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## Financial Integration and the Growing ECOWAS Nations: Could there be Role for Institutional Quality Variable?

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### Abstract

This study examined effects of financial markets integration on economic growth in Economic ECOWAS countries between 1980 and 2018. The study employed Pool Mean Group (PMG) technique for the data analysis. The short-run results of the estimated regression revealed that the effects of financial integration on the economic performances of ECOWAS countries are neither direct nor linear. In long run, as economies persist in increasing number of convergence criteria met, there is tendency for this to translate into economic growth for countries. The effects appear to only be channeled through improvement in the depth of money supplied, based on the integration instrument considered. The study shows essentially that financial integration does not have relevant short-term impacts on financial sectors of member countries of ECOWAS. Seemingly, role of financial integration should be considered from a wider perspective since perceived benefits or otherwise are shown to only be realized in the long run. Relatively, evidence shows that with Nigeria, Ghana and Gambia high level of assets-based integration occurs within the WAMZ region. Financial integration that considers a broad spectrum of convergence among the economies of ECOWAS, without taking into account domestic institutional support, is harmful for long run financial sector development in the sub-region. When we interacted financial integration variables with institutional quality variables, convergence criteria increased by 0.23 %, interest rate gap shrunk to about 0.26 % and share of member countries' financial assets in the region grew by about 0.53 %. For the fact that institutional quality variable was constructed on the basis of impartiality of the legal system and popular observance of the law, it appears that domestic laws in many ECOWAS countries do not favour compliance with convergence criteria. The study submits that a broad-based and well-encompassing integration policy for ECOWAS region should be pursued and aimed at improving member countries' domestic institutions. This is more so because, we found in the study that with improved quality of institutions, the criteria for deeper integration in the region have more chances to be met.

**Keywords:** financial market integration, economic growth, institutional quality.

### 1. Introduction

One classic tests on financial integration developed by Feldstein & Horioka (1980) is the saving-investment correlation. It can be used to measure the degree of regional capital segmentation. The authors argued that in conditions of perfect capital mobility and investment opportunities, increasing the saving rate in one region results to an increase in investment in all regions. The Feldstein-Horioka test measure the extent to which high domestic saving rate in a

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country links with a high rate of domestic investment. Assuming there is perfect capital mobility in the world, there should be no difference between domestic saving and domestic investment, due to the assumption that the saving decision in each country is a response to the worldwide opportunities for investment, and the investment is assumed to be financed by a worldwide pool of capital. We present and discuss below data on domestic saving/investment in the ECOWAS region.

**Table 1.** Saving and Investment Efforts in ECOWAS 1990 and 2016

Countries	1990			2016		
	Investment rate	Saving rate	Saving per capita	Investment rate	Saving rate	Saving per capita
Benin	15.52	13.48	198.18	24.62	17.44	342.73
Burkina Faso	18.25	14.03	118.44	14.54	7.71	127.93
Cote d'Ivoire	4.85	-0.84	-29.35	19.64	18.53	620.88
Guinea-Bissau	16.18	11.59	164.75	13.04	13.97	223.78
Mali	28.45	11.46	150.28	17.41	10.31	199.91
Niger	11.02	7.35	70.11	39.58	24.10	250.54
Senegal	9.14	1.37	25.14	26.85	21.54	507.38
Togo	15.71	11.00	175.05	27.38	17.65	253.58
The Gambia	5.30	12.30	204.24	18.73	9.84	151.71
Ghana	17.61	14.69	287.82	14.49	7.79	316.61
Guinea	18.88	11.72	166.09	25.24	-6.69	-119.50
Nigeria	12.19	20.22	634.55	12.56	13.23	728.29
Sierra Leone	6.65	-4.58	-82.39	12.50	-9.27	-145.40
Cape Verde	36.96	18.51	467.97	37.03	33.30	2051.24

Source: Authors' compilation with data obtained from IMF Economic Structure Data, 2016

Many African economies record poor growth relative to North America, Europe and the Asian. Why is Africa so much poorer than these continents? What are the constraints that cause slow growth of the economies of SSA, in particular, that of ECOWAS? A common factor may be the low level of capital stock in most of the ECOWAS member countries, which, largely, can be attributed to the binding effect of disintegrated financial markets. The weak macroeconomic indicators for ECOWAS countries could be attributable to a number of external and internal factors, among which includes the inability of some ECOWAS countries to finance economic development from domestic saving. A crucial aspect of this arises from poor saving efforts which have proved to be inadequate to finance required growth. The deficit between domestic saving and investment is assumed to constitute finance from external (international) sources.

Iyoha (2004) linked Africa's poor growth to crude and fragmented financial markets. The author posits that the African financial market is characterized by small size and low depth, which tend to act either individually and collectively to impede output growth in the region. Furthermore, the author concluded that the current structure of the financial markets (in terms of market depth, breadth, size and distribution) appears underdeveloped; as a result, saving-investment-growth linkage remains weak. Likewise, Comincioli (1995) posits that the degree of financial markets' development predict and promote economic activities.

To buttress the impact of the size of financial market on the economic growth of the continent of Africa, the Economic Commission for Africa (ECA) report of 2004 suggests that small population and low income tend to limit the size of Africa's markets. According to the referenced report, out of the 53 countries in the continent, 39 have less than 15 million people, and 21 have below 5 million. Hence, small population, low income and independent financial systems within the continent compound Africa's economic growth problem.

Internally, greater financial markets integration may facilitate efficient mobilization of domestic saving for investment through enhancing financial development. It is therefore not surprising that Sub-Sahara Africa as a whole records slow economic growth comparable to Europe, Asia and North America which has large capital due, perhaps, to the size their financial markets and the degree of financial integration.

In view of rank of economic growth and critical role of financial services sector in the linkage, this study aims to investigate the dynamic effect of financial markets integration in ECOWAS countries and obtain estimates of the potential growth benefits of such integration. The study analyzed the linkage between financial market integration and economic growth in the ECOWAS sub-region. The choice of ECOWAS sub-region for this study is due to existing legal instrument in the form of ECOWAS' treaty of 1975 which provide for economic integration of the sub-region. The study is structured into six sections. In addition to the introduction, next is empirical review of literature followed by discussion of methodology used in carrying out the study. The subsequent section present the data analysis/interpretation of econometric results and thereafter, we have the conclusions.

## 2. Discussion

We begin with study by Akinlo & Egbetunde (2010) who employed VECM on data for 1980 to 2005 for 10 SSA countries and find that a long-run relationship exists between financial development and economic growth. The causality result was mixed for different countries. Specifically, the study reported that financial development Granger-causes economic growth in Central African Republic (CAR), Congo, Gabon, and Nigeria, while economic growth Granger-causes financial development in Zambia. The study nevertheless, found a bi-directional relationship between financial development and economic growth in the other countries- Chad, Kenya, Sierra Leone, South Africa and Swaziland.

Similarly, Roja & Valev (2004) examined channels through which financial development influence economic growth in a panel of 74 countries between 1961 and 1995. Their finding indicates that financial development has a strong positive effect on productivity and growth more in developed countries, but in less developed countries, the effect is mainly through capital accumulation. Wurgler (2000), noted in his study that financial sector development promotes economic growth through the efficient distribution of existing investment and increase in the efficiency of on-going projects by monitoring such projects as well as lowering information acquisition cost to indigenous firms.

Ogbeide & Igbinedion (2016) investigated impact of financial sector reform on human development in SSA using framework of traditional panel, dynamic panel and causality test with data for the period 1980 to 2012, on a sample of fourteen (14) African countries and employed financial reform index 2010 developed by IMF. The researchers obtained results which showed that financial reforms have a positive and significant effect on human development and hence inclusive growth in the overall SSA countries. Other researchers however obtained different results.

Egwaikhede, Omisakin, Oyinlol & Adeniyi (2016), sought to examine the connection between financial systems development and economic growth in SSA by determining the likely influence of monetary policy on economic growth. Using annual time series data from 28 countries for the period 1996 to 2014, they obtained fixed effects estimation model as well as system generalized method of moments estimators. Egwaikhede et al. (2016) found a fairly broad negative linkage between finance and economic growth in the sample. The same submission was robust for alternative definitions of financial development. The role of monetary policy as an intervening factor in the finance-growth space was insignificant.

Monetary policy indicators, together with their interactions with financial development markers, gave weak growth predictors. Aziokpono (2010) uses co-integration and error correction techniques as well as impulse response analysis to examine the extent of interest rates pass-through and measure the degree of financial integration among countries of the South Africa Customs Union (SACU). The author found that there exist hierarchies of integration of the financial systems of each member state, with that of South Africa playing the dominant role in SACU. The study confirmed the presence of limited arbitrage opportunities between the countries in the union hence prevailing integration between the financial systems is mainly a result of policy convergence than market convergence.

### Theoretical Framework and Model Specification

The theoretical proposition of the study is that financial markets in the ECOWAS SSA region depend on each other. This study is based on AK endogenous growth model by Rebelo (1991). The AK-model extends the Solow growth model to include institutions and human capital in a simplistic and practical fashion that abstracts the economic systems of developing countries, and appears to offer a better explanation to the existence and persistence of cross-country income differences. Empirical research evidence on economic performance of developing countries support predictions of AK model.

The model is built upon a constant-returns-to-scale production function whereby output per worker is obtained by dividing both sides of (1) by  $L$  to obtain:

$$y = Ak^\alpha \quad (1)$$

Where  $y = Y/L$  is output per worker;  $k = K/L$  is the capital – labour ratio. Capital accumulation is given by:

$$\dot{k} = sy - (n + \delta)k, \quad [0 < \delta, s < 1; n > 0] \quad (2)$$

Where  $s$  denotes the saving rate,  $n$  is the exogenous rate of population growth and  $\delta$ , the rate of depreciation of physical capital. Equation (2) contains equilibrium in the goods market, the equality of investment and saving,  $I = sy$ . Suppose that  $A$  is constant over time, substituting equation (1) into (2) and divide through by  $k$  to obtain the growth rate of the capital stock per unit of labour,  $g_k$  thus:

$$g_k \equiv \frac{\dot{k}}{k} = sAk^{\alpha-1} - (n + \delta) \quad (3)$$

and therefore, the growth rate of output per worker as:

$$g_y \equiv \frac{\dot{y}}{y} = \frac{\alpha k Ak^{\alpha-1}}{Ak^\alpha} = \alpha g_k \quad (4)$$

The theory of falling marginal returns to capital causes the saving curve ( $sAk^{\alpha-1}$ ) to be negatively sloping. If technology grows at a constant rate, the model explains that output per effective worker and capital to effective labour ratio are all constant and proportional to the rate of technological progress.

The saving rate therefore affects positively level of per capita income in steady-state. This implies that countries with similar production technologies, equivalent saving rate and population growth rate should converge to the common steady-state per capita income. This convergence property means that poor countries with relatively low standard of living and a lower capital/labor ratio will grow faster during transition period.

Ultimately, both economies will arrive at the same level of capita income. Convergence happens because of diminishing marginal returns to capital. Successive additions to the capital stock results to large increases in output when the capital stock was small. The reverse applies when the initial capital stock is large.

In order to facilitate the objective of our study, we employed a panel co-integration analysis to evaluate the level of co-integration vectors of the ECOWAS financial market. The measure of the dependence is based on the relationship between each country's share of asset as a ratio of the regional total and a spread between a country's interest rate, and a computed ECOWAS average which we name as 'Interest Rate Gap'. In econometric form, the model is expressed thus:

$$FM_{eco_t} = \alpha + \beta FM_{i,t} + \varepsilon_t, \quad [t = 1, \dots, T] \quad (5)$$

Where  $FM_{eco_t}$  is financial market indicator for the ECOWAS region (measured as the average regional Asset (credit to GDP ratio) in year  $t$ ;  $FM_{i,t}$  is the share of a country's asset or financial market indicator for a given country, and  $\varepsilon_t$  is the error term.

In order to conduct the co-integration test, the EG two-stage co-integration test technique is employed. This test involves estimation of equation (5) using the OLS technique, then the error term is obtained. A further check for stationarity is conducted on the estimated error term. If the error term is stationary, (i.e.,  $I[0]$ ), then there is co-integration between  $FM_{ECO}$  and  $FM_i$  for the individual countries. The stationarity or unit root test uses the  $p^{th}$  order augmented DF regression method (see Baltagi, 2013), given as:

$$\Delta y_{it} = a_i + b_i y_{i,t-1} + c_i t + \sum_{j=1}^p d_{i,j} \Delta y_{i,t-j} + u_{it} \quad (6)$$

Where  $y_{it}$  is the regressand and  $x_{j,it}$  the  $j^{th}$  regressor,  $u_{it}$  are stochastic process. The variables for this model are financial market indicators as interest rate spread and the ratio of claims of banks to the private sector to GDP.

The realization of the simultaneous relationship between financial integration and economic growth with financial sector development as state variable implies OLS estimation of economic growth equation gives inconsistent results. ECOWAS member countries are likely to exhibit cross-section dependence in the panel dataset which introduces complexity in estimation and inference and thus renders familiar techniques (OLS, FGLS) inefficient. The study adopted the use of fixed effect within group model for the estimation.

Exploring a dynamic strategy in order to determine the long run effects of financial integration on economic growth with cross section heterogeneity. The heterogeneity arises as a result of country-specific factors since such factors could play critical roles over the time period.

In what follows, the expanded ARDL model is used to capture the long run relationship between economic growth and financial integration. This is so specified:

$$\begin{aligned} \Delta pcyg_t = & \alpha_0 + \phi pcyg_{t-1} + \delta_1 fint1_{t-1} + \delta_2 fint2_{t-1} + \delta_3 savr_{t-1} + \delta_4 instQ_{t-1} \\ & + \sum_{i=1}^{p-1} \psi_i \Delta pcyg_{t-i} + \sum_{i=1}^{q_1-1} \varphi_1 \Delta fint1_{t-i} + \sum_{i=1}^{q_1-1} \varphi_2 \Delta fint2_{t-i} + \sum_{i=1}^{q_1-1} \varphi_3 \Delta savr_{t-i} \\ & + \sum_{i=1}^{q_1-1} \varphi_4 instQ_{t-i} + \xi_t \quad (7) \end{aligned}$$

Note that: *pcyg* is growth rate of real *GDP*, *savr* is saving rate (inclusive of private sector saving and public sector saving), and *instQ* represent institutional quality, *fint1* is financial integration using interest rate measure, and *fint2* is financial integration using ratio of regional assets and liabilities to total foreign assets and liabilities of a given country. To provide robustness and exploit additional information in cross-sectional dimension of our data, we study employed three panel data unit root tests, each having the general form as:

$$\begin{aligned} \Delta q_{it} \equiv & a_i + \alpha q_{it-1} + \Delta y_{it} = a_i + \alpha q_{it-1} \\ & + \beta_i t + \sum_{j=1}^p \varphi_{ij} \Delta q_{it-j} + \epsilon_{it} \quad (8) \end{aligned}$$

Where the subscript  $i = 1, 2, 3, \dots, N$  indexes the countries,  $q_{it}$  is the regressand and  $x_{j,it}$  is the  $j^{th}$  regressor;  $\alpha$  is the indicator of serial correlation,  $\epsilon$  is assumed a white noise term. The CIPS statistics was obtained as follows:

$$CIPS = \frac{1}{N} \sum_{t=1}^N \tilde{t}_i \quad (11)$$

Where  $\tilde{t}_i$  is the OLS t-ratio of  $\alpha_i$  in the DF regression equation, augmented with the cross-section averages  $\bar{y}_{t-i}$  and  $\Delta \bar{y}_{t-j}$ , for  $j=0, \dots, p$ . The CIPS tests the unit root hypothesis when a factor structure is considered. Monte Carlo experiments have shown how robust the CIPS statistics is in the presence of other cross-section dependence like the spatial autoregressive process (Paseran, 2007) that may be present in the panel data set. Two other panel root tests, proposed by Breitung (2000) and Levin, Lin, and Chu (2002), were employed for additional robustness check.

In this study, we tested for the existence or otherwise of long-run relationship between economic growth and financial integration as well as the interaction between financial integration and financial development variables of the model, with and without controlling for institutional quality. The co-integration test involves computing the residual-based DF and ADF of the variables of the model as in Kao (1999).

The Kao panel co-integration assumes a homogenous panel, with identical co-integrating vectors among the countries. The assumptions of homogeneous co-integrating vectors and AR coefficients, lack of multiple exogenous variables in the co-integrating vector, and the existence of multiple co-integrating vector constitutes a draw-back which makes it unsuitable for application in empirical study of this nature. To overcome these seemingly unrealistic assumptions for a study involving several countries in the ECOWAS sub-region, we applied the Pedroni (2000, 2004) tests which allows for considerable heterogeneity in the panel data.

The Pedroni tests assume trends for the cross-sections and consider the null hypothesis of no co-integration in panel data. These tests allow multiple regressors for the co-integration vector to vary across different sections of the panel as well as heterogeneity in the error term. The Pedroni panel regression model has the following form:

$$Q = \alpha_i + \delta_t + \sum_{m=1}^M \beta_{mi} X_{mi,t} + u_{it} \quad (12)$$

Seven different co-integration statistics is used to capture within and between effects in panel. The statistical tests can be classified into two categories: The first category includes four tests based on pooling along the 'within' dimension (pooling the AR coefficients across different sections of the panel for the unit-root test on the residuals). This is also known as first generation statistical test.

#### Definition of Variables and Sources of Data

**Financial Integration Measures:** In this study, one of the financial integration measures used is interest rate spread. A simple average interest rate for the sub-region ( $BN_{eco_t}$ ) was calculated and serves as the benchmark for which each country's interest rate is measured. The difference between the benchmark and individual country's rate is the "Interest rate gap" denoted as ( $BN_{i,t}$ ) for each country per time. The lesser the gap between benchmark ( $BN_{eco_t}$ ) and domestic country rate ( $BN_{i,t}$ ), the stronger the level of integration among the financial markets.

Another measure of financial integration is an ordinal variable that measures the number of integration criteria met in terms of integration in the ECOWAS sub-region. We called this variable the convergence index. This convergence process was initiated by the West African Economic and Monetary Union (WAEMU) and was later absorbed and incorporated into the ECOWAS protocols as the convergence and macroeconomic stability pact, tagged, "ECOWAS Monetary Cooperation Programme (EMCP)".

The resolve of the convergence criteria is thus to materialize this requirement (ECA, 2014). The convergence pact indicates the formal commitment made by ECOWAS Member States to deepen economic integration in the sub-region. The convergence mechanism for the community comprises eleven criteria, with four primary and seven secondary as shown in Table 2. More criteria met by a country indicate better integration of that country within the sub-region.

**Table 2.** Convergence Index for the Economies of West Africa

<b>Primary criteria</b>	
i.	Annual inflation rate $\leq 5\%$
ii.	Budget deficit in % of nominal GDP (including grants) $\leq 3\%$
iii.	Funding by the central bank of the budget deficit in relation to the fiscal revenues of the previous year $\leq 10\%$
iv.	Gross external reserves $\geq 6$ months
<b>Secondary Criteria</b>	
v.	Non-accumulation of domestic and external arrears under current management.
vi.	Ratio of wage bill over fiscal revenues $\leq 35\%$
vii.	Ratio of public investments financed on internal resources in relation to fiscal revenues $\geq 20\%$
viii.	Rate of fiscal pressure $\geq 20\%$
ix.	Real interest rate $> 0\%$
x.	Stability of the nominal exchange rate (+/- 10%)

Source: ECA, 2014

Other financial integration variables used in the study include extent of capital account openness (measured by the indicator of capital account openness formulated by Chinn and Ito (2006), and ratio of a country's external central bank assets to that of ECOWAS regional total).

**Financial Development Measures:** Broad money to GDP ratio ( $myr$ ): A measure that relates to size of the financial sector in the economy. It is based solely on Liquid Liabilities (or broad money) and it captures the size of financial system (also called "financial depth").

**Economic Growth variables:** This is real income level in the economy which shows the basic structure of an economy in terms of aggregate income levels. We used the growth rate of real per capita GDP ( $pcyg$ ). The lagged real gross domestic product ( $rgdp$ ) variable as demonstrated in Forbes (2000); Bond, Hoeffler & Temple (2001); Gallo (2003) indicates the initial economic condition of a country.

Institutional variables: Institutional factors are included in the estimation of equation to observe the effects of institutional quality, political commitment, and political willingness on deepening economic integration in the ECOWAS bloc. The institutional variables are investment profile to capture the general respect to the rule of law as opposed to arbitrariness or discretionary behavior in a country, government stability and rule of law (to capture strength and capacity of political institutions, as measured by the International Country Risk Guide (ICRG) with a scale of 1-12 for investment profile and government stability and 1-6 for Law and order. In each of these institutional variables, lower ratings are given to countries where the quality is low, with higher tendencies for political risks.

Panel data involving annual values ECOWAS countries were used in empirical analysis. The data were obtained from World Bank's world development indicators; IMF financial structure database; UNCTAD world investment report database; and West African Monetary Agency (WAMA) panel database for ECOWAS countries. The empirical analysis covers a 38-year period, 1980 to 2018 and that gave rise to 570 balanced panel observations.

### 3. Results

#### Analysis of Correlation between Variables

In order to further understand the pattern of interactions among the variables in the study, we carried out correlation checks. This analysis was aimed partly to examine the extent of multicollinearity among the explanatory variables of the models which can provide initial indications with respect to the efficiency of the estimators used in the study. Table 3 below provides the correlation matrix.

All the variables have either low or negative correlation with one another, which suggests the absence of multicollinearity in the estimated models. The results also show a strong positive correlation between money supply to GDP rate among the countries. There is positive correlation between criteria met and both financial development variables, though only that of money supply is significant. This implies that rising financial development moves in the same direction with number of convergence criteria met among ECOWAS countries. Interest rate gap has negative correlation with both financial development indicators and with other integration variables. Asset size and capital account openness also have negative correlation with the financial development indicators.

**Table 3.** Correlation Matrix of the Explanatory Variables in the Model

Variable	PCYG	MYR	CRITERIA	FINT	INTR_GAP	KAOPEN	SAVR	GOVSTAB	INVST_PROF	LAW_ORDER
MYR	0.44 (0.00)									
CRITERIA	0.14 (0.19)	0.28 (0.01)								
ASSET	-0.06 (0.57)	-0.49 (0.00)	0.42 (0.00)							
INTR_GAP	-0.18 (0.11)	-0.35 (0.00)	-0.64 (0.00)	-0.06 (0.61)						
KAOPEN	-0.05 (0.66)	-0.05 (0.64)	0.21 (0.06)	0.21 (0.05)	-0.14 (0.20)					
SAVR	-0.14 (0.21)	-0.30 (0.00)	0.08 (0.45)	0.52 (0.00)	0.07 (0.51)	0.29 (0.01)				
GOVSTAB	-0.20 (0.06)	-0.23 (0.04)	-0.51 (0.00)	-0.15 (0.19)	0.35 (0.00)	0.04 (0.74)	0.14 (0.22)			
INVST_PROF	0.16 (0.14)	0.28 (0.01)	-0.41 (0.00)	-0.39 (0.00)	0.42 (0.00)	-0.27 (0.01)	-0.15 (0.18)	0.31 (0.00)		
LAW_ORDER	0.03 (0.80)	0.11 (0.32)	-0.01 (0.92)	-0.31 (0.00)	-0.22 (0.05)	-0.13 (0.24)	-0.61 (0.00)	-0.05 (0.67)	-0.01 (0.94)	
CPI	0.35 (0.00)	0.70 (0.00)	0.33 (0.00)	-0.23 (0.04)	-0.41 (0.00)	-0.38 (0.00)	-0.13 (0.23)	-0.17 (0.13)	0.07 (0.54)	0.12 (0.28)

Source: Author's computation (2019)

### Analysis of Cross-section Dependence Test

Prior to testing for main time series properties of the datasets, we examined presence (or otherwise) of cross-section dependency in our dataset. The tests allow us to disentangle crucial features of the relevant variables particularly interaction between cross-sectional units data. Notice that presence of cross-section dependence within framework of our dataset (which are based on financial sector indicators) is highly likely. This is because financial markets in the ECOWAS sub-region tend to respond to similar baseline conditions in terms of performance of economies even though responses may be in a heterogeneous manner, i.e., according to their institutions and to their fiscal framework.

Moreover, the interdependencies of ECOWAS member countries are likely to present spatial autoregressive processes. The issue of dependence across the countries is investigated by implementing the most commonly used test for cross section dependency (Pesaran, 2004; Pesaran, 2007). Given that the number of cross-sectional units in this study is larger than the time period ( $n > 504$  and  $T = 38$ ), the standard Breusch & Pagan (BP) (1980) LM test for cross-equation correlation is not appropriate for testing cross-sectional dependence in the model (Baltagi et al., 2012).

Therefore, cross-sectional dependence (CD) test developed by Pesaran (2004) which uses a pair-wise average of a sample correlation to test existence of cross-sectional dependence is adopted for the study. Unlike traditional BP LM test, CD test is suitable for a large number of cross-sectional units ( $n$ ) observed over  $T$  time periods.

The results of cross-section dependence test are reported in Table 4. From the result, it is seen that the Peseran CD test for one of the growth equations fails the significance test at the 5 % level, suggesting the absence of cross-sectional dependence for the estimation structure. For the other equations, the presence of cross-sectional dependence can be observed from the significant Pesaran CD values. Based on the results in Table 4, the hypotheses of cross-section independence of the variables can hardly be rejected.

**Table 4.** Cross-section Dependence (CD) Test Results

Variables series tested	pesaran CD	p-value	abs corr
Growth-myr equation	1.718	0.086	0.144
Financial dev- financial int equation (myr)	21.324	0	0.541

Source: Authors' computations

Apparently, CD test results in Table 3 reject the null of lack of cross-section dependence further informed our choice of estimating the co-integration results using PMG. The presence of cross-sectional dependence does not nevertheless render estimations inefficient because sources of dependence are accounted for in estimation procedure in this study; heterogeneous socio-economic structure of different economies calls for an estimation procedure which allows for slope heterogeneity across panel units. The co-integrated regressions which incorporated fixed effects accounts for structural differences among the countries (Beqiraj et al., 2018). Apparently, CD test results in Table 4 reject the null of lack of cross-section dependence informed our choice of estimating co-integrating relationships in the presence of cross section dependence.

Table 5 assessed quality of institutions in ECOWAS region using some international country risk guide indicators as measures of institution. This gives some background to determine if countries with relatively better institutions will perform better in terms of financial integration, financial development and economic growth. The study used 'law and order', 'government stability' and 'investment profile' as measures of institutional environment. Law and order explains the general respect to "rule of law" as opposed to "rule of thumb" or discretionary behavior; government stability captures degree of stability and consistency in the policy environment, while investment profile explains the bureaucratic and legal huddles that an entrepreneur has to overcome in order to establish a business and the efficiency of a country's contract enforcement process.

As observed in Table 5, Cape Verde, Gambia, Burkina Faso and Sierra Leone, in that order, are only countries that averaged 3 and above a scale of 1 to 6. The countries that scaled up to 3 seem to have a predictable prevalence of the law over discretionary behavior; the low standard deviations associated with respective means imply that uncertainties associated with investment in these countries can be

mitigated at calculated risk. But the entire sub-region has an average of 2.76 in Law and order. This indicates general weak legal and regulatory environment in the ECOWAS countries.

Similar pattern is observed with investment profile as a measure of institutional environment. From Table 5, only Cape Verde, Senegal, Gambia, Burkina Faso and Sierra Leone appear to have relatively efficient contract enforcing processes. This variable accounts for the evolution of contract dispute, duration or time from complaint to resolution, cost and number of procedures involved from the filing of lawsuit to determination of dispute. Lower rank represents poor contract enforcement and weak institutions, and vice versa. From Table 5 majority of ECOWAS countries are poor on this rating.

The political environments in the region, captured by government stability, appear stable and devoid of policy reversals going by the mean value of 6.91 and the low associated standard deviation. This should be a positive attraction to long term-investment. Overall, on basis of combined effects of three measures highlighted, institutional environment in ECOWAS is relatively weak. Entrepreneurs (particularly foreign investors) are averse to weak/unsafe investment environment. Respect for 'law & order' as well as contract enforcement process in most of ECOWAS countries have to improve; in doing so, the quality of institutions will improve.

**Table 5.** Descriptive statistics of the quality of institutions per country in the ECOWAS

Country	law		government stability		investment profile	
	mean	std. dev.	mean	std. dev.	mean	std. dev.
Benin	2.51	1.08	6.39	1.48	<b>3.63</b>	1.82
Burkina Faso	3.29	0.48	6.77	2.08	6.66	2.20
Cape Verde	4.21	0.65	8.32	1.67	9.21	1.81
CIV	2.94	0.51	6.82	1.72	6.17	1.37
Gambia	3.85	0.67	7.00	2.78	6.87	1.82
Ghana	2.20	0.74	7.42	1.94	6.58	2.09
Guinea	2.73	0.28	6.81	2.18	5.16	1.47
Guinea-Bissau	1.45	0.82	5.54	2.01	5.82	1.17
Mali	2.66	0.49	6.81	2.35	5.88	1.91
Niger	2.54	0.84	6.41	2.19	5.63	2.03
Nigeria	1.92	0.75	6.62	1.75	5.59	0.80
Senegal	2.58	0.52	8.11	1.57	7.05	0.96
Sierra Leone	3.13	0.58	6.65	3.25	4.61	2.00
Togo	2.58	0.56	7.07	2.40	6.45	1.06
All	2.76	0.95	6.91	2.23	6.09	2.07

Source: Authors' computations

### Empirical Results and Analysis

This section presents and discusses results of estimation of models of this study. Co-integration tests results are reported in Table 6. The results shows outcome of Trace test on co-integration between an ECOWAS benchmark interest rate and those of countries in ECOWAS and for total assets of ECOWAS and that of external assets for individual member countries.

From Table 6 it can be seen that no co-integrating vector was found for tests for most of countries in both categories. For asset shares, only Gambia, Ghana, Guinea and Nigeria indicated a form of co-integrating vector, which shows that these are only countries than can be said to be more co-integrated within the ECOWAS sub-region. Note that three of the countries, Nigeria, Ghana and Gambia are in WAMZ group, thereby suggesting that a high level of assets-based integration occurs within WAMZ region. For interest rate gap, only Senegal exhibited any form of co-integration. The general result from the test is that financial co-integration is still currently low among ECOWAS countries.

**Table 6.** Test for Financial Integration among ECOWAS Countries

Countries	Assets			Interest rate		
	coefficient	critical val. (95%)	co- integrated?	coefficient	critical val. (95%)	co- integrated?
Benin	12.11	15.49	no	7.30	15.49	No
Burkina Faso	11.50	15.49	no	6.94	15.49	No
Cape Verde	13.40	15.49	no	6.44	15.49	No
CI V	15.49	15.49	no	13.40	15.49	No
Gambia	18.38*	15.49	yes	9.77	15.49	No
Ghana	22.87**	15.49	yes	10.62	15.49	No
Guinea	17.94*	15.49	yes	9.08	15.49	No
Guinea-Bissau	12.06	15.49	no	13.83	15.49	No
Mali	10.37	15.49	no	8.34	15.49	No
Niger	8.65	15.49	no	11.01	15.49	No
Nigeria	20.22**	15.49	yes	6.85	15.49	No
Senegal	12.21	15.49	no	29.22**	15.49	Yes
Sierra Leone	12.23	15.49	no	9.11	15.49	No
Togo	11.02	15.49	no	6.25	15.49	No

Source: Authors' computation

Note: \*\*\*, \*\*, \* indicates the 0.01, 0.05 and 0.10 level of significance, respectively

### Evidence-based Discussion of Financial Integration and Financial Sector Development

Given the presence of cross-sectional dependence as determined earlier and the mixed order of co-integrating vectors in the relationships among the countries in the study (as seen in Table 4), a time-fixed effect is incorporated into the PMG estimation using a trend indicator in the  $I[0]$  fixed exogenous component.

As suggested by Zieseimer (2012) and Roodman (2009) incorporating the time-fixed effects will limit the effects of cross-section dependence in the estimates. The results in this section are estimated using the Pooled Mean Group (PMG) methodology which panel data components. The results are therefore reported in line with the PMG outputs which do not indicate the coefficient of determination nor other basic goodness of fit characteristics of the entire estimates. Rather, results report mean of dependent variables in relation to standard error of regression which demonstrates explanatory capability of the estimated models.

Table 7 presents the result of the effects of financial integration on financial development (measured as money supply to GDP ratio). From this analysis, inferences can be made about the pattern of indirect effects that financial integration could have on economic growth and overall performance for the countries in the sub-region. It should be noted that financial integration is included on its own and as an interaction term with institutional quality in the equations.

**Table 7.** Financial Integration and Financial Development

Variables	Dep var = log of m2gdp					
	without control for institutional quality			with control for institutional quality		
	criteria index	interest gap	assets	criteria index	interest gap	assets
Long-run estimates						
FINT	-0.338***	0.001	-4.450	1.947***	-0.181***	1.863***
FINT*I	--	--	--	-0.225***	0.026***	-0.529***
LGDP	-1.430**	1.477**	-9.398	-1.244	1.230***	1.341
OPEN	0.051	-0.247	-1.853	-0.871***	0.060	-0.950***

GOVSTAB	0.304***	0.283***	-0.949	1.331***	0.068**	0.276**
INVST_PROF	-0.081**	0.075	3.846	0.162**	-0.052**	0.292*
Short-run estimates						
ECM <sub>t-1</sub>	-0.053***	-0.050***	-0.002	-0.040***	-0.055*	-0.025*
ΔFINT	-0.028	-0.001	0.111	-0.068**	-0.003	0.152*
ΔFINT <sub>t-1</sub>	-0.018	-0.011	0.135	-0.001		0.129
ΔFINT*I	--	--	--	0.009*	0.001	-0.007
ΔFINT*I <sub>t-1</sub>	--	--	--	0.000		0.001
ΔLGDP	-0.082	0.320	-0.182	-0.031	0.008	-0.259*
ΔLGDP <sub>t-1</sub>	0.027	0.458	0.156	0.131		-0.035
ΔOPEN	0.030	-0.116	0.008	0.085	-0.029	0.058
ΔOPEN <sub>t-1</sub>	0.097	0.046	-0.050	0.152*		-0.023
ΔGOVSTAB	-0.028	-0.002	-0.003	-0.067*	-0.011	-0.029
ΔGOVSTAB <sub>t-1</sub>	-0.008	-0.009	-0.009	0.001		0.012
ΔINVST_PROF	0.035	-0.007	-0.012	0.021	0.010	-0.005
ΔINVST_PROF <sub>t-1</sub>	-0.004	0.005	-0.013	-0.028*		-0.019
Constant	0.612***	-0.512***	0.117	-0.012	-0.316*	-0.290
Mean dep. Var	0.029	0.029	0.029	0.029	0.031	0.029
S.E. of regression	0.218	0.198	0.147	0.220	0.211	0.134

Source: authors' computation.

Note: \*\*\*, \*\*, \* indicates the 0.01, 0.05 & 0.10 level of significance, respectively

The table reports two panels of long run estimates (upper panel) and the short run estimates along with the co-integrating terms (lower panel). The result shows that the standard error of regression is relatively low and indicates impressive explanatory power of the model equations. The short run estimates for relationship are not quite significant in terms of their coefficients which all failed test at 5 % level, except for those of financial integration measured by convergence index and regional asset shares, financial openness and government stability. The short run results therefore indicate that essentially, financial integration does not have relevant short-term impacts on financial sectors of member countries of ECOWAS.

Apparently, role of financial integration should be considered from a wider perspective since perceived benefits or otherwise are shown to only be realized in the long run. However, the result also shows that the more the number of convergence criteria met by ECOWAS countries, the less will be the size of the financial sector; while more share of regional assets by a country leads to increased financial development in the short run for the countries. The significance at 10 % of the interaction term for the convergence index indicator of financial integration shows that with better institutions, the short run effects of increased criteria-met or convergence index will be positive on financial sectors.

The coefficients of ECM for each of estimates in Table 6 had expected negative sign and are mostly significant at 1 % level (except that of the equation with asset shares). The significant and negative coefficients indicate that the financial sectors possess capacity for restoring long run stability following any short run deviation of the system from equilibrium. The coefficients of ECM term are however low for each estimate, with largest value at -0.055, which indicates that less than 5 % of long run adjustments to equilibrium is completed within first year for each equation. This shows that financial integration possesses only peripheral influences in long run stability of financial markets in ECOWAS.

Also, long run results provide more implications for the relationship since integration activities have more long term implications for any group of countries (Adegboye et al., 2019). The result shows that of convergence index (i.e. number-of-criteria-met) at any given period has a significant negative impact on financial depth among countries in long run (when institutional factors are not accounted for). This indicates that financial integration that considers a broad spectrum of convergence among the economies in ECOWAS, without taking into account domestic institutional support, is harmful for long run financial sector development in the sub-region.

Nonetheless, when the results with control for institutional quality are considered, it can be seen that coefficient of financial integration measured by convergence index now has a significant

positive impact on financial depth for the sub-region, with a very high coefficient of 1.947. This result clearly shows that effect of a broad-based and well-encompassing integration move for a country on the financial sector may only be beneficial when domestic institutional setups are put into consideration. From another perspective, the result suggests that institutional quality actually enhances the impacts of financial integration on domestic financial markets among ECOWAS countries. The coefficient of the interaction term is however negative, demonstrating the moderating role of institutions on desire for more integration within a country.

With institutional quality influences, the coefficients of both interest rate gap and asset shares in the region become significant, though the coefficient of interest rate gap is negative. This indicates that more smoothening of interest rates among the countries has deleterious long run impacts on the financial sector for each country. This outcome can be easily rationalized and evaluated considering the wide gap that exists between financial markets of different countries in the sub-region. It should be noted that interest rate management measures the degree of efficiency of the financial markets. Seemingly, smaller markets which are many in ECOWAS tend to be less efficient therefore making interest rate-based integration a rather unfavourable outcome on financial markets of the bigger economies.

The result however shows that interaction of interest rate gap with institutional quality actually produces long run negative impacts on financial depth for the countries. This is actually a beneficial effect considering that a narrowing gap is what is expected for financial integration. Consequently, there is clearly a need for effective adjustment mechanisms to be provided by domestic institutions in order to accommodate interest rates smoothening across the entire sub-region. The coefficient of share of assets in the regional pool is significant and positive, which shows that under control for institutions, integration that is based on asset shares does have significant positive impact on financial depth. The result shows that in the long run, a 1 % rise in the asset share of a country can lead to up to 1,8 % increase in financial development for the country.

The results in Table 6 likewise show that GDP per capita promotes financial development as expected. Improvement in economic performance generally tends to stimulate aggregate demand which has strong linkages to the monetary base of the economy. Thus, when ECOWAS economies perform well, even the challenge of informality in the financial markets can be more easily addressed. Surprisingly, financial openness is shown to exert negative influences on financial depth, suggesting that more overall openness tends to hurt domestic financial markets among the countries. Institutional quality, however, mainly have positive coefficients, which show that better institution promotes financial development in the sub-region.

Short run results of Table 8 show coefficient of MYR is significant and negative in each of the equations, suggesting that financial depth limits growth in the short run. The coefficients of ECM term had correct negative signs and are all significant at the 1 % level. The values are however low, which suggest that adjustment to long run equilibrium is very slow. The result also shows that financial integration interaction with financial development does not significantly affect short run economic growth in ECOWAS.

**Table 8.** Financial Integration and Economic Growth

Variables	Measure of financial integration			
	asset	criteria index	k account	interest gap
<b>Long-run estimates</b>				
LMYR	0.520***	0.994***	0.660***	0.541***
FINT	-0.414***	0.173**	--	-0.073*
M2*FINT	0.135***	-0.054**	-0.021	0.034**
LSAVR	0.101***	0.101***	0.087***	0.042***
GOVSTAB	-0.003	0.030***	0.023**	0.040*
INVST_PROF	0.079***	0.048***	0.050***	0.079***
LAW_ORDER	0.034	0.026	-0.005	0.117**
<b>Short-run estimates</b>				
ECM <sub>t-1</sub>	-0.078***	-0.069***	-0.078***	-0.048***
ΔLMYR	-0.127***	-0.150**	-0.103***	-0.123***
ΔFINT	0.066	-0.018	--	0.009

$\Delta M2^*FINT$	-0.014	0.004	0.000	-0.004
$\Delta LSAVR$	0.006	0.004	0.005	0.000
$\Delta GOVSTAB$	-0.001	-0.002	-0.003	-0.001
$\Delta INVST\_PROF$	0.003	0.005	0.004	0.005
$\Delta LAW\_ORDER$	0.004	0.009	0.008	0.010
Constant	0.397***	0.249***	0.368***	0.213***
Mean dependent var	0.006	0.006	0.006	0.006
S.E. of regression	0.043	0.043	0.043	0.043

Source: authors' computation.

Note: \*\*\*, \*\*, \* indicates the 0.01, 0.05 and 0.10 level of significance, respectively.

For the long run results, the results show that the coefficients of money supply ratio in each of the equations have become positive in the long run, though they were negative in the short run. In particular, coefficients of financial integration on their own offer certain important implications. In long run, coefficient of number of conditions met becomes positive and shows that as economies persist in increasing the number of convergence criteria met, there is tendency for this to translate into economic growth for countries. That of regional assets share is negative and indicates that more financial integration in this direction would lead to lower growth rates in the economies. The coefficients of number of criteria index and that of interest rate gap however show favorable outcomes that indicate more integration of financial markets along convergence and interest rate harmonization that leads to long run growth in economy. Again, this result emphasizes precarious position of acquiring larger eternal assets that may endanger domestic resource availability and use and, in turn, hinder long term growth prospects.

The results of interaction terms are rather interesting to note. For instance, coefficient of interaction between financial development and share of regional assets is positive even though the coefficient of the financial integration variable is negative. Thus, it is seen that when a country expands its share of regional assets and also seeks to deepen domestic financial markets, the resultant effect on the economy is long run growth. Relatively, interaction of financial depth with criteria index led to a significant negative impact on growth. The result is rather appalling and shows a country with a deep financial market which seeks to expand its commitment to regional convergence may actually experience slower economic growth. The coefficient of interaction between interest rate gap and market depth is also unfavorable, suggesting that such interaction tends to weaken growth over time.

In [Table 9](#), result of effects of financial integration on economic growth while using money supply as measure of financial development. Money supply to GDP ratio is significant and negative in each equations, suggesting that whether financial integration is controlled for or not, financial depth in economies lead reduction in economic growth in the short run. Hence, immediate impact of financial deepening in many ECOWAS countries is to reduce output growth per head.

In the short run results, coefficient of financial integration was only significant for the assets share measure which passed the significance test at the 5 % level. The coefficient is positive and shows that even in the short run, financial integration presents favourable impacts on the economies of ECOWAs countries. Integration (in terms of increased external asset shares) by 1 % leads to a 0,013 % rise in GDP per capita for the economies. The short run results also show that savings rate stimulates economic growth in the short run, while institutional quality has no significant impact on the economy within the short term.

The coefficients of ECM for each estimates in [Table 8](#) had expected negative sign and are all significant at the 1 % level (except that of the equation with asset shares). This output indicates that any short term deviation of the economy from long run equilibrium will inherently be restored on the basis of interactions of financial integration and development. The coefficients of the ECM terms are however quite low for each of the estimates, with the largest value at -0.085. These indicate that less than 8 % of long run adjustments to equilibrium in the economies is completed within the first year for each equation. This shows that financial integration and financial development actually possess only little power in driving long run long run stability of the economies of ECOWAS countries.

**Table 9.** Financial Integration/Development and Economic Growth

Variables	<i>Measure of financial integration</i>				
	baseline	assets	criteria	k account	interest gap
Long-run estimates					
LMYR	0.731***	0.615***	0.777***	0.746***	0.613***
FINT	--	-0.032***	-0.002	-0.046	0.027***
SAVR	0.080	0.147**	0.059	0.079	0.042***
GOVSTAB	0.035***	0.000	0.050***	0.035***	0.068***
INVST_PROF	0.059***	0.089***	0.045***	0.054***	0.097***
LAW_ORDER	0.041	-0.020	0.056	0.037	0.121**
Short-run estimates					
ECM <sub>t-1</sub>	-0.064***	-0.085***	-0.060***	-0.065***	-0.044***
ΔLMYR	-0.097***	-0.108***	-0.101***	-0.092***	-0.092***
ΔFINT	--	0.013**	-0.002	-0.006	-0.002
ΔSAVR	0.129**	0.138***	0.135***	0.131***	0.001
ΔGOVSTAB	-0.003	-0.001	-0.004	-0.003	-0.002
ΔINVST_PROF	0.004	0.001	0.004	0.005	0.004
ΔLAW_ORDER	0.009	0.008	0.010	0.011	0.014
Constant	0.288***	0.442***	0.258***	0.287***	0.168***
Mean dep. Var	0.006	0.006	0.006	0.006	0.006
S.E. of regression	0.044	0.043	0.044	0.044	0.043

Source: authors' computation.

Note: \*\*\*, \*\*, \* indicates the 0.01, 0.05 and 0.10 level of significance, respectively

The results for long run relationships are more relevant in this study and are reported in the upper panel of the Table. The second column in the Table reports the baseline estimation for the role of financial development on economic growth, without controlling for the effect of financial integration. In the long run results, the coefficient of the financial development variable is positive and passes the significance test at the 1 % level. This shows that financial depth in the economy through money supply penetration has significant positive impact on economic growth among ECOWAs countries in the long run. It should be noted that the short run coefficient was negative and significant.

From the result, it is seen that a 1 % rise in monetary penetration in the economies leads to a 0.731 % rise in per capita GDP among the countries. This is quite a large elasticity coefficient and indicates that money penetration has a central role in stimulating the growth of economies within the ECOWAS sub-region. This outcome suggests that it is sustained deepening of the financial markets that deliver growth-enhancing effects on the economy. This implies that central banks in the ECOWAS region must learn to maintain consistent positions over longer periods in terms of the monetary base and the size of money supply in order to achieve reasonable growth prospects in the long run.

The coefficient of savings rate fails the test at the 5 % level, while those of two of institutional quality variables passed the test at 1 % level and show that improved institutions among the ECOWAS countries tend to lead to improvement in economic growth in long run. It should be noted that effects of financial development on growth remained positive even when integration variables were included in the equations, although the coefficient of financial development slightly declined when asset shares and interest rate gap were used as proxies for integration. This implies that with greater integration, especially involving larger shares in regional assets and synchronization of interest rates among the ECOWAS countries, the role of financial sector in growth tends to decline. The coefficients of financial integration variables are again mixed in the long run results. The coefficients of measures using number of criteria index and capital account openness fail significance tests at 10 % level.

The coefficient of asset shares which was positive in short run estimates is negative in long run result. This implies that continued focus on boosting external asset holdings of central banks in ECOWAS region may actually limit growth in long run. Consider that coefficient of asset shares in the region was negative in long run estimates for credit supply. Thus, it can be seen that over bloating of external assets in order to meet ECOWAS integration conditions may hurt domestic credit supply and ultimately reduce growth for the economies. There is therefore need for the

central banks to evolve means of balancing asset holdings among the countries. The coefficient of interest rate gap is also positive in long run result, suggesting that smoothening and harmonization of interest rates may actually have direct enhancing effects on economic growth in ECOWAS.

Unexpectedly, coefficient of criteria index is not significant in the long run results, which is much unlike the results for the financial development indicators. This shows that the number of criteria met by a country directly affects only financial development in the long run, the direct effect on growth is weak. Overall, results show that financial integration exerts more direct impact on financial sector than on the whole economy for the ECOWAS sub-region. The coefficients of each of the institutional variables are positive and significant, showing that in the long run, institutional quality tend to promote economic growth for ECOWAS countries.

The results for effects of financial integration on economic growth are shown in [Table 10](#). It should generally be noted that the results from the panel estimates reflect the long run estimates. The results essentially reveal the role of financial integration on economic growth money supply.

**Table 10.** Financial Integration/Development and Economic Growth

Variables	Dep var = log of m2gdp				
	1	2	3	4	5
C	6.548***	6.516***	6.760***	6.391***	6.479***
LMYR	0.136***	0.129***	0.177***	0.152***	0.159***
ASSETS		0.003***			
CRITERIA			-0.052***		
KOPEN				-0.080***	
IGAP					0.005***
SAVR	0.004***	0.004***	0.006***	0.004	0.005***
GOVSTAB	-0.004	-0.005	-0.006	-0.004	-0.002
INVST_PROF	0.072***	0.073***	0.071***	0.072***	0.070***
LAW_ORDER	0.007	0.022	-0.021	0.020	0.003
Adjusted R-squared	0.217	0.226	0.262	0.242	0.224
F-statistic	4.496	4.614	5.391	4.953	4.571

Source: Estimated by the author

Note: \*\*\*, \*\* and \* indicate significant at 1 %, 5 % and 10 % levels respectively

### Robustness Checks for Regression Results

The robustness checks were carried out on estimates of interaction between financial integration and institutional quality is shown in [Table 11](#). The coefficients are generally similar in signs to those of the PMG outcomes.

**Table 11.** Financial Integration (Interaction with Institution) and Financial Development

Variables	Dep var = log of m2gdp		
	1	2	3
C	-2.682***	-1.142***	-1.178***
CRITERIA	0.145***		
CRI*INST.	-0.006		
ASSETS		0.651***	
ASSETS*INST.		-0.088***	
INTR_GAP			-0.058***
INTR_GAP*INST.			0.004***
LGDPPC	0.579***	0.475***	0.507***
KAOPEN	0.189***	0.141***	0.220***
GOVSTAB	0.121***	0.050***	0.050**
INVST_PROF	0.032*	0.063***	0.038**
Adj. R-squared	0.391	0.596	0.467
F-statistic	8.936	19.213	11.816

Source: Authors' computations.

Note: \*\*\*, \*\* and \* indicate significant at 1 %, 5 % and 10 % levels respectively

The results for effects of financial integration on economic growth are shown in [Table 12](#). It should generally be noted that results from the panel estimates reflect long run estimates. The results essentially reveal role of financial integration on economic growth for money supply indicator as revealed in the PMG estimates.

**Table 12.** Financial Integration/Development and Economic Growth

Variables	Dep var = log of m2gdp				
	1	2	3	4	5
C	6.548***	6.516***	6.760***	6.391***	6.479***
LMYR	0.136***	0.129***	0.177***	0.152***	0.159***
ASSETS		0.003***			
CRITERIA			-0.052***		
KOPEN				-0.080***	
IGAP					0.005***
SAVR	0.004***	0.004***	0.006***	0.004	0.005***
GOVSTAB	-0.004	-0.005	-0.006	-0.004	-0.002
INVST_PROF	0.072***	0.073***	0.071***	0.072***	0.070***
LAW_ORDER	0.007	0.022	-0.021	0.020	0.003
Adjusted R-squared	0.217	0.226	0.262	0.242	0.224
F-statistic	4.496	4.614	5.391	4.953	4.571

Source: Estimated by the authors

Note: \*\*\*, \*\* and \* indicate significant at 1 %, 5 % and 10 % levels respectively

The outcomes of empirical analysis present certain important aspects of our research that require further investigation. In the first place, our study has shown that broad convergence and asset management appear to be main factors within integration strategy that can drive long run financial depth among ECOWAS countries to thrive. This result shows that in order to obtain financial development benefits from financial integration in ECOWAS, not all integration components deliver relevant and beneficial outcomes.

The result is in line with studies by Isah & Odonye (2012), Fwangkwai (2014) and Azuka (2015) that for regional groupings in developing countries, conditional benefits are always expected. This also demands that efficient management of regional pacts must be made by domestic authorities in order to obtain full benefits of regional financial integration within domestic economies. It is clear that the effects are neither direct nor linear. First, the effects appear to only be channeled through improvement in financial development, based on the integration instrument considered, or with only long run benefits. The result also suggests that the effects of financial integration on the economy is rather mixed, and strictly depends on the indicator used for measuring integration (Levine, 2005; McDonald, Schumacher, 2007).

#### 4. Conclusion

Mutually, financial development and financial integration are considered as integral and essential parts of the comprehensive growth and development package for the sub-region, especially with regard to the overall economic integration processes of the sub-region. The goal of the study was to examine how financial integration affects financial development and how financial development affects growth among the countries of the sub-region. The place of the interactions between financial integration and development on economic growth was also examined. In the study, financial development was considered in terms of money supply and credit supply, while financial integration were taken to be the share of a country's external assets in the regional pool of assets; the number of convergence criteria that a country has met at a given year, the gap in interest rates between a country and that of a sub-regional benchmark; and the extent of capital account openness in a country.

The effect of financial integration on both financial development and economic growth among ECOWAS countries is only realized in the long run. The short-term impacts of financial integration possess weak capacity and mostly insignificant to ensure long run stability of both financial markets and economic growth in the ECOWAS sub-region. That the current degree of

financial integration among ECOWAS countries is weak. The test from the study revealed that less than half of the countries in the sub-region exhibit significant integration outcomes over the period of the study. Financial integration component that seeks overall macroeconomic convergence tend to have more positive effects on financial development, while integration measures that seek to boost a country's share of external assets within the ECOWAS sub-region or promote interest rate harmonization tend to limit domestic financial development among the countries.

That financial integration has dynamic mixed effect on economic growth in the ECOWAS sub-region. For many of the integration components, the result showed unfavorable effects on growth, while the effects of number of convergence criteria met was mostly positive and significant in the long run. Institutional quality enhanced the impacts of financial integration on domestic financial markets among ECOWAS countries. This suggests that provision of effective adjustment mechanisms by domestic institutions can aid in accommodating financial integration components across the entire sub-region. Although there was evidence of long run relationship between financial integration and both financial development and economic growth, financial integration possesses weak capacity to ensure long run stability of either financial markets and economic growth in the ECOWAS sub-region. Moreover, it was found that financial integration tends to provide more-long run stability for credit supply than for overall financial market depth among ECOWAS countries.

The findings and recommendations of this study is timely in terms of policy directions, as both the ECOWAS' sub-region monetary union and the African Continental Free Trade Agreement (ACFTA) policy comes into effect in July, 2020. First, the study found that there is weak integration of the ECOWAS sub-regional financial markets. This reality suggests weak conditions in the structure of the domestic financial and institutional systems of many of the ECOWAS countries. So, there is the need for reforms particularly those that promote sound legal and regulatory frameworks for contract enforcement of the domestic financial markets in each of the less integrated countries. Such policy reforms could expand the frontiers of these financial markets and reposition them to integrate quickly into the regional market and reap the systemic scale economies that accrue to larger/integrated financial systems. Quality institutions have been found to play important supportive role in the market-driven ECOWAS regional financial integration process.

Second, policy makers should advert to the use of money supply as preferred policy tool for adjusting the financial sector in ECOWAS member countries. Reason is, the study has found that different integration policies deliver mixed results on financial development, and the greater the level of financial development, the greater is the impact of financial market integration on the member countries' economies. We found that financial integration strategy in ECOWAS that seek overall macroeconomic convergence offers more positive effects on financial development than those integration measures that seek to boost a country's share of external assets within the ECOWAS sub-region, or promote interest rate harmonization. The later inhibits growth of the domestic financial development in some countries. Therefore, we strongly recommend the use of money supply policy to drive the ECOWAS market-driven financial integration process.

The use of money supply as the preferred instrument for financial market integration strategy in the ECOWAS sub-region has the potential to unlock the growth-benefit of financial development in the region, by expanding the frontiers of financial services through increase in the spectrum of opportunities for financial intermediation, increase the number of market participants and the efficiency effect which that brings about, for example, by promoting healthy competition, which could lead to low cost for financial services and productivity of investment.

A supranational institution such as the proposed West African Central Bank would ensure that harmonized rules are sufficiently tight and restrictive enough to ensure legal certainty and also sufficiently flexible to allow state-based regulatory institutions respond in an agile manner to the dynamic nature of financial markets. Finally, policy makers should not expect hasty result from the recommended integration strategy. As have been highlighted and discussed in this study, the speed of adjustment and response of financial development (hence growth) to financial integration variables shock is slow. It takes time for financial integration to impact financial development and produce the gains on the real economy. Promoting financial development through regional financial integration requires careful management, agility and patience. The usual expectation of instant results and hasty reversal of policy in the absence of immediate expected results is ill-advised and should be avoided.

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