Regional Integration and Growth in Economic Community of West African States: A Re-Appraisal

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Abstract: This study examined the effects of trade and financial integration on economic growth in ECOWAS. It spanned the period, 2010 - 2020. The objective of the study was to examine the effects of trade and financial integration on economic growth using trade integration index and financial integration index as proxies for trade integration and financial integration respectively. To overcome the potential problems such as cross-sectional dependence among countries, serial correlation of the error term, and more importantly, the problem of identification and endogenous regressors that characterise some panel data regression methods, this study employed an instrumental variable (IV) regression based on the dynamic panel data (DPD) method, within the framework of the generalised method of moments (GMM-SYS). The study revealed that: (1) There was a steady and sustainable growth within ECOWAS despite the low growth rates in countries of the region. (2) Trade integration had a positive significant effect on economic growth in countries of ECOWAS (3) Financial integration fostered economic growth within ECOWAS. Based on these findings, it was recommended, inter alia, that: (1) Member countries should adopt a strategy of mutual cooperation to assist countries with low levels of human capital index, gross fixed capital formation, domestic value-added, exchange rate and foreign direct investment through the provision of high- level manpower and financial support (2) ECOWAS should strive toward strengthening the productive capacities of firms in individual member countries through proper check of the smuggling activities by entrepot states to curtail dumping which usually inhibits the growth of local industries.

Keywords: Financial Integration, Trade Integration, Regional integration (ECOWAS), Economic Growth.
JEL Classification: F02, F10, F36, R11

1. INTRODUCTION

The attainment of sustainable economic growth has remained one of the most important objectives of both developed and emerging economies. Economic growth is considered a precondition for increased productive employment, which is attained by increasing the quality and quantity of the factors of production including land, labour, capital and entrepreneurship. Globally, economic growth has become a sine qua non for economic progress because it enhances standards of living, reduces poverty and unemployment rates, besides raising life expectancy. Moreover, sustainable growth generates higher tax revenues thereby reducing government borrowing and debt to GDP ratios, raising real income, improving public services and encouraging firms to invest in order to meet future demand. Sustained economic growth leads to reduction in absolute level of poverty and increase in economic development.

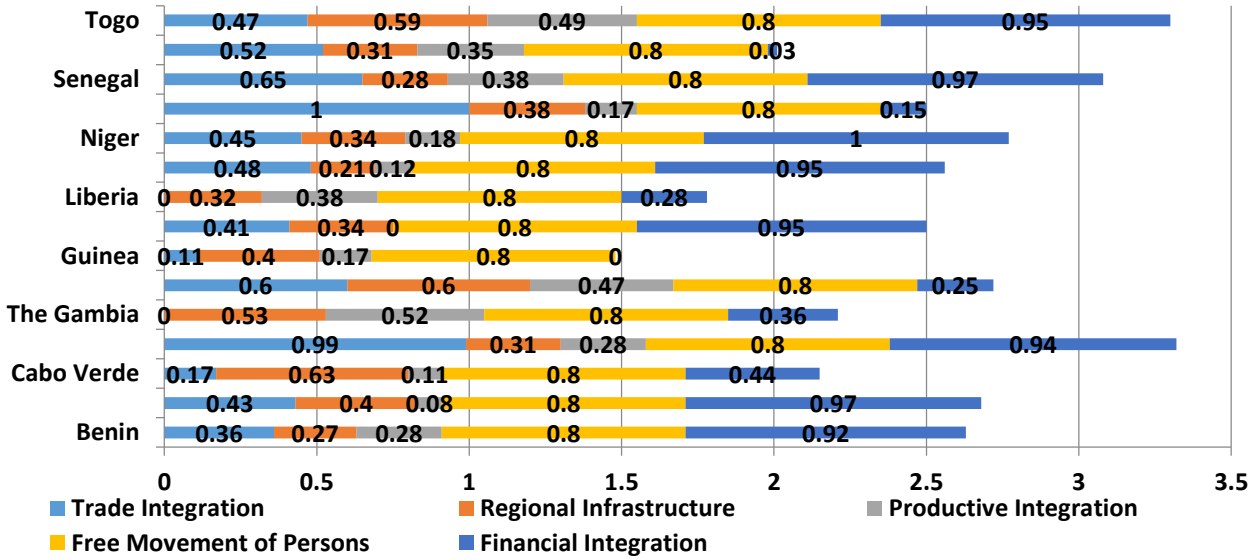
According to Tinta, et al. (2018), the achievement of economic growth in contemporary economies, particularly those of developing countries has remained a major challenge. Economic output of African countries was less than the desired output as the continent reported marginal growth which later declined rapidly from positive growth rate in 1960s and 1970s to negative growth rate in the period, 1980 - 2018 resulting in a significant economic downturn (World Bank, 2019). The whole of 1980s was generally perceived as a period of global recession following the oil shock of the late 1970s which resulted in high-interest rates, reduced international capital flows, low commodity prices, high unemployment, and high external debts (Elu, 1998). Most developing nations were grossly affected by the persistently declining GDP growth rate which posed a serious challenge to the general welfare of most African countries.

African economies began to explore various policy options such as globalization and regional integration in a bid to save their economies and further contain both the exogenous and endogenous shocks posed by the global recession. Expectedly, regional integration allows countries to overcome divisions that impede the flow of goods, services, capital, people and ideas by integrating goods, services and factors' markets, thereby facilitating the flow

of trade, capital, energy, people and ideas (Tinta, et al. 2018). Regional integration is a process in which two or more states come together and agree to cooperate and work closely together as one unit to achieve peace, stability and wealth (Muriuki & Kosimbei, 2015). It helps in creation of trade and more jobs, encourages a greater consensus, allows political cooperation, lowers sovereignty and shift employment; it curtails trade division from productive exporters to less capable exporters. All regional integration agreements have the objective of reducing or eliminating barriers among their members which fosters growth.

African countries embraced regional integration as a crucial element of development strategies with the primary aim of containing the obstacles that characterize small and fractioned economies working in isolation. Economic Community of West African States (ECOWAS) was established in 1975, with 15 member countries including Benin, Burkina Faso, Cape Verde, Cote d' Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal and Togo. The regional integration indices of ECOWAS member countries have been presented in Fig. 1

Fig. 1 Country-Specific Regional Integration Indices in ECOWAS, 2010-2020



Source: ARII (2020)

As can be seen in Fig 1, countries which have achieved trade integration within ECOWAS include Nigeria, Cote d' Ivoire, Senegal, Ghana, and Sierra Leone. Countries which are yet to achieve trade integration are Mali, Togo, Niger, Burkina Faso, Guinea Bissau, Benin, Cape Verde, Guinea, Liberia and Gambia. With respect to financial integration, countries which have achieved financial integration are: Niger, Senegal, Burkina Faso, Togo, Mali, Guinea Bissau, Cote d' Ivoire and Benin. Cape Verde, Gambia, Liberia, Ghana, Nigeria, Sierra Leone and Guinea are yet to achieve financial integration.

Despite growing integration within the region, socially desired rate of growth is still far from being achieved, implying thereby that the region has not benefited appreciably from regional integration. A close examination of the trends in regional integration and economic growth among ECOWAS reveals that countries with the highest integration indices, on the average, do not necessarily have corresponding growth rate. This poses a fundamental question on whether or not regional integration through trade openness and financial flows actually stimulates economic growth in member countries.

It is the quest to provide answer to this question which has informed the need to embark on this study in order to determine the effects of trade and financial integration on economic growth in ECOWAS. Specifically, the study sought to determine the contributions of trade integration and financial integration to economic growth in ECOWAS. To achieve the objectives of this study, the Dynamic Panel Data (DPD) method, within the framework of the Generalized Method of Moments (GMM) was adopted. The essence was to overcome the problems associated with the pool mean group (PMG), fixed effect (FE) and random effect (RE), which are fragile for a detailed analysis of cross-sectional interdependence among countries. Most importantly, GMM generalizes the method of moments by allowing the number of moment conditions to be greater than the number of parameters. In that way, the problem of identification and endogenous regressors is overcome (Collischon & Eberl, 2020).

2. LITERATURE REVIEW

Literature has been reviewed in order to determine the extent to which studies on regional integration in ECOWAS have been carried out. The review has also informed the choice of relevant variables and the formal econometric techniques. Literature review has been organized under the following: conceptual issues, theoretical literature, studies in related area and summary of literature review.

2.1 Conceptual Issues

There are no serious issues or definitional problems arising from the concept of regional integration as most authors have expressed similar views on the concept. However, the present study has adopted the definition of regional integration by Coleman and Underhil (2012) who viewed regional integration as a process of strengthening interconnectivity encompassed by the economies of a region through enhanced collaboration with the backing of unified policies and initiatives. This definition has a theoretical implication for the present study which is that regional integration has the capacity to promote productivity and economic growth via trade and financial channels. Thus, in this way, Coleman and Underhil (2012) incorporated trade integration and financial integration into the concept of regional integration.

With respect to economic growth, there are several definitional problems surrounding the concept. This is the result of different views expressed by different authors on the concept of economic growth. Angelsen and Wunder (2006) defined economic growth as the monetary value of total production or total income for a country which is implicit in the increase in average income. Todaro and Smith (2011) viewed economic growth as a sustained increase in the output of a country during a specific period. To Jhighan (2012), economic growth is a quantitative increase in the country's output or income accompanied by an expansion in its labour force, consumption, capital and volume of trade. One major issue of concern to the present researchers is whether to measure economic growth in monetary term or to measure it in real term. In resolving this issue, the researchers have opted for Todaro and Smith (2011) and Jhinghan's (2012) definitions, which immediately renders any consideration of prevailing inflation rates in different countries of West Africa to be unnecessary.

2.2. Theoretical Literature

Endogenous Growth Theories

The foundations of the endogenous growth theory are in the analytical framework developed by Solow (1956) and Swan (1956). The new growth theories were anchored on the endogenous growth theories, which were developed in reactions to the omissions and deficiencies in the neoclassical growth theory. The new growth theories explain the long-run growth rate of an economy based on endogenous factors as against the exogenous factors of the neoclassical growth theory. The neoclassical growth theory explains the long-run growth rate of output based on two exogenous variables: the rate of population growth and the rate of technological progress which are independent of the saving rate. As the long-run growth rate depended on exogenous factors, the neoclassical theory has few policy implications. Romer (1986) pointed out that in models with exogenous technical change and exogenous population growth, it never really mattered what the government did. The new growth theory did not only criticize the neoclassical growth theory but extended it by introducing endogenous technical progress in the growth models. This approach pays special attention to the factors relevant for economic growth, particularly human capital (education, skills, specialised knowledge) and technological progress (investment in research and development, diffusion of knowledge and innovations) as well as factors related to convergence processes. The framework of this model shows the relevance that human capital and the level of the knowledge of research and development sector have on the growth rate of a country. On the one side, by assigning more human capital into this sector the creation of new knowledge (ideas) can be increased. On the other side, the new knowledge increases the stock of knowledge of the entire economy and as a consequence brings an increase in the productivity of the individuals (researchers) involved in R&D activities. Therefore, it may be expected that countries with low levels of human capital will contribute less to innovative activities and as a consequence they will tend to have a lower rate of growth.

Economic integration is also seen as expanding the consumer base which may also increase the necessary competition and hence mitigate redundancy in research and development required to generate growth. Regional integration may also lead to inter-sectoral and international reallocation effects or trigger economic forces (Krugman, 1991). The new growth theories assume that there are many firms in the market, knowledge or technological advance is a non-rival good, there are increasing returns to scale to all factors taken together and constant returns to a single factor, at least one, technological advancement comes from things people do. This means that technological advance is based on the creation of new ideas. Many individuals and firms have market power and earn profits from their discoveries. This assumption arises from increasing returns to scale in production that leads to imperfect competition. Following the theory, three fundamental implications are important for regional policy. First, the growth rate of less developed regions is higher than the growth rate of developed areas. Second, the growth rate

of the per capita income increases as the economy moves far away from their steady-state equilibrium. Third, the growth rate depends exogenously on the rate of population growth and technical progress. The endogenous growth theory emphasises the role of knowledge for economic development. Tacit knowledge tends to increase divergence, meanwhile codified and interregional available knowledge decreases divergence. Therefore, regional policy should try on one hand to reduce communication and imitation costs, because this improves the competitiveness of the entire territory.

The endogenous growth theory with its assumptions providing a suitable framework for analyzing regional integration-growth interrelationship has proved to be superior to other growth theories for adoption in the present study. The endogenous growth models by assuming non-diminishing returns to the accumulation of broadly defined capital predict permanent or long-term effects of economic integration (Walz, 1997). In other words, the introduction of human capital if sustained along with investment and knowledge flows will guarantee sustained returns and technological transfer. The access to larger technological base through integration arrangements may in turn speed growth.

2.3 Studies in Related Area

Brezigar-Masten, et al (2008) studied the non-linear effects of financial development and financial integration on European's economic growth using the data at macroeconomic and industrial levels. The study revealed that the effects of financial integration are more significant at higher levels of financial development and also that monetary integration in Europe contributed significantly towards achieving a higher degree of financial integration. The study was considered to be relevant to the present study as it yielded results to rehabilitate the findings of the present study.

Kamau (2010) appraised the impact of regional economic integration on economic growth by constructing an economic integration index based on average Most Favoured Nations (MFN) tariffs and the level of regional cooperation for COMESA, EAC and SADC. Study covered the period, 1970-2008. Study adopted the system generalized method of moment (GMM-SYS) estimation technique for the analysis of data. Study revealed a positive relationship between regional economic integration and economic growth in the selected regional economic communities. More specifically, the study revealed that economic integration and trade, separately and conjointly, had a positive significant impact on economic growth.

Osada and Saito (2010) studied the effects of financial integration on economic growth using an international panel data of 83 countries. The study spanned across 1974-2007. In particular, the study disintegrated external liabilities into FDI and equity liabilities and debt liabilities. They reported findings which indicate that: (i) FDI impacted positively on economic growth (ii) Equity liabilities and debt liabilities impacted negatively on growth (iii). Countries with good institutions and developed financial markets benefit more from financial integration (iv) Financial integration has an additional, indirect effect on economic growth through its impact on other determinants of growth such as the volume of international trade and the development of domestic financial markets. Osada and Saito's study has yielded strong evidence to support findings of the present study.

Schularick and Steger (2010) examined the relationship among financial integration, investment and economic growth. Their study covered 55 countries comprised of 35 developing and 20 high-income countries. The study employed the system generalized method of moment within the framework of the dynamic panel data regression. Study revealed that: (i) Financial integration and investment had positive growth effect. (ii) Opening up to the international market led to net capital movements and higher investment.

Adom (2012) studied the impact of both intra-ECOWAS trade and aid on per capita income. The study adopted Two-Stage Least Square (TSLS) estimation technique for the analysis of data. The study found that intra-ECOWAS trade stimulates per capita income growth substantially more than foreign aid, which rather constitutes an impediment to that growth in most specifications. However, when the scope of the study was expanded to include the trade of ECOWAS member countries with the rest of the world, comparable results obtained indicate that intra-ECOWAS trade as a share of GDP remained significant at the 10 percent level, and that it positively affected the expansion of per capita income in member countries of the ECOWAS.

Arunnan, et al. (2016) investigated the relationship between trade integration and economic growth among ASEAN-5 countries. More specifically, the study examined how regional trade among five ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) contributed to the output of these countries. The study applied the ARDL bound testing approach with instrumental variables to explore the relationship. Results indicate that there was a positive significant relationship between trade integration and economic growth. Policy implication of these findings is that government should promote trade integration to stimulate economic growth.

Saafi, et al. (2016) studied financial integration-economic growth nexus. Data were sourced from 19 emerging and developing countries. Study adopted both linear and nonlinear Granger-causality tests to data for

analysis. Results of linear causality analysis indicate that there were only weak causal linkages between financial integration and economic growth, while the results of nonlinear causality analysis suggest that there was a significant causal relationship between financial integration and economic growth in 18 out of the 19 countries.

Kouki and Rezgui (2017) studied the impact of financial integration on the economic growth of the three Maghreb countries, namely, Algeria, Morocco and Tunisia. The study covered the period, 1981 - 2014. The study employed the autoregressive distributed lag (ARDL) bound testing approach to cointegration for the analysis of data. Results indicate that financial integration had positive significant effect on economic growth in Maghreb countries. This study was considered relevant as it yielded results for validating the present study.

Bong and Premaratne (2018) carried out a study to ascertain whether or not regional integration promotes economic growth and also to determine the extent to which the economic and social factors affect economic growth in Southeast Asia. Study covered the period, 1970 - 2013. Panel data was used for the study. Data were analysed using a generalized method of moments (GMM) within the framework of the dynamic panel data regression. Study revealed that regional integration had positive significant effect on economic growth. Policy implication of finding is that governments in the region should strive to promote regional integration for enhanced economic growth by eliminating corruption, stabilizing the macroeconomic environment, ensuring political stability and at the same time, promoting international trade among member countries.

Ehigiamusoe and Hooi (2018) reviewed recent empirical studies on the nexus between economic integration and economic growth in developed and developing countries. Study also reviewed the literature on the impact of financial integration on economic growth. Evidence abounds that: (i) There are overwhelming facts of growth-enhancing effects of economic integration (ii) Common currency adoption has nonsignificant effect on growth. (iii)Economic integration influenced growth via four channels including capital accumulation, productivity growth, trade and financial integration. Ehigiamusoe and Hooi's study had yielded results to reinforce the finding of the present study.

Park and Claveria (2018) adopted a multi-dimensional approach to gauge the degree of regional integration as well as analyze its impact on economic growth, income inequality, and poverty. They used unbalanced panel dataset for 156 countries. Study spanned across the period, 2006 - 2016. Park and Claveria constructed a multi-dimensional regional integration index (MDRII) series that embodies six key facets of regional integration: (i) Trade and investment, (ii) Money and finance, (iii) Regional value chains, (iv) Infrastructure and connectivity, (v) Movement of people and (vi) Institutional and social integration. Data were analyzed using the system generalized method of moment (GMM-SYS). MDRII established that regional integration is most advanced in the European Union which was rated highest in all six dimensions while Asia ranked second with the largest contribution from infrastructure and connectivity. Results of empirical analysis suggest that: (i) There was a positive significant development impact of regional integration even when trade and financial openness is controlled. (ii) Regional value chain, movement of people, and institutional and social integration dimensions contributed significantly to growth (iii) Level of infrastructure and connectivity improved income distribution. The study concluded that regional integration, in conjunction with the dimensions of trade and investment, money and finance, and institutional and social integration appear to significantly and robustly reduce poverty. This study has proved useful in providing a basis for formulating the hypotheses that guided the present study.

Calderon and Cantu (2019) examined the growth effects of different dimensions of international trade integration notably, volume, diversification, and natural resource dependence in Sub-Saharan Africa. Specifically, the study sought to determine the impact of trade integration on growth per worker and the sources of growth, i.e., growth of capital per worker and total factor productivity growth. The study used a sample of non-overlapping five-year period observations for 173 countries. The study covered the period, 1975 - 2014. Study revealed that increased trade openness, greater export production diversification, and reduced export dependence from natural resources had a positive causal impact on economic growth.

Phutkaradze, et al (2019) examined the effect of financial integration on economic growth in Republic of Georgia. The study spanned across the period, 1995-2016. Study employed log-linear equation for data analysis. Study revealed that financial integration had positive significant impact on growth when the country has a relatively stable currency and had negative impact on growth when there was significant fluctuation in currency. They recommended that both government and non-governmental organizations should develop and implement proper policies and also support general institutional quality development in the country. This study has relevance for the present study which had, as its major objective, the determination of the effects of regional integration on economic growth in ECOWAS.

Akpan (2020) investigated economic integration in West Africa. The study reconsidered factors other than convergence criteria for the West African Monetary Zone (WAMZ) region and the link between the Francophone

countries and France. Study examined stylized facts and preliminary panel results, and found unsettled important issues like political will, huge infrastructural deficit and fiscal imperatives as the region moves towards economic integration. It further examined the integration efforts of ECOWAS which was established in 1975 and argued that the stylized facts suggest that there are still fundamental challenges if the union has to be a reality. Based on the issues examined above, the study concludes that economic integration is not a smooth journey; hence the experience of Europe is worth emulating.

2.4 Summary of Literature Review

No conceptual issues have emerged from the review of literature on the concept of regional integration. There has been consistency in the views expressed by different authors on this concept. Only nuances in meaning were discernible in the definitions of different authors. In absence of any definitional problems surrounding the concept, Coleman and Underhil's definition of regional integration was adopted for sake of convenience. Theoretical literature review centred mainly on endogenous growth theory. Endogenous growth models which assumed non-diminishing returns to the accumulation of broadly defined capital predict permanent or long-term effects of economic integration (Walz, 1997). The access to larger technological base through integration arrangements may in turn speed growth. It is the assumption of a link between economic integration and growth which has rendered the endogenous growth theory relevant in the present study. Also, review of related studies has revealed conflicting findings on growth effects of regional integration. There are also methodological issues which have emerged from different proxies used for regional integration by different researchers. Thus, the present study was expected to yield results to mediate among the conflicting findings of earlier studies. To address the methodological issues arising from the use of different proxies for regional integration by different researchers, the present study used the composite measure of African Regional Integration Index (ARII) as proxy for regional integration.

3 RESEARCH METHODS

This section deals with the methods and procedure which were adopted for the conduct and advancement of this study. The method and procedure have been discussed under model specification, a priori expectation and estimation technique and procedure.

3.1 Model Specification

Following the theoretical underpinnings of economic growth and regional integration, the model for the study has been developed to reflect major assumptions of the endogenous growth theory. The endogenous growth theory had connected financial integration, trade integration and some control variables with economic growth. In accordance with the existing literature and the objective of the study, the model was specified to include both the dependent and independent variables. The dependent variable is real gross domestic product (real-GDP) while the core explanatory variables are trade integration index (TII), financial integration index (FII), regional integration index (RII), and domestic value-added (DVA) (a measure of the performance of global value chains). Also included in the model are the following control variables: Gross capital formation (GCF), foreign direct investment (FDI), real exchange rate (EXR), human capital index (HCI) which is the core of the Lucas model; and institutional quality (INS) (a measure of the quality of public administration in the individual country). GCF and FDI measure the level of investment in the country. EXR measures the competitiveness of the domestic currency of the individual country. Thus, constituting an equation with dependent variable, core explanatory variables and control variables, the model adopted from Tinta, et al (2018) was modified as:

$$GDP_{it} = f(GDP_{it-1}, TII_{it}, FII_{it}, HCI_{it}, RII_{it}, GCF_{it}, DVA_{it}, FDI_{it}, EXR_{it}, INS_{it}) \quad 3.1$$

Where GDP_{it-1} is a period lag of the dependent variable (GDP) which is the core of the Dynamic Panel Data (DPD) model structure; GDP_{it}, TII_{it}, FII_{it}, HCI_{it}, RII_{it}, GCF_{it}, DVA_{it}, FDI_{it}, EXR_{it}, and INS_{it} are as previously defined. The subscripts i represents the individual country (cross-sections: i.e. i = 1, 2, 3,…., 15; N = 15 ECOWAS members) and t represents the time dimensions (2010 – 2020: i.e. t = 1, 2, 3,…., 11; T = 11). Specifying equation 3.1 in its full econometric form and applying the natural logarithm transformation, we arrive at equation 3.2.

$$LGDP_{it} = \beta_0 + \beta_1 LGDP_{it-1} + \beta_2 LTII_{it} + + \beta_3 LFII_{it} + \beta_4 LHCI_{it} + \beta_5 LRII_{it} + \beta_6 LGCF_{it} + \beta_7 LDVA_{it} + \beta_8 LFDI_{it} + \beta_9 LEXR_{it} + \beta_{10} LINS_{it} + \nu_{it} \quad 3.2$$

Where β_i (i = 0, 1, 2, …., 10) are the parameters of equation 3.2 while ν_{it} is the uncorrelated random disturbance terms (with the usual properties of $N(0, \sigma^2)$), and L is the natural log notation. Note that all variables appear in natural log form, the aim of which is to standardise the corresponding data. This is necessary to eradicate the elements of heteroskedasticity and a high degree of variability that are prevalent across the relevant cross-sections, as well as allow for easy interpretation of the models' coefficients as elasticities.

3.2 A Priori Expectation

In line with the theoretical framework and literature in general, all the regressors from equation 3.2 are theoretically expected to exert a positive impact on economic growth. The *a priori* expectations of the models' parameters are summarized in Table 3.1 as follows:-

Table 3.1: Summary of A Priori Expectations

	Eq. 3.2
Regressors	DV: $LGDP_{it}$
$LGDP_{it-1}$	$+\beta_1$
$LRII_{it}$	$+\beta_2$
$LTII_{it}$	$+\beta_3$
$LFII_{it}$	$+\beta_4$
$LHCI_{it}$	$+\beta_5$
$LGCF_{it}$	$+\beta_6$
$LDVA_{it}$	$+\beta_7$
$LFDI_{it}$	$+\beta_8$
$LEXR_{it}$	$+\beta_9$
$LINS_{it}$	$+\beta_{10}$

Source: Authors' Compliation, 2021.

3.3 Estimation Technique and Procedure

The study was based on Dynamic Panel Data (DPD) regression covering all ECOWAS countries, which are geographically located within the area west of the African continent. In other words, the ECOWAS consists of all the countries which are located in the Western part of the African continent (United Nations Statistics Division, 2013). Given that the error term in equation 1 captures unobserved heterogeneity specific to countries, but are time-invariant (e.g. welfare system, geographical and environmental differences), the error term is specified as follows:-

$$v_{it} = \lambda_j + \Upsilon_t + \varepsilon_{it} \qquad 3.3$$

Therefore, the likelihood of endogeneity coupled with the interdependence between unobserved country-fixed effects and the error term suggests that the assumption of orthogonality may not be satisfied; hence the consistency of fixed effect (FE) or random effect (RE) estimator becomes questionable. To overcome this problem, it is imperative to explicitly account for any possible endogeneity of regressors using the Instrumental Variable (IV) estimator. Thus, this study employed the Generalized Method of Moments (GMM). The choice of GMM was informed by the premise that it considers the short-run effects while accounting for the time-series dimension of the dataset; it incorporates unobserved country-specific effects and solves the problem of endogeneity as it treats all regressors as endogenous.

4. RESULTS

4.1.1 Summary of Descriptive Statistics

The summary of descriptive statistics has been presented in Table 4.1.

Table 4.1. Summary of Descriptive Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
GDP	2.278594	3.781823	-22.18762	18.06517
GCF	21.77730	6.561761	1.251276	52.41832
HCI	0.368796	0.040719	0.297922	0.450056
RII	0.415000	0.130035	0.100000	0.660000
TII	0.413750	0.263529	0.000000	1.000000
FII	0.510606	0.347156	0.000000	1.000000
DVA	22.13231	6,483885	3.669052	35.23447
EXR	1534.995	2653.726	1.431025	10772.03
FDI	18.28966	26.66179	-53.61357	159.6960
INS	23.65079	11.51403	2.285714	54.19048
Obs.	132	132	132	132

Source: Computed by the Researchers' using Eviews 12

As can be seen in the table, the mean value of GDP growth rate across the selected countries is 2.28 per cent. With a standard deviation of 3.78 per cent, there is a high disparity in growth rates across the selected countries, implying that some countries have relatively higher growth rates than others. The maximum and minimum values of GDP growth rates across the selected countries are 18.07 per cent and -22.19 per cent,

respectively. The average percentage share of gross fixed capital formation (GCF) in GDP of the selected countries is 21.78 per cent with a standard deviation of 6.56 per cent, suggesting a similar trend in the percentage share of GCF in GDP of selected countries. The highest and lowest shares of the GCF in GDP are 52.42 per cent and 1.25 per cent respectively. The mean value of the human capital index (HCI) across the selected countries is 0.37 on a scale of 0 to 1. With a standard deviation of 0.04, there is evidence of closeness of trends of HCI across the selected countries. The maximum and minimum values of HCI across the selected countries are 0.45 and 0.29 respectively. Also, the regional integration index (RII), which is an aggregate measure of the influence of the five dimensions of regional integration, has a mean value of 0.42 on a scale of 0 to 1 and a standard deviation of 0.13. This indicates that the selected countries are on different levels of integration in ECOWAS. The maximum and minimum values of RII are 0.66 and 0.10 respectively. The mean value of the trade integration index (TII) is 0.41 on a scale of 0 to 1 and a standard deviation of 0.26, indicating that a wider variation exists across the selected countries in terms of TII. The maximum and minimum values of the TII were 1.00 and 0.00 respectively.

However, the wide spread of relevant data across the selected ECOWAS countries has necessitated the natural logarithm transformation of variables in order to reduce the likelihood of heteroskedasticity.

4.1.2 Correlation Analyses of Regressors

The correlation analysis was carried out to ensure the absence of multicollinearity. The results of correlation analysis are presented in Table 4.2

Table 4.2. Correlation Matrix of Regressors

Model	LGDP	LGCF	LHCI	LRII	LTII	LFII	LDVA	LEXR	LFDI	LINS
LGDP	1.0000									
LGCF	0.0584	1.0000								
LHCI	0.0546	0.2411	1.0000							
LRII	0.0624	0.0265	0.2386	1.0000						
LTII	0.1770	-0.0662	-0.0678		1.0000					
LFII	0.0025	0.4343	-0.0301		0.0822	1.0000				
LDVA	0.4051	-0.1129	0.1123	0.5420	0.6843	-0.1458	1.0000			
LEXR	0.0910	0.1735	-0.4033	-0.5305	0.1655	0.7695	-0.1838	1.0000		
LFDI	0.0472	0.0889	0.2782	-0.4355	-0.0953	-0.2490	0.1127	-0.4261	1.0000	
LINS	0.0907	-0.0138	-0.0663	-0.4809	-0.2507	-0.3530	-0.2361	-0.3635	0.1154	1.0000

Source: Computed by the Researchers using Eviews 12

As is evident in the table, no two explanatory variables of the model are correlated to a high degree, implying that the specified model is free from the problem of multicollinearity.

4.1.3 Results of Tests for Residual Cross-Section Dependence

Cross-section dependence arises when an individual country's errors are correlated. This is because countries, especially those within the same region or continent are highly interdependent due to globalization and trade, such that the experience of one country may likely affect another country. With this in view, this study employed the Pesaran CD test statistic for the test of cross-section dependence given that the time dimension is less than the cross-section dimension (i.e. T=11< N=15). The results have been presented in Table 4.3.

Table 4.3. Residual Cross-Section Dependence Test of Models 1 and 2

	Test	Statistic	d.f.	Prob.
Model	Breusch-Pagan LM	58.79954	45	0.1813
	Pesaran Scaled LM	1.454599		0.1458
	Pesaran CD	-0.090419		0.9280

Source: Researchers' Calculation using Eviews 12

As can be seen in the table, probability of the Pesaran CD test statistic is 0.93 for the model. Since the probability of the Pesaran CD test statistic is greater than 0.05, the null hypothesis of cross-section independence stands accepted. Thus, there is no cross-section dependence in the panel.

4.1.4 Validation of System GMM Procedure

To estimate the System GMM (GMM-SYS), it is a necessary condition that the procedure be validated using the rule of thumb. This involves estimating three equations of Pool OLS (POLS), Fixed Effect (FE) and First Difference GMM (GMM-FD) in dynamic forms. These equations include a period lag of the dependent variables as independent variables whose coefficients are the main signalling parameter. The coefficient of a period lag of the dependent variable in the POLS model serves as the upper bound, while that of the FE serves as the lower bound. If the coefficient of a period lag of the dependent variable in GMM-FD is less than that of the FE, then the GMM-FD

has downward bias and GMM-SYS is preferred as the appropriate model (Arellano & Bover, 1995; Blundell & Bond, 1998). The results of this test are presented in Table 4.4.

Table 4.4. Validation of System GMM Procedure

	Variable	POSL (Upper Bound)	FE (Lower Bound)	GMM-FD
		Coefficient	Coefficient	Coefficient
Model	LGDP(-1)	0.356205	0.233039	0.125520

Source: Researcher's Calculation using Eviews 12

4.2 Results of Estimated System GMM Models

Having established the appropriateness of the GMM-SYS model for this analysis, the estimation of the GMM-SYS model was carried out. The estimation employed internal instruments which are the lagged values of the regressors and regressands of the dynamic GMM-SYS models. The GMM-SYS instruments for the level estimation include a period lag of the first differenced regressors alongside lag 2 of the differenced dependent variables, while the instruments of the first difference estimation include a period lag of the level regressors plus lag 2 of the level dependent variables. This is to ensure that the problem of weak instruments which usually results from persistent regressors does not affect the results. With GDP as the dependent variable, the model isolated the trade integration and financial integration which are part of the five dimensions of regional integration. The rationale for the extraction of trade integration and financial integration, apart from examining their effects on the economic growth of ECOWAS member countries, is also to validate the famous trade- and finance-led growth hypotheses. The results of GMM-SYS model estimation are presented in Table 4.5.

Table 4.5. Results of the GMM System Estimation (T = 11, N = 15)

Variable	Model (GMM-SYS)
C	1.566634
	(0.9840)
LGDP(-1)	0.387496**
	(0.0000)
LGCF	0.206690*
	(0.0397)
LHCI	0.100126*
	(0.0462)
LRII	0.309921
	(0.6811)
LTII	0.282444*
	(0.0107)
LFII	0.331283*
	(0.0241)
LDVA	0.243855*
	(0.0325)
LEXR	0.310451*
	(0.0256)
LFDI	0.364820*
	(0.0171)
LINS	0.115822
	(0.7461)
Sargan Over-Identification Test	1.3640
	(0.2926)
Durbin-Wu-Hausman Test	0.8492
	(0.0201)
AB Test for AR(1)	4.6273
	(0.0038)
AB Test for AR(2)	0.7528
	(0.5219)

NB: ** (*) denote significance at the 1% (5%) levels.

All figures in Parentheses are the P-values.

The estimation is based on two-steps System GMM and the instruments used are a period lag difference and a period lag level of independent variables and lag 2 of dependent variables.

Durbin–Wu–Hausman and Sargan Tests are based on asymptotic Chi-square distribution.
Source: Researcher's Calculation using Eviews 12

As can be deduced from the results in the table, the estimated GMM-SYS model was considered robust. With consistent coefficients and the result of the Durbin-Wu-Hausman tests that justified the use of dynamic IV regression (i.e., GMM-SYS), thereby warranting the rejection of the null hypotheses of all exogenous regressors, at the 5% level of significance, all regressors were considered to be endogenous. Also, the results of the Sargan over-identification tests suggest that there is evidence of no controversy between the regressors and the instruments used. Moreover, the AB tests of serial correlation revealed that the model exhibits first-order serial correlation, but does not exhibit second-order serial correlation. Furthermore, the results of the tests suggest that the model is well specified since the control variables retained their *a priori* signs and significance. Other relevant test statistics such as the Adjusted R-squared and F-statistics also confirm the robustness of the estimated model.

The results in Table 4.5 reveal that all the regressors conform to theoretical expectations. The coefficient of a period lag of LGDP (i.e., LGDP(-1)) is positive and significant, suggesting that even though the pace of growth is low across the 15 ECOWAS member countries, economic growth, on average, remained steady and sustainable across countries of the ECOWAS region. This implies that the previous-year growth of the economies of ECOWAS countries holds high prospects for future economic growth of the countries in region.

Notably, the individual coefficients of trade integration and financial integration were positive as theoretically expected and equally significant, implying that both trade integration and financial integration had positive significant impact on economic growth of countries within ECOWAS. It follows from this finding that while all the five dimensions of regional integration might not have impacted positively on economic growth in most ECOWAS countries, trade integration and financial integration had contributed positively and significantly to growth in these countries. In terms of the magnitude of impact, the results indicate that a percentage increase in trade integration leads to 28 per cent rise in economic growth and one per cent increase in financial integration leads to 33 per cent rise in economic growth.

4.3 Summary of Findings

The major findings which have crystallized from this study include the following:

1. There was a steady and sustainable growth within ECOWAS despite the low growth rates in countries of the region.
2. Trade integration had positive significant effect on economic growth in countries of ECOWAS.
3. Financial integration fostered economic growth within ECOWAS.

5 DISCUSSION OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Discussion of Findings

An important finding of the study is that there was a steady and sustained growth within ECOWAS despite the low growth rates in individual countries of the region. This finding has come much in expectation. A plausible explanation for the steady and sustained growth within ECOWAS is summed up in the findings of earlier studies which indicate that economic integration fosters economic growth. Endogenous growth theory posits that economic integration leads to expansion of the consumer base which may also increase the necessary competition and hence mitigate redundancy in research and development required to generate growth (Krugman, 1991). No wonder, then, that gross fixed capital formation, human capital index, domestic value-added, exchange rate and foreign direct investment which are correlates of economic integration have been found in the present study to contribute significantly to economic growth in ECOWAS. On the other side, the low growth rates in the individual countries of the region can be explicated in terms of low levels of human capital in some member countries of ECOWAS. These countries usually contribute less to innovative activities and as a consequence they will tend to have a lower rate of growth. This finding is consistent with findings reported by Rodriguez and Rodrik (2000), Nuh (2011), Tahir and Khan (2014), Muriuki and Kosimbei (2015), Ezzeddine and Hammami (2017), and Park and Claveria (2018).

Another important finding of the study is that trade integration had positive significant effect on economic growth in countries of ECOWAS. This is not surprising considering that regional integration facilitates free movement of persons across borders resulting to expanding trade relations among member countries of ECOWAS. Certainly, increase in trading activities among member countries of the region would lead to stiff competition for factors of production by firms in different countries within ECOWAS which in turn leads to technological progress and growth. This is corroborated by the view expressed by Okafor et al. (2016) that low level of integration of West African economies into the globalized economy has reduced their competitiveness and forced them to rely on comparative advantage for optimal performance. This finding is in agreement with the findings reported by Arunnan, et al (2016) and Calderon and Cantu (2019).

Moreover, there is the finding that financial integration fostered economic growth within ECOWAS. This has come rather as a surprise. The productive integration of most member countries within ECOWAS, coupled with their low growth rate, has cast a serious aspersion as to whether or not they possess the capacities to achieve socially desired rates of economic growth within the region. Of the fifteen member countries, only three countries including The Gambia, Togo and Ghana had high production integration index. Notwithstanding, it could be a reasonable proposition that with some appreciable degrees of interconnectivity with the global financial system, ECOWAS had borrowed financial prudence from the developed economies to strive toward achieving sustainable growth. Bain and Howells (2003) had aptly remarked that there is a possibility of countries operating fixed exchange rate system to have a link with a strong anti-inflationary country from which they borrow a reputation for financial prudence. This finding is in consonance with the findings reported by Osada and Saito (2010), Schularick and Steger (2010) and Phutkaradze, et al (2019).

5. Conclusions and Recommendation

5.1 Conclusions

The major inference warranted by this study is that economic integration within ECOWAS region fosters economic growth through trade integration and financial integration. The implications of this are twofold. Firstly, the higher the level of trade integration within ECOWAS region, the higher the socially desired rate of growth. Secondly, the higher the level of financial integration within ECOWAS, the higher the socially desired rate of growth. Certainly, these implications constitute two major building blocks for rehabilitating the endogenous growth theories in the economic environment of West African region. In this way, it could be stated explicitly, that this study is novel to the extent that it represents a systematic approach toward validating the endogenous growth theory in economic environment of developing economies. It is the conviction of the researchers that the full benefits of economic integration of West African economies can be derived with the religious implementation of recommendations proffered in the next section.

5.2 Recommendation

Based on the findings of this study and the accompanying discussion, the researchers have made the following recommendations:

First, the steady and sustained growth within ECOWAS despite the low growth rates in individual countries of the region requires that member countries adopt a strategy of mutual co-operation in order to assist countries with low levels of human capital index, gross fixed capital formation, domestic value-added, exchange rate and foreign direct investment through the provision of high- level man power and financial support.

Second, with the positive significant effect of trade integration on economic growth in ECOWAS, it is a high priority for ECOWAS to strive toward strengthening the productive capacities of firms in individual member countries. This can be achieved through proper check of the smuggling activities by entrepot states in order to curtail dumping which usually inhibits the growth of local industries.

Third, that financial integration fostered economic growth within ECOWAS is a strong incentive which leaves ECOWAS with a viable option to pursue more vigorously the establishment of a monetary union. The monetary union when fully operational would not only allocate resources to member countries according to their economic potentials but would manage the international liquidity in a way that is beneficial to member countries.

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