External Factors and Domestic Policies: Determinants of Inflation in ECOWAS[1]

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Abstract

Food price inflation remains a critical challenge in ECOWAS, where high import dependence and weak institutional frameworks heighten vulnerability to external shocks. This study examines the determinants of inflation in ECOWAS, focusing on the asymmetric effects of global food price shocks from 2010 to 2022. We discover that the pass-through of food prices more than doubles in high-inflation environments and heightens during economic recessions. The WAEMU's fixed exchange rate and fiscal rules sever the standard inflationary link between public debt and inflation observed in more flexible regimes. Strong institutional quality provides a universal stabilising effect across all countries. Our findings are consistent with theories of state-dependent amplification, where pre-existing macroeconomic vulnerabilities critically determine an economy's resilience to external shocks.

Keywords: *inflation, convergence, GMM, ECOWAS*

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Introduction

In developing countries, the trajectory of inflation is generally regarded as non-linear and varies considerably with the economic climate, where domestic economic policies are significantly affected by external shocks (Eggoh and Khan,

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2014; Ha et al., 2019; Darkwah et al., 2024; Tiedemann et al., 2024). This is particularly the case for monetary unions such as ECOWAS,[2] where persistent inflation differentials have challenged policy harmonisation and convergence (Houssa, 2008; Alagidede et al., 2012; Mahmud and Akuoko-Konadu, 2023). This paper investigates how global food price pressures transmit to domestic inflation in ECOWAS countries, focusing on whether this transmission is amplified by pre-existing domestic vulnerabilities, specifically high inflation regimes, elevated public debt, and economic recessions, and whether it differs fundamentally between the fixed-exchange-rate zone and more flexible monetary regimes elsewhere in the region. Although previous studies have highlighted the roles of fiscal policy (Caldara and Kamps, 2008; Baldini and Poplawski-Ribeiro, 2011; Akuoko-Konadu and Alagidede, 2024), global food prices (Frankel, 2006; Headey, 2011; Darkwah et al., 2023), and institutions (Dincer and Eichengreen, 2018) as discrete determinants, their interplay has not been jointly examined. In particular, the literature lacks a comprehensive empirical examination of how domestic vulnerabilities, such as high inflation, elevated debt, and recessions, amplify external shocks, and whether monetary regimes like the WAEMU's fixed exchange rate fundamentally alter these transmission channels. Several studies have examined related issues in West Africa. Adelakun (2020) finds that monetary union reduces inflation persistence in the WAMZ,[3] while Miles (2024) warns that inflation convergence remains elusive. Ilyas et al. (2022) document asymmetric effects of monetary and exchange rate shocks, and Darkwah et al. (2024) show that trade openness exacerbates inflation vulnerability. Yet none systematically tests the interactive, threshold-based amplification effects we identify, nor do they jointly examine monetary regime heterogeneity and institutional quality within a unified framework for ECOWAS.

The ECOWAS context offers a compelling setting for this analysis, characterised by the monetary policy dichotomy between WAEMU's relatively stable exchange rate and WAMZ's more volatile currencies (Appendix A8, Figure 1), persistently heterogeneous inflation (Figure 2), and growing fiscal vulnerabilities (Figure 3). The region's heavy dependence on imported food and energy makes it highly vulnerable to global price fluctuations (Adelakun, 2020; World Bank, 2024), while differing monetary frameworks, the WAEMU's currency peg versus the

[2] Economic Community of West African States (ECOWAS), comprising 15 West African countries.

[3] WAEMU (West African Economic and Monetary Union) comprises eight countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo) sharing the euro-pegged CFA franc with a common central bank (BCEAO) and strict fiscal convergence criteria. WAMZ (West African Monetary Zone) comprises six countries (Gambia, Ghana, Guinea, Liberia, Nigeria, Sierra Leone) planning a common currency but currently operating independent monetary policies with varying degrees of flexibility. The remaining member, Cabo Verde, maintains an independent monetary policy.

WAMZ's more flexible regimes, provide a natural experiment to explore how institutional rules influence inflation dynamics. Despite these characteristics, existing studies have largely focused on linear pass-through effects, with limited attention to the asymmetric, regime-dependent nature of fiscal and monetary influences across the region.

This paper makes three key contributions to the existing literature on inflation and monetary integration in ECOWAS. First, it provides empirical evidence of state-dependent amplification in the transmission of global food prices. Moving beyond linear models, we quantify how pre-existing domestic vulnerabilities, specifically high-inflation regimes, elevated public debt, and economic recessions, act as non-linear amplifiers, more than doubling and in some cases quadrupling the pass-through of external price fluctuations. This offers a more precise mechanism for explaining the persistent heterogeneity in inflation observed across ECOWAS. Second, it provides a comparative institutional analysis of the efficacy of monetary regimes. We demonstrate that WAEMU's fixed exchange rate and rule-based framework not only dampen inflation but also fundamentally alter its drivers by severing the standard inflationary link between public debt and inflation that prevails in flexible regimes. This finding challenges the assumption that fiscal dominance is a universal constant and shows how supranational rules can reconfigure domestic inflation dynamics. Third, it clarifies the role of institutional quality as a universal stabiliser. While monetary regimes condition how shocks are transmitted, we establish that the effectiveness of domestic institutions in anchoring prices is not diminished by an external monetary anchor. This finding underscores that sound governance is a non-negotiable, complementary pillar for price stability, irrespective of the exchange rate regime. By testing these questions, the study provides critical insights for the design of future monetary integration in the region, showing that convergence requires not only meeting numerical targets but also building resilience against asymmetric shocks through robust institutions and macroeconomic stability.

The paper is organised as follows. Section 1 introduces related literature and hypothesis development. In section 2, a detailed overview of methods and data is provided. Section 3 discusses the main results. Robustness analysis is presented in section 4. Last section concludes.

1. Brief Literature Review and Hypothesis

The determinants of inflation in developing economies are widely attributed to a mix of external shocks and domestic policies. A significant body of literature identifies global food price volatility as a primary external driver of inflation in

net food-importing regions like ECOWAS (Frankel, 2006; Kornher and Kalkuhl, 2013; Alper et al., 2016; Ceballos et al., 2016). However, the standard empirical approach often assumes a linear and constant pass-through (Gelos and Ustyugova, 2017; Carrière-Swallow et al., 2023; Andriantomanga et al., 2023; Darkwah et al., 2024). This overlooks the potential for state-dependent effects, where the same shock has a different impact depending on the initial economic conditions. Theories of inflation expectations and wage-price spirals suggest that in already fragile economies, those with high inflation or in recession, a new shock can trigger a more potent, self-reinforcing dynamic (Sargent, 1982; Ball and Sheridan, 2004). While studies such as Alagidede et al. (2012) and Danlami (2019) document persistent and heterogeneous inflation in West Africa, they do not formally test whether the conditional effect of food prices accounts for this heterogeneity. This gap leads to our first hypothesis:

H1: *Pre-existing domestic vulnerabilities, specifically high-inflation regimes and economic recessions, amplify the inflationary impact of global food price shocks.*

The role of fiscal policy is a cornerstone of inflation theory, particularly in developing countries. A well-established literature links high public debt and deficits to inflation through the channel of fiscal dominance, in which monetary policy is subordinated to the government's financing needs (Sargent and Wallace, 1984; Baldini and Poplawski-Ribeiro, 2011; Agoba, 2021). This is often the presumed default in flexible exchange rate regimes. However, this relationship is not an economic law but an institutional outcome. The WAEMU presents a powerful counter-hypothesis: its institutional framework, characterised by a currency peg, convergence criteria, and a prohibition on central bank financing of deficits (Lohi, 2014; Lampe, 2024; Mouhamed, 2025), is explicitly designed to break this link. Imposing external discipline should, in theory, dissociate fiscal expansions from inflationary outcomes, a phenomenon observed in other rule-based monetary unions (De Grauwe and Schnabl, 2008). We therefore test a second, competing hypothesis:

H2: *The WAEMU's institutional framework severs the standard inflationary link between public debt and inflation observed in more flexible regimes.*

Beyond fiscal institutions, the broader quality of governance is increasingly recognised as a fundamental determinant of macroeconomic stability (Acemoglu et al., 2001, 2005). A robust literature finds that strong institutions, manifested in central bank independence, control of corruption, and bureaucratic quality, correlate with lower and more stable inflation by enhancing policy credibility and commitment (Cukierman et al., 1992; Dincer and Eichengreen, 2018; Agoba, 2021; Ho et al., 2023). A critical, unresolved question is whether this institutional effect

is substitutive or complementary to an external monetary anchor. Do pegs like WAEMU's make domestic institutions less relevant for inflation control, or are both necessary for optimal outcomes? Some argue the external anchor does the heavy lifting, while others contend that weak domestic governance can undermine even the most rigid rules (Bems et al., 2020; Apeti et al., 2023; Flaccadoro et al., 2025). This study directly examines their interplay. This forms our third hypothesis:

H3: *Strong institutional quality dampens inflation across all monetary regimes, and its effect is complementary rather than substitutive with an external anchor.*

2. Empirical Strategy and Data

This study employs an unbalanced annual panel dataset of 15 ECOWAS member states from 2010 to 2022. The sample comprises eight countries from the West African Economic and Monetary Union (WAEMU), six from the West African Monetary Zone (WAMZ), and Cabo Verde, which operates an independent monetary policy. The dependent variable is the annual inflation rate, measured by the percentage change in the consumer price index (CPI). The independent variables include domestic macroeconomic factors and global indicators. Global food and oil prices are transformed into annual percentage changes to align with the measurement of domestic inflation (percentage change from the previous year)**.** This ensures a direct interpretation: a one-percentage-point increase in global price growth is associated with a given change in domestic inflation. Descriptive statistics for all variables are presented in Appendix Table A1. Detailed definitions, measurements, and sources for all variables are provided in Appendix Table A2. The data demonstrate substantial variation across countries and over time, offering sufficient identifying variation for econometric analysis. Pairwise correlations (Appendix Table A3) reveal moderate relationships among explanatory variables, with the correlation coefficients below conventional thresholds, indicating no serious multicollinearity concerns. Details of the construction of the institutional quality index are provided in Appendix A4. Building on the theoretical framework of Adu and Marbuah (2011) for small open economies, we specify a dynamic panel model that incorporates inflation persistence:

$$Inflation_{it} = \alpha Inflation_{it-1} + \sum_{d=1}^{D} \beta_d Mac_{dit} + \sum_{g=1}^{G} \delta_g Glo_{git} +$$
$$+ \sum_{b=1}^{B} \theta_b InstQ_{bit} + \mu_{it} + \nu_t + \varepsilon_{it}$$

The dependent variable is the annual inflation rate, measured as the percentage change in the consumer price index (CPI). Accordingly, the lagged dependent variable ($inflation_{it-1}$) captures inflation persistence, a standard feature in dynamic inflation models (Baldini and Poplawski-Ribeiro, 2011). The equation reflects the dynamic effects of macroeconomic variables (Mac_{it}), global factors (Glo_{it}) and institutional quality ($InstQ_{it}$) on inflation. Country-specific effects (μ_i) and time-specific effects (ν_t) account for unobserved heterogeneity, while ε_{it} represents the stochastic error term assumed to be independently and identically distributed. The coefficients on the explanatory variables (β, δ, θ) capture the respective elasticities of inflation concerning each determinant. To test for asymmetric and state-dependent effects, our empirical strategy employs two distinct approaches. First, we introduce continuous interaction terms between global food prices and key domestic variables to examine how the level of a factor (e.g., public debt) linearly moderates the pass-through. Second, we use threshold-based interactions with dummy variables (e.g., a high-inflation regime dummy) to test for nonlinear regime shifts in which the pass-through effect changes fundamentally once a critical economic threshold is crossed. This two-pronged approach allows us to discern whether vulnerabilities build gradually or materialise abruptly at tipping points. The estimation accounts for regime-level heterogeneity across ECOWAS by allowing inflation dynamics to differ between the WAEMU and non-WAEMU blocs via interaction terms.

This study employs the two-step system GMM estimator (Blundell and Bond, 1998) to investigate the determinants of inflation in ECOWAS from 2010 to 2022. This estimator is chosen to address the dynamic panel structure (N = 15, T = 13), endogeneity, and the inclusion of a lagged dependent variable (Arellano and Bond, 1991; Bond, 2002). System GMM mitigates the weak instrument problem in difference GMM when series are persistent (Arellano and Bover, 1995). In line with Roodman (2009), we specify the instrument set to balance validity and proliferation. For the difference equation, GMM-style instruments are lagged values of inflation, the money supply, and GDP growth (t–2 to t–3). These variables are considered endogenous, or predetermined, because of the possible reverse causality with inflation. In the level equation, we replace the instrumentation variables for ivstyle with global food prices, public debt, institutional quality and REER, interaction terms, and year dummies. Because global food prices are exogenous to the individual ECOWAS economy, institutional quality is slow-moving and hard to influence by short-run variations in inflation, public debt is considered predetermined, while the REER largely responds externally in a small open economy setting. This is achieved by collapsing the instrument matrix to reduce instrument proliferation.

Acknowledging that the panel is at the lower bound for system GMM with N = 15 and T = 13, this estimator is still preferred to the difference GMM given persistence in our variables (Blundell and Bond, 1998), and bias-corrected fixed effects are less suitable for addressing multiple sources of endogeneity. The Hansen J test p-values validate our instruments, and the small option implements finite-sample corrections for inference. The consistency of the results across specifications (Tables 1 – 5) reassures us that they are not driven by finite-sample bias.

3. Results

Table 1 displays the results of the dynamic panel regression analysis of inflation drivers in ECOWAS countries, highlighting the influence of global food prices alongside domestic monetary, fiscal, and institutional factors. The persistence of inflation is evident in the significant and positive coefficient on lagged inflation across all models, ranging from 0.61 to 1.08. This indicates that inflation pressures tend to persist in ECOWAS economies, reflecting inertia in price-setting, weak anchoring of expectations, and structural rigidities (Alagidede et al., 2012; Bems et al., 2021; Darkwah et al., 2024). Such persistence complicates the efforts of monetary authorities, as short-term fluctuations can easily develop into medium-term inflation cycles. Global food prices emerge as an influential driver, with coefficients ranging from 0.23 to 0.33. This suggests that a 1 percent rise in global food prices increases domestic inflation by approximately 0.2 to 0.3 percent, highlighting the region's heavy reliance on imported food and limited self-sufficiency. Since food accounts for a large share of consumption in ECOWAS, global food pressures have immediate and direct effects on consumer prices. This aligns with the structuralist perspective that external supply shocks, especially in food and fuel, dominate inflation dynamics in developing economies (Furceri et al, 2016; Bastian and Setterfield, 2020). This result aligns with Darkwah et al. (2024). Monetary factors have a moderate impact. Although money supply is not consistently significant across models, when it is, it shows a positive link with inflation. This indicates that liquidity expansion contributes to rising prices, though its effect is weaker than that of external pressures. This supports the view that, in ECOWAS, inflation is not purely a monetary phenomenon; rather, excess liquidity amplifies existing supply-side shocks, not being the sole cause. Fiscal variables have a stronger effect. Public debt remains positively and significantly related to inflation, with coefficients ranging from 0.02 to 0.07. This explains that fiscal deficits financed through debt contribute to inflationary pressures, either directly via monetary financing or by increasing expectations of future monetisation.

T a b l e 1

Inflation Dynamics and the Role of Global Food Prices in ECOWAS Countries

	(1)	(2)	(3)	(4)
Variables	***Dependent Variable: Inflation (consumer prices)***			
$Inflation_{t-1}$	0.681***	1.083***	1.081***	0.610***
	(0.090)	(0.038)	(0.120)	(0.130)
Global food price	0.232***	0.326***	0.268***	0.226***
	(0.022)	(0.060)	(0.076)	(0.028)
Money supply		0.129	0.235*	0.071
		(0.083)	(0.140)	(0.112)
Public debt		0.018***	0.074***	0.071***
		(0.006)	(0.015)	(0.022)
Institutional quality			–1.112***	–1.374**
			(0.297)	(0.600)
GDP growth				0.347**
				(0.160)
REER				0.315***
				(0.051)
Constant	–1.254***	–1.793***	–3.773***	–4.632***
	(0.551)	(0.327)	(1.041)	(1.531)
AR1	0.005**	0.004**	0.002**	0.002**
AR2	0.127	0.092	0.113	0.478
Hansen J statiistic	10.556	9.187	7.937	4.439
Chi-sq P-value	0.159	0.163	0.243	0.349
Observations	176	172	172	171
Countries	15	15	15	15

Note: The table presents coefficient estimates from dynamic panel regressions estimated using the two-step system GMM estimator (xtdpdgmm). The models sequentially incorporate external and domestic explanatory variables to examine their impact on inflation dynamics across ECOWAS countries. Lagged inflation is included to capture persistence. Robust standard errors are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All specifications include country fixed effects and year dummies.

Source: Author's computation.

The finding is consistent with the fiscal theory of the price level (Cochrane, 2021; Barro and Bianchi, 2023), which explains that weak fiscal positions undermine price stability in developing and low-governance contexts. Institutional quality exhibits a significant negative relationship with inflation, suggesting that stronger governance and credible institutions help lower inflation pressures. This aligns with theories emphasising the importance of institutional credibility in anchoring expectations and preventing fiscal issues from dominating monetary policy (Louati and Boujelbene, 2020; Kakar et al., 2024). Conversely, weak institutions intensify the inflationary effects of external and domestic shocks. Among the control variables, GDP growth is positively linked with inflation in Model (4), indicating demand-pull pressures during economic expansion. This suggests that during periods of growth, total demand exceeds supply capacity, driving inflation. The real effective exchange rate (REER) also becomes positive and significant in the final model, implying that exchange rate movements influence domestic prices. This supports the observation that ECOWAS economies, which are heavily reliant

on imports, experience faster inflation following currency depreciation as import prices rise and consumer prices increase (Burstein and Gopinath, 2014; Kassi et al, 2019). In Models (2) and (3) of Table 2, the lagged inflation coefficient exceeds unity (1.083 and 1.081, respectively). A coefficient greater than one indicates that inflation is not merely persistent but accelerating, a hallmark of unanchored expectations and backwards-looking wage indexation (Sargent, 1982; Ball and Sheridan, 2004; Kuttner and Robinson, 2010). This could mean that a gradualist monetary policy response would be ineffective; a more forceful tightening is required to break the upward momentum. However, once institutional quality and other moderating factors are included in Model (4), the coefficient falls below unity.

T a b l e 2

Structural and Policy Moderators of Global Food Price Pass-Through

Variables	**(1)**	**(2)**	**(3)**	**(4)**
	Dependent Variable: Inflation (consumer prices)			
$Inflation_{t-1}$	0.742***	0.533***	0.624***	0.670***
	(0.129)	(0.162)	(0.090)	(0.131)
Global food price	0.156**	0.673**	0.188**	0.210***
	(0.062)	(0.327)	(0.079)	(0.025)
Money supply	0.264	0.923**	0.023	0.083
	(0.197)	(0.453)	(0.394)	(0.102)
Public debt	0.087***	0.133**	0.074**	0.066***
	(0.028)	(0.056)	(0.036)	(0.020)
Institutional quality	–1.307**	–2.859***	–1.719**	–1.215**
	(0.590)	(0.972)	(0.747)	(0.540)
GDP growth	0.540***	0.592	0.498*	0.328**
	(0.190)	(0.422)	(0.255)	(0.152)
REER	0.190**	0.282***	0.353***	0.281***
	(0.082)	(0.071)	(0.080)	(0.060)
Global food price × INF targeting Dummy	–0.129***			
	(0.296)			
Global food price × Public debt		0.128***		
		(0.045)		
Global food price × Institut. quality			–0.112***	
			(0.045)	
Global food price × REER				–0.024***
				(0.005)
Constant	–6.485***	–6.668***	–5.503***	–4.432***
	(2.178)	(2.542)	(2.499)	(1.514)
AR1	0.007**	0.002**	0.002**	0.002**
AR2	0.849	0.727	0.731	0.501
Hansen J statistic	1.353	0.499	1.858	3.917
Chi-sq P-value	0.717	0.779	0.603	0.417
Observations	171	171	171	171
Countries	15	15	15	15

Notes: The table reports coefficient estimates from dynamic panel regressions estimated with the two-step System GMM procedure. The models examine how different structural factors moderate the pass-through of global food prices. Lagged inflation captures persistence. The AR(1) and AR(2) statistics test for serial correlation in the residuals. The Hansen J statistic tests the joint validity of the instruments. Robust standard errors are in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All specifications include country fixed effects and year dummies.

Source: Author's computation.

Table 2 displays how structural and policy factors moderate the pass-through of global food prices to domestic inflation. The results reveal that domestic economic structures moderate the pass-through of global food prices into domestic inflation. While inflation exhibits strong persistence and food price fluctuation is a consistent driver, the ultimate inflationary impact depends on a country's policy framework and institutional strength. The analysis identifies a clear role for monetary policy credibility. The significant negative interaction with inflation targeting[4] (–0.129) indicates that credible monetary frameworks help anchor inflation expectations. In targeting regimes, the central bank's commitment to price stability prevents temporary food price changes from triggering broader inflationary spirals. Conversely, fiscal vulnerability amplifies the volatility; the positive interaction with public debt (0.128) exposes a weakness. Countries with high debt lack the fiscal space to implement countermeasures, such as targeted subsidies, forcing the full brunt of the price shock onto consumers and amplifying its inflationary impact. The quality of institutions acts as a crucial shock absorber. Robust institutions considerably reduce pass-through (–0.112). Effective governance ensures coordinated and credible policy responses, preventing panic-driven price hikes and improving the economy's ability to absorb external fluctuations. Additionally, exchange rate movements serve as a buffer, with a stronger real exchange rate slightly lowering imported inflation (–0.024). This affirms the traditional channel where currency appreciation reduces the domestic costs of imported goods.

We now turn to our second hypothesis (H2), which posits that the WAEMU institutional framework severs the standard inflationary link between public debt and inflation in more flexible regimes. Table 3 presents the results from models that interact key variables with a WAEMU dummy to explicitly test for heterogeneity between the fixed-exchange-rate WAEMU zone and the more flexible regimes in the rest of ECOWAS. The findings reveal that the monetary framework fundamentally reconfigures the transmission of inflation. The results reveal a stark contrast in how inflationary pressures manifest across monetary regimes. The pass-through of global food prices is significantly weaker within the WAEMU zone, demonstrating how the fixed exchange rate acts as a buffer against external commodity price volatility

The most striking finding, however, is the inversion of standard macroeconomic channels within WAEMU. The relationships among public debt, the money supply, and inflation are fundamentally different. In non-WAEMU countries, higher public debt is clearly inflationary, consistent with theories of fiscal dominance (Louati and Boujelbene, 2020; Kakar et al., 2024). In WAEMU, however,

[4] Ghana and Nigeria are the only ECOWAS member states that have adopted explicit inflation targeting frameworks.

the relationship is reversed; higher debt correlates with lower inflation. Similarly, growth in the money supply, typically a key driver of inflation, is disinflationary in the WAEMU context. This reflects the regime's external anchor and strict fiscal rules, which prevent deficit monetisation and tie monetary expansion to balance-of-payments conditions rather than domestic demand pressures. Crucially, the stabilising effect of institutional quality is strong and nearly identical across both regimes. This underscores that sound domestic governance remains a universal prerequisite for price stability, even within a rule-based monetary union. The results affirm that while monetary regimes shape the transmission of shocks, robust institutions are indispensable.

T a b l e 3

Comparing Inflation Dynamics Across ECOWAS Monetary Zones

Variables	**(1)**	**(2)**	**(3)**	**(4)**
	Dependent Variable: Inflation (consumer prices)			
$Inflation_{t-1}$	0.904***	0.304**	0.764***	0.984***
	(0.179)	(0.146)	(0.280)	(0.176)
Global food price	0.539***	0.245***	0.113**	0.117***
	(0.174)	(0.030)	(0.055)	(0.041)
Money supply	0.306	0.021	0.039	0.455**
	(0.282)	(0.107)	(0.042)	(0.191)
Public debt	0.105**	0.123***	0.221***	0.124***
	(0.042)	(0.028)	(0.053)	(0.020)
Institutional quality	–1.686**	–2.346***	–2.745***	–2.495***
	(0.827)	(0.490)	(0.887)	(0.607)
GDP growth	0.258	0.118	0.176	0.055
	(0.225)	(0.256)	(0.164)	(0.203)
REER	0.002*	0.219***	0.346***	0.006**
	(0.001)	(0.048)	(0.114)	(0.002)
$Global\ food\ price_{WAEMU}$	–0.256**			
	(0.116)			
$Public\ debt_{WAEMU}$		–0.080***		
		(0.027)		
$Money\ supply_{WAEMU}$			–0.288***	
			(0.086)	
$Institutional\ quality_{WAEMU}$				–2.600***
				(0.765)
Constant	–7.103***	–1.657	8.462***	–4.916***
	(2.500)	(1.245)	(3.235)	(1.691)
AR1	0.005**	0.003**	0.019**	0.001**
AR2	0.687	0.227	0.762	0.175
Hansen J statistic	3.947	4.373	5.756	5.443
Chi-sq P-value	0.267	0.497	0.218	0.364
Observations	171	171	171	171
Countries	15	15	15	15

Note: The table presents coefficient estimates from dynamic panel regressions estimated using the two-step system GMM estimator (xtdpdgmm). The models examine how inflation responses differ across ECOWAS monetary regimes by interacting key macroeconomic variables with a WAEMU dummy. This allows for regime-based heterogeneity in inflation dynamics. Lagged inflation captures persistence. Robust standard errors are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All specifications include country fixed effects and year dummies.

Source: Author's computation.

4. Robustness Analysis

To ensure the robustness of our findings on asymmetric effects, we test the sensitivity of our results to alternative model specifications. We construct dummy variables based on economically meaningful criteria. A high-inflation regime is defined as inflation exceeding 10%, which aligns with the primary convergence criterion for ECOWAS monetary integration (41 observations, 21.0% of the sample). A high-debt regime is defined as public debt exceeding the sample mean of 49.5% of GDP, identifying countries with above-average fiscal vulnerability (79 observations, 40.5% of the sample). This data-driven threshold is consistent with the range of debt thresholds found in the literature for developing economies (Mencinger et al., 2015; Benayed et al., 2015; Ndoricimpa et al., 2020; Law et al., 2021). A recession is defined as a year with negative GDP growth (≤0%), following the widely used practical definition of a recession as a period of economic decline (Claessens et al., 2009). While the IMF notes that two consecutive quarters of negative growth is the standard rule of thumb, our annual data structure makes negative annual growth the natural equivalent. The recession regime comprises 15 observations (7.7% of the sample). These thresholds allow us to test for nonlinear shifts in inflation dynamics at critical levels of economic vulnerability. Table 4 confirms that the pass-through of global food price changes is highly asymmetric and conditioned by domestic economic regimes. The results show that the inflationary effect of global food prices varies and is significantly intensified by existing macroeconomic weaknesses. The analysis identifies three specific channels of asymmetry. The findings offer strong evidence of state-dependent dynamics. Notably, the inflationary impact of global food price fluctuations is more than twice as large in economies already experiencing high inflation as in those with low inflation. This aligns with the theory of de-anchored inflation expectations (Sargent, 1982; Ball and Sheridan, 2004; Kuttner and Robinson, 2010), which posits that in a high-inflation environment, a relative price change is seen as permanent, leading to anticipatory wage demands and widespread price-setting, thereby fueling a broad inflationary spiral. Secondly, fiscal vulnerability worsens imported inflation (0.133). The effect of a global food price change nearly doubles in countries with public debt above the sample average (Model 2). This highlights a critical fiscal vulnerability dilemma. Governments burdened by high debt lack the fiscal capacity to implement cushioning measures such as targeted subsidies or social transfers, resulting in a greater adjustment being passed on to domestic prices. Most notably, the analysis indicates that economic recessions strengthen the impact of food price fluctuations (0.475).

T a b l e 4

Asymmetric Transmission of Global Food Prices in ECOWAS

Variables	(1)	(2)	(3)
	Dependent Variable: Inflation (consumer prices)		
$Inflation_{t-1}$	0.819***	0.864***	0.513***
	(0.024)	(0.239)	(0.107)
Global food price	0.362***	0.148***	0.132***
	(0.108)	(0.053)	(0.039)
Money supply	0.517*	0.465	0.475*
	(0.295)	(0.378)	(0.256)
Public debt	0.122***	0.291***	0.145**
	(0.046)	(0.080)	(0.107)
Institutional quality	–1.733**	–1.656**	–1.565***
	(0.754)	(0.737)	(0.840)
GDP growth	0.290*	0.113	0.245
	(0.169)	(0.155)	(0.281)
REER	0.388***	0.280***	0.288***
	(0.030)	(0.086)	(0.063)
Global food price × High Inf. regime	0.475***		
	(0.169)		
Global food price × High Debt regime		0.133***	
		(0.045)	
Global food price × Recession			0.428**
			(0.199)
Constant	–7.150***	–10.732***	–6.464***
	(2.412)	(3.909)	(1.731)
AR1	0.011**	0.003**	0.009**
AR2	0.898	0.576	0.887
Hansen J statistic	6.979	5.97	1.689
Chi-sq P-value	0.323	0.201	0.793
Observations	171	171	171
Countries	15	15	15

Notes: Estimates from two-step system GMM regressions. Interaction terms test the asymmetric effects of global food prices across economic regimes. Threshold definitions: High Inflation = inflation rate ≥10% (ECOWAS convergence criterion); High Debt = public debt >49.5% (sample mean); Recession = GDP growth ≤0%. The coefficient on the interaction term represents the additional effect of food prices in the specified vulnerable regime. Lagged inflation captures persistence. Diagnostic tests: AR(1) and AR(2) for serial correlation; Hansen J for instrument validity. Robust standard errors in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01. All specifications include country fixed effects and year dummies.

Source: Author's computation.

This implies that inflation driven by supply shocks intensifies during periods of weak demand, with recessive phases characterised by factors such as currency depreciation and broken supply chains, which override disinflationary demand effects and suggest significant stagflationary risks. Although it contrasts with the conventional view that weak demand during recessions might lessen inflationary pressures, this is not surprising in developing economies where food constitutes a large component of the consumer price index.

Table 5 confirms the robustness of our main results to the choice of commodity price. Replacing food prices with oil prices yields a positive and significant effect on inflation across all specifications, though the effect is smaller in magnitude.

This could be attributed to the lower weight of energy items in household consumption baskets compared with food. The findings on inflation persistence and the moderating role of fiscal and Institutional factors are unchanged relative to our headline results. Such a robustness check further validates the conclusion that external commodity price volatility is a structural or fundamental driver of ECOWAS inflation, whilst domestic vulnerabilities help define the strength of pass-through.

T a b l e 5

Inflation Dynamics and the Role of Global Oil Price in ECOWAS Countries

Variables	**(1)**	**(2)**	**(3)**	**(4)**
	Dependent Variable: Inflation (consumer prices)			
$Inflation_{t-1}$	0.400***	1.078***	1.025***	0.509***
	(0.138)	(0.029)	(0.117)	(0.177)
Global oil price	0.050***	0.098***	0.084***	0.057***
	(0.008)	(0.016)	(0.020)	(0.012)
Money supply		0.220**	0.400**	0.316**
		(0.095)	(0.194)	(0.138)
Public debt		0.020***	0.097***	0.071**
		(0.005)	(0.017)	(0.032)
Institutional quality			–1.522***	–1.774**
			(0.448)	(0.737)
GDP growth				0.042
				(0.252)
REER				0.361***
				(0.039)
Constant	–2.905***	–1.771***	–4.725***	–2.815
	(0.861)	(0.223)	(1.194)	(2.892)
AR1	0.005**	0.002**	0.001**	0.005**
AR2	0.318	0.814	0.716	0.394
Hansen J statistic	11.447	9.743	9.085	7.225
Chi-sq P-value	0.121	0.136	0.169	0.125
Observations	176	172	172	171
Countries	15	15	15	15

Notes: The table presents coefficient estimates from dynamic panel regressions estimated using the two-step system GMM estimator (xtdpdgmm). The models sequentially incorporate external and domestic explanatory variables to examine their impact on inflation dynamics across ECOWAS countries, using global oil prices instead of food prices as the external shock variable. Lagged inflation is included to capture persistence. Robust standard errors are reported in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All specifications include country fixed effects and year dummies.

Source: Author's computation.

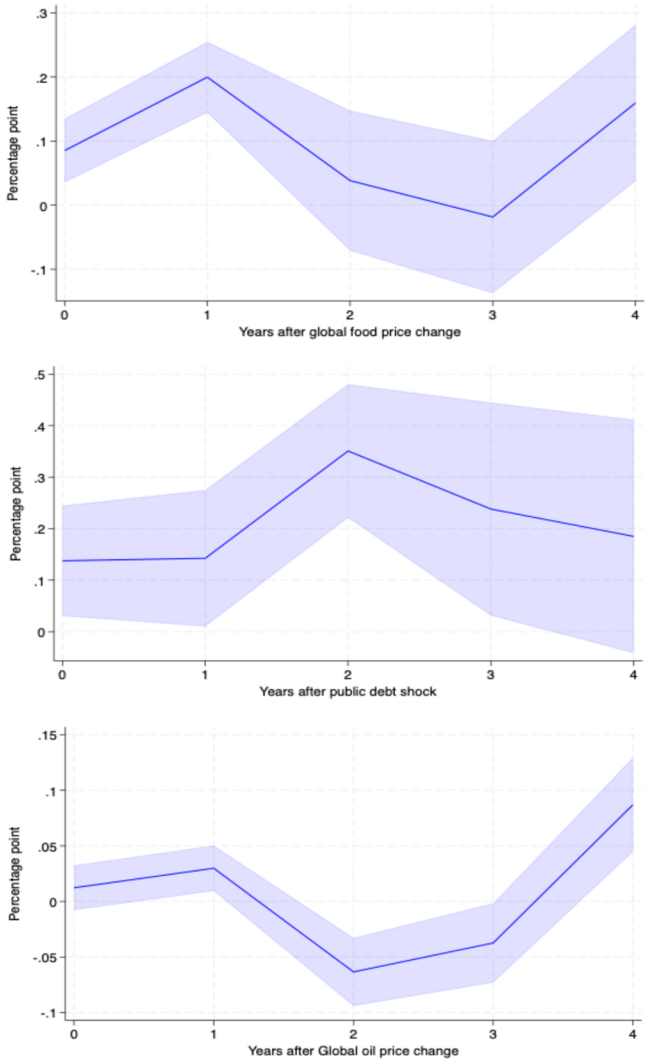
As a further robustness check, we re-estimate our baseline specification using the difference GMM estimator (Arellano and Bond, 1991). While system GMM is preferred due to persistence in our variables, difference GMM provides a useful benchmark by instrumenting the difference equation with lagged levels. The results, reported in Appendix Table A7, are qualitatively similar to our main findings and confirm that the core results are not driven by the choice of estimator.

4.1. Dynamic Impulse Responses: Local Projections

In addition to our GMM estimates, we employ local projections (Jordà, 2005) to capture inflation's response to three critical shocks over time: global food prices, global oil prices, and public debt. This approach is appropriate for our panel context with sparse time observations.

F i g u r e 1

Impulse Responses of Inflation to Structural Shocks



Notes: The figure displays local projection estimates (Jordà, 2005) with country fixed effects. Shaded areas are 90% confidence bands. Food price shocks use a bivariate specification. Oil price and public debt shocks control for money supply, institutions, and the real effective exchange rate; debt shocks also control for food prices. Horizons are in years.

Source: Author's computation.

We regress future inflation at horizons up to four years on current shocks, controlling for lagged inflation, lagged shocks, and additional covariates. All specifications include country fixed effects. The coefficients directly estimate the impulse response at each horizon. The type of controls varies by shock type, according to economic priors. We avoid over-control for the external shock by using a parsimonious bivariate specification for exogenous global food prices. For oil prices and public debt, which we believe mainly transmit through the domestic economic structure, we keep all controls from our baseline GMM specification. Numerical estimates are reported in Appendix Tables A5.

Figure 1 presents the results. The local projections show three distinct transmission channels, each operating on different timelines. Food price shocks struck immediately and with force. Inflation increases by 0.085 percentage points contemporaneously and peaks at 0.200 after one year due to the pure pass-through from world markets to household consumption baskets, given that food accounts for about 30 – 50% of the CPI weights in ECOWAS. After a pause, the effect re-emerges at year four (0.159), consistent with delayed wage-price spirals (Thielens and Vermeiren, 2025). Oil price shocks display a clear cyclical pattern. There is a slight increase in year one (0.030), followed by corrections in years two (–0.063) and three (–0.037), and then a renewed increase in year four (0.087). This reflects the gradual transmission of energy prices through production chains, with initial price effects, adjustments and delayed second-round impacts. The reaction to public debt shocks is the most persistent. Inflation immediately increases by 0.138 percentage points, with cumulative effects peaking at 0.351 after two years and remaining significantly above baseline (0.238) in year three. This persistent, reinforcing pattern is a hallmark of fiscal dominance, in which elevated debt leads to expectations of future monetization, thereby generating inflationary pressure that builds rather than dissipates. For policymakers, this implies that inflation control requires not just managing immediate shocks but also addressing underlying fiscal fundamentals. The results are robust to alternative lag structures and control sets (Appendix Table A6).

Conclusions

This study shows that inflation in ECOWAS is driven by a heterogeneous interplay of external shocks and domestic vulnerabilities, with effects that are highly nonlinear and regime-dependent. The analysis reveals that the pass-through of global food price shocks is not uniform but is amplified by pre-existing economic conditions, more than doubling in high-inflation environments and increasing during recessions. Furthermore, while the WAEMU's institutional framework

mitigates the classic link between public debt and inflation, strong domestic institutional quality serves as a universal stabiliser across all monetary regimes. The experience of other regions facing similar inflation surges confirms that pre-existing vulnerabilities amplify external shocks. Countries with high debt or unanchored expectations experience the same interest rate hike or energy price spike far more acutely than their stronger neighbours, making one-size-fits-all monetary policy inherently destabilising. The lesson is twofold. First, institutional quality is not a luxury but a necessity. Strong governance – transparency, policy credibility, low corruption – acts as a shock absorber everywhere. Second, fiscal rules only work when they are credible. Binding constraints can reshape behaviour, but only if markets and governments believe the rules will be enforced. These findings compel a move beyond one-size-fits-all policy. Effective inflation control requires a risk-based approach that prioritises macroeconomic stability to reduce vulnerability to shocks, alongside an unwavering commitment to strengthening institutions. Without addressing these foundational domestic vulnerabilities, the goals of inflation convergence and sustainable monetary integration in ECOWAS will remain out of reach. The bottom line is simple: monetary integration without institutional convergence is a house built on sand.

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Appendix

Table A1

Descriptive Statistics

Variable				Quantiles				
	Obs.	*Mean*	*Std. Dev.*	*Min.*	*0.25*	*Median*	*0.75*	*Max.*
Inflation	191	5.42	5.86	–3.23	1.11	3.02	8.83	31.26
Money Supply	190	33.00	19.04	0.02	23.4	28.03	38.56	117.19
Food Price	195	113.18	14.37	98.54	101.1	105.39	120.87	147.4
Oil Price	195	77.97	24.66	43.33	54.89	71.61	99.35	112.01
REER	193	778.87	1789.17	1.43	86.19	493.90	580.66	9565.08
GDP growth	195	4.51	4.27	–20.81	3.05	4.92	6.37	21.08
Public Debt	195	49.52	26.02	9.39	31.41	44.39	60.28	154.48
Institutional quality	195	0.00	2.20	–3.49	–1.67	–0.59	1.06	5.55

Note: Variables are shown in index form.

Source: Author's computation.

Table A2

Variable Definitions

Variables	Definition
Inflation	Annual % change in consumer price index (CPI)
Money supply	Broad money growth (annual %)
Global food price	Annual percentage change in the global food price index (2010 = 100), measured in US dollars
Global oil price	Annual percentage change in Brent crude oil price, measured in US dollars per barrel
REER	An index measuring the value of a currency against a weighted average of foreign currencies, adjusted for inflation.
GDP growth	Weighted average of annual percentage growth of real GDP
Public Debt	Total public debt (% of GDP)
Institutional quality	Institutional quality index based on PCA of six indicators (voice and accountability, political stability, government effectiveness, regulatory quality, Rule of law, and control of corruption)

Note: All macroeconomic data are sourced from the World Bank's World Development Indicators (WDI) and the International Monetary Fund (IMF). The institutional quality data is from the World Bank's Worldwide Governance Indicators (Kaufmann et al., 2010).

Source: Author's computation.

Tabyle A3

Pairwise Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Inflation	1.000							
(2) Money supply	–0.318	1.000						
(3) Global food price	0.254	0.076	1.000					
(4) Global oil price	0.079	–0.076	0.718	1.000				
(5) REER	0.176	–0.121	–0.091	–0.055	1.000			
(6) GDP growth	–0.071	–0.107	0.165	0.218	0.108	1.000		
(7) Public debt	0.038	0.735	0.069	–0.229	–0.105	–0.180	1.000	
(8) Institutional quality	–0.158	0.585	0.017	–0.005	–0.291	0.013	0.506	1.000

Source: Author's computation.

T a b l e A4

Principal Component Loadings Of Institutional Quality Index

Component	Eigen value	Proportion explained	Primary variables	Eigen vectors	Correlation coefficients
Institutional quality	4.826	0.804	Control of Corruption	0.432	0.9485
			Government Effectiveness	0.431	0.9468
			Political Stability	0.336	0.7371
			Regulatory Quality	0.407	0.8942
			Rule of Law	0.437	0.9601
			Voice and Accountability	0.398	0.8749

Note: The institutional quality index was derived using principal component analysis, with the first component retained based on the Kaiser criterion (eigenvalue > 1). Correlation coefficients indicate the strength of association between the index and original variables. Bartlett's test (p = 0.000) confirms sufficient intercorrelation, and the KMO value (0.896) suggests sampling adequacy. Scores were normalised using min–max transformation.

Source: Author's computation.

T a b l e A5

Impulse Response Functions: Local Projections

	Global Food Price Shock		Global Oil Price Shock		Public Debt Shock	
Horizon	***IRF***	***90% CI***	***IRF***	***90% CI***	***IRF***	***90% CI***
0	0.085	[0.036, 0.135]	0.012	[–0.008, 0.032]	0.138	[0.030, 0.245]
1	0.200	[0.144, 0.255]	0.030	[0.009, 0.050]	0.142	[0.010, 0.275]
2	0.038	[–0.071, 0.147]	–0.063	[–0.094, –0.033]	0.351	[0.221, 0.481]
3	–0.019	[–0.137, 0.100]	–0.037	[–0.073, –0.002]	0.238	[0.031, 0.445]
4	0.159	[0.037, 0.281]	0.087	[0.045, 0.129]	0.185	[–0.042, 0.412]

Notes: Impulse responses estimated using panel local projections (Jordà, 2005) with country fixed effects. Food price shocks are estimated with a bivariate specification (no controls). Oil price and public debt shocks include one lag of the dependent variable, one lag of the shock, and controls for money supply, institutional quality, and the real effective exchange rate (and food prices for the debt shock). Bold coefficients indicate statistical significance at the 10% level.

Source: Author's computation.

T a b l e A6

Local Projections: Alternative Specifications

Specification	Food Price (h1)	Oil Price (h4)	Public Debt (h2)
Baseline (as above)	0.200***	0.087***	0.351***
With full controls	0.160***	0.087***	0.351***
With 2 lags	0.157***	0.083***	0.338***
Without fixed effects	0.185***	0.079***	0.312***

Notes: Table reports peak horizon coefficients under alternative specifications. All coefficients are significant at 1% level.

Source: Author's computation.

T a b l e A7

Inflation Dynamics and the Role of Global Food Price in ECOWAS Countries

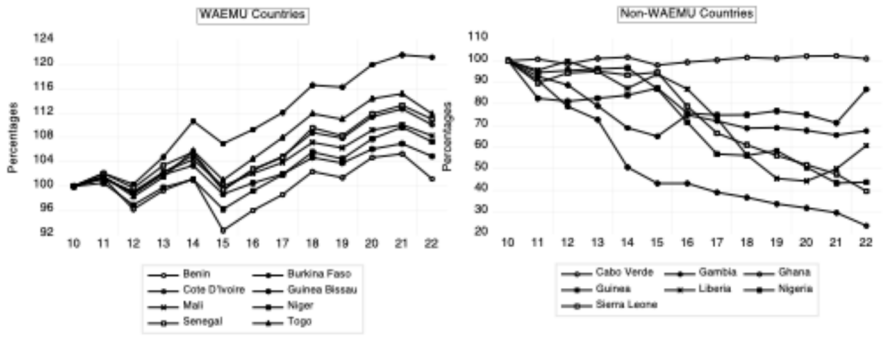
Variables	**(1)**	**(2)**	**(3)**	**(4)**
	Dependent Variable: Inflation (consumer prices)			
$Inflation_{t-1}$	0.334***	1.210***	1.014***	0.719***
	(0.072)	(0.068)	(0.141)	(0.119)
Global food price	0.282***	0.258***	0.243***	0.226***
	(0.033)	(0.072)	(0.077)	(0.033)
Money supply		0.121	0.474***	0.247*
		(0.226)	(0.144)	(0.133)
Public debt		0.029***	0.096***	0.049**
		(0.008)	(0.018)	(0.022)
Institutional quality			–1.720***	–1.028*
			(0.358)	(0.525)
GDP growth				0.292
				(0.202)
REER				0.392***
				(0.067)
Constant	1.586**	–2.245***	–4.655***	–2.923
	(0.747)	(0.377)	(1.153)	(2.118)
AR1	0.009**	0.003**	0.003**	0.003**
AR2	0.464	0.097	0.373	0.377
Hansen J statistic	5.749	11.324	6.489	3.723
Chi-sq P-value	0.569	0.079	0.371	0.293
Observations	176	172	172	171
Countries	15	15	15	15

Notes: Estimates from the two-step difference GMM estimator (Arellano & Bond, 1991) with collapsed instruments (Roodman, 2009). GMM-style instruments use lagged levels of inflation and GDP growth; IV-style instruments include global food prices, public debt, institutional quality, REER, and year dummies. Diagnostic tests: AR(1) and AR(2) for serial correlation; Hansen J for instrument validity. Robust standard errors in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All specifications include country fixed effects and year dummies.

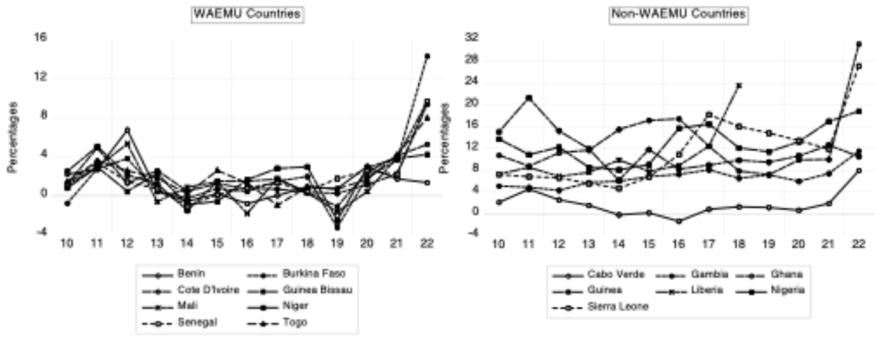
Source: Author's computation.

A p p e n d i x A8
Macroeconomic Trends in the ECOWAS Region

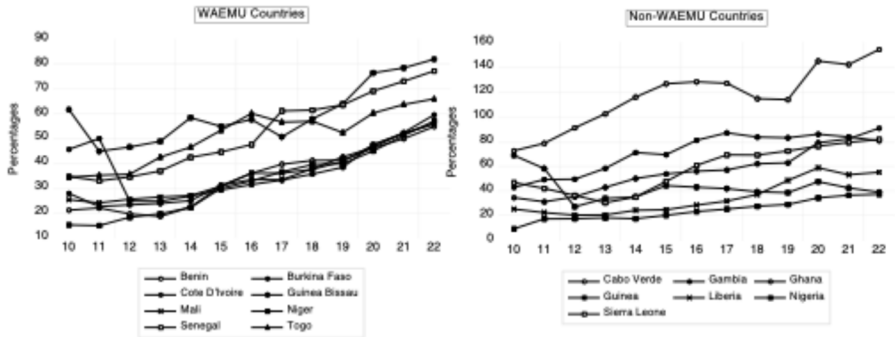
F i g u r e 1
Nominal Exchange Rate Trends in the ECOWAS Region



F i g u r e 2
Inflation Trends in the ECOWAS Region



F i g u r e 3
Public Debt Trends in the ECOWAS Region



Source: Author's computation.