

Effect of International Trade on Economic Growth in ECOWAS Sub-Region Felix Onoriode Ashakah¹ and Osaretin Godspower Okungbowa²

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Abstract

In this paper econometrically analyze the effects of international trade on economic growth in ECOWAS sub-region using a panel data set of fourteen ECOWAS countries covering 1995 to 2017. The Pooled Mean Group (PMG) estimator was employed in data analysis since time dimension was greater than cross-section and the order of integration of the variables were mixed. The study found that international trade (extra-ECOWAS trade) positively and significantly affected economic growth both in the long run and in the short run in ECOWAS sub-region. Intra-ECOWAS trade adversely affected economic growth of the sub-region in the long run, while its short run effect was also negative, but not significant. In the light of the empirical evidences, this study recommends the enhancement of international trade; integration of the countries in ECOWAS sub-region with the global market to promote the growth of the sub-region.

Key words: International Trade, Economic Growth, ECOWAS, Panel Data, Intra-Regional Trade

JEL classification: F1, F13, F14

1.0 Introduction

International trade expands the production and consumption possibilities of both developed and developing countries. It is unanimously agreed that a country with more open economy enjoys economies of scale and high variety of products to enhance the welfare of her citizenry (Copeland, Weston & Shrastri, 2005). The new endogenous growth models postulate that international trade has potentials of promoting growth in the long-run through the transmission of technologies, increases in the size of the market available to local firms and through product specialization (Grossman & Helpman, 1991a; Rivera-Batiz & Romer, 1990). Based on the fore going, it is important to align theoretical predictions to evidence with the aim of proffering solutions to growth problem in ECOWAS sub-region.

The low economic performance of ECOWAS sub-region has been a serious problem that many ECOWAS countries are classified as low and middle level income nations (Iyoha & Okim, 2017). The report of Africa Growth Initiative (2016) confirms that ECOWAS

countries are characterized by low economic growth rates, weak industrial development, growing poverty rates, rising populations living in slums without basic amenities, increased corruption and disadvantaged in global market. In spite of the huge natural resources and labour force in ECOWAS sub-region, it still lags behind in terms of growth.

The objective of this study is to investigate empirically the effects of international trade on economic growth in ECOWAS sub-region both in the long run and short run. The establishment of ECOWAS by the Treaty of Lagos in 1975 was driven by a strong desire of achieving rapid economic growth and development of its member states. The primary instrumentality for achieving this desirable objective was the establishment of free trade area, customs union and free movement of factors of production (Iyoha & Okim, 2017).

The number of empirical studies on international trade and growth relationship focusing on ECOWAS sub-region seems to be very small. Iyoha & Okim (2017), Ijirshar (2019) and Osabuohein (2007) find positive impact of international trade on growth while others (Guei & Roux, 2019) find negative impact. This shows that more empirical work on this issue seems warranted, given its obvious policy relevance.

This paper provides empirical evidence on the long-run and short-run growth effects of international trade in ECOWAS economy. The empirical evidence is based on endogenous growth model using data from fourteen ECOWAS countries covering 1995 to 2017. The Pooled Mean Group (PMG) estimator was employed in data analysis. Our findings supported endogenous growth model's postulation that trade impacts long-run growth positively.

The remainder of the paper is organized as follows: Section 2 presents the conceptual issues, empirical and theoretical literature linking trade and growth. Section 3 presents the theoretical framework and section 4 presents model specification. Section 5 presents the sources and nature of data. Sections 6 and 7 present the estimation technique and empirical results of data analysis respectively. Finally, section 8 concludes the paper and outlines some recommendations.

2.0 Literature Review

This section presents the conceptual issues in sub-section 2.1. The empirical literature linking trade and growth is presented in sub-section 2.2 while the theoretical literature on trade and growth nexus is presented in sub-section 2.3.

2.1 Conceptual Issues

International trade entails the exchange of goods and services for money between two or more countries. It requires the conversion of local currency into foreign currency of the trading partners. The goods and services exchanged in international trade must conform

to minimum standard required by trade regulations. The goods and services trade in international trade can be grouped into exports and imports. The countries involved in international trade derive some gains from trade interactions. The gains from international trade are benefits countries enjoy from trade over time both in the short run and in the long run. Therefore, the welfare gains from international trade play a very vital role in promoting economic growth in the trading countries. The static gains from international trade are considered as the short run benefits the countries enjoy immediately the enter into trade with other countries while dynamic gains from international trade are benefits obtained by the countries in the long-run. The gains from international trade increase as trade openness increases (Abdulahi, Safiyanu, & Soja, 2016; Iyoha & Oklim, 2017).

Economic growth refers to sustained increase in inflation-adjusted market value of goods and services produced in a country over time. Conventionally, it is measured as the percentage increase in real gross domestic product (GDP) usually in per capita terms. The endogenous growth theory maintains that growth is generated by forces or factors within the economic system. In other words, growth results primarily from endogenous and not external forces (Adamu, Ighodaro & Iyoha, 2012).

2.2 Theoretical Literature Review

The traditional theory of international trade holds that trade promotes efficiency in resources allocation and utilization which results in increased productivity and welfare gain. The theory of comparative cost advantage marks the start of a discussion of the benefits of trade (Jayme, 2001). The comparative cost advantage- the Ricardian model, explains the welfare gain if a country specializes in producing goods and services which it has comparative cost advantage. The comparative cost theory assumes the existence of two communities, two countries and one factor- labour of production. The Heckscher-Ohlin theory of international trade explains the welfare gain of trade in a two-country model; that each country specializes in certain goods and services based on their factor endowments.

The traditional theory of international trade hypothesises that international trade leads to a better welfare condition than autarky. The gains the traditional theories of international trade postulate are static in nature. The static gains are short term benefits which countries achieve immediately they engage in international trade. There are no possibilities that such gains can be sustained during the post-trade liberalization period (Iyoha and Oklim, 2007). The shortfall of the traditional theory of international trade is that it could not tell whether or how international trade determines growth in the long run.

The new growth theory- endogenous growth theory explains what was previously inexplicable about the issue of growth. The endogenous growth theory endogenizes the

growth rate of an economy. The endogenous growth theory hypothesises that international trade results in long-run growth in an economy. In addition to direct exchange of goods and services which ultimately results in output increase, international trade has indirect effects on growth through the transfer of technology from trading partners (Grossman & Helpman, 1991a; Rivera-Batiz & Roman, 1990; Roman, 1990). This theory advocates the use of internal variables to cause growth within a system which is a major departure from the use of exogenous variables in the case of neoclassical growth theory.

The fundamental variables for growth in endogenous growth model include education, learning by doing and development of new technologies for the world market. The technologies developed for the world market are transferred through international trade to spur on economic growth in the domestic economy. Research and Development (R&D) activities of individual entrepreneurs and government informed growth which international trade provides a platform for the transfer of the knowledge generated for productivity enhancement in the domestic economy. The shortcoming of this model is that growth in per capital output tends towards zero in a steady state (Rivera-Batiz & Roman, 1991).

2.3 Empirical Literature Review

There are some empirical evidence about the impact of trade liberalization on economic growth and development following the hot debates on the relevance of opening up the borders of nations for more international trade. In most recent time, Ijirshar (2019) assessed the impact of trade openness on economic growth among ECOWAS countries using secondary data from 1975 to 2017. The study used non-stationary heterogeneous dynamic panel models through the application of Pooled Mean Group (PMG) and Mean Group (MG) estimators as time dimension was more than cross-sections. PMG estimator was preferred following the result of Hausman test. The empirical result of the study showed that trade openness has positive effects on growth in ECOWAS countries in the long-run but mixed effects in the short-run. The study therefore recommends that ECOWAS member countries should improve cooperation among economic actors by using export consortia to help SMEs in the region to access international markets and to pursue a twin strategy of trade and competitiveness

On the contrary, Guei and Roux (2019) examined the impact of trade openness on economic growth in the Economic Community of West Africa States (ECOWAS) using the autoregressive distributed lag (ARDL) bound testing approach and the pool mean group (PMG) model. The data set covered the 15 ECOWAS member countries over the period 1990–2016. A long run relationship at 1% level was established in the data and that made it possible for the application of the PMG model. The empirical results of the estimates revealed that trade openness has a negative impact on GDP per capita in the

long run. It was noted that the lifting of trade barriers in all sectors among ECOWAS members would not contribute to growth. ECOWAS countries must decide the sectors to liberalize and also add value to their production of goods and services in order to fight poverty and boost income.

Moyo and Khobai (2018) examined the relationship between trade openness and economic growth for 11 SADC countries for the period between 1990 and 2016. The study employed the ARDL-bounds test approach and the Pooled Mean Group (PMG) model in estimating the long run relationship among the variables included in the specified model. The evidence suggests that co-integration is detected at the 1% level in all countries with the exception of Malawi, Mauritius, Swaziland and Tanzania. Co-integration is only detected at the 10% level in Tanzania while Malawi, Mauritius and Swaziland the null of no co-integration is not rejected. Also, the results revealed that trade openness has a negative impact on economic growth in the long-run.

Similarly, Kisava and Myovella (2018) analyzed the relationship between trade openness and economic growth in East African Community (EAC) by employing the modern methodology of Dumitrescu and Hurlin (2012) Panel Causality test. The Test involved a scope of 46 years from 1970-2016. The empirical finding shows that there is a bidirectional movement (causality) as trade openness increases, it leads to the growth of the economy in the East African Community. The results are supported by the endogenous growth theory that openness increases economic growth. It was recommended that the governments of the East African economies should dismantle barriers to trade to enable them reap more benefit from trade.

Taking the evidence further, Iyoha and Okim (2017) examined the impact of trade on economic growth both from a theoretical perspective and using econometric evidence from ECOWAS countries. Data set on the fifteen member countries of ECOWAS stretching from 1990 to 2013 were analyzed using panel data regression (pooled OLS, Fixed effects model, random effects model and dynamic panel regression model). Exports which represented trade consistently had positive relationship with economic growth. The finding showed that trade has a significant positive impact on economic growth in ECOWAS countries. This empirical evidence corroborates the position of endogenous growth theory that trade impacts positive on economic growth.

On a continental scale, Zohonogo (2017) investigates the impacts of trade openness on economic growth in developing countries with a focus on sub-Saharan Africa (SSA). He used a dynamic growth model with data from 42 SSA countries between covering 1980 to 2012. He employed the Pooled Mean Group (PMG) estimation technique which is appropriate for drawing conclusions from dynamic heterogeneous panel by considering long run equilibrium relations. The empirical evidence indicates that a threshold exists below which greater trade openness has beneficial effect on economic growth and above

which the trade effects on growth decline. The empirical evidence showed that the relationship between trade and economic growth in SSA was not linear. It was recommended that SSA must have more effective trade openness, particularly by productively controlling imports levels in order to boost economic growth through international trade.

Towards establishing the link between trade liberalization and growth, Suleiman and Suleiman (2017) examined the long run impact of trade openness on economic growth in East African Community (EAC) using Dynamic Ordinary Least Squares (DOLS) estimation technique to panel data from 1990 to 2015. The study finds negative relationship between trade openness and economic growth but statistically significant at 5%. The granger causality test results have shown the existence of a unidirectional causality from economic growth to trade openness.

Osabuohien (2007) examined the impact of trade openness on economic performance of ECOWAS Members focusing on Ghana and Nigeria. The study employed error correction mechanism to establish a long-run relationship between economic performance, trade openness, real government expenditure, labour force and real capital stock for both Ghana and Nigeria. The period of the study covered from 1975 to 2004. About 88.9% and 83.1% errors made in the previous period were found to be corrected in the current period for the respective countries. Also, trade openness and real government expenditure impact positively on the economies of Ghana and Nigeria. However, the effects were higher in Ghana.

In sum, the empirical evidences on trade and growth focusing on ECOWAS sub-region are mixed. As far as the authors of this paper are aware, none of the studies focusing on ECOWAS sub-region investigated the growth effect of international trade both at the regional and global levels. Following the identified gaps in the literature and economic policy relevance of trade, this study is motivated to complement the extant literature on trade-growth link.

2.4 Theoretical Framework

The theoretical framework of this study is based on endogenous growth model which was used by Abdulahi, Safiyanu and Soja (2016). The choice for the use of endogenous growth model is stemmed from its ability to explain the intrinsic characteristics of economies that cause them to grow over extended period of time. The endogenous growth model is adequate for the study as it carefully incorporates trade; which is a measure of economic integration and very vital component that endogenously brings about productivity increase in the economic system (Grossman & Helpman, 1990; Rivera-Batiz and Roman, 1991). In a simple formulation of the endogenous growth model, the firm's production function depends on capital and labours as in the

neoclassical model, and makes technology dependent on capital and labour in the integrated economy as a whole. Romer (1987) formulation of the endogenous growth model can be captured as in Equation [1]:

$$[1] \quad Y_i = A(K,L) * K_i^\tau * L_i^{(1-\tau)}$$

where Y represents growth rate of output, K stands for accumulated capital, L is labour input, i represents individual firm, τ stands for private returns of capital, $1 - \tau$ represents private returns of labour, $\tau + (1 - \tau) = 1$ and, A is technological progress depending on capital stock and labour in the firm. If individual firm embarks on further investment and enhances trade, it increases the capital stock and technological progress (A) at the macro level.

By assuming that all firms in the enlarged economy use similar technology, we collapse the firms' production functions into an economy wide production function as presented in Equation [2]:

$$[2] \quad Y = A(K,L) * K^\tau * L^{(1-\tau)}$$

Assuming that A(K,L) can be specified as in Equation [3]:

$$[3] \quad A(K,L) = K^\gamma * L^{(1-\gamma)}$$

where γ stands for social return and A, K, and L are as earlier defined. Given that the weights of (α) as used in Solow model comprise both private (τ) and social (γ) returns, intuitively, $\alpha = (\tau + \gamma)$. Private returns are the benefits accrue to individual private investment while social returns are benefits accrue to public investment.

Both private and social returns are expected to engendered and enhance economic growth in the integrated economy. Equation (2) above can be expressed as a traditional Cobb-Douglas production function as in Equation [4]:

$$Y = K^{(\alpha-\tau)} * L^{-(\alpha-\tau)} * K^\tau * L^{(1-\tau)} \text{-----}(4)$$

The application of algebraic technique on Equation [4] yields Equation [5]:

$$[5] \quad Y = K^\alpha * L^{(1-\alpha)}$$

The superscripts (α) and $(1-\alpha)$ represent the contributions of capital (K) and Labour (L) to output growth respectively. In the endogenous growth tradition, technical progress (A) is generated endogenously to cause productivity increase, Equation [5] becomes Equation [6]:

$$[6] \quad Y = AK^\alpha * L^{(1-\alpha)}$$

The formulation in equation (6) above is an endogenous growth model. Y is growth rate of ECOWAS GDP, K represents physical capital, L represents labour while A stands for technical progress through which trade is introduced into the endogenous growth model.

3.0 Methodology Model Specification

The model specified in this study is based on Iyoha and Oklim (2017) and Ijirshar(2019) specifications. The model is specified functionally as depicts by Equation [7]:

$$[7] \quad GDPGR_{it} = f(TOPN_{it}, INTRECO_{it}, GFCF_{it}, FDIY_{it}, HK_{it},)$$

Equation [7] shows that the growth rate of real gross domestic product (GRGDP) in ECOWAS sub-region is determined by TOPN, INTRAECO, GFCF, FDIY and HK.

where: GDPGR is growth rate of real gross domestic product, TOPN depicts trade openness, INTRAECO represents intra-ECOWAS trade(measure of regional trade openness), GFCF stands gross domestic investment, FDI is foreign direct invest as percentage of GDP, and HK is human capital (proxy by secondary school enrolment) respectively.

The empirical specification of the growth model to be estimated is as presented in Equation [8];

$$[8] \quad GDPGR_{it} = \alpha_{0t} + \alpha_1 TOPN_{it} + \alpha_2 INTRAECO_{it} + \alpha_3 GFCF_{it} + \alpha_4 FDIY_{it} + \alpha_5 HK_{it} + \varepsilon_{1it}$$

Where i represents countries in ECOWAS group and t represents time horizon (1995-2017), which is the period of this study. GDPGR, TOPN, INTRAECO, GFCF, FDIY, and HK are as earlier defined. α_0 - α_5 are parameters to be estimated, and ε_1 is the error term. The a priori expectations of the parameters are $\alpha_1 - \alpha_5 > 0$. From a priori reasoning, intra- ECOWAS trade, trade openness, foreign direct investment, domestic investment and human capital are expected to be positively related to economic growth. These signs expectations come from economic theory.

Sources and Nature of Data

The data for the study which are annual time series data, are obtained from the UNCTAD online database, World Bank (WDI) online database and United Nations Commodity Trade database. Specifically, data for TOPN (trade openness) were obtained from the UNCTAD database, data on intra-ECOWAS trade were obtained from United Nations Comtrade while data on RGDP (real gross domestic product), domestic investment, HK (human capital), FDI (foreign direct investment), were obtained from the World Bank database. The data cover from 1995 to 2017.

Estimation Technique

The estimation of the model for this study as stated in equation (8) above was achieved using the Pooled Mean Group (PMG) estimator developed by Pesaran, Shin, and Smith (1999).

The Pooled Mean Group (PMG) estimator is used in estimating dynamic model of panel data where we have time series observations, $t= 1, 2, \dots T$ on a number of groups, $i= 1, 2, \dots N$. The number of the time series observations (T) is relatively large that we can estimate individual equations for each of the countries. That is, the number of time series observation (T) is greater than the number of cross-section (N). The panel data set can be in stationary form; integrated in order zero [I(0)] or follow unit root process [I(1)].

The choice of this methodology is motivated by the need to investigate the long-run (dynamic) relationship between the dependent variable and the independent variables. It is named Pooled Mean Group estimator because it involves both pooling and averaging. The estimator allows for heterogeneous dynamics as the intercepts, short-run coefficients and error variances differ freely across groups but imposes a homogenous long-run relationship between the explained variable and the explanatory variables across groups (N). That is, it constrains the long-run coefficients across group to be the same (Pesaran et al., 1999). Explanations for the expected similar long-run relationship between variables across groups include budget or solvency constrains, arbitrage conditions or common technologies influencing all groups or cross sectional units in a similar way.

This explanation is supported by the Solow growth theory which assumed that all countries have access to same technology and long-run production parameters are expected to be the same (Pesaran, Shin, & Smith, 1999). The PMG estimator is the panel data form of the single equation autoregressive distributed lag (ARDL) bounds testing approach to co-integration and error correction developed by Pesaran, Shin, and Smith (2001). As with the single equation ARDL approach, the PMG is applicable in cases of small and finite sample size, cases of mixed order of integration of variables, and it yields consistent estimates and valid t-ratios even in the presence of endogenous regressors.

Preceding the estimation of the specified regression model, the variables were tested for unit root using Levin, Lin and Chu (LLC) (2002) homogeneous unit root procedure. Thereafter, the co-integration test was performed using Pedroni (1997) co-integration test to ascertain whether or not long run relationship existed among the variables of the model (Pesaran et al. 1999).

4.0 Empirical Analysis

This section presents the descriptive statistics of the variables for the study, panel unit root test, panel co-integration test and the regression results in sub-sections 7.1, 7.2, 7.3 and 7.4 respectively.

Descriptive Analysis

Table 1

Descriptive Statistics of the Variables

	GDPGR	INTRAECO	TOPN	GFCF	FDI	HK
Mean	4.586407	6.894420	5690.586	19.48902	3.191741	84.91987
Median	4.703091	6.155622	1143.894	19.47026	2.036674	82.61984
Maximum	26.41732	28.65984	102438.1	52.41832	32.30119	132.4668
Minimum	-28.09998	0.000000	28.57000	-2.424358	-1.048196	27.77572
Std. Dev.	4.453733	6.256815	15230.37	8.381640	3.794665	23.81659
Skewness	-1.204436	0.708377	4.511926	0.703478	2.999341	-0.078115
Kurtosis	16.35332	2.772053	24.33534	4.159215	16.83257	2.527176
Jarque-Bera	2470.193	27.62697	6976.149	42.51064	3030.988	2.872320
Probability	0.000000	0.000001	0.000000	0.000000	0.000000	0.237839
Sum	1476.823	2220.003	1775463.	5983.130	1021.357	23607.72
Sum Sq. Dev.	6367.272	12566.42	7.21E+10	21497.08	4593.436	157122.6
Observations	322	322	312	307	320	278

Source: Author’s Computations using E views 9

Looking at Table 1, economic growth (measured by the annual growth rate of real GDP) of ECOWAS sub-region ranged between -28.1% and 26.4% with a standard deviation of 4.45 and an average growth rate of 4.59% between 1995 and 2017. The coefficients of skewness, kurtosis and the Jarque-Bera statistic (with a probability of 0.00) indicate that the variable does not follow a normal distribution.

The variables of intra-ECOWAS trade and trade openness (global trade integration) display some marked differences. The mean, median, maximum and minimum statistics indicate that intra-ECOWAS integration has been quite low compared with integration of countries in the sub-region with the global market. While average intra-ECOWAS trade integration was a paltry 6.89%, trade openness (integration with the global market) was 5690.60%. This suggests that the volume of trade among countries in the ECOWAS sub-region has been quite low compared to the volume of trade between countries in the sub-region with countries outside the sub-region. The economic implication of this is that ECOWAS countries are benefiting more from trade with countries outside the sub-region and it shows that the key objectives for the formation of ECOWAS is far from been achieved.

Majority of the variables considered for this study are not normally distributed based on the coefficients of skewness, kurtosis and the Jarque-Bera statistic probability values which are less than 5 per cent. This shows there is the possibility of the problem of

heterogeneity in the panel data set; which the method of estimation (PMG) considered for this study is capable to handle effectively.

Panel Unit Root Tests

Table 2

Panel Unit Root Tests

Variables	Level			1 st Difference			Integration Order
	LLC Statistics	Prob.	Inference	LLC Statistics	Prob.	Inference	
<i>GDPGR</i>	-8.75	0.00	S	-	-	-	0
<i>INTRAECO</i>	-6.59	0.00	S	-	-	-	0
<i>TOPN</i>	-0.07	0.47	NS	-9.18	0.00	S	1
<i>GFCF</i>	-1.79	0.04	S	-	-	-	0
<i>FDIY</i>	-2.43	0.01	S	-	-	-	0
<i>HK</i>	0.15	0.56	NS	-5.63	0.00	S	1

Note. S = stationary, NS = not stationary.

Source: Author's Estimations using Eviews 9

The Levin, Liu and Chu test results show that GDPGR, INTRAECO, GFCF and FDIY are stationary at level, while Trade openness and human capital are stationary at first difference. It could be inferred therefore from the panel unit root test that the variables are of mixed order of integration.

Panel Co-integration Tests

Table 3

Pedroni Residual Co-integration Test

Alternative Hypothesis: Common AR Coefs. (Within Dimension) weighted				
	Statistic	Probability	Statistic	Probability
Panel v-statistic	-0.974986	0.8352	-1.875733	0.9697
Panel rho-statistic	-0.297445	0.3831	0.162471	0.5645
Panel PP- statistic	-11.21669	0.0000***	-8.781383	0.0000***
Panel ADF- statistic	-3.137435	0.0009***	-2.400178	0.0082***
Alternative Hypothesis: Individual AR (Between Dimension)				
	Statistic		Probability	
Group rho-Statistic	1.183457		0.8817	
Group PP-Statistic	-15.68634		0.0000***	
Group ADF-Statistic	-20.29887		0.0000***	

Note. Three Astericks (***) represent 1% level of significance.

Source: Author's Estimation using Eviews 9

The Pedroni residual co-integration test results show two classes of results, viz, the panel statistics (including the v , ρ , PP, ADF) for within dimension test, which assume common (homogenous) AR coefficients, presented in the top panel of Table 3, and the group statistics (including ρ , PP and ADF) for between dimension test, which assume individual (heterogeneous) AR coefficients, presented in the bottom panel of Table 3. The null hypothesis of no co-integration is rejected as majority of the statistics are significant at the 1 % level.

Panel Long Run and Short Run Models

The estimation results presented in Table 4 show that the long run and short run effects of international trade on economic growth in ECOWAS sub-region. The long run and short run effects of international trade with countries outside the region on the growth of the sub-region are observed to be positive and statistically significant at the 1% level. A unit rise in trade is associated with about 0.12 unit rise in the sub-region's economic growth in the long run. And a unit rise in trade is associated with about 0.005 unit rise in the sub-region's economic growth in the short run. The results obtained on the growth effects of trade openness suggest that the sub-region's economic growth will be enhanced by integration of its economies with the global market.

The observation is in line with the empirical evidences from the studies of Iyoha and Okim (2017) and Ijirshar (2019), which also found positive growth effect of trade in ECOWAS.

The long run effect of gross fixed capital formation on economic growth is also observed to be positive and statistically significant at the 1% level while its short run effect is positive but not significant. A unit rise in GFCF is associated with about 0.14 unit increase in the growth rate of real GDP in ECOWAS. This validates the propositions of economic growth theories and corroborates previous empirical studies such as those of Dritsakis, *et al.* (2006), Lach (2010), Ongo and Vukenkeng (2014), which also found positive growth effect of fixed capital formation on economic growth in the long run.

Table 4
Estimated Panel Long Run and Short Run Models Results

Dependent Variable: D(GDPGR)				
Method: ARDL				
Sample: 1996 2017				
Included observations: 282				
Dependent lags: 1 (Fixed)				
Dynamic regressors (1 lag, fixed): INTRAECO TOPN GFCF FDI Y HK				
Fixed regressors: C				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
<u>Long Run Equation</u>				
INTRAECO	-0.024373	0.013352	-1.825419	0.0618
TOPN	0.125412	0.021367	5.869426	0.0046
GFCF	0.140243	0.004869	28.80503	0.0000
FDIY	0.125614	0.031289	4.014637	0.0013
HK	0.071389	0.024279	2.940359	0.0082
<u>Short Run Equation</u>				
COINTEQ01	-0.865159	0.088051	-9.825651	0.0000
D(INTRAECO)	-0.008218	0.042878	-0.191652	0.8482
D(TOPN)	0.005165	0.002135	2.419426	0.0163
D(GFCF)	0.141728	0.178197	0.795345	0.4273
D(FDIY)	0.231082	0.061211	3.775171	0.0015
D(HK)	0.421301	0.181491	2.321333	0.0325
C	1.249872	0.493939	2.530418	0.0121
Mean dependent var	0.086805	S.D. dependent var		5.850591
S.E. of regression	3.194606	Akaike info criterion		4.624768
Sum squared resid	2286.034	Schwarz criterion		5.532655
Log likelihood	-613.7780	Hannan-Quinn criter.		4.988227

Note. P-values and any subsequent tests do not account for model selection.

Source: Author's Estimations using Eview 9

The estimation results presented in Table 4 show that the long run and short run effects of international trade on economic growth in ECOWAS sub-region. The long run and short run effects of international trade with countries outside the region on the growth of the sub-region are observed to be positive and statistically significant at the 1% level. A unit rise in trade is associated with about 0.12 unit rise in the sub-region's economic growth in the long run. And a unit rise in trade is associated with about 0.005 unit rise in the sub-region's economic growth in the short run.

The results obtained on the growth effects of trade openness suggest that the sub-region's economic growth will be enhanced by integration of its economies with the global market. The observation is in line with the empirical evidences from the studies of Iyoha and Okim (2017) and Ijirshar (2019), which also found positive growth effect of trade in ECOWAS.

The long run effect of gross fixed capital formation on economic growth is also observed to be positive and statistically significant at the 1% level while its short run effect is positive but not significant. A unit rise in GFCF is associated with about 0.14 unit increase in the growth rate of real GDP in ECOWAS. This validates the propositions of economic growth theories and corroborates previous empirical studies such as those of Dritsakis, *et al.* (2006), Lach (2010), Ongo and Vukenkeng (2014), which also found positive growth effect of fixed capital formation on economic growth in the long run.

The long run and short run effects of foreign direct investment on economic growth in the ECOWAS sub-region are positive and statistically significant at the 1% and 5% levels respectively. A unit rise in the FDI (as a percentage of GDP) is associated with 0.15 unit rise in the growth rate of real GDP in the long run. And a unit rise in FDI is associated with a 0.23 unit rise in the growth rate of real GDP in the short run. The positive growth-effect of FDI is in line with empirical evidence from the studies by Adamu and Oriakhi (2013) and Shittu (2018) which also found that FDI positively affects economic growth in West Africa.

Human capital (represented by secondary school enrolment rate) is observed to positively affect economic growth both in the long run and short run. This conforms to a priori expectation as it validates the endogenous growth theory. The growth effect of human capital is significant at the 1% and 5 % levels in the long run and short run respectively . The positive long run growth effect is in sync with, and corroborates empirical evidence from the study by Tasel and Bayercelik (2013) and Hanif and Arshed (2016) which indicated positive growth effect of secondary school education/enrolment on economic growth.

The coefficient of the error correction term in the estimated short run equation is negatively signed, statistically significant (at the 1% level) and less than unity as expected. This further confirms that long run relationship exists among the variables of the variables of the model. The error correction coefficient of -0.87 suggests that the speed of adjustment to equilibrium in the event of short-run deviation therefrom is quite high. It indicates that about 87% of the deviation from equilibrium is corrected annually to restore equilibrium in the next period (year).

5.0 Conclusion and Recommendation

The paper examined the growth effect of international trade on economic growth in ECOWAS sub-region. The effect of International trade on growth in ECOWAS sub-region was investigated in two dimensions- effects of trade among ECOWAS countries and trade between ECOWAS countries and with the rest of the world on growth in ECOWAS sub-region. In doing this, the Pooled Mean Group (PMG) estimator was employed to investigate the short-run and the long run effects of international trade on economic growth in ECOWAS sub-region. The study found that the long run growth of the sub-region is positively affected by trade with the rest of the world, but negatively affected by intra-regional trade. This suggests that trade with the rest of the world is a key requirement for

growth in ECOWAS sub-region. Further evidences from the study are that domestic capital formation, FDI inflow and human capital development are important ingredients for sustainable (long-run growth) in ECOWAS sub-region.

Considering the positive and significant long run growth effect of international trade (trade with the global market), it is recommended that international trade with the global market should be well promoted to enhance economic growth in ECOWAS sub-region. Also, efforts should be made by ECOWAS governments to enhance the growth contribution effect of the regional integration scheme.

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