The African growth and opportunity act (AGOA) and export performance: a case study of the united republic of Tanzania in relation to its east African partner states

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Abstract
This study assesses the effectiveness of the African Growth Opportunity Act (AGOA) on the export performance of Sub-Saharan African countries (SSA) countries. Tanzania's export performance in relation to that of the other three East Africa Community (EAC) partner states, namely, Kenya, Rwanda, and Uganda, is investigated. The study employs a traditional trade model based on the Ordinary Least Square (OLS) procedure, covering the pre-and post-AGOA period from 1990 to 2020, 11 years before the signing of AGOA and 20 years after it. The main differences between this study and previous studies assessing the impact of AGOA preference include a longer sample period, the techniques of treating the model in the empirical analysis, and the number of countries assessed that allows to observe what differentiates the AGOA's impact on SSA countries. A panel model showing the overall impact of AGOA, and individual country regressions are estimated. The panel results show no impact of AGOA on the export performance of the EAC partner states, while to the individual country findings indicate that AGOA has a significant impact only on the total exports of Kenya, to the country of interest that is Tanzania is insignificant. The policy implications of the findings are discussed.

Introduction
Background
The African Growth and Opportunity Act (AGOA) is a non-reciprocal preferential trade programme that the United States (US) offers to the sub-Saharan African (SSA) countries to support their economies (Williams, 2015). Even though the Act provides SSA countries with preferential export opportunities, since 2000, their exports to the US have remained around one percent of total US imports from abroad, with a focus on oil and others energy products (CRS, 2015).

From the year 2000 to 2013, data shows that the total value of trade between East African Community (EAC) partner states and the US increased from USD 2,372 million to USD 3,167 million. The value of exports from EAC to the US improved from USD 186 million to USD 577 million, while the value of imports from the US sharply increased from USD 328 million to USD 1,184 million, resulting in an EAC trade deficit (EAC Secretariat, 2014). Contrariwise, the increased exports reflect inequality among partner states. Whereas 96 percent of EAC exports to the US were from Kenya, Tanzania exported 3 percent, Uganda 0.4 percent, Rwanda 0.2 percent, and Burundi had no export data. (EAC Secretariat, 2014)[1].

Tanzania is one of the SSA nations that is working to grow its exports in order to strengthen its economy. Sayuni (2006) reported that since the 1970s, the country has experienced a persistent trade imbalance where the main challenges are low export volumes concentrating on primary products and high importations of industrial products. Low levels of export products production, competition from other nations producing comparable export goods in the same targeted market, the capacity to adhere to international standards, and low trade facilitation, which drives up export costs, are just a few of the obstacles the country faces in attempting to boost exports (Mueller, 2008).

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[1] U.S. imports from AGOA beneficiary countries (AGOA countries) represent a small share (1%) of total U.S. imports and are largely concentrated in energy-related products. Oil is consistently the top duty-free U.S import from AGOA countries, accounting for 68% of such imports in 2014.

From the year 1980 onward, the country started to take several reforms to liberalize the economy. Among others, including commitment to the World Trade Organisation (WTO), fiscal reforms to abolish export taxes, and integrating the country into the global economy through trade arrangements and treaties, including membership in EAC and SADC, and signing of the AGOA with the US and Economic Partnership Agreements (EPA) with the EU through EAC, respectively (Milanzi, 2012). Among of the motives for integrating the country into the global economy is to increase the market size for goods produced, earn foreign currency, and create employment opportunities (Brenton & Hoppe, 2006).

In line with the above initiatives, the country adopted administrative measures to promote exports. The Act No. 5 of 1978 established an external trade board and Saba Saba Day   as an annual special event for export promotion. The Export Processing Zone (EPZ) Act of 2002 established a special zone to manufacture products mainly for exports, and similarly, the Special Economic Zones (SEZ) Act of 2006 introduced an investment programme to encourage production of products for domestic consumption and exports.

Despite the above measures taken by the government, including the signing of the AGOA and the formulation of the National AGOA strategy implemented from 2016/2017 to 2020/21, the country is still lagging in utilization of the market preference and exports in general. Simon et al, (2021) reported that firms in Tanzania underutilizes the preferential market access, which results in low exports and hence jeopardizes the balance of payments of the country, reduces the level of economic growth, and hinders the creation of employment. Notable, SSA countries eligible for the AGOA, including Tanzania, their low level of exports is due to both supply and demand side considerations (USITC, 2015). The supply side is concerned about being unable to access the market due to high production costs, inefficient trade facilitation, poor soft and hard infrastructure, and a low level of technology in producing goods for export. The demand side is price competitiveness in the market.

According to Condon & Stern (2011), non-reciprocity of the AGOA preference, uncertainty of the time frame, and mixing on the agreement political and commercial criteria have been identified as barriers to regional participation and the opportunity to exploit it. For instance, Simon et al. (2021) report that Tanzanian small and medium enterprises do not exploit well the market opportunities brought by the AGOA because of difficulties in obtaining international permits from the US embassy due to uncertainty in diplomatic relations between the US and Tanzania. As suggested by Muller (2008), the mixing of political and commercial conditions in the AGOA agreement poses uncertainty to firms and investors, which limits the participation of the SSA countries in the AGOA. Another reason for the limited participation of the SSA countries is that the AGOA fails to remove non-tariff barriers to trade, which include a lack of integration into international shipping and freight networks; a lack of complementary investments in critical infrastructure such as power networks, and a lack of trade facilitation and financial assistance (EAC secretariat, 2014; Brenton & Hoppe, 2006).

Reported challenges faced by the EAC partner states in utilization of the AGOA market preference include the following:
i).   Low level of diplomatic relation between some EAC states and the US, which is the key criteria for the SSA countries to qualify eligibility criteria. Due to that, the flow of trade between EAC and the US is distorted.
ii).   insecurity to some of EAC states such as DRC and South Sudan create unfavorable environment to businessmen.
iii). concentration in few eligible products, mainly apparel and garments while the region has the opportunity to produce products from others sector such as minerals, agro-processing, and others.
iv).   high cost of trade to businessmen in EAC including transport cost, cost of compliance to standards and cost of production which reduce competitiveness to the AGOA market.
v).   uncertainty to investors with intention to utilize the AGOA market preference since the preference is a unilateral program which can be modified or terminated at the discretion of the US president also limited lifespan which create unpredictability to invest long term projects; and
vi).   limited participation of private firms, especially medium and small enterprise to respond to the opportunity.

This study assess the impact of the AGOA on the SSA exports to the US. The author motivated by the following factors: First, there are limited studies on the impact of the AGOA on the exports of the SSA countries to the US. Second, as Asante, Bawakyillenuo and Ahiadeke (2011) argue, the realized benefits of the AGOA on export performance are likely to be below expectations[2]. Third, the limited studies that have analysed the impact of the AGOA on SSA countries focus on specific regions or countries, and their findings therefore cannot be generalised to all SSA countries. As a result, the agenda of AGOA preference utilisation and its impact on SSA countries, specifically in stimulating their exports to the US, is not well known at best (CRS, 2015).

The Enactment of AGOA and its Implementation by EAC Countries

On May 18, 2000, the US passed the AGOA as Public Law 106 of the 200th Congress. The Act regarded as an extension of tariff preferences granted by the US to developing countries under the programme of the Generalized System of Preferences (GSP), which provides duty-free treatment to the eligible SSA countries to export their products to the US in non-reciprocity. The objective of this law is to boost trade between the US and SSA countries, thereby integrating the latter into the global economy (Ufuo & Alagidele, 2020). AGOA initially intended to be in effect for eight years, ending in September 2008. President George W. Bush of the United States made an amendment in July 2004 to extend the preference for 13 years, from 2008 to 2015. In keeping with this, in June 2015, President Barack Obama extended the duration of the scheme for an additional 10 years to 2025.

According to office of US trade representative, the primary objectives of the AGOA are to promote increased trade and investment between the US and SSA countries; to promote increase access and opportunities for US investors and businesses in SSA countries; and to promote economic development and reforms in SSA countries.

The country's eligibility, product eligibility, and coverage of the products are the key issues in AGOA utilisation. (Condon & Stern., 2011). Sections 104(a) and (b) of the Act empower the president of the US to designate and decertify a Sub-Saharan African country as eligible. The key requirements of the Section for an SSA country to be granted eligibility are that a country has established or is making continual progress towards establishing the rule of law; political pluralism; a market-based economy; and the right to due process. Further, it has removed or does not pose a risk to US trade and investment, has a system in place to combat corruption and bribery, and protects internationally recognised worker rights. Adhering to the Rules of Origin (RoO) and complying with customs regulations are additional criteria. Furthermore, exports in the garment subsector are contingent upon the fulfilment of an apparel visa. The list and information accessed through a specific website for AGOA information.[3] The eligibility criteria reviewed on an annual basis by the office of the US Trade Representative (USTR) and announced by the US President.

The participation and utilisation of the AGOA scheme among EAC partner states have different features. Some countries' access to the AGOA is limited, and not all countries attain eligibility on the same date. Considering the criteria stipulated under Section 106 of the AGOA, only four EAC partner states—Kenya, Rwanda, Tanzania, and Uganda—have been eligible for the AGOA since the enactment of the Act in 2000. Other states followed, such as the DRC, which attained eligibility in December 2002; Burundi in January 2006; and the Republic of South Sudan in December 2012. Nevertheless, not all EAC partners maintain their eligibility status all the time, except for Kenya, Rwanda, Tanzania, and Uganda.

With regard to the utilisation, the Democratic Republic of the Congo lost its eligibility from January 2011 until January 2021, when the US President declared it reinstated; South Sudan lost in 2015; and Burundi lost on January 1, 2016. Further, AGOA apparel benefits for Rwanda were suspended effective July 31, 2018.

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[2] AGOA was expected to trigger industrialization as domestic firms expanded and diversified in order to add value to local products for export. It was also anticipated that the ensuing industrialization would increase employment by absorbing surplus labor. To date, however, these expectations have not been met.

[3]https://www.federalregister.gov/documents/2022/05/11/2022-10082/annual-review-of-country-eligibility-for-benefits-under-the-african-growth-and-opportunity-act.

Country	Date declared AGOA eligible	Date suspended
Republic of Burundi	January 1, 2006	January 1, 2016.
Democratic Republic of Congo	October 1, 2003	January 1, 2011
Republic of Kenya	October 2, 2000	
Republic of Rwanda	October 2, 2000	30 Jul 2018, only to Apparel
Republic of South Sudan	December 20, 2012	January 1, 2015
United Republic of Tanzania	October 2, 2000	
Republic of Uganda	October 2, 2000	

Table 1: EAC partner states status of AGOA eligibility

The rest of the study is organised as follows: Section 2 provides a literature review, followed by methodology and estimation technique in Section 3. Section 4 consists of results and discussion, and Section 5 provides policy implications and a conclusion, followed by limitations and directions for future research.

Literature Review
Theoretical review
Preferential trade arrangement (PTA) in the WTO context is the term that applied when one country provides trade preference over the other in non-reciprocal[4]. The preference may be in different trade arrangement such as reducing or removing of the tariffs also removing or lowering others trade barriers. The history of PTA in in the year 1964, when the United Nations Conference on Trade and Development (UNCTAD) recommended developed countries to grant non-reciprocal trade preferences to developing countries. The later conference of 1968 emphasised non-discrimination in granting preference (UNCTAD, 2008).

The well-known trade preference scheme is the Generalised System of Preferences (GSP), which mainly used by developed nations to allow products from developing nations (beneficiary countries) to enter developed nations' markets at preferential tariff rates. The programme was first implemented in 1971 and is a deviation the most favoured nation obligation principle granted under Article IX of the Marrakesh Agreement. This provision enables the least-developed and developing countries to receive preferential treatment from trade agreements with developed countries after fulfilling all requirements.

Additionally, in 1979, with the intention of improving LDCs into multilateral trade participation, the General Council introduced the Enabling Clause under the GSP scheme to allow importing nations to extend preferential tariff treatment to the products of LDCs (Van Grasstek, 2013). The enactment of the AGOA comes from this ground, where President W. Bush signed and approved the extension of unilateral preferential trade terms to eligible SSA countries. Considering the genesis of trade preferences, theoretical background based on the expected effects of the preference to developing countries. Theoretically, we expect benefits or costs from trade preferences; however, in this paper, the author reflects the spirit of SSA countries towards trade preferences granted through the AGOA by the US government.

According to Persson (2012), the rationale of developing nations towards the trade preference is to diversify their economies and export products to be able increase earnings from exports. This is emphasized by CRS (2013) which reports that the common goal to all trade preference program to LDCs is to promote export growth and economic development. Therefore, trade preference granted to LDSs by reducing tariffs, removing tariffs or removal of trade restrictions is expected to increase exports and diversification of exports products.

The theoretical support for this point of view originated from the work of Persson (2012) and Grossman & Sykes (2005), using the demand and supply curves in a partial equilibrium setting. These studies illustrate the effect of unilateral trade preference on the recipient country based on the assumptions of perfect

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[4] These include the Generalized System of Preferences schemes, under which developed countries grant preferential tariffs to imports from developing countries. They also include non-reciprocal preferential schemes granted through a waiver by the General Council, meaning the member has been exempted from applying the most favoured nation (MFN) principle (WTO).

competition, trade in a homogeneous product, and the recipient country applying a higher tariff rate than the tariff rate applied by the country granting preferences. This illustrated in Figure 3.
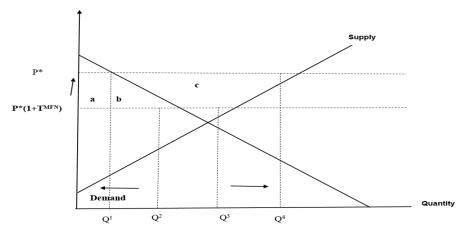

Figure 1: Theoretical effect of AGOA to eligible SSA countries

From **Figure 1**, before the enactment of AGOA, the tariff rate applied to all countries exporting to the US (MFN tariff) was TMFN. If the price of a particular product to the US market is at P*, therefore the particular products from the SSA countries when exporting to the US market will be P* (1+ TMFN) and the quantities exported will be the area Q3 – Q2. With the presence of AGOA preference to the SSA countries comprising removal of tariffs to eligible products will make the exported products to be charged at price P* which means exported good will no longer subject to tariffs as was the case in the pre-AGOA period. At that price P*, the quantities exported to the US will increase to be the area Q4 – Q1.

With the presence of the AGOA preference, the welfare of SSA countries will be affected to both producers and consumers. The producers will be better off in the post-AGOA period than before, since the price received when exporting to the US is higher, which also encourages them to produce more exported goods and to earn more. In **Figure 1**, the producer welfare is areas a, b, and c. Consumers suffer in the post-AGOA period because increases in export prices raise domestic prices, creating scarcity of specific products in the domestic market because producers prefer to export their products overseas rather than sell them in local markets. The consumer surplus from Figure 1 decreases in areas and b.

From **Figure 1**, the eligible SSA countries benefit when exporting to the US through the AGOA export preference by receiving a higher export price than in the local markets. Producers increase production of eligible products to export more, which in turn creates more employment. Further, exports generate foreign currency for the SSA countries. Further, provide incentive for new firms to invest in the country in order to take advantage of available export opportunities. These benefits were among the factors that motivated the SSA countries to sign the AGOA with the US (Ufuo & Alagidele, 2020).

Empirical review

Using a gravity model for 36 AGOA-eligible SSA countries covering the period from 1997 to 2004, Seyoum (2007) finds that the AGOA has no significant impact on the overall exports from SSA countries to the US. However, when a sector analysis conducted, including apparel, energy, and minerals, the AGOA preference found to be significant, but only for the apparel sector. Mueller (2008) also applies a gravity model with special treatment of the Prais-Winston technique to assess the contribution of AGOA to the exports from eligible SSA countries from 2000 to 2004. Mueller (2008) finds no significant impact of the AGOA, including the apparel sector he studies.

Applying a gravity model to estimate the overall impact of AGOA on imports from SSA, Fayissa & Tadesse (2007) find that AGOA has a positive and significant impact on only 14 out of 32 product categories analyzed and a negative impact on three products. They further examine the impact of AGOA on exports of new products (trade initiation) and the impact on exports of existing products (trade intensification). In the case of the trade initiation, they find that the AGOA had a statistically significant effect on 24 products

out of 99 product categories where the apparel sector has a large share. In terms of trade intensification, the AGOA had a small impact on increasing export volume.

Condon & Stern (2011) assess the effectiveness of AGOA in increasing trade from LDCs using the inclusion and exclusion criteria. They find that AGOA has had a positive impact on apparel exports from a small number of sub-Saharan African LDCs. Apart from the apparel sector; there is little or no evidence of the gains brought by AGOA in any other sectors for LDCs.

Zenebe, Wamisho, and Peterson (2014) evaluate the impact of AGOA on agricultural exports from Sub-Saharan African countries to the US by using gravity models from 1990 to 2013. They find the AGOA did not increase the SSA countries' exports to the US. Zenebe (2013) examines the impact of the AGOA on African agricultural exports to the US using a gravity trade model that included 35 eligible SSA countries in the pre-and post-AGOA periods. The author finds that the AGOA does not have a statistically significant impact on SSA agricultural exports.

Brenton & Hoppe (2006) analyse the impact of the AGOA by considering its contribution to the exports and development of SSA countries up to 2005. They report that, from 2001 to 2005, exports from SSA to the US increased to 22 billion USD, with 90 percent of the increased exports being contributed by petroleum exports. They further report that in 2004, about 96 percent of US AGOA imports of apparel products came from seven countries; about 75 percent of that came from four countries, and Kenya was among them. Tanzania, Uganda, and other countries had substantially increased exports of apparel in 2005 but were not among the major contributors.

By applying a pseudo-Poisson maximum likelihood gravity model simulation, Coulibaly (2017) analyses two preferential agreements extended by the US to detect the impact of the AGOA and Everything But Arms (EBA) on the West African countries. The findings of the estimation reveal that not all African countries have benefited from the AGOA and EBA. Further, he also observes that the West African countries could be exporting more to the EU and the US if AGOA and EBA were implemented without the criteria for country eligibility, product coverage, and rules of origin.

Using socioeconomic factors, Osabohien and Adeleye (2021) investigate the AGOA's implementation status and performance in Nigeria. Relevant stakeholders were interviewed as part of the methodology. They conclude that Nigeria has not yet fully benefited from the AGOA due to a lack of compliance with international standards, a shoddy industrial base, ingrained structural barriers for exporters, and limited productive capacity, among others.

Simon et al., (2021) assess the role of local and international factors in the participation of Tanzanian small and medium enterprises in the market opportunity brought by AGOA. Using survey data with 129 respondents, they find that both local and international-related factors constrain Tanzanian SMEs from engaging in the AGOA market. Among those factors are poor business policies in the country, long bureaucracy in accessing business permits, poor infrastructure in the country, and poor provision of business information in the country.

Overall, a brief survey of empirical evidence above indicates that the effect of AGOA on SSA countries is ambiguous. While some studies find that AGOA has no or small effect in SSA countries, others report some significant impact.

Methodology and Estimation Technique

This study employs an econometric trade model commonly applied to assess the volume of bilateral trade and to estimate the bilateral trade potential. The model applied in different studies for the empirical analysis of the bilateral trade, including the assessment of the impact of the AGOA (Choudhri et al., 2017; Nouve, 2005; Zenebe, 2013; and Zenebe, Peterson, and Wamisho, 2014). The model allows testing whether various factors, such as the presence of a regional agreement or preferential trade arrangements, have a statistically significant impact on trade flows (Zenebe, 2013). The econometric analysis conducted by using Stata/IC 15 using a log (ln) linear regression model based on the Ordinary Least Square (OLS) method. The model given below:

$$In\ T_t = \beta_0 + \beta_1 InDY_t + \ \beta_2 InUSY_t + \ \beta_3 InE_t + \beta_4\ AGOA_t + \varepsilon_t\ Eq.\,1$$

Where T_t is the total exports of each individual EAC state to the US, DY_t and USY_t represent the domestic real GDP and the US real GDP, respectively. E_t is real exchange between the domestic currency against the US dollar, t is the time and $AGOA_t$ is a dummy variable which takes a value of 0 during the pre-

AGOA (1990-2000) period and 1 during the post-AGOA (2001-2020) period. This dummy variable approach applied in different studies, including Seyoum (2007), Tadesse et al., (2008), and Frazer & Van Biesebroeck (2007).

To test the individual impact of the AGOA on four EAC partner states exports to the US, Eq.1 estimated separately for each country: Kenya, Rwanda, Tanzania, and Uganda. Further, estimated in a panel model to get the overall effect of the AGOA. All variables transformed into natural logarithms except the AGOA dummy variable to interpret the estimated coefficients as elasticities.

Because of the existence of multicollinearity among independent variables (see Table 3), Eq.1 is further divided into three models, where each model includes one independent variable at a time plus the AGOA dummy variable as follows:

$$In\ T_t = \beta_0 + \beta_1 In E_t + \beta_2\ AGOA_t\ + \varepsilon_i\ Model\ 1$$
$$In\ T_t = \beta_0 + \beta_1 In DY_t +\ \ \beta_2\ AGOA_t\ + \varepsilon_i\ Model\ 2$$
$$In\ T_t = \beta_0\ \ \beta_1 In USY_t + \beta_2\ AGOA_t\ + \varepsilon_i\ Model\ 3$$

Before estimating the individual country models, the author run a panel OLS model with and without fixed country effects to check the overall impact of AGOA based on the assumption that differences in the AGOA stimulation among EAC countries (cross section) could be traced from different intercepts.

Regarding the expected signs of the independent variables, we expected the following: An increase in US real GDP (income) should increase exports to the US as the latter will have greater purchasing power to buy more goods and services. An increase in real GDP in Tanzania and other EAC partner states will indicate more production (income) that would lead to an increase in exports to the US. The real exchange rate depreciation of EAC partner states against the US dollar is expected to increase AGOA exports to the US because the dollar will be stronger against the EAC currencies and hence it would be cheaper for Americans to import from EAC countries.

Summary of descriptive statistics

Reports of the descriptive statistics, indicates that in domestic countries, Kenya is leading in GDP with a maximum GDP of USD 100,700 million, followed by Tanzania with USD 62,410 million, Uganda with USD 37,600 million and Rwanda with USD 10,360 million. The mean GDP is highest in Kenya, with a mean GDP of 36,210, and Rwanda has the lowest, with a mean GDP of USD 4,611 million. The US has a maximum GDP of USD 21,370,000 million and a minimum of USD 5,963,000 million. Kenya leads in exports with USD 667 million, followed by Tanzania with USD 153 million, and Uganda and Rwanda with USD 83 million and USD 68 million, respectively. On the exchange rate, Kenya has the strongest currency against the US dollar, and Uganda has the least strong.

VARIABLES	(1) N	(2) Mean	(3) Sd	(4) Min	(5) Max
Kenya real GDP	31	36,210	30,760	5,752	100,700
Rwanda real GDP	31	4,611	3,178	754	10,360
Tanzania real GDP	31	25,450	19,290	4,258	62,410
Uganda real GDP	31	15,920	12,260	2,857	37,600
US real GDP	31	12,980,000	4,777,000	5,963,000	21,370,000
Kenya exports	31	300	198	59	667
Tanzania exports	31	54	41	11	153
Uganda exports	31	37	22	10	83
Rwanda exports	31	18	17	2	68
Kenya exchange rate	31	74	22	23	107
Rwanda exchange rate	31	500	242	84	943
Tanzania exchange rate	31	1,185	651	195	2,294
Uganda exchange rate	31	2,004	948	429	3,727
AGOA dummy	31	0.68	0.48	0	1.00

Table 2: Summary of descriptive statistics

Note: Countries' GDPs and domestic exports are in millions of US dollars. Exchange rate is in terms of units of domestic currency per US dollar.

Diagnostic tests and Robustness Analysis

To ensure the robustness of the findings, the author first provides several diagnostic tests, including the tests of multicollinearity, heteroscedasticity, and serial correlation. These tests applied to Models 1-3.

Testing for Multicollinearity

According to Wooldridge (2013), multicollinearity may bias the results and cause low t-stats. Therefore, it is important to test before estimation. This study tests multicollinearity by using the Variance Inflation factor (VIF). The VIF above 10 is evidence that there is multicollinearity among variables (Gujarati, 2004). Table 3 reports the collinearity tests. Both US and domestic real GDP, as well as the exchange, are highly collinear in most cases (13 out of 16 cases) with the dependent variable as the VIF values are above 10. To deal with high collinearity, O'Brien (2007) suggests that when the value of VIF is high, the level of collinearity among variables could be reduced by eliminating some of the variables from the model. In this study, the author runs individual regression models with one independent variable at a time along with the AGOA dummy variable against the dependent variable.

KENYA

Variable	VIF	1/VIF
ln_usa_real GDP	19.57	0.051108
ln_kenya_real GDP	10.73	0.093231
ln_kenya_exchange rate	5.42	0.184549
Mean VIF	11.9	

TANZANIA

Variable	VIF	1/VIF
ln_usa_real GDP	47.9	0.020878
ln_tza_exchange rate	26.7	0.037455
ln_tza_real GDP	13.34	0.074969
Mean VIF	29.31	

UGANDA

Variable	VIF	1/VIF
ln_usa_real GDP	33.5	0.029985
ln_uganda_real GDP	31.49	0.031761
ln_uganda_exchange rate	9.6	0.104117
Mean VIF	24.86	

RWANDA

Variable	VIF	1/VIF
ln_usa_real GDP	43.45	0.023014
ln_rwanda_exchange rate	22.42	0.044612
ln_rwanda_real GDP	8.59	0.116451
Mean VIF	24.82	

Table 3: Collinearity among variables per each country's model

Testing for Heteroscedasticity

Heteroscedasticity refers to data for which the variance of the dependent variable is unequal across the range of independent variables. This study employs the Breusch-Pagan test to detect the presence of heteroscedasticity. The determination is made by observing if the p-value of the test is less than the significance level. In this study, if the value of chi-square is less than a significant level at 5 percent, we conclude that there is no presence of heteroscedasticity and accept the presence of heteroscedasticity if it is greater than that level.

Countries	Chi2(1)	Prob > chi2 (p-values)
Kenya	1.71	0.1907
Tanzania	0.13	0.7197
Rwanda	5.12	0.0237
Uganda	2.36	0.1244

Table 4: Summary result for Breusch-Pagan test per each model

From the results in **Table 4**, the Breusch-Pagan test to all Models 1-3 detect the presence of heteroscedasticity only for Rwanda since the p-value is significant at 5 percent level and better.

Serial Correlation Test

A serial correlation test is a determination of the relationship between the same variable measured over different periods of time. The common problem with serial correlation is endogeneity. According to Roberts and Whited (2013), endogeneity is defined as "a correlation between the explanatory variables and the error term in a regression." The technique applied in this study is the application of the lags to the independent variables. The aim is to measure the existing value of variables and the lagged value of the same variables in the previous periods. The Breusch-Godfrey LM test for autocorrelation was used in this study to test for autocorrelation in the errors in a regression model. The hypothesis of the author is that there is no serial correlation.

Countries	lags (p)	Chi2	Df	Prob > Chi2
Kenya	1	15.313	1	0.001
Tanzania	1	6.428	1	0.112
Rwanda	1	1.667	1	0.1966
Uganda	1	3.372	1	0.1663

Table 5: Summary result for Breusch-Godfrey LM test per each model

Note: Values inside are P-values

Breusch-Godfrey LM test in all models applied to individual countries strongly reject the null expect for Kenya. This shows presence of no serial correlation in models for Tanzania, Rwanda, and Uganda, but serial correlation for Kenya.

Results and Discussion

This section presents a discussion of the empirical findings. To facilitate interpretation and make it easier for the readers, stars for statistical interpretation are used to present the results of the analysis. To ensure the robustness of the results of the analysis, the autor first report the results of the panel model with and without country-fixed effects, followed by the individual country regression models with corrections for multicollinearity, heteroscedasticity and serial correlation, and potential endogeneity bias.

Results of panel model

The estimation results from the panel model with and without fixed effects reveal that the variable of interest (AGOA) is statistically insignificant. This indicates that, overall, the AGOA has not stimulated the exports of the EAC countries to the US. The findings are supported by Condon & Stern's (2011) systematic review of the GOA's effectiveness in increasing trade with the LDCs. Based on a synthesis review of four empirical studies on the impact of the AGOA, Condon & Stern (2011) conclude that the AGOA can only account for a small portion of the increased exports from SSA countries to the US. This is inline with other empirical studies, Mueller (2008) and Seyoum (2007), which employ gravity models in time series data and find that the AGOA has no significant impact on the overall exports from SSA countries to the US. For the other variables used in the models, domestic GDP improves exports to the US in both models, while the US GDP and real exchange rate are significant only when no fixed effects are applied. All the variables have the expected signs.

VARIABLES	Fixed effects	No fixed effects
ln_gdp_domestic	0.701***	0.768***
	(0.156)	(0.13)
ln_exchangerate	0.186	0.326***
	(0.191)	(0.12)
ln_gdp_usa	0.703	0.734*
	(0.574)	(0.438)
AGOA	–0.132	–0.115
	(0.152)	(0.152)
Constant	–18.65	–20.27**
	(13.28)	(10.23)
Observations	124	124
Countries	4	4
R-squared	0.78	

Table 6: Panel model with and without country-fixed effects

*** = indicates that the variable is significant at a 1 percent level, ** = significant at a 5 percent level, * = significant at a 10 percent level and no star indicates that the variable is insignificant. Standard errors reported in parentheses under each variable.

Results of individual regression models

Each model estimated separately for each country using the following three versions that correct for multicollinearity, potential endogeneity bias, and serial correlation/heteroscedasticity, respectively.

BM-Base model results. The dependent variable is regressed against the AGOA dummy and an independent variable at time t to correct for multicollinearity.

EBC - Endogeneity bias correction model. The dependent variable is regressed against the AGOA dummy and an independent variable with a one-period lag.

NW - The base model estimated with the Newey-West standard errors to correct for potential serial correlation and heteroscedasticity. Since the R-square values depend on the coefficients but not on the standard errors, this procedure does not output these values.

Standard errors in parentheses.
*, **, *** denote significance levels at 10, 5 and 1 percent level, respectively.

Regression results of Tanzania

In Model 1, present the importance of the real exchange rate along with the AGOA dummy. The coefficient of the exchange rate in all three versions (BM, ECB, and NW) of Model 1 is positive and significant at 1 percent level, ranging from 1.205 to 1.310, suggesting that a 1 percent depreciation of the domestic currency increases exports by about 1.2 to 1.3 percent. The variable of interest within AGOA in all three versions is negative; however, it is significant only when the EBC model employed.

In Model 2, the coefficients of GDP ranging from 1.689 to 1.725 are all positive and significant at 1 percent level, suggesting that a 1 percent increase in the domestic GDP increases exports by about 1.2 to 1.3 percent. All the coefficients of AGOA are negative and significant, showing that AGOA reduces exports to the US.

In Model 3, the coefficients of US GDP are all positive at the 1 percent level, ranging from 4.599 to 4.878, suggesting that a 1 percent increase in US GDP increases exports by about 4.6 to 4.8 percent. The coefficients for the AGOA are all negative and significant at the 1 percent level.

Overall, the results for Tanzania show that AGOA did not stimulate the exports of Tanzania and even reduced them. The depreciation of the domestic currency and higher domestic and US GDP increased the total exports of Tanzania to the US.

Dependent variable: Domestic total exports value to the US (natural logarithm)

	Model 1: Exchange rate			Model 2: Domestic GDP			Model 3: US GDP		
VARIABLE	BM	EBC	NW	BM	EBC	NW	BM	EBC	NW
Independent variable	1.205***	1.310***	1.205***	1.725***	1.689***	1.725***	4.599***	4.878***	4.87***
	(0.166)	(0.148)	(0.232)	(0.15)	(0.158)	(0.138)	(0.42)	(0.396)	(0.383)
AGOA	-0.304	-0.453**	-0.304	-0.354**	-0.277*	-0.354**	-0.710***	-0.856***	-0.710***
	(0.232)	(0.208)	(0.221)	(0.155)	(0.16)	(0.14)	(0.191)	(0.18)	(0.169)
Constant	9.405***	8.855***	9.405***	-23.67***	-22.76***	-23.67***	-121.4***	-129.7***	-121.4***
	(1.025)	(0.908)	(1.51)	(3.509)	(3.693)	(3.227)	(12.63)	(11.9)	(12.37)
Number of observations	31	30	31	31	30	31	31	30	31
Adjusted R square	0.8057	0.8486		0.9027	0.8882		0.894	0.9111	
Fixed effect	YES	YE	YES	YES	YES	YES	YES	YES	YES

Table 4: Regression of Tanzania

Regression results of Kenya

In Model 1, present the importance of the real exchange rate along with the AGOA dummy. The coefficients of the exchange rate in all three versions of Model 1 are positive and significant at the 1 percent level, ranging from 0.7691 to 0.826, suggesting that a 1 percent depreciation of the domestic currency increases exports by about 0.8 percent. The variable of interest, AGOA, is positive and significant at 1 percent in all three versions of the model, ranging from 0.921 to 0.957, suggesting that AGOA increased exports to the US.

In Model 2, present the coefficients of domestic GDP ranging from 1.403 to 1.446 are all positive and significant at the 1 percent level, suggesting that a 1 percent increase in the domestic GDP increases exports by about 1.4 to 1.5 percent. All of the coefficients of AGOA are positive and significant at the 1 percent level, showing that AGOA increases exports to the US by 0.6 percent when employing the BM and NW models and 0.7 percent when employing the EBC model.

In Model 3, present the coefficients of US GDP are all positive at the 1 percent level, ranging from 4.599 to 4.878, suggesting that a 1 percent increase in US GDP increases Kenya's exports by about 4.6 to 4.8 percent. The coefficients for AGOA are all positive, ranging from 0.283 to 0.311, but they are only significant when the BM and EBC models are used and insignificant when the NW model is used.

Overall, the results for Kenya show that AGOA stimulates the exports of Kenya. In addition, the depreciation of the exchange rate and an increase in domestic and US GDPs have stimulated Kenya's total exports to the US.

Dependent variable: Domestic total exports value to the US (natural logarithm)

	Model 1: Exchange rate			Model 2: Domestic GDP			Model 3: US GDP		
VARIABLES	BM	EBC	NW	BM	EBC	NW	BM	EBC	NW
Independent variable	0.826***	0.769***	0.826***	1.446***	1.403***	1.446***	2.806***	2.744***	2.806***
	(0.218)	(0.244)	(0.153)	(0.155)	(0.156)	(0.202)	(0.33)	(0.365)	(0.449)
AGOA	0.957***	0.921***	0.957***	0.636***	0.657***	0.636***	0.311**	0.283*	0.311
	(0.166)	(0.187)	(0.123)	(0.109)	(0.107)	(0.149)	(0.149)	(0.166)	(0.229)
Constant	15.13***	15.43***	15.13***	-16.68***	-15.58***	-16.68***	-66.00***	-64.02***	-66.00***
	(0.852)	(0.941)	(0.603)	(3.763)	(3.776)	(4.89)	(9.911)	(10.97)	(13.48)
Number of observations	31	30	31	31	30	31	31	30	31
Adjusted R square	0.8466	0.8209		0.9433	0.9387		0.9353	0.9206	
Fixed effect	YES	YE	YES	YES	YES	YES	YES	YES	YES

Table 5: Regression of Kenya

Regression Result of Rwanda

In Model 1, present the importance of the exchange rate along with the AGOA dummy. The coefficient of the exchange rate in all three versions of Model 1 is positive and significant at the 1 percent level, ranging from 0.375 to 1.068, suggesting that a 1 percent depreciation of the domestic currency increases exports by about 0.3 to 1.1 percent. The variable of interest, AGOA, is insignificant in all three versions of the model, suggesting AGOA did not increase exports of Rwanda to the US.

In Model 2, present the coefficients of domestic GDP ranging from 1.794 to 2.056 are all positive and significant at the 1 percent level, suggesting that a 1 percent increase in the domestic GDP increases exports by about 1.7 to 2.1 percent. All the coefficients of AGOA are negative. However, it is significant only when employing the NW model, which indicates that AGOA reduces exports from Rwanda to the US.

Table 5 shows that the coefficients of US GDP in Model 3 are all positive and significant at the 5 percent level or higher, ranging from 4.599 to 4.87. This suggests that a 1 percent increase in US GDP increases Rwanda's exports by a range of 4.6 to 4.8 percent. All coefficients for AGOA are insignificant.

Overall, the regression for Rwanda has some mixed results. However, in most cases, it observed that AGOA does not stimulate the exports of Rwanda. In two cases, AGOA reduces exports. However, the depreciation of the exchange rate and an increase in domestic and US GDPs have stimulated the total exports of Rwanda to the US.

Dependent variable: Domestic total exports value to the US (natural logarithm)

VARIABLES	Model 1: Exchange rate			Model 2: Domestic GDP			Model 3: US GDP		
	BM	EBC	NW	BM	EBC	NW	BM	EBC	NW
Independent variable	0.375	1.068**	0.375	2.056***	1.794***	2.056***	3.952***	5.343***	3.952**
	(0.478)	(0.433)	(0.664)	(0.243)	(0.237)	(0.236)	(1.324)	(1.057)	(1.574)
AGOA	0.856	0.24	0.856	-0.741**	-0.208	-0.741**	-0.277	-0.653	-0.277
	(0.636)	(0.578)	(0.652)	(0.3)	(0.289)	(0.35)	(0.6)	(0.48)	(0.616)
Constant	13.40***	9.592***	13.40***	-28.90***	-23.40***	-28.90***	-103.4**	-145.3***	-103.4**
	(2.561)	(2.29)	(3.724)	(5.245)	(5.102)	(5.046)	(39.81)	(31.74)	(47.46)
Number of observations	31	30	31	31	30	31	31	30	31
Adjusted R square	0.2999	0.4937		0.7984	0.8013		0.9353	0.6812	
Fixed effect	YES	YE	YES	YES	YES	YES	YES	YES	YES

Table 5: Regression of Rwanda

Regression result of Uganda

In Model 1, present the importance of the exchange rate along with the AGOA dummy. The coefficient of the exchange rate in all three versions of Model 1 is positive and significant at the 1 percent level, ranging from 0.899 to 1.025, suggesting that a 1 percent depreciation of the domestic currency increases exports by about 0.8 to 1.2 percent. The variables of interest in the AGOA are insignificant in all three versions of the model.

In Model 2, present the coefficients of domestic GDP ranging from 1.185 to 1.197 are all positive and significant at the 1 percent level, suggesting that a 1 percent increase in the domestic GDP increases exports by about 1.2 percent. All of AGOA's coefficients are negative around 0.39 and significant marginally at the 10 percent level, indicating that the AGOA reduces exports to the US.

In Model 3, present the coefficients of US GDP are all positive at the 1 percent level, ranging from 3.206 to 3.420, suggesting that a 1 percent increase in US GDP increases exports in the range of 3.2 to 3.4 percent. The coefficients for the AGOA are all negative at the 5 percent or 10 percent levels.

Overall, the results for Uganda show that AGOA does not stimulate the exports of Uganda and even reduces them. However, the depreciation of the exchange rate and an increase in domestic and US GDPs have stimulated Uganda's total exports to the US.

Dependent variable: Domestic total exports value to the US (natural logarithm)

	Model 1: Exchange rate			Model 2: Domestic GDP			Model 3: US GDP		
VARIABLES	BM	EBC	NW	BM	EBC	NW	BM	EBC	NW
Independent variable	0.899***	1.025***	0.899***	1.185***	1.197***	1.185***	3.206***	3.420***	3.206***
	(0.232)	(0.239)	(0.259)	(0.178)	(0.174)	(0.137)	(0.567)	(0.58)	(0.516)
AGOA	0.0253	-0.103	0.0253	-0.399*	-0.391*	-0.399*	-0.472*	-0.579**	-0.472*
	(0.248)	(0.254)	(0.269)	(0.213)	(0.207)	(0.201)	(0.257)	(0.264)	(0.262)
Constant	10.49***	9.682***	10.49***	-10.44**	-10.66**	-10.44***	-79.63***	-85.98***	-79.63***
	(1.616)	(1.649)	(1.834)	(4.075)	(3.991)	(3.152)	(17.05)	(17.44)	(15.52)
Number of observation	31	30	31	31	30	31	31		31
Adjusted R square	0.5736	0.5956		0.7471	0.7523		0.6943	0.7023	
Fixed effect	YES	YE	YES	YES	YES	YES	YES	YES	YES

Table 6: Regression of Uganda

Conclusion and Policy Implication

This chapter presents the policy implications of the findings of the study conclusion, and the recommendations to SSA countries regarding the utilization of AGOA preference to increase exports.

Conclusion

This study assessed the effectiveness of the African Growth and Opportunity Act (AGOA) on the export performance of SSA countries to the US. Tanzania exports performance in relation to that of other partner states in the EAC examined to observe if AGOA has stimulated Tanzanian exports more than that of its partners. The individual regression results of the three models with different treatments for each model show that AGOA preference did not stimulate the total exports of Tanzania to the US. The individual regression of its partner (Kenya, Uganda, and Rwanda) and the coefficients of AGOA to Kenya's total exports are all positive and significant in all cases, except in one case, which provides strong evidence that the AGOA preference has made a strong contribution to the total exports of Kenya to the US. Conversely, in the estimation results for Rwanda and Uganda, all the AGOA dummy variable coefficients are either insignificant or negative, depending upon the treatment model used. This indicates AGOA has not stimulated the total exports of both Rwanda and Uganda.

Further, using a panel model estimation with the application of both fixed and non-fixed effects, the results show the overall impact of AGOA preference to stimulate the exports of EAC partner states to the US is insignificant. This finding cements the importance of examining the impact of the AGOA on the SSA countries, both in terms of individual countries and country groups, as reported in this study.

Policy Implications

Although Tanzania is accessing the US market through AGOA preference, the findings of the study indicate that the preference has not stimulated Tanzania's exports. Among the challenges identified in this study are a low level of production of AGOA-qualified products; a low level of Tanzanian firm participation; a low level of trade facilitation; and a mismatch between the products that the country has a comparative advantage in producing and those qualified under the AGOA. Policymakers, through a national AGOA strategy, could design appropriate measures to deal with challenges. In addition to that, the Tanzania Revenue Authority (TRA), identified as one of the 14 government agencies facilitating exports with the roles of tax registration, tax collection, and customs clearance, therefore has the potential to facilitate Tanzanian exporters in utilising the AGOA window. Likely, in other countries with good performance in AGOA exports, such as South Africa, the Revenue Authority website contains AGOA-related information.

Further, the individual country regression results of all EAC partner states show that the domestic currency depreciation and an increase in domestic GDP improve exports. Hence, policymakers should consider an appropriate exchange rate policy and/or economic growth strategies to stimulate exports. These policies could be used along with trade agreements such as the AGOA. Furthermore, the findings show that the US GDP has the most significant effect on the exports of the four SSA countries to the US. This indicates that business cycles in the US may create significant uncertainty for their exports to the US, hence causing big volatility in export revenues. Therefore, policymakers need to be aware of this

uncertainty and use a mix of a proper exchange rate policy and relevant economic growth programmes to prepare for it.

Nevertheless, to ensure effective implementation of AGOA and to archive the intended objectives of the Act, SSA countries should call for negotiations with the US government to make reforms to the Act to be accompanied only by trade-related eligibility criteria rather than non-trade criteria that highly affect SSA countries in the utilisation of the preference as observed in this study. This should be addressed in line with the integration of international shipping and freight networks and the opening up of the US-SSA trade facilitation window..

Limitations and direction for future research

The results of this study ought to be viewed in light of some restraints. The fundamental limitation of this study that future research might solve is multicollinearity among variables. This necessitates that the author run individual regression models of the variables at a time.

Regarding the future areas for research, studies can investigate why SSA countries within a customs union or common market benefit differently from the AGOA and what areas need to be improved for better utilisation of AGOA preferences. In addition, the impact of US business cycles on the volume of exports from SSA countries can be an important future research agenda.

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