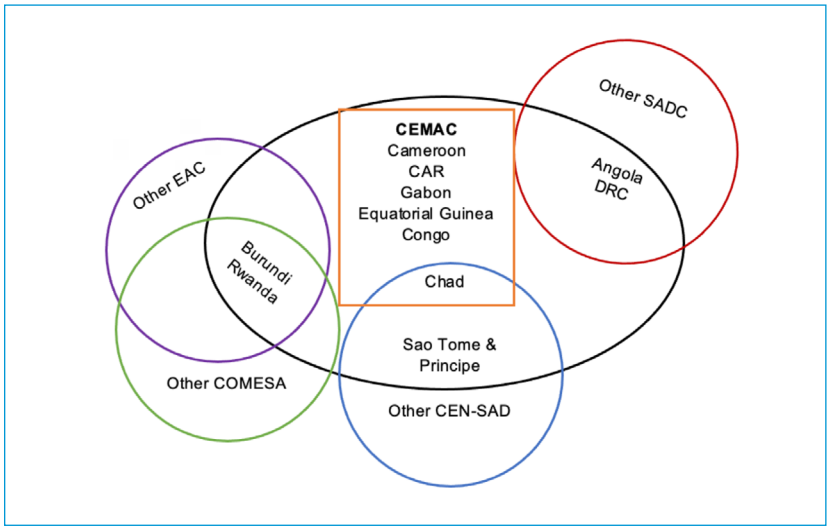
Challenges

Since ECCAS has been legally established, the member countries must take responsibility for driving integration, and removing the bottlenecks that hinder integration, including institutions and infrastructure needs. The foremost challenge is overlapping memberships of ECCAS countries in several RECs. Membership in a community entails a number of financial, technical, and institutional obligations. These can be onerous for the least developed countries, including Angola, Burundi, Central African Republic, Chad, DRC, Rwanda, and Sao Tome and Principe, given their financial limitations. The second challenge is related to the ineffectiveness of the ECCAS customs union, scheduled for 2016 but not yet instituted, which leads to higher trade costs through tariffs and numerous nontariff measures and thus limits trade integration, productive integration, and competitiveness of countries within ECCAS. The third challenge is the infrastructure gap within ECCAS. The issue of infrastructure is particularly important because ECCAS is made up of landlocked countries as well as countries with an ocean coastline; and because poor quality of infrastructure is a source of additional trade costs. The fourth challenge is the need for integrative institutions. The main reason for the failure of African integrative initiatives, according to Rekiso (2017), is the lack of adequate institutions. Even when countries have the will to build an integrated space, they may face divergent concerns and interests that limit progress in integration projects. For these reasons, establishing adequate institutions is essential.

Overlapping trade agreements

In ECCAS, six countries belong to at least one other REC recognized by the African Union. This multiple membership, shown in Figure 6.10, creates a number of challenges (Bhagwati 1995). For example, integration has proceeded at different speeds in different RECs and for different countries. The CEMAC countries are highly integrated among themselves, at least in terms of macroeconomic convergence, but their integration with the other ECCAS countries is weak. Angola and the DRC are the most poorly integrated countries in both ECCAS and SADC. Burundi is poorly integrated in both ECCAS and COMESA, but it does better in EAC. Rwanda, which left ECCAS to focus on the other RECs, occupies a middle level of integration in both EAC and ECCAS. However, it is among the countries that best respect the disciplines of COMESA. Recently, the DRC was officially admitted to the EAC trade bloc during the 18th Extra-Ordinary Summit of the EAC Heads of State in December 2021.

Figure 6.10 ECCAS "spaghetti bowl" of memberships



Source: Authors' construction.

The above description shows that belonging to several RECs poses several problems, including the trade-offs between the disciplines of different communities, which are not always harmonized or convergent. A good illustration of this difficulty is the multiplicity of common external tariffs (CETs), shown in Table 6.13.

Table 6.13 Common external tariffs in CEMAC, EAC, and COMESA

Goods classification	EAC	COMESA	Goods classification	CEMAC
			1st category: Essential goods	5%
Raw materials and capital goods	0%	0%	2nd category: Raw materials and capital goods	10%
Intermediate goods	10%	10%	3rd category: Intermediate goods and miscellaneous	20%
Final goods	25%	25%	4th category: Final goods	30%
Sensitive Items	≥ 30%			

Source: Authors' construction.

To further complicate matters, there are different rules of origin (RoO) and various integrating programs and projects that these countries must finance in each REC, with scarce resources. All of this leads to bottlenecks in terms of institutions, finance, governance, program implementation, overlapping disciplines, coordination, and so on. Therefore, rationalization of the RECs or a harmonization of the various disciplines is needed.

Tariff and nontariff measures

In addition to the challenges posed by the overlapping memberships, intra-ECCAS trade costs, including tariffs and nontariff measures, hamper ECCAS integration. The ESCAP-WB trade costs database[14] shows that for some countries, the average cost of trade in ECCAS has continued to rise, while for others, these costs have fallen (Table 6.14). In both cases, intra-ECCAS trade entails trade costs that reduce the volume of trade and hinder trade integration among countries.

14 Bilateral comprehensive trade cost is an estimated measure of costs associated with both importing and exporting agricultural and manufactured goods between two countries. Values of trade cost in the database are provided in ad valorem equivalent form (see ESCAP-WB Trade Cost Database: explanatory note for users).

Table 6.12 Trade introversion index in ECCAS countries (2003–2020)

		Importing countries										
		AGO	BDI	CAF	CMR	DRC	COG	GAB	GNQ	RWA	STP	TCD
Exporting countries	AGO	-	-1.00	-1.00	-0.78	-0.72	0.86	-0.95	-0.99	-1.00	-0.18	-1.00
	BDI	-0.19	-	0.36	0.78	1.00	0.18	0.27	0.45	1.00	-1.00	0.95
	CAF	-0.72	0.99	-	1.00	0.98	0.98	0.93	-0.34	0.49	-1.00	1.00
	CMR	0.57	-0.96	0.88	-	0.94	0.97	0.95	0.93	0.45	-0.74	0.96
	DRC	-0.42	0.29	0.41	0.25	-	0.90	-0.81	-1.00	0.72	-1.00	-0.99
	COG	0.99	-0.84	0.01	0.95	0.55	-	0.97	0.73	-0.96	0.03	-0.03
	GAB	0.37	-0.84	0.50	0.76	0.68	0.99	-	0.78	-0.95	0.44	0.38
	GNQ	-0.59	-1.00	-0.99	0.97	-0.98	0.98	0.22	-	-0.99	-0.93	-1.00
	RWA	0.65	0.99	0.85	-0.21	1.00	0.68	-0.42	-1.00	-	-0.93	-0.71
	STP	1.00	-1.00	-1.00	1.00	-1.00	0.98	1.00	0.95	0.91	-	-1.00
	TCD	-0.95	-0.98	0.65	0.88	-0.92	0.22	-0.74	-1.00	-0.90	-1.00	-

Source: Authors' calculations based on 2022 AATM data
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad.

Table 6.14 presents the trade costs faced by ECCAS countries in their bilateral trade relationships with other ECCAS members in agriculture and manufactured goods. Symmetric bilateral trade costs are computed using the inverse gravity framework (Novy 2009), which estimates trade costs for each country pair using bilateral trade and gross national output.

Table 6.14 Average trade costs in ECCAS, ad valorem equivalent (%)

	AGO	BDI	CMR	CAF	TCD	COG	DRC	GNQ	GAB	RWA	STP
2017	243	183	179	174	399	173	167	201.8		503	316
2018	280			310	470	258	130	293		450	298
2019					462	321	182	242		369	260

Source: Authors' construction using ESCAP-WB-trade costs-dataset (2021).
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad.

On average, tariff and nontariff trade costs have increased over the period under review. The COVID-19 pandemic has led to additional costs, related to limiting the spread of the virus, on the one hand, and caring for the sick, on the other. In sum, the reduction, if not elimination, of trade costs related to intra-ECCAS trade remains a major challenge for the integration of countries.

With respect to tariffs, the six CEMAC countries apply a common external tariff to all non-CEMAC countries (Table 6.15). Products originating within CEMAC are supposed to circulate freely. In contrast, trade relationships between CEMAC countries and other ECCAS countries are affected by the tariffs that each country applies to other members. An illustration is presented in Table 6.15, which shows the trade costs that arise from tariff measures within ECCAS in 2018 in ad valorem equivalent (%).

Table 6.15 Trade costs in ECCAS, ad valorem equivalent (%), 2018

		Importing countries										
		AGO	BDI	CMR	CAF	TCD	COG	DRC	GNQ	GAB	RWA	STP
Exporting countries	AGO	-				385	60	195	216		725	156
	BDI		-									
	CMR			-								
	CAF				-	337	231		412			
	TCD	385			337	-	328				849	
	COG	60			231	328	-	138	174		482	308
	DRC	195					138	-			156	
	GNQ	216			412		174		-			330
	GAB									-		
	RWA	725				849	482	156			-	
	STP	156					308		330			-

Source: ESCAP-WB-trade costs-dataset (2021).
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad.

The numbers of NTMs applied by ECCAS countries to their ECCAS partners are shown in Table 6.16. Burundi and Rwanda appear to apply the most NTMs within ECCAS, particularly technical barriers to trade (TBTs). The CEMAC countries apply the fewest NTMs to their ECCAS partners. Burundi and Rwanda therefore will need to make significant efforts to reduce these NTMs to boost regional integration. Nonetheless, it should be noted that the number of sanitary and phytosanitary measures (SPS) is surprisingly low, which may be related to a failure to notify these measures to the WTO.

Table 6.16 Nontariff measures in ECCAS in 2022

Partner affected	Country implementing	SPS	TBT
ECCAS countries	Burundi	8	230
	Cameroon		8
	Central African Republic	2	11
	Congo, Rep		3
	DRC	2	
	Gabon		2
	Rwanda	1	655
ECCAS countries total		13	909
Least developed countries	Burundi	8	230
	Central African Republic	2	11
	DRC	2	
	Rwanda	1	655
Least developed countries total		13	896

Source: World Trade Organization Integrated Trade Intelligence Portal.
Note: SPS = sanitary and phytosanitary measures; TBT = technical barriers to trade.

In short, trade barriers (tariffs and NTMs) are indeed an obstacle to integration in ECCAS, and ECCAS countries, particularly Rwanda and Burundi, must take steps to remove these barriers. Harmonization of CETs and establishment of the ECCAS free trade area will certainly be an important step toward stronger integration.

Infrastructure

The literature on economic integration highlights competitiveness factors and incentives for engagement, including the important role of infrastructure. Expansion of trade will require adaptation to just-in-time production and management systems and improvements in speed, flexibility, and reliability in delivery of goods and services, all of which will require better infrastructure. The ECCAS region's inadequate infrastructure and poor transport organization impede trade and regional integration (Mbekeani 2010). The World Bank's quality of trade and transport-related infrastructure index[15] rates the integrative infrastructure in ECCAS countries as poor (on average 2.2 on a scale of 0 to 5 in 2018). This finding is corroborated by a World Economic Forum report (2017), which shows a similar average for transport infrastructure on a scale of 1 to 7.

Regarding ECCAS, Ranganathan and Foster (2011) made the following observation:

[t]ransportation is slow and the most expensive in Sub-Saharan Africa, with poor road conditions, border delays, port delays, time-consuming administrative processes, no integrated railway network, and inefficient air transport. The ICT [information and communications technologies] backbone is still in its early stages; access rates are low and the prices of critical services are the highest in Africa. ECCAS has the least-developed power sector on the continent despite significant hydropower resources.

Table 6.17 corroborates these observations more than five years later. Not only is the quality of infrastructure in ECCAS countries not better, but it has deteriorated in most countries.

15 Logistics performance index: Quality of trade and transport-related infrastructure (1=low to 5=high), World Bank.

Table 6.17 Logistics performance index: Quality of trade and transport-related infrastructure

Country	2016	2018
Angola	2.13	1.86
Burundi	1.98	1.95
Cameroon	2.21	2.57
Chad	2.07	2.37
Central African Republic	–	1.93
Congo, Rep.	2.60	2.07
DRC	2.01	2.12
Equatorial Guinea	1.50	1.88
Gabon	2.04	2.09
Rwanda	2.62	2.76
Sao Tome & Principe	2.12	2.33

Source: Data from the World Bank's World Development Indicators.
Note: Scale is 1 (low quality infrastructure) to 5 (high quality infrastructure).

Building infrastructure that promotes integration thus remains critical for ECCAS countries which, given their diversity, should take up the challenge in a coordinated approach. Ranganathan and Foster (2011) estimated the cost of upgrading the region's infrastructure at $1.8 billion per year for a decade, which will require external assistance.

Institutions

Institutions play a critical role in the development of trade and integration, including in ECCAS countries. They are essential to enforcement of contracts and property rights that underlie any type of trade.[16] The role of institutions is also highlighted in the literature on socioeconomic factors that drive upgrades of exports (Méon and Sekkat 2004; Faruq 2011; Essaji and Fujwara 2012; Falkowski et al. 2019). The integration process depends on explicit or implicit contracts between states and populations, through institutions, and the enforcement power of institutions is an important prerequisite for effective integration, especially for trade integration. For example, ineffective institutions discourage innovation and investment, leading to a reduced capacity to offer quality goods (Faruq 2011), while countries with a stronger rule of law or judicial system have a comparative advantage in exporting higher quality final goods (Essaji and Fujiwara 2012; Falkowski et al. 2019). In terms of integration, Rekiso (2017) argues that adequate integrational institutions are key elements for success. Unfortunately, institutions in ECCAS are generally not of good quality, as revealed by the low Worldwide Governance Indicators ratings for most countries in the region (Table 6.18).[17] These low ratings make it clear that ECCAS countries should work to strengthen institutions at the local and regional level.

16 The role of institutions is described extensively in the literature, including North 1990; Mignamissi 2020; Gandjon Fankem 2016; Levchenko, 2007; Rodrik et al. 2004; and Mansfield et al. 2002.
17 The World Bank's Worldwide Governance Indicators measure perceptions of the quality of governance under six domains. Values range from around −2.5 to +2.5, with higher values indicating better quality of governance (Kaufmann, Kraay, and Mastruzzi 2010).

Table 6.18 Institutional quality in ECCAS countries (2020)

Country	Control of corruption	Government effectiveness	Political stability and absence of violence/terrorism	Regulatory quality	Rule of law	Voice and accountability
AGO	-0.927	-1.182	-0.521	-0.909	-0.963	-0.811
BDI	-1.527	-1.259	-1.411	-1.019	-1.316	-1.538
CMR	-1.131	-0.883	-1.527	-0.817	-1.146	-1.215
TCD	-1.415	-1.460	-1.264	-1.138	-1.305	-1.420
CAF	-1.282	-1.690	-2.178	-1.537	-1.712	-1.273
DRC	-1.572	-1.693	-1.708	-1.541	-1.791	-1.282
COG	-1.403	-1.435	-0.896	-1.431	-1.160	-1.290
GNQ	-1.685	-1.471	-0.192	-1.549	-1.254	-1.832
GAB	-0.924	-0.910	-0.077	-0.878	-0.665	-0.994
STP	0.164	-0.645	0.482	-0.901	-0.686	0.349
RWA	0.555	0.342	0.033	0.156	0.107	-1.104

Source: Data from the World Bank's Worldwide Governance Indicators.
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad.

At the ECCAS level, only a few institutions coordinate regional integration. However, there are some effective regional institutions, primarily those designed to maintain peace and security, including the Network of Parliamentarians of Central Africa (REPAC), Council for Peace and Security in Central Africa (COPAX), Defence and Security Commission (CDC), Multinational Force of Central Africa (FOMAC), and Early Warning Mechanism of Central Africa (MARAC).

Opportunities

There are some promising opportunities for advancing trade integration within ECCAS. Most notably, establishment of the AfCFTA could accelerate the integration process, and the development of untapped trade potential could lead to deeper trade integration. By taking advantage of these and other opportunities, ECCAS could expand and upgrade intra-ECCAS and its broader trade participation.

African Continental Free Trade Area

The AfCFTA, launched on January 1, 2021, is a multilateral free trade agreement that seeks to create a single common market across the 54 members of the African Union. As such, the AfCFTA may help to address the challenges discussed above, including tariff and NTM reduction and trade facilitation. Some estimates predict an increase in intra-African trade of 18 to 50 percent by 2030 as a result of the agreement.

Concerning institutions, the AfCFTA will work to harmonize existing REC institutions and to promote coordination for a well-functioning AfCFTA. The resolution of the "challenges of multiple and overlapping memberships" is an explicit objective of the AfCFTA agreement (art. 3, para. h), which is of particular relevance in the ECCAS case. One of those challenges is the multiplicity of disciplines, for example, conflicting principles on RoOs. (Annex 2 of the AfCFTA agreement on RoOs does not discuss contradictory disciplines, but we can assume that RoO principles will be governed by the main text of the agreement, which indicates what should be done when REC rules differ from AfCFTA rules.) Moreover, the AfCFTA is established as the preeminent agreement should any conflicts arise with other agreements (art. 19), meaning

it could help overcome bottlenecks to integration within a particular region, economic community, or customs union.

Removing all forms of trade barriers, especially tariffs and NTMs, is central to AfCFTA (art. 3 (a–d) and art. 4 (a–e)). RECs are considered the foundation of AfCFTA. Therefore, AfCFTA intends to build on the progress already made at the REC level (art. 5 (f)) to support continentwide liberalization (art. 5 (j)) and to take advantage of the "best practices in the RECs, in the State Parties and International Conventions binding the African Union" (art. 5 (l)). As a result, conflicts may arise from inconsistency between REC disciplines and AfCFTA. In such cases, article 19 states that the AfCFTA agreement "shall prevail to the extent of the specific inconsistency, except as otherwise provided in this Agreement."

In the case of NTMs, Annex 4 on trade facilitation, Annex 5 on nontariff barriers, Annex 6 on TBTs, and Annex 7 on SPS measures provide rules to deal with conflicts regarding those constraints. As shown in Table 6.16, there are more than 900 NTMs in intra-ECCAS trade, including 13 SPS measures and more than 600 TBTs. The AfCFTA invites RECs to "establish or strengthen NTBs [nontariff barriers] monitoring mechanisms responsible for: (a) tracking and monitoring NTBs affecting intra-African trade and updating regional and national plans for the elimination of NTBs" (Annex 5, art. 10 (1)). Moreover, "State Parties are encouraged to resolve NTBs raised at intra-REC level using the resolution mechanisms in place in each REC" (Annex 5, art. 12(3)). An AfCFTA monitoring mechanism is dedicated to nontariff barriers "that have not been resolved at REC level, are inter-REC in nature, or are arising from State Parties that are not members of any REC."

Finally, the AfCFTA takes into account economic and development disparities between countries that affect their rate of integration (the principle of "variable geometry"). In this sense, the AfCFTA is an opportunity for ECCAS integration because it gives countries incentives to participate in the integration process. AfCFTA also provides a framework for the development and strengthening of integration and cooperation efforts of African countries, and its core objectives are promoting productive integration, trade integration, and multifaceted cooperation among the various African regional bodies. However, meeting these objectives will depend on the agreement's effective implementation.

Potential trade in ECCAS

In this subsection, we assess the potential for expanding trade in ECCAS countries. We first examine possibilities for increasing intra-ECCAS trade in agricultural products, focusing on two indicators of overlapping intraregional trade flows: the trade complementarity index and the trade expansion index. We then turn to the trade potential of individual member states, identifying agricultural and non-agricultural products that show export expansion potential for each country.

Given the unsatisfactory performance of African RECs in promoting intraregional agricultural trade to date, it is reasonable to ask whether there is a potential to increase intra-African trade, particularly within ECCAS. Geda and Seid (2015) describe the noncompetitive position of potential African suppliers of goods, which is a result of poor infrastructure, logistics, productivity, and trade facilitation. Thus, an innovative approach is needed to enhance intra-African trade and foster regional integration that can address the challenges of export supply constraints, competitiveness of African exports, and export diversification.

To assess the potential for expanding intra-ECCAS agricultural trade, we first examine the degree to which ECCAS countries' export supply of agricultural products matches the import demand of other countries in the region. A trade complementarity index (c_{rs}) between two countries *r* and *s* is given by equation (5), where m_k^s is the sectoral share of country *s*'s imports,

x_k^r is the sectoral share of country *r*'s exports *k*, $X_{.s}^k$, $X_{.s}$,, $X_{r.}^k$ and $X_{r.}$ are as previously defined, and n is the number of goods. This index, introduced by Michaely (1996), approximates the adequacy of country *r* 's export supply to country *s*'s import demand. c_{rs} is zero when there is no overlap in the trade patterns of countries *r* and *s*, and it is equal to 100 when there is perfect complementarity in the trade between countries *r* and *s*.

$$c_{rs} = 100 * \left[1 - \sum_{k=1}^{n} |m_k^s - x_k^r|/2\right] = 100 * \left[1 - \sum_{k=1}^{n} \left|\frac{X_{.s}^k}{X_{.s}} - \frac{X_{r.}^k}{X_{r.}}\right|/2\right] (5)$$

In analyzing trade complementarity among ECCAS countries, we consider agricultural products disaggregated at the HS6 level. The results in Table 6.19 indicate that complementarity is very low in the trade of agricultural products in the ECCAS region. Intra-ECCAS exports only partly match import demand from trade partners within the region. The highest trade complementarity index is observed in trade between DRC and Rwanda – DRC's import demands are matched by Rwanda's exports at 18.4 percent.

Table 6.19 Average agricultural trade complementarity index, 2018–2020

		Exporting countries										
		AGO	BDI	CAF	CMR	DRC	COG	GAB	GNQ	RWA	STP	TCD
Importing countries	AGO		6.6	1.5	1.8	3.6	6.3	8.8	6.2	15.7	1.6	0.2
	BDI	12.4		2.4	1.6	4.4	3.9	7.7	4.9	12.4	2.2	0.5
	CAF	9.4	8.0		1.9	4.1	10.4	6.7	6.9	11.5	1.9	0.2
	CMR	12.8	5.0	1.5		4.6	7.1	6.7	5.8	13.1	2.2	0.2
	DRC	16.9	8.7	1.9	1.9		8.2	8.0	6.5	18.4	1.6	0.3
	COG	10.0	2.3	3.5	1.7	4.1		8.1	5.7	13.8	1.6	0.2
	GAB	9.8	4.3	2.0	1.6	4.6	7.4		8.1	11.5	1.6	0.2
	GNQ	17.8	11.7	1.5	1.6	3.5	6.1	9.5		13.6	1.6	0.2
	RWA	16.2	3.7	2.2	1.7	3.3	6.1	8.3	6.1		1.8	0.9
	STP	17.5	10.4	1.9	1.8	2.5	5.6	7.2	15.5	13.3		0.4
	TCD	12.3	9.7	3.7	6.2	8.0	9.7	8.8	9.5	15.6	6.1	

Source: Authors' calculations based on 2022 AATM data.
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad.

The trade complementarity index summarizes complementarity in trade patterns for all agricultural products. Despite the low level of overlapping trade flows at the sector level, there may be individual products that are both exported and imported by ECCAS countries. We thus use the trade expansion indicator (TEI) as in Badiane and Odjo (2016) to further examine the trade expansion potential within the region. The TEI measures the overlap in trade flows between countries within a region at the individual product level, indicating how much of the same product a given region exports and imports at the same time. We calculate the TEI at the ECCAS region level as follows:

$$TEI_k = 100 \cdot \left[min\left(X^k_{R.}, X^k_{.R}\right) / max\left(X^k_{R.}, X^k_{.R}\right) \right] \quad (6)$$

where $X^k_{R.}$ refers to the values of the region's exports of an agricultural product k to the world market; that is, $X^k_{R.} = \sum_r X^k_{r.}$, and $X^k_{R.}$ refers to the values the region's imports from the world market; that is, $X^k_{.R} = \sum_r X^k_{.r}$, R stands for ECCAS, r is an ECCAS member state, and $X^k_{r.}$ and $X^k_{.r}$ are as previously defined. The TEI indicates the percentage of the region's exports (imports) of a product that corresponds to the region's imports (exports) of the same product. Table 6.20 lists the 20 agricultural products with the highest TEI values for the region. TEI calculations reveal that a number of products have highly overlapping trade flows in ECCAS. The top 5 products, all with TEI values of close to 70 or higher, are "Vegetables; cucumbers and gherkins"; "Oils, essential"; "Vegetables, uncooked or cooked, frozen"; "Fruit, edible, fresh"; and "Vegetables, edible, fresh or chilled."

ECCAS countries also need to strategize and find an effective way to expand intra-ECCAS trade, given that imports from other regions or continents are becoming more expensive as the Russia-Ukraine war is increasing transport and fuel costs. Without an increase in intra-ECCAS trade, regional food markets will become more volatile, with significant impacts on the region's poor.

Table 6.20 Top 20 agricultural products with the highest TEI values in ECCAS, 2018–2020

HS6 code	Short description	Average TEI
071140	Vegetables; cucumbers and gherkins	98.7
330129	Oils, essential	83.2
071080	Vegetables, uncooked or cooked, frozen	82.2
081090	Fruit, edible, fresh	70.3
070999	Vegetables, edible, fresh or chilled	68.2
120600	Oil seeds; sunflower seeds, whether or not broken	62.9
060319	Flowers, cut, fresh	61.4
010613	Mammals; live, camels and other camelids	60.3
090411	Spices; pepper (of the genus piper), neither crushed nor ground	60.2
071430	Vegetable roots and tubers; yams, fresh, chilled, frozen or dried	59.9
151329	Vegetable oils; palm kernel or babassu oil and their fractions	57.4
230660	Oil-cake and other solid residues;	57.3
060210	Plants, live; unrooted cuttings and slips	52.9
120760	Oil seeds; safflower seeds, whether or not broken	52.3
430130	Furskins, raw	52.2
071334	Vegetables, leguminous; bambara beans, shelled, dried	51.9
080112	Nuts, edible; coconuts, in the inner shell	51.4
071410	Vegetable roots and tubers; cassava, with high starch or inulin content	50.9
230210	Bran, sharps and other residues; of maize (corn)	50.7
071231	Vegetables; mushrooms of the genus Agaricus	49.9

Source: Authors' calculations based on 2022 AATM data.

Finally, we examine the potential for individual ECCAS countries to expand their exports, considering both agricultural and non-agricultural products. According to the International

Trade Centre's Export Potential Map,[18] some products have a great export potential for intra-Central Africa trade, namely "[…] Soups & broths & preparations therefor, carboys & other glass containers, and chocolate & other cocoa preparations." Moreover, "Palm oil (excl crude) & fractions shows the largest absolute difference between potential and actual exports in value terms, leaving room to realize additional exports worth $2.6 mn [million]."

Export potential is assessed using a gravity model specified at the product level as follows:

$$X_{rs}^{k} = \alpha_{r}^{k}\beta_{rs}\gamma_{s}^{k} \quad (7)$$

where X_{rs}^{k} corresponds to exports from exporter r of product k to market s. The parameter α_{r}^{k} describes exporter $r's$ performance in exporting product k, γ_{s}^{k} market reflects $s's$ demand for product k and β_{rs} the easiness to export any good from r to s.

Instead of an econometric estimation, which is inconvenient in this case, export potential assessments infer potential export values at rsk level from a multiplicative model based on two-dimensional data as described in equation (8):

$$\tilde{X}_{rs}^{k} = \alpha_{r}^{k}\beta_{rs}\gamma_{s}^{k} = \frac{X_{r.}^{k}}{X_{..}^{k}} \frac{X_{rs}}{\sum_{k}\left(\frac{X_{r.}^{k}}{X_{..}^{k}} X_{.s}^{k}\right)} X_{.s}^{k} \quad (8)$$

where the first term $\frac{X_{r.}^{k}}{X_{..}^{k}}$ corresponds to exporter $r's$ world market share in product k. The second term $\frac{X_{rs}}{\sum_{k}\left(\frac{X_{r.}^{k}}{X_{..}^{k}} X_{.s}^{k}\right)}$ is a measure of bilateral trade relative to what trade would be if the exporter had the same share in world markets as it has in market s. The third term ($X_{.s}^{k}$) simply reflects total imports. More details on this methodology are available on the ITC website.[19]

Using the results of this calculation, we extend our analysis to individual countries. We then simulate export potential and export diversification potential for each country, with results presented in Table 6.21. This analysis reveals that there is untapped trade potential in ECCAS. This potential is largely based on a narrow range of natural resource products, particularly agricultural products, both raw and processed.

18 Export Potential Map (intracen.org)
19 epa-methodology_141216.pdf (intracen.org)

Table 6.21 Trade potential analysis for ECCAS countries

Country	Product export potential	Product export diversification potential	Potential additional gain
AGO	Fish nes, whole, frozen, Cement clinkers, and Portland cement	Wheat or meslin flour, Urea and Bovine cuts boneless, frozen, and Semi-milled or wholly milled rice	US$16,000 k
BDI	Wheat or meslin flour, Bars & rods of iron or non-alloy steel, and Boxes & articles for conveying/packaging goods, of plastics. Unwrought lead, refined	Palm oil (excl crude) & fractions, Raw cane sugar, and Semi-milled or wholly milled rice	US$63 k
CMR	Soups & broths & preparations therefor, carboys & other glass containers, and Chocolate & other cocoa preparations	Bars & rods of iron or non-alloy steel, Semi-milled or wholly milled rice, and Soap & organic surface-active products	US$2,600 k
CAF	Pears & quinces, fresh, Wood continuously shaped, non-coniferous, and Wood, sawn/chipped lengthwise, sliced/peeled, thickness >6mm	Crude palm oil, Palm oil (excl crude) & fractions and Raw cane sugar.	US$0.770 k
TCD	Natural gum arabic, Cotton, not carded/combed, and Lac; natural gums (excl gum arabic), resins, balsams	Beans "Vigna & Phaseolus" nes, dried & shelled, Fish nes, whole, frozen, and Broken rice	US$0.468 k
COG	Fish nes, whole, frozen, Portland cement, and Self-propelled graders & levellers	Beans "Vigna & Phaseolus" nes, dried & shelled, Palm oil (excl crude) & fractions, and Crude palm oil	US$291 k
DRC	Malt extract, Beauty, make-up & skincare preparations, and Crude palm oil	Palm oil (excl crude) & fractions, Maize (excl seed for sowing), and Raw cane sugar	US$835 k
GNQ	Methanol "methyl alcohol", Wood, sawn/chipped lengthwise, sliced/peeled, thickness >6mm, and Self-propelled tamping machines & roadrollers	Urea, Crude palm oil and Palm oil (excl crude) & fractions	US$195 k
GAB	Crude palm oil, Ferro-silico-manganese, and Plywood, veneered panel & similar laminated wood	Palm oil (excl crude) & fractions, Fish nes, whole, frozen, and Broken rice	US$1,200 k
RWA	Wheat or meslin flour, Palm oil (excl crude) & fractions, and Vegetable fats, oil & fractions, hydrogenated, inter-esterified, etc.	Raw cane sugar, Semi-milled or wholly milled rice and Flat-rolled products of iron or non-alloy steel	US$4,000 k
STP	Airplane/helicopter parts, nes, Parts of turbojets or turbo propellers, and Nuts of iron or steel	Palm oil (excl crude) & fractions, Soups & broths & preparations therefor, and Food preparations	US$3.8 k

Source: Export Potential Map (International Trade Centre, www.intracen.org)
Note: AGO = Angola; BDI = Burundi; CAF = Central African Republic; CMR = Cameroon; DRC = Democratic Republic of the Congo; COG = Republic of the Congo; GAB = Gabon; GNQ = Equatorial Guinea; RWA = Rwanda; STP = Sao Tome and Principe; TCD = Chad.

Other potential opportunities

Other opportunities arise from the proximity of ECCAS to relatively more successful integration initiatives, notably CEMAC (six countries) and EAC (three countries). Indeed, the classification of ECCAS countries by the integration index reveals that the best-performing countries are those of CEMAC and Rwanda. These countries could certainly lead the integration process in ECCAS. The experience of CEMAC countries is rich in terms of macroeconomic convergence initiatives, the establishment of common governance of the financial system, management of

a common monetary policy, and application of a CET. Although CEMAC countries trade little among themselves and the issue of regional infrastructure is a major concern, these difficulties may provide an opportunity to examine strategies for deepening trade relations. As for Rwanda, the experience acquired in the EAC integration process could be used by ECCAS, particularly with regard to the free movement of people.

Since the early 2000s, several initiatives have been undertaken with a view to a future merger between CEMAC and ECCAS. One step has been the signing of the Regional Indicative Program on January 24, 2003, in the presence of the CEMAC and ECCAS authorities. Another is the project to harmonize a single CET for ECCAS presented in May 2019. Currently, the heads of CEMAC and ECCAS, on behalf of the heads of state and governments, are discussing some common projects, including a common industrial strategy.

CONCLUSION AND THE WAY FORWARD

This chapter has analyzed trade integration in the ECCAS regional economic community. After a discussion of the history of ECCAS, we looked at trade integration within ECCAS, with a focus on agricultural products, and discussed intraregional trade in both agricultural and non-agricultural products. Finally, the challenges and potential opportunities for successful trade integration in ECCAS were outlined.

Our main findings show that exports of agricultural products are poorly diversified, while imports are highly diversified. They also reveal that, although agriculture is an important sector for the ECCAS countries in terms of contribution to GDP and employment, intra-ECCAS trade of agricultural products is weak and the REC's main trade partners are outside of the region. This may be explained by high trade costs, low competitiveness, and underinvestment coupled with poor logistical and transport infrastructure. In terms of competitiveness, some ECCAS countries have a comparative advantage in "Cocoa and cocoa preparations" and "Bran, sharps and other residues." Unfortunately, few industries are developed for these products in Africa. Moreover, they are not everyday consumer products. These two facts explain why intra-African demand for these products is low. A synthesis of the results can be found in the appendix to this chapter.

ECCAS faces several challenges due to the heterogeneity of the countries as well as their membership in more than one REC. Further complicating integration, participation in multiple RECs means countries must cope with different RoOs and various integrating programs and projects that they are expected to finance despite resource constraints. In addition to the challenges posed by the overlapping membership, intra-ECCAS trade costs must be reduced or eliminated. Additional challenges identified were related to the political and economic environment of the subregion. However, a major opportunity for increasing trade has been created by the effective launch of the AfCFTA at the beginning of 2021, which will not conflict with or contradict existing RECs. AfCFTA provides a framework for the development and strengthening of integration and cooperation efforts of African countries by promoting productive integration, infrastructure integration, and multifaceted cooperation among the various African regional bodies. In addition, an examination of the potential for expanding trade in ECCAS suggests that, although there is limited overlap in agricultural trade patterns of ECCAS countries at the sector level, some individual agricultural products show sizable overlapping flows and could present opportunities for increased intra-ECCAS trade.

From a policy perspective, numerous recommendations merit discussion. First, an intraregional export strategy should be defined to address trade weakness and poor diversification of exports. For this purpose, the decision-support model of Cuyvers and Viviers (2012) could be

employed to identify export opportunities for each country. Second, the key frictions that impede trade growth in ECCAS should be reduced. These include high trade costs, lack of logistical and transport infrastructure, and low commitment to development of ECCAS compared to other RECs. In this vein, countries should implement trade facilitation disciplines as well as a free movement agreement. They should work to harmonize REC frameworks and establish a coherent and concerted strategy for infrastructure development. Third, countries should take advantage of their untapped trade potential to expand intra-ECCAS trade. This chapter has identified goods that could be considered in a regional program for trade expansion. Fourth, countries should build trade complementarity through regional value chains based on revealed or created comparative advantages. Indeed, our analysis of revealed comparative advantages in agricultural products shows that some countries do not have comparative advantages in any major agricultural product categories. Therefore, following Krugman (1986), a strategic trade policy involving creation of comparative advantages for those countries in goods with untapped trade potential appears as a solution. Moreover, to exploit this trade potential these countries should:

- Eliminate all tariff and nontariff barriers to trade in order to facilitate and accelerate transactions.
- Develop the agrifood industry to increase trade in raw materials in the ECCAS region.
- Develop transport infrastructure in the region, particularly highways linking the ECCAS countries.

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APPENDIX

Table A6.1 Synthesis of trade patterns in ECCAS countries

Indicators	Formulae	Objective	Main outcomes for ECCAS countries
RCA index	$RCA_r^k = \frac{\left(\frac{X_{r.}^k}{X_{r.}}\right)}{\left(\frac{X_{..}^k}{X_{..}}\right)}$	The RCA of country for product is measured by the share of the product in the country's exports compared to its share in world trade	ECCAS countries have a comparative advantage in raw agricultural products without a high level of processing.
HHI index	$H(r) = \sum_k \left(\frac{X_{r.}^k}{X_{r.}}\right)^2 \quad (2)$	Inverse measure of diversification	Low values of HHI indicate a diversified set of products; ECCAS countries' agricultural imports are diversified, whereas exports are highly concentrated.
Trade intensity index	$TII_{rs} = \frac{\frac{X_{rs}}{X_{r.}}}{\frac{X_{.s}}{X_{..}}} \quad (3)$	Trade intensity measures to what extent countries in a region trade with each other more intensely than with other countries	Overall, trade among the ECCAS economies is intense with an overall trade intensity ratio of 12.4.
Trade introversion index	$TI_{rs} = \frac{\frac{X_{rs}/X_{r.}}{(X_{.s}-X_{rs})/(X_{..}-X_{r.})} - \frac{1-X_{rs}/X_{r.}}{1-(X_{.s}-X_{rs})/(X_{..}-X_{r.})}}{\frac{X_{rs}/X_{r.}}{(X_{.s}-X_{rs})/(X_{..}-X_{r.})} + \frac{1-X_{rs}/X_{r.}}{1-(X_{.s}-X_{rs})/(X_{..}-X_{r.})}} \quad (4)$	Corrects for the weaknesses of the trade intensity index	Most ECCAS countries are introverted in their trade within ECCAS.
Trade complementarity index	$c_{rs} = 100 * \left[1 - \sum_{k=1}^{n} \lvert m_k^s - x_k^r \rvert / 2\right] = 100 * \left[1 - \sum_{k=1}^{n} \left\lvert \frac{X_{.s}^k}{X_{.s}} - \frac{X_{r.}^k}{X_{r.}} \right\rvert / 2\right] \quad (5)$	Examines the degree to which ECCAS countries' export supply of agricultural products matches the import demand of other countries in the region	Complementarity in the trade of agricultural products is very low in the ECCAS region.
Trade expansion indicator	$TEI_k = 100 \cdot \left[min\left(X_{R.}^k, X_{.R}^k\right) / max\left(X_{R.}^k, X_{.R}^k\right)\right] \quad (6)$	The TEI measures the overlap in trade flows between countries within a region at the individual product level, indicating how much of the same product a given region exports and imports at the same time	Some products have highly overlapping trade flows in ECCAS: "Vegetables; cucumbers and gherkins", "Oils, essential", "Vegetables, uncooked or cooked, frozen", "Fruit, edible, fresh", and "Vegetables, edible, fresh or chilled''.
Trade potential indicator	$\tilde{X}_{rs}^k = \alpha_r^k \beta_{rs} \gamma_s^k = \frac{X_{r.}^k}{X_{..}^k} \frac{X_{rs}}{\sum_k \left(\frac{X_{r.}^k}{X_{..}^k} X_{.s}^k\right)} X_{.s}^k \quad (8)$	The potential for expanding intra-ECCAS countries' trade	There is untapped trade potential in ECCAS based on a narrow basket of raw and processed agricultural products.

Note: X refers to exports while M refers to imports.

SUMMARY AND CONCLUSION

World agricultural prices are rising as the Russia-Ukraine war disrupts production and supply chains, contributing to fears of a food crisis in Africa. Boycotts of Russian and Belarussian products, the blockade of Ukrainian ports, damage to Ukrainian transport infrastructure, and financial difficulties faced by Russian exporters all have serious impacts on trade in grains and vegetable oils. Fear of a food crisis is justified, given that Ukraine, Russia, and Belarus are all major players in the world's food, energy, and fertilizer markets. Trade of about 12 percent of the world's calories used as food and fodder are thought to be at risk in the Russia-Ukraine war.

However, through an examination of long-term price trends, **Chapter 1** demonstrates that the current price hikes started before the Russian invasion of Ukraine. Thus, the war cannot be held solely responsible for the current global food crisis. Climate change plays an important role as well as certain questionable economic policies, notably support for the biofuel industry and the adoption of restrictions on food and fertilizer exports. Moreover, the situation differs among poor countries. In Africa, for example, the continent's 55 countries are extremely diverse in terms of their diets, local agricultural dynamics, and foreign trade structure. Thus, the impact of the crisis on these countries is quite heterogeneous. In addition, although many observers are focused on the cereal markets, the dynamics of the vegetable oils and fertilizer markets are at least equally important. Finally, it is essential to accelerate the fight against climate change, using policies that do not jeopardize global food security.

The Russia-Ukraine war and its disruptive effects on production and supply chains are adding to Africa's difficulties in boosting its participation in world trade and reaping the related developmental benefits. **Chapter 2** shows that Africa captures only a small share of global trade in value-added terms despite increasing participation in global value chains (GVCs). Compared to developed economies, which have large manufacturing sectors, African economies exhibit stronger forward than backward linkages; that is, they contribute with more value added to other countries' exports than other countries contribute to theirs. Within Africa, SADC, AMU, and ECCAS exhibit more backward linkages than COMESA and ECOWAS, reflecting regional differences in the size of the manufacturing sectors in these regional economic communities (RECs).[1]

African countries are positioned more upstream and participate more intensely in agriculture GVCs than in those related to textiles and wearing apparel, food and beverages, fishing, and mining and quarrying sectors. Over the past decade, African countries have intensified their involvement in agriculture GVCs more than in the non-agriculture sector while also moving further upstream over time. The BRICS countries and Western developed countries are Africa's major upstream partners, and EU countries are Africa's main downstream partners.

These results suggest that Africa should broaden its manufacturing sectors in order to upgrade to a more balanced position in agriculture GVCs. To that end, policy interventions should be designed to attract foreign direct investment by eliminating restrictions in factor markets and improving the continent's business climate. The latter includes workforce development, supporting innovation and R&D, reducing logistical costs, and promoting higher standards, infrastructure development, and special economic zones. The continent must also improve its human resources for the management of local small and medium enterprises and seize the opportunity offered by the large domestic market created by the African Continental Free Trade Area (AfCFTA).

1 SADC is the Southern African Development Community; AMU is the Arab Maghreb Union; ECCAS is the Economic Community of Central African States; COMESA is the Common Market for Eastern and Southern Africa; and ECOWAS is the Economic Community of West African States.

Recent trends show that local products manufacturing is already underway. Focusing on sugar, palm oil, cigars and cigarettes, tea, and wheat flour, **Chapter 3** reveals that SADC countries lead the intracontinental trade of processed products with more than half of the total exports. However, processed products are predominant in intra-REC trade, while unprocessed and semi-processed products predominate in trade outside the REC countries, with the exception of AMU, which trades mainly processed products with other RECs. Interestingly, processed products account for higher shares of protein and especially of fats in total intra-African trade than of calories and trade values, suggesting that the most commonly traded processed products are rich in proteins and fats.

Most of the trade in key processed products takes place within geographic regions, reflecting the importance of physical proximity and REC memberships in trade relationships. For most of the processed products examined, Southern Africa is the most successful at exporting outside its geographic region. For most RECs, their highest levels of competitiveness are in niche products that account for very small trade shares. An exception is tea, which plays an important role in intra-African processed trade and for which EAC is highly competitive.

With increasing incomes and urbanization, demand for processed food products in Africa will continue to expand. Intra-African trade in processed products represents an important channel through which producers and processors on the continent can access rapidly growing African markets. However, nontariff measures (NTMs) not only pose challenges for Africa's global exports but constitute a major barrier to intra-African trade. Other factors such as costs and time required for border and documentary compliance are also significantly higher in Africa than in other regions and present additional constraints for intra-African trade. Overcoming these barriers can facilitate formal trade and also contribute to formalizing informal trade flows.

Manufacturing has advanced less significantly in the value chains of the three great stimulants. **Chapter 4** reveals that a significant proportion of African exports of cocoa, coffee, and tea involve little or no processing. Exports are concentrated in unprocessed coffee and cocoa and semi-processed tea. Many African countries are under-trading these commodities across the three levels of processing, and thus, there is strong potential not only to trade more in volume but also to trade "better" in terms of more sophisticated products.

Several factors explain both under-trading and the concentration of exports in unprocessed commodities. At the global level, African exports of semi-processed and processed products face difficulty in accessing EU and US markets because of stringent sanitary and phytosanitary (SPS) measures. To resolve this impasse, more transparency is needed from the EU and US trade rules and better-quality products are needed from the African side. At the regional level, intra-African tariffs are often higher than the preferential tariffs imposed on African exports by wealthier regions (under the Generalized System of Preferences or the Everything but Arms Initiative, for example). Thus, despite the availability of high-quality African-grown cocoa, coffee, and tea, many African countries continue to source a substantial share of these inputs from outside the continent for purposes of processing and manufacturing of final goods.

Promotion of intra-African trade will require serious tariff dismantlement and elimination of burdensome NTMs. In this context, the full implementation of the AfCFTA can contribute to development of regional value chains, allowing African countries to benefit from trade complementarities and economies of scale as they access a larger (free) market. Internal challenges, especially those related to infrastructure and access to technology and credit must be addressed, as these are two key determinants of the success of African countries in upgrading along regional and global value chains.

The evaluation of the potential impact of the AfCFTA provided in **Chapter 5** – based on various methodological improvements to common practices in the relevant literature – largely confirms the findings of previous evaluations. Through an assessment of five scenarios, the chapter finds that the AfCFTA will be a game-changer only if it is ambitious, both for tariff liberalization (important for boosting trade) and NTMs (important for raising GDP). The sensitive and excluded products clause reduces the potential impact of this reform: the AfCFTA tariff agreement (in a scenario based on the current implementation plan) increases African exports of agrifood goods by only 1.6 percent in volume, whereas a complete elimination of tariffs on intra-African trade would increase these exports by 6.2 percent. The opportunity cost of this clause is thus significant.

The current AfCFTA scenario has an impact of close to zero on Africa's GDP, and a complete elimination of tariffs on intra-African trade increases African GDP by only 0.05 percent (almost no impact). However, adding an 80 percent reduction in NTMs to the current planned tariff reduction would increase African GDP by 0.2 percent. A more ambitious scenario that combines complete elimination of tariffs with the 80 percent reduction in NTMs increases African GDP at market prices by US$4 billion more than just the elimination of tariffs, demonstrating the importance of on-going NTM reduction negotiations, though this evaluation takes into account NTMs of only 14 of the 55 African countries.

This assessment like others does not account for informal cross-border trade (ICBT), which is a key feature of African trade, particularly agricultural trade. However, the trade-generating and welfare-enhancing effects of the AfCFTA may be larger when ICBT is included. Hence, policy recommendations for a successful AfCFTA are clear. If the implementation of this trade reform is unambitious, the benefits for the African economy will be minor. The data available for this assessment are weak both on NTMs and on informal trade. Yet, there are many initiatives targeting improved data collection on trade and trade policies in Africa. Continuing these efforts must be a priority.

AfCFTA implementation will be a game-changer, particularly in the ECCAS region where trade integration is lagging. Although agriculture is an important sector for ECCAS countries in terms of its contribution to GDP and employment, **Chapter 6** shows that agricultural trade is weak in the region, which may be attributed to underinvestment coupled with poor logistical and transport infrastructure. Intra-ECCAS trade in agricultural products remains rather limited, as the main trade partners of ECCAS countries are outside the region. Exports of agricultural products are poorly diversified, while imports are highly diversified, confirming the high level of import dependence of ECCAS countries.

ECCAS faces several challenges due to the heterogeneity of the countries in the bloc as well as their membership in more than one REC. Additional challenges identified are related to the political and economic environment of the subregion and intraregional trade costs. With overlapping memberships with other RECs, the ECCAS countries have different rules of origin, and are expected to finance various program and projects for integration in multiple RECs despite their resource constraints. AfCFTA provides a framework for the development and strengthening of integration and cooperation efforts of African countries by promoting integration of production and infrastructure along with multifaceted cooperation between the various African regional bodies.

From a policy perspective, an intraregional export strategy should be defined to solve the problems of intra-African trade weakness and poor diversification of exports. Key frictions such as trade costs, lack of logistical and transport infrastructure, and low commitment to ECCAS development that all impede trade growth in ECCAS should be addressed. In this vein,

countries should implement trade facilitation disciplines as well as a free movement agreement. They should work to harmonize REC frameworks and establish a coherent and concerted strategy for infrastructural development. In addition, ECCAS countries should take advantage of their untapped trade potential to expand intra-ECCAS trade. To exploit this potential, these countries will have to (1) eliminate all tariff and nontariff barriers to trade in order to facilitate and accelerate transactions; (2) develop the agrifood industry to increase trade in raw materials in the region; and (3) develop transport infrastructure in the region, particularly the highways linking the various ECCAS countries.

The year 2023 will be a crucial year for the African continent, not only because of the potential food crisis, but also because of the implementation of the continental free trade agreement, which is expected to set in motion a long process of trade integration and economic development.

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