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Analyzing the Impact of Regional Trade Agreements on Intra-African Trade

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Abstract

This study investigated the impact of Regional Trade Agreements (RTAs) on intra-African trade by employing an augmented gravity model. Using Poisson Pseudo-Maximum Likelihood (PPML) estimation on panel data covering 36 African countries from 2008 to 2023, the analysis revealed that RTAs significantly enhance trade flows within the continent. In addition, economic size, geographical contiguity, and a shared official language were found to exert a positive and statistically significant influence on bilateral trade. Conversely, geographical distance had a negative but statistically insignificant effect in the presence of RTAs, suggesting that policy-driven integration may mitigate traditional spatial constraints. Based on these findings, the study recommends reinforcing the implementation of the African Continental Free Trade Area (AfCFTA) through regulatory harmonization and the systematic elimination of non-tariff barriers in order to unlock its full trade potential and foster deeper regional integration.

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1. Introduction

Trade has long been acknowledged as a fundamental engine for economic growth, structural transformation, and poverty reduction. In recent decades, regional trade agreements (RTAs) have emerged as a crucial instrument for fostering deeper economic integration, eliminating trade barriers, and stimulating commerce among member countries. For Africa, where intra-continental trade remains significantly lower compared to other regions such as Asia and Europe, RTAs are widely viewed as a strategic pathway toward unlocking market potential, achieving economies of scale, and accelerating industrialization.

Despite the widespread adoption of RTAs across the continent—including initiatives such as the African Continental Free Trade Area (AfCFTA), the Economic Community of West African States (ECOWAS), and the Southern African Development Community (SADC)—the share of intra-African trade remains disproportionately low. This persistent underperformance has raised critical questions about the effectiveness of RTAs in achieving their intended goals, particularly within a continent characterized by fragmented markets, infrastructural deficits, and institutional weaknesses.

Empirical evidence on the impact of RTAs in Africa is inconclusive. While some studies report positive outcomes such as enhanced trade flows and improved export diversification (**Sun et al., 2022**), others suggest that the expected benefits are often undermined by implementation gaps, overlapping memberships, and

weak institutional frameworks (**Bankole & Oladapo, 2019**). Moreover, the performance of African RTAs tends to lag behind those in other regions, with higher levels of trade diversion and lower levels of trade creation (**Nguyen, 2019**), further questioning their economic efficacy.

In addition to these challenges, RTAs may generate unintended adverse effects. Trade diversion remains a prominent concern, wherein trade shifts from more competitive non-member countries to less efficient member states due to preferential access, thereby reducing overall trade efficiency (**Barbalet et al., 2015; Coulibaly, 2007**). Non-member countries may face diminished access to regional markets, negatively affecting their export sectors (**Lee et al., 2019**). Within member states, increased competition can disproportionately impact vulnerable sectors, such as agriculture and small-scale enterprises, as observed under agreements like the ASEAN-India Free Trade Agreement (**Harsora, 2023**). Furthermore, the benefits of RTAs are often unevenly distributed, with economically dominant countries gaining disproportionately while smaller or less developed members may experience limited or even negative effects (**Jiménez-García & Rodríguez, 2022**). Over time, the initial positive effects of RTAs may also erode, as noted in the case of ECOWAS, where gains in import levels were not sustained (**Coulibaly, 2007**).

Given these mixed outcomes and the strategic importance of regional trade for Africa's development agenda, this study employs the gravity model of trade (**Tinbergen, 1962**) to rigorously assess the impact of RTAs on intra-African trade flows. The model incorporates key explanatory variables including bilateral trade volumes, the presence of RTAs, gross domestic products (GDP), geographical distance, shared borders (contiguity), and common official languages. By capturing both economic size and frictional factors influencing trade, the gravity model provides a robust framework for evaluating whether African RTAs have significantly promoted intra-continental trade. The findings of this study offer critical insights for policymakers and regional bodies seeking to enhance the effectiveness of RTAs and to advance the broader objectives of economic integration, diversification, and inclusive growth across the continent.

2. Literature Review

The relationship between regional trade agreements (RTAs) and trade performance has been widely explored in both global and African contexts, though empirical evidence remains mixed. A key theme in the literature centers on whether RTAs effectively stimulate trade creation and structural transformation or merely generate trade diversion and uneven gains across member countries.

Bankole and Oladapo (2019) investigated the nexus between regional trade integration, governance, and structural transformation within the ECOWAS bloc from 2000 to 2015. Utilizing the Africa Regional Integration Index (ARII) alongside panel regression techniques, their findings reveal that weak governance structures significantly hinder structural transformation efforts in West Africa. While regional and global economic openness were found to promote industrial growth, the direct influence of trade integration, as proxied by the TINT index, was statistically insignificant. This suggests that RTAs in ECOWAS, in isolation, are insufficient to catalyze industrial development without strong institutional frameworks and strategic trade complementarities. The study recommends a dual strategy of fostering both intra-regional and global trade openness to facilitate the shift from primary commodity dependence to industrialization.

Mukwaya (2019) explored the impact of RTAs on intra-African manufactured exports using data for 45 African countries between 1990 and 2015. Applying a structural gravity model with the Poisson Pseudo Maximum Likelihood (PPML) estimator to address issues such as zero trade flows and endogeneity, the study found that RTAs significantly enhance trade among African members, increasing manufactured exports by 72% within twelve years of implementation. This reinforces the potential long-run gains from RTAs, especially when applied in sectors with higher value addition, such as manufacturing.

Nguyen (2019), in a comprehensive study of 160 countries covering 1960 to 2014, assessed the ex-post effects of 18 plurilateral RTAs. Using the gravity model and PPML estimators, the study identified a general trade-enhancing effect of RTAs. However, it also revealed regional disparities: while RTAs in Europe and Asia led to both trade creation and efficiency gains, African and American RTAs showed higher levels of trade diversion. This distinction underscores the importance of context, institutional quality, and intra-regional complementarities in determining the success of trade agreements.

A related study by **Studnicka et al. (2019)** assessed the effects of RTAs on European exports using fixed effects estimation techniques. The authors reported a positive effect on the extensive margin of exports—indicating increased product or market coverage—but found no significant impact on the intensive margin or total exports. Importantly, the effects were found to vary across EU countries, reflecting underlying heterogeneity in competitiveness and trade readiness. Their conclusion cautions against equating trade integration with guaranteed trade expansion.

Ejones et al. (2021) focused on the East African Community (EAC) from 1990 to 2017, applying an extended gravity model with PPML estimators. Their findings show that RTAs contributed positively to intra-regional trade but with differentiated effects across countries and sectors. Additionally, contrary to fears of excessive trade diversion, the study observed that RTAs in the EAC also facilitated greater trade with non-member countries, implying potential spillover effects under favorable policy environments.

Kaushal (2021) examined India's export performance under various RTAs using a stochastic frontier gravity model over the 2008–2018 period. The results suggest that India gained more from Free Trade Agreements (FTAs) such as SAFTA and ASEAN compared to Preferential Trade Agreements (PTAs) like MERCOSUR and APTA. The analysis revealed that India's exports were still below potential, emphasizing the role of institutional quality and regulatory effectiveness in shaping trade outcomes. This aligns with broader findings that successful RTAs often require institutional depth in both design and implementation.

Sun et al. (2022) turned attention to the quality dimension of exports, analyzing how RTAs affected manufacturing export sophistication in China. The study highlights that high-standard RTAs—particularly those with "WTO-X" clauses involving innovation, labor, and environmental standards—contributed to balanced regional development and improved export quality. However, these benefits were uneven across industries, with limited effects observed in sectors reliant on outdated technologies.

Diaz-Mora et al. (2023) applied the gravity model with PPML estimators to analyze how different types of trade agreements influence bilateral trade. Their findings demonstrate that preferential and regional trade agreements significantly enhance trade flows, with regional South-South agreements exerting the strongest impact. The study provides robust evidence that RTAs between developing countries can be just as impactful—if not more—than North-South agreements when tailored to structural complementarities.

Bharti and Nisa (2023) analyzed the trade performance of India with 30 partner countries between 2001 and 2019, employing both POLS and PPML estimation strategies. Their results indicate that India's South Asian partners derive more benefits from RTAs than India itself. This asymmetry points to challenges related to market access, competitiveness, and the limited utilization of agreement provisions by Indian exporters.

Finally, **Jongwanich (2024)** evaluated the influence of FTAs on Thailand's export structure, including changes in product diversification and export sophistication, from 2006 to 2020. The results revealed that FTAs supported the expansion of existing exports and contributed to moderate improvements in export sophistication, especially in middle-income markets. Agreements such as the ASEAN-China FTA were particularly effective in promoting these outcomes. However, the introduction of new products remained minimal, suggesting that FTAs may reinforce rather than transform existing trade patterns unless supported by complementary domestic reforms.

Synthesis and Gaps in the Literature

Taken together, these studies underscore the multifaceted and context-dependent nature of RTAs. While many demonstrate positive impacts on trade volumes and export diversification, others highlight significant limitations such as trade diversion, unequal benefit distribution, institutional constraints, and limited impact on structural transformation. Notably, the African experience appears distinct due to persistent governance challenges, infrastructural deficits, and weak productive capacity, which often blunt the effectiveness of trade agreements.

However, there remains a gap in assessing the broader effectiveness of RTAs in Africa using updated models and more comprehensive datasets that reflect recent integration efforts like the African Continental Free Trade Area (AfCFTA). Few studies simultaneously account for institutional quality, geography, and linguistic proximity alongside trade policy variables. This study seeks to fill this gap by applying an extended gravity model framework that incorporates such multidimensional factors to determine whether

RTAs are significantly enhancing intra-African trade and promoting regional economic transformation.

3. METHODOLOGY

3.1 Model Specification

To examine the relationship between regional trade agreements and intra-African trade, this study adapted the traditional gravity model which is the theoretical foundation of this study, and derived an augmented gravity model. The gravity model was developed by **Tinbergen (1962)** who drew inspiration from Newton's law of universal gravitation, which suggests that the force of attraction between two objects depends on their mass and the distance between them (**McKinnon et al, 1996**). The dependent variable included trade volume (total trade) while the independent variables would be, regional trade agreements, gross domestic product, and distance including contiguity and common language. Therefore to examine the effect of RTAs on intra-African trade the model is specified in its functional form as

$$trade_{ijt} = f\left(rta_{it}^{\gamma_1}, gdp_{it}^{\gamma_2}, gdp_{jt}^{\gamma_3}, dist_{it}^{-\gamma_4}, cont_{ijt}^{\gamma_5}, coml_{ijt}^{\gamma_6}\right) \quad \ldots\ldots 1$$

Taking the logarithm of the independent variables the model is captured in Equation 1

$$trade_{ijt} = \alpha_0 + \gamma_1 rta_{ijt} + \gamma_2 lngdp_{jt} + \gamma_3 lngdp_{it} - \gamma_4 dist_{jt} + \gamma_5 cont_{ijt} + \gamma_6 coml_{ijt} + \varepsilon_{ijt} \quad \ldots\ldots 2$$

Where $trade_{ij}$ is the total trade volume between country pairs, rta_{ij} is the existence of regional trade agreements between exporting country and importing country, $lngdp_{it}$ represents the natural logarithm of the gross domestic products of the exporting country, $lngdp_{jt}$ represents the natural logarithm of the gross domestic products of the importing country, $lndist_{ijt}$ represents the bilateral distance between the importing and exporting country,$cont_{ij}$ represents the existence of common borders referred to as Contiguity and $coml_{ij}$ represents common language among trading partners. γ_{1-6} denotes the coefficient of the independent variables, ε_{ijt} is the error term or unobserved variable, it represents the exporting country at time (t) and jt represents the importing country at time (t).

3.2 Estimation Techniques

3.2.1 Pooled Ordinary Least Squares

The pooled model is employed when there is homoscedasticity and no autocorrelation, as it is based on the assumption that entities in the panel behave similarly. The assumptions for the pooled model are analogous to those of a basic regression model. These assumptions include the absence of multicollinearity, exogeneity, homoscedasticity, no cross-section or time series correlation, and a normal distribution of the disturbances (**Greene 2012**).

The Panel Ordinary Least Squares (Panel OLS) model, often referred to as pooled OLS, has faced criticism for its resemblance to the conventional Ordinary Least Squares (OLS) regression. The Panel OLS method is accused of treating each observation as an independent entity and not accounting for any interdependencies or recognizing the properties present in panel datasets. In addition, Panel OLS does not consider time-related dynamics as it disregards the temporal component included in panel data. However, it is claimed that the Panel OLS framework does utilize panel-specific data to a certain degree.

3.2.2 Pseudo Poisson Maximum Likelihood Estimator

The PPML estimator is used to estimate the non-linear component of the gravity model. This method directly handles zero trade flows, which is a common issue in trade data, and avoids the need to exclude these observations. In traditional log-linear models, taking the logarithm of trade values leads to an undefined result for zero trade flows. By directly estimating the model in its multiplicative form, PPML avoids this issue and can include zero trade observations in the estimation process. This is essential for providing a comprehensive analysis of trade relationships, as excluding zero trade flows would distort the results.

Also, as emphasized by **Santos, Silva and Tenreyro (2006)** trade data often exhibit heteroscedasticity, where the variance of trade flows differs across observations. This can lead to biased parameter estimates when using OLS. Therefore, the PPML method is robust to heteroscedasticity, providing more reliable and consistent parameter estimates in the presence of varying error terms. This estimation technique is widely employed in the estimation of the

gravity equation, as demonstrated by **Westerlund and Wilhelmsson (2006)**. This feature makes PPML an appropriate choice for estimating the gravity model in this thesis, ensuring the robustness and consistency of its findings

3.3 Data and Data Sources

This study covers the analysis of the panel dataset that covers the period of 2008 to 2023 focusing on the African countries, who belong to the Regional Economic Communities that account for the most trade within the continent. They are; EAC - Burundi, Democratic Republic of the Congo, Kenya, Rwanda, South Sudan, Uganda, and Tanzania; ECOWAS - Benin, Burkina Faso, Cabo Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal and Togo; and SADC – Angola, Botswana, Comoros, Eswatini (formerly Swaziland), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Zambia and Zimbabwe. The variables used in the study include trade volume (total trade) while the independent variables include regional trade agreements, gross domestic product, and distance including contiguity and common language. Table 1 shows the data and data sources.

Table 1: Data Description

Variable	Definition/Measurement	Source
Trade, total trade from country *i* to *j*	Total exports and imports to and from partner countries (USD)	UN Comtrade (2024)
Regional Trade Agreement	if countries have an existing regional trade agreement, 1 = Yes, 0 = No, (Binary Number)	Centre d'Etudes Prospectives et d'Informations Internationales (CEPII)(2022)
GDP	GDP at constant prices (or real GDP) is a measure of a country's economic output that is adjusted for inflation (USD)	World Bank, World Development Indicators (2024)
Distance	distance between the most populated city of each country, in km, (Number)	Centre d'Etudes Prospectives et d'Informations Internationales (CEPII)(2022)
Contiguity	if countries share common borders, 1 = Yes, 0 = No (Binary Number)	Centre d'Etudes Prospectiveset d'Informations Internationales (CEPII) (2022)
Common Language	if countries share common official or primary language, 1 = Yes, 0 = No (Binary Number)	Centre d'Etudes Prospectiveset d'Informations Internationales (CEPII) (2022)

4. RESULTS AND FINDINGS

4.1 Descriptive Analysis

The descriptive statistics presented in Table 2 provide a comprehensive overview of the key variables employed in the analysis. The dependent variable, **bilateral trade flows**, includes 21,312 observations with an average value of approximately 62,784.65 and a substantial standard deviation of 450,651.4. The wide range—from a minimum of zero to a maximum of 11.9 million—highlights considerable disparities in trade volumes across African countries. This distribution points to the existence of trade imbalances, where a few country pairs account for high trade flows while many others engage in minimal or no trade. The presence of zero trade values is particularly noteworthy, as it underscores the limitations in trade linkages and integration among certain country pairs, possibly due

to geographical, infrastructural, or institutional barriers.

The **Regional Trade Agreement (RTA)** variable is binary in nature, taking values of 0 and 1 to indicate the absence or presence of an RTA, respectively. With a mean of 0.3, the data suggest that RTAs are present in less than one-third of the observed bilateral relationships. This reflects the uneven coverage and participation in trade agreements across the continent.

In terms of economic size, the **Gross Domestic Product (GDP)** for both exporters and importers exhibits high variability. The exporter GDP variable has 20,837 observations, with a mean of approximately $39.3 billion and a standard deviation of $91.8 billion. Similarly, the importer GDP variable reports a mean of $39 billion and a standard deviation of $91.1 billion. The extreme range in values—from $778 million to $552 billion—demonstrates the economic asymmetries among African nations. Such disparities suggest that a few dominant economies may be driving the bulk of intra-African trade, while smaller economies have limited participation.

The bilateral distance variable also reveals significant variation, with an average of 3,598.3 km and a standard deviation of 2,122.8 km. The minimum distance between trading partners is 109 km, while the maximum reaches 9,671 km. This wide range reflects the diverse geographical configurations of African countries and underscores the logistical and infrastructural challenges associated with long-distance trade on the continent.

Table 4.1: Descriptive Statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
Bilateral Trade Flows	21,312	62.80	451.00	0	11,900.00
Regional Trade Agreements	21,312	0.3	0.5	0	1
Gross Domestic Product (Exporter)	20,837	39,300.00	91,800.00	778.00	552,000.00
Gross Domestic Product (Importer)	20,806	39,000.00	91,100.00	778.00	552,000.00
Bilateral Distance	20,907	3598.3	2122.8	109.0	9671.0
Contiguity	21,311	0.1	0.3	0	1
Common Language	21,311	0.4	0.5	0	1

Two additional binary variables—contiguity and common language—provide insights into non-economic factors influencing trade. The contiguity variable shows that only a small proportion of country pairs share borders (mean = 0.1), which may limit the ease of trade. The common language variable has a mean of 0.4, indicating that in approximately 40% of cases, trading partners share a common official language. Shared linguistic ties can reduce transaction costs and facilitate trade negotiations, suggesting that language alignment is a potentially important enabler of regional trade.

4.2 Correlation Matrix

The correlation matrix in Table 3 offers further insight into the relationships among variables. Bilateral trade is positively associated with RTAs (0.137), exporter GDP (0.274), importer GDP (0.100), contiguity (0.201), and common language (0.053), aligning with theoretical expectations that larger economies, shared borders, and common languages facilitate trade. Conversely, trade is negatively correlated with distance (-0.138), consistent with gravity model predictions that geographical proximity enhances trade intensity.

Importantly, the correlation coefficients among the explanatory variables are relatively low, indicating the absence of multicollinearity concerns. The strongest negative correlation is between RTAs and distance (-0.611), which may reflect a tendency for RTAs to be formed among geographically proximate countries. Despite this, the values do not exceed thresholds that would pose problems for regression analysis, thereby affirming the suitability of the model specification and the reliability of the estimations to follow.

Table 3: Correlation Matrix

Variables	trade	rta	gdp_i	gdp_j	dist	cont	coml
trade	1						
rta	0.137	1					
gdp_i	0.274	0.026	1				
gdp_j	0.1	0.028	-0.027	1			
dist	-0.138	-0.611	-0.062	-0.059	1		
cont	0.201	0.325	0.012	0.025	-0.414	1	
coml	0.053	0.097	0.059	0.059	-0.097	0.088	1

4.3 Results and Discussion

This presents the results of the POLS and PPML estimation methods. The PPML results are preferred, therefore the discussion focused on that, although both results are presented in Table 4. The Poisson Pseudo-Maximum Likelihood (PPML) results, presented in Table 4, revealed that the Regional Trade Agreement (RTA) had a coefficient of 1.259, indicating that a percent increase in regional trade agreements leads to a 125.9 percent increase in intra-African trade flows. This relationship is statistically significant at the 1% level.

The coefficients for Exporter GDP and Importer GDP remain positive and statistically significant in the PPML estimation. The Exporter GDP had a coefficient of 1.078, suggesting that a percent change in the exporting country's GDP leads to a 107.8 percent increase in trade flows. Similarly, the Importer GDP had a coefficient of 0.713, indicating that a percentage increase in the importing country's GDP results in a 71.3 percent increase in trade flows. Both results are statistically significant at the 1% level.

The Bilateral Distance variable revealed an insignificant negative relationship with trade flows in this model, with a coefficient of -0.153. This implies that a percent change in the distance between trading partners reduces trade flows by 15.3 percent, which implies that distance increases trade costs and impedes trade, but in the presence of an RTA may be insignificant.

The Contiguity variable revealed a positive effect on intra-African trade flows, with a coefficient of 1.660. This suggests that sharing a border increases trade flows by 166 percent, which is statistically significant at the 1% level. The Common Language variable also remains slightly significant at 10%, with a coefficient of 0.483, implying that a percent change in shared language would lead to 48.3 percent increase in trade flows.

The R-squared value for the PPML model is 0.687. The PPML model accounts for heteroskedasticity and zero trade flows, ensuring robust results. Exporter-time fixed effects and importer-time fixed effects were also included in the model to control for unobserved heterogeneity. The findings are consistent with the gravity model of trade, reinforcing the importance of regional agreement, proximity, and economic growth in fostering trade flows.

Table 4: Estimation Results (Regional Trade Agreements and Intra-African Trade)

Variable	OLS	PPML
Regional Trade Agreement	1.495***	1.259***
	(0.000)	(0.000)
Exporter_GDP	1.127***	1.078***
	(0.000)	(0.000)
Importer_GDP	0.871***	0.713***
	(0.000)	(0.000)
Bilateral Distance	-1.410***	-0.153
	(0.000)	(0.433)
Contiguity	1.794***	1.660***
	(0.000)	(0.000)

Common Language	0.908***	0.483*
	(0.000)	(0.065)
Constant	-29.992***	-31.564***
	(0.000)	(0.000)
Time Effect	Yes	Yes
Exporter Effect	Yes	Yes
Importer Effcet	Yes	Yes
R-squared	0.530	0.687
F-test	307.39***	
	(0.000)	
Wald Chi-squared		537.91***
		(0.000)

Source: Researcher's Computation: NB: Significance is indicated as follows: ***, ** and * for 1%, 5% and 10% respectively.

The importance of RTAs has been established in literature, and this study also reaffirms its relevance. The results revealed that RTAs have a positive and highly significant relationship with intra-African trade. This reinforces the importance of regional cooperation in promoting trade within the continent. This aligns with the findings of **Afesorgbor et al. (2017), Candau et al. (2019), Ngepah & Udeagha (2019)**, Ejones et al. (2021), who found that RTAs generally enhance trade among the countries in Africa.

The positive and statistically significant relationship between RTAs and trade in Africa points to the crucial role of regional integration, through trade agreements in fostering trade within Africa. This implies that RTAs play a key role in reducing trade barriers, streamlining customs procedures, and improving market access, all of which facilitate the flow of goods and services across the continent of Africa.

Although the relationship is positive and significant, there are still challenges such as incomplete market integration, inconsistent implementation of RTA agreements across member states, and insufficient infrastructure development to support seamless trade. Furthermore, the positive effects of regional integration may take time to materialize as countries gradually reduce non-tariff barriers and improve regulatory frameworks. Despite these challenges, RTAs demonstrate the potential of enhancing intra-African trade flows. Expanding and deepening the AfCFTA and other regional agreements can help African countries create larger and more integrated economies, and ultimately improve the competitiveness of African economies.

Based on the findings of the study, it is important to note that in the presence of a Regional Trade Agreement (RTA), bilateral distance is statistically insignificant although it maintains its negative since as expected. This could be as a result of lower trade costs like tariffs, non-tariff barriers, and other trade costs in the presence of free trade. This implies that the presence of RTAs reduces the barriers typically created by geographical distance (**Anderson & van Wincoop, 2003; Baier & Bergstrand, 2007; Sohail et al., 2021**).

In addition, the variables Contiguity and Common Language revealed a positive and statistically significant coefficient, reinforcing the vital role of geographical and cultural factors in facilitating trade. These findings emphasize that both geographical proximity and shared cultural ties, through language are essential in reducing transaction costs and enhancing trade flows within Africa. This implies that geographical proximity, through shared borders, helps reduce physical barriers to trade by making it easier to move goods across countries. Border-sharing countries benefit from lower tariffs, reduced logistical costs, and more streamlined customs procedures. This is particularly significant for intra-regional trade in Africa, where landlocked countries often face higher transportation costs due to limited access to international sea routes.

5. Conclusion

The study concludes that Regional Trade Agreements (RTAs) serve as a pivotal mechanism for reducing trade barriers and promoting economic integration across Africa. The empirical evidence confirms that RTAs have had a positive impact on intra-African trade, underscoring their strategic importance in facilitating

regional market access and enhancing trade flows. However, the effectiveness of these agreements remains constrained by a range of structural and institutional challenges. While significant progress has been made in lowering tariffs, numerous non-tariff barriers—such as poor transportation infrastructure, inefficient logistics systems, and divergent regulatory frameworks—continue to impede the full realization of trade benefits. These constraints are especially pronounced for landlocked countries, which face heightened difficulties in accessing regional and global markets due to their dependency on transit through neighboring states.

Notably, the study highlights a diminishing role of geographical distance in shaping trade outcomes under RTAs. This suggests that trade cost reductions achieved through policy-driven measures—such as enhanced infrastructure, harmonized customs procedures, and regulatory convergence—can help offset spatial disadvantages. Therefore, although RTAs have made substantial progress in liberalizing trade, their transformative potential is contingent upon broader institutional reforms and a more deliberate effort to address persistent non-tariff barriers.

In light of these findings, the study recommends strengthening the implementation framework of the African Continental Free Trade Area (AfCFTA) to maximize the benefits of regional integration. This includes a firm commitment by African governments to fully operationalize the AfCFTA and deepen cooperation among member states. Specifically, priority should be given to:

1. **Eliminating non-tariff barriers**, including excessive customs procedures, import/export restrictions, and inconsistent trade-related regulations, which currently undermine the ease of cross-border transactions.
2. **Harmonizing trade regulations** and standards across member states to reduce compliance costs and improve the predictability of the trading environment for businesses operating in multiple jurisdictions.
3. **Investing in trade-related capacity building**, particularly for customs officials, policymakers, and private sector stakeholders, to ensure effective implementation and monitoring of trade agreements.
4. **Improving transport and logistics infrastructure**, especially for landlocked and geographically disadvantaged countries, to facilitate seamless connectivity and equitable participation in regional value chains.

By addressing these systemic barriers, RTAs—especially under the framework of the AfCFTA—can be transformed into more effective instruments for achieving inclusive economic growth, industrialization, and sustainable development across the African continent.

References

Afesorgbor, S. K. (2017). Revisiting the effect of regional integration on African trade: Evidence from meta-analysis and gravity model. *The Journal of International Trade & Economic Development, 26(2)*, 133–153. https://doi.org/10.1080/09638199.2017.1346139

Anderson, J. E., & van Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. *The American Economic Review, 93(1)*, 170–192. http://www.jstor.org/stable/3132167

Baier, S. L., & Bergstrand, J. H. (2007). Do free trade agreements actually increase members' international trade? *Journal of International Economics, 71(1)*, 72–95. https://doi.org/10.1016/j.jinteco.2006.02.005

Bankole, A. S., & Oladapo, M. A. (2019). The role of regional trade integration and governance in structural transformation: Evidence from ECOWAS trade bloc. In Elhiraika, A., Ibrahim, G., & Davis, W. (Eds.), *Governance for structural transformation in Africa*. Palgrave Macmillan. https://doi.org/10.1007/978-3-030-03964-6_9

Barbalet, F., Greenville, J., Crook, W., Gretton, P., & Breunig, R. (2015). Exploring the links between bilateral and regional trade agreements and merchandise trade. *International Trade eJournal*. https://doi.org/10.1002/APP5.101

Bharti, S., & Nisa, S. (2023). Evaluation of the impact of regional trade agreements on Indian exports. *Journal of Asian Economic*

Integration, 5, 51–63. https://doi.org/10.1177/26316846221150591

Candau, F., Geoffroy, G., & Schlick, J. (2019). Moving to autarky, trade creation, and home market effect: An exhaustive analysis of regional trade agreements in Africa. *Applied Economics, 51(1)*, 1–17. https://doi.org/10.1080/00036846.2019.1566691

Coulibaly, S. (2009). Evaluating the trade effect of developing regional trade agreements: A semi-parametric approach. *The Journal of Economic Integration, 24(4)*, 709–743. https://doi.org/10.11130/jei.2009.24.4.709

Dianzah, Y. (2022). The effect of regional trade agreements on ASEAN trade flows. *Journal of Indonesian Applied Economics*. https://doi.org/10.21776/ub.jiae.2022.010.02.2

Díaz-Mora, C., Esteve-Pérez, S., & Gil-Pareja, S. (2023). A re-assessment of the heterogeneous effect of trade agreements using intra-national trade flows. *Economic Analysis and Policy*. https://doi.org/10.1016/j.eap.2023.01.008

Ejones, F., Agbola, F. W., & Mahmood, A. (2021). Do regional trade agreements promote international trade? New empirical evidence from the East African Community. *The Journal of International Trade & Economic Development, 30(7)*, 1020–1053. https://doi.org/10.1080/09638199.2021.1930110

Greene, W. (2012). *Econometric analysis* (7th ed.). Pearson.

Harsora, H. (2023). A study on the impact of regional trade agreement on ASEAN trade flows. *International Journal of Creative Research Thoughts, 11(2)*, 824–827. https://ijcrt.org/papers/IJCRT2302595.pdf

Jiménez-García, B., & Rodríguez, J. (2022). A quantification of the evolution of bilateral trade flows once bilateral RTAs are implemented. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4144237

Jongwanich, J. (2024). Free trade agreements (FTAs) and export structures: Evidence from Thailand. *Journal of the Asia Pacific Economy*, 1–39. https://doi.org/10.1080/13547860.2023.2300584

Kaushal, L. A. (2021). Impact of regional trade agreements on export efficiency – A case study of India. *Cogent Economics & Finance, 10(1)*. https://doi.org/10.1080/23322039.2021.2008090

Lee, W., Mulabdic, A., & Ruta, M. (2019). Third-country effects of regional trade agreements: A firm-level analysis (Policy Research Working Paper No. 9064). *World Bank Group*. http://documents.worldbank.org/curated/en/110561574281995016

Mukwaya, R. (2019). The impact of regional integration on Africa's manufacturing exports. *Journal of African Trade, 6(1)*, 83–87. https://doi.org/10.2991/jat.k.190708.001

Ngepah, N., & Udeagha, M. C. (2019). Supplementary trade benefits of multi-memberships in African regional trade agreements. *Journal of African Business, 20(1)*, 1–21. https://doi.org/10.1080/15228916.2019.1584719

Nguyen, D. (2019). A new examination of the impacts of regional trade agreements on international trade patterns. *Journal of Economic Integration*. https://doi.org/10.11130/JEI.2019.34.2.236

Santos Silva, J. M. C., & Tenreyro, S. (2006). The log of gravity. *The Review of Economics and Statistics, 88(4)*, 641–658. https://doi.org/10.1162/rest.88.4.641

Sohail, H. M., Zatullah, M., & Li, Z. (2021). Effect of foreign direct investment on bilateral trade: Experience from Asian emerging economies. *Sage Open, 11(4)*. https://doi.org/10.1177/21582440211054487

Studnicka, Z., Thierie, W., & Van Hove, J. (2019). The impact of regional trade agreements on European exports. *International Economics and Economic Policy, 16*, 467–488. https://doi.org/10.1007/s10368-019-00436-3

Sun, J., Luo, Y., & Zhou, Y. (2022). The impact of regional trade agreements on the quality of export products in China's manufacturing

industry. *Journal of Asian Economics*. https://doi.org/10.1016/j.asieco.2022.101456

Tinbergen, J. (1962). *Shaping the world economy: Suggestions for an international economic policy*. The Twentieth Century Fund.

Westerlund, J., & Wilhelmsson, F. (2011). Estimating the gravity model without gravity using panel data. *Applied Economics, 43(6)*, 641–649. https://doi.org/10.1080/00036840802599784