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Shifting the dial: Using the AfCFTA to boost export growth and diversification in Rwanda

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Abstract

Rwanda has made significant progress in growing and diversifying its export bundle, as is evidenced by rising export values as a percent of GDP, increases in the number of export products and destinations, a decline in the concentration of goods exports in tea and coffee, and a diversification of services exports. However, progress on these fronts has slowed. Export growth has largely been driven by gold exports, and rising re-exports to the Democratic Republic of Congo. Exports outside of gold have only just kept pace with GDP growth, exporter numbers are declining and the share of Africa in the export bundle has stagnated and become increasingly concentrated. The African Continental Free Trade Area (AfCFTA) presents a critical opportunity for Rwanda to shift the dial and build on its efforts to drive economic growth through international trade. This paper draws on a combination of firm level trade transaction data and partial equilibrium simulation techniques to calculate the potential trade and revenue effects for Rwanda arising from the AfCFTA. A distinct contribution of the paper is that the analysis incorporates the actual tariff concession offers by member states. The simulations of the AfCFTA show that Rwandan exports to the new preference partners can increase by 23% while imports rise by 13%. These gains more than quadruple to 104% if African countries implement a trade facilitation agreement that that reduces trade costs. The exporter-level data suggests that entry of new smaller exporters is likely to be an important driver of the increase in export value. While lower import duties result in a loss of customs duties of US$ 5.5 million, these losses are attenuated by the long phase-down period of tariff reductions and additional revenues generated through additional VAT, excise revenue, and other border taxes.

1. Introduction

The African Continental Free Trade Area (AfCFTA) presents a critical opportunity for Rwanda to build on its efforts to drive economic growth through international trade.[1] Over the past decade, exports have been a central part of Rwanda's development agenda, with a target of 17% growth per annum set in the 2017-2024 National Strategy for Transformation (NST1) (Rwanda Ministry of Finance and Economic Planning, 2017). Boosting exports is now listed as one of the top 5 priorities in the 2nd National Strategy for Transformation (NST2), that has the aim of increasing export revenues by at least 13% annually, driven by agriculture and manufactured goods.[2]

Rwanda has seen exports more than double since 2010 in response to major investments in traditional exports like minerals, coffee and tea, to more ambitious projects around creating a vibrant tourism sector and establishing a gold processing industry. However, progress on these fronts has slowed. Export growth has largely been driven by gold exports, and rising re-exports to the Democratic Republic of Congo. Exports outside of gold have only just kept pace with GDP growth, exporter numbers are declining and the share of Africa in the export bundle has stagnated. Services exports have also not fully recovered following their collapse during the COVID-19 pandemic.

By creating a single market for goods and services and deepening regional integration, the AfCFTA has the potential to spur economic growth and reduce poverty by boosting intra-Africa trade, increasing competition and accelerating industrial development. The World Bank (2020), for example, predicts that by implementing tariff reductions, the AfCFTA will boost intra-Africa exports by 22%, with manufacturing experiencing the strongest increases. If the AfCFTA also leads to reductions in trade costs through reductions in non-tariff measures

1 The AfCFTA is a framework agreement that covers trade in goods, trade in services, investment, intellectual property rights, competition, and E-commerce, as well as dispute settlement mechanisms.

2 To boost exports, the NST2 sets out to prioritize "Made in Rwanda", double exports levels from USD 3.5 Bn to USD 7.3 Bn through scaling up private investments, enhancing export focus in key sectors with high potential (fuelled by non-traditional products, agro-processing, mining focusing on value addition), operationalise industrial parks and setting up new industries in priority sectors such as agro-processing, biomanufacturing & pharmaceuticals, construction, mineral processing, etc., and develop quality logistics and standards to meet local and export market requirements. https://www.gisagara.gov.rw/index.php?eID=dumpFile&t=f&f=105584&token=fb04d3feca2d4a8b86889206e625abc3535e80e2

and improved trade facilitation, intra-Africa exports could increase by 81%, with manufactured good exports rising by 110%.

Rwanda has been a strong proponent of greater continental integration as articulated in its Vision 2020, and its joining of the Common Market for Eastern and Southern Africa (COMESA) in January 2004 and the East African Community (EAC) in 2007 (implementing the common external tariff (CET) on 1 July 2009). Rwanda has now taken this vision forward, playing a leading role in driving the AfCFTA agenda.[3] For example, the Agreement establishing the trade area was signed on 21st March 2018 in Kigali, and Rwanda was amongst the first group of countries to participate in the Guided Trade Initiative that operationally kick-started trade under the Agreement in October 2022.

Historically, Rwanda has benefited from regional integration with exports of goods to EAC partners more than doubling in the three years following its joining of the customs union in 2009 (World Bank, 2022), driven partly by lower costs for exporters from falling tariff on imported intermediate inputs associated with the CET (Frazer, 2012).[4] Rwanda's growth in trade with the EAC, however, has subsequently stagnated with the region declining in importance as an export destination (World Bank, 2022). Regional exports have become increasingly dependent on the DRC. The AfCFTA has the potential to re-invigorate Rwanda's trade with Africa, offering greater potential for scale economies, learning from exporting and export diversification.

However, the extent to which AfCFTA will boost Rwanda's trade with the continent depends crucially on how the agreement reduces intra-Africa tariffs, trade costs and other non-tariff barriers to trade. The AfCFTA, for example, does not require the liberalisation of tariffs on all products. Countries and regional economic communities (RECs) are able insulate themselves from import competition by retaining tariffs on up to 3% of tariff lines (Schedule C products), subject to the restriction that imports of these goods do not exceed 10% of total intra-Africa

[3] Rwanda is also a participant in the COMESA-EAC-SADC (Southern African Development Community) Tripartite Free Trade Area (TFTA) that was launched in June 2015. The TFTA covers market integration, infrastructure development and industrial development, with a parallel agreement on the movement of business people (UNECA, 2020).

[4] See also AfDB (2019) that shows an intensification of trade within the EAC after its establishment in 1999. This contrasts with the experience of COMESA and the Economic Community of West African States (ECOWAS).

imports. Rwanda has also already made significant progress in integrating into the region through its membership in the EAC and COMESA. The gains in exports for Rwanda, therefore, depend primarily on how the AfCFTA opens up new markets in Africa, including, for example, Southern African Customs Union (SACU) and the Economic Community of West African States (ECOWAS).

The gains for Rwanda will also depend crucially on how intra-Africa trade costs are reduced by the implementation of the Annexes of the AfCFTA Protocol on Trade in Goods that cover customs co-operation, trade facilitation, nontariff barriers, technical, sanitary and phytosanitary barriers, and transit arrangements. For example, the World Bank (2020) calculates that the increase in Rwandan exports to Africa rises from 4% under tariff liberalisation alone, to 38% in a scenario where trade costs are also lowered through implementation of a trade facilitation agreement and reductions in non-tariff barriers.

The effect of the AfCFTA is also likely to differ across firms. Available evidence for Uganda and South Africa shows that regional trade agreements have enabled the entry of smaller, less productive, and more volatile exporters into the regional market (Chien et al., 2022; Matthee et al., 2018; World Bank, 2024). Finally, the welfare gains from the AfCFTA depend on whether the growth in trade is driven by trade creation or trade diversion. Trade creation, or 'new' trade arises from improved access to lower-cost imports from the partner country and is considered welfare-enhancing. Trade diversion is welfare-diminishing and occurs when imports are diverted from more efficient exporters towards less efficient exporters located in member states of the free trade agreement.

This paper takes these considerations into account and studies the implications of the AfCFTA for Rwandan exports, imports and revenue, while accounting for differences in the impact across products and firms. To conduct the analysis, the paper uses transaction-level trade data for Rwanda from 2010 up to December 2018 to present a firm-level analysis of Rwandan exports. This analysis of the transaction data provides insight into differences in the characteristics of exporters within key product categories and across export destinations. These insights can help tailor polices that target firm-level responses to the AfCFTA.

Next, the paper conducts a product-level partial equilibrium simulation of the trade and revenue impacts for Rwanda of the AfCFTA arising from tariff reductions and improvements

in customs procedures due to the implementation of a trade facilitation agreement (TFA). The model covers 52 African countries and, unlike almost all other studies (e.g., AfDB (2019), World Bank (2020) and UNECA (2021)), accounts for actual tariff reductions offered in the Provisional Schedule of Tariff Concessions (STC) submitted by AfCFTA member states. The model is also extended, using the transaction level import data for 2018, to include the actual tariffs after exemptions, as opposed to the statutory tariffs, applied by Rwanda on imports, thereby allowing more precise estimates of the import and revenue effects for Rwanda of the AfCFTA.

The simulations of the AfCFTA show that Rwandan exports to the new preference partners can increase by 23% while imports rise by 13%. These gains more than double if African countries implement a trade facilitation agreement that that reduces trade costs. The exporter-level data suggests that entry of new smaller exporters is likely to be an important driver of the increase in export value. While lower import duties result in a loss of customs duties of US$ 5.5 million, these losses are attenuated by the long phase-down period of tariff reductions and additional revenues generated through additional VAT, excise revenue, and other border taxes.

The remainder of the paper is structured as follows. The next section presents a background overview of the Rwandan economy covering its policy framework with respect to the AfCFTA and its macroeconomic and trade performance. This is followed by an analysis of the exporter characteristics using the trade transaction data. Lastly, the study simulates the trade and revenue effects of the AfCFTA for Rwanda.

2. The Rwanda policy framework, macroeconomy and trade performance

2.1. Rwanda and the AfCFTA

As illustrated in Figure 1, the AfCFTA is a bold proposal.[5] It is broad in that it covers 54 African countries, and it is deep in that it extends beyond just liberalising trade in goods and services

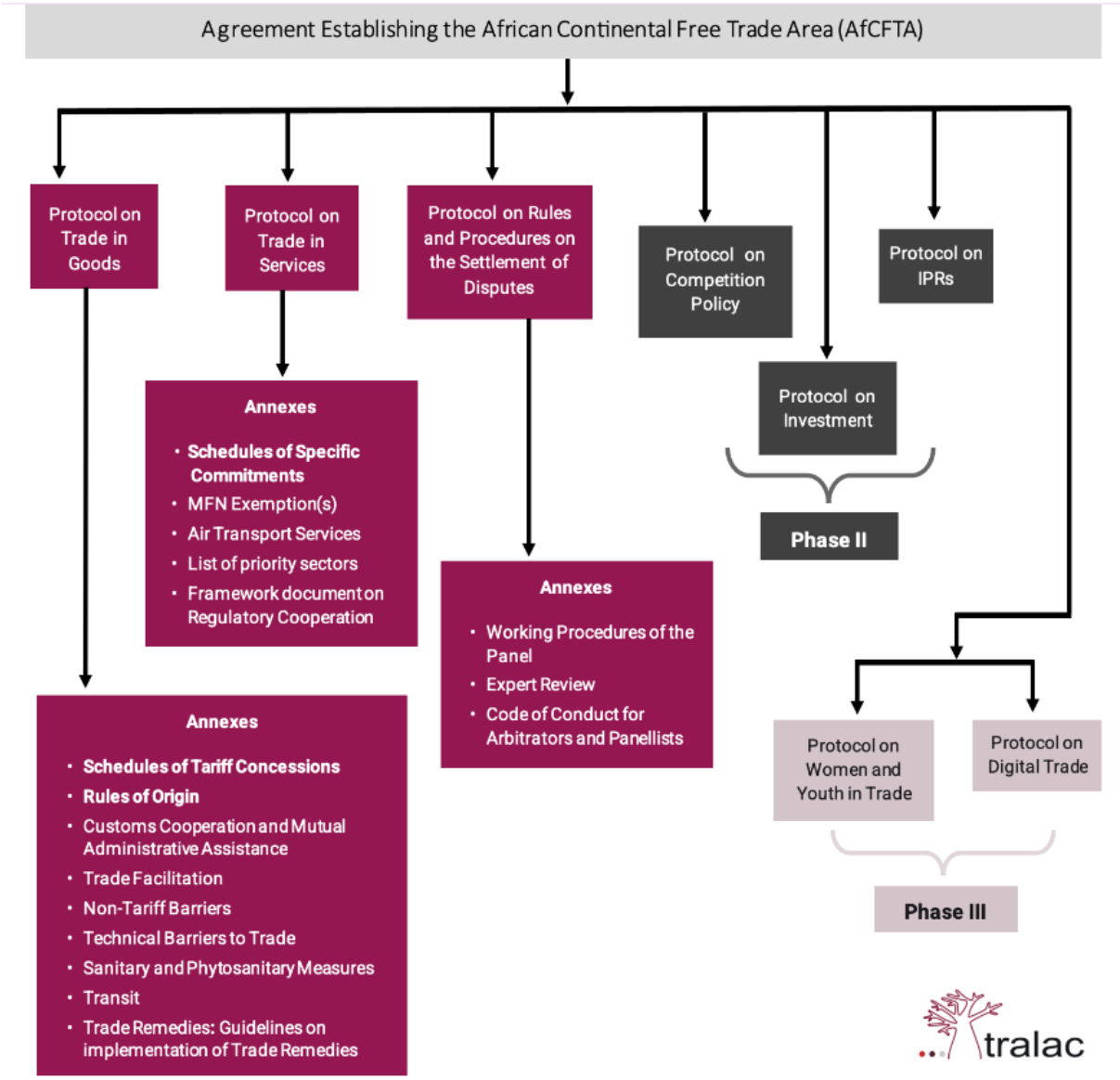
[5] Eight RECs have been officially recognized as building blocs of the AfCFTA: ECCAS, ECOWAS, EAC, SADC, COMESA, AMU, CEN-SAD and IGAD. (TRALAC, 2024)

(Phase I), covering competition policy, intellectual property rights, and investment (Phase II), as well as digital trade and women and youth in trade (Phase III).[6] Furthermore, the negotiations are all-encompassing, with the Protocol on Trade in Goods, for example, covering tariff concessions[7], rules of origin, trade facilitation, non-tariff barriers, technical barriers to trade, transit, sanitary and phytosanitary measures. The Protocol on Trade in Services includes schedules of specific commitments, Most Favoured Nation (MFN) exemptions, air transport services, and a framework document on regulatory cooperation (TRALAC, 2024). The AfCFTA also includes a dispute settlement mechanism, which has been in force since 30 May 2019.

Figure 1: Architecture of the AfCFTA

[6] The negotiations of Phase II issues, which include provisions on investment, competition policy and intellectual property rights, have been ongoing since April 2021. In May 2021, EAC partner states agreed to negotiate on the investment protocol as a bloc.

7 Under the AfCFTA, countries plan to liberalize in phases based on product type and the economic position of member countries. To start, 90 percent of tariff lines will be liberalized over a 10-year period for Least Developed Countries (LDCs) and over a 5-year period for non-LDCs. Countries will maintain up to 7 percent of tariff lines under a sensitive products category which will be fully liberalized over a 13-year period for LDCs and over a 10-year period for non-LDCs with linear liberalization beginning at year 6 of implementation. Countries can exclude remaining 3 percent of tariff lines from liberalization if it does not account for more than 10 percent of total intra-Africa trade.



Source: TRALAC (2024)

While substantial progress in implementing the agreement has been made, several blockages to trade remain. So far (as of February 2024), 46 State Parties have submitted tariff concessions that have been verified by the AfCFTA Secretariat. The Protocols on Investment, Intellectual Property Rights (IPRs), and Competition Policy have been completed and adopted, and progress is being made in negotiating the Protocols on Digital Trade and Women and Youth in Trade (TRALAC, 2024).

Although the start of trading under the AfCFTA Agreement officially began on 1 January 2021, no trade took place as negotiations on tariff concession and Rules of Origin, particularly in

relation to clothing and textiles and automotive products, were not yet finalized. To initiate some trade under the agreement, the Guided Trade Initiative (GTI) was launched in October 2022. The GTI covered a narrow range of products (ceramic tiles, batteries, horticulture products, flowers, avocados, palm oil, tea, rubber, components for air conditioners) and commenced with eight State Parties, including Rwanda. In January 2024, the number of participating countries expanded to 24.

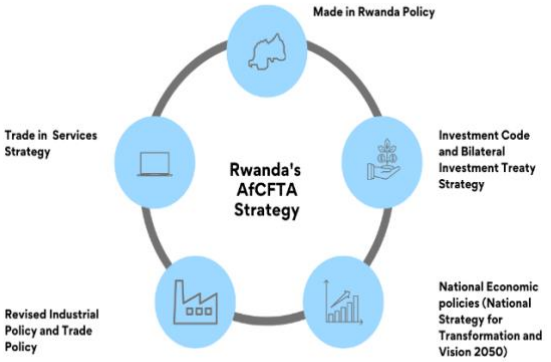
Alongside negotiations, Rwanda has put together an AfCFTA strategy to serve as a guide for policy and investment. The overarching objective of the national AfCFTA implementation strategy is to "*complement Rwanda's broader development vision, especially in relation to effective implementation of the AfCFTA while enabling the country's integration into regional and continental markets''*. This overarching goal is supported by four specific objectives meant to encourage policy cohesion and stakeholder engagement. The first objective is around *ensuring the timely implementation of AfCFTA commitments*; the second focuses on *integrating competitive firms into commodity value chains*; the third goes beyond the goods market and stresses the importance of *building a competitive service sector to serve the continental market*, and the final objective highlights the importance of *promoting inclusivity and increased awareness of the continental market.*[8]

As part of drafting an implementation strategy, the government has identified product and market opportunities under the AfCFTA. This identification process builds on existing national policies (Figure 2) and export priorities around traditional (coffee, tea and minerals) and non-traditional exports (manufactured products like beverages, apparel and services exports primarily through tourism). Using the Revealed Comparative Advantage methodology, the strategy outlines priority products and areas as shown in Figure 3. In terms of regions, the Eastern, Central and Southern African markets will continue to be high export growth markets with potential in Western Africa (Ghana and Nigeria) and Northern African Markets (Algeria, Tunisia and Morocco).

Figure 2: Rwanda's relevant policy landscape

Figure 3: Rwanda's Product and market priorities under the AfCFTA

8 See Rwanda's National AfCFTA Implementation Strategy for more details.



Source: Authors' illustration of the policy landscape

Agro-processing: including tea, coffee, meals, wheat flour, meslin flour, other cereal meals and flour, animal or vegetable oils, sugar, and dairy products	DRC, and other central Africa markets, Northern Africa (Tunisia, Algeria and Morocco), West Africa (Nigeria, Ghana), South Africa
Mining and mineral processing: including ores and concentrated base metals, tin, lead, and other crude minerals	South Africa
Construction materials: including cement, lime, fabrics	Central Africa market (DRC and others)
Agro-products and grains	DRC, Ethiopia, South Africa, Zambia
Textiles: worn clothing and other worn articles	Central African market, Ethiopia, Egypt, South Africa, Mozambique
Processed metals	DRC
Processed fuels	DRC, Ethiopia

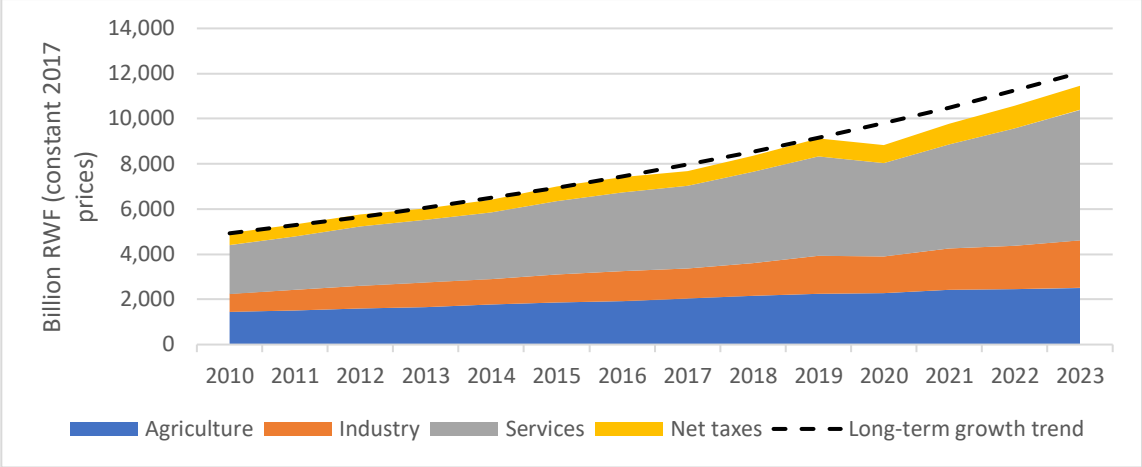
Source: Rwanda Implementation Strategy for the African Continental Free Trade Area (2021)

2.2. Macroeconomic and aggregate trade overview

Over the years, the Rwandan government has prioritised sound economic policy and transparency with strategic investment in high-growth sectors. The result has been impressive and consistent real Gross Domestic Product (GDP) growth averaging around 7.1 percent per annum from 2010 (Figure 4) and exceeding economic growth in other member states of the East African Community. GDP growth has also been broad based covering all the major sectors, with the strongest growth (over 9% compound growth per annum) in the services sectors covering wholesale & retail trade, transport, hotels & restaurants, information & communication, financial services and cultural, domestic & other services.

The only period of negative GDP growth was in2020 in response to the COVID-19 pandemic, with particularly sharp declines in transport and hotels & restaurants services in response to the collapse in tourism. The rebound in 2021 was swift with high growth powered by private consumption, government consumption and investment (World Bank, 2022). The level of GDP, however, still remains below its long-term trend (Figure 4), with transport and hotels & restaurants sectors not having fully recovered following the collapse in tourism during the COVID-19 pandemic.

Figure 4: Composition of Rwandan GDP



Source: Author's calculations using data from the National Institute of Statistics of Rwanda. All values measured in constant 2017 prices. Long-term growth trend is based off the compound annual growth rate between 2010 and 2019, with the trend benchmarked against 2010 GDP values.

Moving to Rwanda's trade performance, Figure 5 presents the value of exports and imports as a share of GDP from 2009 to 2023 for formal trade in goods. Exports are categorised as gross exports that include re-exports, total exports that exclude re-exports and non-gold exports that exclude re-exports and gold exports.

Import values have exceeded export values over the entire period as imports of energy, capital and intermediate inputs have fuelled the growing economy (IGC, 2021). In both cases, trade flows have risen consistently as a share of GDP, with the export share rising from 3.9% in 2010 to 15.2% in 2022. However, much of this growth in formal trade in goods is driven by strong increases in gold trade that accounted for 37% of the increase in the value of gross exports and nearly 20% of the increase in value of imports from 2015 to 2022.

Transit trade has also been a major contributor towards Rwanda's growth in export value. Given its geographic location, the economy serves as a major transit route for trade between the DRC and the rest of the world. This is reflected in a high and growing share of re-exports as a share of Rwanda's gross export value. For example, re-exports made up 14% (US$ 34.2 million) of the gross export value of goods in 2010. By 2022, this had risen nineteen-fold to US$ 650 million (32% share), with the DRC the primary destination. Petroleum products,

followed by edible preparations, animal or vegetable fats & oils, and cereals make up the bulk of re-exports (Twum, 2022).[9]

Once gold and re-exports are excluded, Rwanda's export performance is less positive, with non-gold exports of goods (excl. re-exports) as share of GDP no higher in 2022 than in 2013. Growth in non-gold exports only grew by 6.8% per annum from 2017 to 2022, which is far lower than the 17% goal set out in the NST1, as well as the 13% set out in the NIST2. Positive price movements have also contributed significantly to the rise in export values, particularly for commodity exports (Twum, 2022). The export volume responses have been more modest.

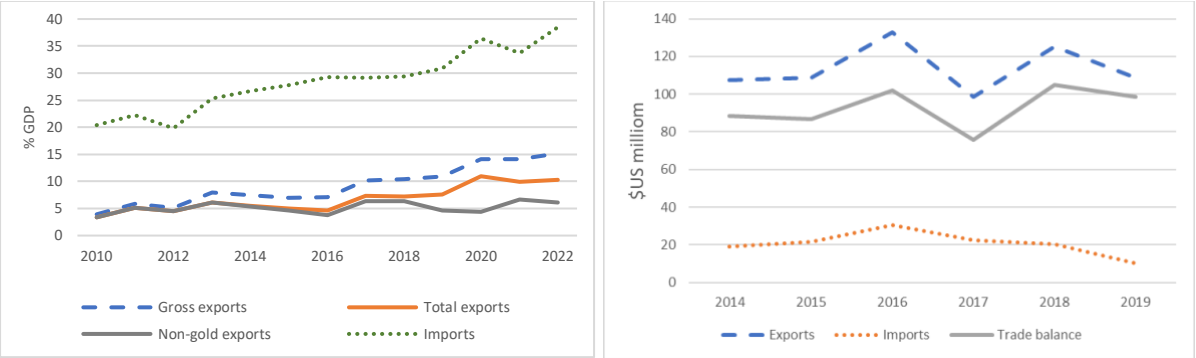
Figure 5 panel (b) presents the picture of informal exports and imports in Rwanda from 2014 to 2019. The figure indicates that informal exports far exceed informal imports. Informal exports also account for a high share of gross exports in Rwanda, making up close to 10% of the total in 2019, and are almost entirely destined for the Democratic Republic of Congo (DRC) (81% average from 2014 to 2019) and Uganda (13%). Informal imports are largely sourced from Uganda (54%) followed by Burundi (28%). The product composition of informal cross-border trade is dominated by agricultural commodities, including livestock, beef meat, flour, fresh or dried fish, sugar, and dried beans (World Bank, 2022).

Informal traders are therefore an important constituency for the Rwandan authorities to consider when implementing policies to enhance trade under the AfCFTA. Informal traders are particular affected by administrative burdens and border closures, such as the Gatuna border closure in February 2019 that led to a sharp reduction in informal trade between Rwanda and Uganda. Reductions in barriers to cross-border trade can, therefore, boost intra-regional trade, assist in formalising informal trade, and thus the collection of revenue, and help reduce the vulnerability of small-traders to risks and challenges at the border post.

[9] The United Arab Emirates was the second largest export destination in 2019 with a 30% share in gross export value. Most of the export value to the UAE is made up of gold (HS 7208), which makes up 81% of the total value of exports to the UAE, 92% of the total value of Rwanda gold exports, and 24% of total value of Rwanda gross exports. According to UN Comtrade data, Rwanda exported US$ 303.4 million of gold in 2019. The country also imported US$242 million of gold in the same year (gold is the second largest imported product item (at 4-digit HS)). Much of the exports, therefore, reflect re-exports or gold that is processed.

Figure 5. Formal exports and imports of goods as share GDP (%) and informal trade (US$ million)

(a) Formal trade flows (b) Informal trade flows



Source: Own calculations using data sourced from UN Comtrade, National Institute of Statistics of Rwanda (for 2023 trade data), Rwanda National Bank (for informal trade) and World Development Indicators (for GDP data). Gross exports include re-exports. Non-gold exports exclude re-exports and gold exports. Total exports exclude re-exports.

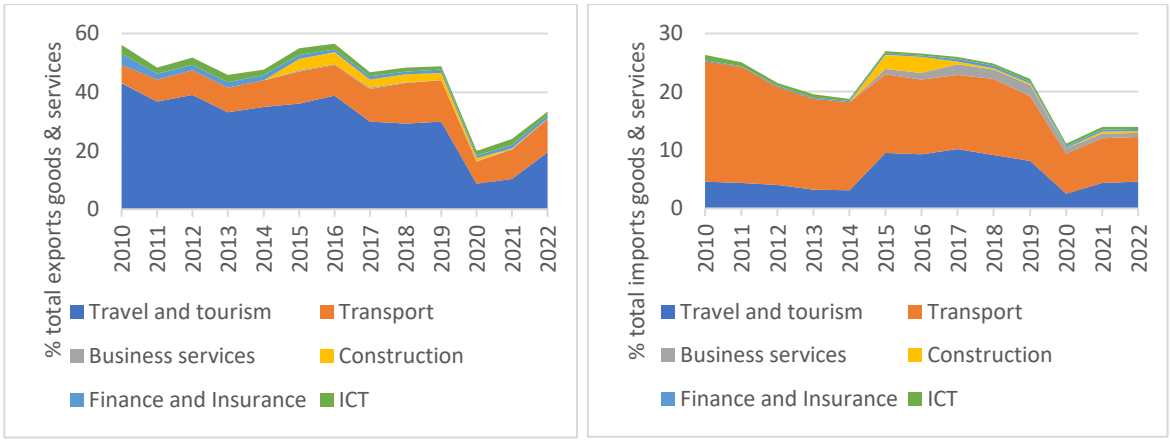
Trade in commercial services also make a considerable contribution to aggregate trade, as shown in Figure 6. Services accounted for 24% of aggregate imports of goods and services between 2014 to 2019, with transport services making up between 50% and 90% of this value. Exports of services are even more important as a share of aggregate exports, making up a 49% share in 2019, although this is lower than the 56% share in 2010. The high value of services exports reflects the importance of the tourism industry for the Rwandan economy, with travel and tourism exports making up just over two-thirds (69%) of the value of services exports from 2010 to 2019. Rwanda has made good progress in diversifying its services exports into transport (29% in 2019), reflecting Rwanda's role in transit trade within the region, and construction services (5% share in 2019). Exports of business, ICT, finance and insurance services, however, have lagged expectations set out under the NST1 and have grown very slowly (1.5% per annum from 2010 to 2019), declining in importance as a share of total exports of services.[10]

[10] A key strategic intervention of the NST1 was a shift in orientation in Rwanda's export outlook towards services export, including in high-tech areas such as Financial Services/Fin-tech/e-payment, BPOs, Legal, Security services, and other professional services.

Figure 6 also illustrates the disproportionate negative impact of COVID on services trade. Services exports fell sharply relative to goods exports, with the share of services in total exports declining by more than half from 49% in 2019 to 20% in 2020 as global trade and travel restrictions affected travel, tourism and transport. Exports of travel and tourism services, for example, fell by US$ 339 million (74%) in 2020 from 2019 values. While services exports recovered in 2021, partly driven by a recovery in tourism, the sector's share in total exports and GDP remain below pre-pandemic levels. Similarly, services imports as share total imports and GDP have not recovered to pre-pandemic levels.

Figure 6. Services exports and imports as share trade

(a) Services exports as share total exports (b) Services imports as share total imports



Source: Own calculations using, UN Comtrade for goods trade and TradeMap for services trade. Only commercial services are included. The category for "*Government goods and services, n.i.e.*" are excluded. Re-exports are excluded.

3. Rwanda export composition and tariffs

This section presents a more detailed analysis of the geographic and product composition of Rwandan exports and tariff barriers.

3.1. Geographical composition of trade

Table 1 presents summary data for Rwandan exports and imports of goods by geographical region for 2013 and 2022. The values are based on Rwanda reported trade data obtained from UN Comtrade. The data excludes services, informal trade and re-exported goods.

The table highlights several interesting features regarding Rwanda's trade. On aggregate, exports rose from US$ 482 million to US$ 1369 million from 2013 to 20221, representing an average annual compound growth rate of 12.3%. However, as noted earlier, much of this growth has been driven by the strong increases in exports of gold to countries that rose from zero in 2013 to US$ 556 million, or 41% share, in 2022. If gold exports are excluded, export of goods rose at a much slower rate of 6% per annum over the 2013 to 2022 period.

Turning to the geographic composition of export trade, Rwanda has established a presence in new markets, with the United Arab Emirates emerging as a major market, although these exports are almost entirely gold (82% share), followed by ores & concentrates and precious stones. Rwanda's trade with the continent has grown weaker in importance, with the African share falling from 38% to 21% (or 38% to 35% if gold is excluded) between 2013 and 2022. A key driver of this decline are exports to the EAC customs union members that fell in both value and share. Whereas the EAC accounted for 22% of aggregate exports of goods in 2013, by 2022 this had fallen to 2.5% (4.2% excluding gold). The DRC has become the primary export market, accounting for 19% of Rwanda's non-gold exports. The share of trade from the Rest of Common Market for Eastern and Southern Africa (COMESA) member states is particularly low (less than 2%), despite the establishment of the Free Trade Area. Other African countries also make up a small share of Rwanda’s exports, although the share of exports to the Rest of Africa grouping has risen (to 5% in 20122), reflecting some diversification of exports beyond the traditional African export partners. The major products imported from the Rest of Africa are food preparations for infants or young children, cement, oil seeds and oleaginous fruits and coffee.

Despite this geographic diversification, exports to Africa remain highly concentrated in a few countries. The top 5 destinations make still make up 83% of total exports to Africa in 2022 (compared to 97% in 2013). The main African destinations in order of export value in 2022 are the Democratic Republic of Congo (54% share exports to Africa), Ethiopia (9%), South Sudan (7%), Republic of Congo (7%), and Uganda (6%).

Table 1. Rwanda exports and imports of goods by regional composition, 2013 and 2022

Country	Total (US$, million)		Growth (%), 2013-2022	Share (%)		Trade Balance (US$, million)	
Groupings	2013	2022		2013	2022	2013	2022

Exports							
Rest of World	297.3	1081.4	15.4	61.7	79.0	-1143.2	-2495.3
of which gold	*0.0*	*555.7*		*0.0*	*40.6*		
Africa	184.5	287.1	5.0	38.3	21.0	-357.7	-222.9
EAC	108.1	34.3	-12.0	22.4	2.5	-314.4	-1067.5
SACU	1.8	0.7	-10.4	0.4	0.0	-71.0	-156.7
ECOWAS	1.1	3.9	15.6	0.2	0.3	0.1	-57.8
DRC	70.9	154.6	9.1	14.7	11.3	63.0	121.1
Rest of Comesa	0.5	25.2	55.7	0.1	1.8	-36.6	-125.3
Rest of Africa	2.3	68.3	46.0	0.5	5.0	1.2	25.3
Total	481.7	1368.5	12.3	100	100	-1500.9	-3756.2
Imports							
Rest of World	1440.5	3576.7	10.6	72.7	69.8		
Africa	542.2	1547.9	12.4	27.3	30.2		
of which gold	*0.0*	*510.0*		*0.0*	*10.0*		
EAC	422.4	1101.8	11.2	21.3	21.5		
SACU	72.8	157.3	8.9	3.7	3.1		
Ecowas	1.0	61.8	58.0	0.1	1.2		
DRC	7.9	33.5	-	0.4	0.7		
Rest of Comesa	37.1	150.5	16.8	1.9	2.9		
Rest of Africa	1.1	42.9	-	0.1	0.8		
Total	1982.7	5124.6	11.1	100.0	100.0		

Source: Own calculations based on UN Comtrade data.

Notes: The data excludes re-exports and informal exports. The trade balance is calculated as exports – imports. EAC only includes Burundi, Kenya, Uganda and Tanzania, while Rest of COMESA includes all other COMESA members, whether part of the free trade area or not.

Imports also grew strongly – from US$ 1.98 billion in 2013 to US$ 5.1 billion in 2022, or a compound growth rate of 11.1%. The value of imports from Africa and the rest of the world are substantially higher than exports leading to trade deficits with each (Table 1). For example, the total value of imports from Africa in 2022 equaled US$ 1.5 billion, compared to US$ 287 million for exports. A third of the imports from Africa comprise of gold, reflecting the processing and exporting/re-exporting of gold sourced from the region to the rest of the World (primarily United Arab Emirates). The deficit remains even after excluding gold, mainly because of the trade imbalance with the EAC. Overall, imports from Africa make up between 27% to 30% of aggregate import value, with the EAC (21.5% in 2022), SACU (3.1%), and the Rest of COMESA (2.9%) the main contributors.

3.2. Product composition of trade

Rwanda has made considerable progress in diversifying its export bundle.[11] In 2001, coffee and tea dominated exports of goods, together accounting for 57% of export value (Figure 7). Other key exports were Niobium, tantalum, vanadium or zirconium (17%) and other (mainly tin) ores and concentrates (16%). As shown in Figure 8, by 2022, the export bundle had diversified considerably. Gold emerged as a major source of exports, while the traditional exports of tea, coffee and tin fell in share. Exports of non-food products rose including, tungsten (4%), cement (3%) and bars/rods of steel (2%). Diversification also occurred within the agriculture industry, with wheat flour, brans, food preparations, dried leguminous vegetables and vegetable saps rising in importance as export products.

More detailed product analysis by Twum (2022) shows that this diversification has been accompanied by a rise in both the number of export products and markets. Export performance, however, has been stronger in resource-based products and products with lower product complexity, with exports of more complex products declining across the period 2010-14 and 2015-19. Further, the prominent contribution of price increases in driving Rwanda's export growth increases vulnerability of exports to global price instability. Most pertinent in this regard are movements in the price of gold, on which the Rwandan export bundle has become highly dependent.

Figure 7: Product composition of Rwanda exports 2001

[11] For a more detailed presentation of Rwandan export performance see Twum (2022).

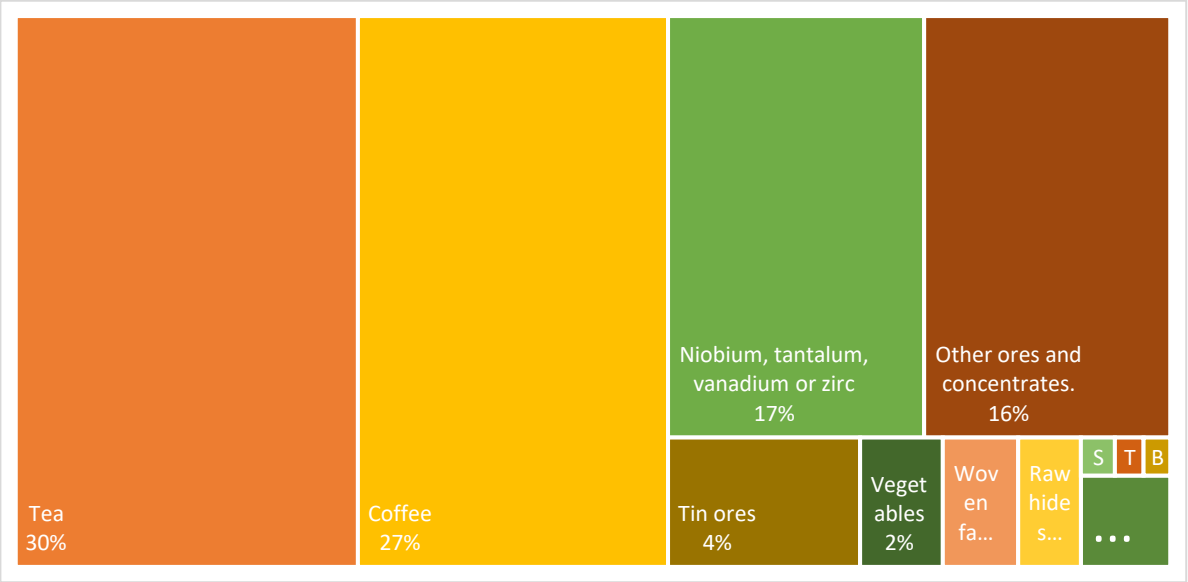
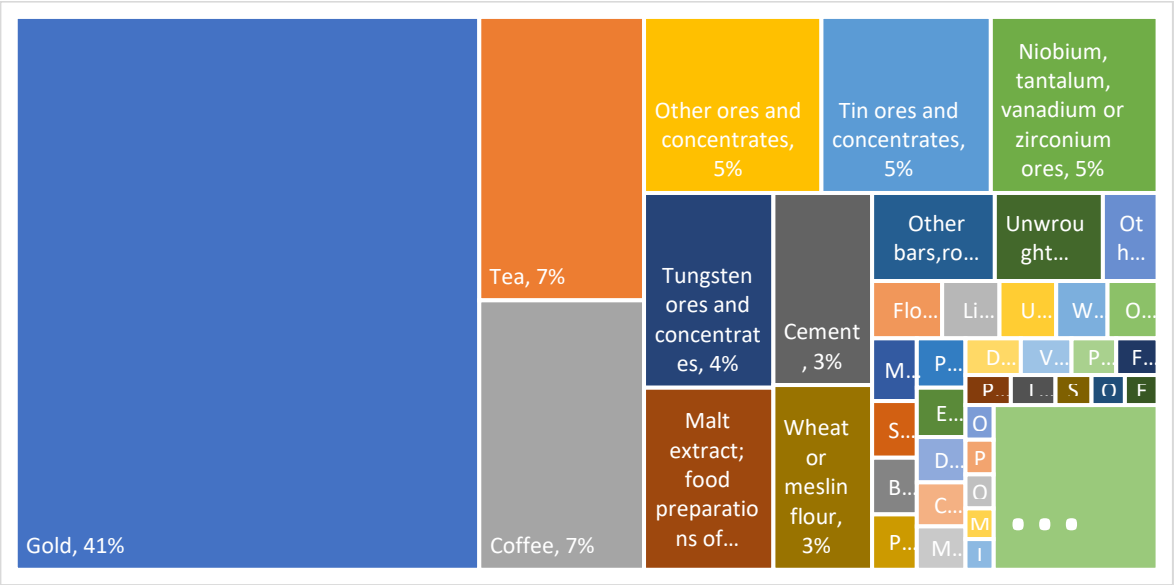


Figure 8: Product composition of Rwanda exports 2022

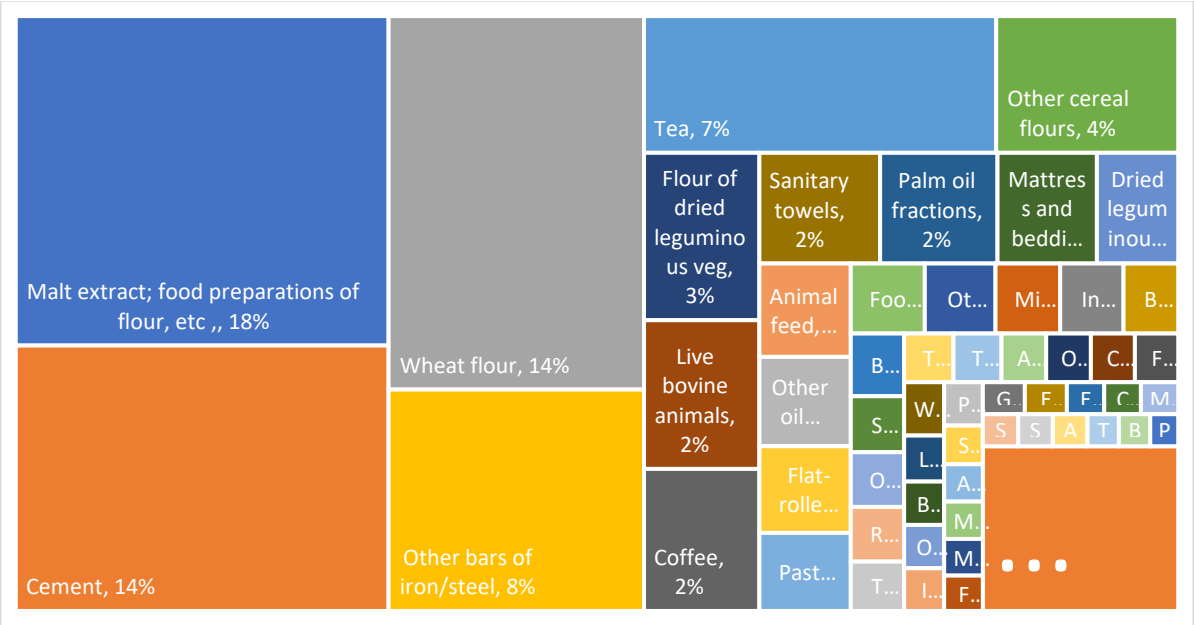


Source: Own calculations using UN COMTRADE data at HS4-digit level. Exports exclude services, re-exports and informal trade. The value of exports to the world in 2001 is $56 million and for 2022 is US$ 1368 million.

For comparative purposes, Figure 9 presents a tree map of the product composition of Rwanda exports to Africa in 2022. While agricultural products dominate Rwandan exports to the African regions, the top export products also include manufactured goods such as metal products (e.g., iron or non-alloy steel) and cement. Exports to Africa are also more diversified than total exports. The top 10 products exported to Africa account for 74% of the value of

exports to the continent, compared to 83% for the top 10 products in total exports (74% share if gold is excluded).

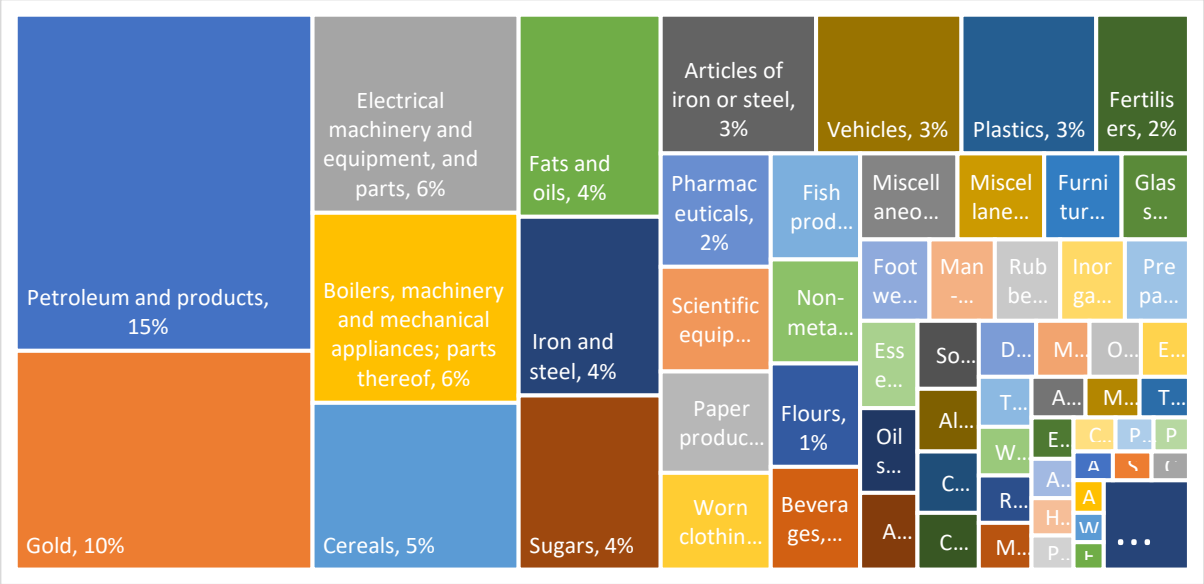
Figure 9: Product composition of Rwanda exports to Africa, 2022



Source: Own calculations using UN COMTRADE data at HS4-digit level. Exports exclude services, re-exports and informal trade. The value of exports to Africa in 2022 is US$ 287 million.

Turning to imports, Figure 10 presents a Treemap of the product composition (at HS 2-digit level) of Rwanda imports in 2022. Rwanda imports are far less concentrated than exports, with petroleum products (15%), gold (10%), machinery and mechanical appliances (6%) and electrical machinery and equipment (6%) the major imported products. Food products such as cereals, vegetable or animal oils, sugar and other edible preparations also fall within the top 20 HS2-digit level products imported.

Figure 10: Product composition of Rwanda imports, 2022



Source: Own calculations using UN Comtrade data at HS2-digit level. The value of imports in 2022 was US$ 5.1 billion.

Several broad implications for Rwandan trade under the AfCFTA can be drawn from the product-level analysis. With the exception of trade with the EAC, Rwanda trade with the rest of the region tends to be low, sparse and concentrated in few products and few countries. The composition of exports to the region differs from exports with the rest of the world, in that it is less concentrated and is comprised of more manufactured products. The AfCFTA thus presents an opportunity for Rwanda to expand exports to the region (particularly outside of the EAC), and assist in diversifying exports towards manufactured goods.

3.3. Tariffs on Rwandan imports[12]

The trade gains by Rwanda from implementing the AfCFTA will depend heavily on the reduction in tariffs imposed by Rwanda on its imports from Africa and the tariffs imposed by other African countries on Rwandan exports. This section, therefore, presents a background analysis of tariff barriers affecting Rwanda's trade with the rest of Africa, together with an assessment of how the AfCFTA Schedule of Tariff Concessions will affect these. The tariff

[12] The analysis in this section does not consider constraints to trade from non-tariff measures that may exceed the effect from tariffs. See Kee et al. (2008).

analysis is largely based on 2019 data given that this is the base year for the AfCFTA Schedule of Tariff Concessions.

Table 2 presents different measures of import-weighted average tariffs imposed by Rwanda on imports from selected countries and regions. Two different types of tariffs are presented: the statutory applied rates for 2019 obtained from the TRAINS data and the actual applied rate (the collection rate) for 2018 obtained from the Rwanda transaction data. The statutory applied rates reflect Rwanda's gazetted tariff schedules applied on a Most Favoured Nation (MFN) and preferential trade basis. The statutory tariffs include "Stay of Applications" rates, which are country-specific import duties negotiated amongst EAC members that deviate from the EAC Common External Tariff (CET). The stay of applications rate can be higher or lower than the CET rate and is widely used amongst EAC members, as documented by Rauschendorfer and Twum (2022). Rwanda, for example, makes use of the Stay of Applications mostly to decrease tariffs (Rauschendorfer and Twum, 2022).

The collection rates measure the actual tariff applied after accounting for exemptions and remissions on customs duties that may apply.[13] Firm- and product-specific exemptions that usually apply for 12 months are granted through the EAC's Duty Remission Scheme.[14] In addition, a wide range of specific exemptions on customs duties are granted, for example on imports by donor agencies, international and regional organisations with diplomatic accreditation, relief goods imported for emergency use, hotel equipment, items imported for use in licensed hospitals, goods and equipment for use in aid-funded projects, mosquito nets, approved seeds for sowing, amongst others.[15]

[13] The gap between the statutory rates and the collections rates differs widely across African countries. According to data from the World Bank (2020), average collection rates are less than half the statutory rates for Republic of Congo, Rwanda and Sao Tomé & Príncipe.

[14] Country-specific duty remissions are also granted to all firms on selected raw materials and inputs also published in the EAC gazettes. The duty remissions provide decreased tariff rates to individual firms for specific products with the names of the beneficiaries published in the EAC gazettes (Rauschendorfer and Twum, 2022).

[15] For a list of products exempt from customs duties see https://www.rra.gov.rw/fileadmin/user_upload/THE_EXEMPTIONS_REGIME.pdf.

As can be seen from Table 2, the average statutory applied rate is higher on Rwanda's imports from African economies, outside of the COMESA free trade area (FTA)[16] and EAC customs union (Burundi, Kenya, Tanzania and Uganda) where preferential access is granted, than imports from the rest of the world. For instance, the weighted average statutory applied tariff on imports from members of SACU (10.6%), the Economic Community of West African States (ECOWAS) (11.7%) and the Rest of Africa (9.5%) exceed that on imports from the Rest of the World (7.5%). These differences, however, do not reflect different tariff rates at the product level as Most Favoured Nation (MFN) rates apply in each case. Rather they reflect differences in the composition of imports from African economies compared to imports from the rest of the world. The implication is that compared to imports from the rest of the world, the composition of imports from African economies tends to be biased towards products that face high tariff rates.[17]

A second feature of the structure of tariff protection is the very high preference margins granted on imports from the EAC customs union (and the other COMESA FTA members). Preference margins can be calculated as the difference between the MFN tariff and the preferential tariff. Looking at the statutory MFN rates, exporters in the rest of the EAC customs union and COMESA FTA benefit from a 20.3% to 23% preference margin in the Rwanda market. The preference margins are more than double the weighted average tariff applied on imports from outside these regions (7.7%) and 8-10 percentage points higher than the simple average MFN tariff across all HS 8-digit tariff lines. The implication is that while tariff preferences under the EAC common external tariff have been effective in stimulating imports by Rwanda from EAC customs union partners (and to a lesser extent from other COMESA FTA members), they have also resulted in a shift in the value and product composition of these imports towards relatively protected products. This suggests that much

[16] The COMESA free trade area members include: Burundi, Comoros, Djibouti, Egypt, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Tunisia, Uganda, Zambia, and Zimbabwe. The COMESA members not part of the free trade area include: Democratic Republic of Congo, Eritrea, Ethiopia, Swaziland, and Somalia. Note, however, that tariffs imposed on imports from Eritrea are 90% of the MFN rate, while imports from Ethiopia are taxed at 20% of the MFN rate.

[17] The findings are the same when using the simple average tariff across import transactions. The simple average MFN tariff on import transactions from African countries outside of COMESA FTA and EAC customs union is 18.9% compared to 15.2% on import transactions from outside of Africa.

of the import growth from the other EAC customs union members may be due to trade diversion.

A third feature is that collection rates are lower than the statutory rates. The average import-weighted statutory applied rate is 5.9%, compared to 4.9% for the collection rate. This gap can be attributed to the many exemptions granted on payment of customs duties. A disaggregated analysis of the transaction data indicates that exemptions on customs duties cover 37% of the value of dutiable (products with a positive statutory tariff) imports from countries outside of the EAC customs union and COMESA FTA.[18] The revenue 'lost' is equivalent to 40% of the actual customs duties collected through import tariffs.

The final observation is the continued application of tariffs on goods imported from the EAC customs union and COMESA FTA member states. These tariffs apply to goods that do not meet the rules of origin requirements, which stipulate the minimum local content or domestic processing for the good to be eligible for duty-free access. Import tariffs are imposed on 5.1% of Rwandan imports of non-exempt dutiable products (i.e., non-exempted products with positive MFN tariffs) from the rest of the EAC customs union, with edible oils from Uganda the most affected.[19] In the case of other COMESA FTA member states, tariffs are imposed on 4.1% of the aggregate import value of non-exempt dutiable products. These numbers equate to a 95% to 96% preference utilisation rate, which is very high compared to other estimates for Rwanda and COMESA member states (UNCTAD, 2022).[20]

Table 2: Different import weighted average tariff rates on Rwanda imports, 2018/2019

		Statutory MFN	Statutory applied	Actual applied	Share imports
Expor	EAC customs union	23.0	0.0	1.0	21.3
	COMESA FTA	20.3	0.0	0.4	2.7
	ECOWAS	11.7	11.7	7.9	0.1

[18] We define products exempt from duty if they are specifically identified in the transaction data as being exempt, and if the actual applied tariff is below the statutory tariff.

[19] The revised EAC rules of origin published in 2015 imposed stricter rules of origin on vegetable oils and fats. Under these rules of origin, for edible oils to be traded duty-free, they cannot be produced using imported oils (e.g. palm oil). They require a further degree of processing, e.g. from the crushing of seeds, which can be imported.

[20] Preference utilisation rates for COMESA member states are estimated members at around 60%, but there is enormous variation across preference arrangements, countries, and product (UNCTAD, 2022).

SACU	10.6	10.6	6.8	4.3
Rest Africa	9.5	9.5	8.6	1.0
Rest World	7.5	7.5	6.0	70.6
World	11.3	5.9	4.9	100.0
World, excl. EAC and COMESA FTA	7.7	7.7	6.1	
EAC preference margin		23.0		
COMESA FTA preference margin		20.3		

Source: Own calculations using data obtained from TRAINS and Rwanda Transaction data. Note: Imports are restricted to goods declared for home consumption and goods cleared using the simplified declaration (applicable for imports less than Frw 500,000). No gold imports were reported in the transaction data for 2018. The total value of imports in the 2018 calendar year is US$ 1992.6 million, which is lower than the Rwanda Balance of Payment value of US$ 2284 million. The differs can be attributed to re-exports of goods imported. Tariffs are weighted by import values. The weighted average tariff, therefore, reflects a combination of tariff rates and products imported. Statutory tariff data are for 2019, but weights are based on 2018 import values obtained from the Rwanda Transaction data. The actual applied rate (collection rate) is based on 2018 Transaction data. All tariffs include the Stay of Applications. COMESA FTA only covers those countries that are members of the free trade area, excluding EAC customs union members. The Rest of Africa, for example, includes the Democratic Republic of Congo, Eritrea, Ethiopia, Swaziland and Somalia. The EAC only includes Burundi, Kenya, Tanzania and Uganda.

3.4. The EAC Provisional Schedule of Tariff Concessions

The relatively high tariff barriers imposed on imports from African countries outside of the EAC and COMESA FTA point to the potential for substantial increases in Rwanda imports from Africa following tariff liberalisation under the AfCFTA. However, the increase in imports will also depend on the Schedule of Tariff Concessions (STCs) being offered by the EAC to the rest of Africa. While most countries/RECs have now submitted provisional Schedule of Tariff Concessions (STCs) covering non-sensitive products (Schedule A covering 90% of lines) to the AfCFTA secretariat for validation, not all, including the EAC, have defined the Schedule B (sensitive products covering up to 7% of lines) and C (excluded products), as the final decision on these awaits the conclusion of the rules of origin negotiations. Nevertheless, the available STCs provide some insight into the degree to which the AfCFTA will reduce tariff barriers to intra-Africa trade.

Table 3 presents the import weighted average applied 2018 tariff on Rwanda imports from African countries without preferential access (i.e., excluding EAC customs union and COMESA FTA member states) by product grouping and STC Schedule. Also presented are shares of non-preference country imports by product.

Table 3: Import weighted average applied tariff on imports from non-preference African countries by product and the EAC Provisional Schedule of Tariff Concessions, 2018

	Applied tariffs by Schedule (%)			Import shares (%)	
	A	B&C	Total	Share total imports	Share B&C in product imports
Total	4.7	15.8	7.2	100	22.4
Animal and Vegetable Products	1.0	16.5	2.7	5.9	11.0
Food and Beverages	14.8	23.1	21.3	8.2	78.3
Mineral Products	1.4	23.9	11.1	3.5	43.0
Chemicals and Plastics	1.8	16.8	4.5	22.0	18.2
Wood and Articles Thereof	8.0	9.3	8.4	5.6	31.5
Textiles, Apparel and Footwear	19.6	23.7	20.8	3.3	30.2
Precious Metals	20.6		20.6	0.0	0.0
Base Metal and Articles Thereof	2.4	5.7	3.3	21.3	27.3
Mechanical Machinery	3.3	10.1	3.6	11.6	3.7
Electrical Machinery	3.2	16.3	4.0	10.5	5.7
Transportation Vehicles	14.5	25.0	14.5	6.2	0.0
Other	15.0	22.2	15.8	1.8	10.4
Simple average tariff based on EAC provisional STC offer	11.3	27.9	12.9		
Value imports (US$ mill)	82.2	23.8	105.9		

Source: Own calculations using data obtained from Rwanda Transaction data for 2018.
Note: Weights are based on imports in 2018 from African countries excluding EAC members adopting the common external tariff (Burundi, Kenya, Tanzania and Uganda) and members of the COMESA free trade area as obtained from the Rwanda Transaction data. Mineral Products include Petroleum, Food and Beverages includes Tobacco; Wood and Articles Thereof include Paper & Furniture; Textiles, Apparel and Footwear include Leather; and Electrical Machinery includes specialist electrical equipment. The simple average tariff based on the complete PSTC covers all HS 8-digit tariff lines in the EAC offer.

The table reveals several insights. In their offer, the EAC has designated product lines with relatively high tariffs as sensitive or excluded products. The simple average common external tariff across all Schedule B & C lines is 27.9% (see second last line of table), whereas the average tariff on Schedule A products is 11.3%. The implications of the EAC tariff offer for Rwanda, however, will depend on its imports from Africa outside of the EAC and COMESA FTA, as well as the exemptions and Stays of Applications. The table, therefore, also presents the import weighted applied tariffs by Rwanda, using imports from African countries outside of the EAC customs union and COMESA FTA as weights. As found with the EAC STC. Rwandan imports of Schedule B & C products face higher levels of tariff protection at 15.8% compared to 4.7% for Schedule A products.

Schedule A products cover 77.6% of total imports by Rwanda from non-preferential access African countries. However, over two-thirds (77%) of these imports already enter Rwanda duty-free, either because the MFN tariff is zero, or exemptions on customs duties have been granted. The combination of relatively low tariff protection, plus exemptions, diminishes the potential impact of Schedule A tariff reductions on Rwandan imports. Much of the effect of the AfCFTA on Rwandan imports will therefore depend on which products are designated as part of Schedule B. Given the slower phase-down of Schedule B tariffs, the effects will also be delayed.

Looking across products, tariff barriers are most restrictive on imports of Food and Beverages (21.3%), Textiles, Clothing and Footwear (20.8%) and Precious Metals (20.6%). Together these products made up only 11.5% of imports from Africa outside of the EAC customs union and COMESA FTA. Tariff barriers are least restrictive on imports of Animal and Vegetable Products (2.7%), Base Metal and Articles Thereof (3.3%) and Mechanical Machinery (3.6%), which together account for 38.8% of imports from the non-preferential access African countries.

Across all the product groupings, Schedule A tends to cover products with relatively low tariff levels. Sensitive and excluded products have higher levels of tariff protection and disproportionately include Food and Beverages products. For example, 78% of imports of Food and Beverages are included in Schedules B & C. This increases to 89% if imports are narrowed down to goods facing non-zero tariffs.

3.5. Tariff barriers on Rwandan exports

From the export perspective, Rwandan exporters stand to gain from improved market access in African outside of the EAC and COMESA FTA, subject to the AfCFTA tariff concession offers made by these countries. To assess this, we draw upon the data base used in the AfCFTA simulation model constructed by Edwards et al. (2024). This data includes bilateral import flows at the HS 6-digit product level between African countries in 2019 and includes the provisional STCs of 45 countries.[21] The trade data for Rwanda are for 2018 and are based on

[21] The model excludes tariff offers by Comoros, Djibouti, Eritrea, Ethiopia, Libya, Mozambique and Sudan (assuming that the EAC offer applies to Somalia and South Sudan). Rwanda already provides duty free access to imports from Comoros and Djibouti as part of the COMESA FTA. South Sudan and Somalia are now members of

exports (excluding re-exports) reported by Rwanda (obtained from UN Comtrade) and imports from the Rwanda Transaction data.

Table 4 presents the weighted average statutory applied tariffs imposed on Rwanda's exports to selected African countries and regions. Rwandan exports face the highest average tariffs to Rest of Africa (17%), ECOWAS (15.6%) and the DRC (12.9%). The average tariff imposed by SACU on Rwanda exports is relatively low (5.3%), in large part because over half of the export value is in duty-free products (mainly tin ores and concentrates, and machinery for agglomerating). In terms of export value, the DRC tariffs are the most binding, with almost all Rwanda exports facing a positive tariff (see final column of Table 4). The DRC also accounts for close to 85% of the value of exports to Africa outside of the EAC customs union and COMESA FTA. With regards to current products exported, tariff reductions by the DRC will therefore contribute the most towards boosting Rwanda's exports.

Table 4: Export weighted average applied tariff on Rwanda exports to Africa, 2019

	Statutory applied tariff (%)	Statutory MFN tariff (%)	Exports (US$ mill)	Share exports to Africa (%)	Share exports facing positive tariffs (%)
EAC customs union	0.0	14.7	58.9	38.9	0.0
COMESA FTA	0.0	12.2	15.5	10.3	0.1
ECOWAS	15.6	15.6	0.4	0.3	99.9
SACU	5.3	5.3	1.0	0.7	44.6
DRC	10.7	10.7	64.7	42.8	99.9
Rest Africa	17.0	17.1	10.7	7.1	99.0
All Africa	5.9	12.8	151.3	100.0	50.4

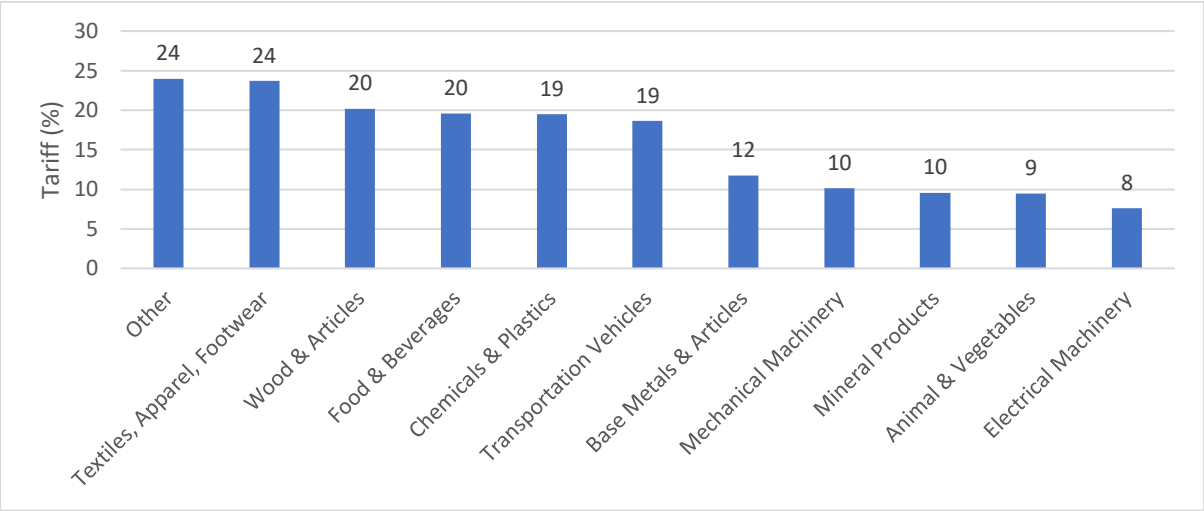
Notes: Own calculations using data from Edwards et al. (2024), updated using 2018 Rwanda reported data from UN Comtrade and 2018 Rwanda Transaction data for imports. Rwanda exports are used as weights. Destination tariffs are mostly based on 2019 data. The EAC only includes Burundi, Kenya, Tanzania and Uganda. COMESA FTA excludes the EAC customs union members.

Looking at Figure 11, Rwanda exporters to non-preference African countries face high tariffs (19% - 24%) across a wide range of products, including Other (non-metallic minerals and miscellaneous manufactured articles), followed by Textiles, Apparel & Footwear, Wood, Food & Beverages, Chemicals & Plastics and Transportation vehicles. Several of these products

the extended EAC. While the Democratic Republic of Congo is also a member of the EAC, the country has submitted its own STC. None of the new members have adopted the common external tariff of the EAC.

overlap with those prioritised by Rwanda for growth under the AfCFTA (e.g., agro-processing and non-metallic minerals) indicating the potential of the AfCFTA to realise the export expectations of Rwanda's policy makers. Much of these gains, however, will also depend on the specific tariff concession offers made by the African States.

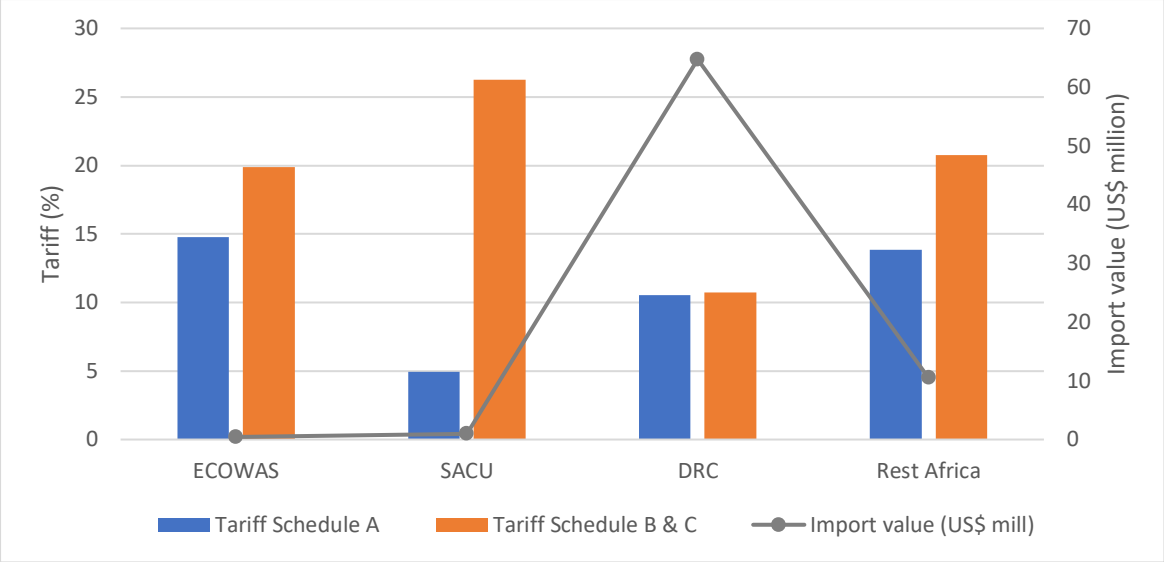
Figure 11: Weighted average tariffs on Rwanda exports to non-preference African countries by product



Notes: Own calculations using data from Edwards et al. (2024), updated using 2018 Rwanda reported data from UN Comtrade and 2018 Rwanda Transaction data for imports. Rwanda exports are used as weights. Destination tariffs are mostly based on 2019 data.

For further insight into how the AfCFTA will affect market access, Figure 12 presents the weighted average tariff on Rwanda exports to Africa by Schedule of the STC. Because not all African States have classified Schedule C and B products, these schedules are combined. As was the case with the EAC STC, Schedule A in most African States covers products with relatively low levels of tariff protection. The exception with respect to Rwandan exports is the DRC, where weighted average tariffs do not differ substantially by Schedule. In the case of SACU, however, Schedule B and C products are very highly protected, with Rwanda exports of these products facing an average tariff of 26%. Tariffs on Schedule B and C products in ECOWAS and the Rest of Africa are also high at around 20%. The broad implication is that the bulk of the gains in Rwanda exports under the AfCFTA are most likely to only kick-in once the Schedule B tariffs are reduced.

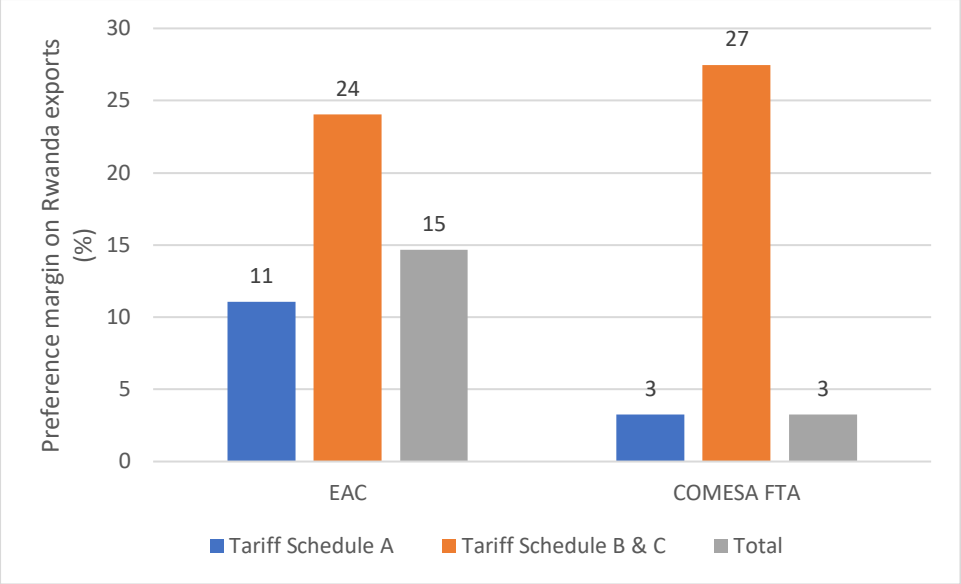
Figure 12: Weighted average tariffs on Rwanda exports to African destinations by AfCFTA Schedule



Notes: Own calculations using data from Edwards et al. (2024), updated using 2018 Rwanda reported data from UN Comtrade and 2018 Rwanda Transaction data for imports. Rwanda exports are used as weights. Destination tariffs are mostly based on 2019 data.

There is an additional consideration for Rwandan exporters. Rwandan exporters benefit from relatively high preference margins when exporting to the rest of the EAC. This is shown in Figure 13 which plots the weighted average preference margin conferred on Rwanda exports to the rest of the EAC and COMESA FTA. On average, Rwanda exporters benefit from a 15% preference margin when exporting to the EAC, but only 3% on exports to COMESA FTA member states. One implication of the AfCFTA is that by opening up the EAC market to exporters from other African economies, Rwandan exporters will be exposed to greater competition in their regional market. Given the importance of the regional market for Rwanda exports, this increased competition may have a deleterious effect on aggregate exports to Africa. However, as with other African States, the EAC Schedule of Tariff Concessions is structured such that it excludes (Schedule C products) or delays tariff reductions (Schedule B products) on the key products Rwanda exports to the EAC. The average EAC tariff on Schedule B & C products exported by Rwanda is 24%. For COMESA FTA destinations, the average tariff on these products is higher, at 27%.

Figure 13: Weighted average preference margin on Rwanda exports to EAC and COMESA FTA by AfCFTA Schedule



Notes: Own calculations using data from Edwards et al. (2024), updated using 2018 Rwanda reported data from UN Comtrade and 2018 Rwanda Transaction data for imports. Rwanda exports are used as weights. Destination tariffs are mostly based on 2019 data. The preference margins are calculated as the MFN tariff minus the statutory applied tariff.

3.6. Implications

Several implications for the possible impact of the AfCFTA on Rwanda trade flows follow from the tariff analysis. Rwandan exporters face considerable tariff barriers in accessing African markets outside the EAC and COMESA FTA. Tariff reductions under the AfCFTA therefore have considerable potential to boost Rwanda exports into the African continent. However, the export gains will be attenuated or delayed by the classification by many African States of highly protected products under Schedule C (excluded) or Schedule B (sensitive) in their tariff concession offers.

Rwandan exporters also benefit from relatively high preference margins when exporting to the rest of the EAC and, to a much lesser extent to COMESA FTA countries. Although the AfCFTA will expose Rwanda exporters to greater competition in these markets, the Schedules of Tariff Concessions of the EAC and COMESA FTA members exclude or delay tariff reductions on key export products, thus diminishing the potential adverse effect on Rwanda exports.

Looking at imports, the AfCFTA will boost imports by Rwanda from the rest of Africa. Average levels of tariff protection on imports from Africa outside of the EAC and COMESA FTA are

around 7% but reach over 20% for products such as food & beverages, and textiles, apparel & footwear. Lower tariffs under the AfCFTA will also reduce the high preference margin granted to the rest of EAC exporters in the Rwanda market. In doing so, the AfCFTA will help to correct some of the welfare-reducing trade diversion associated with Rwanda's membership in the EAC customs union. De Melo and Regalo (2014) refer to this as 'trade correction'. However, as many of the highly protected products are classified under Schedules B and C, the import response to the AfCFTA is likely to be diminished.

4. Characteristics of Rwanda exporting firms

In this section, we present an analysis of Rwandan firms in international trade. Mainstream literature has shown that the characteristics of exporting firms are very different from non-exporting firms (Bernard et al., 2003, 2007; Melitz, 2003). In particular, exporting firms are found to be larger and more productive than other firms (Bernard et al., 2007). Further, international evidence suggests that by entering exporting markets, firms grow significantly faster with regard to employment, output and productivity than non-exporting firms (Van Biesebroeck, 2005; Atkin et al., 2017).[22] By improving market access through lower tariff barriers and trade costs, the AfCFTA is expected to boost exports through a combination of new firms entering into exporting, and by increasing exports of existing firms. In this section we provide insight into some of the exporter-level characteristics that will underpin these adjustments in response to the AfCFTA.

4.1. Rwanda transaction data

The firm analysis draws on the Rwandan export transaction data for 2010-2018. This data provides detailed information on every trade transaction across the Rwanda border and covers information on the trader (anonymised), product (HS 8-digit level), destination/origin,

[22] While a large strand of the literature concludes that high productivity precedes entry into export markets, recent studies report that exporting improves productivity for manufacturing firms in Sub-Sahara Africa (SSA) (Van Biesebroeck, 2005).

date, and value among other key variables. The transaction data excludes informal cross-border trade and re-exports.

To prepare the data for analysis, several cleaning processes were implemented. First, re-exported goods are excluded. Secondly, outliers, duplicates, firms with missing anonymized trader identifier codes, and transactions with missing destination or origin codes were excluded. Second, gold and petroleum were excluded from the analysis as a high share of these goods are re-exported directly or after limited processing. Gold and petroleum make up to 23% of Rwanda exports and 14% of Rwanda imports in 2018 according to the raw transaction data.[23] Thirdly, informal exports are not included in the data.

Table 5 presents summary statistics of the export transaction data over two periods 2010-2014 and 2015-2018. A transaction in this table (and for the remainder of the analysis) is defined as the annual export of an HS6-digit product by a firm to a destination in a particular year. On average we observe 3050 transactions per year between 2010 and 2014. This increased to 3284 in the period 2015-2018. The average value of exports rose from US$344 million to US$455 million per year over the period 2015-2018. This increase in aggregate value can be attributed to an increase in the average number of products (776 to 855) as well as number of destinations (87 to 106). The average number of exporters, however, fell between the two periods, as is also found by the World Bank (2017).

Table 5: Summary Statistics – Transaction data for exports (annual average)

	Exports	
	2010-2014	2015-2018
Value of exports ($ mill)	344	455
Number of Transactions	3050	3284
Number of Firms	1143	1128
Number of Distinct Products	776	855
Number of Destinations	87	106

Notes: The following data are excluded: gold trade (HS 7108) and Petroleum (2710).

[23] The values and trends in aggregate exports using the transaction data are consistent with official sources including the Rwanda National Bank, UN Comtrade, International Monetary Fund and World Development Indicator database (See Figure A1 in the Appendix).

Table 6 presents a comparative analysis of the Rwanda exporters in relation to other African regions or countries. Compared to other countries, the churning of export firms in Rwanda is high compared to comparator countries, as indicated by a high entry rate (60%) and exit rate (62%). The negative entry rate of 2% (60%-62%) reflects a net exit of firms over the 2015-2018 period and a decline in the total number of exporters. Other countries in the EAC also exhibit negative entry rates (for example Uganda -1.5% and Kenya -4%). One explanation for the high exit rate is the very low survival rate. Only 23% of Rwanda exporters that enter continue exporting in the following year. This is substantially lower than the median for emerging economies (43%) and for other African countries (median 41%).

In terms of export levels, Rwanda lags behind other emerging economies. For example, aggregate exports of goods by Rwanda averaged US$0.45 billion between 2015-2018, compared to US$2.3 billion for the median African country. The aggregate value of Rwanda exports is also lower than other members of the EAC presented in the table. The lower export values for Rwanda arise from relatively few exporters (1302 vs. 1715 for the median African country) combined with relatively low values of exports per firm (US$ 276 thousand vs. US$ 1708 thousand) (see also World Bank (2017)). Compared to EAC members, Rwanda has substantially fewer firms than Kenya (5057) and marginally fewer than Tanzania (1899) and Uganda (1556).

One explanation for the relatively low number of firms is the relatively small size of the economy. When the number of exporters is compared to the size of the population, Rwanda (0.1 exporters per thousand inhabitants) performs comparably well against many other African countries (median of 0.6) and the EAC members of Uganda (0.04) and Tanzania (0.05). Rwanda is therefore not an outlier in Africa in terms of exporter numbers given its population size. This is not the case when compared to other emerging economies where the median country in the sample has 0.22 exporters per thousand inhabitants (a mean value of 0.45). Rwanda, therefore, lags behind its emerging economy peers in terms of exporter numbers.

As shown in Table 6, export values are concentrated amongst a few firms, but less so in Rwanda than most other emerging economies. For example, the share of aggregate exports of goods (excluding gold and petroleum) accounted for by the top 5% of exporters in Rwanda is 77%, compared to 85% for the median African country and 82% for the median developing

country. The concentration in Uganda is similarly low at 70%. Compared to the other countries in the sample, the distribution of export value in Uganda and Rwanda appears to be characterised by a 'truncated top' - there are too few large firms relative to the African peers, and other emerging economies. As argued by Fernandes et al. (2016), this suggests that policy and other distortions may be impeding investment and growth of high-productive firms.

Table 6: Firm characteristics – Rwanda compared to other African countries

	Total exports (U$ bill)	No. of exporters	No. of exporters per thousand inhabitants	Mean exports per exporter (U$'000)	Median exports per exporter (U$'000)	Share of top 5% exporters (%)	Entry rate (%)	Exit rate (%)	Entrant survival rate (%)
Rwanda (2015-2018)	**0.45**	**1302**	**0.10**	**276**	**6**	**77**	**60**	**62**	**23**
Uganda (2015-19)	1.1	1556	0.04	686	22	70	50.9	52.4	27
Kenya	4.0	5057	0.14	796	18	81	40	44	35
Tanzania	2.3	1899	0.05	1180	17	86	51	46	32
South Africa	58.8	21721	0.45	2699	29	92	28	26	49
Average - Developing Countries	21.7	7017	0.49	2206	63	81	38	37	43
Median Developing Countries	4.2	2931	0.22	1708	37	82	38	35	43
Average - African Countries	7.3	3585	0.26	1682	32	84	41	40	39
Median - African Countries	2.3	1715	0.06	1289	19	85	43	40	41

Source: Data for other African countries is obtained from Table 1 of Fernandes et al. (2016) and covers the period 2006-2008. The Fernandes et al. (2016) sample comprises 15 African countries and 38 developing countries. Rwanda data is sourced from the transaction data. The statistics for Uganda are based on transaction data excluding gold and petroleum over the period 2015-2019.

Note: Rwanda export data for 2015-2018 excludes gold and petroleum.

4.2. Exporter characteristics by destination region/country

To better understand how regional trade flows may underpin the aggregate results, Table 7 disaggregates some of the exporter characteristics by destination region/country for 2018. The table presents, for each region/country, the total value of trade, the number of exporter-destination trading relationships and the number of transactions, defined as firm-product (HS 6-digit)-destination export combinations. Using this information, total exports can be decomposed into the number of exporter-destination relationships, the mean number of transactions per firm and the mean value of exports per transaction.

The results in Table 7 provide several insights. First, corroborating with earlier product level analysis, firm-level exports are regionalized, albeit in a few countries, when measured in terms of the number of firms and number of transactions. In total, there are 386 exporter-destination relationships with the EAC in 2018 resulting in a total of 888 transactions, or 2.3 transactions per firm. Over 300 firms export to the DRC, with each firm exporting an average of 1.9 products. Looking across the Rest of Africa, SACU, Nigeria, and Ghana, the table shows that far fewer firms export to these destinations. Given its size, the number of firm-destination relationships to the rest of the world is higher (693), but the number of transactions per firm is lower at 2 than for exporters to the EAC. However, the average value of exports per transaction is higher to the rest of the world ($0.24 million) than to the EAC ($0.13 million).

The general finding is that the composition and characteristics of firms that trade within the EAC region differ from those that export to other destinations, particularly to destinations outside of Africa. Exporters to the EAC region are more numerous and export more products at lower values than exporters to the rest of the world. The differences will likely be more pronounced if informal traders are accounted for.

These results indicate that, when compared with exports to the rest of the World, the extensive margin, as measured by the number of firm-destination relationships and number of transactions per firm, is a relatively important contributor to aggregate export values to the EAC. The intensive margin (the value of exports per transaction and per firm) has a larger

contribution to aggregate value of exports to the rest of the world than is the case for exports to the EAC. Similar findings using transaction data are found for Uganda (Chien et al., 2022). These results suggest that trade agreements such as the EAC have been effective in raising intra-regional export values through increases in the number of trading relationships and the number of transactions.

Table 7: Exporter characteristics by destination, 2018

	Total trade (US$ mill)	Number firm-destination relationships	Number transactions	Mean trade per firm (US$ mill)	Mean transaction per firm	Mean value per transaction (US$ mill)
	(1)	(2)	(3)	(4)	(5)	(6)
Rest EAC	117	386	888	0.30	2.30	0.13
SACU	1	45	76	0.03	1.69	0.02
Nigeria	0	15	15	0.00	1.00	0.00
Ghana	0	5	46	0.03	9.20	0.00
Congo. Dem. Rep.	109	302	592	0.36	1.96	0.18
Rest COMESA	8	53	164	0.16	3.09	0.05
Rest Africa	11	72	190	0.16	2.64	0.06
Rest World	326	693	1383	0.47	2.00	0.24

Source: Own calculations using export transaction data.

Notes: Sample excludes gold. petroleum. missing firms. missing destinations. and outliers. Transaction here is defined as a firm-product-destination combination. Values in column (4) = (1)/ (2). Column (5) = (3)/(2) and column (6) = (1)/(3).

Table 8 presents additional information on exporter dynamics, focusing on entry, exit, and survival at the exporter-destination level. The results are split according to destinations, namely: the EAC, the Rest of Africa and the Rest of the World. The objective is to identify whether firm dynamics differ according to the destination of the export relationship. The annual average values over the 2015-2018 period are presented.

Table 8: Exporter-destination dynamics, 2015-2018

	Rest EAC	Rest Africa	Rest World	Total
Number new export relationships	315	319	380	1014
Entry rate	62.0	56.6	62.6	60.0
Exit rate	64.7	63.4	58.3	62.2
1-year survival rate	20.8	21.0	25.6	22.6
2-year survival rate	11.6	8.1	12.9	10.9
3-year survival rate	7.1	4.3	12.1	7.6
Mean value exports of entrants (US mill)	0.04	0.04	0.25	0.12

Average annual export growth of new export relationships for 3yr survivors (%)	11.9	27.7	55.1	36.1
Average annual export growth of existing export relationships (3yr window) (%)	-17.1	3.3	1.1	-2.2

Note: The unit of analysis is the firm-destination combination. Entry rate is calculated as the number of new firm-destination combinations in period *t* divided by the total number of firm-destinations in year *t*. The average over the 2015-2018 period is presented. 1-year survival rate measures the share of new entrants in t that survive in t+1. The 1-year survival rate covers new entrants in the period 2015-2017, the 2-year survival rate covers entrants from 2015 to 2016 and the 3-year survival rate covers entrants in the year 2015. The average annual export growth of new export relationships for 3yr survivors covers firms that entered in 2015 and continued exporting into 2018. Entry in an export relationship may be due to a new firm entry, or an existing firm expanding into new markets. Exit from a trade relationship can arise from a firm exiting from exporting or a continuing firm exiting from a destination.

Table 8 reveals some stark differences in exporter-destination dynamics for exports to the EAC and the rest of the world. Entry rates are high (62-63%) in both regions, but exit rates are higher for exporter relationships with EAC countries (64.7%) than exporter relationships with destinations outside of Africa (58.3%). Survival rates are higher for new exporter relationships with destinations outside of Africa than for EAC members. For example, the three-year survival rate for new exporter-destination relationships outside of Africa is 12.1% compared to 7.1% for exports to the EAC. Further, new exporter-destination relationships with the rest of the world commence with higher initial trade value (US$0.25 million on average vs. US$0.04 million to EAC countries) and once established, experience higher growth (55% per year over a 3-year window vs. 11.9% to the EAC and 27.7% to the Rest of Africa). Growth rates of new firm export relationships that survive are also much higher than established export relationships (36.6% vs. -2.2%).

The high entry and exit rates are indicative of considerable churning by exporters across destinations – more so than in the case of Uganda where entry and exit rates average around 51 to 53%. Survival rates for exporter-destination relationships are also lower in Rwanda than in Uganda (7.6% vs. 10.3% for 3-year survival rates). High entry/exit rates with low survival rates are suggestive of informational uncertainty on market opportunities together with inefficiencies, including insufficient trade finance, within the domestic market that inhibit survival and growth of exporters.[24] More research on those factors driving these exporter

[24] Cadot et al. (2013), for example, find that probability of survival of new exporters in Malawi, Mali, Senegal and Tanzania rises with the number of same-country firms exporting the same product to the same destination,

dynamics could provide useful policy insights on ways to increase firm survival and, thus, exporter numbers and aggregate export values.

4.3. Firm export performance and destination characteristics

To understand how characteristics of destination markets influence firm exports, this section makes use of estimates of a firm-gravity model for 2018 following the approach of Bernard et al. (2007). Given the richness of the firm-level data, we focus on aggregate exports to each destination, but also decompose how the aggregate values are driven by the number of exporters (extensive margin) and the mean value of exports per exporter (intensive margin), as well as the total number of transactions and the mean value of exports per transaction. Details on the model, including the econometric estimates, are provided in Appendix B.

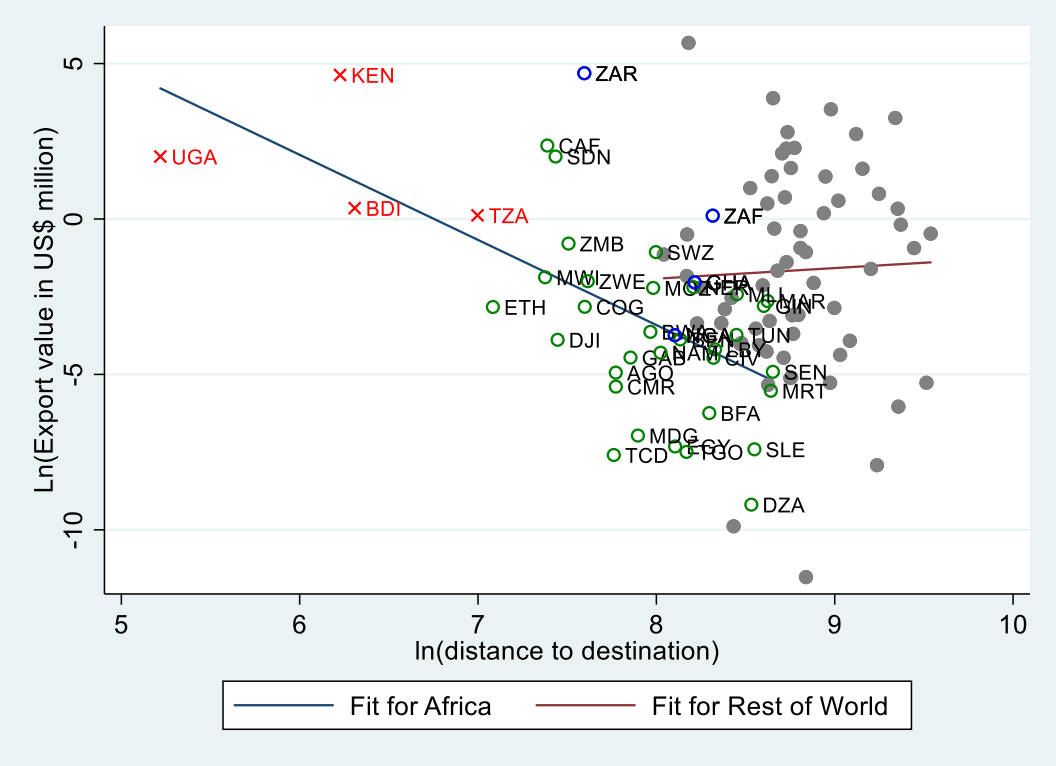
The results provide several insights into factors driving Rwandan bilateral exports. Firstly, they highlight the influence of *trade costs* on Rwandan export values. Distance to market, a proxy for trade costs, has a powerful negative impact on bilateral export values, particularly with regard to exports to Africa. A rise in distance from that of Kenya (506 km) to Ghana (3694 km), for example, is predicted to reduce export values from US$ 105 million to US$ 5.5 million (holding all other characteristics constant). Exports to Ghana were only US$ 0.13 million in 2018, suggesting the presence of additional trade cost barriers affecting Rwandan exports to the country.

The effect of distance is also evident in Figure 14 which plots the relationship between Rwandan bilateral exports and distance to markets (without conditioning on other factors) in 2018. While there is wide variation in the data, the scatter plot shows a stark negative association between export values and distance to African markets.[25] Poor transport infrastructure giving rise to high transport costs within the African continent are, therefore, a particularly high barrier to Rwandan exports.

Figure 14: Bilateral exports and distance to destination, 2018

suggesting the existence of cross-firm informational externalities. Constraints such as access to trade finance may also play a role. The World Bank (2017) finds similar relationships for Rwanda.

[25] The slope in the figure for Africa is -2.7, but is insignificantly different from zero for rest of world trade.



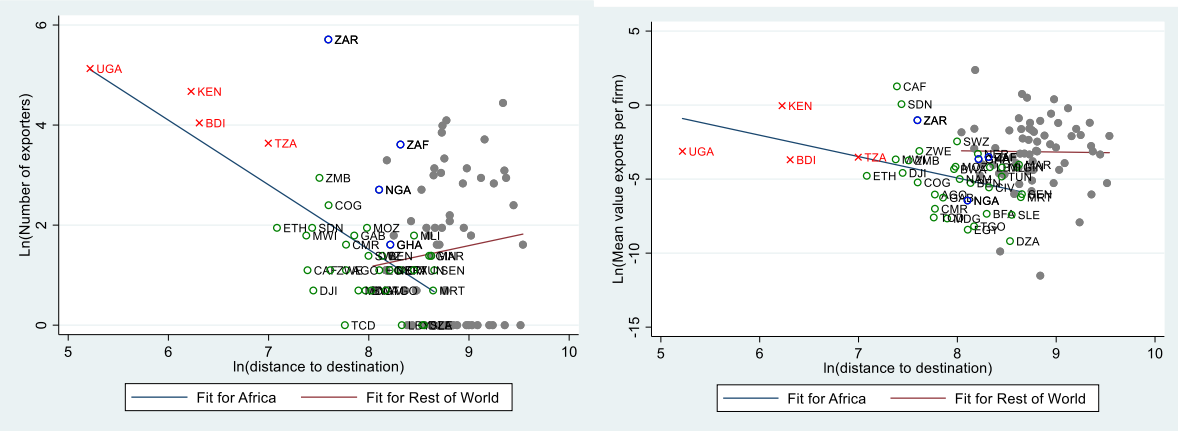
Source: Own calculations using Rwanda export transaction data for 2018 and bilateral distance obtained from CEPII.
Note: The regression line plots the relationship between distance and exports (both in logs) to African partners. The relationship in this diagram differs from those in Table 8 where the influence of distance on the probability that Rwanda trades with a country is also accounted for.

A decomposition of the distance relationship reveals that the negative impact of trade costs on Rwandan exports works through both the extensive and intensive margin. Firstly, higher trade costs reduce the probability that a firm trades with the destination, and, for those firms that do trade, trade costs reduce the number of firm-product export transactions to the destination (extensive margin adjustment). This can be seen in the first scatter plot in Figure 15 showing the relationship between distance to market and exporter numbers. Export values to the neighbouring countries, for example, are largely driven by higher exporter numbers. Secondly, higher trade costs reduce the value of exports per exporter and per transaction (intensive margin adjustment), as is shown in the second scatter plot in Figure 15.

The effects are economically meaningful. The regression results, for example, predict that a rise in distance from that of Kenya (506 km) to Ghana (3694 km) reduces the probability that the Rwanda firms export by 16.9 percentage points. If the distance increases to that of

Australia (12 643 km), the probability of exporting falls by 58.2 percentage points. The increase in distance from Kenya to Ghana also reduces the mean value of firm exports by 95%. Therefore, the combination of fewer exporters with lower export values reduces aggregate export values to more distant destinations.

Figure 15: Distance to market and the relationship with number of exporters and mean value of exports per firm, 2018



Source: Own calculations using Rwanda export transaction data for 2018 and bilateral distance obtained from CEPII.

A second insight from the regression results is the impact of poor logistics performance in destination markets on Rwandan export values. Logistics performance is measured using a summary indicator that combines data on the efficiency of customs and border clearance, the quality of trade and transport infrastructure, the ease of arranging competitively priced shipments, the competence and quality of logistics services, the ability to track and trace consignments, and the frequency with which shipments reach consignees within scheduled or expected delivery times.[26]

The empirical results show that Rwandan exports to destinations with good logistics are substantially higher than to countries with poor logistics. This higher export value is driven by a combination of a higher probability that Rwanda will trade with the destination, a rise in the

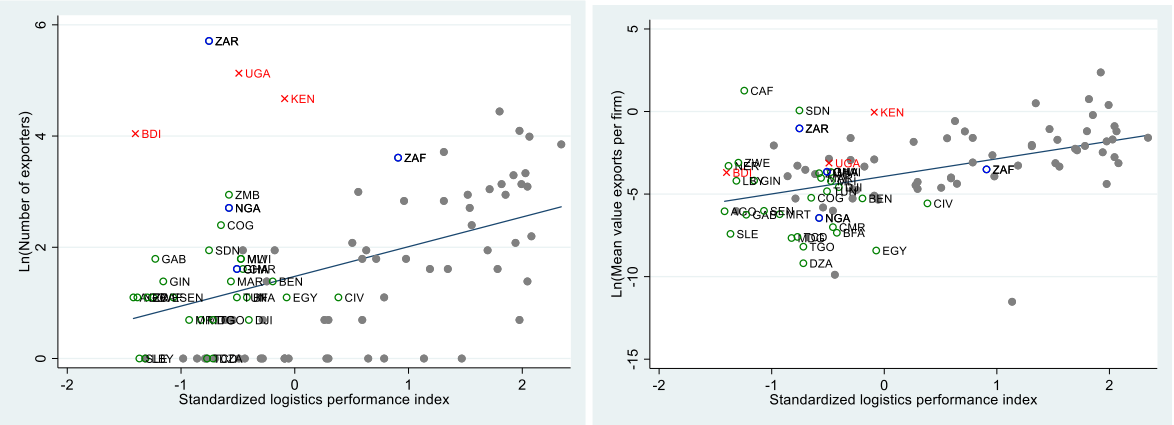
[26] The index ranges from 1 (low) to 5 (high). To minimize loss in observations, the simple average for each country of all available data from 2010-2018 is used in the empirical analysis. The data are then standardized by subtracting from each country indicator the global average and dividing by the global standard deviation. A value of one, thus, reflects a one standard deviation increase in the indicator.

number of exporters to the destination and, to a greater extent, a rise in the average value of exports per exporter.

This positive association between logistics performance in the destination market and number of Rwanda exporters and the mean value of exports per firm is shown in the scatter plots in Figure 16. These figures also reveal how intra-Africa trade is particularly constrained by high logistics costs. Logistics performance in African countries (hollow circles) falls below the global average (sometimes substantially), with the exception of South Africa.

Figure 16: Destination logistics performance and Rwanda aggregate export value

a) Number of exporters (b) Mean value of exports per exporters



Source: Own calculations using Rwanda export transaction data for 2018 and Logistics Performance Index (LPI) data obtained from the World Bank. The logistics performance index is standardized such that an increase in value of one reflects a one standard deviation increase.

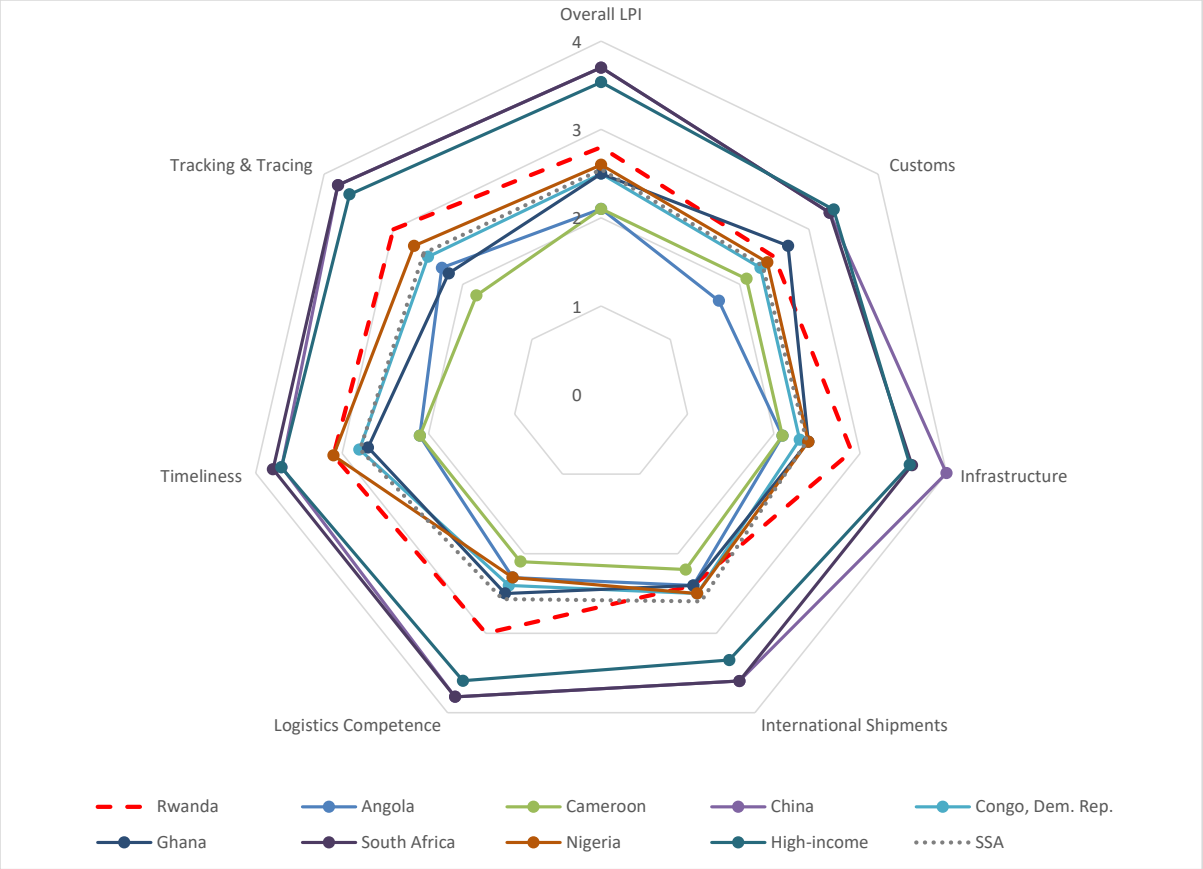
Rwanda performs relatively well in terms of its logistics performance compared to the average country in Sub-Saharan Africa. Figure 17 plots the relative performance of Rwanda and selected countries/regions in terms of the sub-indicators used to construct the logistics performance index. The data are for 2023. A value of 1 reflects the worst performance, while 5 denotes the best possible performance. Sub-Saharan Africa performs poorly along all indicators with scores ranging from 2.3 to 2.8. Rwanda performs better than the Sub-Saharan average across all indicators, particularly in logistics, timeliness and tracking & tracing with scores of 3. Rwanda has also shown strong progress in moving up the rankings in terms of

logistics performance.[27] In 2012, Rwanda was ranked 132 out of 155 countries (33 out of 44 African countries in data) in its overall logistics performance. By 2018, its ranking had improved to 57 out of 160 countries (3 out of 45 African countries). Improvements, however, appear to have halted, with the level and ranking of Rwanda's overall logistics performance indicator falling between 2018 and 2023. Logistics performance in the rest of Africa also appears to have worsened. The average overall logistics performance score for the sample of 44 African countries in 2012 was 2.48 (Rwanda was 2.27), but this fell to 2.46 (Rwanda was 2.97) in 2018.

While there is still scope to improve logistics performance in Rwanda, the results show that the high logistics costs in the rest of Africa are a primary barrier to growth in Rwanda's exports. The regression results, for example, suggest that Rwanda's exports to Africa would increase by 67% if African countries were to improve their logistics performance halfway to the mean across all countries in the sample. Exports to DRC, Rest of COMESA and Rest of Africa would more than double. Rwanda, therefore, stands to gain significantly from implementation of the AfCFTA Annexes on trade facilitation and customs co-operation.

Figure 17: Logistics performance in selected countries, 2023

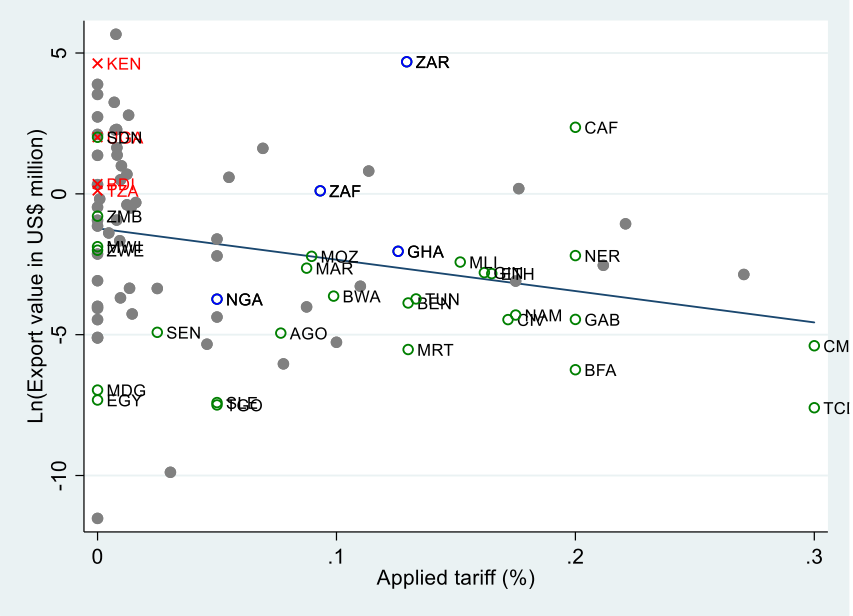
[27] Data obtained from https://lpi.worldbank.org/ [accessed 17 April 2025].



Source: https://lpi.worldbank.org/. The sample comprises 139 countries, of which 25 are in Sub-Saharan Africa (SSA), and 55 are high-income.

Looking at tariff protection, the results show no consistent results for the effect of destination tariffs on Rwandan exports. Figure 18 presents a simple scatter plot of Rwandan bilateral export values against the destination average applied tariff. A negative association is shown indicating that, without controlling for other influences, higher tariffs are associated with lower export values for Rwanda. What is also noticeable in the figure is that the average tariffs applied by African countries (green circles) are significantly higher in most cases than tariffs imposed by other countries (gray dots). Tariffs therefore appear to be a greater impediment to Rwanda exports to Africa than to the rest of the world. This speaks to the potential of the AfCFTA to reduce tariff barriers on Rwandan exports.

Figure 18: Rwanda aggregate bilateral exports and applied tariffs, 2018



Source: Own calculations using Rwanda transaction data and applied tariffs obtained from TRAINS. Note: Excludes Swaziland where the applied tariff is 125 percent.

Overall, Rwanda bilateral exports are relatively well explained by traditional gravity variables such as distance and GDP. Africa is an important market for Rwanda exports, but access to these markets is adversely affected by high trade and transport costs, poor logistics and relatively high tariff barriers. Exporter numbers play a key role in driving aggregate trade responses to lower trade costs. Facilitating the entry of new exporters following the AfCFTA can therefore be a major channel through which Rwanda is able to boost is exports.

5. Simulating the trade response to the AfCFTA

This section of the paper draws upon a product-level partial equilibrium model to simulate trade-related effects (trade flows; trade creation, trade diversion; revenue changes) for Rwanda arising from tariff reductions under the AfCFTA. Also presented are the potential trade effects following the implementation of a trade facilitation agreement.

5.1. Modelling framework

The partial equilibrium model builds off the AfCFTA model developed by Edwards et al. (2024) and follows the structure of the SMART model that has been widely used to model the potential effects of free trade agreements (Laird and Yeats, 1986; Jammes and Olarreaga,

2005). The SMART model simulates import changes in response to preferential tariff reductions from the perspective of the importer.[28] Changes in imports arise from two channels: (i) *trade creation* and (ii) *trade diversion.* Trade creation occurs when tariff reductions lower the price of imported goods (relative to domestic produced goods), thus stimulating increases in demand for imported goods. Although tariff revenue falls, this is more than compensated by gains to consumers that benefit from the lower-priced imports. Trade diversion occurs when the price of imports from the new FTA member falls relative to non-members. The effect is a substitution by consumers towards imports of the FTA member and away from other countries. Trade diversion can be welfare-reducing if the imports are diverted from relatively efficient countries towards an efficient FTA partner country. Losses arise because the government loses tax revenue, without commensurate gains to consumers.

There is a third important channel to consider. The AfCFTA will result in a redirection of imports away from existing FTA member countries (e.g., the EAC and COMESA for Rwanda), towards other African countries. This *trade correction* reflects a reversal of trade diversion associated with the implementation of the original FTA agreements (de Melo and Regalo, 2014). While trade correction is welfare enhancing for the importing country, exporters in the existing FTA experience declines in export values in the face of loss of preferential tariff margins and greater competition in the market. These trade correction effects could be relatively important for Rwanda given the country's high level of trade within the EAC (and to a lesser extent COMESA).

One of the key advantages of the SMART model is that it can be applied to highly disaggregated data (Harmonised System (HS) 6-digit level in this paper). However, partial equilibrium models bear several weaknesses that one should always consider while carrying out the analysis. The model being 'partial' may not account for important interactions between various markets and intersectoral linkages of a trade policy change. It also ignores

[28] The model assumes that imported goods are imperfect substitutes (Armington assumption) and that export supplies are infinite. Reductions in tariffs on imports sourced from a specific country boosts import values by (a) reducing the price of imports from that country relative to domestic prices (causing trade creation), and (b) reducing the price of imports from that country relative to other countries, causing a diversion of imports towards the country facing lower tariffs (trade diversion). The model requires import demand elasticities and elasticities of substitution to estimate these trade effects.

dynamic effects that can drive long-term gains from trade agreements. The model simulates changes in trade based only on existing trade flows (i.e., intensive margin), and, consequently, cannot account for the extensive margin (e.g., firm entry and exit) adjustments in response to lower trade costs that were shown earlier in the gravity analysis. The results of the simulation, therefore, can best be seen as short or medium-term outcomes of the trade agreement. In addition, simulated changes in trade flows are highly sensitive to the choice of import demand and substitution elasticities. The approach in this study is to draw upon import demand elasticities (at the HS6-digit level) estimated by Kee et al. (2008).[29] These elasticities have been widely used in other SMART model simulations.

The choice of tariff measure also affects the simulated results. Most studies use the applied statutory rate. However, as shown earlier, the actual applied rate is often less than the statutory rate given exemptions. Simulations using the statutory rate can therefore exaggerate the import response and the revenue losses associated with an FTA. The model deals with this concern in two ways. Firstly, when assessing the impact of the AfCFTA on Rwanda imports we use the collection rates obtained from the transaction data for Rwanda tariffs.[30] Secondly, to account for exemptions and incomplete preference utilisation in destination markets when assessing Rwanda's export effects, we assume a preference utilisation rate of 77%, which is the upper bound value for preferential agreements between COMESA member states and advanced countries measured in the study UNCTAD (2022).

A related issue is the merging of the Provisional Schedules of Tariff Concessions (PSTC) into the data. The PSTCs are often at a more disaggregated product level than the HS 6-digit level used in the model. Full details of the process followed are provided in Edwards et al. (2024). In effect, the 6-digit subheadings are allocated to the Schedule A, B or C category in accordance with whichever category accounts for the highest value of intra-Africa imports by the country within the 6-digit subheading. Not all countries or RECS have submitted PSTCs,

29 Some import demand elasticities were very high, sometimes in excess of 100. Consequently, the elasticities were capped at the 99th percentile. The first percentile elasticity was set as the floor elasticity.

30 Note that statutory rates are used for the other countries. The implication is that the export response by Rwanda to the new FTA members may be exaggerated if tariff exemptions are widely applied by the partner countries.

and of those that have, only the Central African Economic and Monetary Community (CEMAC) and 7 individual African States (Algeria, Angola, Egypt, Madagascar, Sao Tomé & Príncipe, Tunisia, and Zimbabwe) have categorised Schedule A, B & C tariff lines in their PSTC submissions. The remaining countries have only classified Schedule A products. To broaden the pool, Edwards et al. (2024) follow the World Bank (2020) and construct hypothetical Schedule B and C categories for these countries. The hypothetical Schedule C category includes the top tariff revenue generating imported products (at HS6-digit level) from Africa for the country, subject to the constraints that the share of African import value covered is no more than 10%, and the share of total product lines is no more than 3%. For those countries that have not submitted STCs (Djibouti, Egypt, Ethiopia, Eritrea, Mozambique, Sudan), we classify Schedule C products following the same approach but also classify Schedule B products as the remaining top revenue-generating tariff lines up to the 90th percentile.

A further consideration is the choice of import data for each country. Reported import data (from UN Comtrade) are mostly measured following the general trade system and include imports for home market consumption, as well as imports destined for customs warehouses, free trade zones and premises for inward processing. The implication is that reported import values can exaggerate the actual value of dutiable imports, leading to overestimates of import changes and revenue losses from the AfCFTA. This is particularly relevant for Rwanda exports to the DRC where re-exports make up 81% of gross exports to DRC in 2018 according to UN Comtrade data.[31] We resolve this concern for Rwanda by using the 2018 transaction import data that excludes warehousing and transit trade and replace African country imports from Rwanda using Rwanda-reported export data in 2018 that excludes re-exports.

A final point to make is that, despite becoming a member of the EAC in 2011, we assume the DRC remains outside of the EAC customs union. We reduce DRC tariffs according to its own STC submission, and retain its current MFN tariffs on non-preference partner countries. The

[31] The data also excludes informal trade flows that constitute a high share of aggregate exports (11.1% of gross exports in 2018), particularly to the DRC (32%, or US$ 109 mill, of the value of reported gross exports by Rwanda to the DRC. Informal trade, however, is not subject to tariffs, and their exclusion from the analysis should not affect the simulated results substantially.

adoption of the EAC common external tariff and the EAC tariff concessions are likely to give rise to different outcomes.

5.2. Simulations

To analyse the impact of the AfCFTA on Rwanda trade flows, two scenarios are simulated:

- Scenario (1) simulates AfCFTA tariff liberalisation of Schedule A and B products.
- Scenario (2) extends Scenario (1) by including the implementation of a trade facilitation agreement (TFA) that reduces import and export trade costs within Africa.

Annex 4 of the AfCFTA Protocol on Trade in Goods covers trade facilitation. The objectives of this annexe are to simplify and harmonise trade procedures and logistics and expedite the movement, clearance and release of goods (including transit trade).[32] To simulate declines in trade costs from implementing a TFA, we use ad valorem equivalent estimates by de Melo and Sorgho (2019) of reductions in time in customs associated with the full implementation of the World Trade Organisation Trade Facilitation Agreement. As in the study on the AfCFTA by the World Bank (2020), we assume a TFA that achieves half the WTO agreement, with a cap on reductions in trade costs of 10 percentage points. The outcome is a reduction in trade costs between 10 percentage points for Nigeria, to 0.3 percentage points for Senegal. These reductions are assumed to apply to imports from and exports to all African countries (i.e., on MFN basis), with no change assumed for trade with the rest of the world. Minerals, petroleum products and precious metals (HS 25-27, 71) are excluded from the TFA simulation.[33] We do not assume any reductions in non-tariff barriers as in the World Bank (2020). Scenario (2) thus provides a conservative estimate of the trade effects that can be expected should all the Annexes to the Protocol on Trade in Goods be implemented.

[32] Further details on trade facilitation and the institutional arrangements under the AfCFTA, see https://www.tralac.org/blog/article/15270-trade-facilitation-and-institutional-arrangements-under-the-african-continental-free-trade-agreement.html

[33] Liberalisation of services trade, and improvements in customs management and diminished use of non-tariff barriers expected under Annex 3 on Customs Cooperation and Mutual Administrative Assistance (CC&MAA), Annex 5 on Non-tariff barriers to trade (NTB), and Annex 6 on Technical barriers to trade (TBT) are not accounted for.

5.3. Impact of the AfCFTA on Rwanda exports

This section presents the estimates of the impact of the trade agreements on Rwanda exports. Table 9 and Figure 19 present the calculated impacts of each scenario on Rwanda's exports.

Table 9: Impact of AfCFTA implementation on Rwanda's exports

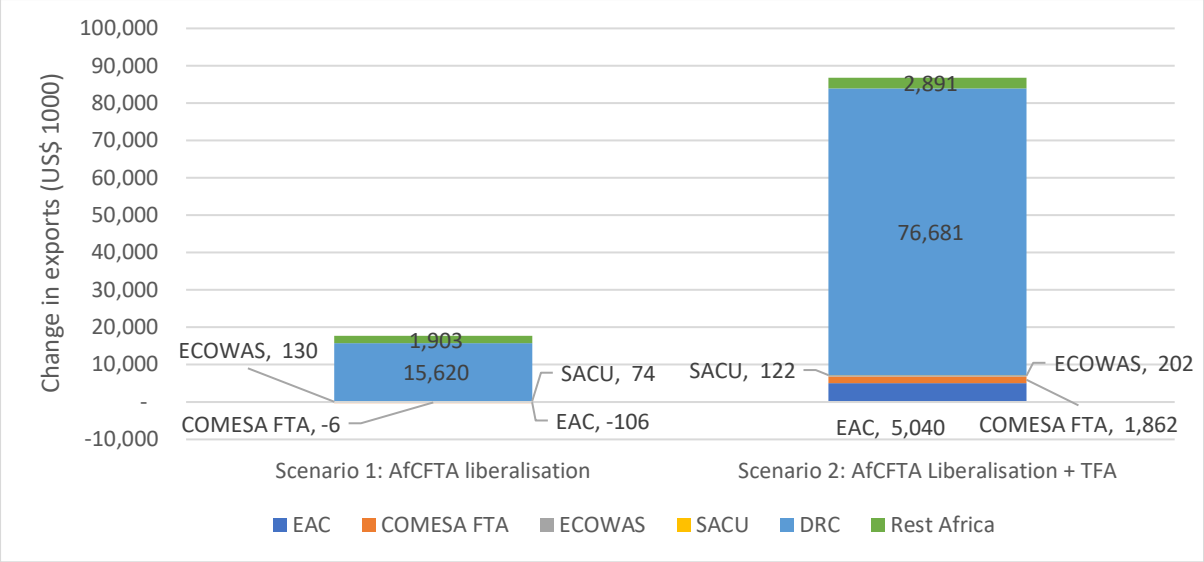
	Scenario 1: AfCFTA liberalisation	Scenario 2: AfCFTA Liberalisation + TFA
Change in exports to new partners (US$ mill)	17.73	79.90
ECOWAS	*0.13*	0.20
SACU	*0.07*	0.12
DRC	*15.62*	76.68
Rest Africa	*1.90*	2.89
% Change in exports to new partners (%)	23.05	103.89
Change in exports to EAC & COMESA FTA (US$ mill)	-0.11	6.90
% Change in exports to EAC & COMESA FTA	-0.15	9.28
Change in exports to Africa (US$ mill)	17.61	86.80
% Change in exports to Africa (%)	11.64	57.36
% Change in total exports (%)	2.55	12.57

Note: Total exports of US$ 690.8 million in 2018 are used to calculate the percentage change in total exports. Simulations assume a preference utilisation rate of 77% with new African preference partners.

The table and figure reveal a strong positive impact of the FTA on Rwanda's exports. Total exports to new preference partners (Africa excluding EAC and COMESA FTA) under Scenario (1) rise by US$ 17.7 million, representing a 23.1% increase to these countries.[34] The major contributor to the rise in exports is the DRC with an increase in export value of US$ 15.6 million. This increase is driven by the combination of high initial export values, together with high initial tariffs. In contrast, exports to SACU and ECOWAS only rise marginally, reflecting the low initial export base, and in the case of SACU, relatively low average tariffs faced (5.3 percent).

Figure 19: Impact of FTA on Rwanda's exports to Africa (US$ 1000)

[34] Total exports to Africa under Scenario 1 are estimated to rise by 11.64%, which is substantially higher than the 4% estimated by the World Bank (2022), but is similar to Sandrey and Jensen (2015) who estimate a 10.1% increase in exports to Africa under a full liberalisation scenario.



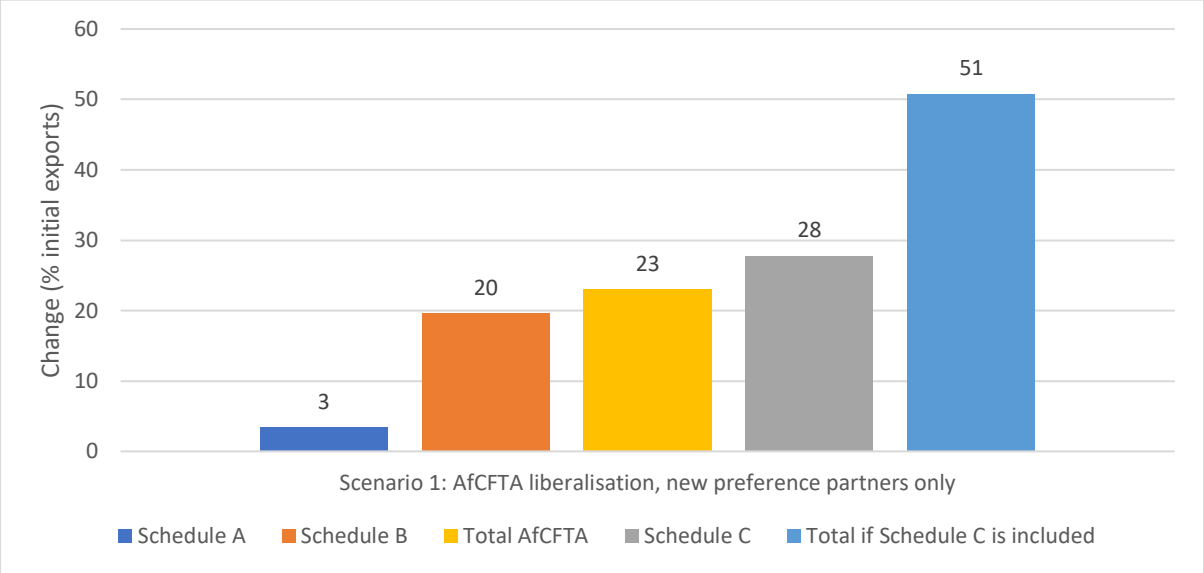
Note: All simulations exclude gold and petroleum exports. The reductions in trade costs associated with the TFA scenario are taken from the World Bank (2020). The estimates are based on ad valorem equivalent of reductions in time lost in customs reported associated with a TFA programme. These range from 0.3 percentage points for Senegal to 10 percentage points for Nigeria. The simple average reduction of 5.6 percentage points is assumed for African countries not available from the World Bank (2020). The reductions in trade costs apply to imports from all countries.

The exclusion of Schedule C products from the agreement in destination markets substantially reduces the potential gain in exports for Rwanda. Figure 20 presents the simulated impact of the AFTA on Rwanda's exports to new preference partners by STC Schedule. The bulk of the rise in exports under the AfCFTA will only occur once countries commence tariff reductions on Schedule B products. Tariff reductions on Schedule A products only boost Rwanda's exports to the new preference partners by 3%, compared to 20% for Schedule B products. The figure also illustrates that the extension of tariff reductions in destination markets to include Schedule C products would more than double the increase in exports to new preference partners in Africa from 23% to 51%.

The simulation also predicts a decline in exports to the EAC and COMESA FTA Member States arising from increased competition in these markets for Rwandan exporters. The reduction of exports, however, is low (US$0.11 million) and is swamped by the rise in exports to the rest of Africa members. This result differs from similar simulations conducted for Uganda by Chien et al. (2022). As noted earlier, Uganda exporters are far more dependent on the EAC as a destination for their exports and thus exposed to reductions in tariff preferences. A simulation

of a FTA between Uganda, EAC, SACU, Ghana and Nigeria predicts a US$ 3.1 million decline in the value of exports to the EAC, which exceeds the US$ 0.97 million increase in exports to the FTA members (Chien et al., 2022).

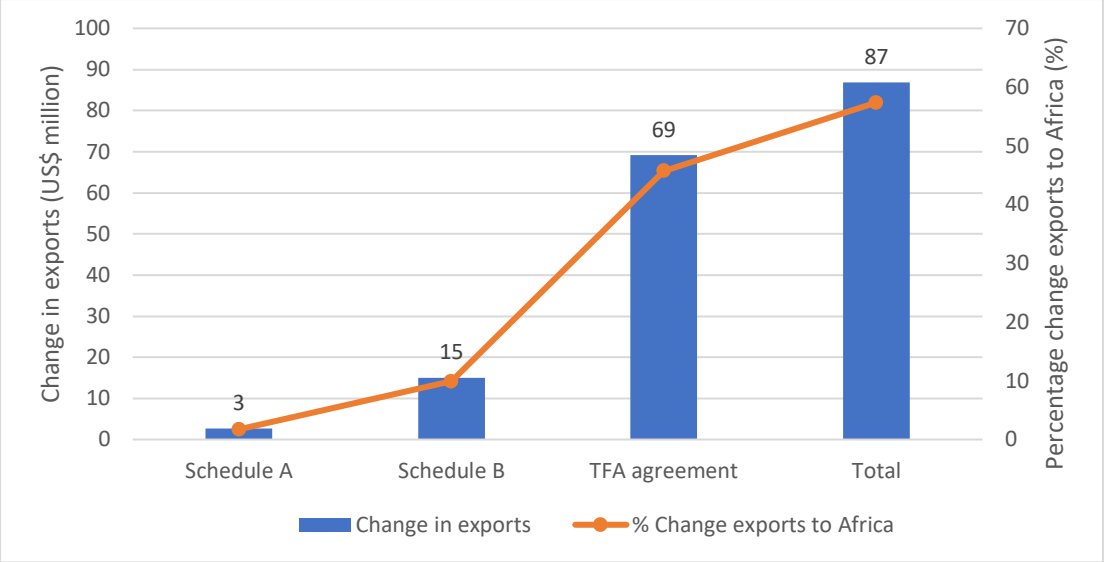
Figure 20: Impact of the AfCFTA (Simulation 1) on Rwanda's exports to new preference partners by STC Schedule (% change initial exports)



Note: All simulations exclude gold and petroleum exports.

Turning to scenario 2, Figure 21 plots a bar graph of the impact inclusive of the TFA effect on Rwanda's exports to Africa separated according to STC schedule and TFA components. The figure, and column (2) in Table 9, reveal a substantial additional impact on Rwanda's export performance arising from the implementation of a TFA. Total exports to new preference partners in Africa increase from US$ 17.3 million to US$ 80 million. Exports to the EAC also rise by 9.3%, thus offsetting the negative displacement effect of tariff reductions shown in Scenario (1). The aggregate value of exports to Africa increases by a multiple of five when compared to Scenario (1) (US$ 86.8 million vs US$ 17.6 million). The increase represents a 57.4% increase in the total value of non-gold exports to Africa. Most of this increase (US$ 69 million) is attributable to the TFA (Figure 21).

Figure 21: Impact of the AfCFTA including a TFA (Simulation 2) on Rwanda's exports to Africa by STC Schedule and TFA components (US$ million and % change initial exports)



Note: The TFA only considers improvements in customs procedures affecting trade between African countries.

To assess how the impact varies across industries, Table 10 breaks down the simulated results by industry. All the industries experience increases in exports, with the largest change in export value in animal and vegetable products (US$ 13.1 million or 74.1% share of the total change in exports), followed by base metals (US$ 1.25 million) and Transportation equipment (US$ 1.13 million). The percentage increase in exports is particularly high (19% or more) in animal & vegetables and wood products. The lowest increase in exports is in minerals, reflecting the low initial export values and relatively low tariffs in destination markets on these exports. Exports of Foodstuff (prepared food, beverages, tobacco, sugars, residues of leguminous plants) also only increase marginally as many of the new preference partners exclude these products from the trade agreement, and Rwandan exporters market share in the EAC falls in the face of increased market competition.

The implementation of a TFA is particularly effective in boosting exports of Animal and vegetable products, which rise by 110% (US$ 73.7 million). Exports of Wood products, and Base metal products also rise significantly by just over 38%. Smaller (less than 20%), although still sizeable, effects are found for Chemicals & plastics, Machinery, Foodstuff and Electrical machinery.

Table 10: Impact of AfCFTA on Rwanda's exports (US$'000)

	Scenario 1: AfCFTA liberalisation		Scenario 2: AfCFTA Liberalisation + TFA	
	Exports (US$'000)	Percentage change total exports to Africa (%)	Exports (US$'000)	Percentage change total exports to Africa (%)
Animal, Vegetables	13058.6	19.5	73719.9	110.1
Foodstuff	32.7	0.2	1492.2	6.9
Minerals	43.1	0.2	43.1	0.2
Chemicals, Plastics	209.1	7.6	523.1	19.0
Wood Products	994.1	21.4	1787.3	38.6
Textiles, Apparel, footwear	224.8	5.7	1166.0	29.3
Base Metal products	1250.4	12.5	3826.2	38.3
Machinery	228.5	4.0	1081.7	18.9
Electrical Machinery	255.8	5.2	786.3	16.0
Transportation	1134.4	13.6	2027.7	24.3
Other	182.6	9.3	344.4	17.5
Total	17614.1	11.6	86797.9	57.4

Note: The percentage change total exports is based on the value of exports declared by Rwanda obtained from the transaction data. The percentage change in exports to new partners is based on total imports by these countries from Rwanda (mirror exports).

The increase in exports to the new FTA partners broadly supports the Rwanda government's product and market priorities for the AfCFTA that were presented in Figure 3. The large increase in agricultural products (31%) such as milled products (mainly Maize and wheat flour) and live bovine animals, and processed metals (16% increase) to the DRC align with the government's prioritizations. Iron or non-alloy steel bars and rods, for example, fall within the top 5 products experiencing increases in export value to the DRC. Similarly, Portland cement, another priority product for the DRC, falls within the top 10 export growth products to the country. While the FTA results provide support for the prioritized industries for the DRC, the results also suggest other industries, such as Wood products, and Electrical machinery and Transport equipment experience strong increases in exports to the DRC. For SACU, another large regional market, exports values increase most strongly for plants used in perfumery, vegetable extracts, and metal products (e.g., household articles, taps and valves for pipes and tanks), and coffee. Further details on the top 10 products experiencing increases in exports can be found in Table A1 in Appendix A.

The overall implication is that the AfCFTA will be effective in boosting Rwandan exports, but the outcome is amplified if combined with the implementation of other policies to reduce

trade costs. Rwandan exports increased to all African destinations implementing the agreement, with exports rising across a wide range of industries. Tariff reductions, together with a TFA can, therefore, be effective in growing and diversifying Rwandan exports with the rest of the continent.

5.4. Impact of the AfCFTA on imports by Rwanda[35]

Table 11 and Figure 22 present the simulated effect on the value of Rwanda's imports of goods, including, in the case of Table 11, the contribution from creation and trade diversion of the two scenarios. Scenario 1 results (column 1) show that total imports from new FTA partners increased by $13.3 million–representing a 12.8% increase from their initial value. SACU, with a value of $12.2 million is the primary source of this increase.

By decomposing the source of the increase in imports, results in column (1) show that the bulk of the increase ($8.8 million) is driven by trade creation. Trade creation is conventionally associated with positive consumer welfare as it represents additional quantities of products that are now affordable to consumers as a result of tariff reductions. On the contrary side, the increased import competition associated with trade creation may pose a threat to domestic firms producing similar products.

Table 11: Impact on Rwanda's imports of goods

	Scenario 1: Liberalisation	Scenario 2: Liberalisation + TFA
	(1)	(2)
Change value imports from new FTA partners (US$ mill)	13.34	24.37
ECOWAS	0.16	0.23
SACU	12.20	17.45
DRC	0.91	6.49
Rest Africa	0.07	0.20
% Change in imports from new FTA partners (%)	12.83	23.45
Change value imports from new FTA partners, by source (US$ mill)		
From: Trade creation (US$ mill)	8.77	8.77
From: Trade correction (US$ mill)	0.86	0.86
From: Trade diversion (US$ mill)	3.72	3.72
From: Trade Facilitation (US$ mill)	-	11.03

[35] The import simulations for Rwanda are based on 2018 import transaction and tariff data at the HS 8-digit level.

Change value imports, other countries (US$ mill)	-4.57	61.14
Trade correction: EAC and COMESA FTA (US$ mill)	-0.86	-0.86
Trade diversion: Rest of World (US$ mill)	-3.72	-3.72
From: Trade Facilitation (US$ mill)		65.71
Change total value imports from Africa (US$ mill)	12.48	89.23
% Change in total imports from Africa (%)	2.13	15.25
Change total value imports (US$ mill)	8.77	85.41
% Change in total imports (%)	0.51	3.74

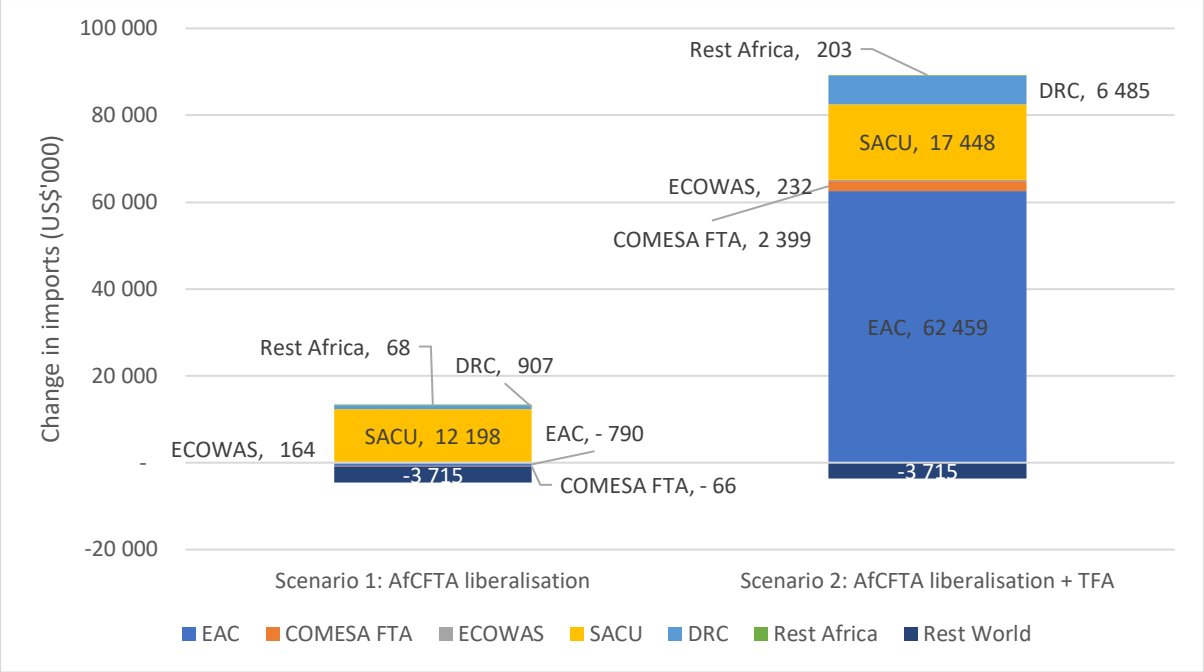
Note: Scenario 2 only covers increased imports from African countries. The TFA only considers improvements in customs procedures affecting trade between African countries. The change in total value of imports equals sum of trade creation and TFA. In all scenarios, a preference utilisation rate of 95% is used. This is based on the actual preference utilisation rates on imports from EAC and COMESA FTA obtained from the transaction data. The hypothesised Schedule C products cover the top 1% customs revenue generating tariff lines (at HS8 -digit level) and account for 10.8% of imports from African countries outside of COMESA FTA and EAC member states.

Turning to trade diversion, the results in Table 11 column (1) show trade diversion from the rest of the world makes up US$3.7 million (or 28%) of the total increase in imports from the new FTA partners. Trade diversion is traditionally portrayed as detrimental to economic welfare as globally efficient producers are displaced by potentially less efficient new FTA partners. The high share of trade diversion as a result of AfCTFA, suggests that these trade diversion losses may be quite large.

Trade correction – the re-direction of import from countries in the EAC, and COMESA (existing FTA partners for Rwanda) – contributes an additional US$ 0.9 million of the total increase in imports from the new partners. This redirection enhances welfare as it diminishes some of the trade diversion losses associated with the initial implementation of the EAC and COMESA FTA trade agreements.

Taking all trade flows into account, while imports from new FTA partners rise considerably, the net increase in aggregate imports is substantially reduced by declines in imports arising from trade diversion and trade correction. Total imports rise by only $8.8 million (equivalent to the trade creation effect), or in percentage terms, by 0.37%. Nevertheless, the dominance of the welfare-enhancing trade creation and trade correction effects, suggests a net positive increase in social welfare.

Figure 22: Impact of FTA on Rwanda's imports (US$ 1000)



Note: Scenario 2 only covers increased imports from African countries. Imports from the rest of the world are assumed to be constant.

Column (2) of Table 11 extends the FTA effects to include the implementation of the TFA (see also final bar in Figure 22). The TFA is anticipated to have considerable positive impacts on intra-regional trade. The World Bank (2020) study, for example, calculates that improved trade facilitation will have a far greater impact on intra-regional trade than tariff reductions alone.

The simulated results presented in Table 11 corroborate the World Bank (2020) finding. Implementation of the TFA, reduces trade costs in accessing the domestic market, thereby raising Rwanda's imports from new African preference partners by US$ 24.4 million (23.5% rise in imports from these countries). Imports also rise from the EAC and COMESA FTA member states boosting the increase in total imports from Africa to US$ 89.2 million, or 15.3%. The large aggregate increase in imports from the TFA reflects the relatively large reductions in export trade costs in the other EAC member states.

5.4.1 Import responses at the industry and product level

One of the advantages of the SMART framework is that the analysis can be conducted at the highly disaggregated product level. It is therefore interesting to assess the simulated effects

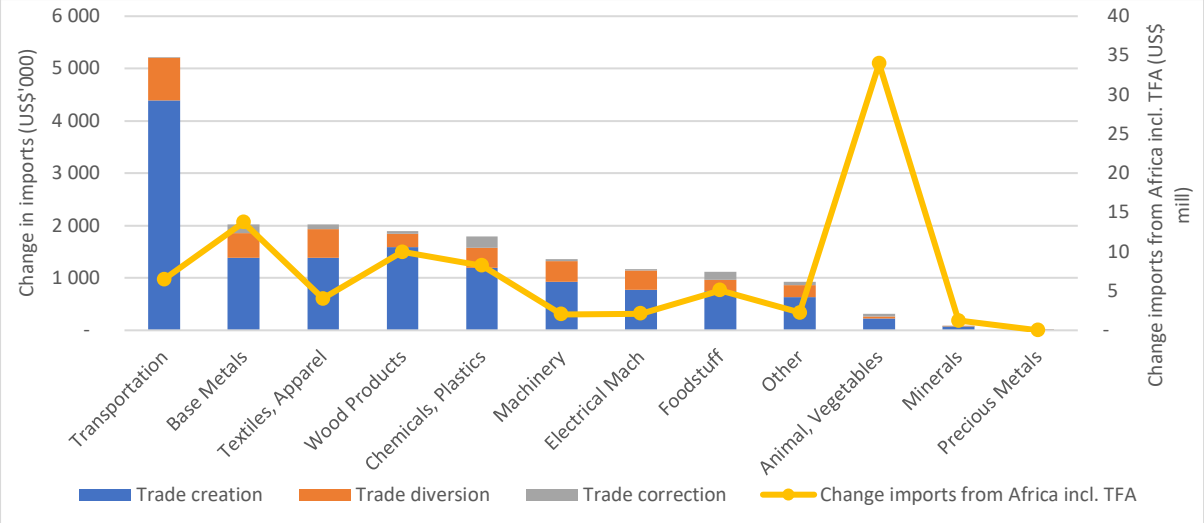
on Rwanda imports at a more disaggregated level. The bars in Figure 23 plot the impact of Scenario (1) on imports from the new African FTA partners by industry grouping, with the total effect broken down into the contributions by trade creation, diversion and correction. Table A2 in the appendix presents the 10 products experiencing the largest increases in imports from the new FTA partners.

The results suggest that the largest increase in imports from the new trade partners is in Transport equipment (US$ 5.2 million) with almost all of this sourced from South Africa.[36] The next largest increases in import value are in Metal products and Textiles, apparel & footwear (both US$ 2.02 million) and US$ 1.47 million), followed by Wood products and Chemicals & plastics (US$ 1.8 million to US$ 1.9 million). In all these cases South Africa accounts for between 73% to 99% of the increase.

Looking at how much of the increase in imports from the new partners is driven by trade diversion, the highest shares are found within Electrical machinery (31%), Machinery & equipment (29%) and Textiles, apparel & footwear (27%). Much of the gains from trade creation in these industries will, therefore be offset by trade diversion losses. The trade correction share is highest in Animal & vegetables (15%) and Food products (13%) and arises from the combination of increased import competition and relatively high shares of these products in Rwanda imports from the rest of the EAC.

Figure 23: Change in imports from new African FTA partners (US$ 1000)

[36] One concern with this result is that these vehicles appear to be used vehicles. Although the transaction data declares these as originating from South Africa, it is also possible that they originate from countries such as Japan, and are merely transiting through South Africa. South Africa is not known as a major exporter of used vehicles.



Note: Results based on scenario 1.

The line diagram in Figure 23 plots out the total change in Rwanda imports from Africa (US$ million on right hand axis) after accounting for the TFA. The largest increase in imports is of Animal & vegetable products, driven by rising imports from the rest of the EAC. Imports of Metal products, Wood products and Chemicals & plastics also experience relatively large increases of between US$ 8 million to US$ 14 million.

5.5. Effect of the AfCFTA on revenue collected

While the simulations show that the AfCFTA can be effective in driving intra-Africa trade with Rwanda, it also has the effect of reducing customs revenue. Customs revenue only constitutes around 7-8% of total government revenue in Rwanda.[37] Nevertheless, losses in customs revenue from the AfCFTA would nevertheless require the government to reduce fiscal expenditure or find alternative sources of revenue.

The severity of the revenue loss from AfCFTA depends on several channels. Customs revenues are lost on existing imports from the new FTA partners, as well as from the diversion of trade from the rest of the world to these countries. The more important are the new FTA partners as a source of customs revenue, and the greater the diversion of large revenue-generating

[37] Based on data obtained from the Tax Statistics published by the Rwanda Revenue Authorities (https://www.rra.gov.rw/fileadmin/user_upload/tax_statistics_in_rwanda_fy_20182019.pdf).

imports, the greater the revenue losses will be. On the other hand, increases in imports through trade creation generate additional VAT, excise revenue, and other border taxes (e.g., withholding taxes) that can offset some of the customs revenue losses. In addition, increases in domestic production and employment can be expected to raise corporate and personal income taxes. A comprehensive assessment of the revenue implications of the AfCFTA would need to take all these channels into account.

This section presents a cursory analysis of the revenue implications, focusing only on customs revenue and other taxes paid on imports. The data are drawn from the 2018 Rwanda Transaction data for imports that provides information on payments of the customs duties paid, VAT, excise taxes, withholding taxes and the infrastructure development levy. According to the transaction data, US$ 96.9 million in customs duties was collected in 2018. This is very close to the officially reported value of US$ 101 million in the 2018/19 tax year providing some confidence in the precision of the data.

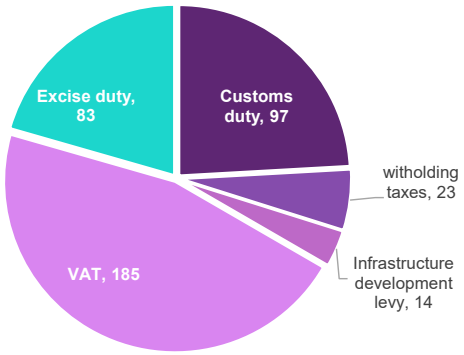
Customs duties are not the most important source of revenue generated from imports. Figure 24 presents pie charts based on the 2018 import transaction data of border revenue by tax type (part a) and customs duties by origin (part b). In total US$ 401 million of revenue was generated on imports, which equates to around 25% of total government revenue in 2018. VAT on imports dominates as a source of import revenues (US$ 185 million, or 46% share), followed by customs duties (US$ 97 million, or 24%) and then excise taxes (US$ 83 million, or 21%). Withholding taxes and the infrastructure development levy make up the remaining US37 million.[38]

The relatively low share of customs revenues in total revenue suggests a low exposure to revenue loss from the AfCFTA. Part (b) of Figure 24, reinforces this view. African countries only account for 22.5% of total customs duties, with the remainder paid on imports from the rest of the world. These shares, however, potentially under-estimate the loss in customs duty from the AfCFTA as duties will also not be paid on imports diverted from the rest of the world to the AfCFTA member states.

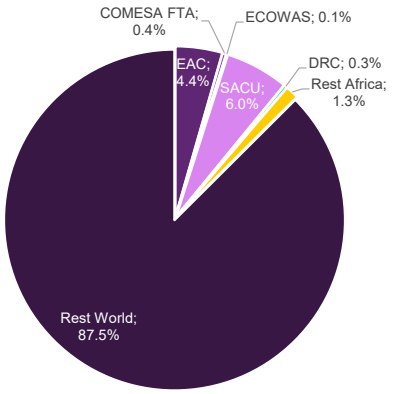
[38] Strategic reserves levies on fuels and vehicle registration fees are not included.

Figure 24: Border revenues by tax type and customs duties by origin

(a) Total border revenue by tax type (US$ mill)



(b) Customs duties by origin (%)



Notes: Based on Rwanda Transaction data for 2018.

Table 12 therefore presents estimates of the changes in revenue based on the partial equilibrium trade model that accounts for trade diversion effects. The values reflect the annual loss in revenue after the completion of the tariff phase down (i.e. after 13 years). Scenario 1 implies a loss in custom duties of US$ 5.5 million, or 5.7% of the initial value. This loss is higher than the 1% to 3.1% loss in customs duties predicted by Edwards et al. (2024) indicating the importance of basing estimates on the transaction level data.[39]

While rising imports through trade creation do not generate additional customs revenue, they do generate additional VAT, excise revenue, etc. These effects attenuate the loss in government revenue through lower customs duties. The attenuation effect is shown in Table 12 by the lower decline in total border revenue (inclusive of tariffs, VAT, excise duties, withholding taxes, etc.) of US$ 4.36 million compared to the decline in customs duties (US$ 5.5 million). This loss is equivalent to 0.27% of total government revenue in 2018/19.

Table 12: Impact on Rwanda tax revenue after completion of the AfCFTA tariff phase-down

	Scenario 1: AfCFTA liberalisation	Scenario 2: AfCFTA Liberalisation + TFA

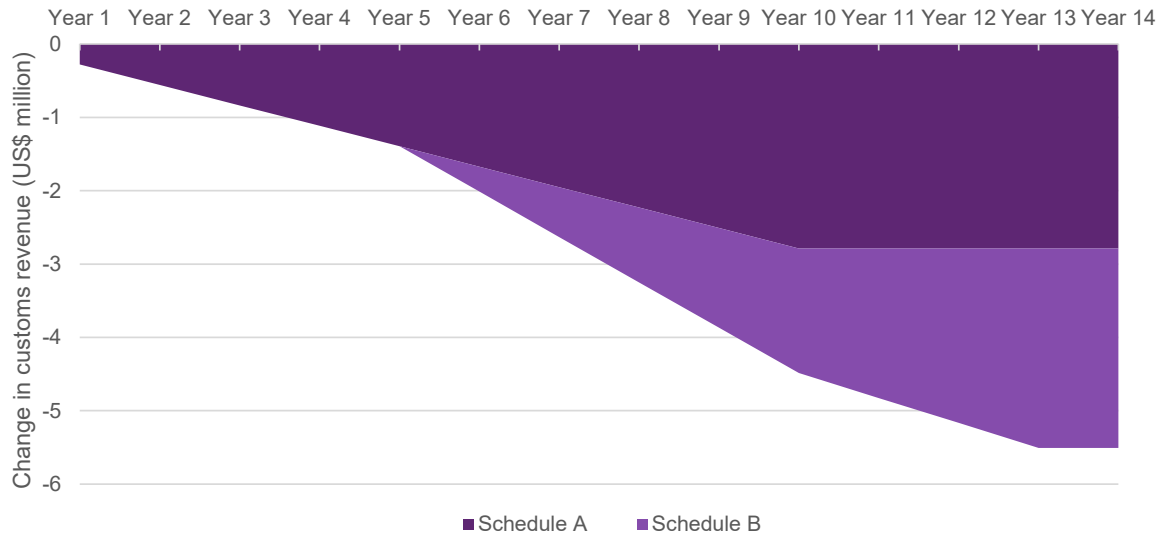
[39] The revenue losses are similar to those of UNECA (2020) that estimates losses in revenue of US$ 6 mill or 4% of total tariff revenue following liberalisation of all products.

Change in customs revenue (US$ mill)	-5.51	-4.80
Change in other border revenue (VAT, excise, etc.)	1.15	10.21
Total change in border revenue (US$ mill)	-4.36	5.41
% change customs revenues (%)	-5.69	-4.95
% change total border revenues (%)	-1.09	1.35
% change total government revenues (%)	-0.27	0.33

Note: Scenario 2 only covers increased imports from African countries. It assumes that lost revenue on imports from the Rest of the World remains the same as in Scenario 1. The smaller decrease in customs revenue reflects increased imports from EAC and COMESA FTA where tariffs are imposed because rules of origin requirements are not met. Total border revenues include VAT, excise duties, withholding taxes and infrastructure levies. They exclude the strategic reserves levy on fuel, the African Union levy and motor vehicle registration fees that are also applied to imports. The TFA only considers improvements in customs procedures in Rwanda. It does not consider improvements in customs procedures in origin countries.

The long tariff phase-down period of the AfCFTA implies that the tariff losses are not immediate providing an opportunity for the revenue authorities to implement additional measures to collect new tax revenue. Figure 25 plots the evolution of customs revenue losses over the 13-year phase-down period. Revenue losses are initially gradual, but then increase as Schedule B tariff reductions commence (assumed from year 6). The cumulative loss in customs duties over the 13 years is 36 US$ million, which is equivalent to 2.2% of total government revenue in 2018/19.

Figure 25: Evolution of customs revenue losses during the phase-down of tariffs



The negative effect of the FTA on border revenues changes dramatically with an improved trade facilitation environment in Africa. Increased VAT and other revenues from the rise in

imports from Africa following the TFA more than offset the customs revenue losses (see column (2) of Table 12), leading to a net increase in revenue of US$ 5.4 million. Thus, for Rwanda, the implementation of the TFA has multiple benefits in terms of its gains from the AfCFTA. Further, the revenue losses from the AfCFTA, even without the TFA, are marginal relative to total revenue. Concerns regarding losses in customs duties therefore should not pose a constraint towards commencement of the AfCFTA.

6. Conclusion and policy recommendations

Rwanda has made significant progress in growing and diversifying its export bundle, as is evidenced by rising export values as a percent of GDP, increases in the number of export products and destinations, a decline in the concentration of goods exports in tea and coffee, and a diversification of services exports. To consolidate this growth the country needs to continue to diversify its export bundle, in terms of exporter participation, and product and market composition.

However, progress on these fronts is slowing. Exports remain highly dependent on traditional exports, and the commodity-intensity of the export bundles has risen dramatically with the rising importance of gold exports that now accounts for close to 40% of Rwandan aggregate exports (incl. re-exports) of goods. The rise in exports as percentage of GDP over the 2010 to 2022 period has primarily been driven by gold and transit trade to the DRC, and non-gold exports (excl. re-exports) as a percent of GDP are no higher in 2022 than they were in 2013. Exporter numbers are also declining reflecting an exit from exporting by firms. Finally, after increasing up to 2016, the share of Africa in the export bundle has fallen, and has become more concentrated on the DRC.

The AfCFTA provides a unique opportunity to shift the dial. By creating a single market for goods and services, the AfCFTA has the potential to significantly boost growth and diversification of Rwandan exports. Using a partial equilibrium model based on the actual tariff concessions submitted by State Parties, we estimate that liberalisation of tariffs will boost Rwandan's aggregate exports to Africa by 11.6% (US$17.6 million). These gains increase five-fold (57%, or US$86.8 million) if African countries implement a trade facilitation agreement that that reduces trade costs. Exports to African countries outside of existing

preferential trade agreements (EAC customs union and COMESA FTA members) account for most of this increase, leading to a geographic diversification of Rwanda's export bundle. Exporter-level transaction data suggests that entry of new exporters, including smaller exporters, is likely to be an important driver of the increase in export value.

To realise and enhance the gains from the AfCFTA requires policy action. Several recommendations follow from the analysis in this paper.

A. Reduce trade and logistics costs within EAC and between Rwanda and rest of Africa.

While Rwanda has made significant progress in improving its logistics performance other African countries, on average, have not followed suit. Although there is still scope to reduce trade costs within Rwanda, much of the gains for Rwanda from the AfCFTA will depend on actions taken by State Parties outside of its control. Several actions can drive this process:

- **Use the AfCFTA institutional structures and processes to accelerate and deepen the implementation of the provisions of the annexes covering the AfCFTA trade facilitation agenda** (Annex 3 on Customs Cooperation and Mutual Administrative Assistance, Annex 4 on Trade Facilitation, and Annex 8 on Transit). [40]
- **Place greater emphasis on working jointly within the EAC to coordinate and harmonize and align the implementation of trade facilitation policies of member states.** This may include the formation of supra-regional EAC-level National Trade Facilitation Committee (TFC) whose role is to ensure alignment of the AfCFTA and World Trade Organization (WTO) trade facilitation agendas of each member state.[41] Currently, each EAC member state has proposed different levels of commitment under the WTO's TFA and their WTO TFA commitments are also not necessarily aligned with those of the AfCFTA. Working as a collective will strengthen the hand of the EAC in

[40] For further details see https://www.tralac.org/resources/infographic/16188-trade-facilitation-agenda-in-the-afcfta-factsheet.html.

[41] Both the World Trade Organization Trade Facilitation Agreement (WTO TFA) and the AfCFTA provide for the establishment of National Trade Facilitation Committees (NTFCs) to facilitate the domestic co-ordination and implementation of the trade facilitation agreements.

driving and accelerating the AfCFTA TFA and resolving disputes around non-tariff barriers in third-party countries[42].

B. Re-evaluate the classification of products and the implementation of deviations from the common external tariff.

Wide-spread use of Stays of Application (SoA), firm-level exemptions through the Duty Remission Scheme (DRS), high tariffs on the sensitive list and the recent introduction of introduced a fourth tariff band of 35%, have the potential to undermine the common external tariff (Rauschendorfer and Twum, 2022) and the gains for Rwanda from the AfCFTA.

- N**egotiate a re-classification of products in the CET, pushing for zero tariffs on key intermediate inputs.** The frequent use of the DRS arises, in part, from a misclassification of intermediate goods used by manufacturing firms in the production process (Frazer and Rauschendorfer, 2019). Re-classifying products in the CET to ensure tariffs on intermediate inputs are zero, would improve cost competitiveness of Rwandan exporters that rely on imported inputs in production (Rauschendorfer et al., 2021), enabling them to better realise export opportunities from the AfCFTA. This reform of the CET would not preclude other EAC members of using SoA should they desire to protect a domestic firm producing the imported good.
- **Should reform of the CET not be possible, Rwanda should make greater use of the SoA mechanism to reduce import tariffs on intermediate inputs, rather than the duty Remission Scheme (DRS)**. While the DRS provides relieve on import duties, smaller firms that are potentially key drivers of Rwanda's export response to the AfCFTA, are less able to utilize these measures, and they do not provide long-term security of access to duty-free imports.
- **Negotiate for changes in the CET to reduce tariffs where high potential for trade diversion exists**. High common-external tariffs, including the new 35% tariff band and the sensitive items lists, increase the likelihood that new imports from Africa following

[42] The institutional design of the AfCFTA is such that there is no supra-national institution to ensure compliance with regards to implementation of the annexes (Erasmus, 2020). Disputes are to be resolved bi-laterally with the home states acting on behalf of traders or firms.

the AfCFTA will be driven by trade diversion. Estimates in this paper, for example, shown that nearly 30% of the increases in imports by Rwanda from the AfCFTA are driven by trade diversion. Trade diversion reduces the welfare gains from the AfCFTA in that consumers do not fully benefit from lower prices following the tariff reductions, and the government loses tax revenue. To minimise these effects, Rwanda should negotiate for changes in the CET to reduce tariffs where high potential for trade diversion exists. Alternatively, Rwanda should make more active and extensive use of the SoAs to reduce tariffs on highly protected goods imported from the region.

- **Keep key food products out of the excluded product list (Schedule C) in the EAC offer of tariff concessions.** The EAC has not yet finalized what products are to be excluded (Schedule C) from the AfCFTA tariff concession offer. The EAC common external tariff on many food products are very high and raise the cost of living for households, particularly poor households that disproportionately spend the incomes on food. Food products should be included in list products to be liberalised under the AfCFTA so as to maximise the welfare gains for consumers.

C. Implement alternative tax policies, and improve collection efficiency of existing tax policies to mitigate customs revenue losses from the AfCFTA.

The losses in customs revenue following tariff liberalisation under the AfCFTA will require that the Rwandan authorities find alternative sources of revenue.

- **Reduce the widespread exemption of customs duties**. Estimates in this paper show that up to 40% of the actual customs duties collected through import tariffs is 'lost' from exemptions from customs duties.

- **Conduct more detailed empirical research on potential revenue losses using more up-to-date data.** The estimates in this paper are based on 2018 data and require updating. A revenue-loss study should also consider alternative tax policies and their economic impacts that can be implemented to boost government revenue.

D. Develop policies to enhance firm entry, survival and growth

The AfCFTA has the potential to boost the entry of small firms into the exporter market. While entry into exporting is very high in Rwanda, exit rates are also very high, and survival rates of

new entrants are very low. Once firms survive, they make a substantive contribution to aggregate export growth (World Bank, 2017). Not enough is known about what drives entry, exit and survival of Rwandan exporters.

- **Conduct more research on what drives entry, survival and growth of exporters in Rwanda.** The AfCFTA presents an opportunity for new firms to enter into exporting. Evidence, however, shows that very few new entrants survive and grow. Firm-level research on exporter dynamics using trade transaction level combined with administrative tax data for firms obtained from their corporate income tax or VAT submissions can provide new policy relevant insights (see Spray (2017) as an example).
- **Evaluate the effectiveness and availability of trade and other types of finance to exporters.** Empirical evidence shows that access to finance is a critical factor in driving export participation in Rwanda (World Bank, 2017; World Bank, 2022). However, close to half of exporters surveyed under the World Bank 2019 Enterprise survey responded that access to credit posed an obstacle to their operations (Twum, 2022). Constraints in accessing finance will reduce the responsiveness of Rwandan firms to export opportunities under the AfCFTA.
- **Expand export market access programmes (e.g., trade shows), explore funding options for export promotion activities, and provide information on market opportunities from AfCFTA.** High churn of exporters signals the possibility of large informational gaps. Carefully constructed marketing support programmes can assist in helping exporters identify, enter and expand their export markets. Evidence shows that once new exporters survive, they grow very fast. More research is needed on the role of e-commerce platforms and digital marketing facilitating access of firms into the export market.
- **Provide support for exporter to adhere and apply for certification of international standards.** Certification of standards is strongly associated with firm participation in exporting, yet very few firms in Rwanda (3%) have ISO certification (World Bank, 2022). Support for firms in learning about and applying for ISO certification could increase export participation. It could also help reduce the under-utilisation of the

trade preferences that provide competitive market access for Rwandan exporters to the European and US markets (World Bank, 2017).

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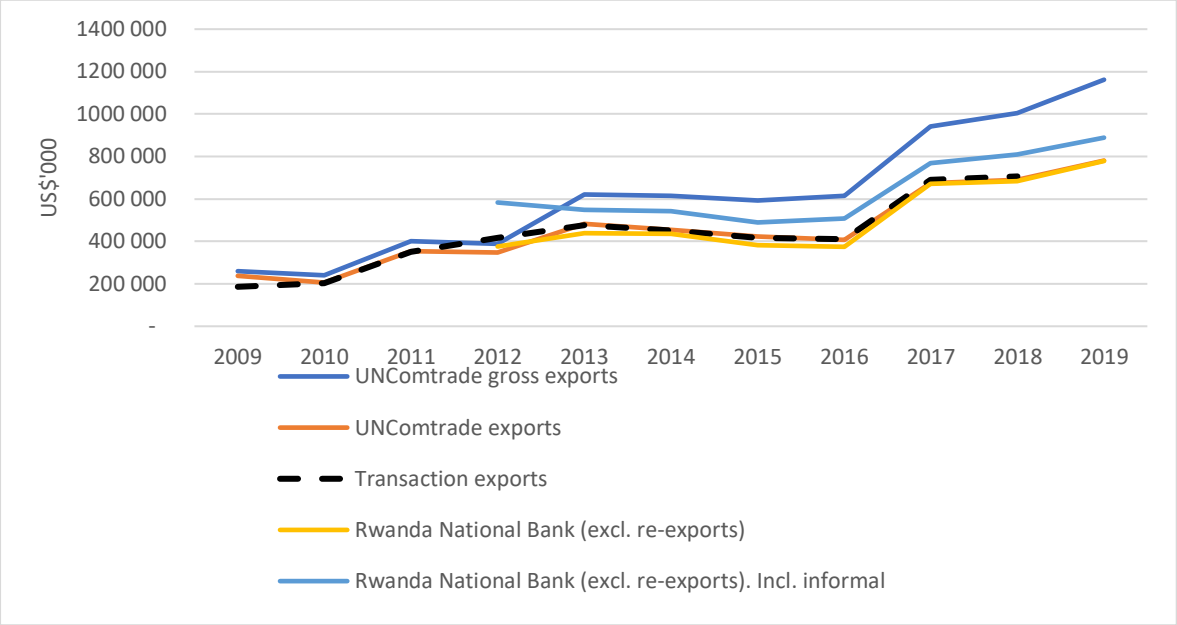
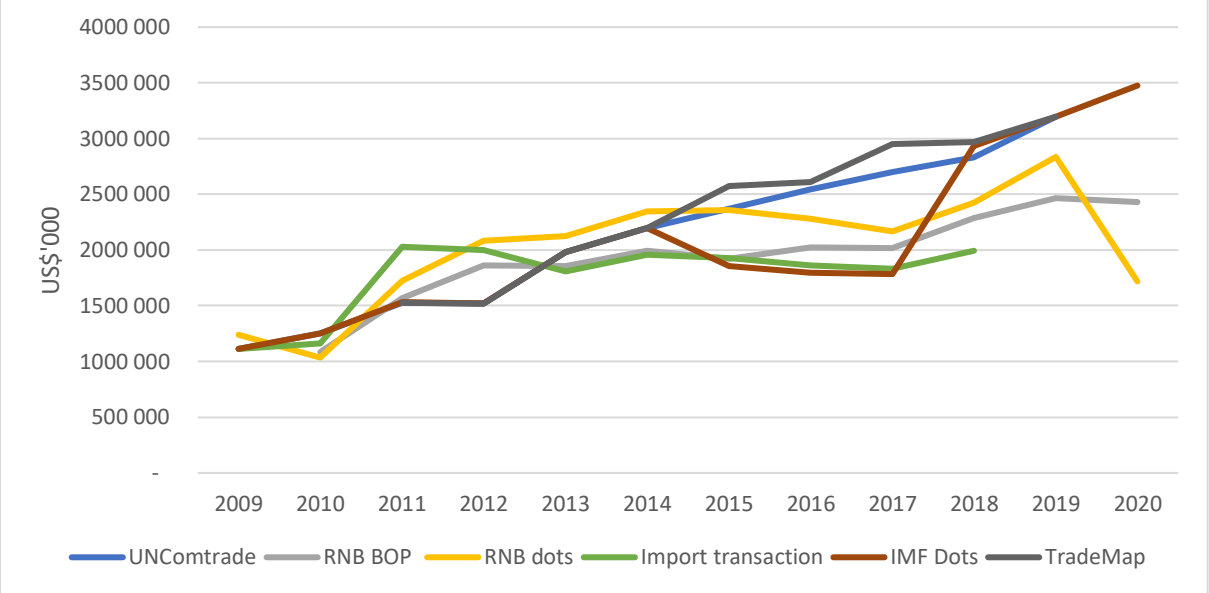
Appendix A: Additional tables and figures

Figure A1. Comparison of export data



Notes: The UN Comtrade gross exports include re-exports. UN Comtrade exports, the Transaction exports and Rwanda National Bank exports exclude re-exports.

Figure A2. Comparison of import data



Notes: IMF denotes International Monetary Fund, RNB denotes Rwanda National Bank, Dots refers to direction of trade statistics, and BoP refers to balance of payments.

Table A1: Top 10 products experiencing a rise in exports (US$ 1000), Scenario (1).

HS code	Description	Initial exports (US$ million)	Change exports (US$ million)	Mean change in tariff (percentage point)
110220	Maize (corn) flour	9.35	8.13	-5.00
010290	Other live bovine animals	6.67	4.25	-7.50
721430	Other bars and rods of iron or non-alloy steel	5.64	0.74	-10.00
940429	Mattresses fitted with springs or stuffed	2.09	0.63	-21.67
870421	Unassembled diesel powered trucks not exceeding 5 tonnes	3.34	0.58	-12.50
010229	Cattle, Live, Other Than Purebred Breeding	0.31	0.25	-10.00
730300	Tubes, pipes and hollow profiles of cast iron	0.30	0.22	-10.00
110620	Flour and meal of sago, roots or tubers of 0714	0.26	0.22	-10.00
870323	Unassembled automobiles of cylinder capacity exceeding 1,500 cc but not exceeding 3,000 cc	0.47	0.18	-22.13
630622	Tents of synthetic fibres	0.32	0.14	-25.00
Total		28.75	15.35	
Share total increase in exports (%)			87.13	

Note: The list covers the 10 products with the largest increase in Rwanda exports in scenario 1 from the new FTA member states. Products are measured at the HS 6-digit level.

Table A2: Top 10 products experiencing a rise in imports (US$ mill), Scenario (1).

HS8	Description	US$ million
87033288	Motor vehicles exceeding 2500 cc	3.552
44072100	Sawn tropical wood of thickness exceeding 6 mm	0.383
44182000	Doors and their frames and thresholds, of wood	0.327
87033392	Other motor vehicles exceeding 2500 cc	0.225
87032392	Motor vehicles of 1500 cc to 2500 cc	0.163
44072900	Other sawn wood of thickness exceeding 6 mm	0.146
84314896	Machine parts	0.143
44181000	Windows, French-windows and their frames, of wood	0.134
52085192	Unbleached plain cotton fabrics, containing 85% or more by weight of cotton	0.128
73089096	Steel doors, windows, and their frames	0.124
Share total increase in imports from new FTA partners (%)		39.9

Note: The list covers the 10 products with the largest increase in Rwanda imports in scenario 1 from the new FTA member states. Products are measured at the HS 8-digit level.

Appendix B: Firm gravity model estimates

The gravity model is estimated using the transaction export data for 2018. The destination characteristics in the model include the standard gravity variables such as GDP in constant US$, bilateral distance from Rwanda, and dummy variables (=1) for a common official language and common colonizer.[43] To capture the effect of tariff barriers, the regressions include the average applied statutory tariff rate on Rwanda exports obtained from TRAINS.[44] To control for the cost and efficiency of logistical services, the regressions include a standardized Logistics Performance Index (LPI), obtained from the World Bank.[45] We also include a dummy variable for Africa to see whether export values to Africa differ from exports to other countries, after controlling for the destination characteristics.

We also take into account an additional consideration, namely whether a firm exports to the destination or not. High trade costs, for example, may prevent exporters from selling to a particular destination. For example, Rwanda only exported to 108 (out of 197 potential) countries in 2018. It exported to 41 of the 54 African countries. If high trade costs explain the selection countries that Rwanda exports to, then not accounting for these 'zero' trade observations can lead to selection bias in the estimates of the relationships.

The empirical analysis takes the selection effect into account in two ways. Firstly, we estimate a logit and linear probability model that estimates the probability that a firm exports to a particular destination in 2018. Secondly, we estimate a gravity-style model for Rwanda that controls for zero export value destinations (also for 2018) using the Poisson pseudo maximum likelihood estimator of Silva and Tenreyro (2010).[46]

[43] The data for distance, contiguity, common colonizer and common language are obtained from CEPII. The data on GDP in constant US$ is obtained from the World Development Indicators (WDI).
[44] Missing tariff data are first replaced with the two-year lagged average tariff, and, if still missing, by the closest tariff in the subsequent two years.
[45] The LPI is a summary indicator that combines data on the efficiency of customs and border clearance, the quality of trade and transport infrastructure, the ease of arranging competitively priced shipments, among several other measures.
[46] We construct a balanced panel with firm-destination exports as the dependent variable. We restrict destinations to those that at least one Rwanda firm exported to in 2018 (108 countries in total).

The results are presented in Table B1. The first 6 columns present results explaining the aggregate value of bilateral exports together with the various decompositions of this value into its extensive and intensive margins. The final two columns present logit models that explain the probability that Rwanda trades with a particular country.

Table B1: Gravity model estimates using 2018 export transaction data for Rwanda.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	Export value	Export value	Number of exporters	Mean export value per firm	Number export transactions	Mean export value per transaction	Export destination dummy	Export destination dummy
	PPML	PPML	PPML	PPML	PPML	PPML	Logit	Logit
ln(distance)	-1.483+	-0.682	-0.950**	-0.967*	-0.950**	-0.633*	-1.049*	-1.883**
	(0.828)	(0.587)	(0.125)	(0.484)	(0.118)	(0.322)	(0.483)	(0.626)
Contiguous	2.652*	4.151+	2.628**	1.138	2.618**	1.553+	-1.865	
	(1.286)	(2.283)	(0.653)	(0.750)	(0.565)	(0.863)	(1.244)	
ln(GDP constant US$)	0.755*	-0.122	0.393**	-0.509	0.305**	-0.221	0.642**	0.271
	(0.332)	(0.404)	(0.107)	(0.334)	(0.111)	(0.249)	(0.109)	0.127
Common language	-1.526	-1.655*	0.317	-1.574**	0.308	-1.187**	-0.012	1.015
	(1.061)	(0.749)	(0.311)	(0.416)	(0.334)	(0.288)	(0.543)	(0.915)
Common colony	2.026	2.318**	-2.022**	2.149**	-1.945**	2.439**	-0.389	-1.474+
	(1.471)	(0.668)	(0.777)	(0.505)	(0.673)	(0.498)	(0.563)	(0.872)
Africa	-2.037	1.363	1.128**	0.857	0.914*	0.325	1.901**	1.201
	(1.393)	(0.920)	(0.360)	(0.775)	(0.379)	(0.755)	(0.634)	(0.778)
Logistics performance		2.772**	0.519*	2.360**	0.541*	2.216**		0.621+
		(0.622)	(0.210)	(0.374)	(0.251)	(0.333)		(0.365)
Applied tariff		11.171*	0.137	8.252*	0.689	5.471*		0.222
		(4.886)	(1.874)	(3.821)	(1.817)	(2.499)		(3.360)
Constant	12.315*	3.364	6.972**	6.401	7.159**	3.136	-6.806	10.096
	(6.163)	(5.176)	(1.035)	(4.449)	(1.016)	(2.857)	(5.589)	(7.513)
Observations	187	121	121	121	121	121	187	118
R-squared	0.267	0.751	0.739	0.792	0.738	0.905		

Notes: Own calculations using the Rwanda Transaction data for exports in 2018. PPML denotes the Poisson Pseudo Maximum Likelihood estimator of Silva and Tenreyro (2010). P** p<0.01, * p<0.05, + p<0.1.

Column (1) presents the estimates for the base gravity model explaining aggregate bilateral export values. The negative on distance to trader partner, a proxy for trade costs, reveal a powerful negative impact on export values the further the partner country is from Rwanda.

The effect of trade costs on firm participation in exporting to destinations is provided in the final two columns of Table B1. The results in the base regression in column (7), for example, predict that a rise in distance from that of Kenya (506 km) to Ghana (3694 km) reduces the probability that the Rwanda firms export by 16.9 percentage points. If the distance increases to that of Australia (12 643 km), the probability of exporting falls by 58.2 percentage points.

Column (3) provides insights on how trade costs (and other destination characteristics) affect the number of exporters that trade with each destination. Increases in distance to destination significantly reduces the number of firms that export to the destination. A similar negative relationship is also found between distance and the number of firm-product combinations to

each destination (column 5), indicating that the effect of distance works both through firm export participation and the range of products exported.

Column (4) and (6) shows that increased distance reduces the aggregate value of exports through reductions in the size of exporters, as measured by firm export value (column 4), and the value of exports per transaction (column 6). According to the distance coefficient in column (4), an increase in distance from Kenya to Ghana reduces the mean value of firm exports by 95%.

The estimates for export values (column 2) produce a large negative coefficient on logistics performance in the destination country, with a 0.1 standard deviation improvement in logistics performance estimated to raise bilateral export values by 32%. The increase in export value is driven by a combination of a higher probability that Rwanda will trade with the destination (column 8), a rise in the number of exporters to the destination (column 3) and, to a greater extent, a rise in the average value of exports per exporter (column 4).

Looking at the other results, the estimates also reveal higher export values to destinations with higher income (GDP), with the country (column 8), firm (column 3) and transaction (column 5) extensive margins the main contributors to this association. However, the average value of exports per firm is no higher than the rest of the world (column 4) after controlling for income.

The coefficient on the applied tariffs in the export value regression is actually positive (column 2), but this largely reflects the influence of the DRC where both applied tariffs and export values are high. When a dummy variable is included for the DRC, the coefficient loses significance.

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