

INTERNATIONAL MONETARY FUND

AFRICAN AND MIDDLE EAST AND  
CENTRAL ASIA DEPARTMENTS

# Trade Integration in Africa

## Unleashing the Continent's Potential in a Changing World

Prepared by an IMF team led by Asmaa ElGanainy, Shushanik Hakobyan, Fei Liu, and Hans Weisfeld and comprising Ali Abbas, Celine Allard, Hippolyte Balima, Celine Bteish, Rahul Giri, Daniel Kanda, Benjamin Kett, Sergii Meleshchuk, Megan Pohl, Gustavo Ramirez, and Robert Zymek, with guidance from Vivek Arora and Subir Lall

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DEPARTMENTAL PAPER

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# Acronyms and Abbreviations

AfCFTA	African Continental Free Trade Area
AfDB	African Development Bank
AMU	Arab Maghreb Union
ASEAN	Association of Southeast Asian Nations
CEMAC	Central African Economic and Monetary Community
CENSAD	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
EU	European Union
FTA	Free trade agreement
GVC	Global value chain
ICT	Information and communication technology
IGAD	Intergovernmental Authority on Development
LDC	Least developed country
MERCOSUR	Southern Common Market
NAFTA	North American Free Trade Agreement
NTM	Nontariff measure
OECD	Organisation for Economic Co-operation and Development
PAPSS	Pan-African Payment and Settlement System
PPP	Purchasing power parity
REC	Regional economic community
SACU	Southern African Customs Union
SADC	Southern African Development Community
WAEMU	West African Economic and Monetary Union
WTO	World Trade Organization



# Executive Summary

The creation of the African Continental Free Trade Area (AfCFTA) in 2018 established the world's largest free trade area by population (1.3 billion) and with a combined GDP of \$3 trillion as of 2022. The AfCFTA presents its members with an opportunity to take advantage of expanding trade to lift growth and living standards across the entire continent. This departmental paper examines the prospects for African trade integration in the context of a changing world amid climate change, risks of geopolitical fragmentation, technological progress, and Africa's prospective demographic boom. It discusses policies to underpin successful implementation of the AfCFTA that, when combined with complementary reforms, would maximize the potential gains from enhanced trade integration in Africa.

Africa's recorded cross-border trade has grown relatively modestly in recent decades, with limited growth in merchandise trade and an unchanged share of services trade in GDP. The continent's exports to the rest of the world are dominated by commodities, while trade within the region is more diversified and includes a larger share of processed goods. These trade patterns are consistent with the continent's limited integration in global value chains (GVCs), reflecting its fragmented trade policy landscape marked by multiple regional economic communities, a challenging trade environment with gaps in structural factors such as transport networks, customs and border processes, and access to finance. At the same time, there appears to be significant informal cross-border trade although it is hard to measure. These patterns, including the more diversified nature of intra-African trade, reflect the potential for significant gains for African trade from building regional value chains, unifying the trade policy landscape, and strengthening the trade environment.

AfCFTA implementation will entail large reductions in tariff and nontariff trade barriers among African countries. These reductions could increase the median merchandise trade flow between African countries by 15 percent and median real per capita GDP by 1.25 percent. If the reductions in tariff and nontariff barriers are combined with substantial improvements in the trade environment, the payoff to countries would be significantly higher. The paper finds that comprehensive reforms combined with the AfCFTA implementation could increase the median merchandise trade flow between African countries by 53 percent and with the rest of the world by 15 percent, and as a result raise the real per capita GDP of the median African country by more than 10 percent. This result resonates with findings in the literature that trade reforms could help reduce extreme poverty by an additional 30–50 million people across the continent.

The creation of the AfCFTA comes at a time when a changing global environment creates both opportunities and challenges for Africa. Greater trade integration can help the continent take advantage of the opportunities provided by technological change and demographic trends and enhance its resilience to shocks such as climate change and geopolitical fragmentation. In particular, greater trade openness would help countries adapt to climate change and to strengthen food security, including by improving the availability and affordability of food supplies. More diversified and broad-based trade would reduce the impact of disruptions in specific markets and products that could result from shifts in global trade patterns. Trade is the principal means through which the emergence of new technologies and digitalization, in combination with a rapidly growing labor force, could create new and higher paying jobs.

Seizing these opportunities will require investment in physical and human capital, a robust macroeconomic and business environment conducive to private sector-led growth, and a modernized social safety net that supports the most vulnerable during the transition to a higher growth trajectory.



# 1. Overview—Unlocking the Benefits of Regional Trade Integration in Africa

Initiatives to foster greater economic integration in Africa over several decades culminated in the creation of the African Continental Free Trade Area (AfCFTA) in 2018, with the goal of expanding intra-African trade and promoting economic diversification and industrialization of its member countries. The AfCFTA aims to achieve this through the liberalization of goods and services trade across the continent, trade facilitation by enhancing border processes, and implementation of certain “behind the border” measures (Box 1). This paper discusses how implementation of the AfCFTA, when complemented with other reforms, could catalyze deeper trade integration both within the African continent and with the rest of the world, thereby embracing the opportunities offered by technological change, a growing working-age population, and a changing global environment. By facilitating specialization, exploitation of scale economies in production, productivity growth and strengthening of cross-border value chains, closer regional trade integration would raise growth rates and living standards in African countries and enhance their resilience to shocks.

The experience of globalization in past decades suggests there is a large unrealized potential for African economies to enhance trade with each other and the rest of the world in terms of both volume and share of value added. The growth in the continent’s overall trade has been modest, reflecting limited growth of merchandise trade and an unchanged share of services trade in GDP. The evolution of intra-African trade in particular reflects two main considerations: the trade policy landscape is fragmented with multiple regional economic communities (RECs) that generally have provided limited within-bloc integration and little between-bloc integration, with still substantial tariff and nontariff measures (NTMs);<sup>1</sup> and a trade environment (structural factors that affect trade such as transport networks and border processes) that is more challenging than elsewhere. As detailed in the 2021 World Trade Organization (WTO) report, while global trade has had positive effects for African industrialization and development, efforts must continue to help Africa build capacity and take fuller advantage of the benefits offered by trade.<sup>2</sup> Implementing AfCFTA provides such an opportunity to enhance trade capacity and reap the benefits from trade. This paper examines the potential impact of implementing AfCFTA on Africa’s intraregional and overall trade and recommends policies that are needed to ensure sustained gains from trade integration.

This paper’s analysis suggests that AfCFTA goals to lower tariffs and NTMs across the continent, if combined with reforms to the trade environment, could significantly boost Africa’s trade in goods and services both within the region and with the rest of the world, raising income levels and supporting integration into cross-border value chains:

- Regarding merchandise trade, a lowering of tariffs and NTMs between African countries as planned under the AfCFTA would lead to notable increases in trade and incomes. These gains would be amplified considerably if complemented with improvements in the trade environment, for example, transport and telecommunications infrastructure, access to finance, and domestic security, to bring them to levels comparable to those in other regional free trade agreements (FTAs). More concretely, a cut in tariffs on intra-African trade by 90 percent and NTMs by half could increase the median merchandise trade flow between African countries by 15 percent and real per capita GDP in the median country by 1.25 percent. However, if accompanied by complementary improvements in the trade environment, the median merchandise trade flow between African economies would rise by 53 percent and with the rest of the

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<sup>1</sup> Chapter 2 describes NTMs and distinguishes them from the broader concept of nontariff barriers (NTBs).

<sup>2</sup> WTO (2021a).

world by 15 percent, raising real GDP per capita in the median country by more than 10 percent. World Bank estimates of a broadly similar growth scenario suggest that this would help 30-50 million people in Africa emerge from extreme poverty.

- Under a scenario of broad-based trade reforms combining AfCFTA implementation with improvements in the trade environment, the composition of trade would also change to include more sophisticated products. This would support integration into regional and global value chains, opening up opportunities for diversification of sectors and expansion of manufacturing industries. Improvements in the trade environment would boost services exports by about 50 percent.
- Importantly, increasing the role of trade in Africa would allow countries to embrace the opportunities provided to Africa by the continent's rising working-age population against the backdrop of ongoing technological progress to raise incomes and living standards for all. An improved trade environment would also provide diversification benefits in terms of food availability and affordability, resilience to shocks such as from natural disasters including due to climate change, and the ability to navigate and adapt to dislocations or shifts in global trade patterns.

In addition to policies that directly facilitate trade expansion, complementary policies are needed to ensure gains from trade integration can be sustained and that the benefits are shared as widely as possible across the population. For the growing workforce to take advantage of the opportunities that trade integration brings, it will be important to invest in their education and skills. Protecting those that are adversely affected during the transition will require upgrading social safety nets to be able to efficiently target the most vulnerable in a fiscally sustainable way. More broadly, for comprehensive reforms to be sustained and generate the largest possible benefits in terms of income and employment creation, they need to be embedded in policy and institutional frameworks that safeguard macroeconomic stability and promote a favorable business environment.

The paper is structured as follows: Chapter 2 presents the current state of trade and trade integration in Africa. Chapter 3 quantifies the impact of lower tariffs and NTMs under AfCFTA and improvements in the trade environment on trade volumes and on integration into regional and global value chains. It also reviews the next steps in AfCFTA implementation and the needed supporting policies. Chapter 4 discusses how regional trade integration can be part of a strategy for responding to, and benefiting from, a changing global environment. Chapter 5 concludes.

### Box 1. AfCFTA Goals and Status of Implementation to Date

In 2018, 44 African countries signed the agreement establishing the African Continental Free Trade Area (AfCFTA), marking the culmination of African trade integration efforts spanning decades.<sup>1</sup> The agreement entered into force in May 2019 following ratification by 22 countries. At this stage, 54 African countries have signed on (of 55, with the exception of Eritrea), and 46 have ratified the agreement.

The AfCFTA's strategic objectives are to expand intra-African trade in goods and services; increase competitiveness through economies of scale and diversification; promote industrialization, structural transformation, and gender equality; and lay the foundation for a future customs union and single market.

Key operational objectives are to progressively eliminate tariffs and NTMs hindering the trade in goods, liberalize the trade in services, and enhance border processes ("trade facilitation"). Aiming for deep trade integration through "behind-the-border" measures, in line with recent trends in regional trade agreements globally, the AfCFTA also plans to harmonize regulations for the provision of goods and services, investment regimes, and rules governing the protection of intellectual property rights, competition, and digital trade.<sup>2</sup> Further, the AfCFTA aims to establish a dispute settlement mechanism and an institutional framework for AfCFTA implementation and administration (Abrego and others 2020).

AfCFTA negotiations have proceeded in two phases. In phase I, members aimed to agree on measures that regulate trade in goods and services, simplify and harmonize trade procedures, and create a dispute settlement system. Significant parts of phase I negotiations are complete, and in these areas the focus now is on countries making proposals on how to implement the agreements. Concretely:

- On trade in goods, signatories have agreed to eliminate tariffs on 90 percent of non-sensitive product lines within five years (10 years for least developed countries [LDCs]) from January 1, 2021, while 7 percent of tariff lines (for sensitive goods) are to be liberalized within 10 years (13 years for LDCs). Each member may exclude from liberalization no more than 3 percent of tariff lines that represent no more than 10 percent of its intra-African imports. By July 2022, rules of origin had been agreed for 88 percent of goods (with remaining goods relating to automobiles, textiles, and clothing), and 46 countries had submitted their tariff schedules. Additionally, signatories have agreed to reduce nontariff measures to trade via the creation of institutional structures for the elimination of such barriers and reporting and monitoring tools.
- Regarding services trade, signatories have agreed on a protocol that provides for comprehensive liberalization of this type of trade, covering all services sectors and all modes of supply. Member countries are presently making proposals for national treatment and market access in five key services sectors—business services, communication, transportation, tourism, and financial services. So far, 25 countries have submitted their proposals. Further, the AfCFTA aims at facilitating services trade by harmonizing national regulatory frameworks. As a preparatory step, a stocktaking of regulatory frameworks has been completed for the five key sectors mentioned above.

<sup>1</sup> The formation of the Organization of African Unity in 1963 aimed at political and economic integration of the member states, and the 1980 Lagos Action Plan called for the creation of a continental customs union.

<sup>2</sup> Deep trade agreements (DTAs) "cover not just trade but additional policy areas, such as international flows of investment and labor, and the protection of intellectual property rights and the environment. While these legal arrangements are still referred to as trade agreements, their goal is integration beyond trade. DTAs aim at establishing five "economic integration" rights: free (or freer) movement of goods, services, capital, people, and ideas" (World Bank 2020a).

**Box 1.** *(continued)*

- Signatories have agreed to pursue trade facilitation measures that improve trade procedures and expedite the movement of goods in accordance with the World Trade Organization Trade Facilitation Agreement. They have committed to harmonize, simplify, and automate customs procedures, publish all the relevant regulations online, and adopt electronic payments of duties, among other things. Signatories intend to harmonize customs rules. They also aim to take stock of, and address, obstacles to trade (of any nature) in a set of trade corridors.

Phase II of the AfCFTA negotiations covers intellectual property rights, investment protection, and competition policies, as well as digital trade and the topic of women and youth in trade. So far, draft protocols have been prepared for the first three of these areas.

According to the AfCFTA Secretariat, trade under AfCFTA rules started in January 2021. However, commercially meaningful trade began in October 2022, when seven pilot countries—Cameroon, Egypt, Ghana, Kenya, Mauritius, Rwanda, and Tunisia—started trading a set of goods duty free under the AfCFTA “Guided Trade Initiative.”

## 2. The State of Trade and Trade Integration in Africa

Global experience suggests a promising opportunity for Africa to develop a successful growth lift-off strategy around the expansion of trade. Trade in Africa has grown only modestly in recent decades. The increase in merchandise trade has been dominated by the expansion of trade in unprocessed merchandise and fuel. The relatively modest role of manufacturing trade reflects the fragmented trade policy landscape in the continent and an overall trade environment that has constrained greater noncommodity trade within the continent and with the rest of the world. Accordingly, the composition of trade also reflects lower integration in regional and global value chains. In addition, services trade as a share of GDP has remained unchanged. Overall, this suggests that policies that improve the trade policy landscape and overall trade environment have the potential to foster significantly greater trade integration both within the continent and with the rest of the world and increase participation in regional and global value chains. This holds the promise that Africa can make the scaling up of trade and moving up the value chain a key pillar of a successful growth lift-off strategy that significantly increases living standards and employment for a rapidly growing labor force in coming decades.

### Evolution of Trade in Goods and Services

Trade in Africa as a whole has grown only modestly in recent decades, expanding from 49 percent of GDP in 2000 to 53 percent by 2019 (Figure 1).<sup>3,4,5</sup> This overall increase reflects a divergence of experiences in individual countries. About 60 percent of African countries experienced an increase in noncommodity merchandise and services trade openness and 36 percent enjoyed an increase of more than 10 percentage points (Figure 2). The share of manufactured goods trade remained stable at about 35 percent of GDP. The change in merchandise exports in individual countries has varied broadly in line with the share of commodities in their export structure. The biggest increases in merchandise exports in percent of GDP were observed in countries where exports were dominated by commodities (fuel and other minerals), whereas countries with relatively small share of commodities in their exports saw a decline in exports.

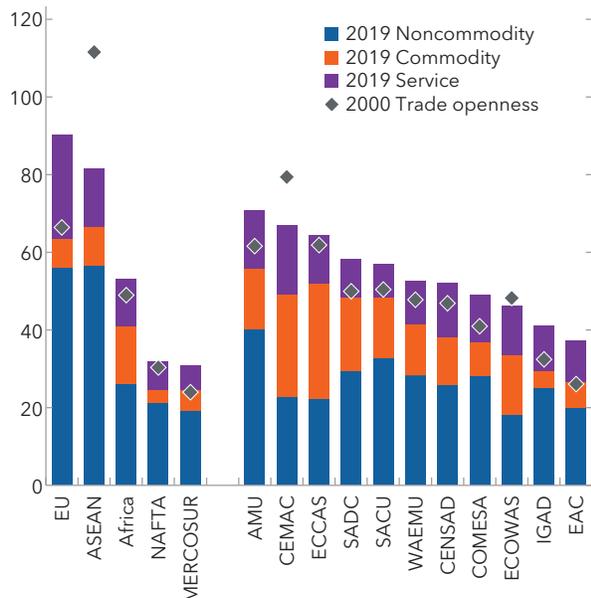
The dominant role of oil and commodity exports in trade with the rest of the world (Figure 3) when compared with other regional trade arrangements is also reflected in the increase in exports to fast growing large economies in Asia that are big importers of commodities. Accordingly, exports to China and India rose from 5 percent of total African exports in 2000 to 23 percent by 2019 while the share of traditional destinations

<sup>3</sup> The composition of country groups used throughout the paper is as follows. The EU includes 28 countries, including the United Kingdom, to ensure consistency over time. ASEAN comprises Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam. Singapore is excluded as its openness exceeds other ASEAN countries by a large margin and drives up ASEAN openness substantially. NAFTA includes Canada, Mexico, and the United States. MERCOSUR comprises Brazil, Argentina, Paraguay, Uruguay, and Venezuela to ensure consistent country composition over time. Africa includes both North African and sub-Saharan African countries. The composition of subregional groupings in Africa is detailed in Annex 1.

<sup>4</sup> Trade is measured as the sum of exports and imports as a share of GDP.

<sup>5</sup> The finding of a modest increase in Africa's trade does not take into consideration a potentially large volume of informal cross-border trade (for example, Lesser and Moisé-Leeman (2009) estimate that informal trade accounts for as much as 30–50 percent of intraregional trade).

**Figure 1. The Role of Trade across Regions**  
(Percent, exports and imports of merchandise and services trade as a share of GDP)



Sources: Harvard University, Atlas of Economic Complexity; IMF, World Economic Outlook database; and IMF staff calculations. Note: AMU = Arab Maghreb Union; ASEAN = Association of Southeast Asian Nations; CEMAC = Central African Economic and Monetary Community; CENSAD = 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; EU = European Union; IGAD = Intergovernmental Authority on Development; MERCOSUR = Southern Common Market; NAFTA = North American Free Trade Agreement; SACU = Southern African Customs Union; SADC = Southern African Development Community; WAEMU = West African Economic and Monetary Union.

such as the United States and the European Union has declined from 65 percent of total exports in 2000 to 38 percent by 2019 (Figure 4). Intra-regional exports have increased from 11 percent to 15 percent of total exports.<sup>6</sup>

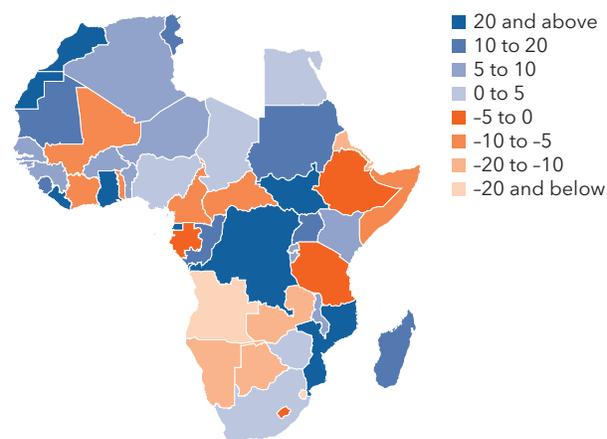
The overall patterns indicate that Africa's exports to the rest of the world are dominated by commodities while being more diversified and more processed within the region. This is consistent with the limited role of global and regional value chains in the continent's trade notwithstanding some recent progress with building regional value chains around basic manufacturing. For example, South African retailers have built local value chains by offshoring textile manufacturing to neighboring countries (Figure 5).<sup>7</sup> Nevertheless, backward and forward value-added linkages between African countries, a common measure of integration into value chains, overall remain limited (Figure 6).<sup>8</sup>

<sup>6</sup> Africa's exports to China and India, and other countries outside Africa, continue to be dominated by commodities, notably petroleum and mineral products, but noncommodity exports are also on the rise.

<sup>7</sup> See Gereffi (2014). In line with this, South Africa plays a relatively central role in the Southern part of the continent, but it has not emerged yet as a dominant continent-wide trading hub in the same way that China did in Asia, the United States in North America, or Germany in Europe (Abrego and others 2020).

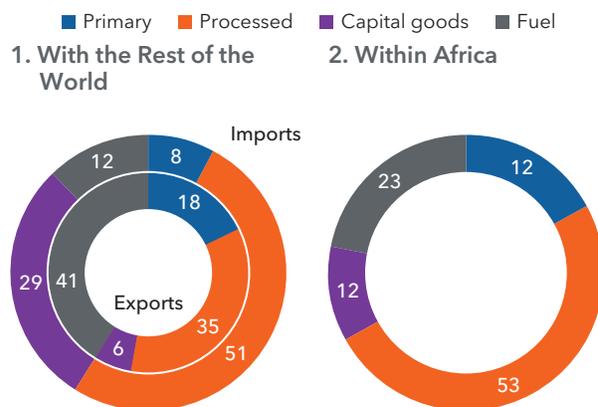
<sup>8</sup> A country's "backward linkages" capture the country's use of foreign value added in its exports. "Forward linkages" capture the use of its own value added in foreign countries' exports. Annex 4 describes data construction.

**Figure 2. Africa: Change in Noncommodity Merchandise and Services Trade, 2000-19**  
(Percent of country's GDP)



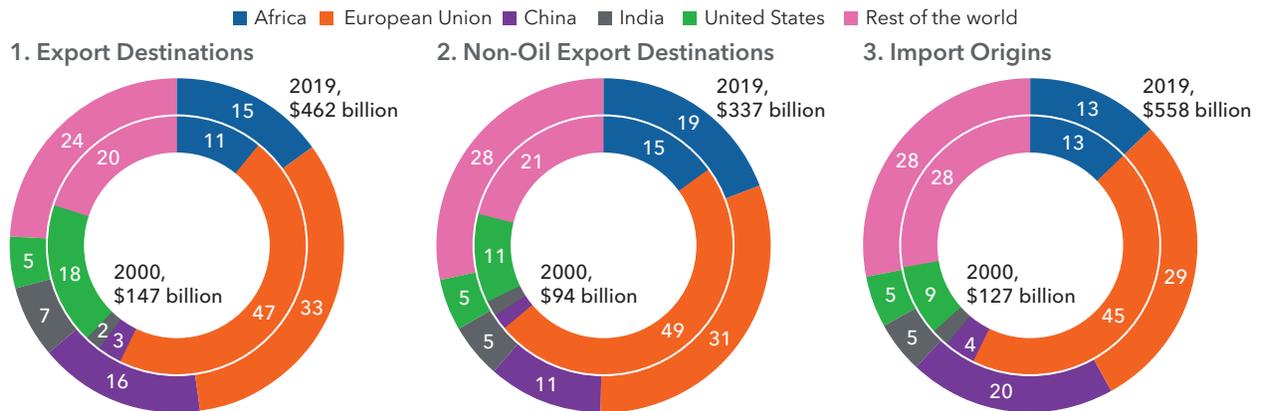
Sources: Harvard University, Atlas of Economic Complexity; IMF, World Economic Outlook database; and IMF staff calculations. Note: Due to lack of data, a shorter time period is used for Somalia (2013-19) and South Sudan (2011-19). Data are unavailable for Libya.

**Figure 3. Africa: Composition of Merchandise Trade, 2019**  
(Percent)



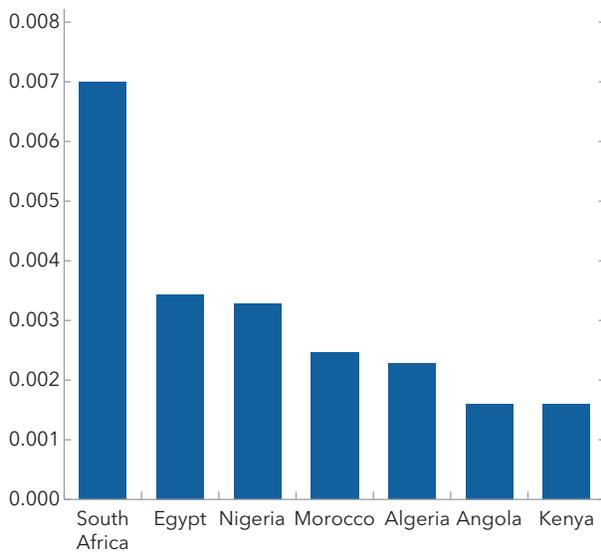
Sources: Harvard University, Atlas of Economic Complexity; and IMF staff calculations.

**Figure 4. Africa: Major Trade Partners, 2000 and 2019**  
(Percent)



Sources: Harvard University, Atlas of Economic Complexity; and IMF staff calculations.

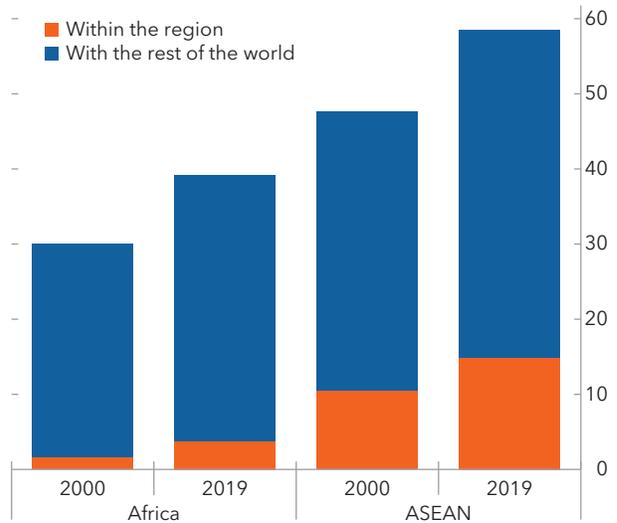
**Figure 5. Africa: Countries with Highest Centrality Index, 2019**



Sources: Harvard University, Atlas of Economic Complexity; and IMF staff calculations.

Note: Trade centrality index is a PageRank index that takes into account the size of exports for any given country, the number of its trade partners, and the relative weight of these partners in global trade (Brin and Page 1998). The higher the index, the more integrated the country in global trade networks.

**Figure 6. Backward and Forward Linkages, 2000 and 2019**  
(Percent of gross exports)



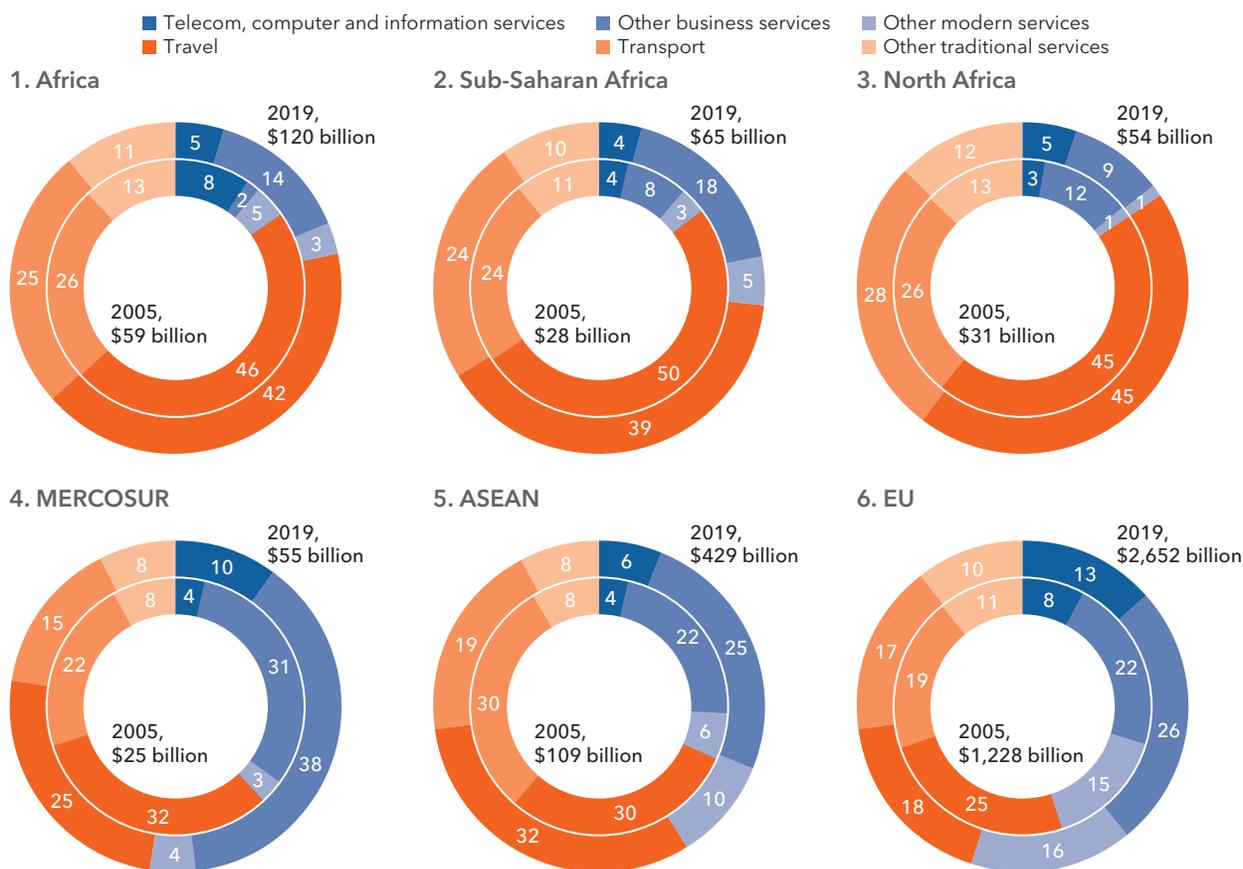
Sources: Eora Global Supply Chain Database; and IMF staff calculations.

Note: "Backward linkage" refers to the value added of other countries embodied in a given country's exports. "Forward linkage" refers to the value added of a given country embodied in other countries' exports. The figure shows the sum of backward and forward linkages across all countries expressed as a percentage of world gross export. ASEAN = Association of Southeast Asian Nations.

Services account for a relatively low share of total exports in Africa (16 percent compared with 25 percent globally) and services trade as a share of GDP has remained broadly unchanged over the past two decades.<sup>9</sup> While traditional services like travel and transport still account for the bulk of services exports (78 percent,

<sup>9</sup> The services sector accounts for more than two-thirds of the value added and employment in advanced economies, and 43 percent of value added and 31 percent of employment in low-income and developing economies. Improvements in information and communication technology (ICT) and reductions in trade costs over the past decades allowed global goods production to become more dispersed and resulted in increased tradability of services. See "Services trade in the global economy" at <https://www.oecd.org/trade/topics/services-trade/>.

**Figure 7. Composition of Services Exports, Select Regions, 2005 and 2019**  
(Percent)



Sources: IMF, Balance of Payments Statistics; and IMF staff calculations.

Note: Modern services (shades of blue) include telecommunication, computer and information services, financial services, other business services, and charges for the use of intellectual capital. Traditional services (shades of orange) include travel, transport, personal, cultural, and recreational services, manufacturing services on physical inputs owned by others, maintenance and repair services, insurance and pension services, construction, government goods and services. ASEAN = Association of Southeast Asian Nations; EU = European Union; MERCOSUR = Southern Common Market.

Figure 7), skill-intensive and high value-added modern services such as telecommunications and business services have been gaining ground.

## Challenges and Opportunities

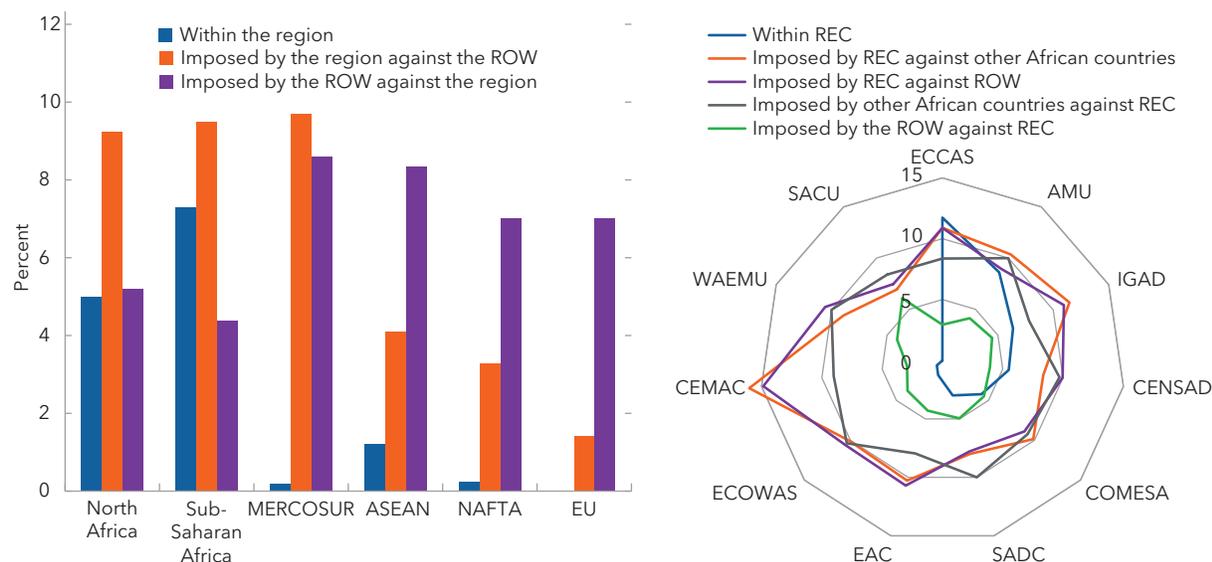
Looking at the trends in trade in Africa over past decades, a key question is what role policies and institutions have played in the evolution of trade in the continent. Policymakers have made efforts spanning decades to boost trade. For example, several RECs were established in Africa. All African countries are members of at least one REC, and some are members of two or more RECs.<sup>10</sup> However, the effectiveness of RECs in boosting trade has been uneven.<sup>11</sup> The RECs' limited impact reflects challenges in their design, lax enforcement (for example, insufficient and inconsistent application), and the fact that the multiple and overlapping memberships in regional trade arrangements have led to complexity and uncertainty, impeding implementation.<sup>12</sup>

<sup>10</sup> Six African countries belong to one bloc and the rest belong to two or three blocs, see IMF (2015) and Abrego and others (2020).

<sup>11</sup> Some RECs have supported the development of intraregional trade. For example, one-fifth of SACU and EAC exports are within Africa.

<sup>12</sup> World Bank (2022), Akinkugbe (2021), Woolfrey and Byiers (2019), Yang and Gupta (2005), Hailu (2014), de Melo and Tsikata (2015), Jung (2017).

**Figure 8. Import Tariffs, 2019**  
(Weighted average)



Sources: UNCTAD TRAINS; and IMF staff calculations.

Note: Within region tariff is zero for EU, and within REC tariff is zero for SACU, CEMAC, and WAEMU. AMU = Arab Maghreb Union; ASEAN = Association of Southeast Asian Nations; CEMAC = Central African Economic and Monetary Community; CENSAD = 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; EU = European Union; IGAD = Intergovernmental Authority on Development; MERCOSUR = Southern Common Market; NAFTA = North American Free Trade Agreement; REC = regional economic community; ROW = rest of the world; SACU = Southern African Customs Union; SADC = Southern African Development Community; UNCTAD = United Nations Conference on Trade and Development; WAEMU = West African Economic and Monetary Union.

In terms of outcomes, import tariffs on trade within Africa remain higher than comparable tariffs in other regions, and averaging 6 percent. This mainly reflects elevated tariffs on imports from other RECs although tariffs within RECs are also substantial in some cases (Figure 8). For example, while trade within Southern African Customs Union (SACU), Central African Economic and Monetary Community (CEMAC), and West African Economic and Monetary Union (WAEMU) is tariff-free, within-bloc tariff rates average 9 percent in Arab Maghreb Union (AMU) and 12 percent in Economic Community of Central African States (ECCAS).

Looking more broadly at the ease of trading, NTMs are also seen as relatively high in Africa.<sup>13</sup> For intra-African trade, NTMs are estimated to be equivalent to an import tariff of 18 percent on average (Figure 9, Annex 1), thus posing a substantially larger obstacle to trade than tariffs.

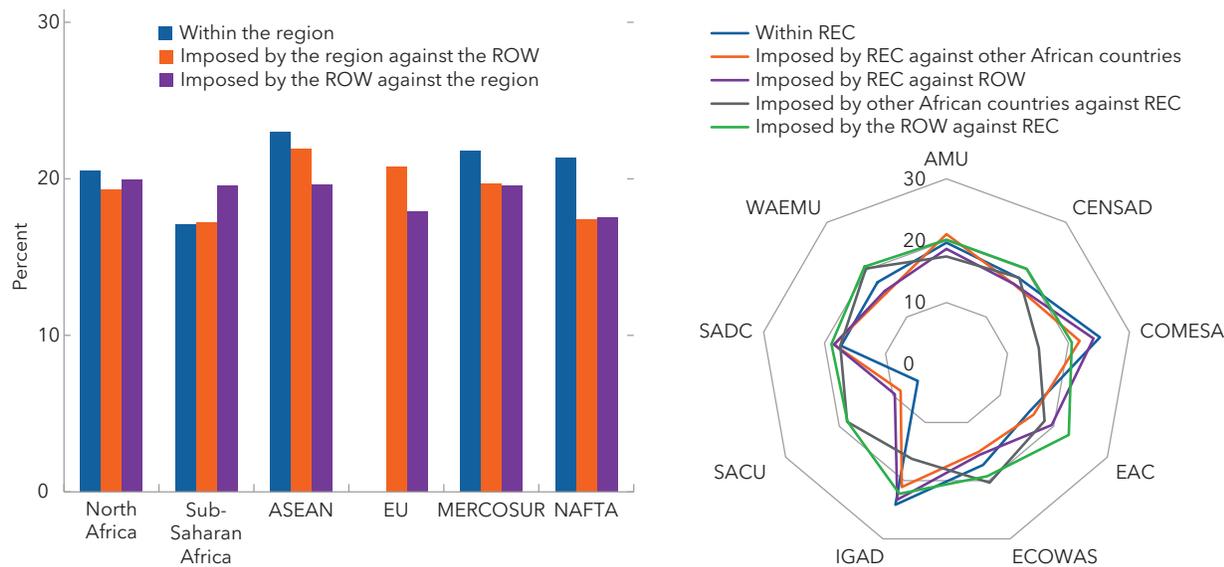
Beyond restrictive trade policies, the largest factor weighing on intra-African trade is the challenging trade environment, comprising such factors as transport infrastructure (including trans-border road, rail, port and air transport networks and border and customs procedures), telecommunication infrastructure, financial development, human capital, institutions, and restrictive product and labor market regulations (Figure 10).

Based on a subset of these features, the (nontariff-related) cost of trading across borders in Africa is estimated to be about double that in East Asia and OECD countries.<sup>14</sup>

<sup>13</sup> Nontariff measures are at-the-border policy barriers to trade other than tariffs, including price and quantity controls, import and export licenses, sanitary and phytosanitary measures, and technical barriers to trade. NTMs are a subset of broader "nontariff barriers" (NTBs), which also include transportation and logistics costs, and behind-the-border barriers arising from differences in regulatory standards. While some NTMs pursue important goals like consumer protection, differences in such protections between countries can still hinder trade.

<sup>14</sup> This measure of trade costs includes a broad range of trade-related costs other than tariffs. See Portugal-Perez and Wilson (2008).

**Figure 9. Nontariff Measures, 2019**  
(Tariff-equivalent weighted average)

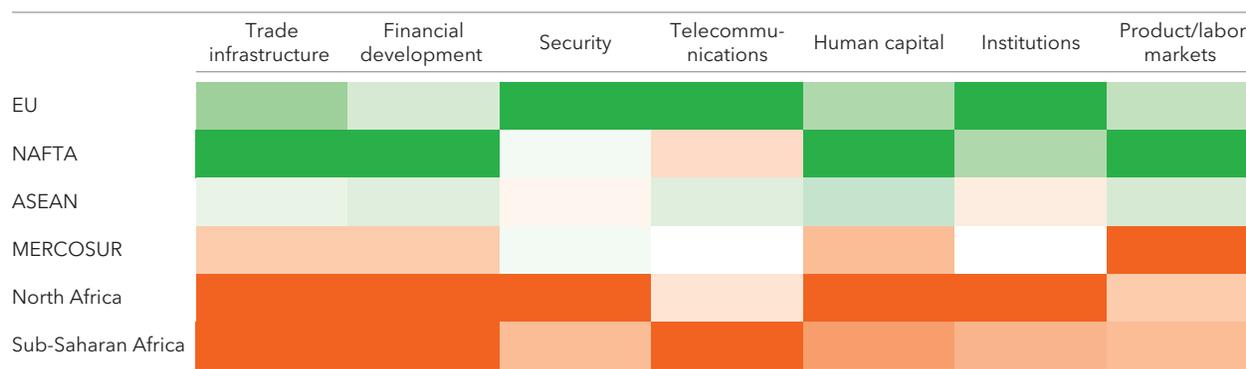


Sources: UNCTAD TRAINS; and IMF staff calculations.

Note: For details on the calculation of tariff-equivalent estimates of nontariff measures, see Annex 2. AMU = Arab Maghreb Union; ASEAN = Association of Southeast Asian Nations; CEMAC = Central African Economic and Monetary Community; CENSAD = Community of Sahel -Saharan States; COMESA = Common Market for Eastern and Southern Africa; EAC = East African Community; ECOWAS = Economic Community of West African States; EU = European Union; IGAD = Intergovernmental Authority on Development; MERCOSUR = Southern Common Market; NAFTA = North American Free Trade Agreement; REC = regional economic community; ROW = rest of the world; SACU = Southern African Customs Union; SADC = Southern African Development Community; UNCTAD = United Nations Conference on Trade and Development; WAEMU = West African Economic and Monetary Union.

The evolution of trade in the African continent as reviewed above and the overall policy and institutional backdrop suggest that addressing the key barriers to trade by implementing the AfCFTA and improving the broader trade environment could provide a substantial boost to trade and lead to narrowing the gap with other regions in terms of the role that trade can play in lifting growth, living standards and employment. These policies are explored in Chapter 3.

**Figure 10. Trade Environment Indicators**  
(Index)



Sources: Institute for Health Metrics and Evaluation; International Telecommunication Union, World Telecommunication/ICT Indicators Database; World Bank, Logistics Performance Index; World Bank, World Development Indicators; World Bank, Worldwide Governance Indicators; World Economic Forum, Global Competitiveness Report; and IMF staff calculations.

Note: Indices are normalized between 0 (low performance, shaded orange) and 1 (high performance, shaded green), with the median for each indicator shaded white. MERCOSUR excludes Venezuela. Construction of trade environment indicators is described in Annex 1. ASEAN = Association of Southeast Asian Nations; EU = European Union; MERCOSUR = Southern Common Market; NAFTA = North American Free Trade Agreement.

### 3. Achieving Greater Trade Integration through the African Continental Free Trade Agreement

Empirical analysis finds that a reform agenda aimed at implementing AfCFTA plans to lower both tariffs and NTMs, when combined with substantial improvements in the trade environment, has the potential to boost Africa's intraregional and overall merchandise trade substantially. This would lead to large gains in income and living standards. A strengthening of the overall trade environment would boost services trade as well, which would be further enhanced by services trade liberalization. Implementation of AfCFTA and improving the trade environment would also support integration into GVCs, offering opportunities for strengthening manufacturing and achieving economies of scale, promoting economic diversification, and generating improved economic dynamism. Furthermore, progress towards the objective of making the AfCFTA a deep trade agreement, including through regulatory alignment on goods and services provision, would open up additional opportunities for trade. All these steps should be part of broader efforts to overcome long-standing barriers to integration such as the use of import tariffs for import substitution or as a substantial source of revenue. These efforts need to be grounded in a strong policy framework that ensures macroeconomic stability and promotes a favorable business environment.

#### Quantifying the Impact of AfCFTA Implementation

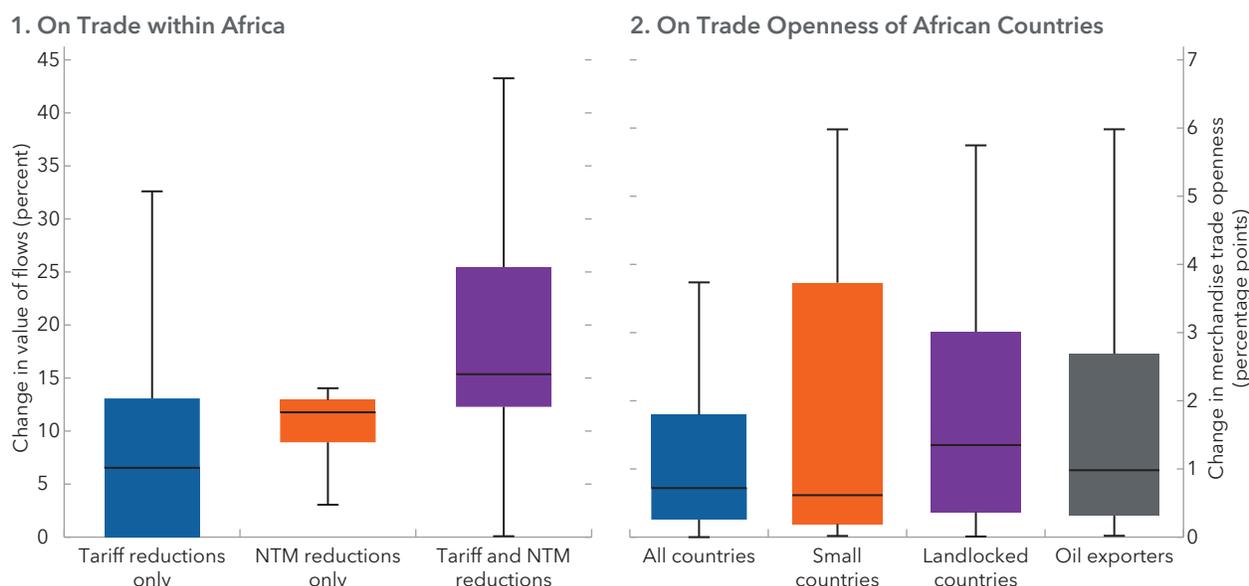
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The empirical analysis in this paper complements previous analyses along several dimensions. It (1) provides novel indicators of Africa's trade environment and NTMs; (2) presents quantitative analysis of how reductions in tariffs and NTMs, as well as improvements in the trade environment would boost trade flows; and (3) analyzes the importance of trade agreements such as the AfCFTA for countries' participation in regional value chains, which has been a driver of growth in other regions, using both macroeconomic and firm-level data.

#### Impacts on Trade in Goods

The empirical analysis quantifies the drivers of, and obstacles to, bilateral merchandise trade flows in Africa, using the gravity model with a range of explanatory variables. In addition to standard explanatory variables such as geographic and cultural distance, the specification includes measures of bilateral tariffs and NTMs, as well as of countries' trade environments. These are captured with indicators of trade infrastructure, financial development, and domestic security, constructed using a range of sources and a statistical method that identifies common components in these data. The trade infrastructure indicator combines information on the quality of roads and rail network, ports, and customs procedures; the financial development indicator combines information on firms' access to financing; and the security indicator combines information on the risk of terrorism and domestic conflict. Annex 1 presents the data and the construction methodology for the indicators.

The model is able to explain observed global and African trade flows well and finds that reductions in tariffs and NTMs, as well as improvements in the trade environment all offer opportunities for greater trade in Africa. In particular, (1) a 1 percentage point reduction in weighted average tariffs between a pair of African countries would boost bilateral goods trade by about 2 percent, consistent with findings in the literature; (2) the tariff-equivalent impact of existing NTMs between African countries is three times as large as the impact

**Figure 11. Effects of AfCFTA**

Source: IMF staff calculations.

Note: In panel 1, the figure shows respectively the distribution of first-order impacts on intra-African trade flows (1) of reductions in intra-African tariff barriers to one-tenth of their current value, (2) of reductions in intra-African nontariff measures (NTMs) to one-half of their current value, and (3) of both. The impacts are based on the gravity-estimated tariff and NTM elasticities described in Annex 2. In panel 2, the figure shows the distribution of first-order impacts on the merchandise trade openness of different groups of African countries, with openness measured as the percentage share of merchandise exports plus imports in countries' GDP. Changes in openness are obtained by aggregating changes in bilateral merchandise trade flows to the country level. Small countries are defined as those with populations of fewer than 10 million. Oil exporters are defined as countries with oil exports making up more than 10 percent of total merchandise export value. AfCFTA = African Continental Free Trade Area.

of the tariffs that are presently in effect;<sup>15</sup> and (3) improvements in trade infrastructure, financial development and security would have significant positive effects on African countries' trade (see below as well as Annex 2 for detail on estimation methodology and results).

Using these estimates, two policy scenarios are considered and their trade-boosting potential determined:

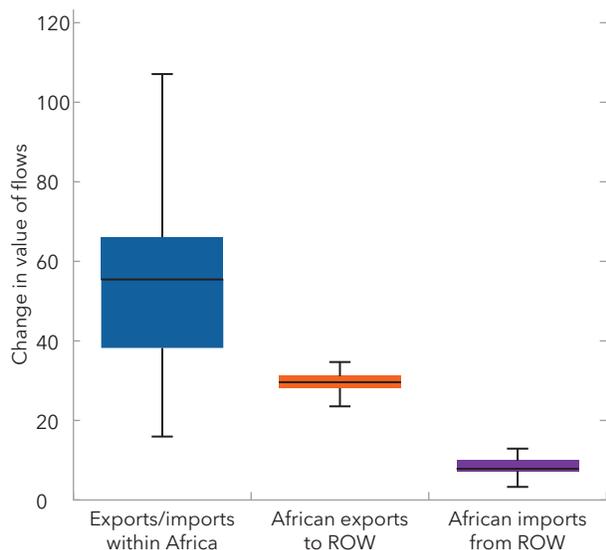
- First, an "AfCFTA scenario" assumes that average weighted tariffs will be cut to one-tenth of their current level, and NTMs will be cut by half, in line with assumptions in the literature (Table 1). Under this scenario, AfCFTA implementation would raise bilateral goods trade within the region by 7 percent from tariff reductions alone, by 12 percent from NTM reductions alone, and by 15 percent both combined, with significant heterogeneity around these median effects (Figure 11, panel 1).<sup>16,17</sup> The median African country would see its trade openness rise by just under 1 percentage point of GDP, with the largest gains concentrated among small countries and landlocked countries: one-quarter of small African countries would see openness increase by more than 4 percentage points, and one-quarter of landlocked countries by more than 3.5 percentage points (Figure 11, panel 2).

<sup>15</sup> The tariff equivalent magnitude of the (qualitative) NTM measure is computed as the normalization of this measure that equalizes its estimated impact on trade with the effect of a 1 percent reduction in tariffs. See Annex 2 for details.

<sup>16</sup> Throughout the paper "first-order" trade impacts are used to describe the direct impact of changes in trade barriers on trade flows. This abstracts from indirect general equilibrium effects (which are of second-order magnitude in standard gravity models with conventional elasticities; see Baier and Bergstrand (2009)) and potential dynamic impacts of trade liberalization on countries' economic structures.

<sup>17</sup> The median impact of combined tariff and NTM reductions is smaller than the sum of the individual median effects because the incidence of tariff barriers and NTMs is imperfectly correlated in the data. As a result, the country pair which is the median beneficiary from tariff reductions is not the same as the country pair that is the median beneficiary from NTM reductions, or the country pair that is the median beneficiary from a combined reduction of tariffs and NTMs.

**Figure 12. Effects of AfCFTA+ on Trade by Partner (Percent)**



Source: IMF staff calculations.

Note: The figure shows the distribution of first-order impacts of reductions in intra-African tariff barriers to one-tenth of their current value, reductions in intra-African nontariff measures (NTMs) to one-half of their current value, and improvements in trade infrastructure, financial development and domestic security that bring the median African country in line with the median of the “next best” major regional trade agreement. The box plots split the distribution of effects respectively into (1) effects on intra-African trade flows, (2) African exports to the rest of the world (ROW), and (3) African imports from the ROW. The impacts are based on the gravity-estimated tariff, NTMs, and trade environment elasticities described in Annex 2. AfCFTA = African Continental Free Trade Area.

Second, an “AfCFTA+ scenario” complements the reductions in tariffs and NTMs in the AfCFTA scenario with improvements in the trade environment. Specifically, the scenario assumes that trade infrastructure, financial development, and security indices experience step increases that are uniform across African countries and that bring the regional median of each indicator in line with the median of the next-best performing comparator free trade agreement (Association of Southeast Asian Nations [ASEAN] for trade infrastructure and security, and the Southern Common Market [MERCOSUR] for financial development).<sup>18</sup> In this scenario, the median bilateral trade flow between African countries would grow by 53 percent, of which 15 percentage points would be from tariff and NTM reductions and the remaining 38 percentage points from improvements in the trade environment (Figure 12). The impact of improvements in trade infrastructure and financial development is larger for trade over longer distances, as both improvements reduce trade costs, which tend to rise with distance. Importantly, beyond strengthening intra-African trade, improvements in the trade environment would also boost Africa’s trade with the rest of the world. Median exports from Africa to the rest of the world would grow by 29 percent, and median imports from the rest of the world by 7 percent.<sup>19</sup>

In line with impacts on trade, improvements in the trade environment would multiply beneficial impacts on income gains and reductions in poverty. Using a standard estimate of the effect of increases in trade openness on real per capita income,<sup>20</sup> the above findings suggest that the median African country could see real per capita income rise by 1.25 percent under the AfCFTA scenario thanks to the boost to intra-African trade arising from lower tariffs and NTMs on trade between African countries. Much more significantly, under the AfCFTA+ scenario that adds the assumption of substantial improvements in the trade environment, the median country could see per capita income gains of 10.6 percent.<sup>21</sup> This much larger payoff reflects the fact that improvements in the trade environment would boost not only intra-African trade but also trade with the rest of the world, which is five to six times larger.

<sup>18</sup> See Annex 2 for details. Note also that while AfCFTA plans on trade facilitation (Box 1) would feed into the assumed improvement in trade infrastructure and may be a key element of efforts to enhance the trade environment, the assumed improvement in the trade environment is broad-based, comprising improvements in other areas as well.

<sup>19</sup> The estimates of increases in trade from the scenarios above are broadly in line with those in the existing literature.

<sup>20</sup> The literature finds that a 1 percentage point increase in trade openness causes long-term real per capita income to increase by between 0.5 and 2 percent (Frankel and Romer 1999, Irwin and Terviö 2002, Feyrer 2019). The estimates of growth gains reported here assume an elasticity of 1.25, the midpoint of the range of elasticities found in the literature.

<sup>21</sup> These figures should be interpreted as long-term income effects that would be expected to manifest within 10 years following the policy change. However, note that the time horizon for changes in the policy variables considered in this paper may differ as, for example, the significant infrastructure upgrades may have a longer lead time than tariff cuts.

The above estimated per capita income gains from reductions in tariffs and NTMs as well as improvements in the trade environment are broadly in line with previous research findings on the AfCFTA (Table 1). For example, the World Bank has found that AfCFTA implementation including substantial improvements in trade facilitation, comparable to the AfCFTA+ scenario above, could yield per capita income gains of 7-9 percent by 2035 (World Bank 2020b, 2022). The gains predicted in this study are also in line with findings on payoffs from trade liberalization more generally, which indicate average cumulative growth gains 10-20 percent over the decade following the liberalization (see Irwin 2019 for a survey of the literature).

In line with large positive income effects, regional trade integration can have large beneficial impacts on poverty. Using assumptions broadly similar to the AfCFTA+ scenario, the World Bank finds that AfCFTA implementation may lift 30-50 million people from extreme poverty by 2035 (World Bank 2020b, 2022).

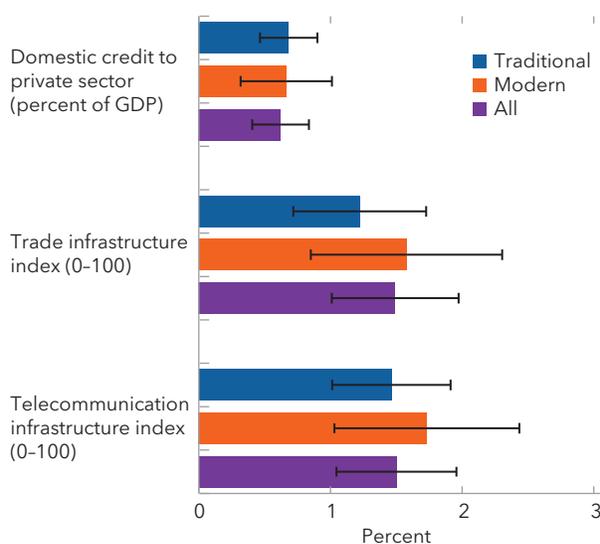
## Impacts on Trade in Services

A broadly similar analysis as was done for goods trade was conducted for services trade. The analysis uses a cross-country specification to estimate the impact of the trade environment on services exports, controlling for gravity regression-inspired country characteristics such as exporter size (GDP), geography (landlocked or with access to the sea), and price competitiveness (output-purchasing power parity (PPP) index, see Annex 3 for a detailed discussion of the methodology and results).<sup>22</sup> Countries' trade environment is captured through indicators of trade infrastructure; telecommunications infrastructure, particularly relevant for trade in services; and financial development operationalized as the credit-to-GDP ratio (IMF 2015; IMF 2019; see Annex 1 for a discussion of data construction).<sup>23</sup>

The analysis finds that the trade environment plays an economically and statistically significant role in boosting services exports. In particular, improvements in trade and telecommunications infrastructure have the largest impact on services exports, followed by financial development (Figure 13). Moreover, improvements in trade and telecommunication infrastructure boost modern services exports more than traditional services exports, whereas the impact of improvements in financial development is similar for both types of services exports.

Using the results of this analysis, a policy scenario was constructed to assess the impact of improvements in the trade environment on services exports of African countries. Consistent with the scenario analysis prepared for goods trade, it was assumed that the median African score for each trade environment indicator increases uniformly to the median of the next-best performing comparator free trade agreement (MERCOSUR for the three indicators).

**Figure 13. Marginal Impact by Type of Services**  
(Percent of services exports)



Source: IMF staff calculations.

Note: The figure shows the marginal effects of financial development and trade and telecommunication infrastructure on exports of modern and traditional services.

<sup>22</sup> The analysis covers African countries' services exports both to other African countries and to the rest of the world, given insufficient data on intra-African services exports alone.

<sup>23</sup> Annex 3 also discusses a specification with socioeconomic and institutional environment indicators—product and labor market efficiency, level of human capital development, and strength of institutions. Product and labor market efficiency affects the cost and quality of services supplied. Human capital plays a key role in determining productivity and the ability to learn by doing and to adopt new technologies. Strength of institutions affects the ability to benefit from trade liberalization, including by attracting investment.

**Table 1. Estimates of the Impact of AfCFTA Implementation on Trade and Other Key Outcomes**

Study	Methodology	Headline Findings on AfCFTA Impact on Trade Flows
<i>Making the Most of the African Continental Free Trade Area: Leveraging Trade and Foreign Direct Investment to Boost Growth and Reduce Poverty</i> (World Bank 2022)	Using Envisage CGE model and starting with the scenario of World Bank (2020b), adds a number of “behind the border” harmonization measures and incorporates impacts of increased foreign direct investment flows.	Up to 109 percent increase in the value of intra-African trade, boost to output and productivity, real income gains of up to 9 percent, lifting up to 50 million people from extreme poverty.
<i>The African Continental Free Trade Area: Economic and Distributional Effects</i> (World Bank 2020b)	Using Envisage CGE model, estimates the impact of 90 percent reduction in tariffs, 50 percent reduction in nontariff barriers, and 50 percent reduction in trade costs due to trade facilitation measures.	90 percent increase in the value of intra-African trade, of which about one fourth from tariff reductions, one third from reductions in broadly defined nontariff barriers, and one half from improved trade facilitation. Boost to output and productivity. Real income gains of 7 percent, lifting 30 million people from extreme poverty.
<i>The African Continental Free Trade Agreement: Welfare Gains Estimates from a General Equilibrium Model</i> (Abrego and others 2019)	Using a micro-founded general equilibrium trade model, estimates the impact of complete elimination of tariffs and 35 percent reduction in nontariff barriers on trade flows.	80 percent increase in value of intra-African trade flows, mostly due to reduction in nontariff barriers and a 2–4 percent increase in real income for the continent.
<i>African Economic Outlook 2019</i> (AfDB 2019a)	Using a CGE model, estimates the impact of elimination of all tariff and nontariff barriers and improved trade facilitation on trade flows.	132 percent increase in value of intra-African trade flows, of which about 10 percent from tariff reductions, 70 percent from reductions in broadly defined nontariff barriers and 30 percent from improved trade facilitation. Real income in Africa increases by 4.5 percent.
<i>Is The African Continental Free Trade Area A Game Changer for the Continent?</i> (IMF 2019)	Using a gravity model, estimates first-order impact of 90 percent reduction in tariffs on trade flows.	Increase in intraregional trade flows by 16 percent. When trade liberalization is combined with effective structural reforms, real GDP increases by up to a third. AfCFTA has limited and mixed effects on inequality, reducing the Gini coefficient by 3 percent for agricultural exporters and increasing it by 3 percent for manufacturing exporters.
<i>The Continental Free Trade Area: A GTAP Assessment</i> (Jensen and Sandrey 2015)	Using a CGE model, estimates the impact of elimination of all tariffs, and 50 percent reduction in nontariff barriers broadly defined on trade flows.	Country-level trade impacts generally below 10 percent (effects on intra-African flows not reported), mostly due to reduction in broadly defined nontariff barriers. Real GDP increases by 0.5–1 percent by 2025 and employment increase by a quarter of percent.

Source: IMF staff.

Note: AfCFTA = African Continental Free Trade Area; AfDB = African Development Bank; CGE = computable general equilibrium.

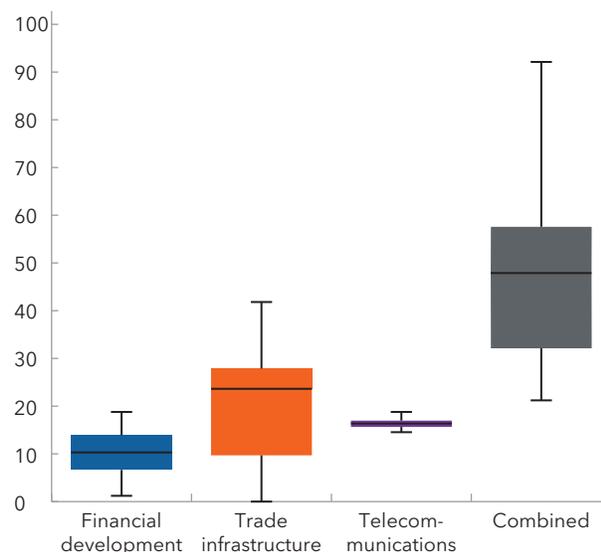
Combining this scenario with the above-mentioned estimates suggests that improvements in the trade environment would boost Africa's services trade substantially (Figure 14). Strengthening of trade infrastructure would have the largest impact (23.6 percent), followed by telecommunications infrastructure (16.3 percent) and financial development (10 percent). A scenario in which all three indicators improved simultaneously would boost services exports by about 50 percent.

Adding to the impacts of a strengthened trade environment, services trade liberalization would boost services trade and incomes further. The analysis did not quantify these gains due to data limitations. Bilateral services trade data and data on barriers to trade in services are available only for a small fraction of African countries.<sup>24</sup>

### Impacts on Integration into Global Value Chains

An important aspect of Africa's trade integration relates to the integration into GVCs, which have driven trade and growth in other regions.<sup>25</sup> In GVCs, different stages of the production process are spread across several countries, each providing some of the steps in the value-added chain needed to produce a good. The beneficial impacts of integration into GVCs result in part from their ability to raise participating countries' manufacturing productivity by allowing firms to specialize, source cheaper inputs, and benefit from knowledge transfers.<sup>26</sup> It may also allow poor countries to overcome demand-side constraints on the development of industrial processes with strongly increasing returns to scale.<sup>27</sup> In this way, it may facilitate countries' efforts to transition to more sophisticated manufacturing.<sup>28</sup> While the reverse is also true—countries with higher productivity, lower costs, and better skills are in general better placed to enter GVCs—the key question is what AfCFTA implementation and supporting reforms can do to contribute to the emergence of stronger intra-African value chains and help African countries enhance their integration into value chains with countries outside the continent, including “moving up the value chain.”<sup>29</sup>

**Figure 14. Bringing Africa's Trade Environment on Par with the Next-Best Performing FTAs**  
(Percent growth of services exports)



Source: IMF staff calculations.

Note: The figure shows the impact on services exports of bringing Africa's performance for a given indicator on par with the “next-best” performing free trade agreement (FTA). The medians are represented as the horizontal lines inside the boxes. The whiskers refer to the 25th and 75th percentiles.

<sup>24</sup> For instance, the OECD Services Trade Restrictiveness Index, which provides information on regulations affecting trade in services in 22 sectors, is available only for South Africa. The ad valorem equivalents of the barriers faced by foreign suppliers of services estimated by Jafari and Tarr (2017) are an exception to this, but they were calculated more than two decades ago, which limits their applicability today. Nevertheless, using the Jafari and Tarr data, the World Bank finds that cutting nontariff barriers in the services sector by half would spur intra-African services trade by 14 percent and services trade with the rest of the world by 4 percent (World Bank 2020b).

<sup>25</sup> See UNCTAD (2013), Jithin, Ashraf, and Umar (2023).

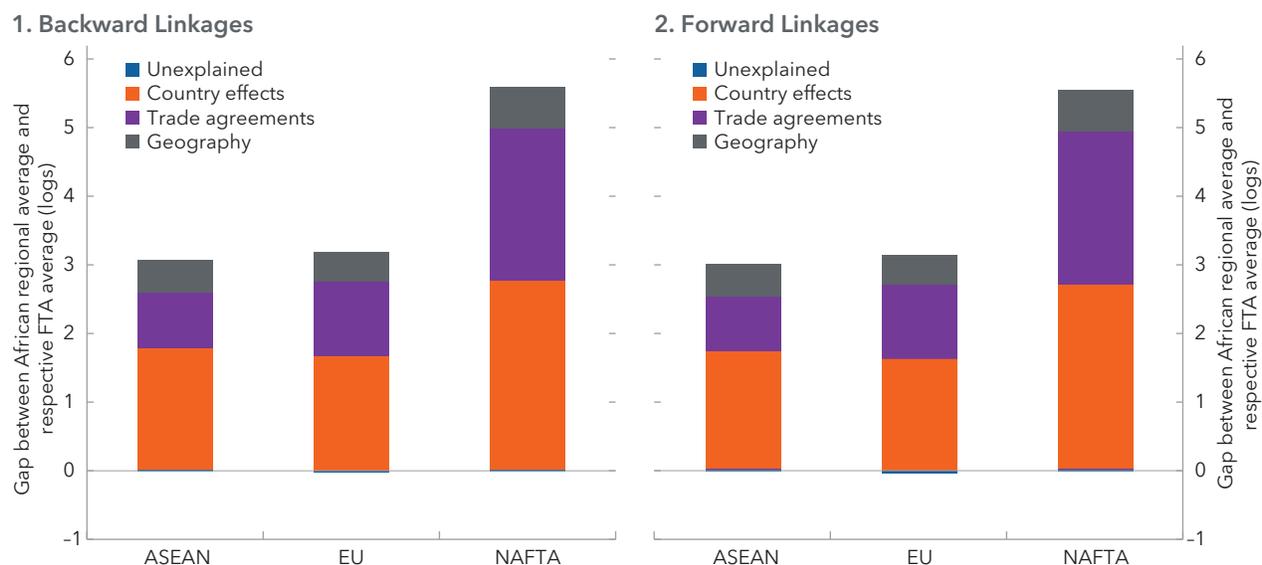
<sup>26</sup> See Grossman and Rossi-Hansberg (2008), Topalova and Khandelwal (2011), Bas and Strauss-Kahn (2014), Halpern, Koren, and Szeidl (2015), Taglioni and Winkler (2016), and Chor, Manova, and Yu (2021). In turn, countries' level of development, industrial structure and factor endowments have also been shown to affect their ability to participate in GVCs (OECD 2015, World Bank 2020c).

<sup>27</sup> See Goldberg and Reed (2022).

<sup>28</sup> For example, Vietnam has emerged as the world's second-largest smartphone exporter, through rapid integration into electronics GVCs since 2000, facilitated by a large decline in import tariffs in this sector. See Pham and others (2019), World Bank (2019).

<sup>29</sup> This term refers to the transition from exporting mainly raw materials to providing increasingly sophisticated parts of production.

**Figure 15. Contributors to Gap between Intra-African GVC Integration and Intra-FTA GVC Integration for Major FTAs**  
(Log differences)



Source: IMF staff calculations.

Note: The figure shows log difference between average backward and forward linkages between member countries of three major free trade agreements (FTAs) and average backward and forward linkages between African countries. The decomposition of the difference into the contributions of country effects, geography, trade agreements and unexplained factors is based on estimates obtained from the regression analysis described in Annex 4. ASEAN = Association of Southeast Asian Nations; EU = European Union; GVC = global value chain; NAFTA = North American Free Trade Agreement.

Empirical analysis finds that both country characteristics and trade agreements are important determinants of countries' integration into GVCs. To shed light on the contribution of three broad factors to the intensity of GVC linkages—country characteristics, trade agreements, and geography—an analysis was conducted using data for 186 countries.<sup>30</sup> Geography and country factors were found to play a major role in explaining differences in GVC integration. Nevertheless, trade agreements can have a sizeable impact on countries' propensity to forge value chain links as well. By lowering tariffs and other policy barriers to trade, the average trade agreement is found to be associated with a 39 percent increase in both backward and forward linkages between participating countries.<sup>31</sup> The results also suggest that deep trade agreements (such as the EU, North American Free Trade Agreement [NAFTA], and ASEAN) have been more successful in stimulating GVC integration among their members than more shallow agreements.

Using these estimates, the analysis finds that country-specific factors and trade agreements contribute the most to the gap between average value-chain linkages within Africa and average such linkages within the ASEAN, NAFTA, and the EU (Figure 15):

- Country-specific factors account for the largest portion of these gaps. These factors cover a wide range of country characteristics, of which the most important for value chain integration are the size of economies (as measured by GDP) and the output share of higher-end manufacturing (including of products such as electrical equipment and machinery and transport equipment). One possible explanation for Africa's scarcity of local cross-border value chains, therefore, is that its largest economies—Egypt, Nigeria, and South Africa—may not yet have acquired the size and higher-end manufacturing that would allow them to act as regional value chain hubs in the same way that China, Germany, or the United States do in their respective regions.

<sup>30</sup> See Annex 4 for a detailed discussion of the methodology and results.

<sup>31</sup> These linkages show different forms of integration into value chains. Backward linkages capture the inclusion of imported inputs in a country's output, while forward linkages capture inclusion of a country's output in other countries' production processes.

- Trade agreements account for the second-largest share of the gap. This reflects the limited coverage and depth of Africa's existing trade agreements (Chapter 2). This implies that there may be significant scope for the unification of Africa's trade policy landscape and the envisaged deepening of trade integration under the AfCFTA to boost cross-border value chains in Africa and provide the market size needed for manufacturing industries to flourish.

A caveat to the above findings on the AfCFTA's capacity to support GVC integration depends on trade barriers falling to below a low threshold value (Yi 2003, 2010). This is because GVCs require intermediate inputs to cross country borders multiple times as they move along the production chain. To succeed in supporting the emergence and further development of GVCs within Africa, AfCFTA implementation will thus need to be combined with a substantial improvement in the trade environment to achieve a sufficiently large reduction in trade costs. This is where the improvements to the trade environment discussed earlier will have to play a key role. A complementary analysis of African firms' decisions to engage in exporting and participate in GVCs suggests that strengthening customs efficiency, including clearance times for exports and imports, would be particularly impactful (Box 2). Echoing the earlier findings, the analysis also highlights the role of financial development (access and depth) and infrastructure quality in firms' decisions on engaging in exports and their GVC participation. Reducing informality would further support exports and GVC participation.

In addition to strengthening intra-African value chains, AfCFTA implementation and improvements in the trade environment would also support better integration of African countries into value chains with countries in other continents if policymakers ensure sufficiently low trade costs with the rest of the world as well. As discussed above, improvements in the trade environment would not only lower the costs of intra-African trade but also the costs of trade with the rest of the world, thereby providing opportunities for greater value chain integration with countries outside Africa. Further, development of intra-African value chains could conceivably be a stepping stone toward better integration into value chains with countries outside the region. For example, to the extent that strengthened intra-African value chains would allow a strengthening of manufacturing industries, this should put African countries in a better position to take on manufacturing in value chains with third countries, thereby "moving up the value chain" from today's position of providing mainly raw materials.<sup>32</sup>

## Implementing the AfCFTA and Complementary Policies

To establish the AfCFTA as a deep trade agreement, as intended, policymakers would need to both complete implementation of the steps agreed under phase I and advance on the negotiation and implementation of phase II.

Under phase I of AfCFTA, member countries will need to agree on rules of origin for the remaining 12 percent of goods (relating to automobiles, textiles, and clothing) and complete the process of submitting tariff schedules. Similarly, regarding the liberalization of services trade, member countries would need to complete efforts on the initial set of five services sectors (see Box 1) and tackle liberalization in the remaining services sectors. Making progress on lowering NTMs should also be a high priority as NTMs constitute a significantly larger barrier to trade between African countries than tariffs, as set out above. Progress under the institutional structures that have been created for the reporting and resolution of individual NTMs could be accelerated by taking stock of NTMs in a systematic fashion and devising a process for lowering them.

<sup>32</sup> WTO/IDE-JETRO (2011) makes the case that regional clustering of supply chains paved the way for the role of "Factory Asia" in global trade. Baldwin (2013) argues that the successful integration of Asia as well as North America and Europe into GVCs rests on strong cross-border supply chain relationships within these regions. Diakantoni and others (2017) also show that regional hubs play a central role in GVC networks.

## Box 2. Determinants of African Firms' Decision to Export and Participate in GVCs

This box investigates how the trade environment affects African firms' export activities and participation in global value chains (GVCs). The analysis draws on data from the World Bank Enterprise Survey, which includes data on the operating environment and firm attributes of more than 96,000 non-agriculture formal firms (including about 24,000 firms surveyed in 45 African countries) between 2010 and 2022.

The analysis uses the following specification:

$$TI_{ijst} = \beta Y_{ijst} + \gamma X_{ijst} + C_j + S_s + \theta_t + \varepsilon_{ijst},$$

where  $i$ ,  $j$ ,  $s$ , and  $t$  denote firms, countries, sectors, and years, respectively. The  $TI_{ijst}$  is one of the measures of a firm's export activities; the  $Y_{ijst}$  are the trade environment indicators as perceived by firms; and the  $X_{ijst}$  are firm characteristics. The  $C_j$ ,  $S_s$ , and  $\theta_t$  terms account for unobservable factors at the country, sector, and year levels, and  $\varepsilon_{ijst}$  is the error term.

Firms' export activities are captured by three dependent variables: two proxies of a firm's propensity to export including an exporter dummy that takes the value of one if the firm exports at least 10 percent of its sales and a GVC participation dummy that takes the value of one if the firm exports at least 10 percent of its sales and sources at least 10 percent of its inputs from abroad; and one measure on export intensity, computed as the value of exports over sales.

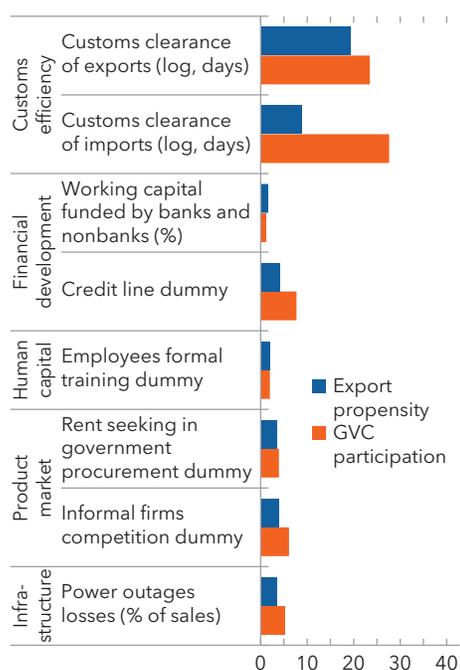
Trade environment indicators as perceived by firms are sorted into eight groups: (1) energy and transport infrastructure; (2) digital technology and innovation (introduction of new products/services in the firm's main market, adoption of new or significantly improved processes, and decision to engage in research and development); (3) financial development (access to a line of credit/loan, working capital and fixed assets funded by banks and nonbanks); (4) customs efficiency (time needed to clear imports and exports in customs); (5) product market conditions (competition from the informal sector, rent seeking in government procurement, and regulatory burden); (6) labor market conditions (average worker wage and labor market regulations); (7) human capital (experience of the firm's manager and existence of training for employees); and (8) security (losses due to theft and vandalism, and whether the firm paid for security).

Firm characteristics include firm size (number of full-time employees); age (years of existence); location (a large city); and ownership structure (presence of women among owners, share of foreign ownership, and whether the establishment is part of a large firm).

Using the estimates from the specification above, a policy scenario is constructed to illustrate the improvements to firms' export activities, should the trade environment indicators improve to the levels seen in a benchmark free trade agreement, chosen to be the Association of Southeast Asian Nations. Results for export propensity and GVC participation underscore the importance of customs efficiency, especially for GVC participation (Box Figure 2.1).<sup>1</sup> Other policies with an economically and statistically significant impact relate to access to finance, competition from informal firms, rent seeking in government procurement, infrastructure, and human capital. Results for export intensity are broadly similar (Box Figure 2.2).<sup>2</sup>

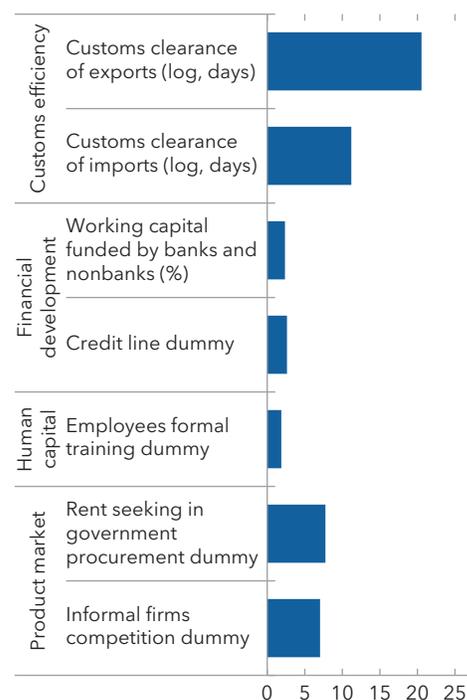
<sup>1</sup> The figures show results only for the main indicators as assessed by the size of the impact.

<sup>2</sup> On access to finance in particular, WTO/IFC (2022) provides a detailed, survey-based assessment of the obstacles to accessing trade finance for firms in the four largest ECOWAS countries.

**Box 2.** (continued)**Box Figure 2.1. Potential Increase in Africa's Firms Export Propensity and GVC Participation***(Percent, benchmark: ASEAN)*

Source: IMF staff calculations.

Note: The figure shows the impact on export propensity and GVC participation of improving Africa's firm-level policy determinants for a given indicator to the level observed in the ASEAN. ASEAN = Association of Southeast Asian Nations; GVC = global value chain.

**Box Figure 2.2. Potential Increase in Africa's Firms Export Intensity***(Percent, benchmark: ASEAN)*

Source: IMF staff calculations.

Note: The figure shows the impact on export intensity (as measured by exports-to-sales) of improving Africa's firm-level policy determinants for a given indicator to the level observed in the ASEAN. ASEAN = Association of Southeast Asian Nations.

Beyond these efforts, ensuring deeper integration of markets for goods and services on the African continent will require tackling behind-the-border barriers to trade that arise from differences in national regulations. Steps in this direction are currently in progress under phase I (for example, a stocktaking of service sector standards) and planned for phase II (through a strengthening of investment protections, harmonization of competition law and intellectual property rights, and agreement on rules for e-commerce). However, the process of lowering behind-the-border barriers to trade is likely to be lengthy, as it is complex and involves sensitive trade-offs between deeper trade integration and legitimate differences in national preferences over rules and standards. Advancing this agenda will require sustained efforts and engagement by policymakers.

Experience suggests that the AfCFTA Secretariat as a multilateral anchor could support negotiation and implementation efforts and bolster the credibility of the trade integration agenda. Regional secretariats can support member states in conducting trade negotiations and implementing trade agreements, including

by bringing member states and other stakeholders together to solve issues related to the application or interpretation of the trade agreement; undertaking regional information and consultation activities; and providing capacity-building services (World Bank 2022).

Beyond efforts to lower tariffs and NTMs as well as implementing certain “behind-the-border” measures discussed above, reaping full benefits from the AfCFTA will require a range of efforts. First, as discussed in earlier chapters, it would be very important to enhance the structural trade environment, as this will multiply the opportunities for, and the gains from, trade. Inevitably this will involve policy tradeoffs. While building transport networks can be costly, administrative procedures hindering trade could for example be improved at lower cost. Against this background, AfCFTA member countries would benefit from rapidly developing and implementing plans for harmonizing customs and border processes, delivering on their intentions to progress on trade facilitation.

Second, to ensure that broader policy frameworks are consistent with the AfCFTA, trade openness should be a core feature of domestic policy frameworks. For this, the use of import tariffs to protect domestic industries or generate substantial fiscal revenue should be phased out along with the imposition of ad hoc export restrictions:

- Efforts at trade integration in a number of African countries may have been held back by the legacy of import substitution, i.e., the use of elevated tariffs and NTMs hindering imports with the goal of protecting domestic infant industries and/or self-reliance. While a case for infant industry protection can be made under a narrow set of circumstances,<sup>33</sup> import substitution policies, where they were adopted in developing countries after World War II, have generally not worked well in the longer term.<sup>34</sup> In response, the consensus on approaches switched to export-led development strategies, which have been implemented with success in East Asia and elsewhere.
- In the past, a number of African countries have sometimes imposed ad hoc food export restrictions in response to recurring food price surges.<sup>35</sup> Such restrictions may temporarily succeed in limiting price increases in the country imposing the restriction. But they exacerbate shortages and price pressures in other countries, and undermine incentives to invest in agriculture in the country imposing the restriction, which may over time result in higher prices even domestically. To end reliance on ad hoc trade restrictions, policy frameworks need to provide targeted mechanisms for assisting poor households in times of high food prices, for example, through cash transfers, while limiting less targeted and costly broad-based food price subsidies.

In addition, sustained efforts to enhance domestic revenue mobilization including via broadening the tax base and improving tax administration, and to strengthen fiscal frameworks, will not only compensate the lower revenue from tariff reduction, but also enlarge fiscal space for future development.<sup>36</sup> Implementation of structural reforms on customs administration will also contribute to enhancing revenue while maximizing the benefits from the AfCFTA.<sup>37</sup>

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<sup>33</sup> See Harrison and Rodriguez-Clare (2009).

<sup>34</sup> Irwin (2020a) reviews the history of economic thinking on import substitution and Bruton (1998) the history of its application.

<sup>35</sup> WTO Trade Policy Reviews for Ghana (2022), Kenya (2019a), and Tanzania (2019b); WTO (2014).

<sup>36</sup> Benedek, Benítez, and Vellutini (2022) discuss the historical importance of macroeconomic changes, such as increased intra-African trade through AfCFTA, as a driver of personal income tax revenue in emerging market economies and developing countries.

<sup>37</sup> See Perez Azcarraga and others (2022) for a discussion of structural reforms in customs administration.

Finally, it is important to be mindful of the factors that have hindered the success of previous trade liberalization efforts in Africa. African countries where trade liberalization did not yield higher growth in the past<sup>38</sup> tended to be characterized by adverse macroeconomic conditions, including contractionary policies (Wacziarg and Welch 2008) and low investment in physical and human capital (Billmeier and Nannicini 2013), as well as by unfavorable structural features such as limited property rights protection (Rodrik 1999, 2005), governance challenges (Sequeira 2016), and limited financial market development (Jung 2017).

This suggests that strong policy frameworks that ensure sustained macroeconomic stability and promote a favorable business environment are important enabling conditions. Key elements include debt sustainability and external stability, requiring sustained efforts to mobilize domestic revenue and avoiding overvaluation of exchange rates including by supporting flexible exchange rates where appropriate. These need to be complemented by efforts at improving governance, increasing efficiency and productivity of physical and human capital, and strengthening financial development. All these reforms would promote higher private sector-led investment and greater trade integration.

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<sup>38</sup> Trade liberalization efforts around the world have on average had substantial positive effects on growth. However, there is substantial variation around the mean, and trade liberalizations in Africa have yielded smaller growth dividends than in other regions. Of the 16 liberalization episodes noted in Africa during 1968–94, the episodes prior to 1990 were found to have raised growth, but such positive impacts are difficult to corroborate post-1990 (Billmeier and Nannicini 2013).

## 4. Africa's Trade Integration in a Changing World

The creation of the AfCFTA comes at a time when a changing global environment is presenting both new opportunities and new challenges for African countries. These changes include climate change and its consequences, emerging risks of geopolitical fragmentation, ongoing technological progress and digitalization, and Africa's prospective demographic boom. Against this backdrop, reforms to promote trade integration could allow countries to take advantage of new opportunities while reducing their vulnerability to shocks. Greater trade openness would help improve the availability and affordability of food supplies. Diversification and broad-based trade would reduce the impact of disruptions in specific markets and products. Trade is also the principal means through which the emergence of new technologies and digitalization, in combination with a rapidly growing labor force, could create new and higher paying jobs. Seizing these opportunities would require investment in physical and human capital, a robust macroeconomic and business environment conducive to private sector-led growth, and a modernized social safety net that supports the most vulnerable during the transition to a higher growth trajectory.

### Adapting to Climate Change

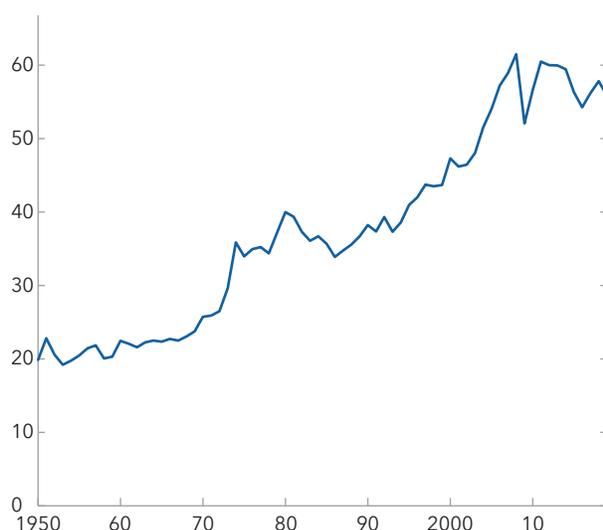
As elsewhere, climate change brings unprecedented challenges and risks for Africa. Rising average temperatures are expected to lower GDP growth (AfDB 2019b) and exacerbate food insecurity (IMF 2022a). In addition to their human toll, the rising frequency of natural disasters associated with climate change would also be expected to disrupt economic activity at an increasing frequency. Agriculture is likely to come under particular pressure, particularly as it remains mostly rain-fed in the continent. Climate change and the associated extreme weather events could disrupt global supply chains, create shortages and damage infrastructure, and drive up prices.<sup>39</sup> Climate change could also affect transportation costs in the future due to carbon pricing or use of more costly fuels.<sup>40</sup> Over the medium-term, climate change mitigation policies could lower demand for fossil fuels and affect the prospects for countries that rely heavily on hydrocarbon exports.

While the relationship between trade and climate change is complex (Brenton and Chemutai 2021), regional trade integration in Africa can be an important element of a climate adaptation strategy. For example, by supporting diversification and growth, regional trade integration could boost countries' resilience by reducing their overreliance on sectors that are at increasing risk of being adversely affected by climate change related natural disasters. Further, by facilitating the flow of goods across borders, regional trade integration would help countries diversify sources of climate-vulnerable products. Finally, regional trade integration could open up opportunities for increased regional trade related to climate-related infrastructure, services, and finance.

<sup>39</sup> IMF's Climate Change Indicators Dashboard ([climatedata.imf.org](https://climatedata.imf.org)) provides a comprehensive set of statistical indicators including on economic activities, trade, and risks.

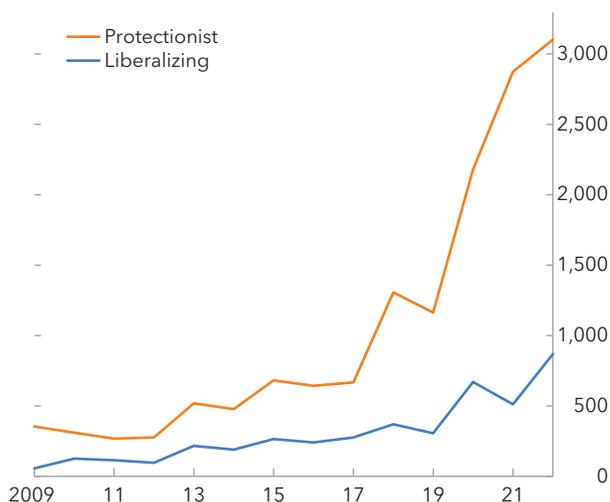
<sup>40</sup> African exporters will face the EU carbon border adjustment scheme, which could result in reducing EU's demand for Africa's carbon-intensive exports (IMF 2021).

**Figure 16. World Exports and Imports, 1950-2019**  
(Percent of global GDP)



Sources: Penn World Tables; and IMF staff calculations.

**Figure 17. New Trade Interventions per Year, 2009-22**  
(Number)



Sources: Global Trade Alert Database; and IMF staff calculations.  
Note: As of December 31, 2022.

## Building Resilience in the Face of Rising Geopolitical Fragmentation Risks

The world is facing the risk of fragmentation after decades of increasing global economic integration.<sup>41</sup> Peaking prior to the global financial crisis, global trade openness has plateaued (Figure 16).<sup>42</sup> This development reflects in part a marked increase in protectionism (Figure 17), including notably an intensification of U.S.–China trade tensions.<sup>43</sup> Most recently, trade restrictions introduced in the context of the COVID-19 pandemic and Russia’s war in Ukraine have also weighed on trade. The intention of the G7 to make critical international supply chains more resilient to geopolitical risks by encouraging a rebalancing of supply chains towards closely allied countries (G7 2021, Yellen 2022) is adding to the risk of fragmentation going forward. The consequences for the global economy could be sizeable (Georgieva, Gopinath, and Pazarbasioglu 2022),<sup>44</sup> and low-income countries would likely suffer the most (Aiyar and others 2023; Hakobyan, Meleshchuk, and Zymek forthcoming).

Increased global competition for commodities and critical minerals may allow some African economies to deepen their pre-existing integration into global value chains as upstream suppliers of raw materials. However, geopolitical fragmentation is also likely to raise the frequency of shocks to individual bilateral trade relationships directly and indirectly. In the face of this risk, the AfCFTA presents African countries with an opportunity to diversify their export destinations, import sources and patterns of cross-border value chain integration by boosting regional trade.

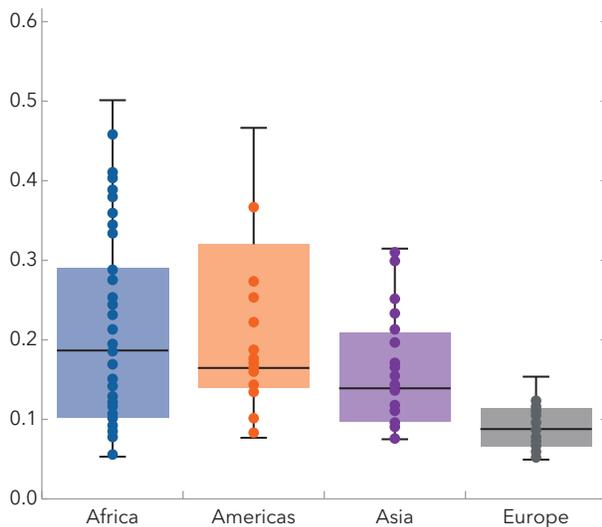
<sup>41</sup> See Aiyar and others (2023).

<sup>42</sup> The period since 2008 has been described as the “global trade slowdown” (Hoekman 2015) and the era of “slowbalisation” (Irwin 2020b).

<sup>43</sup> During the first half of the 2010s, a significant part of the trade slowdown likely reflected weak investment due to a slow recovery from the global financial crisis (IMF 2016). Further drivers included diminishing gains from further cross-border production sharing (Wignaraja and others 2017; WTO 2021b) and a rebalancing of the Chinese economy toward domestic demand (Lewis and Monarch 2016).

<sup>44</sup> Geoeconomic fragmentation is distinct from “international fragmentation of production”, which has been used to describe a division of labor in cross-border value chains that is associated with increased integration of international goods markets (Timmer and others 2014).

**Figure 18. Concentration of Merchandise Export Destinations, 2019**  
(Herfindahl-Hirschman Index)



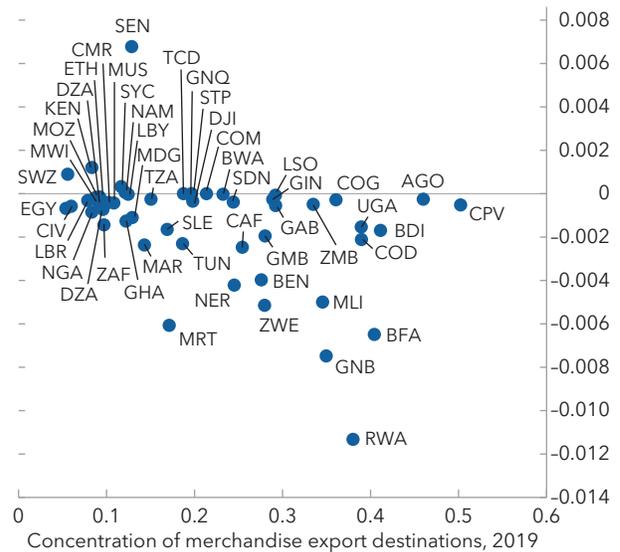
Sources: Harvard University, Atlas of Economic Complexity; and IMF staff calculations.

Note: The figure shows the distribution of countries' concentration of merchandise export destinations in 2019, measured by a Herfindahl-Hirschman Index that ranges from 0 (highly diversified) to 1 (single export destination), grouped by region.

African countries appear especially vulnerable to shocks affecting their export relationships with individual partner countries, given their above-average concentration of export destinations (Figure 18).

Under the AfCFTA scenario of reductions in tariffs and NTMs described in Chapter 3, most African economies would see a decline in the concentration of their export destinations, with generally larger declines for countries that currently have a relatively high export concentration (Figure 19). A greater diversity of export destinations would in turn increase economic resilience (IMF 2022b).

**Figure 19. Change in Export Concentration under AfCFTA Scenario, 2019**



Sources: Harvard University, Atlas of Economic Complexity; and IMF staff calculations.

Note: Position along the horizontal axis reflects African countries' concentration of merchandise export destinations in 2019, measured by a Herfindahl-Hirschman Index (HHI) that ranges from 0 (highly diversified) to 1 (single export destination). Position along the vertical axis indicates the change in HHI-measured concentration of export destinations under the AfCFTA scenario from Chapter 3 (intra-African tariffs reduced by 90 percent, NTMs by 50 percent). Data labels in the figure use International Organization for Standardization (ISO) country codes. AfCFTA = African Continental Free Trade Area.

## Leveraging Opportunities from Africa's Population Growth and Global Technological Progress

Africa's population is expected to grow rapidly in the coming decades, reflecting declining mortality and still elevated fertility. In the process, the continent's working-age population (ages 15–64) is projected to rise from about 800 million in 2022 to more than 1.5 billion by 2050 (and peak only later this century) while the median dependency ratio (the number of the young and the elderly relative to the size of the working-age population) is expected to decline from 0.77 currently to 0.60 by 2050 (UN 2022).

This demographic shift presents both an opportunity and a challenge. A large and growing labor force creates opportunities for more rapid growth, complemented by a falling dependency ratio that creates room for more domestic savings. Taking advantage of these population dynamics requires generation of a larger number of jobs over the next several decades.

Global technological progress, including digitalization, also brings opportunities for Africa. The adoption of new technologies would enable gains in productivity and competitiveness, strengthening the continent's growth potential (IMF 2018). Further, digitalization (a key element of technological progress in recent years) can promote growth of trade in services by making some previously nontradeable services tradable. This includes in particular business services such as accounting, advertising, and IT services (Baldwin 2022). Digitalization also creates opportunities for greater goods trade through e-commerce and improvements in the trade environment. For example, it can help accelerate border and customs processes and facilitate making cross-border payments (Box 3).

Against this background, trade integration could potentially enhance Africa's economic dynamism. Concretely, trade integration would support the growth of new industries that could provide jobs for Africa's growing workforce provided they have the necessary skills and training to work with emerging technologies, which requires the provision of enhanced education, including to women and children, and vocational training.<sup>45</sup> The transition of an economy to a higher private sector-led growth path led by trade will also require ensuring that those who are adversely affected by the transition are adequately supported by a modernized social safety net. This will in some cases require redesigning the social safety net to ensure they are better able to target the most vulnerable in a fiscally sustainable way. Despite the recent increase in social safety net programs in Africa, their effectiveness in addressing equity, resilience, and the opportunities for the vulnerable will hinge on increasing their scale and sustainability.<sup>46</sup> The success stories of rapid expansion (such as in Ghana, Kenya, Senegal, and Tanzania) remain exceptions in the region.

Finally, taking advantage of new opportunities in a changing world, underpinned by an expanded role for trade, needs to be embedded in a policy framework that ensures macroeconomic stability and a supportive business environment which fosters the development of domestic industries that are more deeply integrated into value chains and produce more sophisticated and diversified products.

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<sup>45</sup> Trade openness accelerates adoption of new technology, including by incentivizing firms to upgrade product quality (Fan, Li, and Yeaple 2015).

<sup>46</sup> The average number of new social safety net programs launched in Africa each year rose from 7 in 2001–09 to 14 in 2010–15 (Beegle, Coudouel, and Monsalve 2018). Every African country has at least one social safety net program. This trend has also been a global one. By 2015, every country in the world was implementing at least one social safety net program.

### Box 3. Leveraging Digitalization to Facilitate Trade

In the context of trade integration, there are several ways in which Africa can take advantage of technological progress and more specifically its key feature of digitalization, the incorporation of data and the internet into production and consumption, cross-border flows, and finance. Two of these relate to more efficient customs processes and cross-border payments that help lower trade costs and thus improve the structural trade environment.

Intraregional trade (and trade with the rest of the world) would benefit from faster customs processes (Arvis and others 2018), and digitalization can help with this, for example via the following tools:

- Import/export platforms such as electronic single-windows allow lodging information and documents in a single-entry point to fulfil all import, export and transit-related requirements. These systems shorten clearance times thanks to simultaneous submissions of customs and other documents, reduce costs by limiting the duplication of processes and the need to submit physical documents; and help reduce errors by ensuring consistency and traceability of transactions. Such a system helped keep trade and customs revenue flowing in Nigeria during the COVID-19 pandemic.
- Non-intrusive inspection technology such as cargo scanners can speed up inspection and monitoring of containerized goods, replacing time consuming manual examinations. Nigeria and Uganda are using such scanners successfully.
- Electronic cargo tracking systems make it possible to monitor goods in transit. In Kenya and Tanzania, such systems have improved border efficiency and reduced trade costs for private businesses.

Intraregional trade would also benefit from improved cross-border payment systems within Africa (AfDB 2022), and initiatives are under way to strengthen these systems through digitalization. In recent years, payment platforms have emerged that allow settling payments in local currencies within certain regions, replacing more complex and expensive transactions with correspondent banks outside Africa. However, there are as yet no links between these regional platforms, hindering trade between sub-Saharan African regions as well as between sub-Saharan and North Africa. To address this challenge, the AfCFTA Secretariat and the African Export-Import Bank launched the Pan-African Payments and Settlement System (PAPSS) in January 2022. This cloud-based system aims to link African central banks, commercial banks, and FinTech firms into a network to enable quicker transactions among the continent's countries in their currencies. The AfCFTA Secretariat and the Arab Monetary Fund announced plans to ensure interoperability between PAPSS and Buna, the cross-border multi-currency payment system in the Arab region.

Advancing digitalization in Africa will require reforms to improve information and communication technology (ICT) infrastructure, strengthen foundational infrastructure (notably for electricity), build digital skills, and enhance cybersecurity resilience. With respect to ICT infrastructure, there is already notable progress that should be sustained. While the African continent is still the digitally least connected region, its mobile and internet connectivity are growing rapidly (ITU 2022, Alper and Miktus 2019), enabling greater digitalization. For example, in sub-Saharan Africa, thanks in part to improvements in the extent and quality of ICT infrastructure, internet penetration has grown tenfold since the early 2000s, compared with a threefold increase in the rest of the world (IMF 2020), and more than a quarter of additional mobile subscribers by 2025 are expected to come from Africa (GSMA 2022). Yet disparities between and within African countries persist. In particular, the urban-rural gap is greater than in other regions: one-half of urban citizens have access to internet, compared with just 15 percent of the rural population.

**Box 3.** *(continued)*

Lastly, implementing digital technologies should be accompanied by effective implementation of governance and managerial reforms, as well as upskilling and training, to achieve the desired effects.

## 5. Conclusions

This paper argues that recent moves to broaden and deepen intra-African trade integration through the AfCFTA hold promise for boosting trade and incomes across the continent if they are supported by a comprehensive reform agenda. Specifically:

- Reduction in tariffs on intra-African trade as planned under the AfCFTA together with improvements in the trade environment, for example, transport and telecommunication infrastructure, access to finance, and domestic security, to bring them to the levels seen in comparator free trade agreements would give a large boost to intra-African merchandise trade as well as merchandise trade with the rest of the world, enabling real per capita income gains of more than 10 percent in the median country.
- Improvements in the trade environment to the levels seen in comparator free trade agreements would boost services exports substantially, enabling further such gains.
- Implementation of the AfCFTA and improvements in the trade environment hold the potential to deepen integration into cross-border value chains within Africa and with countries in other regions if the cost to trade is reduced sufficiently. This could allow diversification through the growth of manufacturing industries and a move up the value-added chain over time that has underpinned the success of growth take-offs in emerging market economies worldwide.

Determined efforts will be needed over several years to complete AfCFTA implementation and strengthen the trade environment. Trade openness needs to become a core feature of policy frameworks with an end to the past practice of using import tariffs for protecting domestic industries or generating substantial fiscal revenue and the periodic imposition of ad hoc export restrictions. While trade integration would eventually lift the income levels of all countries in the continent, it is important to be mindful that the pace of progress may differ across countries and the impacts on households and workers may vary. It is therefore critical to modernize social safety nets to support the most vulnerable and enhance vocational training and job search assistance during the transition. To reap the full benefits of trade integration, African countries will need to ensure favorable business environment and macroeconomic stability, complemented by efforts at improving governance, education, efficiency and productivity of physical capital, and strengthening financial development.

Regional trade integration could become the vehicle for economies in the continent to transition to higher growth and job creation in a changing global environment. In particular, it can help make countries more resilient to climate change and risks of geopolitical fragmentation. Trade can also help Africa take advantage of the opportunities from technological progress and a growing working-age population with the appropriate investment in physical and human capital and in the context of a modernized and efficient social safety net.

# Annex 1. Data Sources and Construction

## Country Composition of Regional Arrangements in Africa

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Throughout the paper, regional arrangements in Africa have the following country composition:

AMU: Algeria, Libya, Mauritania, Morocco, and Tunisia.

CEMAC: Central African Republic, Cameroon, Chad, Republic of Congo, Gabon, and Equatorial Guinea.

CENSAD: Benin, Burkina Faso, Central African Republic, Chad, Comoros, Côte d'Ivoire, Djibouti, Egypt, Eritrea, The Gambia, Ghana, Guinea-Bissau, Libya, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Togo, and Tunisia.

COMESA: Burundi, Comoros, Democratic Republic of Congo, Djibouti, Egypt, Eritrea, Eswatini, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Somalia, Sudan, Tunisia, Uganda, Zambia, and Zimbabwe.

EAC: Burundi, Kenya, Rwanda, South Sudan, Tanzania, and Uganda.

ECCAS: Angola, Burundi, Central African Republic, Cameroon, Chad, Democratic Republic of Congo, Republic of Congo, Gabon, Equatorial Guinea, Rwanda, and São Tomé and Príncipe.

ECOWAS: Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

IGAD: Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda.

SACU: Botswana, Eswatini, Lesotho, Namibia, and South Africa.

SADC: Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Tanzania, South Africa, Zambia, and Zimbabwe.

WAEMU: Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo.

## Weighted Average Bilateral Tariffs

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Bilateral tariff data are obtained from the UNCTAD TRAINS database at HS 6-digit product level for the years 2018–20. Reported tariff rates by country pair and product are averaged across these three years to maximize coverage and minimize noise.

UNCTAD TRAINS reports up to four tariff rates per country pair-product: effectively applied (AHS), preferential (PRF), bound (BND) and most-favored-nation (MFN). To construct the tariff measure employed in the analysis, the AHS rate is used if available, and the PRF otherwise; if neither is available, the BND rate is used; and if none of the three are available, the MFN rate is used.

To construct the weighted average bilateral tariffs by country pairs, product-level tariff rates are multiplied by the share of the product to which they apply in total value of bilateral imports of the country pair, before summing across all products for each country pair. The resulting dataset provides weighted average bilateral tariff rates for 26,272 country pairs, covering 182 individual countries. The results reported in Annex 2 are robust to alternative selections of the bilateral tariff rate, and reasonable variations in the weighting scheme.

## Weighted Average Number of Bilateral Nontariff Measures

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Information on NTMs is obtained from the UNCTAD TRAINS database. The database reports 264 possible types of NTMs that could apply to imports by one country from another in a given year. The measures are primarily reported at the HS 6-digit product level, with some at even finer level. As a first step, all NTMs are aggregated to the HS 6-digit product level by assigning a value of 1 to a given NTM at the HS 6-digit product level if the NTM is applied to a more narrowly defined goods category.

Unlike tariffs, NTMs are qualitative in nature, making it inherently difficult to construct a meaningful aggregate measure of trade restrictiveness due to NTMs (for example, “does a particular phytosanitary measure apply to imports of a given good?”). The measure employed in the analysis is based on a simple count of NTMs, on the assumption that the higher the number of NTMs applied to a given trade flow, the greater the trade impediments generally. NTMs are counted by country pair for each HS 6-digit product. Similar to tariffs, the number of NTMs at the product level are multiplied by the share of the product to which they apply in total value of bilateral imports of the country pair, and then summed across all HS 6-digit products for each country pair. This yields a measure of the weighted average number of bilateral NTMs for 17,998 country pairs, covering 181 countries.

## Trade Environment Indicators

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The analysis of trade in both goods and services uses several indicators that seek to capture how supportive countries’ economic, political, and institutional environment is to trade. A large number of such indicators from different sources are used to construct novel “meta-indicators.” This is done for two reasons: (1) there is a large set of economic, political, and institutional indicators compared to the number of countries (182) in the sample, and (2) some of these indicators are designed to capture the same features—for example, both the World Economic Forum Global Competitiveness Report (GCR) and the World Bank Logistics Performance Index (LPI) provide an index of trade infrastructure—but they often differ in country coverage and are imperfectly correlated across the subset of jointly covered countries, reflecting differences in data construction methodologies. Aside from collinearity, including all of these explanatory variables would significantly reduce the sample size, leading to imprecise estimates.

Iterative Principal Component Analysis (IPCA) is used to construct the meta-indicators to address these concerns. Principal component analysis (PCA) is an unsupervised machine learning algorithm, commonly used to reduce the dimensionality of datasets with large number of variables by identifying the main dimensions of common variation among them. However, PCA can only be performed on the subset of observations that are not missing for all variables. In our context, this subset is too small. IPCA, which imputes any missing observations based on principal components, is used instead to obtain the principal components while maximizing the number of observations (Imtiaz, Shah, and Narasimhan 2004).

The meta-indicators are constructed by grouping variables from different sources into sets intended to capture different features of countries’ trade-enabling environment, performing IPCA on each of these sets, and then choosing the first principal component as the meta-indicator. The variable groups are as follows:

- *Trade infrastructure*: quality of roads (GCR); quality of railroads (GCR); quality of port infrastructure (GCR); quality of air transport infrastructure (GCR); infrastructure score (LPI).
- *Financial development*: domestic credit to the private sector as a share of GDP (World Bank World Development Indicators); local equity financing (GCR); ease of loan access (GCR); venture capital availability (GCR).
- *Security*: business cost of terrorism (GCR); business cost of crime and violence (GCR); security index (GCR); terrorism incidence index (GCR); political stability and absence of violence (World Bank World Governance Indicators (WGI)).
- *Telecommunications*: fixed-telephone subscriptions per 100 inhabitants; mobile-cellular telephone subscriptions per 100 inhabitants; international internet bandwidth per internet user; percentage of households with a computer; percentage of households with internet access; percentage of individuals using internet; fixed (wire)-broadband subscriptions per 100 inhabitants; wireless-broadband subscriptions per 100 inhabitants. All these indicators come from the World Telecommunication/ICT Indicators Database.
- *Human capital*: average years of schooling (Institute for Health Metrics and Evaluation); quality of the education system (GCR); quality of math and science education (GCR); quality of management schools (GCR).
- *Institutions*: control of corruption; government effectiveness; political stability and absence of violence; rule of law; voice and accountability. All these indicators come from the WGI.
- *Product and labor markets*: intensity of local competition; extent of market dominance; effectiveness of anti-monopoly policy; cooperation in labor-employer relations; hiring and firing practices; pay and productivity. All these indicators are taken from the GCR database.

The resulting meta-indicators cover 161 countries and are highly correlated with their individual components.

## Annex 2. Quantifying Obstacles to Goods Trade

### Methodology

The main results are obtained by estimating a gravity equation of the form:

$$M_{ij} = \exp\{\beta' X_{ij} + \Omega_i + \Pi_j\} \times e_{ij}, \quad (2.1)$$

where  $M_{ij}$  is the dollar value of c.i.f. imports by country  $j$  from country  $i$ ;  $X_{ij}$  is a vector of country-pair specific trade determinants (for example, distance);  $\Omega_i$  is a country- $i$ -as-exporter fixed effect;  $\Pi_j$  is a country- $j$ -as-importer fixed effect; and  $e_{ij}$  is the error term. This specification of the gravity equation is often referred to as “theory-consistent” because it is compatible with a large range of economic models.<sup>47</sup> The equation above is estimated using the Poisson Pseudo-Maximum-Likelihood (PPML) estimator.<sup>48</sup>

### Data

Equation (2.1) is estimated using data for the year 2019.<sup>49</sup> Bilateral trade flows are obtained from the Harvard University Atlas of Economic Complexity (Hausmann and others 2013). Bilateral and multilateral gravity controls, including GDP, population, and country-price indices, are obtained from the CEPII gravity database (Conte, Cotterlaz, and Mayer 2022) and Penn World Tables 10.0 (Feenstra, Inklaar, and Timmer 2015).

The analysis relies on original measures of the weighted average bilateral tariff and the weighted average number of bilateral NTMs between countries. Three meta-indicators capturing countries’ quality of trade infrastructure, level of financial development, and domestic security situation are also deployed. The sources and construction of these variables are described in Annex 1.

### Estimates

#### Simple Gravity Prediction

For reference, column (1) of Annex Table 2.1 presents the results of a simple, atheoretic gravity estimation that only includes the log of countries’ bilateral distance and their GDPs as right-hand-side variables. The R-squared indicates that this simple empirical model can explain 62 percent of the observed variation in bilateral trade flows across country pairs.<sup>50</sup>

<sup>47</sup> See Head and Mayer (2014) for a discussion of the sufficient conditions for trade models to deliver a microfounded gravity equation. Such gravity equations include so-called importer and exporter “multilateral resistance terms” (MRTs) among the right-hand-side variables. Anderson and van Wincoop (2003) were the first to show that omitting MRTs in gravity estimations can lead to large biases in the estimated effects of the bilateral variables ( $\beta$ ), since it amounts to omitting controls for a country’s global market access. Since MRTs do not have a natural empirical analogue, the most prominent approach to controlling for the presence of “multilateral resistance” has been the inclusion of importer and exporter fixed effects.

<sup>48</sup> Santos Silva and Tenreyro (2006) show that the PPML estimator permits the straightforward inclusion of zero-valued trade flows and prevents coefficient biases in the presence of a heteroskedastic error term. Fally (2015) further shows that the PPML estimator is most consistent with the theoretical assumptions underpinning gravity models.

<sup>49</sup> While data for the year 2020 are currently the latest available, observed trade flows likely differ from flows in a typical year due to the impact of the pandemic on trade flows, with greater demand for medical goods, shortages of key inputs, and global supply chain disruptions.

<sup>50</sup> The simple model in column (1) is estimated using data for 182 countries covering 21,200 unique bilateral trade flows. There is no systematic difference in the model’s ability to explain bilateral trade flows within versus outside of Africa.

**Annex Table 2.1. Gravity Model Estimates**

Dependent Variable: Log Imports	(1)	(2)	(3)	(4)	(5)
Log distance	-0.836 (0.029)***	-0.933 (0.026)***	-0.736 (0.027)***	-0.761 (0.027)***	-0.686 (0.034)***
Common border			0.440 (0.073)***	0.498 (0.073)***	0.484 (0.080)***
Common official language			0.117 (0.069)*	0.105 (0.067)	0.104 (0.078)
Common colonizer			0.488 (0.133)***	0.431 (0.139)***	0.544 (0.174)***
Trade agreement			0.287 (0.052)***		
Log (1 + bilateral tariff)				-2.500 (0.785)***	-1.981 (0.726)***
Log (1 + number of bilateral NTMs)					-0.193 (0.042)***
Log exporter GDP	0.861 (0.021)***				
Log importer GDP	0.826 (0.023)***				
R-squared	0.62	0.86	0.89	0.90	0.89
Number of observations	21,200	21,200	21,200	18,412	12,237
Number of countries	182	182	182	182	181
Number of African countries	51	51	51	51	51
Fixed effects:					
Country-importer	No	Yes	Yes	Yes	Yes
Country-exporter	No	Yes	Yes	Yes	Yes

Source: IMF staff calculations.

Note: The table provides results from gravity regressions performed on bilateral trade flows for all country pairs for which sufficient data are available. All data are for the year 2019. Robust standard errors are in parentheses. \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively. NTMs = nontariff measures.

Column (2) of Annex Table 2.1 shows the results when importer and exporter fixed effects are introduced, in line with the baseline estimating equation (2.1). Unsurprisingly, the inclusion of a large set of fixed effects further raises the regression fit, with an R-squared of around 0.9 in all subsequent regressions.

Standard bilateral gravity variables are introduced in column (3) of Annex Table 2.1. The estimated coefficients on these variables have the expected sign: countries that share a common border, common official language or common colonizer are found to trade more than countries that do not. Moreover, the inclusion

of a dummy variable that captures the presence of a bilateral trade agreement shows that the average trade agreement raises bilateral trade flows by approximately 30 percent. The magnitude of the estimated coefficients is also in line with the range of estimates found in the literature.<sup>51</sup>

The weighted average bilateral tariffs and weighted average number of bilateral NTMs are introduced as a right-hand-side variable in columns (4) and (5), respectively. Focusing on column (5), the percentage increase in bilateral trade flows with respect to a percentage reduction in tariffs (“trade elasticity”) is found to be around 2.<sup>52</sup> Furthermore, a one percent reduction in the weighted average number of bilateral NTMs between countries increases bilateral trade flows by 0.2 percent. Using these estimates, it is possible to compute a tariff-equivalent NTMs by raising the NTM to a power that divides the NTM coefficient by the trade elasticity. As shown in Figure 9 in Chapter 2, tariff-equivalent NTMs are orders of magnitude larger than tariff barriers for all world regions, consistent with the findings of other studies (Kee and Nicita 2022). Introducing tariff and NTM barriers explicitly shrinks the trade-agreement coefficient and renders it statistically insignificant. This is unsurprising, as trade agreements would be expected to impact trade primarily by reducing tariffs and NTMs. For this reason, trade agreement dummy is omitted in all regressions that include tariffs and NTMs.

### Gravity Estimation with Trade Environment Indicators

The indicators of trade-enabling environment—trade infrastructure, financial development, and security—are only available for 160 countries. Column (1) of Annex Table 2.2 replicates the results in column (5) of Annex Table 2.1 for this sample of countries. Despite this reduction in the sample size, there is little change in the two key coefficients: the trade elasticity and the NTM elasticity.

Column (2) introduces two interaction terms that multiply the log bilateral distance between country pairs with the arithmetic average of their trade infrastructure and financial development indicators. The purpose of these interactions is to allow for trade infrastructure quality and financial development to have a differential effect depending on the distance between trade partners. Column (2) reports positive and statistically significant coefficients on both these interaction terms, in line with expectations. The quality of ports and airports is likely to affect trade with more remote trade partners more strongly than trade with close neighbors. Likewise, access to (trade) finance becomes more important the longer the lag between shipment and delivery of goods, which rises with distance.<sup>53</sup>

To assess the full effect of trade infrastructure quality and financial development on trade flows, the regressions should allow for an effect that is independent of bilateral distance between country pairs. However, trade infrastructure and financial development, as well as domestic security, vary only by country, not by country pair, and hence, they are colinear with the importer and exporter fixed effects. The results reported in columns (3) and (4) of Annex Table 2.2 thus exclude the importer and exporter fixed effects, respectively. Since the gravity literature shows that the coefficient estimates on bilateral variables—obtained with the full set of fixed effects—are likely to be the best unbiased estimates, the coefficients on these variables in columns (3) and (4) are constrained to be equal to their column (2) values. To limit the omitted variable bias as much as possible, including due to the absence of MRTs, the regressions in columns (3) and (4) also include a range of country-level controls that are not reported: log GDP, log population, log land area, the log expenditure- and output-side PPP.

<sup>51</sup> See Head and Mayer (2014) for an overview of the range of estimates for these and other standard gravity variables. The results are robust to including alternative sets of trade agreement variables.

<sup>52</sup> This is consistent with, but at the lower end of, the range of values of the trade elasticity found in other studies, which runs from 2 to 10 (Simonovska and Waugh 2014).

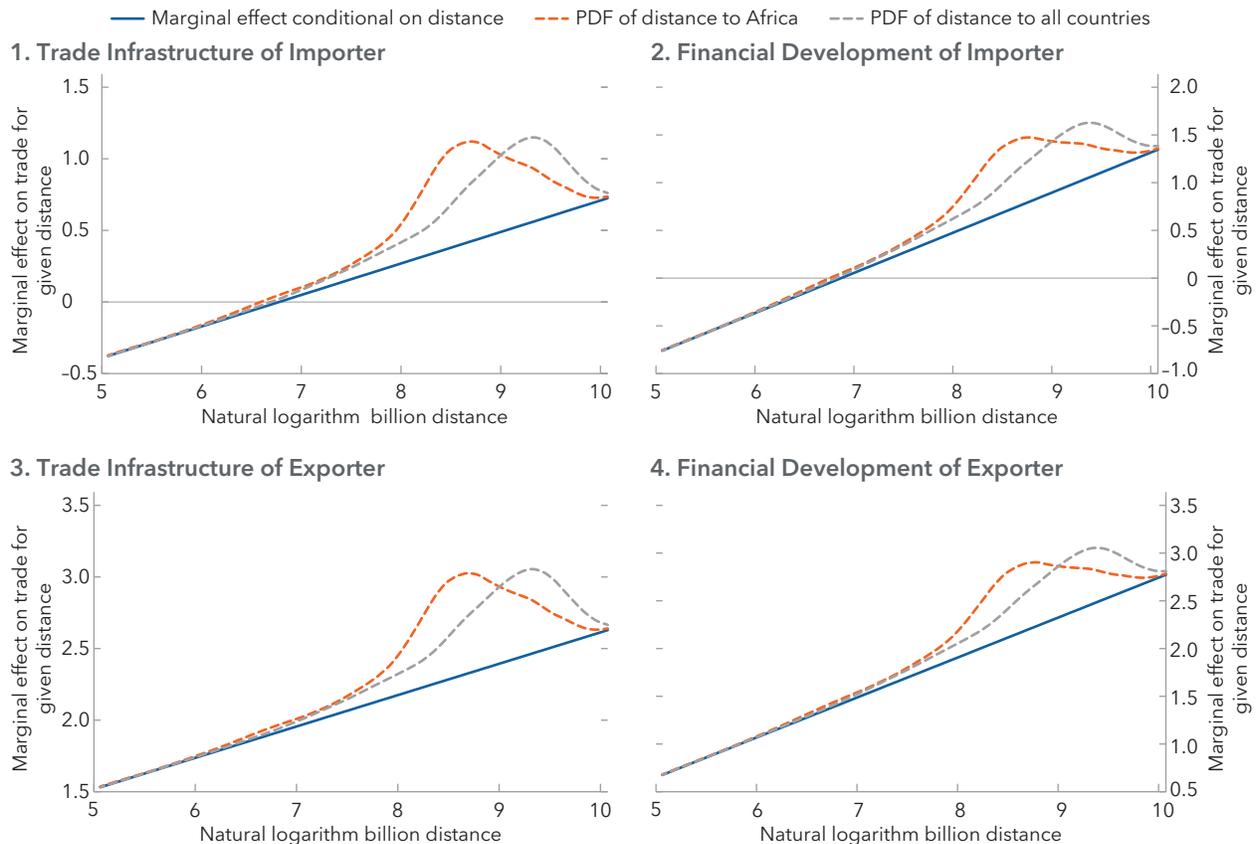
<sup>53</sup> There is no a priori reason to expect that countries’ security situation affects trade with remote partners differentially than trade with closer partners, and the data do not support such an interaction. For this reason, the interaction term between security indicator and distance interaction is omitted from the regressions in Table 2.2.

**Annex Table 2.2. Gravity Estimates with Trade Environment Indicators**

Dependent Variable: Log Imports	(1)	(2)	(3)	(4)
Log distance	-0.682 (0.034)***	-1.544 (0.089)***	-1.544	-1.544
Log (1 + bilateral tariff)	-1.969 (0.713)***	-1.448 (0.631)**	-1.448	-1.448
Log (1 + number of bilateral NTMs)	-0.183 (0.042)***	-0.197 (0.041)***	-0.197	-0.197
Log distance * Pair average trade infrastructure		0.440 (0.227)*	<b>0.440</b>	<b>0.440</b>
Log distance * Pair average financial development		0.841 (0.235)***	<b>0.841</b>	<b>0.841</b>
Importer trade infrastructure			-1.491 (0.659)**	
Importer financial development			-2.889 (0.226)***	
Importer security			1.675 (0.338)***	
Exporter trade infrastructure				<b>0.418</b> (0.751)
Exporter financial development				<b>-1.453</b> (1.000)
Exporter security				1.088 (0.680)
R-squared	0.89	0.90	0.59	0.68
Number of observations	11,162	11,162	11,162	11,162
Number of countries	160	160	160	160
Number of African countries	51	51	51	51
Control variables:				
Bilateral gravity controls	Yes	Yes	Yes	Yes
Multilateral gravity controls	No	No	Yes	Yes
Country-importer fixed effects	Yes	Yes	No	Yes
Country-exporter fixed effects	Yes	Yes	Yes	No

Source: IMF staff calculations.

Note: The table provides results from gravity regressions performed on bilateral trade flows for all country pairs for which sufficient data are available. All data are for the year 2019. Robust standard errors are in parentheses. \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively. NTMs = nontariff measures.

**Annex Figure 2.1. Marginal Effect on Trade**

Source: IMF staff calculations.

Note: The blue lines indicate the marginal effects of an increase in trade environment indicators by one unit on bilateral trade flow conditional on the distance between two countries. The dashed lines represent the density of distances from African countries to partners in Africa (orange lines) or the entire world (gray lines). PDF = probability density function.

Columns (3) and (4) show that security has a positive and statistically significant effect on imports and a positive but statistically insignificant effect on exports. The coefficients on trade infrastructure and financial development are more difficult to interpret due to the presence of interaction terms. For each of these variables, the marginal effect of an improvement in the indicator is the direct effect on the importer or exporter from columns (3) and (4), respectively, plus the coefficient on the interaction term times the log of country-pair distance. To illustrate the magnitude and heterogeneity of these effects across country pairs, Annex Figure 2.1 plots the marginal effects of each of these two indicators on bilateral imports and exports as a function of distance.

The dashed lines in the figures illustrate the distribution of effects in the data, due to differences in bilateral distances, for all country pairs (dashed gray line), and for the subset of country pairs in which the trade partner is in Africa (dashed orange line). For the vast majority of country pairs, an improvement in trade infrastructure and financial development has a positive impact on both exports and imports. Moreover, the marginal effect is larger on trade flows with more distant partner countries.

## Policy Experiments

The estimates from columns (2)-(4) in Annex Table 2.2 are used to compute the quantitative effects of the policy experiments described in Chapter 3. Let  $X_{ij}$  denote the set of country(-pair) variables as observed in the data, and  $\tilde{X}_{ij}$  the set after imposing a given policy change. Then the first-order impact of these policy changes on trade flows can then be computed as:<sup>54</sup>

$$\frac{\Delta M_{ij}}{M_{ij}} = \exp\{\widehat{\beta}' (X_{ij} - \tilde{X}_{ij})\} - 1. \quad (2.2)$$

Throughout the policy experiments, statistically insignificant coefficient estimates are treated as zeroes. The AfCFTA scenario assumes a 90 percent reduction in tariffs and a 50 percent reduction in NTMs. In the AfCFTA+ scenario, in addition to changes in tariffs and NTMs, the trade infrastructure, financial development and security indicators are uniformly increased for African countries, so as to bring the regional median in line with the median of the next-best performing FTA. Specifically, the trade infrastructure and financial development indicators are increased to set the African median equal to the median among MERCOSUR countries, and the security indicator is increased to set the African median equal to the median among ASEAN countries.

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<sup>54</sup> Note that this does not account for any general-equilibrium effects via changes in the MRTs (Anderson and van Wincoop 2003).

## Annex 3. Quantifying Obstacles to Services Trade

### Data and Empirical Specification

The analysis of services trade relies on services exports at the country level, obtained from the IMF Balance of Payment Statistics (BOPS), as compiled by Loungani and others (2017).

The lack of bilateral services trade data precludes the structural gravity estimation used for goods trade analysis. The baseline specification to analyze aggregate services trade flows relies on a gravity-inspired framework. More specifically, the aggregate services exports of country  $i$  at time  $t$  are modeled as:

$$\ln(\text{Export}_{it}) = \alpha \text{Environ}_{it} + \beta X_{it} + \gamma_t + \varepsilon_{it}, \quad (3.1)$$

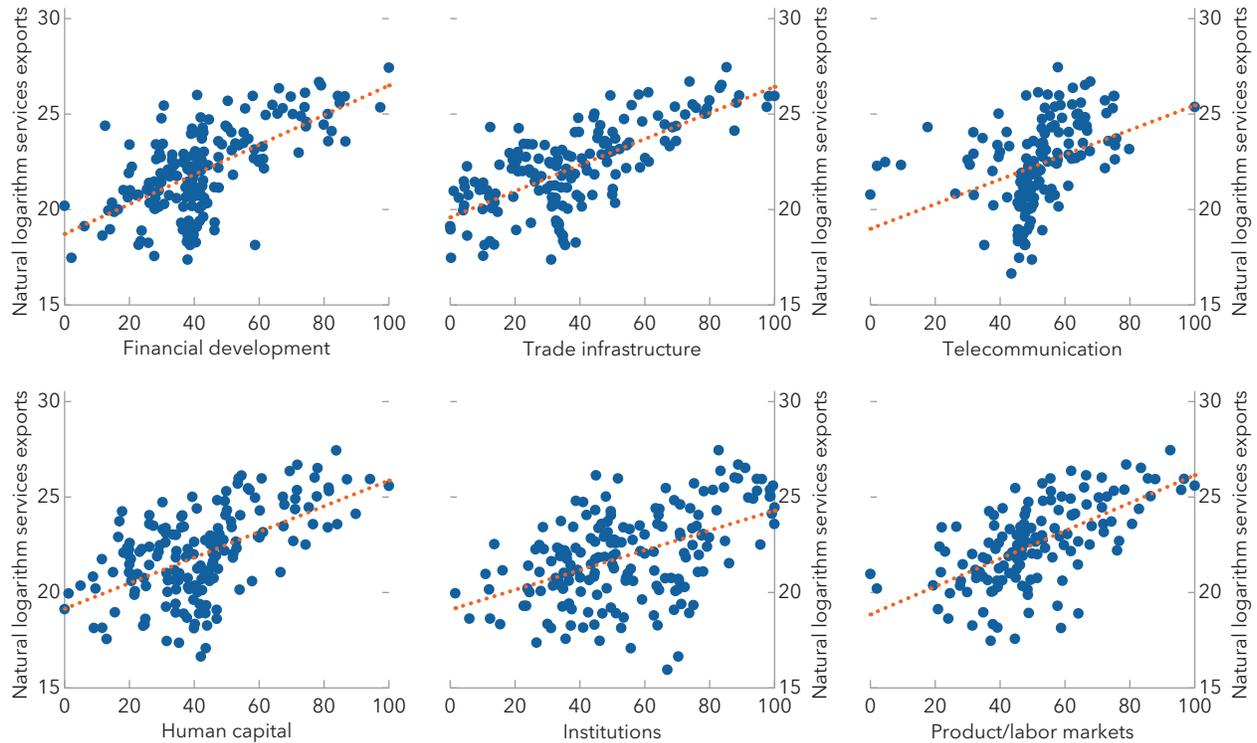
where  $\text{Export}_{it}$  is the value of aggregate services exports;  $\text{Environ}_{it}$  is a set of meta-indicators capturing the trade-enabling environment;  $X_{it}$  is a set of country characteristics such as log GDP, whether the country is landlocked, and log output-side PPP;  $\gamma_t$  is a period fixed effect where  $t$  refers to 5-year periods (2006–10, 2011–15 and 2016–19); and  $\varepsilon_{it}$  is the error term. All variables are period averages.

Six meta-indicators capturing countries' level of financial development, quality of trade infrastructure and telecommunications network, level of human capital development, strength of institutions, and product and labor market efficiency are used. The first three meta-indicators are directly related to trade in services and are consistent with the ones used in the gravity model in Annex 2; the last three capture countries' broader socio-economic and institutional environment that could support trade in services. As in IMF (2019), a measure of financial depth (credit to private sector/GDP) is also considered, in addition to the meta-indicator of financial development. The sources and construction of these variables are described in Annex 1. All meta-indicators of trade-enabling environment are positively correlated with services exports (Annex Figure 3.1).

### Results

Column (1) of Annex Table 3.1 shows the results from estimating equation (3.1) when only meta-indicators directly linked to trade in services are introduced, in addition to country characteristics. The remaining meta-indicators are introduced in column (3). Columns (2) and (4) replicate the results in columns (1) and (3), replacing the meta-indicator of financial development by credit to GDP. Irrespective of the specifications, the R-squared indicates that this empirical model can explain almost 90 percent of the observed variation in services export flows at the country level.

The estimated coefficients on the trade environment indicators have the expected sign and are economically and statistically significant; countries with higher levels of financial development, better trade infrastructure and telecommunications network, better quality of human capital and stronger institutions are found to export more. The estimated coefficient on product and labor market efficiency is positive but statistically insignificant. Consistent with the previous literature that uses gravity models, one percent increase in GDP is associated with 0.7 percent increase in services exports (Buera and Kaboski 2012; Herrendorf, Rogerson, and Valentinyi 2014; Comin, Lashkari, and Mestieri 2021). Being landlocked adversely affects trade in services across both specifications; services exports by landlocked countries are on average a fifth lower than countries with direct sea access.

**Annex Figure 3.1. Correlation between Services Exports and Trade Environment Meta-Indicators**

Sources: IMF, Balance of Payments Statistics; Institute for Health Metrics and Evaluation; International Telecommunication Union, World Telecommunication/ICT Indicators Database; World Bank, Logistics Performance Index; World Bank, World Development Indicators; World Bank, Worldwide Governance Indicators; World Economic Forum, Global Competitiveness Report; and IMF staff calculations. Note: The indicators aggregate information from the World Economic Forum, Logistics Performance Index; World Telecommunication/ICT Indicators; Institute for Health Metrics and Evaluation; World Development Indicators; and Worldwide Governance Indicators, as described in Annex 1. To develop a time series of these indicators, the IPCA methodology described in Annex 1 is modified to address the increased incidence of missing values for the earlier years.

## Policy Experiments

Annex Figure 3.2 illustrates the median score for six trade-enabling meta-indicators in Africa, ASEAN, MERCOSUR, NAFTA, and EU. Africa lags other FTAs in all areas, except product and labor markets. Among the trade environment indicators, the largest gap is observed in trade infrastructure, followed by financial development. Among the socioeconomic and institutional environment indicators, there are large gaps in both human capital and institutions.

To assess the impact of improvements in trade-enabling environment on services exports of African countries, policy experiments assume that the median African scores for financial development, trade infrastructure and telecommunications increase to the median of the next-best performing FTA (MERCOSUR). The impact of each indicator is a product of its marginal effect on services exports and how far the African economies are from their comparator FTA.

The policy experiment in Chapter 3 is replicated here, while accounting for human capital development, strength of institutions, and product and labor market efficiency (Annex Figure 3.3). The impact of aligning African trade and telecommunication infrastructure with comparator FTAs is approximately half of the scenario where only meta-indicators directly linked to trade in services are included, with the combined improvement in all three indicators yielding 26.6 percent growth in African services exports, as compared to 47.9 percent under the scenario without broader trade-enabling meta-indicators.

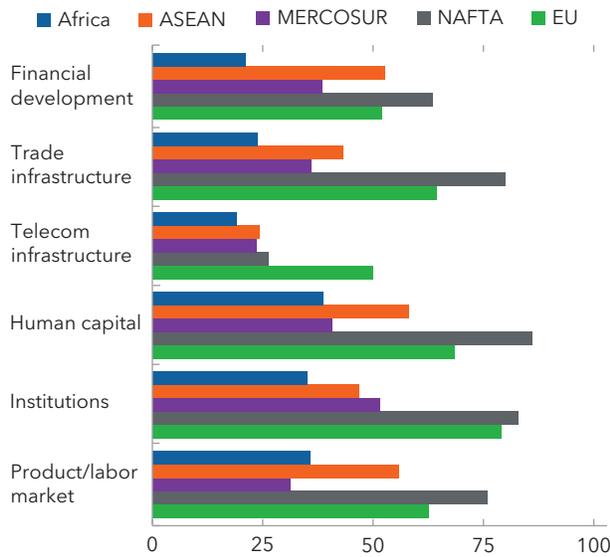
**Annex Table 3.1. Regressions of Services Exports on Trade Environment**

	(1)	(2)	(3)	(4)
Financial development	0.004 (0.003)		-0.001 (0.003)	
Credit to private sector/GDP		0.006*** (0.001)		0.004*** (0.001)
Trade infrastructure	0.018*** (0.003)	0.015*** (0.002)	0.011*** (0.003)	0.008** (0.003)
Telecommunications infrastructure	0.018*** (0.002)	0.015*** (0.002)	0.009*** (0.003)	0.008*** (0.003)
Human capital development			0.007* (0.004)	0.008** (0.004)
Strength of institutions			0.012*** (0.004)	0.011*** (0.004)
Product and labor market efficiency			0.005 (0.004)	0.003 (0.004)
Log GDP	0.692*** (0.023)	0.678*** (0.023)	0.705*** (0.025)	0.695*** (0.024)
Landlocked	-0.177* (0.093)	-0.183* (0.094)	-0.257*** (0.094)	-0.248** (0.096)
Log output-side PPP	-0.051 (0.097)	-0.099 (0.083)	-0.220 (0.159)	-0.239 (0.164)
R-squared	0.884	0.890	0.892	0.896
Number of observations	440	432	392	384

Source: IMF staff calculations.

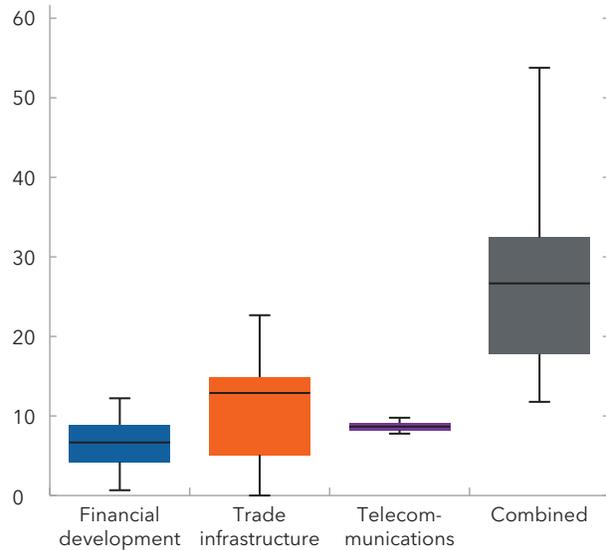
Note: Robust standard errors are in parentheses. \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively.

**Annex Figure 3.2. Trade Environment and Development Indicators, Selected FTAs**  
(Percent, median)



Sources: Institute for Health Metrics and Evaluation; International Telecommunication Union, World Telecommunication/ICT Indicators Database; World Bank, Logistics Performance Index; World Bank, World Development Indicators; World Bank, Worldwide Governance Indicators; World Economic Forum, Global Competitiveness Report; and IMF staff calculations. Note: ASEAN = Association of Southeast Asian Nations; EU = European Union; FTA = free trade agreement; MERCOSUR = Southern Common Market; NAFTA = North American Free Trade Agreement.

**Annex Figure 3.3. Bringing Africa on Par with the Next-Best Performing FTA with Additional Controls**  
(Percent growth of services exports)



Source: IMF staff calculations. Note: The figure shows the impact on services exports of bringing Africa's performance for a given indicator on par with the "next-best" performing free trade agreement. The medians are represented as the horizontal lines inside the boxes. The whiskers refer to the 25th and 75th percentiles.

## Annex 4. Drivers of Value Chain Integration

### Backward and Forward Linkages

To gauge the degree of bilateral value chain integration, bilateral backward linkages (BL) and forward linkages (FL) between country pairs are computed using the Eora Global Supply Chain database (Lenzen and others 2012), which provides international input-output tables for 189 countries over 1990–2021. The BL captures the foreign value added contained in a given country's exports, and the FL measures the use of a given country's value added in foreign countries' exports. These measures of global value chain integration are well established in the literature.<sup>55</sup>

A given country's forward linkages are defined as its value added in foreign country's exports, as a share of its exports. In matrix form,

$$FL = X^{-1}V(I - A)^{-1}X$$

where  $X$  is a matrix with each diagonal element corresponding to the value of gross exports of a country;  $V$  is a matrix with each diagonal element corresponding to the share of value added in the output of that country;  $I$  is an identity matrix; and  $A$  is a matrix of requirement coefficients, with each element  $a_{ij}$  representing the value of spending by country  $j$  on intermediate inputs from country  $i$ , as a share of gross output of country  $j$ . All these elements can be read straightforwardly off an inter-country input-output table such as Eora. The derived matrix  $(I - A)^{-1}$  is the so-called Leontieff inverse.

A given country's backward linkages are defined as the foreign value added contained in its exports, as a share of its exports. In matrix form,

$$BL = X^{-1}[V(I - A)^{-1}X]'$$

The matrix of forward linkages is simply the transpose of the matrix of backward linkages.<sup>56</sup>

The heatmap in Annex Figure 4.1 illustrates the bilateral backward and forward linkages for the four largest economies in each of six world regions based on data from 2021. Three stylized facts stand out in relation to economies in Africa. First, their bilateral linkages are generally less developed, reflecting limited integration into GVCs. Second, while economies in other world regions tend to have their strongest bilateral linkages inside their home regions, for economies in Africa the strongest bilateral linkages are with economies in North America, Europe and Asia.<sup>57</sup> Third, African countries' forward linkages tend to be more important than their backward linkages—that is, they tend to supply to other countries goods that have undergone relatively little transformation rather than receive inputs from other countries to produce intermediate or finished products.

### Empirical Methodology

For the bilateral backward linkages ( $BL_{ij}$ ) and forward linkages ( $FL_{ij}$ ) of any two countries  $i$  and  $j$  in 2019, a log linear regression of the following form is estimated:

<sup>55</sup> For example, see Koopman, Wang, and Wei (2014) and De Backer and Miroudot (2014).

<sup>56</sup> Since along the diagonal of the BL and FL matrices, the row country is the same as the column country, the international dimension of value chain integration is only captured by the off-diagonal elements of these matrices.

<sup>57</sup> See Baldwin and Freeman (2020, 2021) on the importance of regional value chain hubs in North America, Europe and Asia.

**Annex Figure 4.1. Bilateral Backward and Forward Linkages, Select Economies, 2021**  
(Percent of gross exports)

### 1. Backward Linkages

		North America			Asia				Europe				Latin America				Africa				
		CAN	MEX	USA	CHN	IND	JPN	KOR	DEU	FRA	GBR	ITA	ARG	BRA	CHL	COL	EGY	ETH	KEN	NGA	ZAF
North America	CAN	0.6	11.0	1.7	0.2	0.4	0.2	0.4	0.2	0.4	0.2	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	MEX	0.5	14.1	2.6	0.4	0.4	0.5	0.8	0.4	0.3	0.3	0.1	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	USA	0.9	0.6	1.3	0.2	0.3	0.2	0.4	0.2	0.2	0.1	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0
Asia	CHN	0.1	0.0	1.4	0.3	1.1	1.4	0.7	0.3	0.3	0.2	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	IND	0.1	0.0	1.6	2.3	0.4	0.5	0.9	0.4	0.6	0.3	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.2
	JPN	0.1	0.0	1.4	1.8	0.2	0.4	0.3	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	KOR	0.2	0.1	2.5	4.6	0.5	1.4	0.6	0.3	0.3	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Europe	DEU	0.1	0.1	2.1	2.5	0.4	0.6	0.2	1.5	1.0	1.0	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1
	FRA	0.1	0.1	1.7	1.7	0.3	0.3	0.2	2.2	1.0	0.8	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1
	GBR	0.2	0.1	2.2	1.9	0.4	0.4	0.2	1.8	1.0	0.5	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1
	ITA	0.1	0.0	0.9	1.3	0.3	0.3	0.1	2.3	1.2	0.6	0.1	0.2	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.1
Latin America	ARG	0.0	0.1	0.6	0.4	0.1	0.1	0.1	0.3	0.1	0.1	0.0	1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	BRA	0.1	0.1	1.1	0.6	0.1	0.1	0.1	0.4	0.2	0.2	0.1	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0
	CHL	0.2	0.4	3.0	1.7	0.2	0.2	0.3	0.5	0.2	0.2	0.2	3.2	1.3	0.2	0.0	0.0	0.0	0.0	0.3	0.0
	COL	0.1	0.2	1.9	0.6	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Africa	EGY	0.1	0.0	2.2	2.4	1.1	1.4	0.3	1.2	0.6	0.9	0.8	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	ETH	0.0	0.0	0.1	0.2	0.3	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	KEN	0.0	0.0	0.4	0.9	1.5	0.1	0.1	0.4	0.1	0.7	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.3
	NGA	0.0	0.0	0.7	1.1	0.6	0.1	0.1	0.6	0.2	0.7	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	ZAF	0.1	0.0	1.5	1.7	0.6	0.3	0.2	1.4	0.4	0.8	0.3	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.0

### 2. Forward Linkages

		North America			Asia				Europe				Latin America				Africa				
		CAN	MEX	USA	CHN	IND	JPN	KOR	DEU	FRA	GBR	ITA	ARG	BRA	CHL	COL	EGY	ETH	KEN	NGA	ZAF
North America	CAN	0.5	3.8	0.7	0.1	0.2	0.2	0.4	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MEX	0.7	3.2	0.3	0.0	0.1	0.1	0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	USA	2.5	2.7	1.6	0.3	0.5	0.7	1.6	0.6	0.8	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Asia	CHN	0.3	0.4	1.1	0.4	0.6	1.2	1.7	0.5	0.6	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	IND	0.2	0.3	1.0	1.5	0.4	0.6	1.4	0.4	0.6	0.4	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	
	JPN	0.2	0.2	0.8	3.3	0.2	1.1	1.2	0.3	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	KOR	0.2	0.4	0.7	5.5	0.4	0.5	0.7	0.2	0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Europe	DEU	0.1	0.2	0.5	1.0	0.2	0.1	0.2	1.0	0.8	0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	FRA	0.1	0.2	0.5	1.0	0.2	0.2	0.2	3.3	1.0	0.9	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	GBR	0.3	0.2	0.6	1.0	0.4	0.2	0.3	2.3	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	ITA	0.1	0.2	0.4	0.8	0.2	0.1	0.2	2.9	1.1	0.7	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Latin America	ARG	0.1	0.4	0.7	0.6	0.2	0.4	0.2	1.1	0.3	0.2	0.4	2.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	BRA	0.3	1.1	1.4	1.9	0.2	0.4	0.3	1.7	0.5	0.3	0.4	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.1
	CHL	0.2	1.1	1.1	1.8	0.9	1.1	1.0	1.4	0.4	0.3	0.4	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.1
	COL	1.5	0.4	2.9	0.3	0.1	0.3	0.2	3.5	0.7	1.2	0.5	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Africa	EGY	0.1	0.1	0.6	1.3	0.7	0.4	0.5	2.4	1.0	1.3	3.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	ETH	2.5	0.2	3.3	0.2	2.7	0.5	0.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.5	0.0	0.0	0.0	0.0
	KEN	0.5	0.6	1.5	0.2	1.8	0.5	1.1	0.4	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.0	0.0	0.1	0.1
	NGA	0.9	0.6	0.4	0.2	2.6	1.4	1.0	0.3	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
	ZAF	1.6	1.0	0.7	0.5	2.7	0.4	1.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.0

Sources: Eora Global Supply Chain Database; and IMF staff calculations.

Note: "Backward linkage" refers to the value added of the column country embodied in the row country's exports, as a percentage of the row country's exports. "Forward linkage" refers to the value added of the row country embodied in the column country's exports, as a percentage of the row country's exports. Warmer colors indicate stronger linkages, signifying greater cross-border value chain integration. The figure shows that African countries' bilateral linkages are generally weaker, oriented outside their home region, and characterized by stronger forward than backward linkages. Data labels in the figure use International Organization for Standardization (ISO) country codes.

$$\ln Y_{ij} = \Omega_i + \Pi_j + \gamma' \mathbf{G}_{ij} + \beta' \mathbf{T}_{ij} + e_{ij},$$

where  $Y_{ij} \in \{BL_{ij}, FL_{ij}\}$ ,  $\Omega_i$  is a country- $i$ -as-origin fixed effect,  $\Pi_j$  is a country- $j$ -as-destination fixed effect,  $\mathbf{G}_{ij}$  is a vector of bilateral geographic variables,  $\mathbf{T}_{ij}$  is a vector of bilateral trade agreement variables, and  $e_{ij}$  is a mean-zero error. The purpose of the fixed effects is to control for country-specific drivers of value chain integration (such as a country's size or industrial specialization). The purpose of the geographic variables is to capture features of bilateral geography that may facilitate or hinder value chain integration. The main right-hand-side variables of interest are those related to trade agreements, which will be used to gauge the contribution that (deep) trade agreements can make to fostering GVC integration.

The geographic variables are taken from the CEPII database (Conte, Cotterlaz and Mayer 2022) and include:

- The log of bilateral kilometer distance between  $i$  and  $j$ , measured as the population-weighted distance between major cities.
- A dummy taking the value of 1 if  $i$  and  $j$  share a border, and zero otherwise.
- A dummy taking the value of 1 if  $i$  and  $j$  are on the same continent, and zero otherwise.
- A dummy taking the value of 1 if  $i$  and  $j$  are the same country, and zero otherwise.

The trade agreement variables are based on a dummy that takes the value of 1 if  $i$  and  $j$  are part of the same regional trade agreement, and zero otherwise. This dummy is also taken from the CEPII database. In addition, the regression includes interaction terms that allow for regional trade agreements to have different effects (1) in Africa and (2) if they are one of the world's four major regional trade agreements: the EU, NAFTA, ASEAN, and MERCOSUR.

## Results

Annex Table 4.1 reports the results of the regressions described above. Four broad findings stand out. First, country fixed effects alone explain a very large share of the variation in bilateral backward and forward linkages. Second, the effects of geographic and trade agreement variables on backward and forward linkages are, in both economic and statistical terms, the same. Third, the geographic variables are all highly statistically significant and have the expected sign: distance impedes bilateral value chain integration; a common border and being located on the same continent facilitate it; and the domestic value-added content of exports tends to be larger than their foreign value-added content.

Fourth and most importantly, the average trade agreement is associated with a statistically significant ( $e^{0.33} - 1 \approx 39$  percent increase in bilateral backward and forward linkages. However, there is a lot of heterogeneity across agreements. The average trade agreement in Africa is only associated with a ( $e^{0.33 \cdot 0.28} - 1 \approx 5$  percent increase in bilateral backward and forward linkages. At the other end of the spectrum, backward and forward linkages within NAFTA are more than ( $e^{0.33+1.91} - 1 \approx 830$  percent larger than the average linkage not subject to a trade agreement, even after controlling for country effects and geography.

It is possible to ascertain the contribution of each of the three groups of explanatory variables—country effects, geography, and trade agreements—to the observed variation in bilateral backward and forward linkages by means of a variance decomposition. To this end, note that

$$\ln Y_{ij} = \widehat{\Omega}_i + \widehat{\Pi}_j + \widehat{\gamma}' \mathbf{G}_{ij} + \widehat{\beta}' \mathbf{T}_{ij} + \widehat{e}_{ij},$$

and

$$\text{Var}(\ln Y_{ij}) = \text{Cov}(\ln Y_{ij}, \ln Y_{ij}) =$$

**Annex Table 4.1. Drivers of Bilateral Value Chain Integration**

Dependent Variable:	Log Backward Linkage			Log Forward Linkage		
	(1)	(2)	(3)	(4)	(5)	(6)
Log distance		-0.506 (0.010)***	-0.433 (0.010)***		-0.506 (0.010)***	-0.433 (0.010)***
Common border		0.963 (0.039)***	0.915 (0.039)***		0.963 (0.039)***	0.914 (0.039)***
Common continent		0.130 (0.016)***	0.053 (0.016)***		0.130 (0.016)***	0.052 (0.016)***
Same country		5.615 (0.077)***	6.130 (0.079)***		5.615 (0.077)***	6.131 (0.079)***
RTA			0.327 (0.016)***			0.326 (0.016)***
RTA * Africa			-0.284 (0.038)***			-0.277 (0.038)***
RTA * MERCOSUR			1.136 (0.198)***			1.137 (0.198)***
RTA * ASEAN			0.493 (0.097)***			0.494 (0.097)***
RTA * NAFTA			1.914 (0.355)***			1.915 (0.355)***
RTA * EU			0.822 (0.039)***			0.823 (0.039)***
R-squared	0.95	0.97	0.97	0.95	0.97	0.97
Number of observations	34,596	34,596	34,596	34,596	34,596	34,596
Number of countries	186	186	186	186	186	186
Number of African countries	51	51	51	51	51	51
Fixed effects:						
Destination-country	Yes	Yes	Yes	Yes	Yes	Yes
Origin-country	Yes	Yes	Yes	Yes	Yes	Yes

Source: IMF staff calculations.

Note: The table provides results from regressions performed on (the natural logarithm of) bilateral backward and forward linkages for 186 countries. All data are for the year 2019. Robust standard errors are in parentheses. \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively. ASEAN = Association of Southeast Asian Nations; EU = European Union; MERCOSUR = Southern Common Market; NAFTA = North American Free Trade Agreement.

$$= \text{Cov}(\ln Y_{ij}, \hat{\Omega}_i + \hat{\Pi}_j) + \text{Cov}(\ln Y_{ij}, \hat{\gamma}' \mathbf{G}_{ij}) + \text{Cov}(\ln Y_{ij}, \hat{\beta}' \mathbf{T}_{ij}) + \text{Cov}(\ln Y_{ij}, \hat{e}_{ij}),$$

where the first term can be interpreted as the contribution to the overall variation in  $\ln Y_{ij} \in \{\ln BL_{ij}, \ln FL_{ij}\}$  of country effects, the second term as the contribution of geographic factors, the third term as the contribution of trade agreements, and the fourth term as the unexplained portion of the variance. Using this approach and the regression results above, 89 percent of the variation in backward linkages and 90 percent of the variation in forward linkages can be attributed to country effects; 9 percent of the variation in both can be attributed to geography; 1 percent of the variation in both can be attributed to trade agreements; and the rest of the variation is unexplained.

It is also possible to use the estimates above to decompose the gap in value chain integration between any two pairs of countries. For any two pairs of countries  $ij$  and  $kl$ ,

$$\ln Y_{ij} - \ln Y_{kl} = (\hat{\Omega}_i + \hat{\Pi}_j - \hat{\Omega}_k - \hat{\Pi}_l) + \hat{\gamma}' (\mathbf{G}_{ij} - \mathbf{G}_{kl}) + \hat{\beta}' (\mathbf{T}_{ij} - \mathbf{T}_{kl}) + (\hat{e}_{ij} - \hat{e}_{kl}),$$

where the first term is the portion of the gap due to country effects, the second term is the portion due to geography, the third is the portion due to trade agreements, and the fourth is the portion of the gap that remains unexplained. This approach is used to construct Figure 6 in Chapter 2.

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