



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

BY

Emeka Unachukwu and Prof. Ijeoma Kalu

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

emeka.unachukwu@gmail.com

Abstract

The study investigates empirically the effect of ECOWAS trade liberalization scheme on agricultural sector performance in selected Francophone ECOWAS 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 a sample of 5 Francophone 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 (ETLSFRC) has a negative effect on Agricultural sector performance in all the selected Francophone West African countries; agriculture export to GDP ratio (AGEXFRC) has a positive effect on agricultural sector performance in all selected in Francophone countries; agriculture import to GDP ratio (AGIMFRC) has a negative effect on agricultural sector performance in all selected Francophone ECOWAS countries; exchange rate (EXRCFRC) has a negative effect on agricultural sector performance in Francophone countries. The study therefore concludes that ECOWAS trade liberalization scheme has not enhanced agricultural sector performance in selected Francophone 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 Francophone Countries (Benin, Burkina Faso, Niger, Cote d'Ivoire, Senegal).

1. Introduction

The importance of trade liberalization in promoting dynamic productivity improvements and, as a result, economic growth in a country should not be overlooked. This is because trade liberalisation entails the removal of trade obstacles between countries and the promotion of free trade. Tariff reductions, quota reductions, and non-tariff obstacles reductions are all elements of trade liberalization.

According to Mustofa (2018), trade liberalisation allows countries to specialize in producing goods and services where they have a comparative advantage (produce at the lowest opportunity cost), resulting in a net gain in economic welfare. The removal of tariff barriers can also lead to lower consumer prices (e.g., removing food tariffs in West would help reduce the global price of agricultural commodities), trade liberalization means that enterprises will face more competition from other nations, it allows for increased specialization (for example, economies might focus on producing specific goods), and it makes a country more attractive for inbound investment.

In line with the foregoing, the ECOWAS Authority of Heads of State and Government directed in 1987 that the promotion and growth of intra-community commerce be given high priority by both member states and community institutions (Akims, 2014).

As a result, in January 1990, the ECOWAS Trade Liberalization Scheme (ETLS) went into effect, with the goal of eliminating customs duties and equivalent levies, removing non-tariff barriers, and establishing a Common External Tariff (CET) to protect goods produced in member states (Akims, 2014; and Oguanobi, Akamobi, Aniebo and Mgbemena, 2014). As a result, the ECOWAS trade liberalization scheme aims to give a boost to the West African region's economic integration and development. It also aims to make it simpler for local manufacturers to access markets in other ECOWAS countries, allowing them to compete more effectively against low-cost imported goods that may be dumped on the market. Because it gives member states preferential consideration, the plan is expected to foster more entrepreneurial development (CBN, 2011; Akims, 2014; and Oguanobi, Akamobi, Aniebo and Mgbemena, 2014).

It is normal that both in principle and practice that the presentation of the ECOWAS Trade Liberalization Scheme (ETLS) as an instrument for ECOWAS to build up a deregulation region in West Africa nations since its origin should improve exchange in the locality, support financial development, decrease destitution, create work and better the way of life of west African individuals. In any case, a quick glance at the area shows that everything isn't well with the

district. This is on the grounds that the economies of the area show that, perpetual underdevelopment, neediness, expanded debt burden, orderly breakdown of frameworks, joblessness, high pace of debasement, and so forth are as yet common.

Thomas (2008), Nwezeaku (2010) and Ogbonna, (2012) kept up with that the locality is truly confronted with ominous monetary indices as proven by high pace of lasting and persevering inflation, fluctuating and shortfall equilibrium of installment position, low per capita pay, helpless pay conveyance, and supported impoverishment. Poor use of bountiful natural, human and material assets, voracious eagerness and desire for extreme riches, degenerate practices at all levels and political banditry have been the most despicable aspect of these nations' financial advancement.

Nirav (2018) has it that when contrasted with East Asia and the Pacific's commitment to declining worldwide neediness, and all the more as of late South Asia, the sub-Saharan Africa's a lot more slow battle against destitution has been not able to match the advancement of these different localities. As indicated by the report, individuals living in neediness in the district developed from 278 million out of 1990 to 413 million out of 2015. Starting at 2015, the vast majority of the worldwide poor live in sub-Saharan Africa. Additionally, the World Bank (2018) detailed that the most recent outrageous destitution gauges from the World Bank uncovered that Africa is falling behind the remainder of the world. Development scholar Francisco Ferreira says Sub-Saharan Africa is the main locality on the planet where the general number of incredibly destitute individuals is expanding rather than diminishing, as indicated by the World Bank's most recent Poverty and Shared Prosperity report. In any case, the World Bank (2018) additionally announced that an expected 413 million individuals in Africa as of now live-in outrageous destitution — the greater part of the world's aggregate.

Observationally, a few investigations utilizing different measures to look at the trade liberalization on the economy of nations have given blended outcomes. For example, researchers like 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 affect the development of an economy and the whole economy while Ghani (2009), Olayiwola, Osabuohien and Okodua (2011), Olowe and Ibraheem (2015), Asante (2018), Tyopev (2019), Duru, Okafor, Adikwu, and Njoku (2020), and more have tracked down exchange advancement to have contrarily impacted the development of an economy and the whole economy.

Likewise, the survey of writing shows that not very many examinations have analyzed the impact of ECOWAS exchange advancement plot on agrarian area growth in parts of West African Countries. The greater part of studies evaluated either analyzed the impact of exchange transparency and monetary development Selected West African Countries (see; Osabuohien, 2007; and Tyopev, 2019). Yusuf¹, Malarvizhi and Khin (2013), Olowe and Ibraheem (2015) and Sani and Yunusa (2019) inspected the impact of exchange progression of horticultural area on financial development a solitary nation like Nigeria. Mohammed (2015) concentrated on the effect of exchange advancement on intra-provincial exchange chosen ECOWAS nations. Olatunji (2019) concentrated on the impact of financial combination on horticultural product execution in Selected West African Countries. None of the examinations known by the scientist have inspected the impact of ECOWAS exchange advancement plot on farming area execution chose Francophone West African Countries in a solitary work.

It is against this foundation that this review is set to analyze the impact of ECOWAS trade liberalization on agricultural sector growth in some West African Countries. The paper is coordinated into five areas. In the first place, is the introduction, following is the writing survey and hypothetical structure. Third, the strategy for study and model assessment is talked about. Fourth is the conversation of results, lastly, conclusion and proposals.

2. Literature Review

2.1 Review of Theoretical Literature

2.1.1 Mercantilist Trade Theory

The Mercantilists were a group of practical men, mostly businessmen, who pioneered the concept of international trade.

The doctrine has a lot of different aspects to it.

It was extremely nationalistic and placed a premium on the welfare of the country.

According to the theory, exporting more than imports is the most significant way for a country to grow wealthy and powerful. Sir Thomas Mum, a merchant and a director of the East India Company, Gerald Malynes, a merchant and government official, Jean Baptise Colbert, Thomas Hobbes, Edward Misselden, and Antonio Serra, who was the first to analyze and fully use the concept of the balance of trade, were some of the key figures of mercantilism, according to Akpakpan (1999). It was understood then, that, the most important way in which a country could

be rich was by acquiring precious metals such as gold. This was achieved by ensuring that the volume of export was better than the volume of import.

Trade must be regulated, controlled, and restricted. It was projected that the country would attain a favorable balance of payments. Mercantilism proposed tariffs, quotas, and other commercial policies to reduce imports and defend a country's trade position. Mercantilism was opposed to free commerce. The world of Mercantilism was a realm of struggle, with nature in a state of war. The necessity of regulation to maintain order in human and economic matters was overlooked. The mercantilist believed that the world's riches was predetermined. Trade benefits a country at the expense of its trading partners. That is, not all nations could simultaneously benefit from trade.

The economic policies of mercantilism were heavily criticized around the end of the 18th century.

The favorable trade balance was critiqued by David Hume as a short-term phenomenon that may be abolished automatically over time. The other country will very certainly retaliate. Mercantilism was also chastised for its pessimistic outlook on the global economy. The idea that the world's wealth is fixed due to the benefits of specialization and division of labor was also questioned by Adam Smith. The general level of productivity within a country will rise as a result of specialization and division of labor. Despite the criticism faced by the foundation of mercantilism, mercantilism is still alive today. New mercantilism now emphasized employment rather than holding some gold. They also postulate that exports are beneficial as jobs are provided domestically. The provision of jobs will lead to reduction in unemployment rate thereby suggesting that production of goods and service would increase which will imply economic growth. Import is considered bad as jobs are taken away and transferred to the foreign workers. To the new mercantilist, trade is a zero-sum activity which a country must lose for the other to gain. And that there is no acknowledgment that trade can provide benefits to all countries (Akeem, 2011; Enu, Havi & Hogan, 2013). Therefore, the inclusion of the mercantilist theory is appropriate because it recognizes the major variables in the study.

2.1.2. 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 the other hand, the same country should import a commodity in which it has higher cost or 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.

2.1.3 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.

"Greater advantage" is meant by "comparative 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 the existence of two countries, two commodities, and one factors of production, labour. He assumed that labour was fully employed and internationally immobile and that the product and factor of prices were perfectly competitive. There are no transport costs or any other impediments to trade. In context of a model of two countries, two commodities and one factor of production, Ricardo advanced that a country will tend to export the commodity in which it has a comparative disadvantage. Since comparative costs are the other side of comparative advantage, the theory could be expressed in terms of comparative costs. Specifically, the theory now states that a country will tend to export the commodity whose comparative cost is lower in production and comparative cost is higher in pre-trade isolation. By implication if this principle is upheld, the export (supply side) will outweigh the import (demand side) of external trade and the balance of trade of such country will be favourable comparatively.

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).

2.2 Empirical Literature

Geda (2006) explores the relationships between openness, poverty and inequality in Africa. The analysis begins with a review of social development on the continent since 1980, followed by a discussion of openness and a lengthy exploration of the patterns of trade and finance that link Africa to the rest of the world. The macroeconomic policy framework that guided African policymaking over the last three decades is the lens through which poverty and inequality are further examined. The study highlighted the major factors underpinning openness and social development, and concludes with policy.

Ghani (2009) examined the impact of trade liberalization on the merchandise trade balance for a sample of developing countries that have adopted trade liberalization policies. The impact is differentiated according to the destinations and origins of the exports and imports, whether they are developing or industrial countries. This is important as one of the arguments for protection is based on the assumption of asymmetry in the elasticities of products traded between developing and industrial countries, and this asymmetry leads to disparity in economic growth. The paper shows that the impact on the merchandise trade balance differs between the two groups of trading partners; there is weak evidence that the trade balance worsens (increase in deficit) for

trade with developing countries, but the trade balance improves (increase in surplus) for trade with industrial countries.

Olayiwola, Osabuohien and Okodua (2011) examined the interaction between economic integration and trade facilitation in ECOWAS and how the regional bloc has performed in promoting agricultural export. The objectives of the study were achieved using descriptive, statistical and econometric analyses of annual data covering the period 1995-2009. The descriptive analysis helped in assessing the level of economic integration in ECOWAS Members. The statistical and econometric analyses were relied on to examine the effect of economic integration on trade facilitation as well as the role of trade facilitation and economic integration in promoting agricultural exports in ECOWAS. The findings suggest that on the average, the level of trade facilitation in ECOWAS is below world average. It was also found that ECOWAS members with more bureaucratic processes experience greater costs of exporting/importing. Evidence from the study also reveals a sustained growth in agricultural production and a close relationship between agricultural production and agricultural exports in the region. Furthermore, results from econometric analyses indicate that economic integration significantly helps in facilitating trade within the ECOWAS sub-region. On the other hand, economic integration and trade facilitation were also found to be significant in influencing agricultural exports in the ECOWAS sub-region, while agricultural production had direct and significant impact on agricultural exports.

Nirodha, Jaime and Jeff (2013) investigated the effect of trade liberalization on agricultural production growth in Sri Lanka from 1960 to 2010. Multiple regression models were employed to investigate whether the trade policy reforms increase the agricultural sector growth or not. The empirical results suggest that the trade liberalization on agricultural sector growth and eventually lead to improved agricultural proclivity in Sri Lanka. Moreover, this analysis concludes that the trade openness, investment, interest rate, Free Trade Agreements are significant factors that are positively related to agricultural sector growth. Their research also confirms that the agricultural sector growth has made a wide contribution to total GDP to accelerate the economic growth in post-liberalization period in Sri Lanka.

Umoh and Onye (2013) empirically investigated the growth implication of trade liberalization in twelve West African (WA) countries using time series data for the period of 1970-2011. Relying on a Vector error correction model (VECM), the result indicates that trade orientation (trade policy variable) investment rate and exports shocks have significant positive impact on growth in

8 out of 12 West African economies. This suggests that it is possible to stimulate economic growth in some African countries through an outward-looking strategy of export expansion. We, thus, conclude that WA economies can vigorously pursue trade liberalization in order to enhance their growth performance. The caveat is that this would require a refocusing of domestic production capacity to commodity lines that overlap those of the trading partners, especially those of the OECD nations, so as to be able to garner the benefits derivable from liberal trade policy.

Mohammed (2015) investigated the relationship between trade liberalization and intra-ECOWAS in selected economies using system and difference generalized method of moments. The study found that trade liberalization has contributed to intra-regional trade in West Africa. Our results also show that better institutional quality and infrastructure are associated with higher intra-ECOWAS trade. Furthermore, using fixed and random effect estimators our findings were validated, thus reinforcing support to the hypothesis that removal of trade restrictions particularly in the manufacturing and primary sectors, good governance and infrastructural developments enhance trade amongst ECOWAS countries.

Olowe and Ibraheem (2015) investigated the impact of trade liberalization on the growth of the Nigerian economy from 1970-2012. The study used trade openness, dummy variable for nature of regime of administration in Nigeria at a particular period, exchange rate and dummy variable for structural adjustment program SAP periods. The study employed both descriptive and econometric analysis techniques. The descriptive analysis shows that the trend of trade openness in Nigeria and economic growth has been positive but relatively unstable. The Ordinary Least Square estimating technique shows that there is a negative relationship between trade openness and the GDP of Nigeria which is the proxy for economic growth. While other variables such as exchange rate, regime of administration and SAP showed positive nonsignificant relationship with growth. In this regard, the major conclusion from the study is that trade liberalization has not improved the growth of the Nigerian economy significantly. Ultimately, the results have shown that Nigeria has not adequately benefited from her trade openness. This might be the reason while SAP fails to shown significant impact on growth of the Nigerian economy.

Hadjiyiannis, Heracleous and Tabakis (2016) investigated the implications of preferential trade agreements (PTAs) for interstate conflict. Their study set up a two-stage game with three competing importers, where first, two of the countries decide on whether to initiate war against each other, and subsequently, all three countries select their import tariffs. The results showed that PTAs produce both a “peace-creation” effect and a “peace-diversion” effect, whereby they

reduce the likelihood of conflict between member countries (peace creation) but render the eruption of war between member and non-member countries more likely (peace diversion).

Onyekwena and Oloko (2016) examined the potential of regional trade in facilitating the achievement of inclusive development in the West African region. The study employed descriptive analysis to examine the nature, composition and dimension of ECOWAS trade within the group and with the rest of the world, vis-à-vis three other Regional Economic Communities (RECs) in sub-Saharan Africa (SSA). From the preliminary study, it can be observed that the growth rate of West African economies is increasing, but the rising economic growth does not translate to improvement in inclusive development, as there was no significant reduction in poverty levels in the region. It further reveals that extra-regional trade of the region is increasing at a very high rate, and also at a disproportionate rate with intra-regional trade, compared with SADC. This indicates the existence of opportunity to boost regional trade for inclusive development through conversion of part of the extra-regional trade into regional trade. However, the study further finds that the region's exports is dominated by mineral fuels, lubricants and related materials, and imports dominated by machinery, transport equipment, manufactured goods and chemicals, which implies that skilled technical manpower in the manufacturing sector must be available to effectively exploit the opportunity of trade for inclusive development in the region. Thus, the study concludes that, with the shortage of skilled technical manpower to boost the manufacturing sector in the region, achieving inclusive development in West Africa through regional trade might be difficult. It however recommends that West African countries should intensify investment in human capital development and re-invigorate their commitment towards regional industrial policy to foster higher regional trade and enhance inclusive development in the region.

Asante (2018) explored whether the ETLS scheme has succeeded in the creation of a free trade area in the West African sub-region. The study gathered data through interviews and secondary sources like books, journal articles and official documents and reports from ECOWAS, UNIDO, and the EU, the study has been able to assess the ETLS and its implementation and offered a conclusion on whether the performance of the scheme has been good so far. In the end, the conclusion is that, even though the scheme has achieved some heights in its implementation of, amongst others, the MFN Treatment and regional accreditation systems, it has generally failed in the creation of a free trade area. This is because of shortfalls in the implementation of such

provisions like the national treatment provisions, transparency mechanisms, competition policies, harmonization models, amongst others.

Sani and Yunusa (2019) assessed the impact of trade liberalization of agricultural sector on economic growth in Nigeria from 1981 to 2016. The study used Error Correction model (VECM) to analyse the data. The study reveals that unidirectional causality emanates from exchange rate to RGDP at weak level of significance (10%) and also a unidirectional causality runs from agricultural export to import and from exchange rate to import at 5% and 1% respectively. However, no evidence of causality was found from GDP to the proxies of trade liberalization and vice-versa. Findings further show that trade liberalization and appreciation in the level of exchange rate exert positive impact on real economic growth in Nigeria. Thus, the study concluded that trade liberalization is good for the Nigerian economy and thus the study recommends for economic diversification to agriculture in order to boost the agricultural production and its export; although it has to be handled carefully as it also has some negative effects. Hence, government should give utmost priority to agricultural sector.

Duru, Okafor, Adikwu, and Njoku (2020) studied the association between trade liberalization and economic growth in Nigeria from 1981 to 2018 using the Autoregressive Distributed Lag Bounds technique for cointegration. The results showed that trade liberalization does not support economic growth in Nigeria. Hence, the genuineness of the extensive trade liberalization campaign in developing countries through the bright idea of international organizations in the late 1980s and early 1990s was not validated. Furthermore, the results showed the presence of unidirectional causality from real Gross Domestic Product to trade liberalization in Nigeria. The study, therefore, recommends that policymakers of the government should balance its strategies of trade liberalization as a result of the inability of the economy to absorb the adverse shocks from foreign trade, appropriate fiscal and monetary policies should be deployed by the government for the protection of the economy against foreign influences and the diversification of the structure of export is necessary to ensure that manufactured products are exported more. Also, the Central Bank of Nigeria and policymakers of the government should prescribe sound macroeconomic policies that will ensure price stability to reduce the uncertainties associated with investment in the economy to boost economic growth. The government should also provide incentives to investors and a conducive environment for investment. Moreover, the government should initiate policies of growth for the promotion of trade.

3. 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 (ETLSFRC) and the three measures of liberalization such as Agric Export (AGEXFRC), and Agric Import (AGIMFRC) in line with Mohammad, Shahiki, and Zahra (2012) and shall also add exchange rate (EXRCFRC) as the explanatory variables.

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

$$AGRPFRC = f (ETLSFRC, AGEXFRC, AGIMFRC, EXRCFRC) \quad (3.2)$$

Where;

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

ETLSFRC = ECOWAS liberalization scheme proxied by dummy

AGEXFRC = Agric Export

AGIMPFRC = Agric Import

EXRCFRC = Exchange rate

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

$$AGRPFRC = \beta_0 + \beta_1ETLSFRC + \beta_2AGEXFRC + \beta_3AGIMFRC + \beta_4EXRCFRC + \mu \quad (3.3)$$

Where;

β_0 , are the intercepts

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

AGRPFRC, ETLSFRC, AGEXFRC, AGIMFRC, EXRCFRC 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	AGRPFRC	Agricultural Sector performance proxied by proportion of Agriculture to GDP (%)	World Development Indicator (WDI)
2	ETLSFRC	ECOWAS Trade Liberalisation Scheme proxied by Dummy	World Development Indicator (WDI)
3	AGEXFRC	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	AGIMFRC	Import to GDP ratio a proxy of liberalization characterizing the dimension of openness related to increased international competition (%)	World Development Indicator (WDI)
5	EXRCFRC	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:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + \mu_{it} \quad (3)$$

Where;

$\alpha_i(i=1, \dots, n)$ 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:

$$Y_{it} = \beta X_{it} + a + \mu_{it} + \varepsilon_{it} \quad (4)$$

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 (ETLSFRC), Agric Export (AGEXFRC), Agric Import (AGIMFRC) and exchange rate (EXRCFRC) will enhance agricultural sector performance in selected West African countries.

4. Data Analysis and Interpretation

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

Table 4.7 presents the results of the pooled OLS, fixed effect model and random effect model in selected Francophone West African countries. This will enable the researcher find out the effect of ECOWAS trade liberalization scheme on agricultural sector performance in selected Francophone West African countries.

Table 4.1: Panel Regression Results for Francophone Countries

Variables	Pooled OLS Result	Fixed Effect	Random Effect
Constant	18.389 (0.000)	23.147 (0.000)	18.388 (0.000)
ETLSFRC	-8.353 (0.000)	-4.716 (0.000)	-8.353 (0.000)
AGEXFRC	0.178 (0.000)	0.081 (0.000)	0.178 (0.000)
AGIMFRC	-1.003 (0.001)	-0.234 (0.482)	-1.003 (0.001)
EXRCFRC	0.016 (0.000)	0.0008 (0.818)	0.016 (0.000)
F-Cal	92.86 (0.000)	13.04 (0.000)	
R ²	0.741	0.562	0.741
Hausman Test for		88.74 (0.000)	

fixed effect			
--------------	--	--	--

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 Francophone Countries

The pooled OLS results examining the effect of ECOWAS trade liberalization scheme on agricultural sector performance in selected Francophone West African countries presented in Table 4.7 show that across all specifications, ECOWAS trade liberalization scheme (ETLS) has a negative (-8.353) and a significant effect on agricultural sector performance in selected Francophone West African countries. Agriculture export to GDP ratio (AGEX) has a positive (0.178) and a significant impact on agricultural sector performance in selected Francophone West African countries at the 5 per cent level. Similarly, the coefficient of agriculture import to GDP ratio (AGIM) has a negative (-1.003) and significant predictor of agricultural sector performance in selected Francophone West African countries at the 5 per cent level. Exchange rate (EXRC) is a positive (0.016) and significant predictor of agricultural sector performance in selected Francophone West African countries at the 5 per cent level.

Also, the model of selected Francophone West African countries has a good fit as the variation in agricultural sector performance is explained by the regressors is about 74 per cent while the F-statistic is statistically significant across all specifications demonstrating the joint significance of the explanatory variables.

(b) Hausman Test Results for Francophone Countries

The result of the Hausman test in selected Francophone West African countries is presented in table 4.7. 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 0.000, hence the null hypothesis is rejected and the fixed effect estimator is used to analyse the model in selected Francophone West African countries.

(c) Fixed Effects Model Results for Francophone Countries

The fixed effect (FE) estimator results examining the effect of ECOWAS trade liberalization scheme on Agricultural sector performance in selected Francophone West African countries presented in Table 4.7 show that across all specifications, ECOWAS trade liberalization scheme (ETLS) has a negative (-4.716) and a significant impact on Agricultural sector performance in selected Francophone West African countries. Agriculture export to GDP ratio (AGEX) has a positive (0.081) and a significant impact on Agricultural sector performance in selected Francophone West African countries at the 5 per cent level. Similarly, the coefficient of agriculture import to GDP ratio (AGIM) is a negative (-0.234) and an insignificant predictor of Agricultural sector performance in selected Francophone West African countries. Exchange rate (EXRC) is a positive (0.0008) and an insignificant predictor of Agricultural sector performance in selected Francophone West African countries.

Also, the FE model estimator in selected Francophone West African countries have a good fit as the F-statistic is statistically significant across all specifications demonstrating the joint significance of the explanatory variables.

4.5.2 Generalised Method of Moment (GMM) Regression Model Results for Francophone Countries

The GMM regression results examining the effect of ECOWAS trade liberalization scheme on agricultural sector performance in selected Francophone West African countries across all specifications is presented in Table 4.8 below.

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

Variables	Coefficient	Probability Values
AGRPFRC L1.	1.197	0.001
ETLSFRC	-0.069	0.031
AGEXFRC	0.071	0.026
AGIMFRC	-6.756	0.101
EXRCFRC	-0.006	0.361
CONS	7.679	0.011
Number of Observations	131	
F-Cal	500.53	0.000
Number of Groups	5	
Number of Instruments	9	

AR (1)	0.028	
AR (2)	0.970	
Sargan Test	0.314	

Source: *Extract from Stata*

The ECOWAS trade liberalization scheme-agricultural sector performance association in selected Francophone West African countries is surveyed within the framework of a generalized method of moment (GMM) estimator. Table 4.8 shows the results from the heterogeneous panel regression from the GMM estimator in selected Francophone West African countries. From table 4.8, 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 is negative (-0.069) and is statistically significant at 5 per cent level in selected Francophone West African countries; agriculture export to GDP ratio (AGEX) has a positive (0.071) effect on Agricultural sector performance in selected Francophone West African countries; the effect of agriculture import to GDP ratio (AGIM) on Agricultural sector performance in selected Francophone West African countries is negative (-6.756) and is not statistically significant at 5 per cent level; the effect of exchange rate (EXRC) on Agricultural sector performance in selected Francophone West African countries is negative (-0.006) and is not statistically significant at 5 per cent level.

5. Conclusion and Policy Recommendation

The study investigates empirically the effect of ECOWAS trade liberalization scheme on agricultural sector performance in selected Francophone ECOWAS 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 a sample of 5 Francophone 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 (ETLSFRC) has a negative effect on Agricultural sector performance in all the selected Francophone West African countries; agriculture export to GDP ratio (AGEXFRC) has a positive effect on agricultural sector performance in all selected in Francophone countries; agriculture import to GDP ratio (AGIMFRC) has a negative effect on agricultural sector performance in all selected Francophone ECOWAS countries; exchange rate (EXRCFRC) has a negative effect on agricultural sector performance in Francophone countries. The study therefore concludes that ECOWAS trade liberalization scheme has not enhanced agricultural sector performance in selected Francophone 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

- Akims, K. A. (2014). The prospects of ECOWAS trade liberalisation in Nigeria. *Net Journal of Social Sciences*, 2(3), 77-81.
- 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.
- Babatunde, M. A. (2006). Trade policy reform, regional integration and export performance in the ECOWAS Sub-Region. *BCID Research Paper*, No. 6, 2006
- 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
- ECOWAS Vanguard (2013). The ECOWAS Trade Liberalisation Scheme: Genesis, Conditions and Appraisal. NANTS Regional Advocacy Series, 2(3), 1-12.
- Geda, A. (2006). Openness, inequality and poverty in Africa. DESA Working Paper No. 25, ST/ESA/2006/DWP/25

- 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
- Hadjiyiannis, C., Heracleous, M. S. & Tabakis, C. (2016). Regionalism and Conflict: Peace Creation and Peace Diversion. *Journal of International Economics*, 102, 141–59.
- 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.
- 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
- Mohammed, S. (2015). Trade liberalization and intra-regional trade: a case of selected ECOWAS countries. *African Development Review*, 27(1), 27–40.
- Mustofa, G. (2018). Trade liberalization. <https://www.economicshelp.org/blog/glossary/trade-liberalisation/>
- 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*.
- 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*.
- 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/>
- 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.
- 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
- Olayiwola, W., Osabuohien, E. & Okodua, H. (2011). Economic integration, trade facilitation and agricultural exports performance in Ecowas Countries
- 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.

- 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.
- 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.
- 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.
- Shobande, O. A. (2019). Effect of economic integration on agricultural export performance in selected West African Countries. *Economies*, 7, 79. doi:10.3390/economies7030079
- 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.
- 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.
- 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/>
- Yusuf1, 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.