

Effect of ECOWAS Trade Liberalization Scheme on Agricultural Sector Performance in Anglophone West African Countries

EMEKA UNACHUKWU

Institute of International Trade and Development, University of Port Harcourt, Port Harcourt, Nigeria.

Abstract

The study investigates empirically the effect of ECOWAS trade liberalization scheme on agricultural sector performance in Anglophone West African countries using annual time series covering a period of 41 years, between 1980 and 2020. The study used agriculture GDP as the dependent variable and used ECOWAS trade liberalization scheme as the main independent variable whereas agriculture exports, agriculture imports and exchange rate were used as check variables. The study used all the 5 Anglophone ECOWAS countries. The study used descriptive statistics, correlation matrix, pooled OLS, fixed effect and random effect models as well as generalized method moment (GMM) modeling techniques for the analysis. The study shows that ECOWAS trade liberalization scheme (ETLSAGL) has a negative effect on Agricultural sector performance in Anglophone West African countries; agriculture export to GDP ratio (AGEXAGL) has a negative effect on agricultural sector performance in Anglophone West African countries; agriculture import to GDP ratio (AGIMAGL) has a negative effect on agricultural sector performance in Anglophone ECOWAS countries; exchange rate (EXRCAGL) has a negative effect on agricultural sector performance in Anglophone countries. The study therefore concludes that ECOWAS trade liberalization scheme has not enhanced agricultural sector performance in Anglophone West African countries within the period of study. The study therefore recommends full compliance in the removal of tariff and non-tariff barriers in line with the provisions of ETLS, implementation of (Common External Tariff CET), and adoption of a common currency by ECOWAS member countries to help mitigate negativity in exchange rate.

Key words: *ECOWAS, Trade Liberalization Scheme, Agricultural Sector Performance, West African Anglophone Countries (Nigeria, Ghana, Liberia, The Gambia, Sierra lone)*

Date of Submission: 08-01-2022

Date of Acceptance: 23-01-2022

I. Introduction

One of the determinants of economic Performance or development in an economy be it high-, middle- or low-income country is trade liberalization and openness. This is because trade liberalization and openness are an indispensable enabler of growth, job creation, and poverty reduction. Trade liberalization and openness provides new market opportunities for domestic firms, stronger productivity, and innovation through competition. It contributes to poverty reduction, stronger wages; geopolitical benefits derived from deeper economic integration, and even on the personal level it increases individual choice and freedom (Jackson, 2015).

In line with the above, Keho (2017) has it that no country has developed successfully in modern times without harnessing economic openness to international trade, investment, and the movement of people. The neo-classical and classical economists attributed so much relevance to external trade in a development process of a nation which is regarded as an engine of growth.

Arising from the above, the Economic Community of West African States (ECOWAS) was established in 1975 with the aim of liberalising trade among member states such as the elimination of tariff and non-tariff barriers, and ultimately achieving an economic and monetary union after successfully going through the process of a free trade area, custom union and common market (ECOWAS Vanguard, 2013).

Specifically, it aimed at the elimination of all tariff and non-tariff restriction on intra-ECOWAS trade, establishment of a common external tariff (CET) and commercial policy against non-ECOWAS countries, abolition of all obstacles to the movement of all factors of production, and harmonization of domestic policies across its member-countries. Hence, the ECOWAS articulated a comprehensive trade liberalisation programme, the ECOWAS Trade Liberalisation Scheme (ETLS) quite early in its existence in 1979, but it had to be postponed three times before it was finally launched in 1990.

The dynamic effect of the ECOWAS Trade Liberalisation Scheme (ETLS) on agricultural sector performance in West African countries, according to Akims (2014), is that, ECOWAS Trade Liberalisation Scheme implies easing/removing barriers to trade within the sub-region, such freer trade will gravitate towards higher wages in general. That as more of the country's goods are being sort after, this will induce prices to go up as a result of the increased demand. This rise in prices will make it possible for wages to be increased. He further asserts that not only will the liberalization in trade increase wages, but greater number of people will be employed to the more productive sectors of the economy. This is because there is most likely to be a greater inflow of technology which could be skill biased because of the increased demand. This will increase the demand for skilled labour and thus reduce the army of the teeming unemployed graduates.

However, according to Ajayi (2005) and Shuaibu (2015), existing evidence suggests that the ECOWAS trade liberalisation scheme has been marked by the unwillingness of many countries to implement its provisions relating to elimination of tariff and non-tariff barriers to trade and the functioning of a compensation mechanism.

In line with the above, Fajana (2018) has it that there are numerous challenges and constraints in the implementation of the ETLS which have limited its effectiveness and impact as a tool of market integration in West Africa such as the lack of political will on the part of Member States to surrender part of their sovereignty to implement the ETLS as evident from the poor domestication of the agreements and decisions and the great disconnect between adoption of policies at the regional level and implementation at the national level, inadequacy of the awareness and sensitization of the ETLS in Member States, lack of trust on the part of some Member States in the transparency of the process of determining product eligibility and issuing of certificate of origin under the ETLS, underdevelopment of direct taxation resulting in the heavy dependence of Member States on import duties for government revenue and their reluctance to forgo such duties on imports from other Member -States, prevalence of non-tariff barriers that hinder the entry of products in-spite of their duty-free status, lack of complementarity and structural transformation in the economies of Member States coupled with the inadequacy of productive capacity and trade- related infrastructure and trade information, absence of an effective mechanism for monitoring and evaluating the implementation of the ETLS and of a legal framework for settlement of disputes and enforcement of rights and obligations, and capacity deficiencies (both institutional and technical) of the ECOWAS Commission.

Despite these challenges and constraint highlighted above, Ajakaiye and Ncube (2010) have observed that intra-ECOWAS trade has increased marginally within the ECOWAS sub-region as indicated by the trend in intra-ECOWAS trade as a percentage of total trade. Also, scholars such as Babatunde (2006), Osabuohien (2007), Nirodha, Jaime and Jeff (2013), Mohammed (2015), Shuaibu (2015), John and Bright (2016), Ofei (2016), Sani and Yunusa (2019), Shobande (2019), and more have found that trade liberalization positively impact on the growth of an economy and the entire economy. However, on the contrary, Adam (2012) has it that intra-ECOWAS trade flows have remained low despite significant deployment of policy prescriptions towards a common monetary and economic union. Also, scholars like Ghani (2009), Olayiwola, Osabuohien and Okodua (2011), Olowe and Ibraheem (2015), Asante (2018), Tyopev (2019), Duru, Okafor, Adikwu, and Njoku (2020), and more have found trade liberalization to have negatively affected the growth of an economy and the entire economy.

It is against this backdrop that this study is set to empirically investigate the effects of ECOWAS trade liberalization scheme on agricultural sector performance in selected West African countries.

The paper is organized into five sections. First, is the introduction, following is the literature review and theoretical framework. Third, the method of study and model estimation is discussed. Fourth is the discussion of results, and finally, conclusion and recommendations.

II. Literature Review

2.1 Review of Theoretical Literature

2.1.1 Absolute Advantage Trade Theory

Adam Smith proposed the absolute advantage trading thesis in his renowned book "Wealth of Nation," published in 1776. As a result of the criticism leveled towards mercantilism, the thesis emerges. He promoted free trade as the best policy for the world's countries.

Smith maintained that free trade would let each country to specialize in the production of those goods in which it could produce more efficiently than others, while importing those commodities in which it could produce less efficiently.

This worldwide specialization of production components would result in an increase in global output that would be shared among trade nations. As a result, a nation does not have to benefit at the expense of other nations; instead, all nations could benefit at the same time.

On other words, a country should specialize in the manufacturing of export commodities where it has a lower cost or absolute cost advantage over others, according to the thesis.

The same country, on the other hand, should import a commodity with a higher cost or an absolute cost disadvantage (Akeem, 2011; Enu, Havi & Hogan, 2013).

By implication this theory supports the act of buying and selling at the international level. This is because the specialization in the production of goods of which a country has real opportunity cost over others will suggest that balance of trade is usually favourable when countries adopt the principle of absolute cost theory. This relationship justifies the inclusion of this theory in this study.

2.1.2 Comparative Advantage Theory

Will trade still be required or helpful to the country in question if it has comparative advantage in the production of two items, according to the principle of absolute advantage?

This was addressed by David Ricardo. Ricardo was the first to show that external commerce is caused by differences in comparative advantage rather than differences in absolute advantage.

By “comparative advantage” is meant by “greater advantage”. Thus, even if one country was more efficient in the production of both commodities, trade would still take place if the degree of its dominance over the other country was not comparable for both commodities in the context of two countries and two commodities.

Ricardo assumed two countries, two commodities, and one factor of production: labor.

He believed that labor was fully employed and immobile internationally, and that the product and price factor were both perfectly competitive.

There are no transportation expenses or other trade barriers.

Ricardo proposed that a country had two countries, two commodities, and one factor of production in a model with two countries, two commodities, and one component of production.

The notion could be represented in terms of comparative costs because comparative costs is the flip side of comparative advantage.

The idea today implies that a country will choose to export the commodity with the lowest comparative cost in production and the highest comparative cost in pre-trade isolation.

If this principle is followed, the export (supply side) of external commerce will outnumber the import (demand side), and the country's balance of trade will be favorable in comparison.

The theory also assumed the level of technology to be fixed for both nations. Different nations may use different technology but all firms within each nation utilize a common production method for each commodity. It also assumed that trade is balanced and rolls out the flow of money between nations. The distribution of income within a nation is not affected by trade.

Most assumption of the Ricardian theory is unrealistic. The theory is based on labour theory of values which states that the price of the values of a commodity is equal to or can be inferred by the quality of labour time going into its production process. Labour theory of values is based on-labour is the only factor of production. Labour is used in the same fixed proportion in the production of all commodities. Labour is homogenous. This underline proposition is quite unrealistic, because as labour is categorized into skilled, semi-skilled and unskilled labour, there are other factors of production.

Despite its shortcomings, the law of comparative advantage cannot be discarded off because it found application in study of economics. The law is valid and can be explained in terms of opportunity cost in the modern theory of trade (Akeem, 2011; Enu, Havi & Hogan, 2013).

2.1.3 Grossman-Helpman's Model of Growth-Cum-Trade

Grossman-Helpman's Model of growth-Cum-Trade is a new endogenous theory. The model was developed by Grossman and Helpman (1991). The theory extended the constant return to capital, or AK growth model of Paul Romer (1986 and 1989) and Robert Lucas (1988) to include trade. The theory states that both technology and foreign trade engagement in an endogenous manner can enhance long run growth in an economy.

According to Sena and Fontenele (2012) the main purpose of this model is to introduce some of the ways that world trade might influence the incentives for industrial innovation and growth. Innovation comes about from two different sources. In one version, entrepreneurs develop new varieties of differentiated intermediate goods. In the other, entrepreneurs seek quality improvements of a given set of non-tradable factors. This amounts to specifying formulations for endogenous product variety and quality. The formal analysis of these specifications is used to establish the production side of the small open country.

2.2 Empirical Literature

Bureau, Jean and Matthews (2006) examined the Consequences of Agricultural Trade Liberalization for Developing Countries. The study highlighted the contrasting interests of various types of developing countries faced with the perspective of liberalization in the agricultural and food sector. For most middle-income developing countries confronted with high protection in their main markets, liberalization can be a source of substantial growth in prospects and prices for a relatively high-performing export sector. For net food importing countries, including most of the LDCs and the small island developing states, and for cotton importing countries (North Africa, Bangladesh), agricultural trade liberalization may have overall negative consequences, because of terms of trade effects. For most sub-Saharan African countries and LDCs, negative consequences also result from the erosion of their preferential access to the EU and US markets. For poorest countries, non-tariff issues and supply side constraints are likely to limit even further trade.

Osabuohien (2007) examined the impact of trade openness on economic performance of ECOWAS Members focusing on Ghana and Nigeria (1975-2004). Data sourced from IFS and others, were analyzed employing ADF/PP stationarity, cointegration and vector error correction techniques. A unique long-run relationship between economic performance, trade openness, real government expenditure, labour force and real capital stock for both Ghana and Nigeria were established, while about 88.9% and 83.1% errors made in the previous period were found to be corrected in the current period for the respective countries. The study also reveals that trade openness and real government expenditure impact positively the economies of Ghana and Nigeria.

Nyairo, Kola and Sumelius (2010) investigated the impacts of agricultural trade on market liberalization of food security in developing countries using Kenya and Zambia. Evidence from results and other literature on maize productivity in the Sub-Saharan African region indicates that the use of fertilizer significantly to agricultural productivity, represented by increased productivity. In effect, policy makers need to design national programs of extending support to maize producers in order to enable them to maintain a level of production that at least meet their basic consumption needs. Maize is produced by rural farmers with limited incomes, or sometimes poor production techniques. Conclusions from the research suggest that agricultural reforms led to mixed results. This may be attributed to the sometimes-stop-go nature of reform implementation. The mixed results are reflected in the weak maize output response to price changes. Overall country economic conditions, state of agricultural development can be attributed to the pace of response, hence effect on agricultural supply. Elasticity of maize output to changes in price and acreage are strongly significant in maize output for the case of Kenya. Both restricted models of maize production suggest that prior to the introduction of reforms acreage, prices and alternative crops were more elastic when simulated with Zambian data than with Kenyan data.

Mohammad, Shahiki, and Zahra (2012) examined the impact of trade liberalization and financial development on economic growth in Iran from 1966 to 2010. The study employed cointegration and the principal component analysis to analyse the data. The study found that financial and trade liberalization could not influence economic growth through this channel, as it was expected. It further revealed that the joint impact of trade liberalization and financial development in terms of economic liberalization is also positive on growth, while the human and the physical capital have had significant impacts.

Yusufi, Malarvizhi, and Khin (2013) examined the causal relationships between trade liberalization growth of the Nigerian economy and poverty. This study applied time series data for Nigeria. We employed the recently introduced Pesaran et al (2001) ARDL approach. Evidence from the study suggest that trade liberalization does not cause poverty reduction, implying that the benefit of trade liberalization does not trickle down to the poor in Nigeria. This suggests that countries with high propensity to import and poor commodity prices need not to strictly follow the one size fit all trade liberalization policies rather each country need to focus on trade policies peculiar to its own environment, which can deliver growth and translate growth into a meaningful poverty reduction.

Akims (2014) examined Nigeria's participation in the ECOWAS trade liberalisation scheme and the potential gains that may accrue the country opening up to trade in the West African sub-region. The ECOWAS Free Trade Area is to give rise to the elimination of custom duties and accompanied by the total elimination of all non-tariff barriers and other administrative measures impeding the free flow of trade in the sub-region. Employing a deductive approach, the study posit that Nigeria stands a chance of benefiting through such gains as improved wages and employment, increased productivity in the manufacturing industry and enhanced technological progress and economic growth. With Nigeria remaining committed to the implementation of the Common External Tariff, she heads toward jointly taking advantage of the opportunities of trade liberalization.

Shuaibu (2015) examine the relationship between trade liberalisation and intra-regional trade in some selected ECOWAS member countries, with particular focus on the role of applied and most favoured nation import tariffs. The Data utilized for the study were sourced from the World Bank's World Development and Governance Indicators, Mayer and Zignago (2006) distance index as well as the World Trade Organisation's

World Integrated Trade System (WiTs). The sample period consists of 8 countries covering the years 1998 to 2011. Predicated on a gravity framework, system and difference generalised method of moments dynamic panel data estimators were relied upon. The empirical results showed that trade liberalisation has contributed to intra-regional trade in the West African sub-region. The potency of trade liberalisation was relatively more pronounced through the use of most favoured nation import tariff compared to applied import tariff rates. Our results also showed that improved institutional quality and infrastructure are associated with higher intra-ECOWAS trade. Furthermore, using alternative measures of institutional quality and infrastructure as well as fixed and random effect estimators validated our findings.

John and Bright (2016) explores the relationship between trade liberalization and economic growth in Nigeria from 1980 to 2013. Two equations were estimated in which index of industrial production proxied as yearly average capacity utilization as a function of degree of openness, terms of trade and real export. Similarly, in the second equation, real gross domestic product as a function of degree of openness, terms of trade, real export and trade liberalization dummy was estimated. The study employed Vector Error Correction Model (VECM) in which results show that openness of the foreign sector and trade liberalization dummy have positive significant impact on both industrial performance and economic growth in Nigeria within the period under review.

Ofei (2016) investigated the impact of EU trade liberalisation on the export competitiveness of ECOWAS countries. Trade liberalisation is captured by import tariffs in the EU market while export competitiveness is captured by the export value of ECOWAS countries. The study uses the gravity model, fixed and random effects as well as the Hausman test for a country pair panel data of 15 ECOWAS and EU 15 countries for the period beginning 1995 to 2014. The study finds a positive impact of trade liberalisation on export competitiveness and estimates the export value of ECOWAS countries to increase by 0.487% for every 1% reduction of import tariffs in the EU.

Siyakiya (2017) investigated the impact of trade openness on national productivity for selected African countries over the period 1980 – 2014. In order to test whether trade openness affect different sectors differently, disaggregate data was used. Applying a pooled ordinary least square technique and STATA software version 13, the results point to depict an overall positive impact of trade openness on manufacturing and service value added. When it comes to other variables the study find that capital also contributes positively to both overall and sectoral value added while labour productivity is negative for all except service value added. The negative relationship between labour and output can be explained by decreasing returns to scale and poor managerial services. Most developing countries are capital constrained hence they end up using a lot of labour to an extent of causing diminishing marginal productivity of labour. Based on these results the research reveals that greater trade openness can stimulate output in developing countries. In view of the above it is therefore recommended that African countries should implement progressive and sectoral trade liberalization.

Tyopev (2019) examined the relationship between trade openness and economic growth in selected West African countries (Cote d'Ivoire, Ghana and Nigeria) using a multivariate panel framework between 1970 and 2016. The Autoregressive Distributed Lag (ARDL) bound tests, VAR Granger Causality/Block Exogeneity Wald tests, Impulse Response Functions (IRFs) and Fixed Error Variance Decomposition (FEVD), Dumitrescu and Hurlin (2012) panel Granger causality test, as well as the fixed effect Least Squares Dummy Variable (LSDV) and other diagnostic tests were employed for data estimation. The results indicated long run relationship between trade openness and economic growth in Cote d'Ivoire, Ghana and Nigeria, and that this relationship is negative but insignificant for Nigeria and Cote d'Ivoire, but positive and significant for Ghana. In the short run, changes in RGDP are driven mostly by the error correction term and short run trade openness shocks for each country. Short run deviations from the long run equilibrium take from 1.291 years (Cote d'Ivoire), 2.189 years (Ghana), and as long as 7.498 years (Nigeria) to return back to equilibrium. The results also indicated heterogeneous non-causality (HENC) implying that causation between trade openness and economic growth exist in a subgroup of the panel. The combination of other macroeconomic variables like investment, human capital, net inflow of FDI and the exchange rate complements the contribution of trade to economic growth. Therefore, these countries should promote appropriate trade policies devoted to foster increased local production of manufactured and agricultural goods to reduce importation and stimulate exports, as a strategy to boost economic growth.

Iloh, Nwokedi, Onyebukwa and Ekeocha (2019) explores the link between WTO's trade liberalization policy on agriculture and food security in West Africa. Specifically, it investigates whether the policy undermines food security in the subregion by examining its impacts on food importation and food dumping. The study relied mainly on documentary evidence. Data were scooped from documents and annual publications of the WTO, UNCTAD, FAO, ECOWAS, and World Bank. Data were analysed using content analysis, rooted on logical deductions. The results of data analysis show that the increased dependency on international trade (as being championed by the WTO) by many countries in West Africa has a number of direct and indirect implications on the realization of food security in the subregion. Importation not only exposes producers and

consumers to increased vulnerability both to worsening terms of trade and to fluctuations in commodity prices, but also exposes the domestic food producing industries to danger of extinction through steep competition. The study also found that relying on international trade for food supply encourages dumping of the excess products on developing countries at relatively cheaper prices. This harms domestic production and reduces the income of domestic farmers and other investors in the food production chain.

III. Research Methodology

3.1 Analytical Framework

The analytical framework for this study shall anchor on the work of Mohammad, Shahiki, and Zahra (2012) with further modification. Mohammad, Shahiki, and Zahra (2012) who examined the impact of trade liberalization and financial development on economic growth in Iran, modeled GDP as the dependent variable as a proxy for economic growth as a function of Export to GDP ratio (EX/GDP), Import to GDP ratio (IM/GDP) and Foreign trade to GDP ratio (EX+IM/GDP) to proxy trade liberalization and also used Narrow money ratio (M1/Y), Narrow money to broad money ratio (M1/M2) and Broad money ratio (M2/Y) to proxy financial development as the independent variables.

$$GDP = f (EX/GDP, IM/GDP, EX+IM/GDP, M1/Y, M1/M2, M2/Y) \quad (3.1)$$

Where;

GDP = Gross Domestic Product a proxy for economic growth

EX/GDP = Export to GDP ratio

IM/GDP = Import to GDP ratio

EX+IM/GDP = Foreign trade to GDP ratio

M1/Y = Narrow money ratio

M1/M2 = Narrow money to broad money ratio

M2/Y = Broad money ratio (M2/Y)

But the present study deviates from these scholars by using a dummy to proxy ECOWAS trade liberalization scheme (ETLS) and the three measures of liberalization such as Agric Export (AGEX), and Agric Import (AGIM) in line with Mohammad, Shahiki, and Zahra (2012) and shall also add exchange rate (EXRC) as the explanatory variables.

Thus, the functional form of the model shall be specified as:

$$AGRPAGL = f (ETLSAGL, AGEXAGL, AGIMAGL, EXRCAGL) \quad (3.2)$$

Where;

AGRPAGL = Agricultural sector performance proxied by the proportion of agriculture to GDP

ETLSAGL = ECOWAS liberalization scheme proxied by dummy

AGEXAGL = Agric Export

AGIMAGL = Agric Import

EXRCAGL = Exchange rate

The linear econometric form of the model or equation (3.2) takes the form of;

$$AGRPAGL = \beta_0 + \beta_1 ETLSAGL + \beta_2 AGEXAGL + \beta_3 AGIMAGL + \beta_4 EXRCAGL + \mu \quad (3.3)$$

Where;

β_0 , are the intercepts

$\beta_1 - \beta_5$ are the coefficients of independent variables while μ_1 is the error terms.

AGRPAGL, ETLSAGL, AGEXAGL, GIMAGL, EXRCAGL are as earlier defined.

3.2 Data Required/Sources

The data for this study shall mainly be annual time series collected from secondary sources covering a period of forty-one years, from 1980 to 2020. Some of these sources include publications of the World Bank and world development indicators (WDI) as presented in table 3.1.

Table 3.1: Variables Description and Sources of Data

S/N	Variables	Description of Data	Source
1	AGRPAGL	Agricultural Sector performance proxied by proportion of Agriculture to GDP (%)	World Development Indicator (WDI)
2	ETLSAGL	ECOWAS Trade Liberalisation Scheme proxied by Dummy	World Development Indicator (WDI)
3	AGEXAGL	Export to GDP ratio a proxy of trade liberalization as the allocation of resources is observed on the level of exports (%)	World Development Indicator (WDI)
4	AGIMAGL	Import to GDP ratio a proxy of liberalization characterizing the dimension of openness related to increased international competition (%)	World Development Indicator (WDI)
5	EXRCAGL	Exchange Rate	World Development Indicator (WDI)

Source: Author’s Compilation from Economic Literature (2021)

3.3 Estimation Techniques and Procedures

This study will adopt descriptive statistics, correlation matrix analysis and inferential analytical tools. Specifically, it will adopt pooled Ordinary Least Squares (OLS), fixed effect model, random effect model and Hausman test and Generalized Method of Moment (GMM) to estimate the effect of ECOWAS trade liberalisation scheme on agricultural sector performance in selected West African countries.

3.4.1 Descriptive Statistics

One of the methods economists normally use to investigate the behaviour of the variables is through descriptive statistics. Descriptive statistics is that type of statistics that involves organizing, summarizing and presenting data in a meaningful form or usable format. Thus, in this research simple averages (i. e. mean), histogram, kurtosis, Jarque-Bera shall be employed to analyse the trends on some of the variables used in this study between 1980 and 2020.

3.4.2 Pooled Ordinary Least Squares (OLS)

The study employed the pooled Ordinary Least Squares (OLS) to examine the impact of ECOWAS trade liberalisation scheme on agricultural sector performance in selected West African countries. According to Gujurati (2013), the pooled Ordinary Least Squares (OLS) model simply pools all the observations and estimate a grand regression, neglecting the cross-section and time series nature of the data.

3.4.3 Fixed Effect Model

The researcher also adopts the fixed effect model to estimate the effect of ECOWAS trade liberalisation scheme on agricultural sector performance in selected West African countries. Fixed effect model is a feasible generalised least squares technique which is asymptotically more efficient than Pooled OLS when time constant attributes are present. According to Gujurati (2013), the fixed effect model pools all the observation, but allows each cross-section unit (i. e. each country) to have its own (intercept) dummy variable. The equation for the fixed effects model is stated as:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + \mu_{it} \tag{3}$$

Where;

α_i ($i=1, \dots, n$) is the unknown intercept for each entity (n entity-specific intercepts)

Y_{it} is the dependent variable (DV). Where i = entity and t = time

X_{it} represents the independent variables (IV)

B_i is the coefficients for the independent variables

Decision Rule

The decision rule for the fixed effects model is that, if the null hypothesis is rejected, it means that there is a fixed effect but if the null hypothesis is not rejected it means that there is not fixed effect.

3.4.4 Random Effect Model

Also, the researcher employed the random effect to estimate the impact of ECOWAS trade liberalisation scheme on agricultural sector performance in selected West African countries. The rationale behind the random effects model is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model. Thus, the equation for the fixed effects model is stated as:

$$Y_{it} = \beta X_{it} + a + \mu_{it} + \epsilon_{it} \tag{4}$$

Where;

Y_{it} is the dependent variable (DV). Where i = entity and t = time

X_{it} represents the independent variables (IV)

β is the coefficients for the independent variables

μ_{it} is between-entity error

ϵ_{it} is within-entity error

Decision Rule

The decision rule for the random effects model is that, if the null hypothesis is rejected, it means that there is a random effect but if the null hypothesis is not rejected it means that there is not random effect.

3.4.5 Hausman Test

The researcher adopts the Hausman test for fixed effect and random effect to model the effect of ECOWAS trade liberalisation scheme on agricultural sector performance in selected West African countries. The rationale behind the Hausman test is to decide whether to use the fixed or random effects for the analysis. It basically tests whether the unique errors (μ_i) are correlated with the regressors, the null hypothesis is they are not.

Decision Rule

The decision rule for the Hausman test is that, if the null hypothesis is rejected, then use fixed effect model. On the other hand, if the null hypothesis is not rejected use random effect.

3.4.6 Generalized Method of Moment Test

The Generalised Method of Moment (GMM) is a generic method for estimating parameters in statistical models. It uses moment conditions that are functions of the model parameters and the data, such that their expectation is zero at the parameters' true value. It is a dynamic panel data estimator. It controls for:

- (i) Endogeneity of the lagged dependent variable in a dynamic panel data when there is correlation between the explanatory variables and the error term in that model.
- (ii) Omitted variables bias
- (iii) Unobserved panel heterogeneity
- (iv) Measurement errors

A priori Expectation

It is expected that increase in these variables - ECOWAS liberalization scheme (ETLS), Agric Export (AGEX), Agric Import (AGIM) and exchange rate (EXRC) will enhance agricultural sector performance in selected West African countries.

IV. Data Analysis and Interpretation

4.1 Pooled OLS, Fixed and Random Effects Models Results for Anglophone Countries

Table 4.1 presents the results of the pooled OLS, fixed effect model and random effect model for Anglophone Countries. This will enable the researcher find out the effect of ECOWAS trade liberalization scheme on agricultural sector performance in selected West African countries.

Table 4.1: Panel Regression Results for Anglophone Countries

Variables	Pooled OLS Result	Fixed Effect	Random Effect
Constant	31.996 (0.000)	33.340 (0.000)	31.996 (0.000)
ETLSAGL	-8.386 (0.002)	-6.697 (0.007)	-8.386 (0.002)
AGEXAGL	0.068 (0.634)	-0.0025 (0.985)	0.068 (0.633)
AGIMAGL	1.723 (0.065)	0.573 (0.494)	1.724 (0.062)
EXRCAGL	0.004 (0.000)	0.003 (0.001)	0.004 (0.000)
F-Cal	21.25 (0.000)	4.14 (0.004)	
R ²	0.480	0.471	0.480
Hausman Test for fixed effect		15.09 (0.005)	

The figures in parenthesis are the probability values.

B = consistent under H_0 and H_A ; obtained from xtreg.

B = inconsistent under H_A , efficient under H_0 ; obtained from xtreg.

Note: (** = 5%)

Source: Extract from Stata

(a) Pooled OLS Results for Anglophone Countries

The pooled OLS results examining the effect of ECOWAS trade liberalization scheme on agricultural sector performance in selected West African countries specifically Anglophone West African countries presented in Table 4.5 show that across all specifications, ECOWAS trade liberalization scheme (ETLS) has a negative (-8.386) and a significant effect on agricultural sector performance in selected West African countries specifically Anglophone West African countries. Agriculture export to GDP ratio (AGEX) has a positive (0.068) and an insignificant impact on agricultural sector performance in Anglophone West African countries at the 5 per cent level. Similarly, the coefficient of agriculture import to GDP ratio (AGIM) is a positive (1.723) and an insignificant predictor of agricultural sector performance in Anglophone West African countries at the 5 per cent level. Exchange rate (EXRC) is a positive (0.004) and a significant predictor of agricultural sector performance in Anglophone West African countries.

Also, the model of Anglophone West African countries has a good fit as the variation in agricultural sector performance is explained by the regressors is about 48 per cent while the F-statistic is statistically significant across all specifications demonstrating the joint significance of the explanatory variables.

(a) Hausman Test Results for Anglophone Countries

The result of the Hausman test of the model of Anglophone West African countries is presented in table 4.1. The Hausman null hypothesis stated that reject the null hypothesis if the p-value is statistically significant at 5 per cent level and use the fixed effect estimator to run the analysis otherwise, use the random effect estimator. Based on this, since the p-value is 0.005, hence the null hypothesis is rejected and the fixed effect estimator is used to analyse the model in Anglophone West African countries.

(c) Fixed Effects Model Results for Anglophone Countries

The fixed effect (FE) estimator results examining the effect of ECOWAS trade liberalization scheme on agricultural sector performance in Anglophone West African countries presented in Table 4.1 show that across all specifications, ECOWAS trade liberalization scheme (ETLS) has a negative (-6.697) and a significant impact on agricultural sector performance in Anglophone West African countries. Agriculture export to GDP ratio (AGEX) has a negative (-0.0025) and an insignificant impact on agricultural sector performance in Anglophone West African countries at the 5 per cent level. Similarly, the coefficient of agriculture import to GDP ratio (AGIM) is a positive (0.573) and an insignificant predictor of agricultural sector performance in Anglophone West African countries. Exchange rate (EXRC) is a positive (0.003) and a significant predictor of agricultural sector performance in Anglophone West African countries.

Also, the FE model estimator in Anglophone West African countries have a good fit as the variation in agricultural sector performance is explained by the regressors is about 47 per cent while the F-statistic is statistically significant across all specifications demonstrating the joint significance of the explanatory variables.

4.3.2 Generalised Method of Moment (GMM) Regression Model Results for Anglophone Countries

The GMM regression results examining the effect of ECOWAS trade liberalization scheme on agricultural sector performance in Anglophone West African countries across all specifications is presented in Table 4.2 below.

Table 4.2: Two-Step System GMM Results for Anglophone Countries

Variables	Coefficient	Probability Values
AGRPAGL L1.	1.228	0.000
ETLSAGL	-0.107	0.600
AGEXAGL	-0.175	0.394
AGIMAGL	-0.509	0.943
EXRCAGL	-0.001	0.494
CONS	2.825	0.170
Number of Observations	94	
F-Cal	1.90e+06	0.000

Number of Groups	4	
Number of Instruments	9	
AR (1)	0.011	
AR (2)	0.182	
Sargan Test	0.571	

Source: *Extract from Stata*

The ECOWAS trade liberalization scheme-agricultural sector performance association in Anglophone West African countries is surveyed within the framework of a generalized method of moment (GMM) estimator. Table 4.6 shows the results from the heterogeneous panel regression from the GMM estimator in Anglophone West African countries. From table 4.6, it was observed that, the model has a good fit as the F-statistic is statistically significant across all specifications demonstrating the joint significance of the explanatory variables. One thing to note here before interpreting the GMM regression coefficients is that it is important to verify the behavior of the residual terms as well as the instruments used. For the statistical inference of the estimated coefficients to be valid, the following must be satisfied:

1. Rejection of the null hypothesis of non-autocorrelation for the AR(1) test.
2. Non-rejection of the null hypothesis of non-autocorrelation for the AR(2) test.
3. Non-rejection of the null hypothesis of valid instruments for the Sargan's/Hansen's test.

A violation of these assumptions may suggest evidence of specification bias. Based on the results, the model passes these entire tests.

Also, the study found that the effect of ECOWAS trade liberalization scheme (ETLS) on Agricultural sector performance in Anglophone West African countries is negative (-0.107) and is statistically insignificant at 5 per cent level in Anglophone West African countries; Agriculture export to GDP ratio (AGEX) has a negative (-0.175) and an insignificant effect on Agricultural sector performance in Anglophone West African countries; the effect of agriculture import to GDP ratio (AGIM) on Agricultural sector performance in Anglophone West African countries is negative (-0.509) and is not statistically significant at 5 per cent level; the effect of exchange rate (EXRC) on Agricultural sector performance in Anglophone West African countries is positive (-0.001) and is not statistically significant at 5 per cent level.

V. Conclusion and Policy Recommendation

The study investigated empirically the effect of ECOWAS trade liberalization scheme on agricultural sector performance in Anglophone West African countries using annual time series covering a period of 41 years, between 1980 and 2020. The study used agriculture GDP as the dependent variable and used ECOWAS trade liberalization scheme as the main independent variable whereas agriculture exports, agriculture imports and exchange rate were used as check variables. The study used all the 5 Anglophone ECOWAS countries. The study used descriptive statistics, correlation matrix, pooled OLS, fixed effect and random effect models as well as generalized method moment (GMM) modeling techniques for the analysis. The study shows that ECOWAS trade liberalization scheme (ETLSAGL) has a negative effect on Agricultural sector performance in Anglophone West African countries; agriculture export to GDP ratio (AGEXAGL) has a negative effect on agricultural sector performance in Anglophone West African countries; agriculture import to GDP ratio (AGIMAGL) has a negative effect on agricultural sector performance in Anglophone ECOWAS countries; exchange rate (EXRCAGL) has a negative effect on agricultural sector performance in Anglophone countries. The study therefore concludes that ECOWAS trade liberalization scheme has not enhanced agricultural sector performance in Anglophone West African countries within the period of study. The study therefore recommends full compliance in the removal of tariff and non-tariff barriers in line with the provisions of ETLS, implementation of (Common External Tariff CET), and adoption of a common currency by ECOWAS member countries to help mitigate negativity in exchange rate.

References

- [1]. Abreha, G., 2019. Importing and firm productivity in Ethiopian manufacturing, *World Bank Econ. Rev.* 33, 772–792.
- [2]. Abugamea, G. H. (2015). The competitiveness of the Palestinian foreign trade: A cointegration analysis. In *Economic Research Forum Working Papers* No. 541.
- [3]. Adam, A. M. (2012). An Evaluation of Intra-Trade Potential in Economic Community of West African States (ECOWAS). *Asian Journal of Finance and Accounting*, 4(2), 314-331.
- [4]. Adekunle, W. & Ndukwe, I. (2018). The impact of exchange rate dynamics on agricultural output performance in Nigeria. MPRA Paper No. 87750, <https://mpra.ub.uni-muenchen.de/87750/>
- [5]. Ajakaiye, O., & Ncube, M., (2010). Infrastructure and Economic Development in Africa: An Overview. *Journal of African Economies*, 19, 3-12.

- [6]. Akims, K. A. (2014). The prospects of ECOWAS trade liberalisation in Nigeria. *Net Journal of Social Sciences*, 2(3), 77-81.
- [7]. Akinniran, T. N. & Olatunji, O. V. (2018). Effects of exchange rate on agricultural export in Nigeria. *International Journal of Engineering Science Invention*, 7(8), 32-40.
- [8]. Aluko, O.A., & Adeyeye, P.O. (2020). Imports and economic growth in Africa: testing for granger causality in the frequency domain, *J. Int. Trade Econ. Dev.* 29, 850–864.
- [9]. Asante, F. O. (2018). Assessing the ECOWAS Trade Liberalization Scheme (ETLS) as a Vehicle for The Promotion of a West African Free Trade Area. Unpublished Dissertation is submitted to the University of Ghana, Legon in Partial Fulfillment of the Requirement for the Award of the Master of Arts (M.A) International Affairs Degree.
- [10]. Babatunde, M. A. (2006). Trade policy reform, regional integration and export performance in the ECOWAS Sub-Region. *BCID Research Paper*, No. 6, 2006
- [11]. Bakari S., & Mohamed M., 2018. The impact of agricultural trade on economic growth in North Africa: econometric analysis by static gravity model, MPRA Paper No. 85116, University of Tunis El Manar, Tunisia.
- [12]. Bakari, S. & Mabrouki, M. (2018). The impact of agricultural trade on economic growth in North Africa: econometric analysis by static gravity model. MPRA Paper No. 85116, <https://mpra.ub.uni-muenchen.de/85116/>
- [13]. Bureau, J., Jean, S., & Matthews, A. (2006). The Consequences of Agricultural Trade Liberalization for Developing Countries. Invited paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-18, 2006
- [14]. Busari, I., & Raheem, A. (2013). Non-oil export and Economic Growth in Nigeria: Does Methodology Matter? *Journal of Asian Development Studies*, 2(2), 21-34.
- [15]. Dawson, A. & Sanjuan-Lopez, P. (2010). Agricultural Exports and Economic Growth in Developing Countries: A Panel Co-integration Approach. *Journal of Agricultural Economics*, 63(1), 565 – 583.
- [16]. Dawson, P. J. (2005). Agricultural Exports and Economic Growth in Less Developed Countries," *Journal of Agricultural Economics*, 3(2), 145 – 152.
- [17]. Divine, S., Gilbert, G. & Linyong, N. (2013). Impact of agricultural exports on economic growth in Cameroon: Case of Banana, Coffee and Cocoa," *International Journal of Business and Management Review*, 1(1), 44-71.
- [18]. Duru, I. U., Okafor, B. O. N., Adikwu, F. O., & Njoku, F. C. (2020). Trade liberalization and economic growth: an assessment of Nigerian experience. *Asian Development Policy Review*, 8(3), 194-213. DOI: 10.18488/journal.107.2020.83.194.213
- [19]. ECOWAS Vanguard (2013). The ECOWAS Trade Liberalisation Scheme: Genesis, Conditions and Appraisal. NANTS Regional Advocacy Series, 2(3), 1-12.
- [20]. Eyayu, T. (2014). Determinants of Agricultural Export in Sub-Saharan Africa: Evidence from Panel Study. *American Journal of Trade and Policy*, 3(3), 165-173.
- [21]. Fajana, o. (2018). Accelerating the implementation of the ECOWAS trade liberalization scheme. *International Journal of Academic Research in Business and Social Sciences*, 2(7), 82-122.
- [22]. Geda, A. (2006). Openness, inequality and poverty in Africa. DESA Working Paper No. 25, ST/ESA/2006/DWP/25
- [23]. Ghani, G. M. (2009). The impact of trade liberalization on developing countries' trade balances with industrial and developing countries: an econometric study. *International Journal of Business and Society*, 10(2), 53 - 64
- [24]. Guntukula, R., (2018). Exports, imports and economic growth in India: evidence from cointegration and causality analysis, *J. Theor. App. Econ.* 25, 221–230.
- [25]. Hadjiyiannis, C., Heracleous, M. S. & Tabakis, C. (2016). Regionalism and Conflict: Peace Creation and Peace Diversion. *Journal of International Economics*, 102, 141–59.
- [26]. Hamdan, B. S. S. (2016). The Effect of Exports and Imports on Economic Growth in the Arab Countries: A Panel Data Approach. *Journal of Economics Bibliography*, 3(1), 42-56.
- [27]. Ibekwe, A. O. (2020). Effects of exchange rate on agricultural sector output in Nigeria 1987-2019. *International Journal of Innovative Finance and Economics Research*, 8(3), 43-54.
- [28]. Ijuo, O. A., & Andohol, J. (2020). Agricultural exports and economic growth in selected West African Countries. *World Academics Journal of Management*, 8(1), 29-39.
- [29]. Iloh, E. C., Nwokedi, M., Onyebukwa, C. F. & Ekeocha, Q. (2019). World Trade Organization's Trade Liberalization Policy on Agriculture and Food Security in West Africa. *Regional Development in Africa*, 1-20. DOI: <http://dx.doi.org/10.5772/intechopen.86558>
- [30]. Javad, M. & Mohsen, B. (2016). The Contribution of Industry and Agriculture Exports to Economic Growth: The Case of Developing Countries. [Online]. www.worldscientificnews.com
- [31]. John, O. A., & Bright, O. O. (2016). Effect of trade liberalization on economic development in Nigeria, (1980-2013). *International Journal of Developing and Emerging Economies*. 4(2), 15-27.
- [32]. Kiawu, J. A. J. & Jones, K. G. (2012). Implications of food aid and remittances for West African food import Demand. *African Journal of Agricultural and Resource Economics*, 8(1), 30-44.
- [33]. Linyong, N., Divine, S. & Gilbert, G. (2013). Impact of Agricultural Exports on Economic Growth in Cameroon: Case of Banana, Coffee and Cocoa," *International Journal of Business and Management Review*, 1(1), 44-71.
- [34]. Mehdi, T., Masoumeh, G., Elham, M. & Hadi, P. G. (2012) Study on the impact of export and import on economic growth in Iran. *Journal of Basic and Applied Scientific Research*, 2(12), 12787-12794.
- [35]. Mohammad, N., Shahiki, T., & Zahra, S. (2012). Trade liberalization, financial development and economic growth in the long term: The case of Iran. *Business and Economic Horizons*, 8(2), 33-45. doi.org/10.15208/beh.2012.9
- [36]. Mohammed, S. (2015). Trade liberalization and intra-regional trade: a case of selected ECOWAS countries. *African Development Review*, 27(1), 27–40.
- [37]. Mustofa, G. (2018). Trade liberalization. <https://www.economicshelp.org/blog/glossary/trade-liberalisation/>
- [38]. Mutenyo, E., & Bbaale, J. (2011). Export composition and economic growth in Sub-Saharan Africa: A Panel Analysis, Consilience," *The Journal of Sustainable Development*, 6(1), 1–19. 2011.
- [39]. Mwangi, E. N., Chen, F., & Njoroge, D. M. (2020). Agricultural imports, agriculture productivity and economic growth in Sub-Saharan Africa. *Journal of African Trade*, 7(1-2), 15–28.
- [40]. Nirodha, D. S., Jaime, M. & Jeff, J. (2013). Trade liberalization effects on agricultural production growth: the case of Sri Lanka. *Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual (SAEA) Meeting, Orlando, Florida.*

- [41]. Nyairo, N. M., Kola, J. & Sumelius, J. (2010). Impacts of agricultural trade and market liberalization of food security in developing countries: comparative study of Kenya and Zambia. *Contributed Paper presented at the Joint 3rd African Association of Agricultural Economists (AAAE) and 48th Agricultural Economists Association of South Africa (AEASA) Conference, Cape Town, South Africa, September 19-23, 2010.*
- [42]. Ofei, E. O. (2016). Trade Liberalization and Export Competitiveness: Evidence from the EU-ECOWAS Trade. MPRA Paper No. 87808. Online at <https://mpra.ub.uni-muenchen.de/87808/>
- [43]. Oguanobi, C. R., Akamobi, A. A., Aniebo, C. A. & Mgbemena, E. M. (2014). Nigeria and the ECOWAS trade liberalization scheme: the journey so far. *Review of Public Administration and Management*, 3(5), 60-66.
- [44]. Olatunji, A. S. (2019). Effect of Economic Integration on Agricultural Export Performance in Selected West African Countries. *Economies*, 7(4), 1-15. doi:10.3390/economies7030079
- [45]. Olayiwola, W., Osabuohien, E. & Okodua, H. (2011). Economic integration, trade facilitation and agricultural exports performance in Ecowas Countries
- [46]. Olowe, T. S., & Ibraheem, A. G. (2015). Impact of trade liberalization on the growth of the Nigerian economy 1970-2012. *Journal of Research in Business and Management*, 3(10), 01-07.
- [47]. Onyekwena, C., & Oloko, T. F. (2016). Regional trade for inclusive development in West Africa. Center for the Study of the African Economies (CSEA) Working Paper WPS/16/03, 1-23.
- [48]. Osabohien, R., Akinpelumi, D., Matthew, O., Okafor, V., Iku, E., Olowande, T., & Okorie, U. (2019). Agricultural Exports and Economic Growth in Nigeria: An Econometric Analysis. *International Conference on Energy and Sustainable Environment*, 331, 1-10. doi:10.1088/1755-1315/331/1/012002
- [49]. Osabuohien, E. S. C. (2007). Trade Openness and Economic Performance of ECOWAS Members - Reflections from Ghana and Nigeria. *African Journal of Business and Economic Research*, 2(2& 3), 57-73.
- [50]. Pandhi, D. (2007). A Senior Honors Thesis Presented in Partial Fulfillment of the Requirements for Graduation with Research Distinction in Economics.
- [51]. Sachin, N. & Mehta, D. (2015). The dynamics of relationship between exports, imports and economic growth in India. *International Journal of Research in Humanities & Social Sciences*, 3(7), 20-35.
- [52]. Sama, A. G., Gwah, G. L. & Noula, M. D. (2013). Impact of agricultural export on economic growth in Cameroon: Case of Banana, Coffee and Cocoa. *International Journal of Business and Management Review*, 1(1), 44-71.
- [53]. Sangho, K., Hyunjoon, L., & Donghyun, P., (2007). Could imports be beneficial for economic growth? Some evidence from Republic of Korea, ERD Working Paper Series No. 103, Asian Development Bank.
- [54]. Sani, I. A., & Yunusa, A. A. (2019). Impact of trade liberalisation of agricultural sector on economic growth in Nigeria: An empirical investigation. *EAS Journal of Psychology and Behavioural Sciences*, 1(1), 23-38.
- [55]. Shobande, O. A. (2019). Effect of economic integration on agricultural export performance in selected West African Countries. *Economies*, 7, 79. doi:10.3390/economies7030079
- [56]. Shuaibu, M. I. (2015). Does trade tariff liberalisation matter for Intra-ECOWAS trade? *International Journal of Business and Economic Sciences Applied Research (IJBESAR)*, 8(1), 83-112.
- [57]. Siyakiya, P. (2017). Can trade openness stimulate output performance? A case of selected African countries. *Journal of International and Global Economic Studies*, 10(2), 55-67.
- [58]. Tyopev, I. (2019). Trade Openness and Economic Growth in Selected West African Countries. An unpublished Thesis Submitted to the Postgraduate School, Benue State University, Makurdi in Partial Fulfillment of the requirements for the Award of Doctor of Philosophy (PhD) in Economics.
- [59]. Umoh, O. J. & Onye, K. U. (2013). The Growth Implication of Trade Liberalization in West Africa. MPRA Paper No. 88371. Online at <https://mpra.ub.uni-muenchen.de/88371/>
- [60]. Yusuf, M., Malarvizhi, C. A., & Khin, A. A. (2013). Trade Liberalization Economic Growth and Poverty Reduction in Nigeria. *International Journal of Business and Management*, 8(12), 1-7.

EMEKA UNACHUKWU. "Effect of ECOWAS Trade Liberalization Scheme on Agricultural Sector Performance in Anglophone West African Countries." *IOSR Journal of Economics and Finance (IOSR-JEF)*, 13(01), 2022, pp. 33-44.