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Potential impacts of free trade areas and common currency on sustainable agricultural export in Africa

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This study probes the potential impacts of free trade areas and common currency in fostering agricultural export based on data from 45 countries in Africa from 1996 to 2018. The main concern is to determine whether exogenous events like becoming a member of Arab Mighreb (AMU), Community of Sahel-Saharan States (CS-SS), Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), Economic Community of Central African States, Intergovernmental Authority on Development (IGAD), Economic Community of West African States (ECOWAS), Southern African Development Community (SADC) or becoming a member of African Continental Free Trade Area (AFCFTA) can potentially accentuate agricultural export. From the main finding, there is evidence that membership becoming membership to AMU, CS-SS, AMU, CEN-SAD, COMESA, EAC, ECCAS, ECOWAS, IGAD or part of SADC has a positive marginal impact on agricultural export, its influence is not immediate. Also, the positive marginal impact on agricultural export for becoming a member of AFCFTA continues to decline after 1 or 2 years than the current year. Common currency and economic growth have a positive marginal impact on agricultural export for the period covered by the study.

1 | INTRODUCTION

The concern to lean on agricultural export to accentuate sustainable economic growth and development has been of great interest to economists and policymakers. In an economic growth, literature emphasis has been laid that export is strongly enhanced when countries have access to foreign markets and stability in macroeconomic factors. In support of this assertion, Tovonjatovo and Dong (2015), Chen, Sousa, and He (2016) note that one of the greatest strategies of economies that have witnessed rapid improvement in export is taking advantage of foreign markets. However, improving market access is tenable with the removal of trade restrictions which can be achieved through free trade agreements. Arguing further, Corbo, Kruger, and Ossa (1985), WTO (2011) asserts that the desire by most countries to attain sustainable growth can also expose them to intense integration as a result of regional integration and at the same

time increase foreign exchange volatility. It is in this regard that several efforts have attempted to examine the link between trade integration, exchange rate and exports. Despite the efforts so far, there is a lack of study quantifying free trade areas and sustainable agricultural export in Africa.

Countries in Africa desire to achieve sustainable growth and improve economic wellbeing to a greater percentage of citizens. It is perceived that agricultural export is imperative in achieving this (Edeme, Ifelunini, & Nkalu, 2016; OECD/FAO, 2016). Butkus, Karpavičius, and Matuzevičiūtė (2018) observe that agricultural export engenders global economic integration and diversification and open up small and backward economies. In Africa, despite the huge potential inherent in agriculture, the sector has not contributed meaningfully to the economic development, endangered by poor regional integration (Beyene, 2014; Shobande, Ezenekwe, & Uzonwanne, 2018). Earlier, Ngaruko (2003) came up with the conclusion that agricultural export commodities are

less diversified in comparison with other countries such as Asia. It was argued that for Africa countries to significantly improve agricultural export performance there is need to liberalize and deregulate the economy and remove trade barriers.

Towards reducing barriers to trade in Africa, many trade regions have been established and excising one strengthened. The establishment of regional trade agreements (henceforth: RTAs) emerged as a shift in the development paradigm that carries every country along. World Bank (2004) states that over the years, RTAs has assisted in improving global trade by dismantling trade barriers and provided harmonization in multilateral negotiations. In the same manner, free trade agreement tends to reduce poverty and enhances the pool of agricultural value chain and export (Elbushra, Karim, & Suleiman, 2011; Lin & Reed, 2010; Tumwebaze & Ijjo, 2015; UNCTAD, 2016).

The positive relationship that exists between free trade areas and export is an accepted treatise in economic literature (among others are Greenaway, Wyn, & Wright, 1999; Brian, Iyare, & Lorde, 2007; Ahmed & Uddin, 2009; Hoque & Yusop, 2012; Kassim, 2005; Zakaria, 2014). This has proved essential for some countries that have transited from lower-to middle-income status. However, this scenario might not be the same in developing countries of Africa, where the effect of free trade areas (regimes) appears to be unclear, with some researchers contending that trade regimes would have a devastating effect on the economy in the long run. Shobande (2018) contend that free trade zones and nonexistence of common currency dampens agricultural sector contribution to growth.

Previous studies that examine trade integration, common currency and export performance are based on supply-side models which have not been capable to unravel the interaction among trade integration, common currency and agricultural export. In this regard, there is a need for research that examines this relationship using the different empirical method. Since it is envisaged that adoption of a common currency might help reduce the negative influence of foreign exchange instability on regional trade in Africa, this study aims to examine the potential impact of free trade areas and common currency on agricultural export in Africa adopting demand–demand model, which previous studies ignored. The specific concern is with the effects of free trade zones and common currency on agricultural export. The study is of policy relevance in Africa not only because agriculture continues to be a dominant production sector, but also to help attain sustainable growth through agricultural export and overcome the chronic balance of payment problem. We find that being a member of a free trade area, has a positive marginal impact on agricultural export. But in the case of ANU, CS-SS, COMESA, EAC, ECCAS, ECOWAS, IGAD and SADC, being a member has no immediate impact on agricultural export. Joining AFCFTA after a year or two has a less marginal impact on agricultural export compared to the current period. Finding also suggests that common currency has negative marginal impact while economic stability has a positive marginal impact on agricultural export.

Going beyond this section which is the introduction, in the next section we give a spate of regional integration and synopsis of free trade areas existing in Africa. Section 2 is concerned with a review of the literature on export determinants and trade integration-free trade areas-agricultural export performance nexus. The methodological framework and model specification is embedded in Section 3 contains empirical result and discussions. The study is rounded off in Section 5 with concluding remarks.

1.1 | The spate of regional integration and synopsis of free trade areas in Africa

The inability of African countries to industrialize efficiently using import-substitution have accentuated the establishment of regional integration as a means to fast track structural transformation. One of the reasons attributable to this is that several countries felt satisfied and therefore does not need to work together with other countries. But after several years, many of the countries have realized that one of the ways to overcome the failures and countries working in isolation is to come together through regional integration and free trade areas. Perhaps Kennes (2002) captures it more succulently when he asserts that since developed countries have been involved in several regional integrations as a way of fostering growth, countries have responded by creating several RTAs and tend to strengthen existing ones. The FTAs established in Africa takes different form aimed at harmonizing trade policies that favour barriers to trade. Apart from countries in the same region, there is an increasing trend for countries in different geographical regions coming together to form free trade areas. In Africa, the following free trade areas exist. Arab Mighreb Union (AMU), Community of Sahel-Saharan States (CS-SS), Common Market for Eastern and Southern Africa (COMESSA), East African Community (EAC), Economic Community of Central African States (ECCAS), Intergovernmental Authority of Development (IGAD), Economic Community of West African States (ECOWAS), Southern African Development Community (SADC) and more recently, African Continental Free Trade Area (AFCFTA).

Arab Mighreb Union (AMU) which was established in 1989 is predominantly made up of Arab and Muslim countries in Africa. Since the 1990s, these countries have reached several trade agreements on trade and tariff, agricultural export promotion and double taxation. The Community of Sahel-Saharan States (CS-SS) was established in 1989 with the desire to promote sustainable growth among member countries through the free movement of goods. There exist also the Common Market for Eastern and Southern Africa (COMESSA), which is the largest regional economic integration in Africa. According to COMESA (20034), COMESSA was established to replace a trade zone that was earlier formed in 1981. To enhance sustainable economic development essentially through trade, countries in East Africa established the East African Community (EAC). The essence was to project a common front that would benefit all countries through common markets for good and capital, with the desire to creating a common currency.

There is also the existence of the Economic Community of Central African States (ECCAS). Since the body came into existence in 1983, it has successfully reduced series of tariffs restricting export

among member countries. Another trade block in Africa is the Inter-governmental Authority on Development (IGAD). It came existence in 1996 and comprises of countries from the Horn of Africa, Nile Valley and the African Great Lakes. Member countries include Djibouti, Ethiopia, Somalia, Sudan, Ugandan and Kenya. In replication, countries of the West African region formed the Economic Community of West Africa States (ECOWAS). The major concern was to facilitate regional economic growth through free trade zone. Olayiwola, Osabuohen, Okodua, and Ola-David (2015) notes that over the years, the regional body has facilitated trade in the region through a reduction in tariff and nontariff barriers. Another free trade area is the Southern African Development Community (SADC) which was established in 2008. In the desire to form a single free trade zone, SADC agglomerate with COMESA and EAC to form the African Free Trade Zone. More recently, the African Continental Free Trade Area (AFCFTA) was created by 54 countries in Africa. It is one of the largest free trade areas, outside the World Trade Organization. The intention is to help open up the economic potentials in the continent through intra-regional trade.

2 | LITERATURE REVIEW

Traditionally, studies that try to explain the drivers of export find its base on the theory of comparative advantage developed by Ricardo (1955) and later expanded by Vanek & Bertrend (1971), Samuelson (1975) and Heckscher & Ohlin (1991). As embedded in the theory, international trade take place because countries differ in technology and other resources that aid production. For mutual benefit, countries must, therefore, specialize in producing goods and services with least opportunity cost and import those with high opportunity cost (Elbushra et al., 2011). A major shortcoming of this theory is that it fails to put into consideration that export of commodities, especially at the regional areas, is usually hindered by trade barriers. To overcome this problem and therefore have access to regional trade, Krugman (1991) developed a theoretical framework in line with increasing returns to scale and geographical location of a particular country. According to the theory, countries can endogenously become industrialized through export with the aid of economic integration. In essence, trade integration is possible when countries improve trade conditions and removing barriers restricting them. However, Urata (2002) and (Winters, 2004) contend that access market access, though imperative, but not a sufficient condition that will inspire agricultural export.

Several empirical studies in both developed and developing countries demonstrate that several factors can be linked to export. The factors can be decomposed into internal and external. The internal factors are those specifically related to firm performance like size, interaction with foreign companies and competences. On the other side of the coin, external factors that determine export performance are nature of the foreign market, level of development of trade partner country, government regulations, membership in a trade agreement, exchange rate and peculiar features of the domestic market.

The external factors can further be classified into foreign and domestic. In most cases, the external features can be influenced by industry and market-specific variables. In support of this assertion, Riedel, Hall, and Grawe (1984), Hoekman & Djankov, (1998) and Sharma (2000) assert that even though export behaviour is positively related to domestic market conditions, relative prices tended to be more influential in some sectors, especially those sectors with strong comparative advantage. In an attempt to ascertain the internal and external factors that determine export in various developing countries. Majeed and Ahmad (2006) finds that industrialization drive export growth. It was further stressed that economic integration, stable exchange rate policy and sustained growth patterns highly promotes export growth. The findings by Hirch, Kalish, and Katzeneison (1988), Hoekman and Djankov (1997), Fugazza (2004), Maurel (2009); Cassim (2001), Moghaddam et al. (2010), Carneiro, da Rocha, and da Silva (2011), Yee, Waimun, Zhengy, Ying, and Xin (2016), Uysal and Mohamoud (2018) further indicates that export is also determined by legal, economic and cultural differences, changes in per capita income, the growth path of the economy and costs of the transaction. It is also stated that export is influenced by supply-side and demand-side variables. Notable supply-side variables include factors that aid productive capacities such as climate, resources, exchange rate and domestic market. Factors such as market size, population, trade restriction, exchange rate and production costs that largely influence foreign demand are categorized into demand-side variables.

Several studies have investigated the effects of economic integration on agriculture performance with varied results. Some studies have found positive effects while others found negative effects. Still, some studies confirm an insignificant relationship between economic integration and agricultural sector performance. Another variant of studies such as Elbushra et al. (2011) assesses the influence of free trade area in promoting intra-regional trade and affirm that free trade zones promote agricultural exports. Specifically, the study concludes that Sudan's membership of COMESA can potentially aid agricultural exports to other member countries. While other studies were concern with the nexus between trade integration and export performance, Francois and Pindyuk (2013) went further to identify welfare and trade benefit generated from free trade agreements. These include increased national income, higher wages and employment and increased capital stocks. On the contrary, in a study on the impact of free trade agreements on economic development between developed and developing countries, Stevens, Irfan, Massa, and Kennan (2015) did not find enough evidence that free trade agreements can accentuate welfare.

For the South African countries, Nin-Pratt et al. (2009) estimate the potential impacts of the free trade agreement on the agricultural sector. Employing partial equilibrium analysis, it was found that free trade agreements can potentially improve general welfare but to a small number of countries. Chances are that countries that have a comparative advantage in agriculture will benefit more from such arrangements. In a further study, Nin-Pratt and Diao (2014) investigate the effect of the free trade agreement on agriculture in the Southern African Community in Agriculture and found negative welfare effect. It was argued that the implementation of regional policies

beyond free trade agreements tends to propel agricultural productivity and export. Bhagwati (1993), Jenkins (1997), Greenaway et al. (1999), Panagariya (1999), Baldwin (2006) found that economic integration hurts export performance. Olayiwola et al. (2015) and Olayiwola et al. (2015) examine how regional integration and trade blocks stimulate export promotion. Evidence provided indicates that export stimulates economic growth.

Another variant of studies applied the gravity model to analyze the relationship between economic integration and export performance. Notably among these is Shobande (2019) that investigates the influence of economic integration of export performance of selected countries in the West African region. The study was anchored on the supply-side model and adopted the gravity model. The finding indicates that economic integration is a strong driver of export performance while effective nominal exchange rate dampens agricultural export performance. This is in tandem with the finding of an earlier study involving ten (10) developed countries, Cho, Ian, and McCorriston (2002) that exchange rate negatively influences agricultural trade. For European countries, Kafle and Kennedy (2012) analyze the effect of the exchange rate and the adoption of the Euro as a common currency on agricultural exports. The study reveals that the exchange rate has a positive effect on agricultural export. Free trade agreements and Euro was found to be positively related to agricultural export, with free trade agreements having a greater effect. Other studies that report a negative relationship between exchange rate and agricultural export are Rahman and Dutta (2012) in the case of Bangladesh, Narayan and Nguyen (2016) in the case of Vietnam.

Since 1992, in the context of the emergence of innovations in nonoil export trade in Africa, especially as a means to fast track agricultural export, there is an increase in the establishment of the common currency at the continental level. An empirical analysis of the effects of a common currency on agricultural export has produced contradicting results. According to Andrew, Lockwood, and Quah (2000), Rodgers (2009), Bergin and Ching-Yi (2012), Miron, Michalus, and Vamvu (2013), the single currency tends to improve trade volumes. Rose & van Wincoop (2001) also find that common currency has a positive and significant effect on trade. To Fosu (1992) however, common currency negatively influences agricultural export. This contradicts the findings of other studies.

Frankel (2009) contends that the adoption of a single currency has a positive effect on intra-trade both in the short-run and long-run. Butkus et al. (2018) had a contrary view when he opines that the positive effect of free trade integration of export is only noticeable in the short-run. Meanwhile, the common currency was found to be negatively related to exports. Murphy & Siedschlag (2011) finds that monetary integration has a positive effect on export. For the Euro area countries, Hossain (2018) providence evidence that common currency has a positive impact on exports. The outcome of the study by Akinniran and Olatunji (2018) has it that common currency had a significant negative effect on agricultural export.

From the review above, it is evident that apart from the fact that findings are mixed, studies in this area so far mainly focus on supply-side models and the effect of bilateral trade agreements. The present study adds to the array of existing studies by linking agricultural export, multilateral trade agreements and common currency. Our focus in this paper is to investigate the potential effect of free trade areas and common currency on agricultural export, using data from African countries. It is anchored on the demand-side model to offer policy suggestion on the desire to improve agricultural export in Africa, considering existing free trade areas in the continent.

3 | METHODOLOGY

3.1 | Analytical framework and specification of model

In line with the objective of this study which is to ascertain the potential impacts of free trade areas and common currency on agricultural export, the study is guided by the following hypothesis: that free trade areas and the common currency have no significant impact on agricultural export. Being weary of the above, we formulate an analytical framework guided by the fact that our study is based on cross-sectional data. Empirical literature reveals that both supply-side and demand-side variables have a role to play in trade liberation and integration. In the case of African countries, there exist challenges of the limited export market, even with the establishment of several trade agreements. Several efforts in analyzing the impact of trade agreements on export at the cross-country level adopt the Gravity model as an instrument of analysis. But the gravity model can only explain bilateral trade flows. Going beyond previous studies, we develop a demand-side model. According to Upender (2008) and Cochrane and Poot (2014), the demand-side model can capture the effect of multilateral trade flows.

The methodology of analysis is developed because data that emanates from each country from the natural experiment is influenced by exogenous variables, such as international trade policy, foreign exchange regime and trade restrictions. In the actual experiment, treatment and control groups are selected independently. But in the case of natural experiments, the treatment and control groups emanate from a change in policy (Woodridge, 2010). To account for the systematic difference in the two groups, it is required that we generate data for at least 2 years, one before the policy intervention and the other after the policy intervention (pre-and-post-program data) as well as other control variables. This estimator accounts for economy-wide effects but is still sensitive to the choice of the baseline period (Woodridge, 2010).

In its simple form, the equation for analyzing the impact of policy change is expressed in linear form as stated below.

$$q = \eta_0 + \eta_1 t + \eta_2 D + \eta_3(t * D) + U \qquad (1)$$

where t denotes dummy variable for the policy change period and $D = 1$ for those in the treatment group and 0 otherwise, U is an error term, with its usual properties. The parameter of interest is η_3, which measures the impact of policy change.

In considering membership-effect model involving several countries, we assume that some countries became a member of a trade

zone after some years. These countries made up the treatment group. Then those countries that did not become a member of the free trade area become the control group. In analyzing such relationship with unobserved effect, the relationship can be stated as:

$$Agricexport_{it} = \lambda + \varnothing membership_{it} + \omega_i + \sigma_1 + U_{it} \qquad (2)$$

$Agricexport_{it}$ denote log of agricultural export performance, $membership_{it}$ is dummy variable (whether country i belong to a free trade zone or otherwise), ω_i is an unobserved country-specific effect, $error_{it}$ is the error term. If a country became membership at a later year, the ordinary least squares (OLS) estimator of $\varnothing$ can be represented in a simple difference-in-difference form as

$$\varnothing = \Delta Agricexport_{treatment} - \Delta Agricexport_{control} \qquad (3)$$

Since the export environment of the countries of study may differ over the period, we need to include additional control variables into Equation (2). The essence of this is to ascertain the average change in $Agricexport$ for the treatment and control groups for 2 years. Assuming membership occur on both periods, we estimate the change in the average value of $Agricexport$ as a result of membership. Vicard (2011) contends that the level of development of other regional trade agreement members influences the trade creation effect on export performance. In respect of this and taking into consideration the various trade zones and control variables, the specification of a linear demand-side function will be as follows:

$$\begin{aligned} logAgricexport_{it} = \lambda &+ \varnothing_1 AMU_{it} + \varnothing_2 CS-SS_{it} + \varnothing_3 COMESA_{it} \\ &+ \varnothing_4 EAC_t + \varnothing_5 ECCAS_{it} + \varnothing_6 IGAD_{it} \\ &+ \varnothing_6 ECOWAS_{it} + \varnothing_7 SADC_{it} + \varnothing_8 AFCFTA_{it} \\ &+ Z_1 logECGR_{it} + Z_1 logREXR_{it} + \omega_i + \sigma_1 + U_{it} \end{aligned} \qquad (4)$$

Here, AMU, $CS - SS$, $COMESA$, EAC, $ECCAS$, $ECOWAS$, $IGAD$, $SADC$ and $AFCFTA$ are dummy variables, whether a particular country is a member of Arab Mighreb Union, Community of Sahel-Saharan States, Common Market for Eastern and Southern Africa, East African Community, Economic Community of Central African States, Intergovernmental Authority on Development, Economic Community of the West African States, Southern African Development Community and African Continental Free Trade Agreement, respectively; $ECGR$ = Economic growth of export partners (growth in GDP of ten main trade partners); $REXR$ = country exchange rate. In our analysis, the concern is verifying the hypothesis whether the marginal impact of becoming a member of the Arab Mighreb Union, Community of Sahel-Saharan States, Common Markets for Eastern and Southern Africa, East African Community, Economic Community of Central African States, Intergovernmental Authority on Development, Economic Community of West African States, Southern African Development Community or African Continental Free Trade Agreement is statistically significant ($\varnothing_1, \varnothing_2, \varnothing_3, \varnothing_4, \varnothing_5, \varnothing_6, \varnothing_7, \varnothing_8 > 0$).

3.2 | Data and estimation technique

Data used for empirical analysis was extracted from World Development Indicators published by the World Bank. This study employs panel data from different African countries and covers the period, 1996–2018. The main variables of interest are sustainable agricultural export and common currency. Economic growth is included as a control variable. Economic growth is proxied by growth in GDP (% annual) while agricultural export performance measured as aggregate of agriculture, forestry and fishing export, % of GDP. Free trade zone is perceived as a geographical area where agricultural products are exported without hindrance. In this regard, agricultural exports are not subjected to custom regulations or any form of trade restriction. Such an arrangement will mutually benefit each trading partner. When external trade is involved, there is every tendency for all the countries to agree on a common currency for ease of transaction. For most international transactions, the literature reveals that US$ is often used. Following Kafle and Kennedy (2012), Butkus et al. (2018), in this study, the common currency is proxied as country's official average exchange rate, that is, the official amount which a specific country's currency exchange for the US $, derived as $\left(\frac{Nominal\ exchange\ rate * US\ Consumer\ PriceIndex}{Country's Domestic\ Consumer\ Price\ Index} \right)$.

Ordinarily, chances are that the country-specific effect of countries not included in the study may be correlated with the explanatory variables. Since our concern is not to estimate their effects, a fraction of them may account for variation in the error term. This may generate spurious results. But in the case of panel analysis, two types of unobserved effects influence outcome variable, which is the time-invariant and varying outcome. In Equation (4), the inclusion of ω_i is justifiable because it will take care of the unobservable and time-invariant explanatory that seems to affect the dependent variable. In the estimation of Equation (4), we may generate a biased result. To control the unobserved effects and therefore overcome the problem of endogeneity, we difference Equation (4) to obtain:

$$\begin{aligned} Agricexport_{it} - Agricexport_{it-1} = &\varnothing(X_{1t} - X_{1t-1}) \\ &+ Z(CONT_{1t} - CONT_{1t-1}) + (U_{1t} - U_{1t-1}) \end{aligned} \qquad (5)$$

where X_{1t} represents set of dummy variables including Arab Mighreb Union, Community of Sahel-Saharan States, Common Market for Eastern and Southern Africa, East African Community, Economic Community of Central African States, Intergovernmental Authority on Development, common currency and economic growth on agricultural export. In our estimation, ($\varnothing$) is the difference-in-difference, which stress the change in the average value of agricultural export. Export performance for belonging to a free zone. Taking into consideration the period covered by our study, the first difference form of the model is stated as:

$$\begin{aligned} \partial Agricexport_{it} = \lambda &+ \omega_{1996} + \ldots + \omega_{2018} + \varnothing_1 \partial AMU_{it} + \varnothing_2 \partial \Delta CS-SS_{it} \\ &+ \varnothing_3 \partial COMESA_{it} + \varnothing_4 \partial EAC_t + \varnothing_5 \partial ECCAS_{it} \\ &+ \varnothing_6 \partial IGAD_{it} + \varnothing_6 \partial ECOWAS_{it} + \varnothing_7 \partial SADC_{it} \\ &+ \varnothing_8 \Delta \partial AFCFTA_{it} + Z_1 \partial ECGR_{it} + Z_1 \partial REXR_{it} + U_{it} \end{aligned} \qquad (6)$$

where ∂ is the first difference operator. All other variables are as previously defined.

TABLE 1 Cross-country descriptive summary statistics of the variables

Variable	Mean	SD
Agricultural export	34.23	36.82
Common currency	61.45	67.88
Economic growth	4.36	5.07

Source: Authors' computation.

In our analysis, the data sets tend to show cross-sectional dependence which may emanate from economic integration of the countries and sometimes unobserved factors that may become part of the error term. To resolve this and generate a robust result, we assumed that error is correlated over time. To analyze the cross-sectional dependence and correlation, we employed the AR (1) autoregressive process where current values are dependent on the preceding value. Further to this, we also use a covariance matrix that adjusts both heteroscedasticity and autocorrelation. For this purpose, the heteroscedasticity and autocorrelation consistent (HAC) approach for panel data proposed by Arellano (2003) was used. Moreover, the

TABLE 2 Results of the impact of membership of free trade area on agricultural export

	(A)	(B)	(C)
Common currency	−0.002**	−0.003**	−0.003***
Economic growth	0.342**	0.355***	0.356***
Constant	0.072	0.081	0.078
Membership in:			
AMU	0.020**	0.020*	0.021**
(−1)		0.504*	0.065*
(−2)			0.054**
CS − SS	0.006**	0.007***	0.007
(−1)		0.004*	0.005*
(−2)			0.004**
COMESA	0.011**	0.012***	0.012***
(−1)		0.004*	0.003*
(−2)			0.002**
EAC	0.002	0.003	0.003
(−1)		0.001	0.001
(−2)			0.002**
ECCAS	0.021	0.022	0.022***
(−1)		0.001	0.001
(−2)			−0.004**
IGAD	0.001**	0.002**	0.002**
(−1)		0.008	0.005
(−2)			0.001**
ECOWAS	0.012**	0.012**	0.010**
(−1)		0.001*	0.001*
(−2)			−0.004**
SADC	0.009**	0.010**	0.010**
(−1)		0.051*	0.049*
(−2)			0.044**
AFCFTA	0.051**	0.053**	0.050***
(−1)		0.066*	0.061*
(−2)			0.055**
R^2	0.655	0.601	0.598
p-value of Durbin–Wu–Hausman (DWH) test	0.107	0.105	0.089

Source: Authors' computation.
*Means significant at 10%.
**Significant at 5%.
***Significant at 1%.

Durbin–Wu–Hausman (DWH) test was employed to test for the absence of endogeneity.

4 | EMPIRICAL RESULT AND DISCUSSIONS

Before the discussion of empirical findings, the descriptive summary statistics of the variables presented in Table 1.

In Table 1, we present the descriptive summary statistics of the variables, which comprises the mean value and standard deviation. Agricultural export, common currency and economic growth average value was 34.23, 61.45 and 4.36 respectively. Their associated standard deviation stood at 36.82, 67.88, 5.07.

Table 2 shows the impact of membership in free trade areas on agricultural export. The empirical results are based on Equation (5). As evidence in Column 1, being a member of the free trade area has a positive marginal impact on agricultural export. The result further indicates that being a member of AMU, CS-SS, COMESA, EAC, ECCAS free trade zone, or becoming ECOWAS, IGAD or part of SADC free trade area has no immediate effect on agricultural export. As indicated by the estimated coefficients, membership in AMU improves agricultural export, on the average, by 0.20–0.21%, CS-SS by 0.06–0.07%, COMESA by 0.11–0.12%, EAC by 0.02–0.03%, ECCAS by 0.21–0.22%, IGAD by 0.01–0.02%, ECOWAS by 0.12–0.13%, SADC by 0.09–0.11%. Joining AFCFTA has the potency to enhance agricultural export by 0.51–0.53%.

As further indicated, the addition of lags of membership variables for 1 and 2 years did not have the effect of becoming a member of AFCFTA. The estimated results in Column 2 and Column 3 contains the result on the effect of membership of free trade area with a time lag. As can be seen, Member of AFCFTA after a year or two has a less marginal effect on agricultural export when compared to the current period. This finding supports the finding by Ju et al. (2010) that countries that joined the World Trade Organization (WTO) experienced an improvement in export performance. Regarding the effect of other variables, the result indicates that exchange rate volatility which is the proxy for the common currency has a negative effect on agricultural export while the level of development of trade partners had a positive marginal impact on agricultural export. More specifically, 10% improvement in the level of development of trade partners improved agricultural export by 0.34, keeping other factors constant. This in agreement with the view of Nin-Pratt and Diao (2014) that implementation in regional policies beyond free trade agreement has the tendency of improving agricultural export. The result supports the finding of Butkus et al. (2018) in the case of European Union countries. Finding also suggests that adopting a common currency may have minimal influence on agricultural export growth. Although Shobande (2018) contend that common currency can help solve the negative effect of exchange rate volatility on trade which has retarded export in African. Some researchers are however in the contention that adoption of currency encourages export especially in countries that are traditionally oriented regions which may not be the case with other countries.

5 | CONCLUSION

Motivated by the desire to overcome the difficulties in agricultural export being experienced because of small and segmented markets, Africa countries are leaning on regional trade areas as an important strategy to expand exports in the quest to attain sustainable growth and development. This paper examines the potential effects of free trade areas on agricultural export in Africa. For this purpose, this study used a fairly large sample of panel observations for 45 countries. In our analysis, we employed the demand-side model which was further extended to include other export control variables as well as those used in supply-side models. Our empirical estimates indicate that although membership of free trade areas has a positive marginal impact on agricultural export, joining the AMU, CS-SS, COMESA, EAC, ECCAS, becoming ECOWAS, IGAD or part of SADC has no instant effect on agricultural export. As indicated by the estimated coefficients, membership in AMU improves agricultural export, on the average, by 0.20–0.21%, CEN-SAD by 0.06–0.07%, COMESA by 0.11–0.12%, EAC by 0.02–0.03%, ECCAS by 0.21–0.22%, IGAD by 0.01–0.02%, ECOWAS by 0.12–0.13%, SADC by 0.09–0.11%. Joining AFCFTA has the potency to enhance agricultural export by 0.51–0.53%. Member of AFCFTA after a year or two has a less marginal effect on agricultural export when compared to the current period. This finding supports the finding by Ju et al. (2010) that countries that joined the World Trade Organization (WTO) improved their export performance.

We also find that common currency has negative marginal impact while economic growth in trade partners countries has a positive marginal impact on agricultural export. In specific terms, 10% improvement in the level of development of trade partners led to a corresponding increase in agricultural export by 0.34%. This is inconsistent with earlier studies such as Butkus et al. (2018). The results of our study indicate that replacement of continental currencies with Dollar has an insignificant effect on agricultural export. This conforms with the finding of Shobande et al. (2018). A slight increase in exports to other countries following the introduction of the euro is attributable to existing long-term trade relations with them. The study has confirmed that the introduction of a single currency has positively affected exports from traditionally export-oriented regions, yet this might not be the same for other countries. Based on findings, we emphasize that if free trade area is to drive agricultural export, there is a need for trade policies that reflects today's economic realities and free itself from the strictures of developed economies.

A major limitation of this study is the inability to generate disaggregated data on respective components of agricultural export. As a suggestion for further research, studies may focus on assessing the effect of the free trade area and common currency on different agricultural export components in Africa. Such studies are essential for more targeted policy suggestions.

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