Chapter 3

Intra-African Trade Integration

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Introduction

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

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

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

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

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

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

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

Intra-African trade trends and structures

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

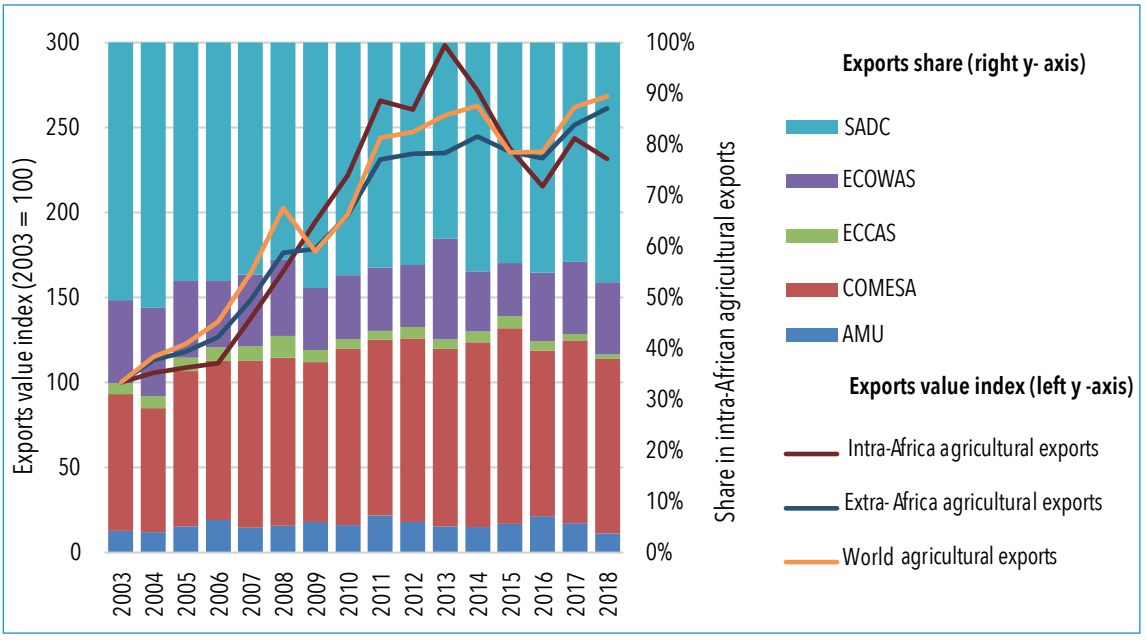
Trade flow trends within Africa

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

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

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

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



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

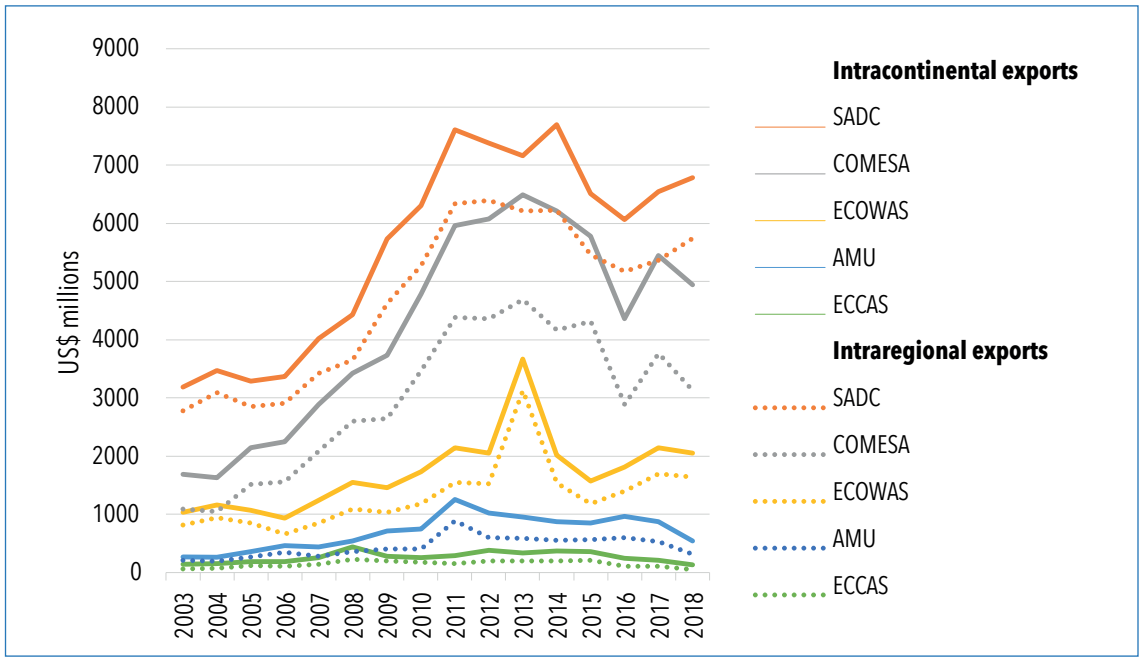
Trade within Africa predominantly occurs within RECs. While the five RECs covered in this analysis also trade with African countries beyond their REC, Figure 3.2 makes it clear that the bulk of individual country exports remain within the region, with total intra-African exports for each REC mostly captured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

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

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

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

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



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

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

Top exporters and importers

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

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

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

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

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

Source: 2020 AATM database and authors' computations.

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

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

Source: 2020 AATM database and authors' computations.

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

Agricultural commodity composition of intracontinental trade

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

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

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

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

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

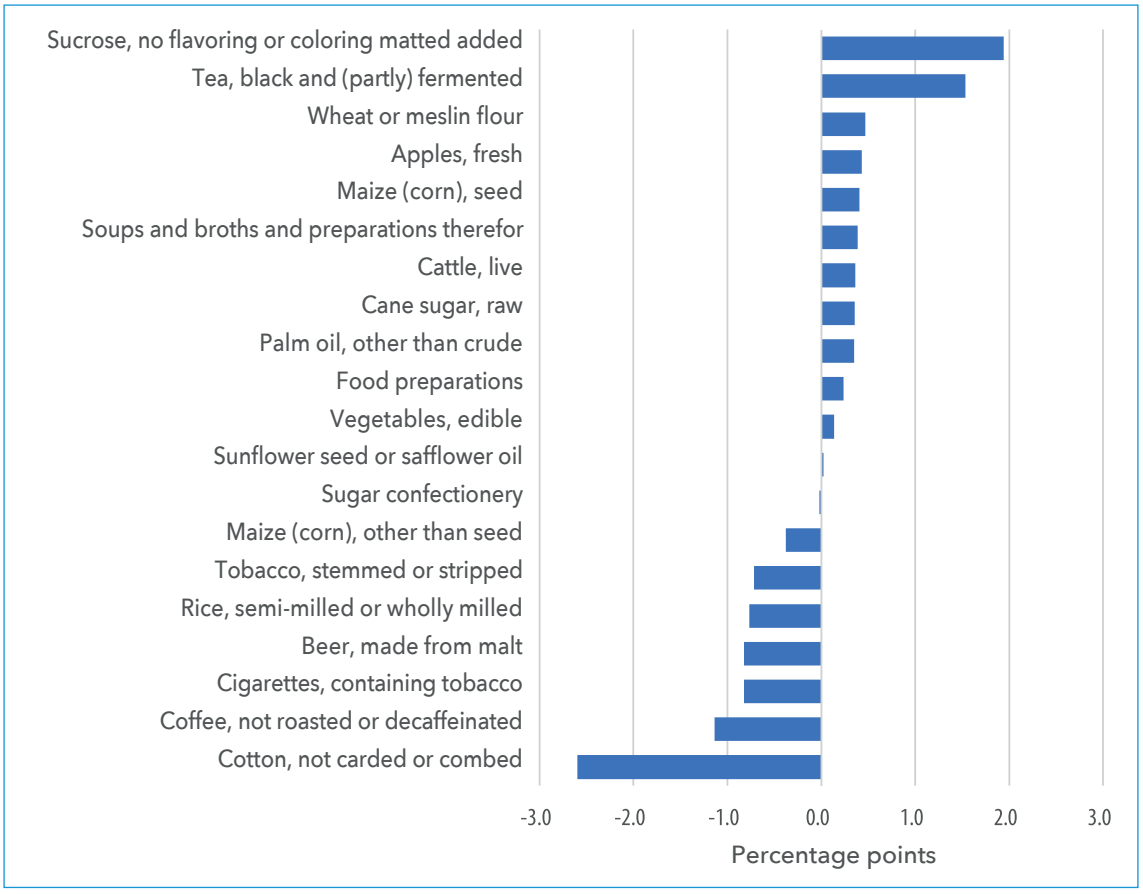
in the world. If supply chains prioritize low-nutrient commodities, African consumers will be forced to rely heavily on global imports to achieve balanced nutrition. In the next section, we focus on the extent to which intraregional trade can be expanded to meet the new demand trends. Yet careful thought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

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

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

Source: 2020 AATM database and authors' computations.

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



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

Potential for regional agricultural trade expansion

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

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

Similarity of export patterns among African countries

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

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

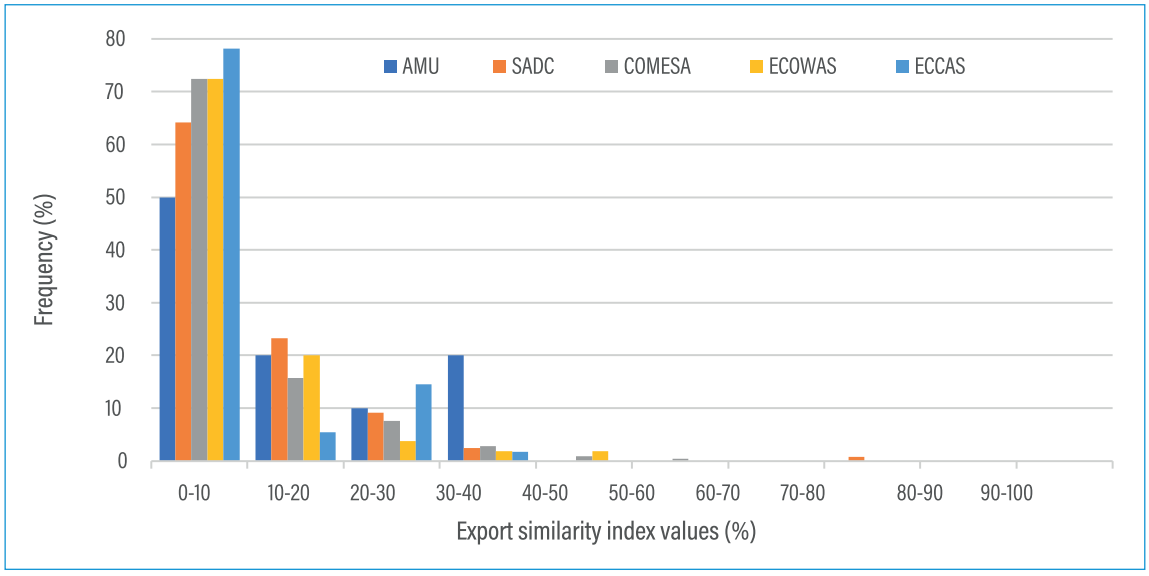
Commodity *k* is restricted to agricultural products only and defined at the HS6-digit level, *r* is a REC's market, and countries *i* and *j* are restricted to the REC's members. ESI varies between 0 (complete dissimilarity) and 100 (complete similarity). For each REC, ESI values are calculated for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

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

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

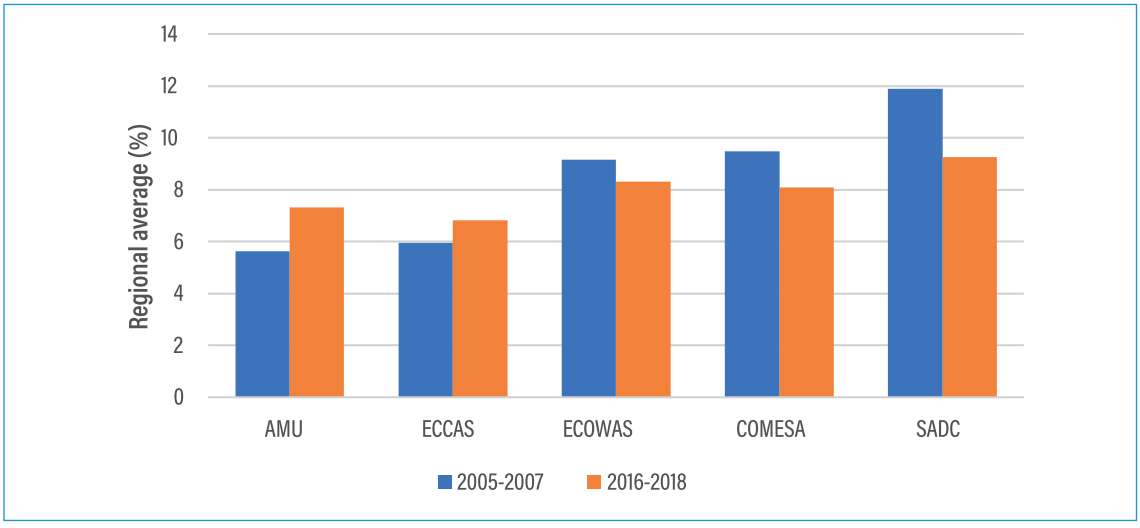
Overall, current export patterns are dissimilar enough within the different African regions to suggest there is room to expand intraregional trade within the continent. However, export dissimilarity is not a sufficient condition for bilateral trade expansion. To further explore the potential for bilateral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

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



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

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



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

Trade complementarity among African countries

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

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

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

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

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

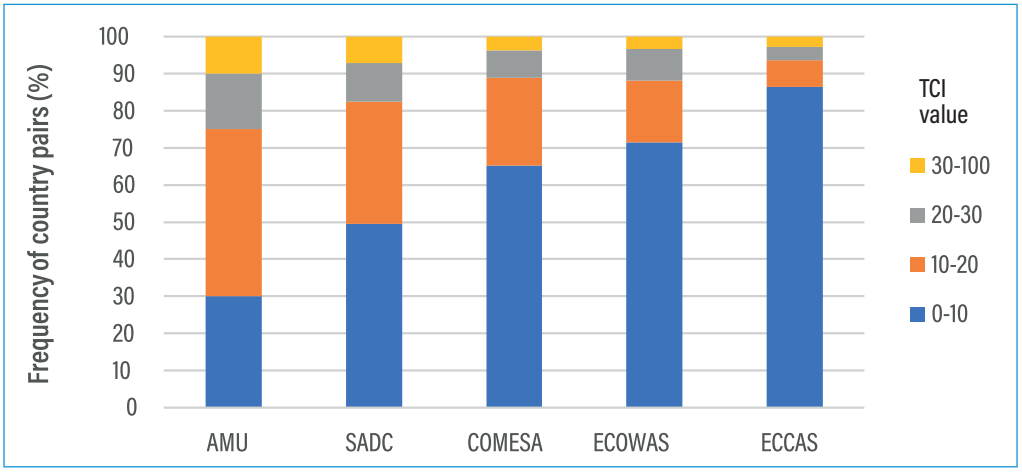
For comparison purposes, agricultural TCI values for country pairs in other world regions are computed at the same HS6-digit level as for African country pairs in 2016–2018. Their distribution is summarized in Table A3.6. The results show, like in Africa, a concentration of low TCI values among the members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

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

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

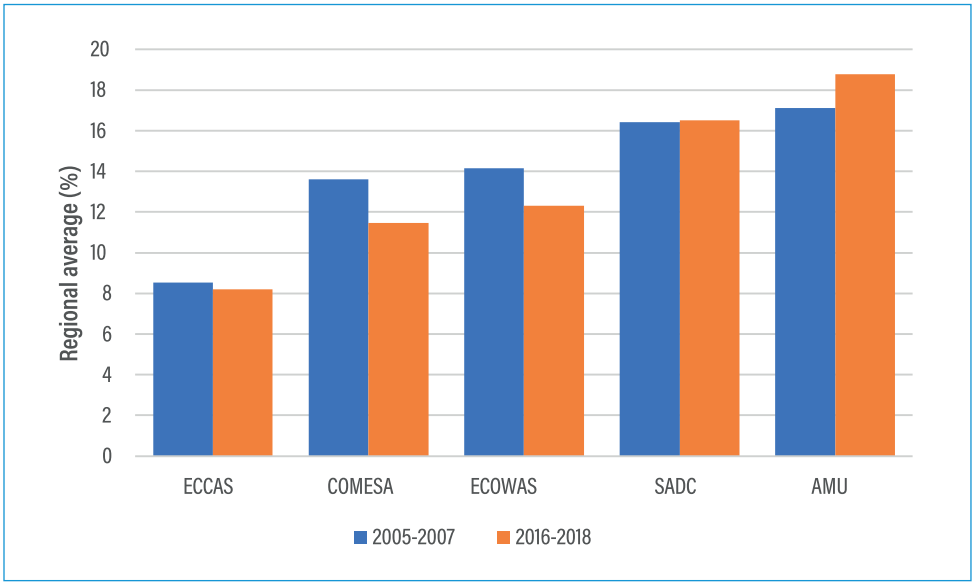
Except in a few cases, most pairs of African countries demonstrate poor and partial trade complementarity, suggesting a limited potential to expand trade, even though most country pairs had dissimilar agricultural exports. In other words, the composition of Africa's world imports and exports does not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

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



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

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



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

Trade intensity among African countries

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

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

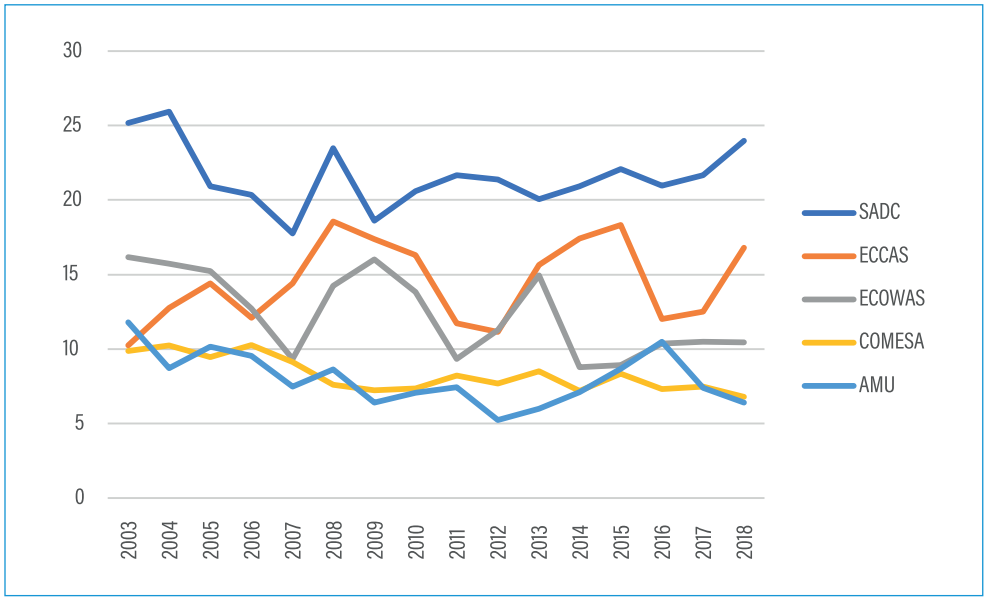
$$TII_{ir} = \frac{X_{ir}}{X_{wr}}$$

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

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

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

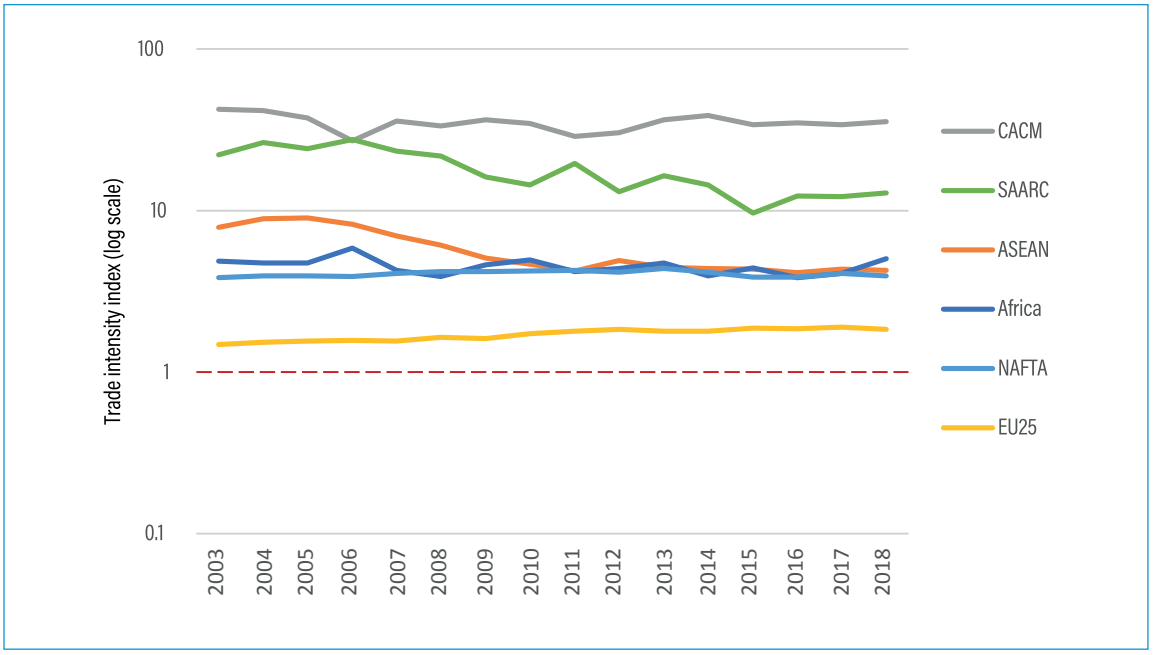
Figure 3.8 Evolution of the intraregional agricultural trade intensity index (TII), 2003–2018



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

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

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



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

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

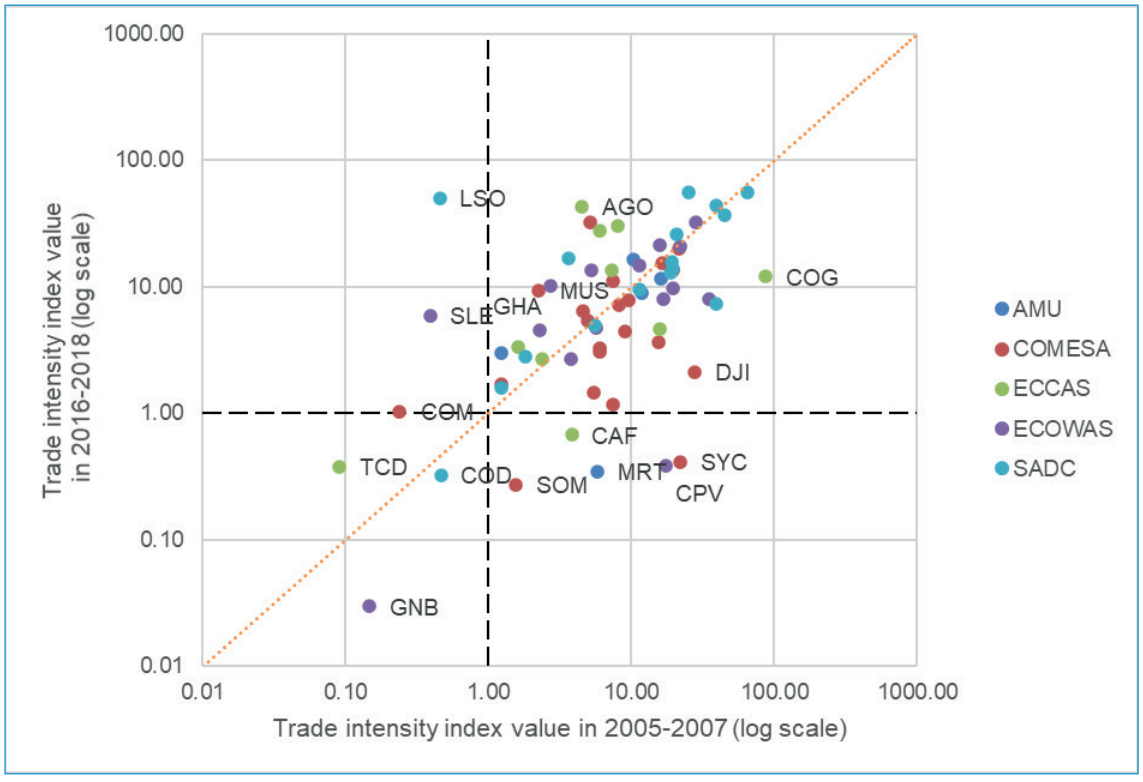
The Figure 3.10 scatter plot shows a few countries (in the bottom-left quadrant) with TII values smaller than 1.0 in both periods. Those countries trade within their respective regions less intensely than expected, given their importance in world trade. They include Chad, DRC within SADC, and Gambia.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

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

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

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

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



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

Intra-African trade policies and the challenges of integration

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

Cost of protective tariff and nontariff measures

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

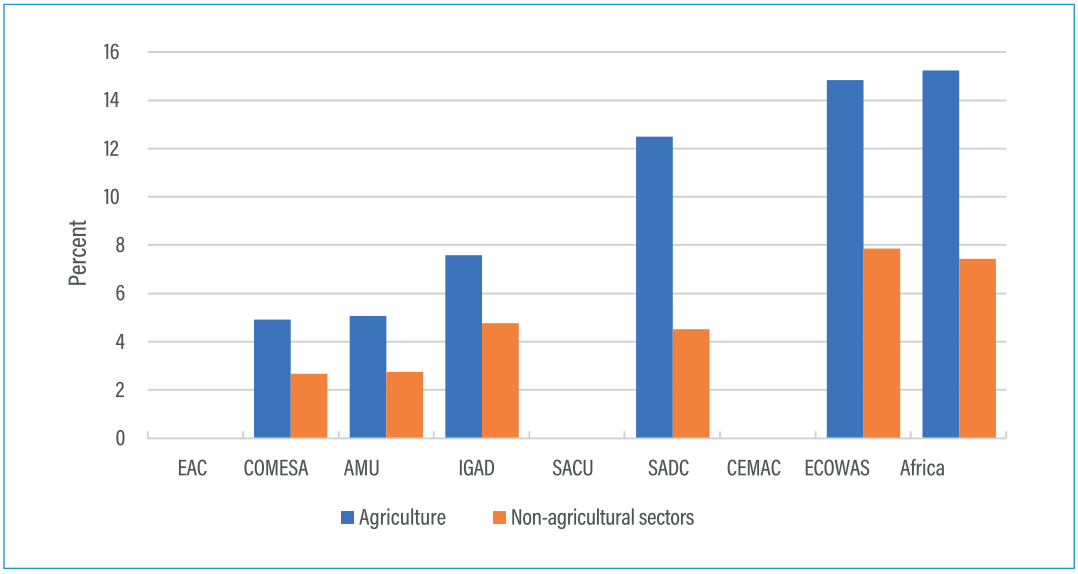
Table 3.5 Simple average tariff rates on agricultural products, 2016 (percent)

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

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

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

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



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

Nontariff measures are potentially more trade-restrictive than tariffs

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

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

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

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

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

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

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

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

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

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

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

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

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

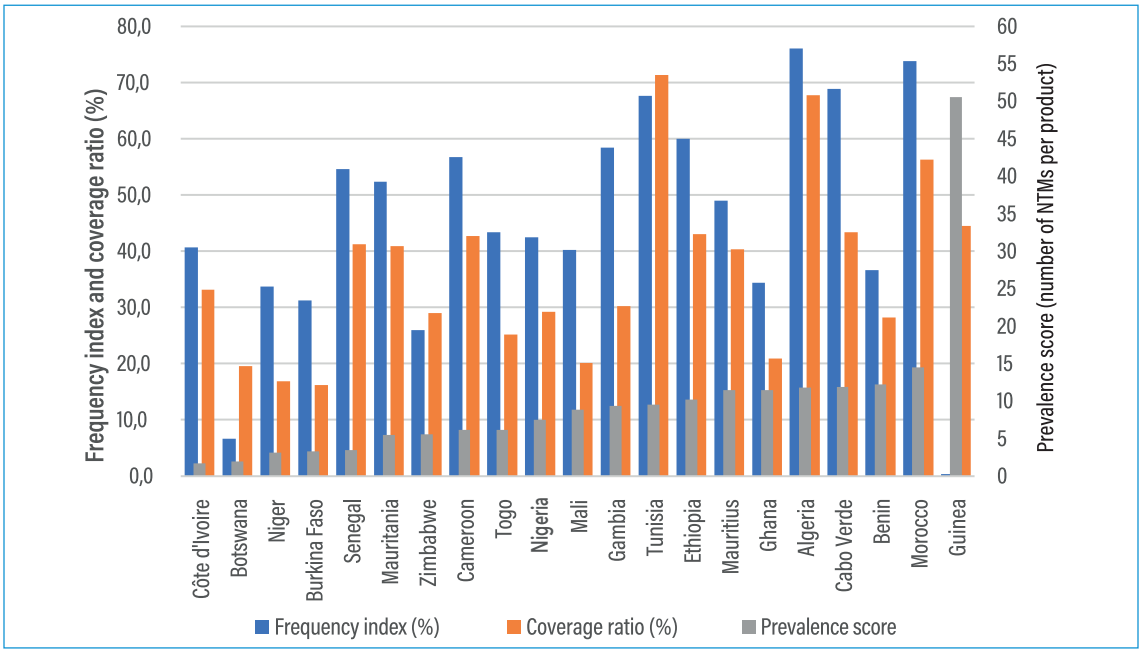
However, the coverage ratio values indicate that the incidence is not negligible in the case of Guinea. NTMs affect up to 44 percent of the value of this country's agricultural imports originating from other African countries. With respect to the coverage ratio indicator, countries where the incidence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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

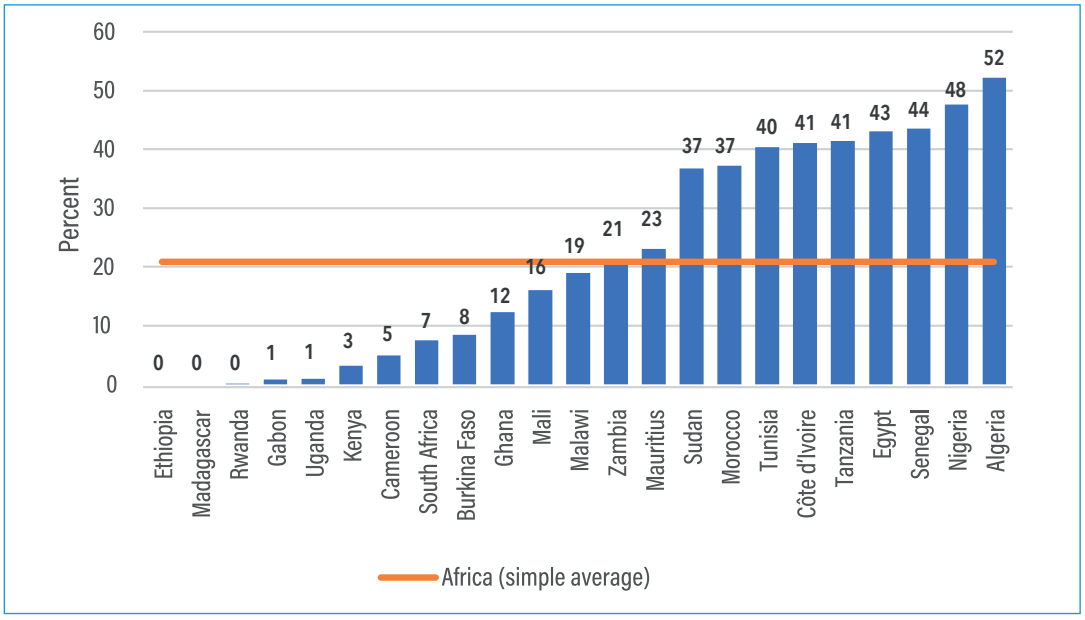
Source: Authors' calculations using UNCTAD-TRAINS database, UN-COMTRADE database, and NTM-MAP tool (Gourdon 2014).
Note: Latest available years across all covered countries range from 2015 to 2019; SADC: Southern African Development Community; ECOWAS: Economic Community of West African States; ECCAS: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

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

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

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

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



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

Conclusions and key lessons

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

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

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

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

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

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

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

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

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

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

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Appendix

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

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

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

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

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

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

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

Source: 2020 AATM database and authors' computations.

Note: ECCAS: Economic Community of Central African States.

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

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

Source: 2020 AATM database and authors' computations.

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

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

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

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

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

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

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

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

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

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

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

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

Table A3.8 Classification of nontariff measures by chapter

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

Source: UNCTAD (2019b).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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