

Trade Creation and Trade Diversion in African RECs

Drawing Lessons for AfCFTA

Woubet Kassa

Pegdéwendé Nestor Sawadogo



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Abstract

This study aims to draw key lessons for the African Continental Free Trade Area using evidence from within the region. Although drawing lessons from the rest of the world is essential, given the unique features of economies in the Africa region, the most relevant lessons can be drawn from the experiences of regional economic communities in the continent. The study draws on the eight regional economic communities that have been recognized by the African Union as pillars on which the continent will rely to implement the African Continental Free Trade Area. The study evaluates the trade creation and trade diversion impacts of each of the eight RECs and examines their performance with the goal of drawing lessons and identifying challenges for the success of the African Continental Free Trade Area. Despite significant heterogeneities, there is more trade creation than trade diversion and a generally positive impact on trade within the regional economic communities. Two

regional economic communities in particular—the East African Community and the Southern African Development Community—outperform all the other regional economic communities in terms of boosting intra-regional economic community trade. This is mainly associated with the high level of investment in trade facilitation, the level of synergy between national and regional goals, the density of economic activity, and the advancement in the quantity and quality of regional infrastructure. There are also many challenges that policy makers should address to realize the objectives of the African Continental Free Trade Area and transform the continent. Learning from the regional economic communities is central. But, given the scope of the African Continental Free Trade Area, there is also a need to examine the transition from regional economic communities to the African Continental Free Trade Area, which is expected to be a sticky transition.

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Trade Creation and Trade Diversion in African RECs: Drawing Lessons for AfCFTA

Woubet Kassa and Pegdewendé Nestor Sawadogo*

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*Woubet Kassa, Office of the Chief Economist for Africa, World Bank, wkassa1@worldbank.org; Pegdewendé Nestor Sawadogo, Office of the Chief Economist for Africa, World Bank, psawadogo2@worldbank.org. Valuable feedback was received from Cesar Calderon, Fulbert Tchana Tchana and Albert Zeufack at various stages of the study. The views expressed in this paper are those of the authors, and do not necessarily reflect those of the World Bank or its Boards of Directors.

1. Introduction

Can Africa's high enthusiasm for regional integration through the Africa Continental Free Trade Area (AfCFTA) be matched by national and regional efforts to achieve its desired goals? It depends on how AfCFTA draws upon the successes and challenges faced by the regional economic communities (RECs). When it comes to regional integration in the region, the rhetoric often does not match the reality. The rising ambitions of the region to reduce poverty and promote rapid economic growth could provide additional momentum to achieve the stated goals of regional integration. However, despite some success, the experience of regional integration and RECs in the continent is fraught with failures. This study aims to draw key lessons using evidence from within the region. Though drawing lessons from the rest of the world is essential; given the unique features of economies in the Africa region, the most relevant lessons can be drawn from the experiences of regional economic communities in the continent.

Although intra-regional trade still accounts for a very small share of total trade in Africa, it is becoming increasingly important. The establishment of AfCFTA presents major opportunities and challenges to boost intra-Africa trade. There is an emerging literature that estimates the potential impact of AfCFTA on economic growth, exports, investments, and welfare. Using a computable general equilibrium model (CGE) model, Saygili et al. (2018) estimate that full elimination of tariffs among African countries increases GDP by close to 1 percent and creates an overall welfare gain of about US\$16.1 billion in the long run. The growth and welfare gains from AfCFTA could be even larger if the scope of the agreement is extended to non-tariff measures (NTMs) and trade facilitation. Depetris Chauvin et al. (2017) estimate that the elimination of tariff barriers combined with reduction of NTMs is associated with an increase in GDP of at least 5 percent. Maliszewska and Ruta (2020) find that full implementation of the WTO Trade Facilitation Agreement brings the overall welfare gains to 4.7 percent by 2030 (compared to the baseline). The volume of total exports is expected to increase by over 21 percent. However, intra-continental exports are estimated to rise by over 57 percent. There is some modest trade diversion to the rest of the world, with an export decline of around 0.5 percent outside the continent. In monetary terms, intra-continental trade grows from \$196 billion in 2030 in the reference scenario to \$310 billion after implementation of AfCFTA in 2030.

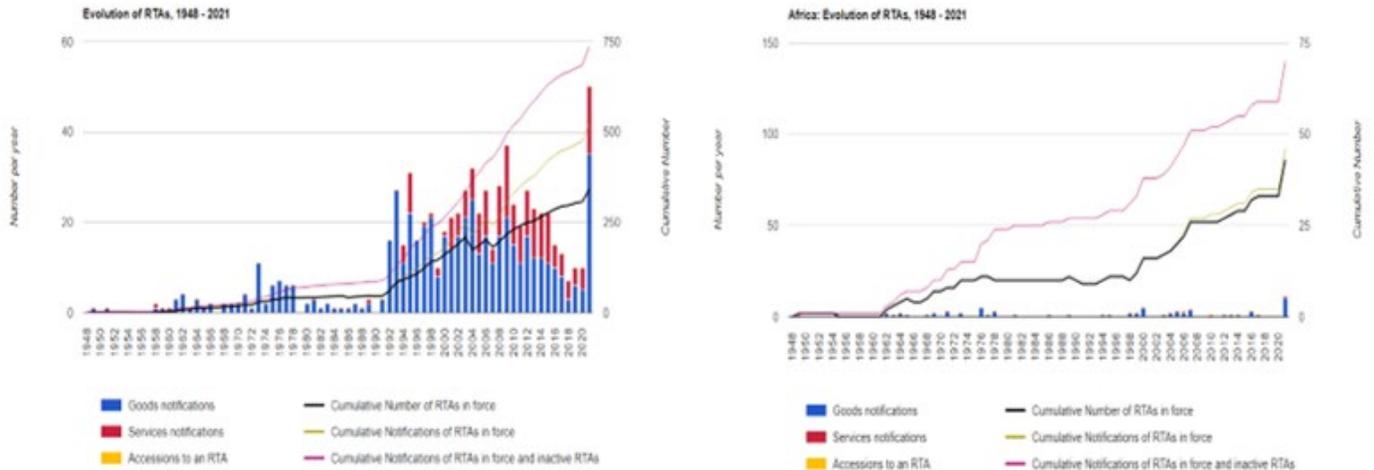
The assessment of the potential impacts of various agreements under AfCFTA could only be estimated ex-ante. Hence, despite all the potentials, the realization of the expected gains from AfCFTA depends on the extent of intra-regional trade under the new AfCFTA regime and subsequently on the impact of such trade on growth and welfare. To better understand if AfCFTA could yield the much-sought gains, it is essential to understand the early successes and failures of regional trade agreements both within the continent and beyond. Of course, much lessons can be drawn from other regional trade agreements including the European FTA, the North American FTA, and Association of Southeast Asian Nations (ASEAN). However, the most relevant lessons can be drawn from the experiences of past and current regional economic communities in the continent. This study focuses on drawing these key lessons from regional trade agreements with emphasis on the experiences of regional economic communities in the Africa region.

It draws upon the eight RECs which have been recognized by the African Union (AU) as pillars on which the continent will rely to implement AfCFTA. We evaluate the trade creation and trade diversion impacts of each of the eight RECs, examine their performance with the goal of drawing lessons and identifying challenges for the success of AfCFTA. Despite significant heterogeneities, there is more trade creation than trade diversion, and a generally positive impact on within-REC trade. Two RECs in particular – East African Community (EAC) and Southern African Development Community (SADC) - outperform all the other RECs in terms of boosting intra-REC trade. This is mainly associated with their high level of investment in trade facilitation, the level of synergy between national and regional goals, the density of economic activity and the advancement in the quantity and quality of regional infrastructure. There are also variations among the RECs in terms of whether they promote exports to the rest of the world or displace them. The key policy implications focus on two key areas - significant investment in trade facilitation and strategic sequencing of integration schemes. Given that AfCFTA is a much larger FTA compared to the existing RECs, it is important that economies use regional integration to create agglomeration economies to expand supply/production which in turn provides greater impetus to engage in GVCs. Given the costs of distance and the benefits of already existing strong trade corridors, it is imperative that integration efforts start with a focus on selected high-density corridors of trade. Expanding trade on a continental level is a daunting task but is achievable and feasible if sub-regional corridors of trade and production integration are strengthened to build regional value chains which serve as key hubs of GVCs. However, there are many challenges that African countries, regional and global entities need to address to realize the objectives of AfCFTA and transform the continent. We address some of these key challenges and suggest relevant policy options.

2. Regional Economic Communities (RECs) in Africa: Background and Key Trends

The resurgence of regionalism and regional trading blocs has also stirred Africans towards establishing a regional trading bloc to deepen integration. The rise of (mega) regionalism is manifested by the rapidly increasing number of regional trade agreements. The number of RTAs in force has been continuously increasing worldwide, from 142 in 1999 to 176 in 2003 and then to 343 in 2021, while the number of RTA notifications is 548 in 2021 (Figure 1). This rise in regional trade liberalization has also contributed to multilateral liberalization, though it could also have fostered increased regionalization at the cost of multilateral trade.

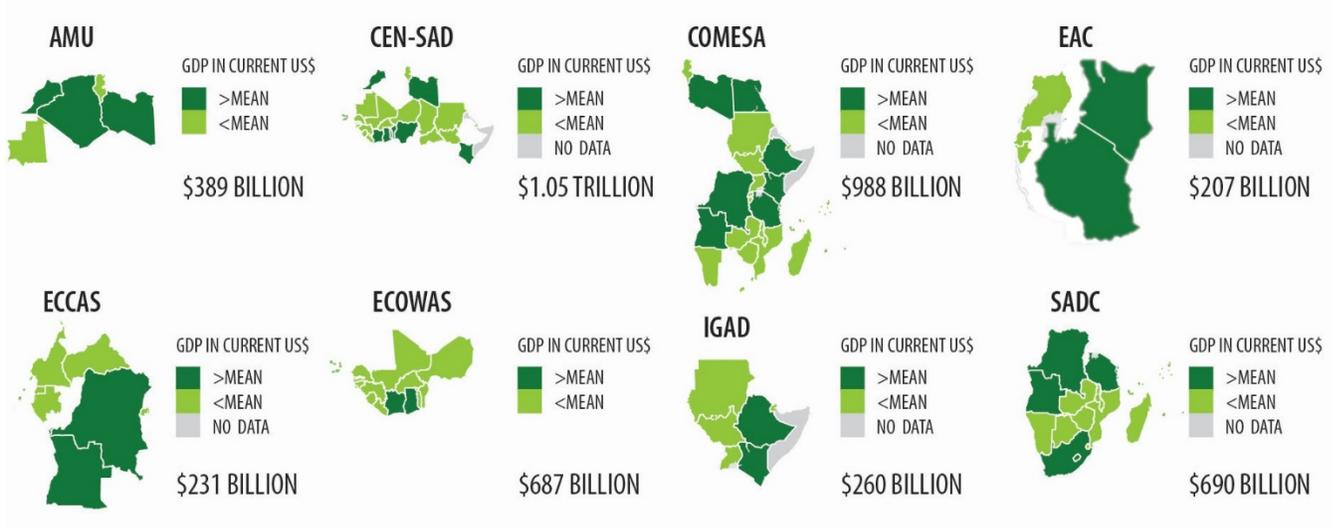
Figure 1: Evolution of Regional Trade Agreements, 1948-2021 (Source: WTO, March 2021)



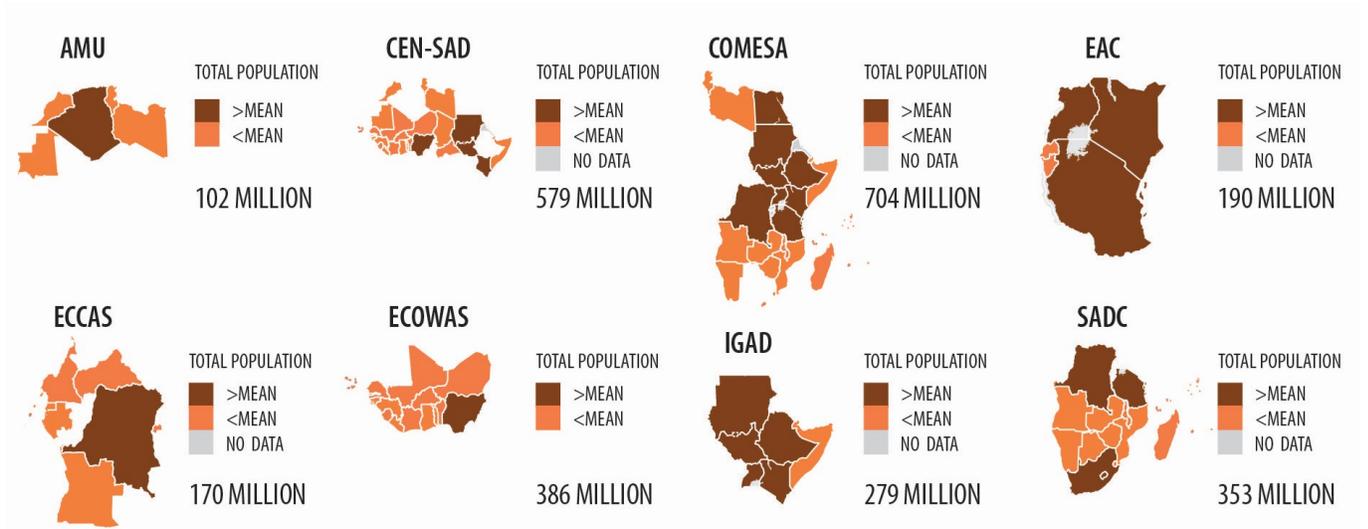
The African continent, like many other regions of the world, has witnessed a proliferation of RTAs (Figure 1B). In Africa, the number of regional trade agreements (RTAs) in force (46) is lower than in North and South America, East Asia and Europe, but it exceeds all other regions. The African Union (AU) recognizes eight (8) RTAs as pillars on which the continent will rely to implement the AfCFTA. These include Arab Maghreb Union (AMU), Community of Sahel–Saharan States (CEN-SAD), Common Market for Eastern and Southern Africa (COMESA), East Africa Community (EAC), Economic Community of Central African States (ECCAS), Economic Community of West African States (ECOWAS), Intergovernmental Authority on Development (IGAD) and Southern Africa Development Community (SADC). The four major RTAs in terms of the number of member countries (in 2021) are CEN-SAD (29 members), COMESA (21 members), SADC (16 members) and ECOWAS (15 members). Most of these RTAs aim to become a custom union (CU) or a common market (CM) or an economic union in the long run. Many African countries have multiple and overlapping memberships. Figure 2 presents membership and economic size of the major RECs in the region.

Figure 2: Regional Economic Communities of Africa, a Profile

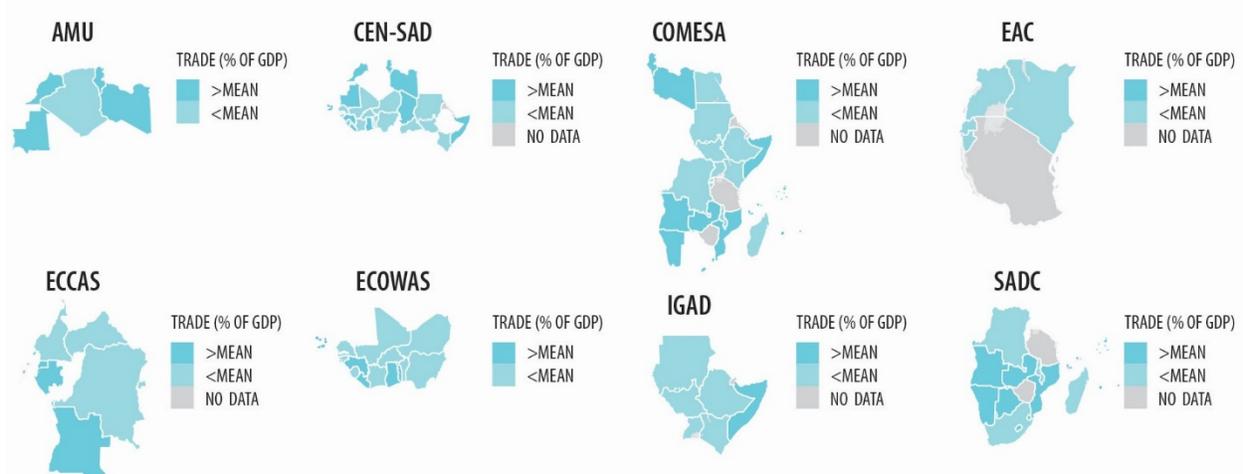
a. Size of economies (GDP in Current US\$)



b. Population size



c. Trade (%GDP)



Mean represents the mean value for all African countries.

Source: Authors' Elaboration based on WDI data.

The RECs have varying experiences and degrees of integration with uneven progress in their integration drives (Table 1). Some RECs have graduated from an FTA and advanced to higher level of integration including customs union while most remain FTAs. For example, EAC has advanced into a common market, COMESA and SADC have free trade areas in operation, while a subset of SADC called the Southern Africa Customs Union (SACU) have developed into a CU with higher levels of integration. Almost all the eight RECs have adopted a free movement of person's protocol. However, the degree of implementation varies. ECOWAS has been recognized as the best practice in this area since all its member countries have implemented the protocol on the free movement of persons and rights of residence and establishment. They have also adopted a common passport.

Table 1: Progress in market integration of African RECs

REC	FTA	CU	CM	EMU	SU	FM protocol
ECOWAS	✓	✓	✗	✗	✗	All 15
EAC	✓	✓	✓	✗	✗	3 out of 5
COMESA	✓	✓	✗	✗	✗	Only Burundi
ECCAS	✓	✗	✗	✗	✗	4 out of 11
SADC	✓	✗	✗	✗	✗	7 out of 15
AMU	✗	✗	✗	✗	✗	3 out of 5
IGAD	✗	✗	✗	✗	✗	No protocol
CENSAD	✗	✗	✗	✗	✗	Unclear

Source: Authors' elaboration based on UNECA, 2016.

Note: ✓ - Yes, ✗ - No, FTA = Free Trade Area, CU = Custom Union, CM = Common Market, FM = Free Movement of persons, EMU = Economic and Monetary Union, SU = Supranational Union.

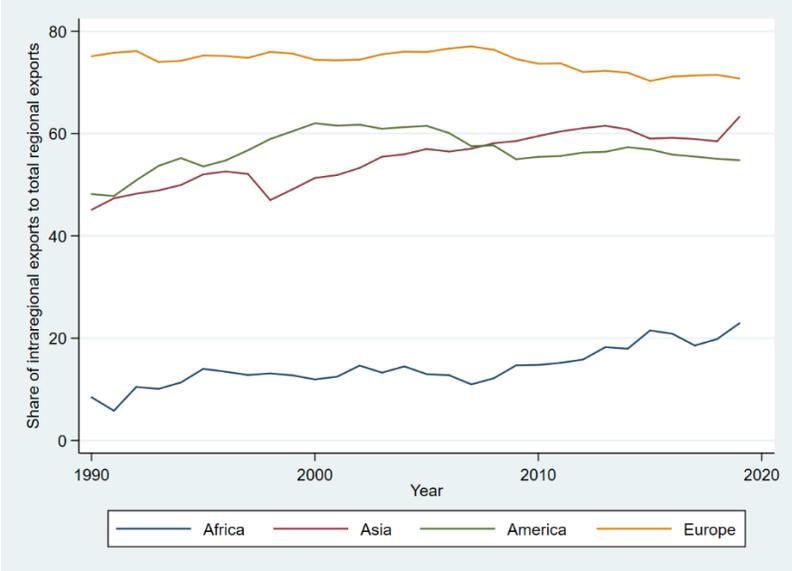
2.1 Key Trends in Regional Trade across RECs

The share of intra-African exports to total exports has doubled from less than 10% in 1990 to more than 20% in 2019. However, despite the strong positive trend in intra-African trade since 2008, the African continent remains the least integrated region in terms of trade flows (Figure 3). Africa's low intraregional trade coexists with the region's extremely high dependence on exports to the rest of the world. The continuously lower level of exports diversification explains this lower regional trade and higher dependence on exports to the ROW. Export dependence, defined as the share of regional exports to the RoW to total regional exports, has slowly decreased from around 90% in 1990 to less than 80% in 2019. This high export dependence also reflects the continent's historical links with the outside world and lack of export diversification. Nonetheless, the lower level of intra-African trade could be underestimated given the omnipresence of informal trade. It could also be overestimated because of the multiple and overlapping memberships of many countries. Overall, there is significant variation in trade and other indicators of regional integration across the major RECs.

Regional integration, as measured by intra-regional exports as a share of total exports, which is the focus of this study, is deeper in EAC and SADC, followed by CENSAD, ECOWAS, and COMESA (Figure 4). The differences in the levels of intraregional export performances within the African RECs reflect many factors including the size of economies in each REC, varying levels of integration in infrastructure and policies, institutional quality to implement the agreements and the provisions in each REC, the difference in the level of the industrialization process, and the degrees of infrastructure integration and the cost of trading across borders in each REC. A closer

look at the share of intraregional exports by country identifies significant disparities across countries within each REC and across RECs.

Figure 3: Share of intra-regional exports to total exports by region



The disparity in intra-regional trade across countries is more stark compared to the disparity across RECs; and the comparison between the RECs tends to hide this intra-REC disparity in trade integration. Some countries are more integrated at the regional level and have high shares of intraregional exports to total exports. In this respect, the 10 countries with the largest share of intraregional trade as a share of total exports, during 2009-2019 include Eswatini, Zimbabwe, The Gambia, Togo, Rwanda, Uganda, Senegal, Djibouti, Mali, and Lesotho, respectively. That is, most of their trade occurs with other African countries. Out of the top 10 countries leading in intra-African exports, three (Eswatini, Zimbabwe, Lesotho) are members of SADC, four (The Gambia, Togo, Senegal, Mali) are members of the ECOWAS and three (Rwanda, Uganda, Djibouti) are members of the COMESA, two of which are also EAC members. On the other hand, the 10 countries with the lowest share of intra-African exports are Libya, Cabo Verde, Angola, Algeria, Gabon, Mauritania, the Seychelles, São Tomé and Príncipe, Guinea, Morocco. The low level of intra-REC trade within AMU aligns with the members who often register the smallest shares of trade share with other African countries. Still, even within each REC there are significant disparities in intraregional trade where some members trade more than others.

Figure 4: Comparison of intra-REC exports trends from 1990 to 2019

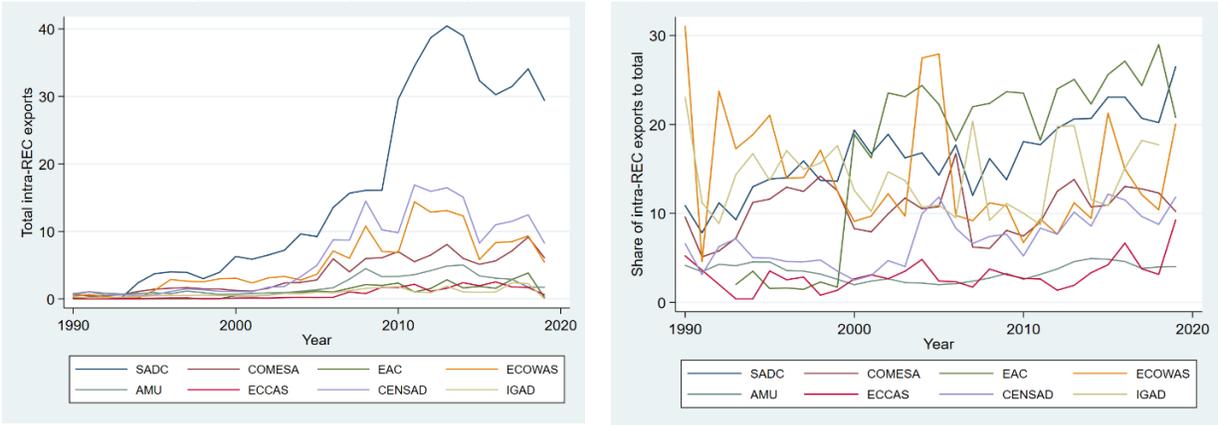


Table 2: Top 10 and bottom 10 countries share of intra-African exports* over the decade 2009-2019

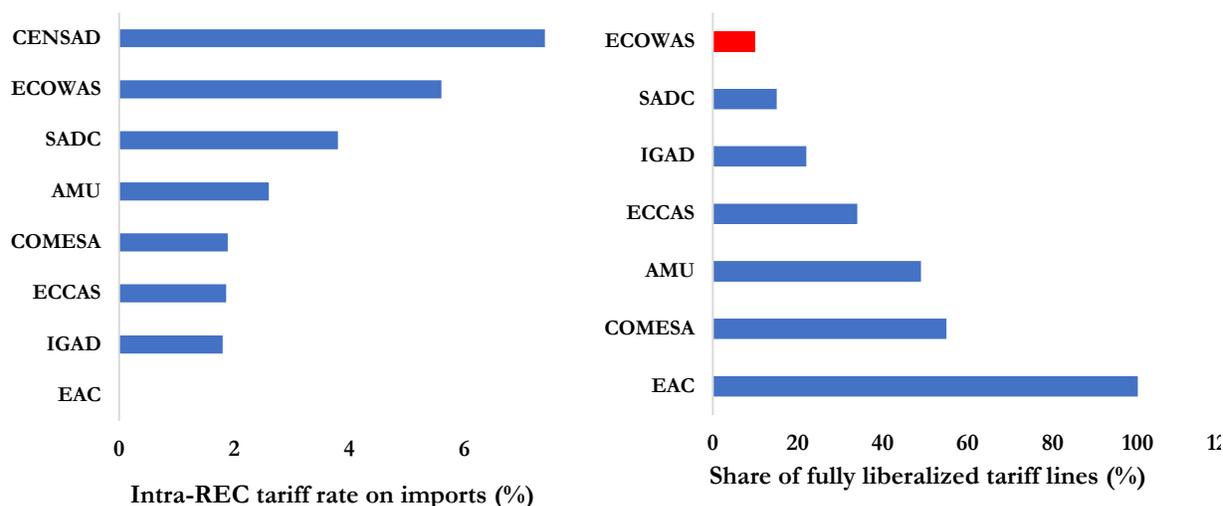
Top 10 countries			Bottom 10 countries		
Rank	Country	Intra-AFR exports (%)	Rank	Country	Intra-AFR exports (%)
1	Eswatini	83.03	10	Morocco	8.50
2	Zimbabwe	81.49	9	Guinea	8.4
3	Gambia, The	78.68	8	São Tomé & Príncipe	8.18
4	Togo	68.89	7	Seychelles	6.27
5	Rwanda	63.73	6	Mauritania	6.27
6	Uganda	58.76	5	Gabon	5.40
7	Senegal	57.54	4	Algeria	4.46
8	Djibouti	51.80	3	Angola	3.87
9	Mali	49.09	2	Cabo Verde	2.22
10	Lesotho	47.96	1	Libya	2.025

*Intra-African exports: the % share of intra-African exports to total exports.

Source: Authors' calculation based on CEPII Data.

The RECs also differ in terms of the extent of tariff liberalization (see Figure 5). The EAC stands out as the most advanced REC in terms of tariff liberalization, where all tariff lines are fully liberalized, with average applied tariffs of zero. SADC on the other hand has relatively the highest intra-regional tariff, excluding members of SACU who have formed a customs union and hence have applied tariff of zero. Within COMESA, the proportion of tariff lines fully liberalized is 55% while average applied tariffs by member countries (using import weighting) is 1.89%. As for SADC, only 15% of tariff lines are fully liberalized while the average applied tariff amounts to 3.8%.

Figure 5: Trade costs in terms of tariff within RECs



Source: Authors' elaboration based on United Nations Economic Commission for Africa (UNECA) (2016).

In addition to tariffs, there is heterogeneity in the levels of trade costs associated with non-tariff barriers. AMU and EAC have the lowest intra-regional non-tariff costs¹, while COMESA, CENSAD and SADC have the highest trade costs among all the RECs. Table 3 shows that, trading goods within African RECs involves, on average for all tradable goods, additional non-tariff costs amounting to approximately 131%-262% of the value of goods - as compared to when each country trades these goods within its borders. AMU stands out as the REC with the lowest non-tariff cost, followed by EAC. While COMESA and CENSAD show the highest levels of non-tariff cost in Africa. The extent of tariff liberalization does not serve as a clear predictor of intraregional trade in the region given that the two RECs with the highest and lowest tariff liberalization have the highest share of intra-regional trade compared to their counterparts.

Table 3: Comprehensive Trade Costs Excluding Tariff by REC in 2017

Rank	REC	Nontariff Trade Costs
1	AMU	131.40
2	EAC	142.70
3	IGAD	169.05
4	ECCAS	174.73
5	ECOWAS	198.39
6	SADC	211.58
7	CENSAD	228.46
8	COMESA	261.97

Note: Comprehensive trade costs excluding tariff (i.e., nontariff trade costs) includes all additional costs other than tariff costs involved in trading goods bilaterally rather than domestically.

Source: ESCAP-World Bank Trade Cost Database

3. Evaluating the Impact of RECs on Trade Creation and Trade Diversion

The objective of our empirical investigation in this section is twofold. First, we examine the determinants of bilateral trade flows in the Africa region following the gravity model framework. Second, we evaluate the effects of African RECs in terms of trade creation (TC) and trade diversion (TD) in accordance with the central theoretical² framework of free trade areas.

The classic theoretical framework³ in analyzing the impact of an FTA or customs union suggests that the welfare impact is ambiguous due to the contrasting welfare impacts of trade creation and trade diversion. Viner (1950) notes that trade creation increases welfare while trade diversion reduces it; pointing out that an FTA could leave countries worse off consequently. A free trade area, by allowing competition among FTA members due to reduced trade barriers, may promote a more efficient (re)allocation of resources within the FTA. This is associated with what is often referred to as trade creation - i.e. there will be a shift in the locus of production from a high-cost producer to a low-cost, relatively more efficient producer, within the FTA. There is a welfare gain associated with reduced prices, increasing consumers' surplus within the FTA and an overall improvement in the efficiency of production within the FTA. There are two distinct effects associated with trade creation - i.e. the production effect and the consumption effect, both of which are expected to increase welfare. On the production side, we will have greater efficiency gains while also contributing to declining prices (consumption effect) and hence increased societal welfare.

On the other hand, there is the possibility of trade diversion - i.e. a shift in the locus of production from more efficient production by non-members of the FTA to inefficient producers within the FTA, depending on the extent of the external tariffs. The impact of trade diversion could be stronger if members raise external tariffs following the FTA. Within the underpinning theoretical framework, this is harmful due to the global efficiency losses. The effect within the FTA, however, could be positive if the 'production' gains of the new exporter outweighs the loss in consumer welfare of the old producer. The net impact of an FTA depends on the totality of trade diversion and trade creation, which is largely an empirical question. According to the classical theoretical framework, an FTA is more likely to have a favorable impact on welfare if trade creation exceeds trade diversion. However, this has largely been focused only on the static gains from trade, without due regard to the dynamic⁴ and arguably more important long-term gains. Considering the dynamic and long-term impacts could change the outcome and even trade diversion could yield increased FDI, employment and growth. We evaluate the 8 RECs by estimating the trade creation and trade diversion impacts.⁵

The baseline econometric model is given by:

$$\ln Trade_{ijt} = \psi_0 + \psi_i X_{ijt} + \alpha_I DI_{ijt} + \alpha_M DM_{ijt} + \alpha_X DX_{ijt} + d_i + d_j + d_t + \vartheta_{ij,t} \quad (1)$$

where $Trade_{ijt}$ represents the total exports from country i to country j in year t . X_{ijt} is a set of control variables including standard gravity variables such as distance, contiguity, and membership of an RTA. The distance variable represents the distance between the most populated cities in partner countries while contiguity is a dummy variable taking the value of 1 if

two countries share a common border and 0 if not. The membership of an RTA is a dummy variable which takes 1 if a given country is a member of an RTA and 0 otherwise. These gravity variables capture the effects of trade barriers on bilateral trade flows. We capture historical and cultural linkages between trading partners by including a dummy variable which take the value of 1 if two partners countries have a common language, and a dummy variable equals to 1 if two partners countries have had the same colonizer. We also include the gross domestic product (GDP) to proxy market size both for importer j and exporter i . d_i ; d_j and d_t are importer j , exporter i and time t dummy, respectively.

To properly isolate TC and TD, we follow Carrère (2006) and Martínez-Zarzoso et al. (2009) by defining three dummies⁶ (with their associated coefficient in parentheses):

- DI (α_I) which takes the value of 1 if the origin and destination country belong to a common REC and 0 otherwise. It captures intra-REC trade.
- DM (α_M) which take the value of 1 if the destination country j belongs to a REC and the origin country i to the RoW (and 0 otherwise). It captures REC imports from the RoW.
- DX (α_X) which equal to 1 if the origin country i belongs to a REC and the destination country j to the RoW (and 0 otherwise). It captures REC exports to the RoW.

The effects of RTAs on trade creation and trade diversion could be captured from the coefficients as follows.

- Pure TC, that is an increase in intra-regional trade while imports from ROW remain unchanged. This reflects a situation where $\alpha_I > 0$ and $\alpha_M \geq 0$ and $\alpha_X \geq 0$.
- Pure TD reflects an increase in intraregional trade which is fully offset by a decrease in intraregional imports from the RoW. There is pure TD if $\alpha_I > 0 = \alpha_M < 0$
- Both TC and TD when intra-regional trade increases more than imports from the ROW decrease. The presence of both TC and TD is observed if $\alpha_I > 0$ and $\alpha_M < 0$ and $\alpha_I > 0 = \alpha_X < 0$.

Table 4 presents results of the basic gravity model estimates without disaggregating the trade creation and trade diversion impacts. Economic size proxied by GDP is a significant determinant of bilateral trade. An increase in country's GDP leads to a strong increase in bilateral trade. A strong economic activity is an important driver of bilateral trade. Countries trade more when their bilateral trade costs proxied by distance are low. Trading partners closer to each other or countries that share a border tend to have higher levels of bilateral trade in comparison to more distant partners. These results are in line with the findings of most gravity models estimated in the literature as they reveal that transportation costs are important determinants of bilateral trade between countries (Longo and Sekkat, 2004; Carrere, 2006; Vicard, 2009; Francois and Manchin, 2013). Consequently, reducing the cost of transportation is crucial to increase bilateral trade.

Table 4: Gravity model Controlling for MRT.

Ln (Exports)	Ordinary Least Squares (OLS)			Poisson Pseudo Maximum Likelihood (PPML)		
	[1] Full sample	[2] Africa↔RoW	[3] Intra-Africa trade	[4] Full sample	[5] Africa↔RoW	[6] Intra-Africa trade
ln(GDP importer)	0.59*** (0.01)	0.64*** (0.03)	0.43*** (0.04)	0.54*** (0.02)	0.86*** (0.07)	0.08 (0.06)
ln(GDP exporter)	0.59*** (0.01)	0.62*** (0.04)	0.72*** (0.06)	0.59*** (0.02)	0.82*** (0.07)	0.34*** (0.08)
ln(distance)	-1.56*** (0.01)	-1.48*** (0.02)	-1.89*** (0.04)	-0.61*** (0.01)	-0.83*** (0.04)	-0.56*** (0.05)
Border	0.73*** (0.02)	1.94*** (0.05)	1.47*** (0.05)	0.58*** (0.02)	1.16*** (0.07)	1.18*** (0.07)
Common colonizer	0.77*** (0.01)	0.29*** (0.03)	0.57*** (0.05)	0.28*** (0.03)	0.05 (0.07)	-0.15** (0.08)
Common language	0.74*** (0.01)	0.71*** (0.03)	0.61*** (0.04)	0.15*** (0.02)	0.53*** (0.06)	0.80*** (0.06)
Regional Trade Agreement	0.56*** (0.01)	0.83*** (0.03)	0.94*** (0.05)	0.52*** (0.02)	0.36*** (0.05)	1.17*** (0.06)
Constant	-4.14*** (0.29)	0.28 (0.64)	3.05*** (0.49)	-7.72*** (0.25)	-3.22*** (0.49)	-1.63** (0.68)
N	496975	91402	30252	994815	258231	69448
R2	0.733	0.565	0.596	0.833	0.497	0.665
Importer/FE	YES	YES	YES	YES	YES	YES
Exporter/FE	YES	YES	YES	YES	YES	YES
Time/FE	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Results also show that RTA membership is positively and significantly related to bilateral trade flows over the period 1990-2019. The formation of RTAs, by removing trade barriers - tariff and non-tariff barriers - improves bilateral trade between countries, ceteris paribus.

The implication of the findings from the basic gravity model including the significant role of the high density of economic activity and low distance as well as the role of RECs are important for the strategic prioritization of selected corridors of trade and integration. Because, given that AfCFTA is a continental FTA, it is going to be daunting to think of regional integration on the bigger continental scale. There is a need to strategically prioritize key corridors of trade along proximity in selected corridors in addition to key regions and sub-regions where the density of economic activity is relatively higher. Reflected in this prioritization is the need to build on the already high levels of regional integration either in East, Southern and West Africa, where based on density and proximity, the sub-regional components of AfCFTA can emerge from and provide the springboard to deepen the continental integration. The existing RECs provide the sub-regional foundation to jump-start and deepen regional integration at the continental level. That is why the RECs are central in the success of AfCFTA.

Table 5 presents a summary of the results for the model that identifies the impact of RTAs in the Africa region on trade creation and trade diversion. Overall, African RECs tend to create more

trade than they divert. TC dominates TD (in terms of imports) in six RECs out of the eight RECs. However, there are some heterogeneities within RECs. Our interpretation here focuses on the coefficients associated with three dummies capturing TC and TD effects of RTAs since the coefficients of the traditional gravity variables do not differ significantly from those in Table 4.

If we consider SADC, TC is more important than TD. SADC has generated a positive and significant intraregional bilateral trade flows. Similarly, SADC members exports to the rest of the world (RoW) has increased, suggesting a trade creation from exports to the RoW. However, the Africa sample indicates that there is trade diversion effect within SADC (with respect to both exports and imports) as its member countries import and export less to the rest of Africa following its formation. There is no evidence of trade diversion or trade creation effect with respect to imports following the formation of SADC trade bloc since the member countries of this regional community have not significantly changed their import from the RoW following the bloc's creation. This is an encouraging trend with respect to regional integration in Africa and particularly SADC that, increased trade between members also promotes trade with the rest of the world. This scenario could lead to the rise of regional value chains that would foster agglomeration economies to serve as loci of production and hence promote exports to the RoW. One key implication of this finding for SADC is that it may not be economically feasible to deepen trade between countries, when the rationale has not been well established. Starting with the RECs and related key trade corridors should precede all other integration efforts under AfCFTA.

Within CEN-SAD, intraregional TC outweighs TD in terms of both exports and imports, though the TC effect is much smaller than what we find for SADC (more than three times smaller). The formation of CEN-SAD has generated a positive and significant intraregional trade. Similar to what we find in SADC, there is also no trade diversion effect with respect to the rest of the world, while there is TD effect with respect to other African non-members of CEN-SAD. This suggests, both exports and imports from other African countries decline as a result of the FTA. This may sometimes come at the cost of loss in efficiency and hence welfare.

ECOWAS is the only REC where we do not find any positive intraregional trade associated with the FTA. ECOWAS exhibits higher TD than TC (mostly TD in terms of imports and exports). Indeed, there is trade diversion effect in terms of exports to the RoW given that ECOWAS member countries have reduced their exports to the RoW following its creation. In addition, there is trade diversion effect in terms of imports from the RoW because ECOWAS member countries seem to import less from non-member countries following its formation. This evidence suggests that ECOWAS may have not succeeded in expanding trade within the FTA as envisioned. If we isolate the West African Monetary and Economic Union (UEMOA) member countries which share a common currency, the results show that there is intraregional TC. UEMOA member countries trade more among themselves as compared to other ECOWAS member countries. In addition, there is TC from imports while no evidence on TD from exports exists. TD in the ECOWAS reflect restrictive unilateral trade policies in Nigeria and similar member countries in ECOWAS. The more recent disputes⁷ in the region from alleged smuggling and illicit trade implies the very high levels of trade barriers in the region and the challenges of associated regional trade.

Looking at COMESA, results show that intraregional TC is more important than TD from exports on average. Considering bilateral trade between COMESA member countries with their partners worldwide, intra-COMESA trade has increased following the creation of this trade bloc. However, intra-COMESA trade has decreased when it comes to bilateral trade between its member countries with the rest of Africa. Moreover, the formation of COMESA has generated a TD effect in terms of exports given that its member countries have reduced their exports to the RoW. Yet, our result show that there is no evidence of either TC or TD effect with respect to imports since imports of COMESA member countries from non-member countries have not significantly changed in the aftermath of its creation.

TC is stronger than TD within ECCAS. ECCAS has generated a positive and significant intraregional bilateral trade flows. Similarly, there is TC effect with respect to exports because ECCAS members exports to the RoW have increased. However, there is no evidence of either TC or TD effect with respect to imports since the member countries of this regional community have not changed their import from the RoW following the bloc's creation. If we consider only Central African Economic and Monetary Community (CEMAC) member countries (a monetary union within ECCAS), the coefficient of intraregional TC is higher than that of TC within ECCAS. This result suggests that the deepness of an RTA is critical to reap the benefits of regional integration. However, contrary to ECCAS, there no evidence of TC from exports within the CEMAC.

Furthermore, within EAC, intraregional TC is more important than TD from exports on average. For instance, intra-EAC trade has increased following the creation of this trade bloc. However, the formation of EAC has generated a TD effect in terms of exports given that its member countries have reduced their exports to the RoW. Finally, we find that there is no evidence of either TC or TD effect with respect to imports since imports of its member countries from non-member countries have not significantly changed in the aftermath of its creation.

Finally, TC is more important than TD within IGAD. For instance, IGAD has generated a positive and significant intraregional bilateral trade flows. In the same vein, IGAD members exports to the RoW has increased, suggesting a trade creation from exports to the RoW. Similarly, the formation of IGAD trade bloc has generated TC effect from imports since the member countries of this regional community have increased their import from the RoW following the bloc's creation. However, the Africa sample indicates that there is TD effect with respect to imports as its member countries imports less to the rest of Africa following its formation.

Most of the RECs in this study have contributed to increasing intra-regional trade as a result of the FTA. Many of the results could also be compared to Carrere (2006), Martinez-Zarzoso et al. (2009) and to Coulibaly (2009). Their results provide evidence of a positive intra-bloc effects in EU and NAFTA in the 1980s and 1990s. Similar to Carrere (2006), we find that African RTAs have generated trade between member countries. Carrere (2006) shows that UEMOA and SADC succeeded in generating net TC with an increase in the propensity to import from the RoW over the period 1962-1996. Another study, Longo and Sekkat (2004) finds contrasting evidence that RTAs schemes were not able to increase intra-African trade. Our study and that of Carrere (2006)

and Coulibaly (2009) show that African RTAs result in increasing intra-regional trade among members.

To summarize, TC effect is stronger than the TD effect in most RTAs in Africa. However, TD effect dominates TC effect in some RTAs. Drawing upon these results, the success of the AfCFTA will critically depend on its ability to address the obstacles to trade creation over the continent. EAC and SADC have particularly succeeded not only in expanding trade between members, but also expanding exports to the rest of the world as a result of FTAs. This is critical to the success of other RECs and AfCFTA. Because, trade with regional partners and the rest of the world should be considered as complements and not substitutes. Countries need to deepen integration while at the same time expanding exports and trading with the rest of the world. Regional integration should be a mechanism to increase local supply capacity to engage in global trade to improve access to markets and other suppliers.⁸

Table 5: Summary on the effects of RECs on TC and TD in Africa

<i>RTAs</i>	<i>Effects</i>	<i>Intraregional</i>	<i>From imports</i>	<i>From exports</i>	<i>Dominant</i>
SADC	TC	yes	no	Yes	TC
	TD	no	no	No	
CEN-SAD	TC	yes	no	No	TC
	TD	no	no	No	
ECOWAS	TC	no	no	No	TD
	TD	no	yes	Yes	
COMESA	TC	yes	no	No	TC
	TD	no	no	Yes	
ECCAS	TC	yes	no	Yes	TC
	TD	no	no	No	
EAC	TC	yes	no	No	TC
	TD	no	no	Yes	
IGAD	TC	yes	yes	Yes	TC
	TD	no	no	No	

Note: yes(no) indicates that there is TC or TD either within the region (intraregional), from imports (imports), from exports (exports) or not. The Dominant effect is given by adding up the significant coefficients of our three dummies variables which capture TC and TD for each REC. We discard AMU because of missing data.

4. Lessons and Challenges in Transitioning from RECs to AfCFTA

Most of the RECs in the Africa region has not achieved their goals of expanding regional trade at scale and creating a network of trade and production structures that enhances the spillovers from economies of scale and larger connected markets. AfCFTA faces the same challenges that served as barriers to RECs success in the region. Significant challenges stand in the way of achieving the goals of transforming the economies of its members through increased trade and increased integration in services, infrastructure, communications, and other spheres of economic activity. These range from building the necessary institutions to carve out conducive agreements and implementing them, to realizing them through national and regional strategies that require significant investment in resources and political commitment. In the following sections, drawing from the experiences of the RECs, we discuss the key challenges that African governments, multilateral and regional organizations, and businesses need to address to realize the objectives of AfCFTA and transform the continent. We also highlight key areas of success among RECs and draw relevant lessons for AfCFTA.

4.1 It Takes More Than Tariff Liberalization

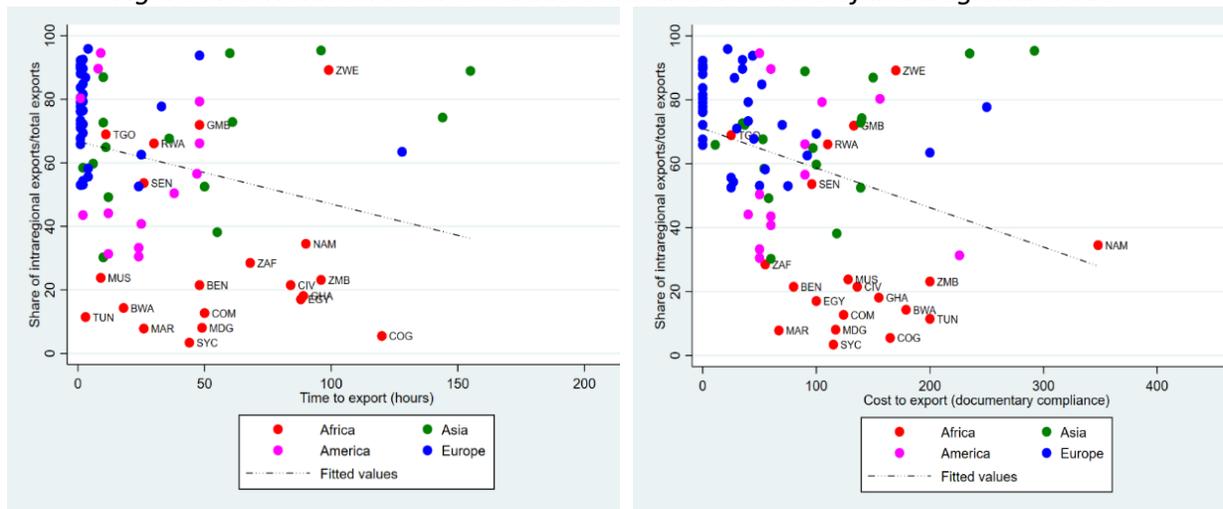
Effective regional integration is more than simply reducing or eliminating tariffs - it is mainly about removing the key trade barriers and reducing the direct and indirect costs of trading across borders. These include regulatory frameworks, the state of regional infrastructure and logistics, efficiency of borders and customs operations, the quality of complementary services to trading both within and across borders. Despite the significant liberalization the region has seen over the last three decades, regional trade still remains restricted to a few corridors and at very low levels. Though many factors play a role, much of the low regional trade is associated with the higher cost of trade in the region, much higher than any other region.

A significant part of the drag on trade costs derives from the higher cost and time associated with the inland transit⁹ of merchandise from production to point of exit at the border and the cross-border transactions. In 2019, out of the bottom ten economies with the worst logistic performance index (LPI),¹⁰ eight were from Africa, the other two being Afghanistan and Haiti. These include Angola, Burundi, Niger, Sierra Leone, Eritrea, Libya, Zimbabwe and Central African Republic. Only South Africa, Botswana, Kenya, Rwanda, Côte d'Ivoire, Tanzania, Uganda and Malawi have a relatively higher logistic performance index, in some cases, even higher than non-African middle-income economies. Except Côte d'Ivoire, all the African economies with a higher LPI are members of either SADC or EAC. Among RECs, EAC is the top performer in terms of customs efficiency and border management while AMU has the lowest score. In addition, the quality of trade and transport-related infrastructure is higher within the EAC compared to the other African RECs. Between the RECs, ECOWAS registers the lowest score for the quality of trade and transport-related infrastructure. Although the LPI indicators are low in Africa on average, the RECs with relatively higher customs efficiency and border management, better quality of infrastructure and timely shipments experience a strong intra-regional trade flow.

Figure 6 presents a correlation between the share of intraregional export to total exports and trade costs measured by: (i) the time to export (in hours) and (ii) the cost to export (in terms of

documentary compliance). On average, trade costs are high in Africa as compared to other regions around the world. And, these higher trade costs are associated with lower levels of the share of intra-regional exports to total exports.

Figure 6: Correlation between trade costs and the share of intraregional trade



Source: Authors elaboration based on CEPII Data and World Bank’s Doing Business Indicators: i) time to export: documentary compliance (hours) and ii) Cost to export: documentary compliance (USD)

This underscores the significant investments in reducing the cost of trading in these two RECs. As discussed in Box 1 and 2 below, there are multiple initiatives focused on reducing the costs of moving goods across borders. In the EAC, it is mainly through doing away with all tariffs and hence the associated need for documentary requirements, establishing one stop custom shops across borders, sharing customs personnel across borders to ease the drag from differences in regulations. The regional strategy is well bolstered by various national efforts to foster trade in the customs union. On the other hand, in SADC, in addition to similar initiatives within EAC, member countries have deliberate priorities to build regional infrastructure. Hence, despite the high levels of tariff and nontariff barriers within SADC, the high levels of both availability and quality of cross border infrastructure provides for a better trading environment. Both SADC and EAC have advanced their investments in one stop border posts, strategic collaboration between members to address the specific challenges associated with differences in regulations and customs procedures across borders as well as a concerted effort and investment in regional infrastructure including roads, payment systems and electronic transaction facilities. Many African countries still encounter significantly higher costs of trading due to the low quality of infrastructure; particularly roads and trucks, lack of seamless processing of transactions across and within borders as well as poor levels of overall logistic services both in transport and other trade facilitation services.

Why are some RECs more regionally integrated than others?

A. The Case of EAC: Integration in infrastructure, better alignment of national and regional priorities often reflected in the degree of political commitment for regional integration and density of economic activity are key drivers, though other factors also play a role. Geographical proximity explains a good share of bilateral trade flows between partner countries. In addition, socioeconomic factors (common language), historical links and economic factors played a key role in promoting trade and integration within REC. The success of regional integration in EAC lies on an adequate infrastructure (e.g., transport networks, information and communication technologies-ICT). Investing in digital infrastructure is critical to bolster intraregional trade in a highly technological world with strong linkages in economic, finance, trade, and social development.

EAC regional integration hinges on its higher levels of infrastructure developments also associated with density of economic activity. EAC stands out as the most densely populated region in Africa with roughly 170 people per square kilometer of land area over the period 1990-2019 (the less densely populated region being the AMU with around 31 people per square kilometer of land area). The success of EAC is also driven by the Customs reforms it has undertaken (including the Single Customs Territory, One-Stop Border Posts, and the electronic cargo tracking system.). For instance, customs officers from Rwanda, Uganda, and Burundi are deployed and are operating in Kenya and Tanzania. Similarly, Tanzania has deployed officers in Nairobi and Mombasa. This initiative has simplified the administrative burden and reduced turnaround time of trucks from Mombasa to Kampala and from Mombasa to Kigali. These reforms, by reducing the time of customs clearance in the region, have helped boost intraregional trade. In short, investments in joint customs processes, in easing the costs of transactions across borders, and concerted effort to address continuously emerging issues due to the national governments' adoption of regional integration as part of national development efforts has been central to the success of EAC. Although EAC is the top performer among the African RECs in terms of trade, there still exist ample room for improvement in terms of infrastructural integration for a successful implementation of the AfCFTA.

Why are some RECs more regionally integrated than others?

B. The case of SADC: Cross-border infrastructure combined with a One-Stop-Border Post initiative¹¹ have contributed to boost intra-SADC trade by eliminating trade barriers through reduction of clearance time and cost. Development corridors within this region have driven industrial growth (mainly in landlocked countries) by providing cheaper alternative transport routes to seaports. As an illustration, the highway linking South Africa and Mozambique has contributed to improving the businesses of many entrepreneurs in these two countries. SADC's Integrated Regional Electronic Settlement System (SIRESS)- a SADC electronic payment system developed by member States to settle regional transactions among banks within the countries- has boosted intra-SADC as well as SADC trade with non-SADC members by reducing transactions clearing time between banks and across different currencies. This has also enhanced the production of goods and services in this region. The success of SADC in boosting intraregional trade also lies on the implementation of regional electricity market in this region. An excellent example of a successful regional infrastructure is the Southern African Power Pool (SAPP)- a cooperation of the national electricity companies in Southern Africa under the auspices of SADC- which has given planners and managers additional options to meet growing demand since 1995. In sum, all these investments in the much-needed infrastructure could explain the above subpar intra-SADC performance in regional trade and integration.

4.2 Fragmentation and Thick Borders Make Regional Integration a Necessity and a Challenge

With a population size slightly smaller than either of China or India, Africa is home to 54 countries, more than any other continent. The high level of fragmentation presents a significant geopolitical challenge for AfCFTA and poses additional costs to African economies. Most of the economies are small, with half of the region's economies with a GDP less than US\$10 billion. Close to 30 percent of the countries (16 countries) are landlocked. The high cost of trading faced by landlocked countries is well documented. Trading costs for an average landlocked country are 40-50 percent higher than those for a representative coastal country. Severe economic and geographic fragmentation of economies leading to limited scale economies has long restricted economic expansion by restricting large-scale investment. Small markets often restrict competition and result in monopoly power creating incentive for incumbent firms to actively pursue strategies that deter the entry of new firms.¹² This contributes to low productivity and limited potential to reap the benefits of economies of scale associated with large size. The fragmentation of African economies makes regional integration a challenge. The stark fragmentation that characterizes Africa, geographically and in economic size and disparity and the associated costs is one of the key reasons why regional integration is even more important to troubleshoot the region's economy.

Historical factors have contributed to the current patterns of trade that are biased toward outside the region. Infrastructure and trade networks were designed with the goals of transferring natural resources outside the continent. As a result, the regional transport networks are poorly developed. Most transport networks, including rail lines, run from the location of a mine or agricultural production hot spot to a port, with a focus on exports to the rest of the world (see Figure 7). This situation still characterizes most of the countries in the region and is reflected in the higher costs of trading within Africa. Transport costs in Africa are 136 percent higher compared with other developing regions.¹³ The persistent cost of the deep fragmentation is reflected beyond the costs of transportation. Even with increased transportation networks, there is a multiplicity of rules and procedures in trading across multiple countries and ports. The redundant procedures associated with each country’s customs procedures present a significant barrier to trade.

Figure 7: Africa Railway Infrastructure and Connected Ports



Source: Africa Infrastructure Country Diagnostic (AICD), database (World Bank, 2009)

The large number of small countries, with a multiplicity of rules and procedures, as well as the difficulties associated with crossing borders for goods, services, and people, remains one of the biggest challenges for the success of AfCFTA. This is a challenge specific to the continent that can only be addressed if countries in the region commit to minimize the costs of this high fragmentation by streamlining policies, harmonizing customs rules and procedures, and sacrificing some level of sovereignty in rule making and implementation in favor of regional frameworks. Through focused policies and investments, the costs of fragmentation and distance can be reduced by improved regional infrastructure - roads, air travel, harbors, communication, energy, and financial services - with the goal of facilitating easy mobility of goods, services, people, and knowledge.

4.3 Shallow Trade Agreements

Almost all RECs in Africa focused on goods and lack relevant provisions for liberalizing services trade between member countries as well as the flow of investment. RTAs in other parts of the world including the EU, North America and Asia have a relatively higher number of RTAs with services and investment provisions, while Sub-Saharan Africa (SSA) has the lowest number (Mattoo et al., 2020). There is considerable variation in investment provisions across RTAs with SSA having only one Preferential Trade Agreement (PTA) with investment provisions compared to 57 in Latin America and the Caribbean (LAC) (Mattoo et al., 2020). Various countries grant members national treatment on the entry of investment in all regions except in SSA, where local governments retain discretion regarding the entry of investment¹⁴. Africa has the lowest number of free trade areas with services provisions. Regional integration under AfCFTA should cover services, investment as well as competition policy in addition to goods. This should be effective not only in the agreements and provisions but also through deliberate policies to promote services trade and investment flows in the region. Because, the free flow of investment and services are essential in facilitating the emergence of regional value chains.

4.4 Avoiding a Sticky Transition from RECs to AfCFTA

One of the core principles of AfCFTA is that the RECs serve as building blocks for the AfCFTA, and the program aims to 'resolve the challenges of multiple and overlapping memberships' between the eight RECs functioning at various levels of integration. The RECs may remain active during the operation of AfCFTA, although 'in the event of inconsistency, the AfCFTA agreement shall prevail'. Still, the multiplicity of rules across RECs and the discrepancy with the AfCFTA rules remain a big challenge. The transition from RECs to AfCFTA is expected to be challenging, and members need to develop strategies to maximize the gains from existing RECs while restricting the costs of disparities in regulations and rules governing each REC in the transition to AfCFTA. For example, recent efforts to establish the Tripartite Free Trade Area (TFTA), at the same time AfCFTA is becoming operational, by merging SADC, EAC and COMESA, while a positive development in fostering regional integration on a bigger scale, could also restrict the pace of adoption and deepening of AfCFTA. Hence, there is a need to avoid AfCFTA from becoming one of the overlapping RECs rather than the all-encompassing FTA it is destined to become.

Still, the RECs present significant opportunity in prioritizing integration across the region. Even though AfCFTA is a continental free trade area, much of the deeper trade integration will be across key regional corridors with a relatively higher economic density. These include key trading corridors along SADC in Southern Africa; EAC and IGAD in East Africa; and Nigeria and neighbors in West Africa. Though regional trade overall is low, about 80 percent of all intra-Africa trade flows through RECs and trade across different RECs has been extremely low. This implies the key role the existing RECs could play in serving as key corridors of regional trade upon which the AfCFTA can build on.

For Africa, the gains from regional integration either through RECs or AfCFTA goes beyond the static analysis of trade creation and trade diversion. Much of the benefits arise from the dynamic gains associated with the potential to exploit economies of scale advantages both in production and markets, to build regional value chains and promote industrialization giving rise to *Factory Africa*, and to promote the transfer of technology through increased trade and FDI flows. To achieve these, AfCFTA members must develop strategies to maximize the gains from prioritizing trade within the existing RECs, while restricting the intricate political challenges of multiple rules and regulations governing each REC in the transition to AfCFTA¹⁵. Setting a clear path to this transition is essential to the success of AfCFTA, which also depends on the success of RECs to deepen trade and integration in the region. Both at the national level and at the REC level, countries may need to sacrifice some level of national and sub-regional sovereignty in policy making and expand the horizons of trade liberalization and ease the cost of trading associated with multiple and overlapping rules, regulations and other domestic policies.

5. Conclusion

In this paper, we evaluate the effects of African RECs with respect to trade creation (TC) and trade diversion (TD). Despite significant heterogeneities, there is more trade creation than trade diversion, and a generally positive impact on within-REC trade. Except ECOWAS, the effect of regional integration is dominated by trade creation. The absence of any intra-REC trade effect associated with ECOWAS could be explained by the existence of significant barriers to trade (tariff and non-tariff barriers) between members. Two RECs - EAC and SADC - outperform all the other RECs in terms of boosting intra-REC trade. This is mainly associated with their high level of investment in trade facilitation, the level of synergy between national and regional goals, the density of economic activity and the advancement in the quantity and quality of regional infrastructure. There are also variations among the RECs in terms of whether they promote exports to the rest of the world or displace them. In this respect SADC presents an exemplary instance where trade integration leads to increased exports to the rest of the world. This provides the ideal form of regional integration regional entities should aim for. That is, deepen integration to promote trade and linkage with global value chains and distance partners particularly the key centers of high economic density including North America, the EU and East Asia. The key policy implications focus on two key areas - significant investment in trade facilitation and strategic sequencing of integration schemes. Given that AfCFTA is a much larger FTA compared to the

existing RECs, it is important that economies use regional integration to create regional value chains to expand supply/production which in turn provides greater impetus to engage in GVCs. Given the costs of distance and the benefits of already existing strong trade corridors, it is imperative that integration efforts start with a focus on selected high-density corridors of trade. We also find that many structural factors impede the process of integration and could explain the limited effects of RTAs in inspiring intra-Africa trade. These factors include tariff and non-tariff barriers, high fragmentation and thick borders, and shallow trade agreements. Our findings suggest that policy makers should focus on eliminating obstacles (tariff and non-tariff barriers) to trade to reap the benefits from the implementation of the AfCFTA. Given that AfCFTA is a continental scheme, fostering trade is going to present a more daunting task compared to the existing RECs. It is hence essential to ensure a smooth transition from RECs to AfCFTA and avoid the possibility that AfCFTA could remain another overlapping REC in the region.

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Appendix A: Estimation Results

Table A1: Gravity model Controlling for MRT (SADC)

	OLS		PPML		OLS		PPML	
	[1] World	[2] Africa	[3] World	[4] Africa	[5] World	[6] Africa	[7] World	[8] Africa
ln(GDP importer)	0.56*** (0.01)	0.42*** (0.04)	0.60*** (0.02)	0.04 (0.06)	0.56*** (0.01)	0.42*** (0.04)	0.60*** (0.02)	0.05 (0.06)
ln(GDP exporter)	0.56*** (0.01)	0.72*** (0.06)	0.64*** (0.02)	0.27*** (0.08)	0.56*** (0.01)	0.71*** (0.06)	0.64*** (0.02)	0.26*** (0.08)
ln(distance)	- 1.66*** (0.00)	-2.12*** (0.03)	-0.72*** (0.01)	-0.72*** (0.05)	-1.66*** (0.00)	-2.12*** (0.03)	-0.72*** (0.01)	-0.72*** (0.05)
Border	0.75*** (0.02)	1.49*** (0.05)	0.66*** (0.02)	1.14*** (0.07)	0.75*** (0.02)	1.49*** (0.05)	0.66*** (0.02)	1.14*** (0.07)
Common colonizer	0.80*** (0.01)	0.60*** (0.05)	0.10*** (0.03)	-0.14* (0.07)	0.80*** (0.01)	0.60*** (0.05)	0.10*** (0.03)	-0.14* (0.07)
Common language	0.77*** (0.01)	0.59*** (0.04)	0.18*** (0.02)	0.79*** (0.06)	0.77*** (0.01)	0.59*** (0.04)	0.18*** (0.02)	0.79*** (0.06)
SADC_M	-0.09** (0.04)	-0.57*** (0.13)	0.01 (0.07)	-0.59*** (0.19)	-0.09** (0.04)	-0.58*** (0.13)	0.01 (0.07)	-0.67*** (0.19)
SADC	1.39*** (0.07)	0.48*** (0.13)	2.00*** (0.09)	1.23*** (0.18)	1.39*** (0.08)	0.22 (0.16)	2.41*** (0.14)	0.44 (0.28)
SADC_X					-0.01 (0.05)	-0.29*** (0.11)	0.42*** (0.11)	-0.76*** (0.23)
Constant	- 3.18*** (0.29)	5.32*** (0.44)	-6.92*** (0.25)	-2.04*** (0.60)	-3.18*** (0.29)	5.52*** (0.45)	-6.92*** (0.25)	-1.42** (0.62)
Observations	496975	30252	994815	69448	496975	30252	994815	69448
R^2	0.732	0.593	0.817	0.656	0.732	0.593	0.817	0.656
Importer/FE	YES	YES	YES	YES	YES	YES	YES	YES
Exporter/FE	YES	YES	YES	YES	YES	YES	YES	YES
Time/FE	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A2: Gravity model Controlling for MRT (CEN-SAD)

	OLS		PPML		OLS		PPML	
	[1] World	[2] Africa	[3] World	[4] Africa	[5] World	[6] Africa	[7] World	[8] Africa
ln(GDP importer)	0.56*** (0.01)	0.42*** (0.04)	0.60*** (0.02)	0.05 (0.06)	0.56*** (0.01)	0.42*** (0.04)	0.60*** (0.02)	0.07 (0.06)
ln(GDP exporter)	0.56*** (0.01)	0.68*** (0.07)	0.64*** (0.02)	0.22*** (0.08)	0.58*** (0.01)	0.73*** (0.07)	0.64*** (0.02)	0.25*** (0.08)
ln(distance)	-1.67*** (0.00)	-2.21*** (0.03)	-0.72*** (0.01)	-0.81*** (0.06)	-1.67*** (0.00)	-2.19*** (0.03)	-0.72*** (0.01)	-0.79*** (0.06)
Border	0.79*** (0.02)	1.51*** (0.05)	0.66*** (0.02)	1.31*** (0.08)	0.79*** (0.02)	1.52*** (0.05)	0.66*** (0.02)	1.33*** (0.08)
Common colonizer	0.78*** (0.01)	0.64*** (0.05)	0.10*** (0.03)	-0.20*** (0.08)	0.77*** (0.01)	0.64*** (0.05)	0.10*** (0.03)	-0.20*** (0.08)
Common language	0.78*** (0.01)	0.62*** (0.04)	0.18*** (0.02)	0.92*** (0.06)	0.78*** (0.01)	0.62*** (0.04)	0.18*** (0.02)	0.94*** (0.06)
CENSAD_M	0.04 (0.03)	0.04 (0.07)	0.07 (0.05)	-0.63*** (0.10)	0.04 (0.03)	-0.01 (0.07)	0.07 (0.05)	-0.64*** (0.10)
CENSAD	0.77*** (0.04)	0.24*** (0.07)	0.69*** (0.09)	-0.05 (0.12)	0.24*** (0.05)	-0.06 (0.10)	0.64*** (0.11)	-0.80*** (0.14)
CENSAD_X					-0.60*** (0.04)	-0.35*** (0.07)	-0.05 (0.07)	-0.90*** (0.11)
Constant	-3.09*** (0.29)	5.39*** (0.44)	-6.96*** (0.25)	2.28*** (0.70)	-3.13*** (0.29)	5.12*** (0.45)	-6.96*** (0.25)	1.96*** (0.70)
Observations	496975	30252	994815	69448	496975	30252	994815	69448
R^2	0.732	0.590	0.817	0.648	0.732	0.590	0.817	0.648
Importer/FE	YES	YES	YES	YES	YES	YES	YES	YES
Exporter/FE	YES	YES	YES	YES	YES	YES	YES	YES
Time/FE	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3: Gravity model Controlling for MRT (ECOWAS)

	OLS		PPML		OLS		PPML	
	[1] World	[2] Africa	[3] World	[4] Africa	[5] World	[6] Africa	[7] World	[8] Africa
ln(GDP importer)	0.56*** (0.01)	0.43*** (0.04)	0.60*** (0.02)	0.04 (0.06)	0.56*** (0.01)	0.43*** (0.04)	0.60*** (0.02)	0.04 (0.06)
ln(GDP exporter)	0.56*** (0.01)	0.70*** (0.06)	0.64*** (0.02)	0.23*** (0.08)	0.56*** (0.01)	0.70*** (0.06)	0.64*** (0.02)	0.23*** (0.08)
ln(distance)	-1.66*** (0.00)	-2.14*** (0.04)	-0.72*** (0.01)	-0.64*** (0.06)	-1.66*** (0.00)	-2.15*** (0.04)	-0.72*** (0.01)	-0.64*** (0.06)
Border	0.76*** (0.02)	1.51*** (0.05)	0.66*** (0.02)	1.36*** (0.07)	0.76*** (0.02)	1.51*** (0.05)	0.66*** (0.02)	1.36*** (0.07)
Common colonizer	0.79*** (0.01)	0.66*** (0.05)	0.10*** (0.03)	-0.19** (0.08)	0.79*** (0.01)	0.66*** (0.05)	0.10*** (0.03)	-0.19** (0.08)
Common language	0.79*** (0.01)	0.63*** (0.04)	0.18*** (0.02)	0.97*** (0.06)	0.79*** (0.01)	0.63*** (0.04)	0.18*** (0.02)	0.97*** (0.06)
ECOWAS_M	-0.72*** (0.09)	-0.75*** (0.22)	-0.21* (0.12)	-0.31 (0.23)	-0.72*** (0.09)	-0.73*** (0.22)	-0.21* (0.12)	-0.31 (0.23)
ECOWAS	0.46*** (0.10)	-0.19 (0.22)	0.72*** (0.15)	1.22*** (0.24)	1.08*** (0.31)	0.63 (0.52)	-0.33 (0.32)	0.95** (0.48)
ECOWAS_X					0.62** (0.30)	0.83* (0.47)	-1.04*** (0.29)	-0.26 (0.42)
Constant	-3.18*** (0.29)	3.12*** (0.46)	-6.82*** (0.29)	-1.70*** (0.64)	-3.18*** (0.29)	3.23*** (0.46)	-6.82*** (0.29)	-1.70*** (0.64)
Observations	496975	30252	994815	69448	496975	30252	994815	69448
R^2	0.732	0.590	0.817	0.651	0.732	0.590	0.817	0.650
Importer/FE	YES	YES	YES	YES	YES	YES	YES	YES
Exporter/FE	YES	YES	YES	YES	YES	YES	YES	YES
Time/FE	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Gravity model Controlling for MRT (COMESA)

	OLS		PPML		OLS		PPML	
	[1] World	[2] Africa	[3] World	[4] Africa	[5] World	[6] Africa	[7] World	[8] Africa
ln(GDP importer)	0.56*** (0.01)	0.37*** (0.04)	0.60*** (0.02)	0.01 (0.06)	0.56*** (0.01)	0.37*** (0.04)	0.60*** (0.02)	0.01 (0.06)
ln(GDP exporter)	0.57*** (0.01)	0.73*** (0.06)	0.64*** (0.02)	0.27*** (0.08)	0.57*** (0.01)	0.71*** (0.07)	0.63*** (0.02)	0.20** (0.08)
ln(distance)	-1.66*** (0.00)	-2.08*** (0.03)	-0.72*** (0.01)	-0.85*** (0.06)	-1.66*** (0.00)	-2.07*** (0.03)	-0.72*** (0.01)	-0.84*** (0.06)
Border	0.80*** (0.02)	1.62*** (0.05)	0.66*** (0.02)	1.25*** (0.08)	0.80*** (0.02)	1.63*** (0.05)	0.66*** (0.02)	1.25*** (0.08)
Common colonizer	0.80*** (0.01)	0.49*** (0.05)	0.10*** (0.03)	-0.33*** (0.09)	0.80*** (0.01)	0.49*** (0.05)	0.10*** (0.03)	-0.36*** (0.09)
Common language	0.78*** (0.01)	0.71*** (0.04)	0.18*** (0.02)	0.96*** (0.07)	0.78*** (0.01)	0.72*** (0.04)	0.18*** (0.02)	0.98*** (0.07)
COMESA_M	-0.10*** (0.04)	-0.90*** (0.10)	-0.02 (0.06)	-0.61*** (0.13)	-0.10*** (0.04)	-0.92*** (0.10)	-0.02 (0.06)	-0.63*** (0.13)
COMESA	0.90*** (0.05)	0.20** (0.10)	1.54*** (0.09)	0.17 (0.13)	0.84*** (0.08)	-0.16 (0.15)	1.06*** (0.15)	-0.78*** (0.20)
COMESA_X					-0.06 (0.06)	-0.39*** (0.12)	-0.57*** (0.15)	-1.06*** (0.17)
Constant	-3.15*** (0.29)	2.06*** (0.42)	-6.96*** (0.25)	-3.96*** (0.59)	-3.15*** (0.29)	2.06*** (0.42)	-6.96*** (0.25)	-3.64*** (0.61)
Observations	496975	30252	994815	69448	496975	30252	994815	69448
R ²	0.732	0.594	0.817	0.648	0.732	0.594	0.817	0.649
Importer/FE	YES	YES	YES	YES	YES	YES	YES	YES
Exporter/FE	YES	YES	YES	YES	YES	YES	YES	YES
Time/FE	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Gravity model Controlling for MRT (EAC)

	OLS		PPML		OLS		PPML	
	[1] World	[2] Africa	[3] World	[4] Africa	[5] World	[6] Africa	[7] World	[8] Africa
ln(GDP importer)	0.56*** (0.01)	0.42*** (0.04)	0.60*** (0.02)	0.04 (0.06)	0.56*** (0.01)	0.42*** (0.04)	0.60*** (0.02)	0.04 (0.06)
ln(GDP exporter)	0.56*** (0.01)	0.68*** (0.06)	0.64*** (0.02)	0.22*** (0.08)	0.57*** (0.01)	0.70*** (0.07)	0.64*** (0.02)	0.25*** (0.08)
ln(distance)	-1.67*** (0.00)	-2.22*** (0.03)	-0.72*** (0.01)	-0.86*** (0.06)	-1.67*** (0.00)	-2.22*** (0.03)	-0.72*** (0.01)	-0.86*** (0.06)
Border	0.77*** (0.02)	1.44*** (0.05)	0.66*** (0.02)	1.21*** (0.08)	0.77*** (0.02)	1.43*** (0.05)	0.66*** (0.02)	1.20*** (0.08)
Common colonizer	0.81*** (0.01)	0.62*** (0.05)	0.10*** (0.03)	-0.24*** (0.08)	0.81*** (0.01)	0.62*** (0.05)	0.10*** (0.03)	-0.25*** (0.08)
Common language	0.78*** (0.01)	0.64*** (0.04)	0.18*** (0.02)	0.91*** (0.06)	0.78*** (0.01)	0.64*** (0.04)	0.18*** (0.02)	0.91*** (0.06)
EAC_M	-0.12** (0.06)	-0.25* (0.14)	0.05 (0.08)	-0.32** (0.13)	-0.12** (0.06)	-0.26* (0.14)	0.05 (0.08)	-0.40*** (0.13)
EAC	2.40*** (0.11)	1.10*** (0.17)	2.76*** (0.13)	0.61*** (0.17)	2.16*** (0.12)	0.94*** (0.19)	1.80*** (0.17)	-0.90*** (0.23)
EAC_X					-0.27*** (0.07)	-0.17* (0.10)	-1.03*** (0.11)	-1.67*** (0.19)
Constant	-3.03*** (0.29)	4.82*** (0.43)	-6.96*** (0.25)	2.69*** (0.69)	-3.04*** (0.29)	4.86*** (0.44)	-6.17*** (0.23)	2.54*** (0.70)
Observations	496975	30252	994815	69448	496975	30252	994815	69448
R^2	0.732	0.591	0.817	0.650	0.732	0.591	0.817	0.651
Importer/FE	YES	YES	YES	YES	YES	YES	YES	YES
Exporter/FE	YES	YES	YES	YES	YES	YES	YES	YES
Time/FE	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6: Gravity model Controlling for MRT (ECCAS)

	OLS		PPML		OLS		PPML	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]

	World	Africa	World	Africa	World	Africa	World	Africa
ln(GDP importer)	0.56*** (0.01)	0.41*** (0.04)	0.60*** (0.02)	0.03 (0.06)	0.56*** (0.01)	0.41*** (0.04)	0.60*** (0.02)	0.03 (0.06)
ln(GDP exporter)	0.56*** (0.01)	0.70*** (0.06)	0.64*** (0.02)	0.24*** (0.08)	0.56*** (0.01)	0.70*** (0.07)	0.64*** (0.02)	0.22*** (0.08)
ln(distance)	-1.68*** (0.00)	-2.24*** (0.03)	-0.72*** (0.01)	-0.94*** (0.06)	-1.68*** (0.00)	-2.24*** (0.03)	-0.72*** (0.01)	-0.94*** (0.06)
Border	0.80*** (0.02)	1.52*** (0.06)	0.66*** (0.02)	1.25*** (0.08)	0.80*** (0.02)	1.52*** (0.06)	0.66*** (0.02)	1.25*** (0.08)
Common colonizer	0.81*** (0.01)	0.65*** (0.05)	0.10*** (0.03)	-0.21*** (0.08)	0.81*** (0.01)	0.65*** (0.05)	0.10*** (0.03)	-0.20*** (0.08)
Common language	0.78*** (0.01)	0.61*** (0.04)	0.18*** (0.02)	0.91*** (0.06)	0.78*** (0.01)	0.61*** (0.04)	0.18*** (0.02)	0.91*** (0.06)
ECCAS_M	0.10 (0.06)	0.26* (0.15)	-0.05 (0.10)	0.33* (0.20)	0.10 (0.06)	0.26* (0.15)	-0.05 (0.10)	0.34* (0.20)
ECCAS	0.46*** (0.12)	-0.08 (0.19)	0.12 (0.23)	-1.38*** (0.52)	0.67*** (0.17)	0.08 (0.26)	1.28*** (0.36)	-0.61 (0.56)
ECCAS_X					0.22* (0.13)	0.17 (0.19)	1.18*** (0.30)	0.79*** (0.25)
Constant	-3.01*** (0.29)	5.79*** (0.47)	-6.96*** (0.25)	3.18*** (0.75)	-3.01*** (0.29)	5.64*** (0.51)	-5.95*** (0.25)	-2.89*** (0.66)
Observations	496975	30252	994815	69448	496975	30252	994815	69448
R^2	0.732	0.590	0.817	0.652	0.732	0.590	0.817	0.653
Importer/FE	YES	YES	YES	YES	YES	YES	YES	YES
Exporter/FE	YES	YES	YES	YES	YES	YES	YES	YES
Time/FE	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A7: Gravity model Controlling for MRT (IGAD)

	OLS		PPML		OLS		PPML	
	[1] World	[2] Africa	[3] World	[4] Africa	[5] World	[6] Africa	[7] World	[8] Africa
ln(GDP importer)	0.56*** (0.01)	0.42*** (0.04)	0.60*** (0.02)	0.04 (0.06)	0.56*** (0.01)	0.42*** (0.04)	0.60*** (0.02)	0.04 (0.06)
ln(GDP exporter)	0.56*** (0.01)	0.70*** (0.06)	0.64*** (0.02)	0.23*** (0.08)	0.56*** (0.01)	0.70*** (0.06)	0.64*** (0.02)	0.23*** (0.08)
ln(distance)	-1.68*** (0.00)	-2.23*** (0.03)	-0.72*** (0.01)	-0.87*** (0.06)	-1.68*** (0.00)	-2.23*** (0.03)	-0.72*** (0.01)	-0.87*** (0.06)
Border	0.79*** (0.02)	1.48*** (0.05)	0.66*** (0.02)	1.22*** (0.08)	0.79*** (0.02)	1.48*** (0.05)	0.66*** (0.02)	1.22*** (0.08)
Common colonizer	0.81*** (0.01)	0.65*** (0.05)	0.10*** (0.03)	-0.22*** (0.08)	0.81*** (0.01)	0.65*** (0.05)	0.10*** (0.03)	-0.22*** (0.08)
Common language	0.78*** (0.01)	0.61*** (0.04)	0.18*** (0.02)	0.91*** (0.06)	0.78*** (0.01)	0.61*** (0.04)	0.18*** (0.02)	0.91*** (0.06)
IGAD_M	0.86*** (0.12)	0.00 (0.33)	0.39*** (0.14)	-0.91*** (0.33)	0.86*** (0.12)	0.00 (0.33)	0.39*** (0.14)	-0.91*** (0.33)
IGAD	2.05*** (0.18)	0.54 (0.35)	2.75*** (0.19)	0.10 (0.36)	-	-1.29** (0.60)	13.39*** (0.29)	8.02*** (0.49)
IGAD_X					-2.05*** (0.18)	-1.83*** (0.50)	10.64*** (0.23)	7.92*** (0.34)
Constant	-3.01*** (0.29)	5.60*** (0.64)	-6.96*** (0.25)	0.00 (0.64)	-1.64*** (0.17)	5.69*** (0.64)	-6.16*** (0.23)	2.75*** (0.69)
Observations	496975	30252	994815	69448	496975	30252	994815	69448
R^2	0.732	0.590	0.817	0.649	0.732	0.590	0.817	0.649
Importer/FE	YES	YES	YES	YES	YES	YES	YES	YES
Exporter/FE	YES	YES	YES	YES	YES	YES	YES	YES
Time/FE	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8: Gravity model Controlling for MRT (AMU)

	OLS		PPML		OLS		PPML	
	[1] World	[2] Africa	[3] World	[4] Africa	[5] World	[6] Africa	[7] World	[8] Africa
ln(GDP importer)	0.56*** (0.01)	0.43*** (0.04)	0.60*** (0.02)	0.04 (0.06)	0.56*** (0.01)	0.43*** (0.04)	0.60*** (0.02)	0.04 (0.06)
ln(GDP exporter)	0.56*** (0.01)	0.70*** (0.06)	0.64*** (0.02)	0.23*** (0.08)	0.56*** (0.01)	0.70*** (0.06)	0.64*** (0.02)	0.23*** (0.08)
ln(distance)	-1.68*** (0.00)	-2.25*** (0.03)	-0.72*** (0.01)	-0.86*** (0.06)	-1.68*** (0.00)	-2.25*** (0.03)	-0.72*** (0.01)	-0.86*** (0.06)
Border	0.81*** (0.02)	1.51*** (0.05)	0.66*** (0.02)	1.26*** (0.08)	0.81*** (0.02)	1.51*** (0.05)	0.66*** (0.02)	1.26*** (0.08)
Common colonizer	0.81*** (0.01)	0.64*** (0.05)	0.10*** (0.03)	-0.20** (0.08)	0.81*** (0.01)	0.64*** (0.05)	0.10*** (0.03)	-0.20** (0.08)
Common language	0.78*** (0.01)	0.64*** (0.04)	0.18*** (0.02)	0.88*** (0.06)	0.78*** (0.01)	0.64*** (0.04)	0.18*** (0.02)	0.88*** (0.06)
AMU_M	-0.12 (0.09)	0.57*** (0.12)	-0.02 (0.08)	-0.41** (0.20)	-4.78*** (0.39)	2.48*** (0.34)	-3.00*** (0.21)	-1.42*** (0.34)
AMU	-	-	-	-	-	-	-	-2.21*** (0.36)
AMU_X					4.66*** (0.38)	-1.91*** (0.33)	2.98*** (0.20)	-1.20*** (0.24)
Constant	-3.00*** (0.29)	3.72*** (0.45)	-6.75*** (0.26)	-0.11 (0.65)	-3.00*** (0.29)	1.12** (0.56)	-6.75*** (0.26)	-0.11 (0.65)
Observations	496975	30252	994815	69448	496975	30252	994815	69448
R ²	0.732	0.590	0.816	0.646	0.732	0.590	0.816	0.646
Importer/FE	YES	YES	YES	YES	YES	YES	YES	YES
Exporter/FE	YES	YES	YES	YES	YES	YES	YES	YES
Time/FE	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix B:

To assess the robustness of our results, we consider a panel data with 4-year interval-1990, 1994, 1998, 2002, 2006, 2010, 2014, 2018-(Olivero and Yotov, 2012; Yotov et al., 2016). This allows us to include importer-year and exporter-year dummies† (Table A1 & Table A2) in our gravity equation (2).

$$\ln Trade\ flows_{ij,t} = \psi_0 + \psi_i X_{ij,t} + \alpha_I DI_{ijt} + \alpha_M DM_{ijt} + \alpha_X DX_{ijt} + d_{i,t} + d_{j,t} + \vartheta_{ij,t} \quad (2)$$

Table B1: Gravity model Controlling for MRT-OLS

Ln (Exports)	[1] Full sample	[2] Africa↔RoW	[3] Intra- Africa trade	[4] Full sample	[5] Africa↔RoW	[6] Intra- Africa trade
RTA	0.11*** (0.02)	0.08 (0.09)	0.22 (0.14)	0.25*** (0.02)	0.51*** (0.08)	0.63*** (0.14)
ln(distance)				-1.65*** (0.02)	-1.65*** (0.08)	-2.00*** (0.15)
Border				0.92*** (0.10)	2.10*** (0.18)	1.68*** (0.20)
Common colonizer				0.68*** (0.05)	0.09 (0.10)	0.51*** (0.15)
Common language				0.87*** (0.04)	0.87*** (0.09)	0.66*** (0.14)
Constant	-5.22*** (0.02)	-7.00*** (0.08)	-7.19*** (0.11)	0.05 (0.42)	0.22 (0.90)	3.63** (1.42)
N	148643	25230	8042	143732	24850	8023
R2	0.341	0.313	0.350	0.737	0.603	0.634
Importer-Year/FE	YES	YES	YES	YES	YES	YES
Exporter-Year/FE	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

† As noted by Ruiz and Vilarrubia (2007), including importer-year dummies and exporter-year dummies is computationally unfeasible in a sample of 100 countries and 30 years of data. In fact, this will require the use of 6,000 dummies (3,000 dummies for importers and 3,000 dummies for exporters) in the estimation.

Table B2: Gravity model Controlling for MRT-PPML

Ln (Exports)	[1] Full sample	[2] Africa↔RoW	[3] Intra- Africa trade	[4] Full sample	[5] Africa↔RoW	[6] Intra- Africa trade
Regional Trade Agreement	1.73*** (0.03)	1.05*** (0.08)	2.41*** (0.09)	0.54*** (0.03)	0.37*** (0.10)	1.19*** (0.11)
ln(distance)				-0.61*** (0.01)	-0.84*** (0.07)	-0.55*** (0.09)
Border				0.55*** (0.04)	1.19*** (0.12)	1.22*** (0.11)
Common colonizer				0.30*** (0.06)	0.09 (0.11)	-0.02 (0.13)
Common language				0.16*** (0.04)	0.55*** (0.09)	0.77*** (0.11)
Constant	-3.16*** (0.38)	-7.12*** (0.53)	-5.41*** (0.71)	-0.18 (0.52)	0.61 (0.86)	-2.97*** (1.02)
Observations	260131	56697	13532	247084	54687	13458
R ²	0.763	0.540	0.741	0.861	0.638	0.806
Importer-Year/FE	YES	YES	YES	YES	YES	YES
Exporter-Year/FE	YES	YES	YES	YES	YES	YES

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix C

Table C1. Description of variables, and sources

Variables	Descriptions	Sources
Exports	Trade flows as reported by the origin country	The CEPII Gravity Database (Conte et al., 2021)
GDP exporter	Gross domestic product of the origin country	
GDP importer	Gross domestic product of the destination country	
Distance	Distance between most populated cities	
Border	Dummy equal to 1 if two countries are contiguous and 0 if not	
Common colonizer	Dummy equal to 1 if two country have the same colonizer and 0 if not	
Common language	Dummy equal to 1 if two country have the same official or primary language and 0 if not	
Regional Trade Agreement	Dummy equal to 1 if a given country belongs to an RTA and 0 otherwise	
DI	Dummy equal to 1 if the origin and destination country belongs to a common REC and 0 otherwise	Authors' construction
DM	Dummy equal to 1 if the destination country belongs to a REC and the origin country to the rest of the world and 0 otherwise.	
DX	Dummy equal to 1 if the origin country belongs to a REC and the destination country to the rest of the world and 0 otherwise.	

Table C2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Exports	1573230	.189	3.185	0	479.7
GDP importer	1307808	261.879	1182.194	.009	21433.227
GDP exporter	1307808	261.879	1182.194	.009	21433.227
Distance	1431092	8398.31	4627.034	10.479	19951.16
Border	1412710	.013	.111	0	1
Common colonizer	1431092	.121	.326	0	1
Common language	1431092	.173	.378	0	1
Regional Trade Agreement	1497332	.099	.299	0	1
AMU	1573230	0	.022	0	1
EAC	1573230	0	.019	0	1
ECCAS	1573230	.001	.037	0	1
ECOWAS	1573230	.004	.067	0	1
CENSAD	1573230	.011	.106	0	1
COMESA	1573230	.007	.084	0	1
IGAD	1573230	.001	.03	0	1
SADC	1573230	.004	.059	0	1

Table C3: List of countries (229 countries)

Afghanistan	Dominica	Macao	Samoa
Albania	Dominican Republic	North Macedonia	San Marino
Algeria	Ecuador	Madagascar	São Tomé and Príncipe
American Samoa	Egypt, Arab Rep.	Malawi	Saudi Arabia
Andorra	El Salvador	Malaysia	Senegal
Angola	Equatorial Guinea	Maldives	Serbia
Anguilla	Eritrea	Mali	Seychelles
Antigua and Barbuda	Estonia	Malta	Sierra Leone
Argentina	Ethiopia	Marshall Islands	Singapore
Armenia	Faeroe Islands	Martinique	Slovak Republic
Aruba	Falkland Islands	Mauritania	Slovenia
Australia	Fiji	Mauritius	Solomon Islands
Austria	Finland	Mayotte	Somalia
Azerbaijan	France	Mexico	South Africa
Bahamas	French Guiana	Micronesia	Korea, Rep.
Bahrain	French Polynesia	Moldova	South Sudan
Bangladesh	Gabon	Monaco	Spain
Barbados	Gambia, The	Mongolia	Sri Lanka
Belarus	Georgia	Montenegro	Sudan
Belgium	Germany	Montserrat	Suriname
Belize	Ghana	Morocco	Eswatini
Benin	Gibraltar	Mozambique	Sweden
Bermuda	Greece	Myanmar	Switzerland
Bhutan	Greenland	Namibia	Syrian Arab Republic
Bolivia	Grenada	Nauru	Taiwan, China
Bosnia and Herzegovina	Guadeloupe	Nepal	Tajikistan
Botswana	Guatemala	Netherlands	Tanzania
Brazil	Guinea	Netherlands Antilles	Thailand
British Virgin Islands	Guinea-Bissau	New Caledonia	Timor-Leste
Brunei	Guyana	New Zealand	Togo
Bulgaria	Haiti	Nicaragua	Tonga
Burkina Faso	Honduras	Niger	Trinidad and Tobago
Burundi	Hong Kong SAR, China	Nigeria	Tunisia
Cambodia	Hungary	Niue	Turkey
Cameroon	Iceland	Korea, Dem. People's Rep.	Turkmenistan
Canada	India	Northern Mariana Islands	Turks and Caicos Islands
Cabo Verde	Indonesia	Norway	Tuvalu
Cayman Islands	Iran, Islamic Rep.	Oman	Uganda
Central African Republic	Iraq	Pakistan	Ukraine
Chad	Ireland	Palau	United Arab Emirates
Chile	Israel	West Bank and Gaza	United Kingdom
China	Italy	Panama	United States
Christmas Islands	Jamaica	Papua New Guinea	Uruguay
Cocos Islands	Japan	Paraguay	Uzbekistan
Colombia	Jordan	Peru	Vanuatu
Comoros	Kazakhstan	Philippines	Venezuela, RB
Congo, Rep.	Kenya	Poland	Vietnam
Cook Islands	Kiribati	Portugal	Wallis and Futuna
Costa Rica	Kuwait	Puerto Rico	Yemen, Rep.
Côte d'Ivoire	Kyrgyz Republic	Qatar	Yugoslavia
Croatia	Lao PDR	Reunion	Zambia
Cuba	Latvia	Romania	Zimbabwe
Curaçao	Lebanon	Russian Federation	
Cyprus	Lesotho	Rwanda	
Czech Republic	Liberia	Saint Helena	
Czechoslovakia	Libya	Saint Kitts and Nevis	
Congo, Dem. Rep.	Liechtenstein	Saint Lucia	
Denmark	Lithuania	Saint Pierre and Miquelon	
Djibouti	Luxembourg	Saint Vincent and the Grenadines	

Table C4: List of African countries (54 countries)

Algeria	Djibouti	Madagascar	Sierra Leone
Angola	Egypt, Arab Rep.	Malawi	Somalia
Benin	Equatorial Guinea	Mali	South Africa
Botswana	Eritrea	Mauritania	South Sudan
Burkina Faso	Ethiopia	Mauritius	Sudan
Burundi	Gabon	Morocco	Eswatini
Cameroon	Gambia, The	Mozambique	Tanzania
Cabo Verde	Ghana	Namibia	Togo
Central African Republic	Guinea	Niger	Tunisia
Chad	Guinea-Bissau	Nigeria	Uganda
Comoros	Kenya	Rwanda	Zambia
Congo, Rep.	Lesotho	São Tomé and Príncipe	Zimbabwe
Côte d'Ivoire	Liberia	Senegal	
Congo, Dem. Rep.	Libya	Seychelles	

End Notes

¹ Comprehensive trade costs includes all additional costs other than tariff costs expressed in ad valorem equivalents (%) (Source:).

² Tinbergen (1962); Anderson (1979); Anderson and Van Wincoop (2003); Baier and Bergstrand (2009) We employ Ordinary Least Squares (OLS) estimator and Poisson Pseudo-Maximum Likelihood (PPML) estimator. The PPML estimator not only addresses zero trade flows but also performs best to the possibility of specification errors and is consistent in the presence of heteroscedasticity (Silva and Tenreyro, 2011).

³ Viner (1950).

⁴ Balassa (1961); Cooper and Massell (1965).

⁵ Please visit the appendix for a complete discussion of the estimation framework and results of estimation for each REC. Here we present a summary of the results.

⁶ Studies which do not include enough dummy variables to distinguish between exports and imports (e.g., Bayoumi and Eichengreen, 1997; Frankel, 1997; Krueger, 1999; Longo and Sekkat, 2004) fail to isolate TD and TC effects following an RTA (Carrère, 2006). For a sake of comparison, we include in the first four columns of Table 2 to Table 5 only two dummy capturing intraregional trade TC and TD (or TC) from imports. By overlooking TD (or TC) from exports, we can observe that TC dominates TD in all RTAs in Africa. We effectively fail to properly isolate TC and TD if we do not include all the three dummy variables.

⁷ In August 2019, Nigeria closed its land borders with neighboring Benin, Cameroon, Chad, and Niger. This action was justified by the argument that it will curb smuggling and dumping of goods and insecurity along Nigeria's land borders. In fact, large quantities of imported goods (especially rice) are re-exported from Benin into Nigeria. This policy decision leads to high informal trade because people cross the borders illegally. This could also explain TD within the ECOWAS.

⁸ World Bank (2009).

⁹ Freund and Rocha (2009).

¹⁰ Arvis et al. (2018). Logistic performance index (LPI) is composed of measures of the efficiency of customs and border management, quality of trade and transport infrastructure, quality of other logistic services including trucks, among others.

¹¹ The One-Stop-Border Post initiative launch in November 2009 led to a massive reduction in time needed to clear customs.

¹² Venables and Collier (2008).

¹³ Limao and Venables (2001).

¹⁴ Mattoo et al. (2020).

¹⁵ Coulibaly et al. (2021).