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Growth, Macroeconomic Fundamentals and Institutional Heterogeneity in ECOWAS, 1970–2025

Pierre Bayo[1]; Etienne Fakaba Sissoko[2]

[1,2]Université des Sciences Sociales et de Gestion de Bamako (USSGB), Bamako, Mali | Centre de Recherche et d'Analyses Politiques, Économiques et Sociales (CRAPES Mali), Bamako, Mali

[2]ORCID: 0009-0005-9538-5912

Corresponding Author: Etienne Fakaba Sissoko*

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Abstract: Regional integration in West Africa has advanced alongside persistent macroeconomic heterogeneity, so membership in ECOWAS cannot be treated as evidence of convergent adjustment. This article examines whether differences in growth performance across ECOWAS economies are better explained by regional membership itself or by the interaction of macroeconomic fundamentals and institutional chronology. Using an annual panel for 1970–2025 assembled by harmonizing World Bank World Development Indicators and IMF World Economic Outlook series, the article codes ECOWAS membership separately from UEMOA and CFA status, the Mauritanian withdrawal effective in 2000, and the AES withdrawals effective in 2025. The empirical strategy follows a sequenced estimator ladder: fixed-effects and two-way fixed-effects models identify within-country associations, dynamic-panel specifications assess persistence and partial endogeneity, and panel error-correction models in the ARDL family are used to examine long-run relationships. The core panel estimates indicate that investment is the most stable correlate of real GDP per capita growth. Inflation carries a negative average association with growth, but this effect weakens once common time shocks are absorbed. Trade openness remains positive but sample-sensitive and does not provide a stable anchor for inference. Break specifications point to an initial negative post-2025 shift for AES countries relative to the rest of ECOWAS, whereas the 2000 Mauritanian break is mature enough to sustain post-break analysis. The article contributes a replicable regional macro panel, explicit institutional coding, and a disciplined estimator hierarchy for analysing macroeconomic heterogeneity in West Africa.

Keywords: *ECOWAS; West Africa; Growth; Investment; Inflation; Regional Integration; Panel Data.*

JEL codes: *O47, O55, F15, E31, C23*

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I. INTRODUCTION

Regional integration in West Africa has unfolded under an unusually heterogeneous macroeconomic and political environment. ECOWAS has always contained oil and mineral exporters, small service economies, landlocked agrarian countries, post-conflict states, and a monetary subset organized under UEMOA/CFA. Treating ECOWAS membership as a homogeneous institutional treatment therefore conflates at least three distinct layers: regional membership, monetary-regime membership, and country-specific adjustment capacity. The 2025 withdrawals of Burkina Faso, Mali, and Niger sharpen this problem. The event is historically important, yet its macroeconomic meaning cannot be inferred from politics alone because the same political rupture enters economies with different trade structures, inflation histories, financing conditions, and investment profiles.

This article asks whether growth heterogeneity across ECOWAS is explained primarily by regional membership itself or by the interaction of macroeconomic fundamentals and institutional chronology. Using a new annual panel for 1970–2025, harmonized from World Bank World Development Indicators and IMF World Economic Outlook series, the analysis shows that growth inside ECOWAS is

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explained less by membership alone than by domestic investment, average macroeconomic stability, and institutionally differentiated adjustment. The 2025 withdrawals are already detectable as an initial negative divergence among AES economies, but not as a consolidated structural break for the region as a whole.

The article makes three contributions. First, it provides a replicable regional macro panel that explicitly separates ECOWAS membership from UEMOA and CFA status, while coding the Mauritanian withdrawal effective in 2000 and the AES withdrawals effective in 2025. Second, it uses a disciplined estimator ladder rather than a menu of loosely comparable regressions: static within-country models, dynamic fixed-effects specifications, and panel error-correction models are combined with robust covariance checks and explicit sample accounting. Third, it delivers a substantive conclusion that is sharper than the standard integration narrative: investment is the only core macroeconomic variable that remains consistently associated with growth across specifications; inflation matters on average but is partly a common-shock phenomenon; openness is positive yet statistically fragile; and long-run slope homogeneity across ECOWAS is weak.

This positioning matters for the literature. Research on African growth emphasizes productivity, macroeconomic stability, and institutions. Research on ECOWAS, by contrast, often focuses on trade creation or monetary-union feasibility. Country studies in the Sahel and in Mali highlight sanctions, insecurity, and public-expenditure composition. Yet few studies combine a long regional panel, explicit institutional chronology, and an estimator strategy designed to distinguish description, association, and structural interpretation. By bringing these strands together, the article shows why regional integration without domestic adjustment need not generate convergence.

The rest of the article proceeds as follows. Section 2 clarifies the institutional chronology and derives the analytical hypotheses. Section 3 positions the article against the growth, integration, and political-economy literatures. Section 4 presents the data and variable construction. Section 5 sets out the empirical strategy. Section 6 reports the results. Section 7 discusses the implications, and Section 8 concludes.

II. INSTITUTIONAL CHRONOLOGY AND ANALYTICAL FRAMEWORK

ECOWAS, UEMOA, and the CFA franc area are not interchangeable institutions. ECOWAS was founded by the 1975 Lagos Treaty. Mauritania later withdrew from ECOWAS, with the exit coded here as effective from 2000 onward for annual macroeconomic analysis. Burkina Faso, Mali, and Niger ceased to be ECOWAS members on 29 January 2025. UEMOA, by contrast, was created in 1994. Guinea-Bissau became the eighth member of the monetary union in 1997. Mauritania had already left the UMOA/CFA monetary arrangement in 1973, while Mali re-entered the CFA zone in 1984. A single regional dummy is therefore conceptually blunt: it fuses trade arrangements, monetary institutions, and rupture events that operate through different mechanisms.

The coding strategy follows this institutional distinction. The dataset stores ECOWAS membership, UEMOA status, and CFA status separately, then adds event variables for the post-2001 Mauritanian non-membership period and the post-2025 AES non-membership period. Because official ECOWAS pages do not fully converge on Cabo Verde's entry year, the dataset also keeps a primary and an alternative accession coding, discussed in the appendix. This discrepancy does not drive the results because the main identification comes from within-country variation and from the 2000 and 2025 rupture windows rather than from a fine distinction around a single historical accession year.

The analytical framework combines four channels. The first is domestic accumulation: if growth is constrained primarily by capital formation, investment should be the most stable positive correlate of per-capita growth. The second is macroeconomic stability: inflation should enter negatively on average, but its coefficient may weaken once common year effects absorb regional and global shocks. The third is integration: openness should be positive in principle, yet weaker than standard open-economy models predict if official trade data under-record informal integration or if trade is dominated by enclave exports. The fourth is institutional chronology: membership shocks should matter through expectations, payments, logistics, and policy coordination, not through a mechanical "exit penalty."

These mechanisms motivate five hypotheses. H1 expects investment to be the most stable positive correlate of growth. H2 expects inflation to carry a negative average association that weakens once common time shocks are absorbed. H3 expects official trade openness to remain positive but sample-sensitive. H4 expects evidence of error-correction, but weak support for a single common long-run coefficient vector across ECOWAS economies. H5 expects the AES withdrawal to appear first as an early negative divergence, whereas the Mauritanian break, being older, should be more mature and less mechanically tied to contemporaneous performance.

III. LITERATURE AND CONTRIBUTION

The starting point is the growth literature. The Solow framework and its empirical extensions established capital accumulation, convergence, and human-capital augmentation as the core language of long-run growth analysis. Cross-country growth studies later emphasized the roles of policy, macroeconomic discipline, and institutional quality, while also warning against fragile conditioning sets. In the African context, Collier and Gunning (1999), Fosu (2013), Arbache and Page (2010), Rodrik (2018), and Krantz (2024) all show, in different ways, that growth performance in Africa cannot be reduced to resource endowments or market access alone. Productivity, policy regimes, and institutional resilience remain central.

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A second strand links macroeconomic stability and political risk to growth. Fischer (1993) shows that inflation and other macro imbalances are systematically associated with weaker growth. Fosu (1992), Alesina et al. (1996), and Gyimah-Brempong and Traynor (1999) show that political instability can depress growth through lower accumulation and weaker credibility. Yet this literature often treats instability as a domestic attribute and gives less attention to region-wide shocks that hit many countries simultaneously. In a region as exposed as West Africa, failing to separate common shocks from country-specific instability can exaggerate the explanatory power of national inflation or national politics taken in isolation.

A third strand examines regional integration in Africa and ECOWAS more specifically. Hanink and Owusu (1998) asked whether ECOWAS had promoted trade among members. Carrère (2004) showed that African regional agreements do not have the same effects with and without currency unions. Longo and Sekkat (2004) documented major economic obstacles to intra-African trade, while Geda and Kibret (2008) emphasized that African regionalism is constrained by overlapping institutions and uneven implementation. More recently, Couharde et al. (2022) revisited the West African monetary-union question and concluded that structural heterogeneity remains substantial. What this literature leaves relatively underdeveloped is a long-horizon account of macroeconomic growth heterogeneity that codes regional membership, monetary regime, and political rupture separately.

A fourth strand concerns measurement. Official trade openness is a standard macro regressor, but in West Africa it is an incomplete proxy for integration. Bensassi et al. (2019) show that informal trade along West African borders is economically meaningful. This matters because a weak coefficient on official openness does not necessarily imply that integration is irrelevant; it may instead indicate that the standard macro measure misses key mechanisms such as re-exports, border arbitrage, and corridor-specific informal flows.

The present article also enters into dialogue with recent Malian scholarship. Sissoko (2025) shows, in a mixed-method study of Mali, that productive public expenditure and human-capital investment support growth, whereas debt-financed recurrent spending, sanctions, and insecurity depress it. Sissoko et al. (2024) show that political stability alone does not mechanically attract foreign direct investment in Mali. Traoré et al. (2025) show that public health spending is growth-enhancing whereas excessive private health financing can be contractionary. These studies imply that macroeconomic allocation and institutional credibility matter more than institutional labels taken alone. The contribution of this article is to test whether that intuition survives at the regional level once country fixed effects, time shocks, and institutional chronology are introduced explicitly.

The article therefore moves beyond binary appraisals of whether ECOWAS is good or bad for growth. Its contribution is analytical rather than declarative: it identifies which macroeconomic relationships remain stable once growth is modeled within countries, once common shocks are absorbed, and once regional and monetary chronologies are separated rather than merged into a single dummy.

IV. DATA AND VARIABLE CONSTRUCTION

The dataset is an annual panel covering 1970–2025 for the 16 countries that belonged to ECOWAS at some point during the period. The World Bank's World Development Indicators provide the long historical backbone, while the IMF's April 2025 World Economic Outlook database extends the core macro aggregates to 2025. Preferred series preserve source markers so that the transition from WDI to WEO can be traced. Because WEO coverage begins in 1980 for many indicators and because some WDI series are intermittently missing, the panel is unbalanced. Unemployment and reserves were excluded from the core article because their coverage is too thin to support the main estimator ladder without inducing major support changes.

The dependent variable in the short-run specifications is real GDP per capita growth, implemented as the stationary transformation of the preferred real GDP per capita series. This choice is substantive as well as econometric. The article is concerned with growth performance rather than income levels, and the growth transformation avoids treating a clearly non-stationary level series as if it were already suitable for static regression. The core covariates are the investment ratio, trade openness measured as exports plus imports over GDP, and CPI inflation. Extended specifications add the current-account balance and the public-debt ratio in the smaller post-1990 sample where those variables are available.

Institutional variables are coded separately from macroeconomic fundamentals. Country fixed effects absorb time-invariant structural characteristics such as geography, colonial legacy, and long-run institutional inheritance. Year fixed effects absorb region-wide and global shocks. The break variables distinguish between common post-break periods and country-group-specific interactions: post-2001 is used for the Mauritanian non-membership period, post-2025 for the AES non-membership period, and additional interactions are built for UEMOA and CFA chronologies. In two-way fixed-effects models, common post dummies are absorbed by the year effects, so the break analysis relies on interaction terms rather than on mechanically collinear post indicators.

Preliminary time-series diagnostics reinforce this design. Fisher-type panel ADF tests reject a unit root for real GDP per capita growth and for inflation, but not for log real GDP per capita. Investment and openness display mixed country-level behavior even though the combined panel statistic rejects a pure unit-root characterization. The implications are straightforward. The article estimates short-

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run models in growth rates, and it examines long-run relations through an error-correction representation rather than by regressing levels on levels without adjustment terms. The effective samples are: 672 observations for the baseline openness sample (14 countries, 1971–2024), 664 observations for the dynamic sample, 730 observations for the break sample (15 countries, 1971–2025), 665 observations for the ECM sample, and 380 observations for the extended debt/current-account sample.

Table 1 Summary Statistics for the Core Variables

Variable	Obs.	Mean	Std. dev.	Min	Max
Real GDP per capita growth (%)	871	0.702	6.381	-58.973	64.622
Investment (% GDP)	783	20.689	9.551	-2.424	75.153
Trade openness (% GDP)	742	57.334	21.011	6.320	131.485
Inflation (CPI, %)	791	11.061	17.450	-14.936	178.700
Log real GDP per capita	887	6.821	0.557	5.376	8.470
Current account (% GDP)	696	-5.662	6.168	-45.327	21.533
Public debt (% GDP)	458	62.543	65.155	0.071	600.117

Notes: Unbalanced panel. Variable definitions are reported in the appendix. The main estimation samples differ by variable support.

V. EMPIRICAL STRATEGY

The first step is a within-country growth equation estimated with country fixed effects and then with two-way fixed effects. In notation, the baseline specification is:

$$g_{it} = \beta_1 Invest_{it} + \beta_2 Open_{it} + \beta_3 Infl_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Where g_it is real GDP per capita growth, α_i captures country effects, and λ_t captures common year shocks. The country fixed-effects model identifies average within-country associations over time. The two-way fixed-effects version is more demanding because it removes regional and global disturbances shared by all countries in a given year.

The second step adds lagged growth to assess persistence and to test whether the investment result is merely a proxy for growth momentum. Because the time dimension is long relative to the number of countries, the article uses dynamic fixed effects as a conservative diagnostic rather than presenting a mechanically instrumented dynamic-panel estimator as if it solved endogeneity automatically. In this sample, a generic system-GMM strategy would generate an instrument count that is too large relative to the number of countries and would risk the overfitting problems emphasized by Roodman (2009). Avoiding an over-instrumented design is therefore a methodological correction, not a limitation.

The third step estimates explicit break equations. Without year effects, common post-break dummies can be included directly. With year effects, however, those common shifts are absorbed; only differential responses remain identifiable. The two break equations therefore differ intentionally. The first identifies common post-2001 and post-2025 shifts plus Mauritania- and AES-specific interactions. The second identifies Mauritania and AES interactions as well as UEMOA/CFA interactions in the presence of year effects. This keeps the interpretation clean: the article does not confuse a region-wide time effect with a group-specific post-rupture differential.

The fourth step estimates an error-correction specification in the panel-ARDL family. The short-run dependent variable is the first difference of log real GDP per capita, while the lagged level of income and lagged levels of the regressors capture long-run adjustment. The article reports pooled dynamic fixed-effects (DFE) and mean-group (MG) estimates. DFE is informative if one is willing to pool long-run slopes; MG is informative if slope heterogeneity is allowed to dominate. The comparison between the two is more valuable here than an unconditional preference for pooling because ECOWAS contains several institutional and macroeconomic regimes inside the same regional umbrella.

$$g_{it} = \rho g_{i,t-1} + \beta_1 Invest_{it} + \beta_2 Open_{it} + \beta_3 Infl_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (2)$$

Inference is country-clustered in the main text, but because the effective number of country clusters is modest and baseline residuals display cross-sectional dependence even after fixed effects, the appendix reports two-way clustered and Driscoll–Kraay corrections. Claims are retained only when sign and magnitude remain stable across these covariance choices. A smaller robustness sample adds current-account and debt controls. All estimations use observed data only: no interpolation, no backfilling of missing macro series, and no support expansion through imputation.

VI. RESULTS

- *Baseline Fundamentals*

Table 1 shows a region characterized by high volatility and substantial dispersion. Mean real GDP per capita growth is modest, while investment, openness, inflation, and debt vary widely across countries and time. This alone is enough to caution against any claim that ECOWAS can be represented by a single macroeconomic trajectory. The empirical question is therefore whether any core correlate survives once that heterogeneity is treated seriously rather than averaged away.

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Table 2 answers that question clearly. Investment is the only core regressor that remains both economically meaningful and statistically stable. In the country fixed-effects model, a one-percentage-point increase in the investment share is associated with roughly 0.10 percentage points higher real GDP per capita growth. In the two-way fixed-effects model, the coefficient remains about 0.09. For interpretation, a ten-point increase in the investment ratio corresponds to roughly 0.9 to 1.0 additional percentage points of per-capita growth, which is substantial in a region where median growth is not high. This makes investment the central empirical channel in the paper rather than merely one control among others.

Trade openness is positive in both specifications, but the coefficient is small and imprecise. Analytically, this is important. It means that official trade integration is not a sufficient statistic for growth in ECOWAS. The result is consistent with a region where openness measures mix formal trade, enclave export structures, and under-recorded informal integration. Inflation is negatively associated with growth in the country fixed-effects model, but the coefficient collapses once year effects are added. The implication is not that price instability is irrelevant. It is that part of the average inflation-growth penalty is shared across countries through common shocks. The contrast between the two columns is therefore itself a result: macroeconomic instability in West Africa is partly regionalized rather than purely national.

Table 2 Baseline Fixed-Effects Estimates

Variable	FE	TWFE
Investment (% GDP)	0.102*** (0.033)	0.089*** (0.028)
Trade openness (% GDP)	0.011 (0.010)	0.008 (0.010)
Inflation (CPI, %)	-0.021** (0.008)	-0.002 (0.008)
Country fixed effects	Yes	Yes
Year fixed effects	No	Yes
Observations	672	672
Countries	14	14
R-squared	0.104	0.232
SE type	Country-clustered	Country-clustered

*Notes: Entries are coefficients with country-clustered standard errors in parentheses. Dependent variable: real GDP per capita growth. *** p<0.01, ** p<0.05, * p<0.10.*

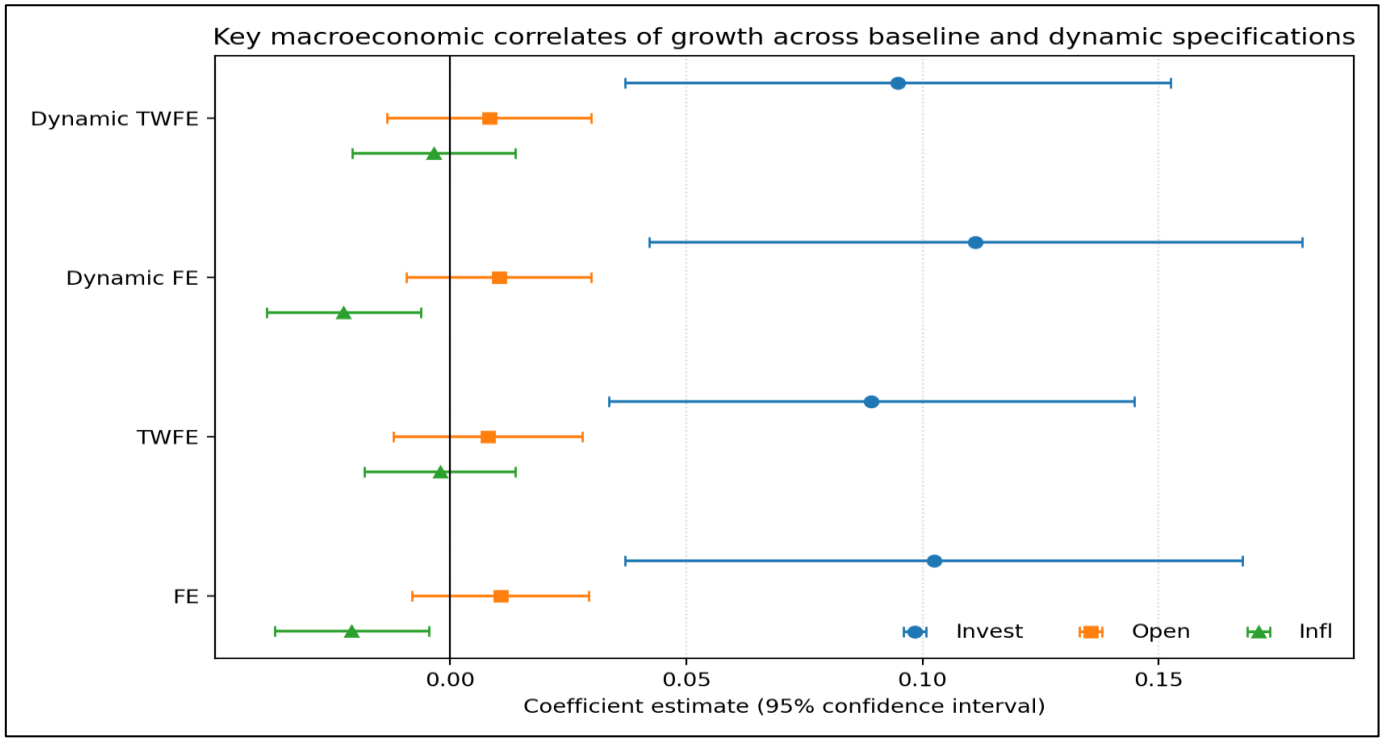

Fig 1 Key Macroeconomic Correlates of Growth Across Baseline and Dynamic Specifications

Notes: Points show coefficient estimates and bars show 95% confidence intervals based on country-clustered standard errors.

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➢ *Dynamic Specifications*

The dynamic models in Table 3 preserve the same hierarchy. Lagged growth is negative but statistically indistinguishable from zero, which suggests that once country effects are removed there is little inertial growth momentum left to explain. This weakens the concern that the investment coefficient is merely capturing persistence in already fast-growing economies.

Investment remains positive and close in magnitude to the baseline estimates in both dynamic specifications. Openness stays statistically fragile, and inflation again becomes negligible once common year shocks are absorbed. The dynamic results therefore reinforce rather than weaken the paper's main claim. The accumulation channel remains visible after a conservative persistence check, whereas the openness channel does not become more persuasive once dynamics are introduced.

Table 3 Dynamic Fixed-Effects Estimates

Variable	Dynamic FE	Dynamic TWFE
Lagged growth	-0.064 (0.069)	-0.084 (0.063)
Investment (% GDP)	0.111*** (0.035)	0.095*** (0.029)
Trade openness (% GDP)	0.010 (0.010)	0.008 (0.011)
Inflation (CPI, %)	-0.022** (0.008)	-0.003 (0.009)
Country fixed effects	Yes	Yes
Year fixed effects	No	Yes
Observations	664	664
Countries	14	14
R-squared	0.107	0.237
SE type	Country-clustered	Country-clustered

*Notes: Entries are coefficients with country-clustered standard errors in parentheses. Dependent variable: real GDP per capita growth. *** p<0.01, ** p<0.05, * p<0.10.*

➢ *Institutional Breaks*

The break results require more than a simple significance reading. In the one-way fixed-effects break model, the common post-2001 and post-2025 shifts are positive. These coefficients should not be interpreted as gains from exit or rupture. They mainly capture period-wide changes shared across the sample, including region-wide recoveries and broader macroeconomic cycles. The one-way break model is therefore informative as a descriptive benchmark, but insufficient for institutional interpretation.

The more credible institutional interpretation comes from the two-way fixed-effects break model in Table 4. Once common year shocks are absorbed, Mauritania's post-2001 differential becomes small and imprecise. The UEMOA and CFA interaction terms are also weak and nearly indistinguishable, which suggests that membership in the common monetary area does not dominate within-country growth dynamics once country and year effects are properly absorbed. By contrast, the AES × post-2025 interaction is negative, large in magnitude, and robust to stricter covariance corrections reported in the appendix. The estimate, around −4.8 percentage points, should be read as an initial negative divergence of AES countries relative to the rest of ECOWAS.

This distinction matters analytically. With a single post-2025 year, the article cannot claim a settled structural break. It can, however, reject the opposite claim that the rupture has no detectable macroeconomic footprint. Figure 2 shows the same pattern in raw group averages: AES and non-AES countries follow broadly comparable paths before 2025, then separate sharply in the post-withdrawal year. The political event has therefore become macroeconomically visible, but it is still too recent for a mature long-run interpretation.

Table 4 Institutional Break Specifications

Variable	Break FE	Break TWFE
Investment (% GDP)	0.089*** (0.024)	0.089*** (0.023)
Inflation (CPI, %)	-0.012 (0.011)	-0.008 (0.010)
Post-2001 common shift	1.067*** (0.353)	
Post-2025 common shift	3.238* (1.566)	
Mauritania × post-2001	-0.605 (0.674)	0.102 (0.846)

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AES × post-2025	-3.417 (1.999)	-4.759* (2.394)
UEMOA × post-2001		0.425 (0.406)
CFA × post-2001		0.425 (0.406)
UEMOA × post-2025		0.966 (1.531)
CFA × post-2025		0.966 (1.531)
Country fixed effects	Yes	Yes
Year fixed effects	No	Yes
Observations	730	730
Countries	15	15
R-squared	0.118	0.229
SE type	Country-clustered	Country-clustered

*Notes: In the TWFE column, common post-break dummies are absorbed by year fixed effects; identification comes from group-specific interactions. Dependent variable: real GDP per capita growth. Country-clustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10.*

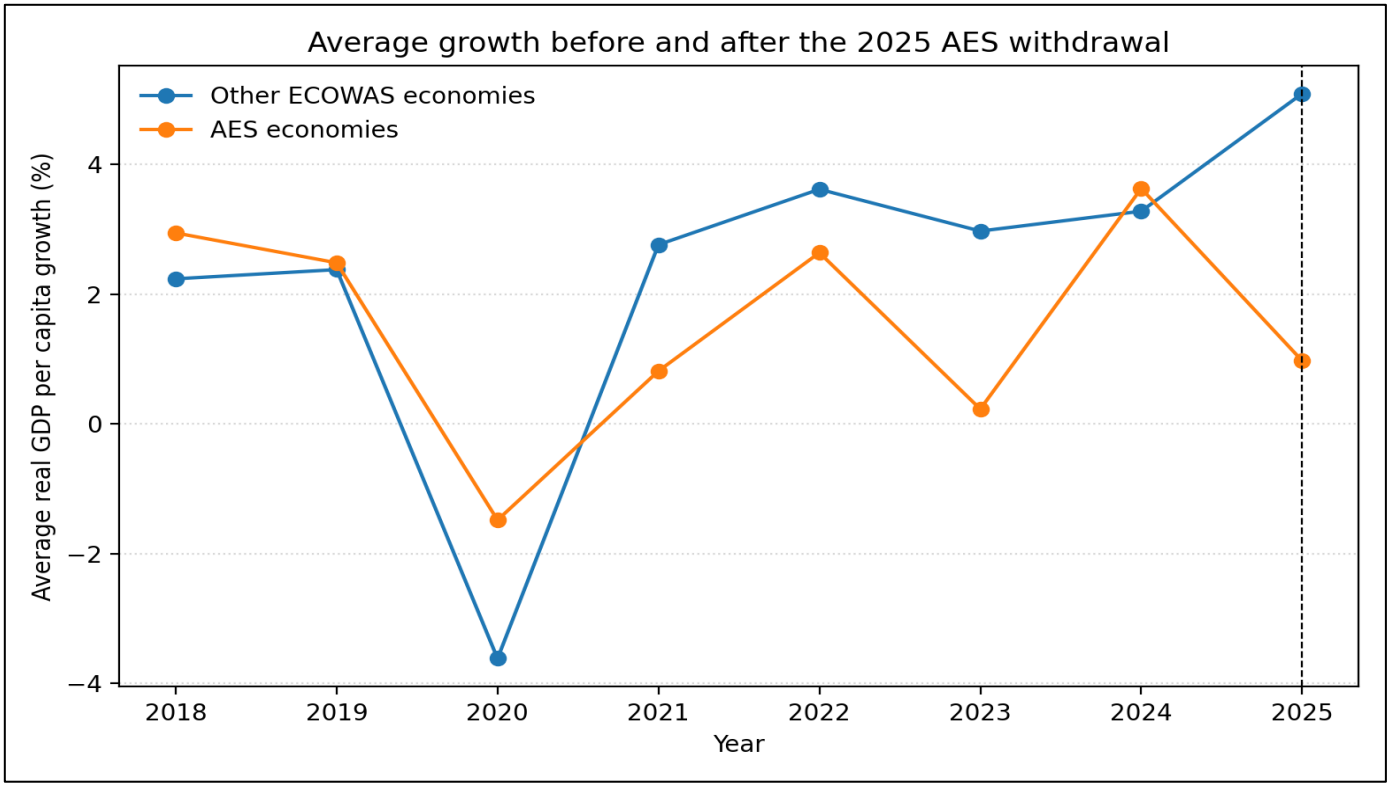

Fig 2 Average Real GDP per Capita Growth in AES and Other ECOWAS Economies, 2018-2025
Notes: Simple group averages. The dashed line marks the effective 2025 withdrawal.

➢ *Long-Run Relations and Heterogeneity*

The panel error-correction results in Table 5 are deliberately interpreted as a test of long-run plausibility, not as a license to impose a homogeneous regional growth law. The key result is that the error-correction term is negative and statistically significant in both the pooled DFE and the mean-group averages. Deviations from the long-run relation are therefore not random drifts: there is evidence of adjustment toward equilibrium.

The more important finding, however, is that adjustment coexists with heterogeneity. In the DFE model without year effects, the implied long-run investment coefficient is positive and statistically meaningful, while long-run openness is weak. When year effects are added, the long-run investment coefficient loses precision and long-run openness becomes modestly positive. The MG estimates go further: they do not support statistically strong common long-run coefficients on any of the core regressors. In other words, ECOWAS economies appear to share an adjustment mechanism without sharing a single stable long-run slope vector.

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This result is central to the article's contribution. The region is integrated enough to exhibit error-correction, but too heterogeneous to justify a common long-run growth equation with high confidence. Short-run changes in openness matter for pooled adjustment, and short-run changes in investment are positive on average in the MG estimates, yet the long-run coefficients vary too much across countries to sustain a strong pooling claim. Institutional heterogeneity is not a rhetorical add-on here; it is what the long-run econometrics itself reveals.

Table 5 Long-Run Panel Error-Correction Estimates

Parameter	DFE	DFE+year FE	MG mean
Error-correction term (phi)	-0.019** (0.008)	-0.044*** (0.013)	
Short-run Δ investment	0.001 (0.001)	0.001 (0.001)	
Short-run Δ openness	0.001** (0.000)	0.001*** (0.000)	
Short-run Δ inflation	-0.000 (0.000)	-0.000 (0.000)	
Long-run investment	0.049** (0.024)	0.009 (0.011)	-0.019 (0.020)
Long-run openness	0.009 (0.008)	0.006** (0.003)	0.009 (0.010)
Long-run inflation	-0.025 (0.017)	-0.005 (0.006)	-0.021 (0.017)
MG error-correction term (phi)			-0.097*** (0.027)
MG short-run Δ investment			0.002** (0.001)
MG short-run Δ openness			0.000 (0.000)
MG short-run Δ inflation			-0.000 (0.000)
Countries in ECM sample	14	14	14
Observations in ECM sample	665	665	665

*Notes: DFE columns report pooled error-correction estimates; MG mean reports country-by-country mean-group averages. Long-run coefficients are implied by the error-correction representation. Standard errors are country-clustered or mean-group standard errors. *** p<0.01, ** p<0.05, * p<0.10.*

➢ *Robustness*

The appendix robustness checks do not overturn the core hierarchy. Two-way clustered and Driscoll–Kraay standard errors preserve the investment effect in the baseline models and continue to leave openness statistically fragile. Pesaran cross-sectional-dependence diagnostics on the baseline residuals remain significant even after fixed effects, which justifies the use of year effects and Driscoll–Kraay inference as complements to country clustering rather than as afterthoughts.

When current-account balances and public debt are added in the smaller 1990–2024 sample, the number of observations falls sharply, but the investment coefficient remains positive. Public debt enters negatively, and inflation becomes more clearly adverse in the two-way fixed-effects specification. The implication is not that debt and external balances replace the core story. It is that the inflation-growth link becomes sharper when financing constraints and balance-sheet stress are made explicit. The article's main claim survives: investment remains the most stable growth correlate, while openness remains positive yet fragile.

Table 6 Extended-Controls Specification: Debt and External Balance

Variable	FE + debt/CA	TWFE + debt/CA
Investment (% GDP)	0.097* (0.046)	0.105** (0.044)
Trade openness (% GDP)	0.028 (0.018)	0.020 (0.018)
Inflation (CPI, %)	-0.027 (0.019)	-0.058** (0.020)
Current account (% GDP)	0.062 (0.069)	0.066 (0.062)
Public debt (% GDP)	-0.018* (0.009)	-0.025* (0.013)

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Country fixed effects	Yes	Yes
Year fixed effects	No	Yes
Observations	380	380
Countries	14	14
R-squared	0.106	0.217
SE type	Country-clustered	Country-clustered

*Notes: Reduced-sample robustness test (1990-2024). Entries are coefficients with country-clustered standard errors in parentheses. Dependent variable: real GDP per capita growth. *** p<0.01, ** p<0.05, * p<0.10.*

VII. DISCUSSION

VIII.

The first implication is conceptual. ECOWAS membership should not be treated as a growth mechanism in itself. It may facilitate coordination, market access, and dispute management, but the paper shows that these institutional possibilities are mediated by domestic accumulation, price management, financing conditions, and country-specific resilience. The strongest coefficients in the article sit on investment, not on regional or monetary labels. This is why a purely institutional reading of integration is analytically insufficient.

The second implication concerns trade. A weak openness coefficient is not evidence that integration is economically irrelevant. It is evidence that the standard trade-to-GDP ratio is an incomplete measure of the ways integration operates in West Africa. Informal border trade, transit economies, re-export structures, and commodity concentration all weaken the mapping from official openness to actual market integration. This helps explain why the short-run openness term can matter in the panel-ECM while the static long-run coefficient remains fragile.

The third implication concerns macroeconomic stability. The disappearance of the inflation effect under year fixed effects suggests that an important share of the growth penalty often attributed to domestic inflation in West Africa is actually linked to common shocks: food and fuel prices, external financing conditions, pandemic aftereffects, and broader geopolitical disturbances. This does not absolve domestic macro policy. It does, however, require analysts to distinguish between domestic indiscipline and region-wide inflationary episodes before drawing strong policy conclusions.

The fourth implication is political. The 2025 withdrawals should neither be dismissed as macroeconomically irrelevant nor overstated as already definitive. The negative AES differential is large enough to matter, but the post-period still consists of a single year. The disciplined claim is therefore narrower and more credible: regional political rupture is already visible as early macroeconomic divergence, and the magnitude of that divergence depends on domestic adjustment capacity rather than on membership status alone.

Finally, the regional results speak directly to recent Malian scholarship. Sissoko (2025) shows that productive expenditure and human-capital investment matter more for sustainable growth than debt-financed recurrent spending under insecurity and sanctions. Sissoko et al. (2024) show that political stability alone does not automatically crowd in foreign investment. The present regional panel generalizes that lesson cautiously: formal institutional status is a poor substitute for macroeconomic fundamentals, and political shocks work through investment, financing, trade organization, and credibility rather than through labels alone.

IX. CONCLUSION

This article examined growth, macroeconomic fundamentals, and institutional heterogeneity in ECOWAS from 1970 to 2025 using a harmonized panel that separates ECOWAS membership from UEMOA/CFA status and codes the Mauritanian and AES withdrawals explicitly. The core conclusion is clear. Investment is the most stable correlate of real GDP per capita growth. Inflation carries a negative average association, but much of that association is absorbed by common time shocks. Trade openness remains positive but statistically fragile and conceptually incomplete as a proxy for West African integration.

The institutional results are equally important. The 2000 Mauritanian break does not yield a robust negative differential once country effects and common shocks are absorbed. The 2025 AES withdrawal does, but only as an initial negative divergence rather than as a settled structural regime change. Long-run panel error-correction evidence shows adjustment toward equilibrium but weak support for a single homogeneous long-run growth equation across ECOWAS economies.

The article therefore argues for a more disciplined political economy of regional macroanalysis. Regional institutions matter, but their macroeconomic meaning depends on the domestic composition of investment, the management of prices and balance sheets, and the heterogeneity of institutional histories inside the region. Future work should extend the post-2025 window, improve measurement of informal trade and regional payments frictions, and test whether the early AES divergence hardens, dissipates, or reorganizes around new policy arrangements.

➢ *Declarations*

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macroeconomic data and does not involve human participants, human biological material, or identifiable personal data; institutional ethics approval was therefore not required.

➢ *Data availability and replication materials*

The empirical dataset harmonizes annual World Development Indicators and IMF World Economic Outlook series with explicit institutional coding for ECOWAS, UEMOA, CFA membership, the Mauritanian withdrawal, and the 2025 AES withdrawals. The cleaned estimation datasets, transformation files, institutional coding files, and estimation scripts are included in the supplementary replication package submitted with the manuscript.

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APPENDIX

GROWTH, MACROECONOMIC FUNDAMENTALS, AND INSTITUTIONAL HETEROGENEITY IN ECOWAS, 1970–2025

Online appendices and supplementary material (for double-blind review)

This appendix reports variable definitions, institutional chronology, expanded descriptive statistics, and the main diagnostics that support the empirical claims in the manuscript. It also reports robustness checks for standard errors and country-by-country mean-group coefficients for the panel error-correction exercise.

- *Appendix Note A1. Why system-GMM is not the headline estimator*

In short-T, large-N panels, GMM estimators can be attractive because they address dynamic endogeneity and fixed effects jointly. In the present application, however, the sample contains roughly 14–15 countries and a long time dimension. Under those conditions, unrestricted instrument proliferation can quickly dominate the cross-sectional dimension. Following the logic developed by Nickell (1981) and Roodman (2009), the cost of a mechanically applied system-GMM design would likely exceed its benefits. The manuscript therefore treats dynamic fixed effects as a conservative persistence check and uses panel error-correction models to examine longer-run adjustment. This is a methodological narrowing designed to improve credibility, not an omission born of convenience.

- *Appendix Note A2. Institutional chronology and coding decisions*

The coding distinguishes ECOWAS membership from UEMOA and CFA participation. Mauritania is coded as outside ECOWAS from 2000 onward in annual terms, while Burkina Faso, Mali, and Niger are coded as outside ECOWAS in 2025 following the official effectiveness of the withdrawal on 29 January 2025. Cabo Verde's accession year is stored in both a primary and an alternative form because official ECOWAS pages are not perfectly consistent. The main results are not driven by this discrepancy because the estimations rely on within-country variation, year effects, and the 2000/2025 rupture windows.

- *Appendix Note A3. Support changes and omitted variables*

Two variables that might appear attractive in a broad macroeconomic design—unemployment and reserve metrics—were dropped from the article's core specifications because they induce excessive support loss and would make the estimator comparison harder to defend. The article therefore privileges comparability of samples and the stability of inference over maximal variable accumulation. The reduced-sample extended-controls specification is reported separately so that the reader can see what is gained and lost when balance-sheet variables are added.

- *Appendix Table A1*

Appendix Table A1. Core variable definitions

Label	Code	Definition	Source
Real GDP per capita growth	g_pc	Annual growth of real GDP per capita; stationary transformation of preferred real GDP per capita series	Preferred series: WDI backbone, WEO extension
Log real GDP per capita	lny	Natural log of preferred real GDP per capita series	Preferred series: WDI backbone, WEO extension
Investment ratio	invest	Gross capital formation as a share of GDP	Preferred series: WDI backbone, WEO extension
Trade openness	open	Exports plus imports as a share of GDP	Preferred series: WDI backbone, WEO extension
Inflation	infl	Consumer price inflation, annual %	Preferred series: WDI backbone, WEO extension
Current account balance	ca	Current account balance as % of GDP	Preferred series: WEO
Public debt	debt	General government gross debt as % of GDP	Preferred series: WEO
Mauritania × post-2001	mrt_post01	Indicator equal to 1 for Mauritania from 2001 onward	Author coding from ECOWAS chronology
AES × post-2025	aes_post25	Indicator equal to 1 for Burkina Faso, Mali, and Niger in 2025	Author coding from ECOWAS chronology

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UEMOA/CFA interactions	uemoa_post01, cfa_post01, uemoa_post25, cfa_post25	Time-varying institutional interactions for monetary-regime chronology	Author coding from UEMOA/BCEAO chronology

Notes: Preferred variables combine World Bank WDI series with IMF WEO extensions when necessary to preserve coverage through 2025.

- *Appendix Table A2*

Appendix Table A2. Institutional chronology by country

Country	ISO3	ECOWAS entry	ECOWAS exit	UEMOA start	CFA start	AES country	Mauritania
Benin	BEN	1975		1994	1970	No	No
Burkina Faso	BFA	1975	2025.0	1994	1970	Yes	No
Cabo Verde	CPV	1977				No	No
Côte d'Ivoire	CIV	1975		1994	1970	No	No
The Gambia	GMB	1975				No	No
Ghana	GHA	1975				No	No
Guinea	GIN	1975				No	No
Guinea-Bissau	GNB	1975		1997	1997	No	No
Liberia	LBR	1975				No	No
Mali	MLI	1975	2025.0	1994	1984	Yes	No
Mauritania	MRT	1975	2000.0		1970	No	Yes
Niger	NER	1975	2025.0	1994	1970	Yes	No
Nigeria	NGA	1975				No	No
Senegal	SEN	1975		1994	1970	No	No
Sierra Leone	SLE	1975				No	No
Togo	TGO	1975		1994	1970	No	No

Notes: Annual coding follows the panel-year convention used in the article. Mauritania is coded as outside ECOWAS from 2000 onward. AES countries are Burkina Faso, Mali, and Niger; the effective withdrawal is coded in 2025.

- *Appendix Table A3*

Appendix Table A3. Expanded descriptive statistics

Variable	Obs.	Mean	Std. dev.	P25	Median	P75	Min	Max
Real GDP per capita growth (%)	871	0.702	6.381	-1.381	1.390	3.446	-58.973	64.622
Investment (% GDP)	783	20.689	9.551	14.213	19.230	24.904	-2.424	75.153
Trade openness (% GDP)	742	57.334	21.011	41.893	53.126	68.817	6.320	131.485
Inflation (CPI, %)	791	11.061	17.450	1.946	5.944	12.213	-14.936	178.700
Log real GDP per capita	887	6.821	0.557	6.441	6.694	7.246	5.376	8.470
Current account (% GDP)	696	-5.662	6.168	-7.974	-5.080	-2.138	-45.327	21.533
Public debt (% GDP)	458	62.543	65.155	34.517	51.450	69.302	0.071	600.117

Notes: Descriptive moments for the main variables in the estimation file.

- *Appendix Table A4*

Appendix Table A4. Fisher-type panel unit-root diagnostics

Variable	Countries	Fisher statistic	Panel p-value	Share rejecting 5%	Mean individual p-value
Log real GDP per capita	16	11.342	1.000	0.000	0.752
Investment (% GDP)	15	79.301	0.000	0.333	0.285
Trade openness (% GDP)	14	83.803	0.000	0.429	0.265
Inflation (CPI, %)	16	234.233	0.000	0.875	0.030
Real GDP per capita growth (%)	16	585.442	0.000	1.000	0.001

Notes: Individual tests are ADF-based. Growth and inflation are clearly stationary; log income behaves as nonstationary; investment and openness show mixed support at country level.

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➢ *Appendix Table A5*

Appendix Table A5. Cross-sectional dependence diagnostics

Model	Countries	Average pairwise correlation	CD statistic	p-value
FE baseline residuals	14	0.078	4.937	0.000
TWFE baseline residuals	14	-0.074	-4.697	0.000

Notes: Pesaran CD tests are based on baseline residuals. Cross-sectional dependence motivates year fixed effects and Driscoll-Kraay robustness checks.

➢ *Appendix Table A6*

Appendix Table A6. Robust standard-error variants for headline models

Variable	FE 2-way cluster	TWFE 2-way cluster	TWFE DK
Investment (% GDP)	0.102***	0.089***	0.089***
	(0.034)	(0.029)	(0.024)
Trade openness (% GDP)	0.011	0.008	0.008
	(0.010)	(0.012)	(0.011)
Inflation (CPI, %)	-0.021*	-0.002	-0.002
	(0.011)	(0.013)	(0.016)
Country fixed effects	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes
Observations	672	672	672
Countries	14	14	14
R-squared	0.104	0.232	0.232
SE type	Two-way clustered	Two-way clustered	Driscoll-Kraay (L=2)

Notes: Two-way clustered and Driscoll-Kraay standard errors show that the investment result remains robust, while the inflation coefficient weakens under broader dependence corrections.

➢ *Appendix Table A7*

Appendix Table A7. Country-specific long-run mean-group coefficients

Country	Phi	LR invest	LR open	LR infl	Obs.
Benin	0.023	-0.065	-0.005	-0.015	44
Burkina Faso	0.022	-0.137	0.017	-0.003	54
Cabo Verde	-0.022	0.008	-0.019	-0.080	44
Côte d'Ivoire	-0.054	0.078	-0.003	-0.012	54
The Gambia	-0.262	0.004	-0.001	0.004	54
Ghana	-0.007	-0.212	0.131	-0.224	47
Guinea	-0.057	0.017	0.009	-0.009	38
Guinea-Bissau	-0.086	-0.058	-0.013	0.013	44
Mali	-0.139	0.017	0.020	0.002	44
Mauritania	-0.330	0.008	-0.001	0.015	38
Niger	-0.076	0.035	-0.000	0.006	54
Senegal	-0.148	0.019	0.001	0.004	54
Sierra Leone	-0.137	0.026	-0.005	-0.001	44
Togo	-0.082	-0.009	0.001	0.007	52

Notes: Country-by-country ECM estimates reveal substantial heterogeneity in long-run slopes, which is why the article does not overstate a homogeneous regional long-run law.

➢ *Appendix Table A8*

Appendix Table A8. Country-specific short-run mean-group coefficients

Country	SR Δ invest	SR Δ open	SR Δ infl	Obs.
Benin	0.002	0.003	-0.001	44
Burkina Faso	0.005	-0.002	-0.001	54
Cabo Verde	-0.000	0.003	-0.002	44
Côte d'Ivoire	0.009	-0.001	-0.002	54
The Gambia	0.002	0.000	0.001	54

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Ghana	0.002	0.001	-0.002	47
Guinea	0.001	0.000	-0.000	38
Guinea-Bissau	-0.002	0.002	0.000	44
Mali	0.003	-0.001	0.002	44
Mauritania	-0.001	-0.000	0.003	38
Niger	0.007	-0.001	-0.001	54
Senegal	0.004	-0.001	-0.000	54
Sierra Leone	0.000	0.001	0.000	44
Togo	0.002	0.002	0.000	52

Notes: Short-run adjustment is more heterogeneous than pooled DFE estimates suggest.