Ilomo, Mesia

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Assessing the Potential for Tanzanian Exports in the African Continental Free Trade Area

Mesia Ilomo[1]

Lecturer, Department of Finance, University of Dar es Salaam, Dar es Salaam, Tanzania

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Abstract

In 2019, the Africa Union launched the African Continental Free Trade Area (AfCFTA), one of the largest pro-development regional trade arrangements (RTAs) in the world. Despite the broad promises, the potential trade benefits of AfCFTA to specific African countries is not crystal clear. We employ a gravity model and the Pseudo Poisson Maximum Likelihood (PPML) estimator to establish the existence, magnitude, and change of Tanzania export potential in 49 African markets. The results show existence of export potential in 38 markets, and inexistence of export potential in 11 markets. Out of 38 markets with export potential, Tanzania has high export potential in 32 markets, moderate potential in 2 markets, and low potential in 4 markets. Further, the export potentials are higher in most markets that fall outside Tanzania's existing RTAs. Also, the study confirms the emerging claim that trade potential is dynamic. The potential was found to increase mainly in markets with high export potential and decrease in markets with low export potential, mostly in the existing RTAs. Impliedly, Tanzania is tapping the export potential in the traditional markets, whereas export potential in other African markets remains untapped. The study presents initial information on export opportunities in AfCFTA that require follow-up action by the business and government. This may include adapting targeted interventions, and taking advantage of AfCFTA operationalization instruments, which partly address market entry constraints. Our findings contribute to regional integration literature by demonstrating that RTAs involving developing countries, such as AfCFTA, present enormous trade potential to member countries.

Keywords: Trade potential, Free trade area, AfCFTA, Tanzania, Panel data, PPML

[1] **Corresponding Author:** ilomo.mesia@udsm.ac.tz

Introduction

The world, including Africa, has witnessed proliferation of regional trade agreements (RTAs) in the last two decades (Benita, 2023; Sun & Reed, 2010; UNCTAD, 2021; Wang, 2016), with the majority of RTAs involving similar countries (Cheong, Kwak, & Tang, 2015). The RTAs have also gradually and increasingly deepened the relationship by covering more policy areas (Hofmann, Osnago, & Ruta, 2017; Wang, 2016), which has proved to be difficult in the multilateral trading systems due to diversity of interest and complex decision making processes (Pomfret, 2021). Some countries are also moving to RTAs following the unimpressive pace of multilateral negotiations (Cheong et al., 2015; Zhai, 2023). Nevertheless, the commitments in the multilateral trading systems, administered by the World Trade Organization (WTO), are informing RTAs' frameworks and influencing liberalization commitments in RTAs (Ebaidalla & Ali, 2023), thus they are seemingly beneficial to RTAs.

Tanzania is not an exception to the global trends in terms of integrating through RTAs. The country joined the Southern African Development Cooperation (SADC) in 1980 and the East African Community (EAC) in 2000 (UNECA, African Union Commission, and African Development Bank, 2019; UNCTAD, 2021). Tanzania is also part of the Common Market of Eastern and Southern Africa (COMESA)-EAC-SADC Tripartite Free Trade Area (TFTA), which entails the merging of RTAs. However, Tanzania signed the TFTA Agreement in June 2015 but had not ratified it by the time we submitted this paper. Notably, TFTA came into force in July 2024. Tanzania's RTAs imply multiple and overlapping membership, one of the critiques of RTAs around the globe (Asongu & Diop, 2023; Ferreia & Steenkamp, 2020; Jordan, 2014). Multiple membership constrains full implementation of RTAs (Ferreia & Steenkamp, 2020), and may disrupt trade by causing confusion and increases in trade cost (Jordan, 2014). This is alarming, given that Africa is already characterized by high trading costs (Abrego et al., 2020) and resource constrained countries. Thus, any effort to address the problem of multiple membership and optimizing the value of RTAs in Africa and Tanzania in particular, should be embraced.

The African Continental Free Trade Area (AfCFTA) is part of the commitment by the African Union to achieve Sustainable Development Goals, which seems ideal in addressing the problem of multiple and overlapping membership, and presents a strategic shift in the continental integration from political and self-reliance to trade and economic cooperation (Bagci, Diallo, & Terai, 2023). AfCFTA offers ambitious promises to African countries of trade in goods and services, labour market integration, investment, cooperation, and development at large. It is expected to contribute to addressing inherent constraints to trade in Africa, including the lack of complementarities and supply side constraints (Charles, 2021; Okangi, 2023; UNECA et al., 2019), concentration of trade (Ndonga, Laryea, & Chaponda, 2020), and implementation-related constraints (Charles, 2021). The AfCFTA came into force on 30 May 2019, and by April 2023, AfCFTA had 46 state parties, that is, countries that had deposited the instruments of ratification with the Chairperson of the African Union Commission (AfCFTA, 2023).

Tanzania ratified the AfCFTA Agreement in September 2021 and started trading in the AfCFTA in April 2023[2]. The country joined AfCFTA with the hope of gaining markets beyond the EAC and SADC. Tanzania can potentially export to the AfCFTA market different kinds of products including agricultural products and manufactured goods (European Commission et al., 2024; Masiya et al., 2023). Essentially, the AfCFTA is considered to be the largest free trade area in the world in terms of population (Abrego et al., 2020) and membership, and presents a cumulative market of about 1.3 billion people (World Bank, 2020). AfCFTA may present an excellent opportunity to African countries, including Tanzania, a country with access to important transport networks, to boost intra-Africa trade (Nyarire-Makilagi & Oh, 2023; Masiya et al., 2023). However, Tanzania may encounter barriers while trading in Africa. In particular, Africa includes more than 100 bilateral borders (Ferreia & Steenkamp, 2020), 16 landlocked countries (Ndonga et al., 2020), and is characterized by limited connectedness (Fouda Ekobena et al., 2021), which may potentially constrain intra-continental trade. While Africa has witnessed progress in tariff reductions, infrastructural challenges and non-tariff barriers (NTBs) remain high (Abrego et al., 2020). This may be a concern to African countries, including Tanzania, because the quality of infrastructure seems to have a higher impact on trade than the effect of tariff reductions (Ebaidalla & Ali, 2023; IMF, 2019). Moreover, the effect of geographical distance seems more relevant for exports than it is for imports (Wang, 2016). Thus, AfCFTA commitments to addressing NTBs and infrastructural barriers will potentially benefit African countries, including Tanzania; otherwise there is a risky of trading below expectation (cf. Ebaidalla & Ali, 2023).

Indeed, the literature suggests the existence of trade potential in AfCFTA in both agricultural and non-agricultural products (Ferreia & Steenkamp, 2020). The trade potential in these sectors appears relevant to Tanzania, with relatively unimpressive current performance in the continent. In comparison to regional comparators, Tanzania is less integrated as it has a regional integration index of 0.312, placing it among the three bottom performers in the EAC and bottom five performers in the SADC (UNECA et al., 2019; Asongu & Diop, 2023). Also, Tanzania appears to trade below the expectation in Africa (Nyarire-Makilagi & Oh, 2023). Its integration into regional markets is partly constrained by limited structural change (Leyaro & Hongoli, 2022), low productive capacity, and limited infrastructural integration (UNECA et al., 2019). Theoretically, further integration into regional markets would boost trade and contribute to economic growth (Asongu & Diop, 2023; Masiya et al., 2023; Wang, 2016). As such, AfCFTA may potentially improve trade performance and reduce the overall trade deficit, which is chronic in Tanzania (International Trade Centre (ITC), 2023; Nyarire-Makilagi & Oh, 2023). Observably, Tanzania's trade relationship in Africa has improved over time from a deficit of USD 0.25 billion in 2003 to a surplus of USD 1.04 billion in 2023 (ITC, 2023).

Nonetheless, the potential trade benefits of AfCFTA for specific countries are empirically not well established. Few available studies on AfCFTA suggest a negative effect in the short-run due to a decline in tariff revenues and unfair competition; the negative effects will be outweighed by socio-economic benefits in the form of economic growth and well-being of

[2] https://www.thecitizen.co.tz/tanzania/news/business/first-tanzanian-gets-certificate-of-origin-to-trade-on-afcfta--4230054

African population in the long-run (Abrego et al., 2019; Chauvin, Romas, & Porto, 2016; Fouda Ekobena et al., 2021). Concretely, studies estimate intra-Africa trade to be 16%, far below intra-Europe trade (at 68%) and intra-Asia trade (at 59%) (Ferreia & Steenkamp, 2020). This suggests the presence of untapped export potential in the continent, cumulatively estimated at 43% of intra-Africa exports (UNCTAD, 2021). Indeed, AfCFTA is estimated to increase intra-Africa trade and exports to non-African countries by 80% and 19%, respectively (World Bank, 2020). That is, there is more export potential within Africa. For Tanzania, AfCFTA is expected to increase exports by 57% (Leyaro & Hongoli, 2022). Moreover, the potential trade gain of AfCFTA seems not to offset intra-EAC trade – thus, countries such as Tanzania may be better off pursuing AfCFTA (Masiya et al., 2023; Ndonga et al., 2020). Also, the current RTAs members are likely to continue to be major trading partners of African countries (Ebaidalla & Ali, 2023; Ndonga et al., 2020; Sun & Reed, 2010; Timsina & Culas, 2020). Yet, the potential in the AfCFTA may vary by country.

While noting some attempts to estimate the trade potential of AfCFTA (Nyarire-Makilagi & Oh, 2023; Masiya et al., 2023), a methodologically sound analysis of trade potential of AfCFTA to Tanzania is specifically lacking. Studies of AfCFTA's trade potential employing efficient estimation techniques, such as Poisson Pseudo Maximum Likelihood (PPML) (Santos-Silva & Tenreyro, 2006), are scant. Masiya et al (2023) is an exploratory study, whereas Nyarire-Makilagi & Oh (2023) employed a gravity model with less efficient estimation techniques, such as the traditional gravity model (i.e. the pooled OLS) and fixed effect models, which are prone to heteroscedasticity problems and tend to bias the sample and exaggerate the effect of RTAs (Santos-Silva & Tenreyro, 2006). Further, available studies seldom identify specific market opportunities for a given country. Notably, the export benefit of RTAs seems to differ from country to country. For example, Leyaro and Hongoli (2022) employed a general equilibrium model and ppml estimator, which are methodologically sound, to examine the potential trade impact of AfCFTA to Tanzania. However, their study is short of analysis of the export potential of AfCFTA to Tanzania. Country specific studies are critical, due to the diverse nature of Africa and quest for prioritization of markets.

Against the presented background, this study assesses Tanzania export potential in the AfCFTA. Tanzania is explicit in the trade policy of her ambition to increase exports through regional integration (United Republic of Tanzania, 2003). However, compared to EAC counterparts, Tanzania appears slow in terms of AfCFTA integration, presumably because the government is less certain about the potential costs and benefits to the economy. For example, Tanzania deposited the instrument of ratification in January 2022, whereas Rwanda and Kenya deposited the instruments in May 2018, Uganda in February 2019, and Burundi in August 2021[3]. Nonetheless, there are risks of joining RTAs without thorough understanding of their implications and expectations (cf. Wang, 2016). Thus, sound empirical evidence on the relevance of AfCFTA may enhance Tanzania's confidence in pursuit of the continental integration. Three related questions are addressed in this study: (1) Is there any potential for Tanzania exports in AfCFTA? (2) What is the magnitude of potential of Tanzania exports in AfCFTA markets? (3) For each identified African market, does the export potential increase or decrease over time? This study uses the gravity model (Zhai, 2023), and

[3] https://www.tralac.org/resources/infographic/13795-status-of-afcfta-ratification.html

a more efficient estimation technique, that is, Poisson Pseudo Maximum Likelihood (PPML) (Santos-Silva & Tenreyro, 2006) to estimate the trade potential of AfCFTA to Tanzania.

The remainder of the paper is structured as follows. The Literature review presents the theory on regional integration, stylized facts on regional integration in Africa, and a review of empirical studies. The Methods section describes the gravity model, data, and a brief account of the Poisson Pseudo Maximum Likelihood (PPML) estimator. This is followed by the Results section, which presents the empirical results of the gravity model and export potential. The Discussion section links the findings with theory and previous empirical studies. The last section concludes and presents the implications of the study.

Literature

Theoretical Framework

Theoretically, the link between free trade areas and bilateral trade relates back to Viner (1950) and the literature on regional trade arrangements. Formation of a regional trade arrangement is expected to boost trade and investment, and enhance economic welfare (Bagci et al., 2023). The effect of free trade areas may be static or dynamic (Wang, 2016), whereby static effects can be classified into trade creation and trade diversion, often linked to old regionalism (Rueda-Junquera, 2006). Trade is created when member countries increase trade between each other following the reduction of internal trade barriers (Ferreia & Steenkamp, 2020; Timsina & Culas, 2020). In such cases, production is done by more efficient and cost effective members, thereby enhancing regional and global welfare (Benita, 2023; Ferreia & Steenkamp, 2020; Rueda-Junquera, 2006). Trade is diverted when member countries start sourcing imports from inefficient member countries simply due to reduced trade barriers between member countries (Timsina & Culas, 2020). Essentially, trade diversion often entails reduction in trade with efficient non-member countries, and abnormal increases in trade with inefficient member countries (Benita, 2023). The net welfare effect depends on the magnitude of trade creation and trade diversion. Deeper integration also comes with static and dynamic effects. Static effects of RTAs, derived using the assumptions from developed countries, which emphasize resource endowment, seem irrelevant to developing countries, such as Tanzania (Rueda-Junquera, 2006).

Dynamic effects, which are "series of separate and often unrelated phenomena not easily captured by a single model" (Brada & Mendez, 1988: p.163), seem ideal and often recommended for developing countries. Dynamic effects focus on the growth of output of the member countries and promote long-term development (Ferreia & Steenkamp, 2020; Rueda-Junquera, 2006; UNECA, African Union Commission, and African Development Bank, 2012). Such growth is attributable to economies of scale because of market enlargement, efficiency gains due to competitive environment and technology transfer, increased foreign direct investment, factor mobility, and the removal or reduction of trade barriers (Brada & Mendez, 1988; UNECA et al., 2012; Wang, 2016). Dynamic effects are the central focus in new regionalism (Rueda-Junquera, 2006). RTAs in this case are outward-looking and market-driven, led by the private sector, focus on market allocation of resources, offer possibilities of upgrading sources of competitiveness of member countries, include North-South RTAs with developed and developing countries, and embrace integration in goods, services, and investment (Ferreia & Steenkamp, 2020; Rueda-Junquera, 2006). Under the new regionalism,

RTAs may create economic conditions that address structural challenges and resource constraints facing least-developed countries (LDCs), thereby enhancing welfare (Rueda-Junquera, 2006). Principally, RTAs among developing countries can be welfare enhancing, even in the absence of conditions for static trade creation (Rueda-Junquera, 2006). They may be more trade enhancing than partnering with developed countries (Cheong et al., 2015). The dynamic effects of fully implemented RTAs are likely to be realized in the long-run and may outweigh short-run static effects (Chauvin et al., 2016; Fouda Ekobena et al., 2021).

Integration in Africa is informed by the ambitions laid out in the Abuja Treaty and the Agenda 2063: "The Africa we Want", which appears to be a historical phenomenon dating back to 1919 (UNECA et al., 2012). Article 6 of the Abuja Treaty considers RTAs as building blocks of continental integration and economic development in Africa. The African Union foresees the merging of RTAs to form the African Economic Community. Thus, the COMESA-EAC-SADC Tripartite Framework and similar initiatives seem in line with the integration strategy provided in the Abuja Treaty (UNECA et al., 2012). Although earlier studies consider RTAs in Africa as shallow because of limited trade diversification and a focus on reduction of trade barriers (Wang, 2016), there is evidence of deeper integration in Africa (World Bank, 2020). AfCFTA is among the most comprehensive RTAs in the world, by including a comprehensive trade agreement, services, investment, movement of capital, standards, competition policy, and intellectual property rights protection (World Bank, 2020). Moreover, AfCFTA embraces the principle of trade liberalization, cooperation, and special and differential treatment. For example, Article 5(d) of AfCFTA Agreement is explicit about commitment to flexibility and special and differential treatment, which is specifically relevant to least developed countries such as Tanzania. Partly, the operationalization of the special and differential treatment principle in AfCFTA includes allowing 10 years of tariff liberalizations for LDCs and 5 years for non-LDCs countries (Ndonga et al., 2020).

AfCFTA started as a free trade area but Africa has the ambition to deepen the integration, as outlined in the Abuja Treaty (UNECA et al., 2012). The 34-year integration process of Africa set in the Abuja Treaty of 1991 includes six phases: the first phase of 5 years entailed creating RTAs in areas where they did not exist; the second phase, of 8 years, involved consolidation within RTAs; the third phase, of 10 years, set up free trade areas and customs union in each RTA; the fourth phase, of 2 years, coordinated and harmonized trade barriers with the view of establishing a continental customs union; the fifth phase, of 4 years, set up an African common market; and sixth phase, of 5 years, established the African Economic Community (UNECA et al., 2012). Nevertheless, AfCFTA incorporates features beyond a typical free trade area, such as free movement of services, capital, and labour, which are features of the common market (Rueda-Junquera, 2006; Taghizadeh-Hesary et al, 2020; UNECA et al., 2012).

AfCFTA negotiations are done in two phases, whereby trade in goods, trade in services, and dispute settlement mechanisms are covered in Phase, I while Phase II includes investment, intellectual property rights, competition policy, digital trade, and women and youth in trade (AfCFTA, 2023). AfCFTA negotiations are unique by working on goods and services in tandem, rather than leaving services for later stages, as is done in most frameworks (Majune, Kaaria, & Kihiu, 2023). The scope of AfCFTA suggests trade opportunities for all African countries, despite their diversity.

Hypotheses Development

Several studies have examined the trade potential of RTAs. Most of the analyses with respect to AfCFTA, which has not been fully implemented, are ex-ante (Fouda Ekobena et al., 2021). A few examples of such studies include Charles (2021), Chauvin et al. (2016), Bagci et al. (2023), and Masiya et al. (2023). Similar ex-ante studies also exist for other RTAs including, for example: Agrawal and Sangita (2017), Ebaidalla and Ali (2023), Ferreia and Steenkamp (2020) and Zhai (2023). However, for the purpose of fairly informing this study, the review covers both ex-ante and ex-post studies of the effect of RTAs on trade in Africa and other parts of the world. Reviewed ex-post studies include Nyarire-Makilagi and Oh (2023), Timsina and Culas (2020)and Wang (2016).

For instance, while estimating the export potential of Côte d'Ivoire in the AfCFTA using the PPML estimator, Charles (2021) found the presence of trade potential in 25 African countries. The author found great trade potential in four countries, namely, Lesotho, Algeria, Seychelles, and Gabon, and low trade potential in other countries, including ECOWAS members. That is to say, Charles (2021) found limited export potential in traditional markets. Consistently, Nyarire-Makilagi and Oh (2023) found Tanzania to have limited trade potential in the EAC and SADC, that is, in traditional markets. Nonetheless, Burundi was the only EAC country in the final study sample, where the authors argue that Tanzania currently trades less with neighboring countries, which seems to contradict Tanzania impressive trade performance in EAC. The two studies present findings different from Masiya et al (2023), which found significant but varying trade potential for EAC member states namely Tanzania, Uganda, and Burundi in the AfCFTA.

Varying trade potential was also reported by Bagci et al. (2023) when assessing the potential trade effects of the AfCFTA in six selected countries, namely, Cote d'Ivoire, Egypt, Guinea, Mozambique, Tunisia, and Uganda. Except for Egypt and Mozambique, Bagci et al. (2023) found that AfCFTA full liberalization will result in high growth in imports and lower growth of exports. Cote d'Ivoire and Guinea were expected to experience significant negative effects on trade balance. Similarly, based on a random effect gravity model, Zhai (2023) found China to have trade potential in 9 out of 10 ASEAN countries. China did not have trade potential in Vietnam. Consistently, Ebaidalla and Ali (2023) examined intra-Arab trade potential and found countries such as UAE, Morocco, Jordan, Saudi Arabia, and Egypt to exhibit higher potential trade, whereas Iraq and Libya registered the lowest potential trade, partly due to political instability and weak trade relationships. Regardless of the geographical context, RTAs seem to benefit and cost member countries differently.

Also, the extant literature suggests the existence of trade potential in various sectors in the AfCFTA and other RTAs, despite the contextual differences. For example, Masiya et al (2023) found significant trade potential in agricultural, mineral, and textile sectors, without identifying specific export market opportunities for Tanzania in the AfCFTA. Chauvin et al (2016) found that the agricultural liberalization under the AfCFTA would increase trade by 8.5% and 0.04% in Cameroon and Botswana, respectively, whereas, manufacturing sector liberalization would increase trade by 42% and -0.14% in Mozambique and Botswana, respectively. Although the focus was different, Ferreia and Steenkamp (2020) found the existence of export potential in the COMESA-EAC-SADC tripartite free trade area in both agricultural products and processed goods. While acknowledging possible trade potential at

sectoral level, our current study is limited to macro-level analysis. With respect to the existence and magnitude of export potential, this study hypothesize as follows:

H1: There are potentials for Tanzania exports in the AfCFTA markets.

H2: Tanzania has higher export potential in non-traditional markets in the AfCFTA, and lower export potential in the traditional markets in the AfCFTA.

Moreover, empirical studies suggest variation of trading potential in RTAs over time. For example, while estimating the trade potential between India and Central Asia in 1996-2015, Agrawal and Sangita (2017) found the trade potential to be U-shaped over time, far greater than 1, and that the index was increasing from 2000. That is to say, the study reported an increase in the gap between the actual and predicted trade. Partly, the authors associated the increase in the gap of trade potential to trade frictions and worsening political instability linked to the Afghanistan war and the adverse political relationship between India and countries such as Pakistan. Also, Timsina and Culas (2020) found the effect of RTAs to change over time, often noting trade creation in early years which disappears over time. While examining the trade potential in China-ASEAN, Zhai (2023) found expanding trade potential in Malaysia, Philippines, Thailand, Singapore, Cambodia, Laos, Myanmar, Brunei, and Indonesia, whereas the trade potential in Vietnam was re-modeling. Zhai (2023) based on the 10-year average (single value) to argue about the expansion and remodeling of trade potential, which sounds misleading. Lastly, Wang (2016) found RTAs to have stronger trade effects in the medium and long-term, but the weakest trade effects in the short-term.

In summary, few studies have examined AfCFTA, a recently established RTA in Africa. However, the reviewed studies suggest RTAs to be trade enhancing, albeit with potential variation. We note possible variation of trade potential over time, and that Tanzania seems to marginally utilize the existing trade potential. This leads to the third and final hypothesis;

H3: The potential for Tanzania exports in the AfCFTA markets is increasing

Methods

This is a quantitative study that employed a gravity model of international trade (Anderson & Wincoop, 2004; Charles, 2021; Tinbergen, 1962) and the Poisson pseudo maximum likelihood (PPML) estimator (Santos-Silva & Tenreyro, 2006) in establishing the export potential of Tanzania in the African Continental Free Trade Area (AfCFTA). In particular, the gravity model was used to examine the bilateral trade between Tanzania and other African countries. The model is commonly used in examining the effect of RTAs (Kepaptsoglou, Karlaftis, & Tsamboulas, 2010). The study employed a two-step approach in computing trade potential (cf. Agrawal & Sangita, 2017; Charles, 2021; Zhai, 2023). The first step involved estimating the gravity model, whereas the second step entailed computing the trade potential using the theoretical trade data estimated from the first step. The two steps are explained hereafter.

Step 1: *Estimating the gravity model*. The gravity model has been used in modeling bilateral trade in previous studies (Agrawal & Sangita, 2017; Charles, 2021; Timsina & Culas, 2020). Inspired by Newton's law of gravitation, the gravity model of international trade assumes that the bilateral trade between two countries is inversely proportional to the distance between the two countries and directly proportional to the product of the size of the two countries, often

measured in GDP. Apart from geographical distance, there are other trade cost elements, such as common border, common language, and common colony, that may affect bilateral trade between two countries (Anderson & Wincoop, 2004). The resulting model incorporating basic variables of gravity model and added trade cost components is presented by equation (1), below. As indicated in equation (1), the tradition has been to log-linearize the gravity model (cf. Kepaptsoglou et al., 2010).

$$lntrade_{rpt} = \beta_0 + \beta_1 lnGDP_{rt} + \beta_2 lnGDP_{pt} + \beta_3 lndist_{rp} + \beta_4 RTA_{rp} + \beta_5 BORDER_{rp} + \beta_6 LANG_{rp} + \beta_7 COL_{rp} + \delta_t + \delta_p + \varepsilon_t \quad \ldots\ldots\ldots\ldots \text{(1)}$$

Where, $Trade_{rpt}$ stands for the nominal export value at time t. lnGDP_{rt} represents the natural logarithm of GDP of Tanzania (an exporter) at time t, whereas lnGDP_{pt} stands for the natural logarithm of other African country (an importer)'s GDP at time t. *lnDIST* refers to the natural logarithm of the geographical distance between Tanzania and other African countries. RTA is a dummy taking a value 1 if Tanzania and other African country are members of the same regional trade agreement and 0 if not. $BORDER_{rp}$ refers to a dummy for the existence of a common border between Tanzania and the other African country. $LANG_{rp}$ stands for a dummy for the existence of a common official language between Tanzania and the other African country. COL_{rp} denotes a dummy for the existence of the colonial ties between Tanzania and the other African country. The model includes the exporter time fixed effects ($\boldsymbol{\delta_t}$) to account for any macroeconomic effects, such as economic recessions or booms, whereas importer fixed effects ($\boldsymbol{\delta_p}$) is included to control for endogeneity of the trade policy variable i.e. to account for unobserved country-specific variables (cf. Benita, 2023; Sun & Reed, 2010; Timsina & Culas, 2020).

However, estimating the gravity model of international trade is often constrained by two problems. Firstly, it concerns the presence of zero trade flows (Charles, 2021; Dadakas et al., 2020), especially when a log-linear model is used (Santos-Silva & Tenreyro, 2006; Sun & Reed, 2010). Zeros are less pronounced in aggregate data, such as the one we use in this study; however, their presence may signify prohibitive transportation costs, thus it is ideal to include zero trade flows (Dadakas, Ghazvini Kor, & Fargher, 2020). Further, trade between two countries can be zero, which is never the case for gravitation force, the origin of the gravity model of international trade (Santos-Silva & Tenreyro, 2006). Dropping the zeros will risk missing such valuable information, critical in examining the trade potential. Zeros are never a problem in a multiplicative version of the gravity model, but are problematic in a log-linear gravity model (Santos-Silva & Tenreyro, 2006). Secondly, the gravity models are constrained by the presence of heteroscedasticity. The two problems may be addressed by using the Poisson pseudo maximum likelihood (PPML) estimator (Santos-Silva & Tenreyro, 2006). The PPML seems superior as it takes into account the problems of zeros, offers unbiased estimates, is robust to different types of heteroscedasticity, and is consistent against model mis-specification (Dadakas et al., 2020; Santos-Silva & Tenreyro, 2006; Timsina & Culas, 2020). In addition, the PPML addresses sample selection bias and improves the fit, thus being better than OLS and the Fixed Effects (FE) model (Santos-Silva & Tenreyro, 2006; Sun & Reed, 2010). The PPML which is used in this study is incorporated into STATA (Majune et al., 2023). However, we use OLS and Fixed effects models for robustness check, albeit given the econometric weakness of these estimation techniques (cf. Timsina & Culas, 2020; Santos-

Silva & Tenreyro, 2006). As such, the current study employed the gravity model presented by equation (2):

$$Trade_{rpt} = exp^{(\beta_0+\beta_1 lnGDP_{rt}+\beta_2 lnGDP_{pt}+\beta_3 lndist_{rp}+\beta_4 RTA_{rp}+\beta_5 BORDER_{rp}+\beta_6 LANG_{rp}+\beta_7 COL_{rp}+\delta_t+\delta_p+\varepsilon_t)} \quad \ldots\ldots\ldots (2)$$

Table 1: Variables Definition and Sources of Data

Variable	Definitions	Expected sign	Source of data
$trade_{rp}$	Value of exports in US$ (thousands)	N/A	ITC Trademap
GDP_r	Value of GDP of exporting country in US$ at current price (millions)	+	UNCTADStat
GDP_p	Value of GDP of importing country in US$ at current price (millions)	+	UNCTADStat
$Dist_{rp}$	Distance between the biggest cities of the trading partner (in kilometers)	-	CEPII
RTA_{rpt}	Dummy variable for regional integration (1=countries pairs and years when any type of RTA was in effect; 0, otherwise)	+	Created based on information in the EAC and SADC websites
$Border_{rp}$	Dummy variable for shared border (1=countries share borders; 0, otherwise)	+	CEPII
$Lang_{rp}$	Dummy variable for common official language (1=countries share a common official language; 0, otherwise)	+	CEPII
Col_{rp}	Dummy variable for colonial history (1= countries had a common colonizer; 0, otherwise)	+	CEPII

The data sources and expected effects of the variables are presented in Table 1, above. This study used a panel dataset, reflecting the bilateral trade relationship between Tanzania and 50 trading partners in Africa for the years 2003 – 2022. Notably, Santos-Silva and Tenreyro (2006) developed the PPML estimator based on cross-sectional data, which may yield different results compared to panel data. Nonetheless, the PPML has been used elsewhere in estimating panel dataset (Charles, 2021; Timsina & Culas, 2020), thus seeming appropriate for this study. The panel dataset for gravity model employed in this study excluded four African countries, namely, Somalia, Western Sahara, Eritrea, and South Sudan, due to data shortages. However, according to ITC, the countries included in the sample accounted for 99.5% of Tanzania exports to Africa in 2022.

Step 2: *Computing the trade potential*. Trade potential was computed after estimating the gravity equation and getting the theoretical values of trade (cf. Agrawal & Sangita, 2017; Charles, 2021). The trade potential index ($X_{ij_t}^p$) was computed using equation (3):

$$X_{ij_t}^p = \frac{\hat{X}_{ijt}^e}{X_{ijt}^E} \quad \ldots\ldots\ldots (3)$$

Where, $X^{p}_{ij_t}$ – the trade potential index in year t, $\hat{X}^{e}_{ijt}$ – the value of exports estimated from the gravity model, X^{E}_{ijt} – the value of exports observed. A value of the index (i.e.$X^{p}_{ij_t}$) less than 1 means that the actual trade is more than the predicted value of trade. That is to say, there are no unexploited trade potentials between Tanzania and the other African country at time t. This is typical for traditional trade partners, that is to say, a pair of countries that have been trading over time. Thus, traditional trade partners of Tanzania may include members of EAC and SADC. The value of a trade potential index more than 1 implies existence of the potential to increase bilateral trade. That is to say, there are trade opportunities in the other African country that can be exploited by the exporter (i.e. Tanzania). If the trade potential index is more than 1 and declining, this implies that the potential is being tapped by the exporter, whereas an increase in trade potential index means untapped trade potential is increasing (Agrawal & Sangita, 2017).

To better explore the extent of trade potential in Africa, this study adapted a trade potential gap index introduced by Charles (2021). The trade potential gap (i.e.$TradePotential_{gap}$) is the difference between the trade potential and ideal position of actual trade being equal to predicted trade, expressed as a percentage. This study used the export potential gap to cluster export potential cases into three groups, namely, low, moderate, and high. Charles (2021) had only two clusters of low and high, which yield limited and sometimes misleading findings. For example, Charles (2021) considers 50% as low, which may mislead the policymakers, especially in Africa where intra-continental trade is still low. In addition, this study modified cluster limits and created four clusters of export potential: (i). countries with no unexploited trade potential ($TradePotential_{gap}<0$) (ii). countries with low export potential ($0<TradePotential_{gap}\leq 30$) (iii). countries with moderate export potential ($30< TradePotential_{gap}\leq 60$) and (iv). countries with high export potential ($TradePotential_{gap}>60\%$). The trade potential gap is computed using equation (4):

$$TradePotential_{gap} = (X^{p}_{ij_t} - 1) \times 100 \quad \ldots\ldots (4)$$

Results

Table 2, below, presents the description of the data about the variables used in this study. The maximum observation for this study is 1000 i.e. reflecting the sample of 50 countries over 20 years. Comparing *exports* and *lexports*, imply 111 zeros. Such observations are dropped when using *lexports*, because a logarithm of zero cannot be computed. With the exception of exports, Table 2, below, shows low standard deviation for all variables, suggesting that data points are closer to the means. This is also indicative from the range, that is, we note a small difference between the minimum and maximum value of each variable. Further interrogation of the dummy variables reveals that Tanzania shares borders, colony, and language with less than half of the countries in the sample. Proportionally, 40% of the sampled African countries share a common official language with Tanzania, which is higher than countries sharing a border and colony with Tanzania i.e. 16% and 28% of the sampled African countries, respectively. Nevertheless, Tanzania ranks second in Africa, after DRC, in terms of the number of countries it borders. Also, Tanzania is in RTA with 38% of the sampled African countries.

Prior to presenting the results about export potential, we first show the results for gravity estimation. Table 3, below, presents the estimation results of the gravity model under two

conditions i.e. controlling for exporter-time effects (Columns 1 and 2), and controlling for exporter-time fixed effects and importer fixed effects (Columns 3 and 4). It is evident from Table 3, below, that the PPML models are more efficient and appropriate for panel datasets with zero observations compared to the Fixed effect models. For example, the PPML models have higher observations (993) than observations in the Fixed Effects models (at 882). Essentially, the PPML includes the zero trade flows in the estimation, which sounds realistic as zero trade flows seem to reflect the actual trade relationships between Tanzania and a number of African partners.

Table 2: Summary Statistics of the Key Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Exports	993	29 742.89	107 945	0	1 100 000
Lexports	882	7.09	2.93	0	13.95
lgdp-exporter	1 000	24.34	0.50	23.45	25.05
lgdp-importer	1 000	23.16	1.63	18.44	27.08
Ldist	1 000	8.06	0.63	6.52	8.90
Border	1 000	0.16	0.37	0	1
Lang	1 000	0.40	0.49	0	1
Col	1 000	0.28	0.45	0	1
Rta	1 000	0.36	0.48	0	1

Consistently, the PPML model in column (4) has a better fit and is superior, given the mentioned limitations of the fixed effect model. In this model, we fail to reject that the additional variable has a coefficient of zero, i.e. the model in column (4) is correctly specified. The inclusion of importer-fixed effect is therefore necessary in the PPML estimated gravity model; otherwise the model is mis-specified, as suggested by the model in column (2). In addition, the PPML model in column (4) has a R-squared of 0.92, higher than the fixed effect model in column (3), with a R-squared of 0.80. The GDP of exporters has a significant positive effect on bilateral trade, consistent with the expectation presented in Table 1, above. Contrary to expectation, the GDP of importers has a negative effect on trade. However, the effect is insignificant. The common language and common colony have positive and significant effects on bilateral trade, as expected. Further, the effect of distance on bilateral trade is found to be significant but positive, contrary to expectations. This may suggest that Tanzania trades more with distant markets. Consistently, while a common border appears to encourage trade, its effect is insignificant.

Distance and common borders seem to communicate similar messages. Partly, this could relate to Tanzania trading more with South Africa, which is relatively far from Tanzania than many African countries. Two variables are consistent with the expectation when we exclude South Africa from the sample. The results for the sample excluding South Africa are not included in this paper, but are available on request. We decided to keep South Africa in, which accounted for 13.6% of Tanzanian exports to Africa in 2022, ideally the leading destination in 2022, followed by Kenya (at 5.6%). That is, the results used for subsequent analysis include South Africa. Moreover, regional integration is found to have a significant positive effect on trade; thus, potentially, the African Continental Free Trade Area (AfCFTA) is likely to increase intra-Africa trade. Noting that AfCFTA will include markets that are distant, some

further than South Africa, column (5) in Table 3, below, is an attempt to interact distance with a dummy for regional integration (i.e. *ldist*rta*). The coefficient of the interaction term is positive and significant, suggesting that two countries that are far apart, but part of RTA, trade more than two closer countries that are not part of RTA.

Table 3: Gravity Model Estimation Results: Fixed Effect Model vs PPML

Estimation method	**OLS**	**PPML**	**OLS**	**PPML**	**PPML**
Dependent variable	**lexports**	**exports**	**lexports**	**exports**	**exports**
	(1)	(2)	(3)	(4)	(5)
lgdp_exporter	-0.001	0.868***	1.300***	1.641***	1.641***
	(0.143)	(0.278)	(0.106)	(0.235)	(0.235)
lgdp_importer	0.755***	0.921***	0.393	-0.001	-0.001
	(0.090)	(0.044)	(0.296)	(0.142)	(0.142)
Ldist	-1.393***	-0.726***	-4.299***	1.171***	0.576
	(0.379)	(0.218)	(0.875)	(0.353)	(0.356)
Rta	1.168**	2.482***	-5.803***	4.842***	-
	(0.485)	(0.272)	(0.870)	(0.209)	
Comborder	2.697***	1.341***	7.772***	0.037	-0.028
	(0.515)	(0.273)	(0.792)	(0.235)	(0.237)
Comlang	0.110	0.780***	1.047***	1.064***	0.983***
	(0.428)	(0.165)	(0.333)	(0.354)	(0.354)
Comcol	-0.113	-1.574***	0.739***	1.129***	1.276***
	(0.443)	(0.121)	(0.262)	(0.253)	(0.254)
ldist*rta					0.643***
					(0.028)
Constant	-	-30.22***	-	-42.76***	-38.23***
		(7.154)		(5.695)	(5.708)
Required[2]	0.6549	0.8405	0.7953	0.9197	0.9197
Observations	882	993	882	993	993
Number of importers	50	50	50	50	50
Fixed Effects (FE):					
Export time FE	Yes	Yes	Yes	Yes	Yes
Importer FE	No	No	Yes	Yes	Yes
RESET test *p*-values	0.7883	0.0000	0.9190	0.1491	0.1491

***Note**: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*

The study used the PPML model (column 4) in Table 3, above, to estimate theoretical bilateral trade and used them to compute the export potential of Tanzania in AfCFTA with the help of equation (3). Results for the export potential of Tanzania in African markets are presented in Table A1 in the Appendix. The results show export potential in some markets (i.e. $X_{ij_t}^{p}$>1) and no potential in other markets ($X_{ij_t}^{p} < 1$). There are more incidences of export potential than not. For example, there are 700 out of 882 observations with export potential (i.e.

$X_{ij_t}^{p}$>1). We find export potential to vary by markets. Moreover, we find export potential to vary by time. The results show Tanzania had export potential in 29 African countries in 2003, with the number increased to 42 countries in 2020 before dropping to 38 countries in 2021. Essentially, examining annual export potentials demonstrate fluctuating trends (see an example in Figure A1, in Appendix). Instead, the five-year averages (2003-2007, 2008-2012, 2013-2017, and 2018-2022) of export potential were computed for each country in the sample. Equally, the results show fluctuating trends but with the potential for more analysis (See Table A1, in Appendix).

To further interrogate the results, we explored the direction of export potential by comparing the last two periods of the time frame of the study i.e. 2013-2017 and 2018-2022. We compared five-year averages rather than comparing single year values, as the former presents more reliable trends than the latter. The results presented in Table 4, below, show export potential increasing in 25 countries and decreasing in 24 countries. Thus, the results partly support the hypothesis, that is, Tanzania export potential is increasing. We note results contrary to our expectations, that is, Tanzania export potential is decreasing. Sao Tome and Principe did not have export potential value in 2018-2022, thus excluded in Table 4. Further, we estimated the magnitude of the potential by computing the export potential gap (i.e. $TradePotential_{gap}$) for 2018-2022 using equation (4). As stated earlier, we based on the computed export potential gap to cluster the markets into: (1) markets with no export potential ($TradePotential_{gap}$<0); (2) markets with low export potential (0<$TradePotential_{gap}$≤30); (3) markets with moderate export potential (30<$TradePotential_{gap}$≤60); and (4) markets with high export potential ($TradePotential_{gap}$>60%). Due to data unavailability for Sao Tome and Principe, the export potential gap was computed for 49 African countries. The results relating to the export potential gap are presented in Table 4.

Of the 49 markets, eleven markets have no export potential and 38 countries have export potential (see Table 4, below). Worth noting is that that Tanzania has no export potential in Burundi, Rwanda, South Africa, Uganda, and Zimbabwe, which are part of EAC or SADC. Among the 38 markets with export potential, 32 exhibit high export potential, 2 show moderate export potential, and 4 demonstrate low export potential. Tanzania has its highest export potential in the Seychelles. Moreover, the majority of markets with high export potentials are non-EAC and non-SADC (non-traditional) markets, whereas all except one of the markets with low export potential are markets within the SADC region, namely, DRC, Malawi, and Zambia. Tanzania has moderate but increasing export potential in Kenya. We also find an increase in export potential in the majority (59%) of markets with high export potential. This includes six (6) markets in the SADC region, namely, Seychelles, Eswatini, Botswana, Angola, Lesotho, and Mozambique. The export potential is high, but decreasing, in Namibia, Comoros, and Madagascar. Relatedly, the majority of markets with no export potential in 2018-2022, including those in EAC and SADC regions, show a decline in export potential between 2013-2017 and 2018-2022.

Table 4: Tanzania's Export Potential, 2018-2022

S/N	Partner state	Export Potential Direction (2013-2017 vs 2018–2022)	Export Potential Gap, 2018-2022 (%)	EAC or SADC?
Markets with high export potential				
1	Seychelles	Increasing	7140.33	Yes
2	Burkina Faso	Increasing	3907.48	No
3	Congo	Increasing	3734.57	No
4	Gabon	Increasing	3453.56	No
5	Eswatini	Increasing	3009.31	Yes
6	Chad	Increasing	2973.67	No
7	Botswana	Increasing	2811.84	Yes
8	Tunisia	Increasing	1437.09	No
9	Cameroon	Increasing	1263.31	No
10	Liberia	Decreasing	1148.28	No
11	Djibouti	Increasing	739.91	No
12	Equatorial Guinea	Increasing	698.20	No
13	Namibia	Decreasing	681.42	Yes
14	Angola	Increasing	547.69	Yes
15	Comoros	Decreasing	505.28	Yes
16	Togo	Increasing	467.11	No
17	Niger	Decreasing	458.93	No
18	Benin	Decreasing	448.94	No
19	Mauritius	Increasing	382.72	Yes
20	Mali	Decreasing	198.90	No
21	Central African Republic	Increasing	154.42	No
22	Ethiopia	Decreasing	151.71	No
23	Sierra Leone	Decreasing	148.73	No
24	Lesotho	Increasing	136.76	Yes
25	Algeria	Decreasing	129.74	No
26	Mozambique	Increasing	111.06	Yes
27	Senegal	Decreasing	84.03	No
28	Sudan	Increasing	77.46	No
29	Libya	Decreasing	76.46	No
30	Côte d'Ivoire	Increasing	71.96	No
31	Mauritania	Decreasing	66.77	No
32	Madagascar	Decreasing	64.64	Yes
Markets with moderate export potential				
33	Gambia	Decreasing	36.49	No
34	Kenya	Increasing	32.60	Yes
Markets with low export potential				
35	Zambia	Increasing	28.95	Yes
36	DRC	Increasing	18.46	Yes
37	Malawi	Decreasing	16.47	Yes
38	Egypt	Decreasing	7.58	No

S/N	Partner state	Export Potential Direction (2013-2017 vs 2018–2022)	Export Potential Gap, 2018-2022 (%)	EAC or SADC?
Markets with no export potential				
39	Nigeria	Decreasing	-1.46	No
40	Ghana	Decreasing	-4.64	No
41	South Africa	Decreasing	-5.60	Yes
42	Guinea	Decreasing	-17.66	No
43	Burundi	Decreasing	-21.87	Yes
44	Morocco	Decreasing	-26.85	No
45	Uganda	Decreasing	-27.82	Yes
46	Zimbabwe	Decreasing	-29.59	Yes
47	Rwanda	Decreasing	-36.55	Yes
48	Cabo Verde	Increasing	-50.37	No
49	Guinea Bissau	Increasing	-83.06	No

Discussion

This study examined the existence, magnitude, and direction of export potential of AfCFTA to Tanzania. The study has revealed that Tanzania has export potential in the majority (75%) of African markets. Essentially, the study demonstrates that an RTA in developing countries, such as the African Continental Free Trade Area (AfCFTA), may equally enhance trade, contrary to the static perspectives of RTAs (Viner, 1950; Reuda-Junquera, 2006). Our findings about the existence of export potential in the AfCFTA resonate with the findings of Charles (2021), despite focusing on a different country, that is, Cote d'Ivoire located in West Africa. However, AfCFTA seems to offer more export market opportunities to Tanzania than it does to Cote d'Ivoire. The higher trade benefit of AfCFTA to Tanzania was also reported by Leyaro and Hongoli (2022), who placed Tanzania in the fourth position in Africa, after Kenya, South Africa, and Nigeria, in terms of magnitude of potential benefits. In part, the varying benefits of AfCFTA may be explained by the location of the countries. For example, while Cote d'Ivoire and Tanzania have access to the ocean, Tanzania appears to be more strategically located. In particular, Cote d'Ivoire borders only five African countries, whereas eight African countries border Tanzania, the second in Africa in terms of land connectedness. The non-uniform effect of AfCFTA on African countries seems consistent with the literature regarding RTAs (Agrawal & Sangita, 2017; Chauvin et al., 2016; Zhai, 2023).

Further, the study reveals Tanzania to have high export potential in many African markets, most of which fall outside the EAC and SADC regions. Such findings also corroborate previous studies of the RTAs (Charles, 2021; Zhai, 2023), despite differences in context. New RTAs seem to have limited trade benefits to countries that are in other existing RTAs. In addition, the fact that the majority of markets with high export potential fall outside existing RTAs suggests the added trade advantage of new RTAs, such as AfCFTA, to member countries. Moreover, the new export market potential of the newly established RTAs appears to challenge the member countries' low pace of integration and related perceived hesitation, especially among the least developed countries (Ndonga et al., 2020). However, Tanzania being among seven African countries piloting the AfCFTA guided trade initiatives (AfCFTA, 2023) demonstrates the enhanced confidence of LDCs in the continental integration,

especially in the context of reduced potential in existing RTAs. The findings presented by this study may enhance confidence in such policy direction.

Also, the findings reveal that export potential is dynamic, i.e. either increasing or decreasing over time. This means that potential trade benefits of RTAs are not steady over time. We found prevalence of an increase in African markets with high export potential, most of which fall outside the EAC and SADC. This suggests that AfCFTA presents increasingly untapped potential (cf. Agrawal & Sangita, 2017), further favouring continental exploration. Moreover, this study revealed some preferential markets, especially in the SADC where export potential is high and increasing. Despite using a different methodological approach, our findings match with those of Leyaro and Hongoli (2022), who used a general equilibrium model and argued that higher potential benefit to Tanzania is expected in markets with smaller baseline bilateral trade. This cements the claim that Tanzania is not fully utilizing the trade opportunities in the existing regional integrations (Nyarire-Makilagi & Oh, 2023). The AfCFTA improves the market access through policy level negotiations, the challenge is however realizing these export opportunities. While the current study reveals the existence of export opportunities in non-traditional markets such as in Central and Western Africa, the challenge among firms has been how to actually trade in such markets. For example, Tanzania is not well connected to such regions, suggesting logistical challenges to export firms. Yet, firms may leverage from the strategies used in existing RTAs namely EAC and SADC in exploiting new markets in Africa.

Nonetheless, the fact that SADC presents increasingly untapped export potential than EAC is worth further interrogation. In terms of level of integration, EAC seems deeper than SADC. EAC covers fourteen policy areas, whereas SADC covers twelve policy areas (World Bank, 2020). Thus, trade potential is declining in EAC, a deep integration. This suggests that Tanzania would be better tapping the export potential in the existing deep RTAs, consistent with the claim in the extant literature regarding deep versus shallow integrations (Wang, 2016). Remarkable progress of Tanzania exports in the EAC resonates with the country commitment, at policy and business level, in such a region. In particular, Tanzania's commitment to harmonization of laws in the region, awareness creation and capacity building to firms exporting to the region, and historical ties between Tanzania and other EAC member states seem to partly explain the enhanced use of export opportunities in the EAC.

However, there is a potential risk of redundancy of both EAC and SADC following the establishment of AfCFTA, similar to the effects on eastern European countries' RTAs in the 2000s, which became redundant after enlargement of the European Union (cf. Pomfret, 2021). This would, thus, make putting more effort into AfCFTA seems justifiable, especially with the long-term view of creating a continental customs union in the near future. AfCFTA is equally deep, covering fourteen policy areas (World Bank, 2020). It is an RTA involving developing countries, which presents more potential trade benefits than an RTA between African countries and developed countries (Cheong et al., 2015). AfCFTA has drawn lessons from existing RTAs, and is likely to progress faster than other RTAs. For example, AfCFTA has notable operational instruments, such as Pan-African Payment and Settlement System (PAPSS), AfCFTA Adjustment Fund, AfCFTA Guided Trade Initiative, the AfCFTA e-tariff book, AfCFTA hub, and NTB online reporting mechanism, which may facilitate implementation of the AfCFTA Agreement (AfCFTA, 2023). These instruments are expected

to improve the market entry conditions, which often limit firms from utilizing secured export opportunities (Okangi, 2023). Essentially, AfCFTA addresses both market access and market entry issues, which is uncommon in other existing RTAs in Africa.

Conclusion and Implications

The study has provided answers to the three questions raised in the introduction. Firstly, the study has revealed the existence of export potential for Tanzania in the AfCFTA. The majority of the markets, most of which are non-EAC and non-SADC markets, exhibit high export potential. Secondly, the study revealed limited export potentials in the EAC and SADC. The extent of export potential in various markets in Africa signifies that AfCFTA is a valuable opportunity for Tanzania beyond the existing RTAs (EAC and SADC). Thirdly, the study shows that export potential is dynamic, i.e. increasing in some markets and decreasing in other markets. Further, the export potential is decreasing in most EAC markets, implying that Tanzania is tapping the potential in these markets. The study revealed increasing export potential in many SADC markets, implying that Tanzania is not doing much to utilize the potential in these markets. Thus, the challenge ahead for the country is to utilize the identified potentials. This may require clear commitment by the government in further negotiating within AfCFTA to improve the business environment. This may include collaborating with the private sector to connect the country with potential markets, mostly concentrated in Central and Western Africa. It is apparent from successful integrations that sustained political commitment, together with sound, flexible, and supporting legal and functional institutional systems, and a set of common actions and policies are central to creating welfare-enhancing regional integrations (cf. Rueda-Junquera, 2006). AfCFTA initiatives to address market entry conditions through instruments addressing payment challenges, access to information, short-term negative effects, and access to distribution channels, for example, by using the guided trade initiatives may attract more firms to use export opportunities presented by AfCFTA, thereby actualizing its benefits.

Although the study focuses only on Tanzania, it recognizes that other African countries may exhibit different patterns of export potential; thus, there is a need for other country specific studies on the trade potential of AfCFTA. In addition, the current study focuses on exports, which is key for Tanzania, as outlined in the national trade policy. Focusing on imports may offer different patterns and insights. Moreover, the current study mainly includes static variables, and does not incorporate some aspects such as trade policy, infrastructural quality, and political relationships, which are expected to evolve. Nevertheless, this study contributes to regional integration literature by demonstrating that developing countries' RTAs with expanded scope in terms of membership are trade enhancing and offer added advantages to member countries beyond the existing RTAs. Methodologically, this study is novel by clustering the export potential into three groups, which better informs the policymakers and business community about the possible priority market opportunities in the AfCFTA. In addition, unlike many studies on export potential, this study demonstrates that export potential is dynamic and that the direction of export potential varies by markets. Lastly, this study is one of the few attempts using the most appropriate approach to estimating a gravity model of international trade i.e. the Pseudo Poisson Maximum Likelihood (PPML), especially in analyzing the trade potential in the context of a newly established RTA, such as the African Continental Free Trade Area (AfCFTA). Meso-level and micro-level studies

incorporating dynamic variables, and using more advanced models may yield additional insights on the export potential in the AfCFTA.

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Appendices

Table A1: Tanzania's export potential, 2003 – 2022

S/N	Partner State	2003 – 2007	2008 – 2012	2013 – 2017	2018 – 2022	Export potential gap 2018-2022 (%)
1	Algeria	6.83	0.61	2.67	2.30	129.74
2	Angola	1.61	2.66	1.44	6.48	547.69
3	Benin	46.64	36.47	24.24	5.49	448.94
4	Botswana	2.74	2.38	9.69	29.12	2811.84
5	Burkina Faso	10.89	41.66	36.88	40.07	3907.48
6	Burundi	1.22	1.61	1.72	0.78	-21.87
7	Central African Republic	0.63	7.60	2.44	2.54	154.42
8	Cabo Verde	-	-	0.46	0.50	-50.37
9	Cameroon	16.55	2.27	7.87	13.63	1263.31
10	Chad	1.06	29.36	6.14	30.74	2973.67
11	Comoros	3.16	12.55	14.34	6.05	505.28
12	Congo	37.05	1.48	31.79	38.35	3734.57
13	Côte d'Ivoire	3.56	2.18	1.08	1.72	71.96
14	DRC	1.04	0.97	0.93	1.18	18.46
15	Djibouti	26.79	2.06	4.52	8.40	739.91
16	Egypt	0.80	1.74	3.24	1.08	7.58
17	Equatorial Guinea	1.01	0.07	0.67	7.98	698.20
18	Eswatini	19.25	1.75	8.09	31.09	3009.31
19	Ethiopia	0.62	1.28	5.54	2.52	151.71
20	Gabon	137.39	49.74	26.08	35.54	3453.56
21	Ghana	7.21	2.57	3.62	0.95	-4.64
22	Guinea	11.31	3.57	4.71	0.82	-17.66
23	Guinea Bissau	-	-	0.11	0.17	-83.06
24	Kenya	0.87	0.92	1.05	1.33	32.60
25	Lesotho	0.85	0.85	0.12	2.37	136.76
26	Liberia	2.82	68.18	35.25	12.48	1148.28
27	Libya	10.13	10.95	12.09	1.76	76.46
28	Madagascar	1.21	0.60	2.27	1.65	64.64
29	Malawi	0.89	0.75	1.24	1.16	16.47
30	Mali	1.35	8.13	4.17	2.99	198.90
31	Mauritania	2.55	3.41	9.96	1.67	66.77
32	Mauritius	0.70	0.92	1.25	4.83	382.72
33	Morocco	2.18	1.84	1.39	0.73	-26.85
34	Mozambique	1.25	0.75	1.33	2.11	111.06
35	Namibia	51.18	5.42	9.44	7.81	681.42
36	Niger	75.27	38.93	143.85	5.59	458.93
37	Nigeria	1.40	4.52	1.68	0.99	-1.46
38	Rwanda	4.09	1.61	4.05	0.63	-36.55

S/N	Partner State	2003 – 2007	2008 – 2012	2013 – 2017	2018 – 2022	Export potential gap 2018-2022 (%)
39	Sao Tome and Principe	0.09	-	1.43	-	-
40	Senegal	5.87	10.89	2.62	1.84	84.03
41	Seychelles	7.17	4.95	3.88	72.40	7140.33
42	Sierra Leone	0.95	19.73	5.04	2.49	148.73
43	South Africa	1.26	1.21	1.04	0.94	-5.60
44	Sudan	2.10	1.47	0.85	1.77	77.46
45	The Gambia	0.63	6.55	2.82	1.36	36.49
46	Togo	6.80	20.74	0.81	5.67	467.11
47	Tunisia	30.87	1.41	0.86	15.37	1437.09
48	Uganda	-15.24	30.33	157.60	-27.82	-27.82
49	Zambia	0.78	0.87	1.11	1.29	28.95
50	Zimbabwe	1.86	2.48	1.27	0.70	-29.59

Figure A1: Tanzania export potential in the EAC countries, 2003 – 2022