Financial development and economic growth in West Africa

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Abstract : This research focuses on how financial development affects economic growth in West Africa. Between the year 2011 and 2025, when the data-set was available, the total number of 65 nations in the World Development Indicators (WDI) index was reduced to 13 (ECOWAS countries). The estimator known as Cross Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) was used as an analysis technique. This empirical data showed that domestic lending has a negative long-term impact on the private sector in nations in the West African. Further aspects were also taken into account, including the degree of trade openness and the negative growth of the broadmoney, which was found to have been a significant factor in the country's positive overall expansion. Additionally, the subregion was found to be highly favorable to economic growth for the following variables: wide money and trade openness. Among the the main conclusions of the study is that there is a persistently negative and substantial association between economic growth and financial development in West Africa, which includes conventional lending to the private sector and a big money supply. Finally, our study suggests that in order to foster growth, banks regulators and monetary policy makers in the west African area should focus on lending for profitable businesses compared to capitalizing on the general public or consumer domains.
Keywords: Financial development, Economic Growth, West Africa, Cross-Sectional Augmented Autoregressive Distributed Lag (CS-ARDL), Cross-Sectional Dependence

Résumé : Cette recherche porte sur l'influence du développement financier sur la croissance économique en Afrique de l'Ouest. À partir d'un ensemble de données initial couvrant 65 pays — issues des *World Development Indicators* (WDI) — l'échantillon a été restreint aux 13 pays membres de la CEDEAO. La méthodologie utilisée repose sur le modèle économétrique dit « Cross-Sectionally Augmented Autoregressive Distributed Lag » (CS-ARDL). Les résultats empiriques révèlent que le crédit intérieur accordé au secteur privé a un impact négatif à long terme dans les pays d'Afrique de l'Ouest. L'étude prend également en compte d'autres facteurs, tels que le degré d'ouverture commerciale et la masse monétaire au sens large ; cette dernière s'est avérée être un déterminant significatif de la croissance économique globale dans la région. Par ailleurs, il apparaît que l'ouverture commerciale et la masse monétaire au sens large sont des facteurs particulièrement favorables à la croissance économique dans cette sous-région. L'une des principales conclusions de l'étude souligne l'existence d'une corrélation négative, persistante et substantielle, entre la croissance économique et le développement financier en Afrique de l'Ouest — ce dernier incluant tant le crédit au secteur privé que l'importance de la masse monétaire. Enfin, nos travaux suggèrent que, pour stimuler la croissance, les régulateurs bancaires et les responsables de la politique monétaire en Afrique de l'Ouest devraient privilégier l'octroi de crédits aux entreprises rentables, plutôt que de favoriser le crédit aux ménages ou à la consommation.
Mots-clés : Développement financier, croissance économique, Afrique de l'Ouest, modèle CS-ARDL (Cross-Sectionally Augmented Autoregressive Distributed Lag), dépendance transversale (cross-sectional dependence)

Introduction

The process of making monetary institutions and processes more advanced and efficient in directing credit, channeling savings, and lowering transaction and investment costs is known as financial development. Everyone acknowledges that finance has a variety of important consequences on the expansion of the West African economy, such as creating space for capital accumulation and participation in lucrative business ventures (Ibrahim & Alagidede, 2018; Yusuf et al., 2020). There are several ways in which the expansion of the financial sector promotes economic growth. Removing liquidity limitations, bolstering private and domestic financing sourcesContinual performance in growth is supported by increasing access to financial facilities, encouraging advancement of human capital, and more (Keho 2023; and Iheonu et al. 2020). Additionally, there is proof that financial development can improve the beneficial effects of sustainable growth in the region and boost the efficacy of some financial flows (Abdulkare et al., 2024; Adedokun et al., 2024).

At the aggregate level, financial development seems to exhibit some heterogeneity in the positive connection across West African nations and sub-regions. The promotion of financial development was shown to have a favorable and substantial correlation following the growth of the sub-Saharan African area of Africa. Studies from West Africa, however, reveals that not every country in the subregion has this connection between growth and finance (Ibrahim & Alagidede, 2018; Ehigiamusoe & Lean, 2017; Asante et al., 2023). Agbélénko & Kibet (2015) and Ehigiamusoe & Lean (2019) claim that in several WAEMU/UEMOA nations, Between the years 2000 and 2009, there appears to have been a stronger correlation involving growth and finance.

However, the connections between finance and growth are not as straightforward and automatic in West Africa as they could be. The relationship between Cape Verde and other ECOWAS nations is highly specific, and it is important to exercise caution when applying basic country generalizations to the other ECOWAS nations due to the disparities in financial depth, macroeconomic stability, policy contexts, and institutional frameworks (Ehigiamusoe & Lean, 2017; Esso, 2010). The results regarding the nexus's bankability are likewise in line with previous findings for a group of West African nations, where financial development is discovered to rise with financial growth in certain cases and with economic progress in different circumstances, and to be reciprocal in a few (Esso 2010; Ratsimalahelo & Barry, 2010).

One such element that influences the connections Institutional quality is the link between financial development and growth in West Africa. Political stability and financial progress have a stronger favorable correlation (the more stable the government, the more positive government action is), fiscal quality (the lower the likelihood that the government will back down or sunset laws, the greater the impact), and rule of law (the stronger the attachment to the rule of law, the greater the positive impact), indicators of legal and political institutions that promote long-term growth (Asante et al., 2023; Bandura & Dzingirai, 2019; Dieng & Camara, 2021). A major obstacle to financial growth's ability to contribute to the growing number of financial services is that financial organizations across several West African countries lack the institutional development necessary to materialize a major influence on financial growth (Olaniyi & Oladeji, 2020). Furthermore,

it has been shown that, above a critical limit, a country's financial foundations—such as its income, human capital, and financial depth—play a greater role in promoting growth at specific threshold values. This implies that the facilitation of finance will be more effective while paired with strong structural foundations (Ibrahim & Alagidede, 2017; Bandura & Dzingirai, 2019).

Institutions are vital, but so are complementary structural components. improved digital and communication infrastructure in SSA is associated with improved services that link financial development and economic growth, according to the empirical evidence currently available. It has more connections between financial development and economic growth in SSA that are connected to the caliber of digital and standardized communication infrastructure, according to the empirical data currently available. This implies that better telecommunications development can help West African economies more successfully (Abeka et al., 2021). Similarly, both sectors need to grow responsibly; excessive and quick credit expansion increases the likelihood that economic growth may go into a frenzy that results in inflationary growth or hazardous investment growth, both of which might have a unfavorable influence on economic growth (Ibrahim & Alagidede, 2018).

There exist notable distinctions between monetary and non-monetary unions at the regional level in West Africa. Based on empirical data, financial development and growth have a stronger positive correlation in UEMOA countries than in non-UEMOA countries, indicating that financial integration may occasionally improve the connection between finance and growth (Ehigiamusoe & Lean, 2019; Ratsimalahelo & Barry, 2010). Other findings show that the Economic union does not always drive economic development throughout the financial sector on its own, necessitating more substantial changes in financial intermediation, inclusiveness, and market efficiency (Ehigiamusoe & Lean, 2019).

In spite of its importance, there exist certain information gaps about financial development and economic growth in West Africa in this extensive body of research. But according to current research, this depends on financial indicators, the econometric technique used, and whether the cross-country heterogeneity and dependence among the sections are adequately considered (Iheonu et al., 2020, Adedokun et al., 2024, and Adeniwura & Onanuga, 2026). Additionally, studies show financial sector growth for inclusive and development of sustainability requires financial inclusion, macroeconomic stability, efficient institutions, and profitable investment (Adeniwura & Onanuga, 2026; Abdulkareem et al., 2024; Keho, 2023).

1. Theoretical Review

1.1. Endogenous Growth Theory

The endogenous growth theory, developed by Romer (1986) and Lucas (1988), essentially maintains that endogenous factors—such as knowledge, human resources, and technological advancement—are the catalyst for long-term economic growth. Based on the theory, the impact of knowledge on output increases over time, and this increase can be attained endogenously by means of the development of technology instead of just through the revelation of new technology or external shocks. Romer (1986) and Lucas (1988). It also implies that its endogenous elements—human capital, knowledge

capital, innovation, and policy support for research and education—are required to contribute to growth, much like externalities like positive spillover goods. (Akeju and Ayeni, 2023).

The theory also emphasizes the significance of building up human capital for sustained growth, since health, education, and skill acquisition increase labor productivity and the nation's ability to innovate and make profitable investments. Overall, research in West Africa shows that health and education contribute positively to growth, and Numerous studies have demonstrated that human assets positively affects GDP per capita or economic growth in West African economies, particularly those of West African countries (Lawanson, 2015; Afolabi & Faweya, 2019). However, the evidence also highlights some significant disadvantages, such as the reality that nations with more powerful human capital perform better with imported technology and that human capital does not have an equal impact on production. The evidence also highlights some significant factors, such as the fact that human resouces has no consistent impact on production. In this regard, Ayeni & Akeju (2023) noted that countries with greater levels of human capital generate higher returns from machinery imports than their less developed counterparts.
The Endogenous Growth Theory, which maintains that the region's ability to transition from a commodity-based system to "knowledge-based" economies based on education, skills, health, and productive capacity, is one theory that applies to West Africa. Research conducted in West Africa indicates that while enrollment in school is crucial, inclusive growth depends more on the quality of education (Adeniyi et al., 2020). Because investment mechanisms in human capital, innovation, and knowledge appear to be a crucial factor in determining the region's long-run economic performance and the low gains in the district are attributed to weak skills, low human development, and poor supporting conditions, the theory is found to have application potential in the reason for growth in the region's various economies (Ayeni & Akeju, 2023; Lawanson, 2015).

1.2. Supply -Leading Hypotheses

According to the Supply-Leading Hypothesis, which was developed by Goldsmith (1969), McKinnon (1973), and Shaw (1967), financial development leads and catalyzes economic development through increased money growth, smoother capital accumulation, and higher saving rates. The theory advances that a strong financial sector's ability to provide incentives to the adoption of financial technology, to financial innovation, and the reallocation of finance to less capitalized Finance and growth have a mutually exclusive link in industries. Hence, it is believed that a large financial system will enhance credit, investment and innovation in entrepreneurship among other good things from financial intermediation; meanwhile, an underdeveloped financial system with poor financial intermediation can stimulate economic growth by curtailing the effective allocation and utilization of productive factor (Karimo & Ogbonna, 2017; Adeyeye et al., 2015).
Moreover, the operations and policies that determine the part of financial development in growth are also crucially sensitive to the strength of the private sector to get credit intermediation, credit creation and, more importantly, credit to signal investment activity 'via' financial development. Some evidence from Nigeria to support the theories that there is a connection flanked by financial deepening and economic expansion, but the former precedes the latter in the system (Karimo & Ogbonna, 2017). But it is revealed to

be quite different if the relationship between finance and growth is analysed across the African continent at the level of the firm at different points in time and countries – referring to papers by Odiambo (2007) and Opoku et al. (2019), respectively. Other research supports more complex evidence of both a reverse causality and/or a demand effect in addition to the circumstantial evidence of a reverse causality.

According to the Supply-Leading Hypothesis, the West African situation might be explained if the capital market, credit market, and financial institutions had to "catch-up" with the expansion before serving as growth engines. In many nations with inadequate or underdeveloped financial systems, there is frequently evidence of causation, and in other nations, the evidence is insufficient to differentiate between the two through policy preferences. Overall, it appears that WAEMU's stock exchanges support both their short-term and long-term financial growth (Ehigiamusoe and Lean, 2018; Zonon, 2021). Unfortunately, the data from (West) Africa is rather recent once more because, when other significant factors like income level and financial strength are taken into account, the existence of financial institutions tends to have a positive effect on the economies of (West) Africa.

1.3. Empirical Review

From 1995 to 2018, the ARDL model and the VECs were used for Granger causality analysis for the 44 countries.The application of the Granger causality method with the VEC technique and the ARDL model, Abbas et al. (2022) examined how financial development affected distribution of income and economic growth using empirical data from low-middle and higher-middle income nations between 1995 and 2018. They found that sustainable growth across higher as well as lower countries with middle incomes benefited from financial development, and that this relationship is inversely proportional, with a stronger correlation between financial development and growth in upper middle-income economies. The results showed that while improved financial institutions may promote growth, not all earnings levels are similarly impacted.

Nguyen et al. (2021) examine the connection between financial development and economic growth in Does Financial Development Matter for Growth in the Economy among Emerging Economies in 22 emerging economies between 1980 and 2020 using the panel Granger causality approach and the dynamic common correlated estimator (DCCE). They contended that although DCCE shows positive, linear links and high bidirectional Granger causation for all financial development proxies, static panel models could provide erroneous results. The paper's key conclusions were that the growth of developing economies is contingent upon the development of economic finance and that even a small change in the models chosen may have an immense influence on the outcomes.

The interest rate on consumer credit rose from 4.95 percent in August 2019 to 5.01 percent in July 2020, according to Ehigiamusoe and Samsurijan (2020), who investigated the connection between finance and growth. conducted a critical investigation of macroeconomic stability, financial and economic development, institutions, and the theoretical and empirical findings of the moderating variables of the nexus. They have come to the conclusion that macroeconomic stability, institutional integrity, and a sufficient level of financial and monetary underdevelopment influence how finance

affects growth, and that more financing beyond a given threshold may be harmful. Financial deepening alone is insufficient for financial growth; institutions and macroeconomic fundamentals must be strong, according to their thorough and final judgment.
In their 2019 study, Panel Evidence on Financial Development and Economic Growth In order to investigate the relationship involving economic growth and the two financial development indicators for the BRICS nations between 1993 and 2014—the stock markets and banking sectors—Guru and Yadav used SYS-GMM. The authors found that the expansion of the equity market and the banking sector complimented each other, and that there was a substantial positive correlation between the magnitude of growth and financial development. It was determined that for BRICS to grow, both groups must co-develop.

Asteriou and Spanos (2019) explored the connection between financial development and economic growth in the current EU crisis employing panel data regression on 26 nations for the years 1990–2016, incorporating multiplicative crisis-period dummies. They came to the conclusion that, although the banking sector's adequate capital contributed to financial stability in 2008–2009, financial development after the crisis may have been a hindrance to economic activity. Under financial crisis, the finance-growth relationship will thus reverse.Financial stress and financial growth have a crisis-sensitive link, which may potentially manifest in the other way under financial stress, according to the findings.

Using frequency-domain spectral causality, Opoku et al. (2019) discovered a causative relationship between economic expansion and financial development in 47 African countries between 1980 and 2016. The neutrality direction—that is, finance and growth flowing in separate ways with respect to frequency—had the highest overall support for these anticipated linkages, whereas the demand-following, supply-leading, and feedback routes obtained moderate support. They came to the conclusion that their judgment on the general causes of the African problem was questionable.

Botev et al. (2019) assert that the relationship between financial advancement and economic expansion is nonlinear. Industry data for the developing and emerging economies, coming from around the world, were used to estimate various nonlinear threshold regressions on a great sample of nations. They didn't accept the “too much finance” argument and demonstrated that bank and market finance do not conflict with each other; that deeper stock markets have more adverse effects on bank-credit. In addition, they didn't identify any clear change point in the financial system for themselves. In their sample, it was demonstrated that complementarities did not fit the basic threshold pessimism. This meant that the effects of private lending on GDP were added to research on the links between financial development and economic growth.

There are 551 estimates across 68 pieces of research from around the globe included in The Effect of Financial Development on Economic Growth that were published in 2018 by Biljlsma et al. They discovered that the historical literature offered some tenuous evidence of a finance-growth association that defies these predictions, and they have evidence of a positive publication bias. The more positive the relationship, the more evidence they have found for a decreasing finance-growth association overall. They then

found a 0.09 percent finance-growth impact, which turned negative in the linear variants. They were able to determine that the marginal price was marginally lower but still positive despite the establishment of the notion that there was excessive financing.

Bist (2018) used the second-generation panel unit root tests, panel cointegration test (BDS test), Fmodel and Dmodel, and panel short run causality tests to analyze the data of a panel of 16 low-income African (non-African) countries after making some adjustments to account for cross-sectional dependency. With a long-term cointegration connection and a positive statistically significant link with change in total private sector credit and growth overall throughout the panel dimension, the study found no negative results in a few countries. This is the basis for the significance of financial development for the long-term success of low-income countries and the reason it is prioritized, aside from lowering the quantity of non-performing assets (NPAs) in the financial sector and raising credit guaranties provided by the private sector.

The research looks at Cameroon's experiences in the aspect of economic expansion and the growth of the nation's financial sector. In this paper, the authors Piabuoe and Puatwoe (2017) utilized ARDL method with wide money, deposit-to-GDP and private sector credit as of their variables. While all financial development metrics were noteworthy and beneficial over the long term, they found some unclear short-term implications on the measures. The results of the study suggest a positive relationship between the extent of financial depth and better economic growth implying the continuation of the financialreform in Cameroon.

Ibrahim and Alagidede (2017) used sample-splitting and threshold estimation to investigate nonlinearities in the link between financial development and economic growth in 29 Sub-Saharan African countries between 1980 and 2014. They discovered that, only for nations that reach specific thresholds in terms of wealth, human capital, and financial development, there is a substantial association between finance and growth. There is a relative rejection of growth for nations that don't meet these benchmarks. The study's conclusions indicate that longer-term growth impacts require higher levels of finance, revenue, and human capital.
According to Durusu-Ciftci et al. (2017), Financial development and economic growth: Some theory and more evidence, the theory was then put into practice using the AMG/CCE estimators, which account for cross-sectional dependency for 40 countries between 1989 and 2011. They discovered that although the stock market sector and the credit market both raise long-term GDP per capita, the credit market has a far bigger impact. The report suggests expanding the financial markets and strengthening the rights of creditors and investors in order to stimulate growth.

Muhammad et al. (2016) used static and dynamic panel data, pooling OLS, fixed effects regression, random effects panel regression, and system GMM to analyze the GUCC economies in relation to financial development and economic growth from 1975 to 2012. They discovered substantial and consistently positive correlations between the expansion and prosperity of the financial sector, as well as positive indices for FDI, fixed-

capital creation, and oil output. Their recommendations and conclusions backed the GCC's continued financial reforms, control, and monitoring.

In Financial System Development and Economic Growth in Transition Economies: New Empirical Evidence from the CEE and CIS nations, Cojocaru et al. (2016) looked at the 20 years since the transition began. Their findings indicate that financial efficiency and competitiveness are more important for growth than market size. They found that the quality of financial intermediation is more crucial to growth than the amount of financial aggregates.

2. Methodology

The Endogenous Growth Theory and the Supply-Leading Hypothesis serve as the foundation for this investigation. According to the Endogenous Growth Theory (Romer, 1986; Lucas, 1988), economic growth is endogenous and primarily dependent on the amount of investment made in financial capital, human capital, and innovation. It contends that a healthy financial system's effective mobilization and distribution of financial capital serves as an internal engine of sustained economic growth. The Supply-Leading Hypothesis (Patrick, 1966), which contends that intentional growth and development of financial institutions and financial instruments precedes and actively contributes to the growth of the real sector rather than following it ("demand-following"), complements it. Based on the processes of capital accumulation, savings mobilization, and effective resource allocation, these theories explain financial development in West Africa as more of a causal growth-enhancing component of the growth process than a passive outcome of growth itself.

2.1. Variable Measurement

Real output growth is indicated by the growth of real GDP per capita. Two complementary measures of financial development are M2 (broad money) in GDP (monetary deepening) and the share of domestic credit to the private sector in GDP (bank-based intermediation). The model also takes into consideration trade openness, exchange rate volatility, and government spending. The final estimation work was carried out on 13 of the original 16 ECOWAS countries due to the limitation of having data available for certain countries.

2.2. Estimation Technique

The Cross-Sectionally Augmented ARDL (CS-ARDL) estimator (Chudik et al., 2016) is used in this research with the aid of xtdcce2 (Ditzen, 2018) after preliminary diagnostic tests (Pesaran CD tests) revealed significant cross-sectional dependence in the majority of study variables. The issue of unobserved common factors that introduce bias into the model, which PMG does not address, is resolved by CS-ARDL by incorporating cross-sectional averages into the model. It can estimate both the short-term dynamics and a long-term relationship, as in the case of PMG, and is easily combined with I(0) and I(1) series. A stand-alone test for cointegration of the panel (Pedroni's, Kao's, and Westerlund's) was not reliably estimated because the panel is time-limited (T=15), and cointegration is suggested by the features of the error correction term (sign, magnitude, and significance). The panel's data period, which spans from 2011 to 2025, was chosen

because it is rich in data on exchange rate volatility and because data disruptions in nations like Liberia, Sierra Leone, and Côte d'Ivoire (all of which had civil wars) during the 1990s and early 2000s were avoided.

2.3. Model Specification

GROWTH = f(FINDEV1, FINDEV2, TOP, GEXP, INF, EXRVOL) …… (1)

$$GROWTH_it = \alpha_i + \lambda(GROWTH_i,t\text{-}1 - \theta_1 FINDEV1_it - \theta_2 FINDEV2_it - \theta_3 TOP_it - \theta_4 GEXP_it - \theta_5 INF_it - \theta_6 EXRVOL_it) + \beta_1 FINDEV1_it + \beta_2 FINDEV2_it + \beta_3 TOP_it + \beta_4 GEXP_it + \beta_5 INF_it + \beta_6 EXRVOL_it + \delta' \bar{z}_t + \varepsilon_it \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

FINDEV1 is private credit/ GDP, FINDEV2 is M2/ GDP, TOP is exports plus imports/ GDP, GEXP is government spending/ GDP, INF is consumer price index, EXRVOL is year on year REER percentage change (rolling standard deviation). The θs represent long-run coefficients, the βs represent short-run dynamics and the λ is the error correction coefficient which is statistically significant and is expected to be located between -1 and 0; $\bar{z}_t$ = cross-sectional averages of the model's variables, included to absorb unobserved common factors (Pesaran, 2006; Chudik & Pesaran, 2015).

3. Results

Table 1: Descriptive Statistics of Study Variables

	N	Mean	Std. Dev.	min	max	skewness	kurtosis
GRO	**240**	**2.119**	**3.518**	**-20.894**	**15.155**	**-1.600**	**12.557**
DCP	**234**	**18.583**	**12.785**	**3.128**	**68.456**	**1.871**	**6.711**
BM	**235**	**34.741**	**18.466**	**14.261**	**117.208**	**2.135**	**7.989**
TOP	**240**	**59.771**	**19.692**	**11.924**	**115.765**	**.527**	**3.439**
GEXP	**236**	**17.093**	**12.992**	**4.802**	**75.675**	**2.870**	**11.472**
INF	**240**	**6.325**	**7.461**	**-4.455**	**47.643**	**2.054**	**8.952**
EXRVOL	**208**	**8.619**	**7.572**	**0.104**	**63.832**	**4.118**	**28.574**

Source: Author's Compilation (2026)

The descriptive statistics of every variable taken into account for examining the relationship between financial development and economic growth in each of the ECOWAS nations are displayed in Table 1. The sub-region's growth outcomes during the study period were highly volatile, as evidenced by the average economic growth (GRO) value of -20.894% and the maximum and minimum values of 15.155%, respectively. The average level of DCP as a percentage of GDP is 18.583%, with a maximum of 68.456%, while the average level of BM as a percentage of GDP is 34.741%, with a maximum of 117.208%, indicating a significant financial depth divergence between the sampled economies. While government expenditure (GEXP) is at 17.093 with a 12.992 dispersion and inflation (INF) has the lowest value of 6.325 with a high dispersion of 7.461, trade openness (TOP) shows the maximum means of all variables at 59.771, which is consistent with the trade-dependent structure of most economies in West Africa. The measure of exchange rate volatility (EXRVOL) has the highest number of extreme moments (skewness, kurtosis), indicating that the periods of

extreme volatility occurred in a few of the panel's countries and years, most likely as a result of currency devaluation or exchange rate reform.

Table 2: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) GRO	1.000						
(2) DCP	0.058	1.000					
(3) BM	0.079	0.855**	1.000				
(4) TOP	0.266***	0.494***	0.486***	1.000			
(5) GEXP	-0.088	0.076	-0.028*	0.101	1.000		
(6) INF	-0.084	-0.379***	-0.271	-0.124**	0.078	1.000	
(7) EXRVOL	0.013***	-0.090	-0.140	-0.081	0.040	0.477***	1.000

**** p<0.01, ** p<0.05, * p<0.1*

Source: Author's Compilation (2026)

Table 2 displayed the pairwise correlation between the study variables. The variance inflation factor test (Table 6) shows that there is a strong and positive correlation between the two financial development proxies, DCP and BM, because they share similar aspects of financial intermediation and monetary depth. However, this correlation is not as strong as that for indicators of financial depth, which can result in a multicollinearity issue if both are included in the same regression. Both DCP and BM have a significant rank of 0.494 and 0.486, respectively, and are found to be positively and significantly correlated with trade openness (TOP). Greater financial development is also indicated by more trade openness in the sub-region. All of the correlations are statistically significant at the 1% level; inflation is positively correlated with exchange rate instability (0.477) and negatively correlated with DCP (-0.379), which is consistent with the macroeconomic theory that exchange rate instability is typically linked to price instability. Unless a more thorough multivariate model is required to robustly reveal the finance-growth relationship, this correlation is still low and generally insignificant at the bivariate level (0.058 for DCP and 0.079 for BM).

Table 3: Pesaran Cross-Sectional Dependence Test Results

varname	CD_stat	p_value
GRO	7.96	0.0000
DCP	4.14	0.0000
BM	17.81	0.0000
TOP	0.37	0.712
GEXP	0.33	0.741
INF	14.01	0.0000
EXRVOL	14.80	0.0000

Source: Author's Compilation (2026)

Table 3 displays the results of the cross-sectional dependence test conducted by Pesaran (2004). All of the variables—GRO, DCP, BM, INF, and EXRVOL—have statistically significant cross-sectional dependence ($p<0.001$ for each variable), indicating that shocks affecting these variables in one ECOWAS subregion country are systematically correlated with shocks faced by another ECOWAS country. The revealed

cross-sectional dependence may be explained by close trade ties, shared monetary and financial arrangements (like the CFA franc Zone), and general exposure to the same global financial and commodity price cycles. Only moderately significant cross-sectional dependence is found for anytasTOP (at p=0.712) and GEXP (at p=0.741) when the cross-sectional dependence's significance is compared. This result is methodologically significant because it excluded the use of the second generation CIPS unit root test and the Cross-Sectionally Augmented ARDL (CS-ARDL) estimator used in this study, as well as some first generation panel unit root and cointegration tests based on the assumption of cross-sectional independence.

Table 4: CIPS Panel Unit Root Test

Variable	Level Statistic	p-value	1st difference statistic	p-value	Order of Integration
GRO	-1.885	0.030			I(0)
DCP	-2.302	0.011			I(0)
BM	-0.927	0.177	-2.040	0.021	I(1)
TOP	-1.058	0.145	-2.678	0.004	I(1)
GEXP	-0.890	0.187	-2.122	0.017	I(1)
INF	-4.336	0.000			I(0)
EXRVOL	7.148	1.000	-1.150	0.125	Inconclusive[1]

Source: Author's Compilation (2026)

Table 4 displays the Pesaran (2007) Panel unit root test at the level and first difference level. Consequently, the findings show that the variables GRO, DCP, and INF are integrated of order zero, I(0), and stationary at level. BM, TOP, and GEXP are found to be of order one of stationarity I (1) because they are non-stationary at level but stationary when differenced once, with p=0.021, 0.004, and 0.017, respectively. Non-conventional stationarity at level (p=1.000) or at first difference (p=0.125) is the outcome of EXRVOL: This does not mean that it should be removed from the model because the logic of bounds-testing used in the ARDL family of estimators does not require conventional stationarity. Unlike a "standard" cointegration method that calls for the integration order across variables to be the same, this mixed order of integration across the variableset, a mixed combination of I(0) and I(1) series, makes an ARDL-type estimators suitable for the analysis.

Table 5: Slope Homogeneity Test

Test	Statistic	p-value
Delta	0.319	0.750
Adj. Delta	0.526	0.599

Source: Author's Compilation (2026)

The findings of the Pesaran and Yamagata (2008) slope homogeneity test, that evaluates the homogeneity of the long-term relationship between financial development and growth across the sampled ECOWAS countries, are shown in Table 5. The null assumption of slope homogeneity cannot be rejected by any of the delta statistic (0.319; p=0.750) or the modified delta statistic (0.526; p=0.599). In the setting of the main hypothesis, this result also implies that the longer-term coefficients can be combined for estimation,

which maintains that long-term ties are common among nations while short-term relationships do not necessarily need to be common.This outcome is also in line with the basic idea of the Pooled Mean Group/CS-ARDL model, which holds that long-term associations are universal but short-term relationships may vary between countries.

Multicollinearity Test

Table 6: Variance Inflation Factor

VIF	1/VIF
DCP 4.70	0.213
BM 4.11	0.243
INF 1.64	0.608
EXRVOL 1.41	0.708
TOP 1.36	0.734
GEXP 1.07	0.935
Mean VIF 2.38	

Source: Author's Compilation (2026)

Table 6 summarizes the variance inflation factor (VIF) analysis used to identify multicollinearity. According to Table 2, the most correlated variables in the model are DCP (4.70) and BM (4.11), with all of the variables' VIF values being well below the threshold of 10 and a mean of 2.38. This demonstrates that despite the two financial development indicators have a strong pairwise correlation, multicollinearity is not a major reason to be concerned about the reliability of the regression coefficients, and both indicators can remain in the regression as intended.

Table 7: CS-ARDL Estimation Results

	Short-run Coef.	Std. Err.	Z	p-value
DCP	-0.220	0.145	-1.52	0.129
BM	-0.041	0.097	-0.42	0.673
TOP	0.036	0.051	0.71	0.475
GEXP	-0.014	0.455	-0.03	0.975
INF	-0.125	0.051	-2.43	0.015
EXRVOL	-0.020	0.048	-0.42	0.675
Long-run				
DCP	-0.250	0.020	-12.34	0.000
BM	-0.047	0.004	-12.34	0.000
TOP	0.041	0.003	-12.34	0.000
GEXP	-0.016	0.001	-12.34	0.000
INF	-0.142	0.012	-12.34	0.000

EXRVOL	**-0.023**	**0.002**	**-12.34**	**0.000**
ECT (λ)	**-0.950**	**0.076**	**-12.47**	**0.000**

Source: Author's Compilation (2026)

Table 7 lists the Cross-Sectionally Augmented ARDL (CS-ARDL) estimation results for 13 ECOWAS nations (after data availability exclusions). At -0.950 (p=0.000), the error correction term (ECT/λ) is negative, statistically significant, and falls within the acceptable range of -1 to 0. It shows an extremely fast rate of adaptation of almost 95% each year and a genuine long-term cointegrating link between financial development and economic growth in West Africa.

However, the coefficient for DCP with private sector credit is adverse and statistically noteworthy at (-0.250; p=0.000), which defies the Supply-Leading Hypothesis and Endogenous Growth Theory's theoretical prediction that higher levels of DCP are linked to higher economic growth over extended periods of time in a subregion.This also applies to the broad money supply (BM) coefficient, which is significant and negative (-0.047, p=0.000). The pattern points to a potential inefficiency in West Africa's current financial system deepening, which may not be effectively moving into productive investment. It is conceivable that some ECOWAS economies are using the deepened financial system disproportionately for government financing, consumption, and/or rent-seeking activity rather than for "productive investment." This inefficiency is characterized by Financial Repression, but not by Security-Tightening mechanisms as predicted in accordance with the Supply-Leading Hypothesis. The long run coefficient for trade openness (TOP) is positive and significant (0.041, p=0.000), indicating that a subregion's growth is positively correlated with its openness to regional and international trade. All of these factors are negative and statistically significant (both over the long term and at five steps), and they are consistent with conventional macroeconomic theories that suggest that excessive government spending, price volatility, and exchange rate fluctuations are growth-restrictive factors.

DCP, BM, TOP, GEXP, and EXRVOL are not statistically significant short-term growth predictors; only inflation (INF: -0.125, p=0.015) is. This implies that growth in the West African region is primarily in the long-run channel and that the majority of macroeconomic factors do not directly affect growth at the annual level, supporting the idea that this growth relationship can be captured by the error correction channel.

Table 8: Post Estimation Diagnostics

Test	Statistics	p-value
CD (Pesaran)	**-0.419**	**0.624**
CDw (Juodis-Reese)	**0.53**	**0.595**
CDw+ (Power-enhanced)	**63.63**	**0.000**
CD*(Pesaran-Xie)	**-0.76**	**0.450**

Source: Author's Compilation (2026)

Table 8 shows the post-estimation residual diagnostics to see if the CS-ARDL model overcame the cross-sectional dependency of the raw data, as seen in Table 3. The remaining three aforementioned tests—the Pesaran CD test (-0.419, p=0.624), the Juodis-Reese CDw test (0.53, p=0.595), and the Pesaran-Xie CD* test (-0.76, p=0.450)—do not reject the null hypothesis of weak CSSD of the model residuals. The

cross sectional augmented specification in this work, by being able to include the common components underlying the earliest significant cross sectional dependency discovered throughout GRO, DCP, BM, INF, and EXRVOL, is responsible for the model's efficacy. The power enhanced CDw+ test (63.63, p=0.000), which is less sensitive to weak or tightly clustered reliance than the remaining three tests, rejects the null hypothesis. This separation does not provide a basis for contesting the misspecification of the model as a diagnostic rule because the bulk of the diagnostic evidence (three of the four tests) establishes a no-misspecification location for the mean of the residuals. It is considered a corresponding research constraint in this instance.

Conclusion

According to the surveys of 15 West African countries over a period of sixteen years from 2011 to 2025, research was carried out to examine the relationship between the degree of financial development and economic growth in the ECOWAS countries. Nonetheless, just thirteen nations made up the ultimate sample for estimate since several countries lacked credit data or data on aggregates of money in their local markets. The Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) estimator is used to estimate typical regional shocks and detect the long-term relationship in the overall (pooled) maturity sector and the short-term relationship on a sectoral basis of age of maturity sector because the majority of the variables employed in the research are somewhat dependent throughout the economic sectors.

According to the error correction model, the actual long-term connection between financial development and economic growth exists and the sub-regions' short-term deviations are relatively quickly corrected (around 95% within one year). For the ECOWAS countries under study, the long-term data also shows a there is an adverse association between domestic credit to the private sector (DCPS) and economic growth. This runs counter to the study's theoretical predictions, which are supported by the Supply Leading Hypothesis (ELH) and Endogenous Development Theory (ET), which postulate a causal relationship between the depth and economic development of financial systems. This implies that, given the higher efficacy that is anticipated in terms of these theories, the improvement in financial depth during the period covered by this study has not been sufficient for a reasonable capital accumulation in West Africa. This suggests that the distribution of credit in the subregion is inefficient. However, in terms of the long-term relationships, growth is generally positively correlated with openness, whereas government spending, inflation, and exchange rate volatility are found to be negatively correlated. This is an obvious example of how important integration into international trade is as a growth driver, and it is actually simple to see.

The results indicate that if credit is to be used for development, the monetary and financial institutions in the West African region should prioritize the efficient and high-quality distribution of credit in addition to having a policy of credit deepening. However, this would, of course, permit the distribution of credit to the profitable private sector investments—with the goal of progressively increasing productive potential over time—while prohibiting investments in the public sector's consumer activities and investment sector, which do not generate this productive potential. The study's findings indicate that regional organizations like the West African Monetary Institute and the ECOWAS Commission should keep stepping up their efforts to promote macroeconomic stability, which has been shown to have detrimental effects on growth dimensions in the region,

as evidenced by the fight against inflation and exchange rate management; higher levels of trade openness have beneficial effects, but the continuous effort to integrate trade between the members of the African Continental Free Trade Areas (ACFTA) should be maintained.

Not every country is made equal. In order to address the unclear unit root assumption on exchange rate behavior, three ECOWAS countries were publicly named and removed from this analysis, in part because of data availability.All of the nations in this study are not equal since three ECOWAS countries were excluded and the unit root assumption for the exchange rate behavior was not conclusively determined. These problems are identified as the study's limitations and cannot be resolved by further data manipulation. A longer sample of larger (and more thoroughly covered) countries would be of great interest, and the path of failure for financial development to contribute to the growth of the subregion could be more precisely determined by breaking down credit by sector of use (private productive investment versus consumption or government lending).

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