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TRADE LIBERALIZATION AND ECONOMIC GROWTH IN CAMEROON: EVIDENCE FROM ARDL BOUNDS TESTING (1980-2024)

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ABSTRACT: This study examines the dynamic relationship between trade openness and economic growth over the period 1980-2024 using an Autoregressive Distributed Lag (ARDL) modeling framework. The control variables for the study include Foreign Direct Investment (FDI) and Exchange. Descriptive statistics reveal considerable volatility in economic growth, alongside moderate fluctuations in trade openness and exchange rate movements, while FDI inflows remain relatively low and unstable. Correlation results indicate positive and statistically significant associations between economic growth and trade (r = 0.5912), FDI (r = 0.4089), and exchange rate (r = 0.3865), providing preliminary evidence of growth-enhancing external sector linkages. Unit root tests confirm a mixed order of integration, with GDP growth integrated at level and other variables at first difference, thus justifying the ARDL bounds testing approach. The bounds test strongly confirms the existence of cointegration, indicating a stable long-run equilibrium relationship among the variables. Long-run estimates reveal that trade openness and exchange rate exert positive and statistically significant effects on economic growth, while FDI shows a positive but weakly significant impact. In the short run, FDI exhibits a negative and significant effect, reflecting adjustment costs and structural constraints.

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The error correction term is negative and highly significant, indicating a rapid speed of adjustment toward long-run equilibrium. Diagnostic tests confirm the robustness of the model, showing no evidence of serial correlation, heteroskedasticity, or non-normality. The findings emphasize the importance of trade integration and exchange rate stability in promoting sustained economic growth, while highlighting the need to strengthen domestic absorptive capacity to fully benefit from foreign investment.

Keywords: *Economic growth; Trade openness; Foreign direct investment; Exchange rate; ARDL; Cointegration; Macroeconomic dynamics.*

Introduction

Trade liberalization has become a key policy instrument for promoting economic growth and global integration, particularly in developing economies (Krugman *et al*., 2018; Feenstra, 2015; World Trade Organization [WTO], 2019). It involves the reduction of trade barriers such as tariffs and quotas to improve resource allocation and enhance international competitiveness (Salvatore, 2019; International Monetary Fund [IMF], 2001). The theoretical foundation is rooted in classical trade theory, where Adam Smith (1776) and David Ricardo (1817) argue that specialization and comparative advantage drive productivity and welfare gains. Modern trade theories further emphasize economies of scale, innovation, and firm-level efficiency as channels through which openness enhances growth (Helpman and Krugman, 1985; Melitz, 2003; Baldwin, 2016).

Empirical evidence generally supports a positive relationship between trade openness and economic growth. Studies such as Sachs and Warner (1995) and Frankel and Romer (1999) show that more open economies tend to grow faster. Subsequent research confirms that trade promotes productivity, investment, and technology transfer (Edwards, 1998; Dollar and Kraay, 2004; Wacziarg and Welch, 2008; Feyrer, 2019). However, the benefits of trade liberalization are not automatic and depend on structural and institutional conditions (Rodríguez and Rodrik, 2000; Rodrik, 2008; Stiglitz, 2017). Short-run adjustment costs and structural constraints may limit its effectiveness, particularly in developing economies (Autor *et al*., 2016; McMillan *et al*., 2014).

In Sub-Saharan Africa, trade liberalization was widely implemented under Structural Adjustment Programs, aiming to improve macroeconomic stability and integrate economies into global markets (Sachs and Warner, 1995; Edwards, 1998; UNCTAD, 2023). While trade volumes increased, growth outcomes remain mixed due to persistent structural challenges such as weak industrialization and export concentration (Fosu, 2013; Rodrik, 2017; Calderón and Servén, 2010).

Cameroon reflects these dynamics. Following the 1980s crisis, the country implemented trade and macroeconomic reforms under IMF and World Bank programs (IMF, 2001; World Bank, 2023). Despite increased openness, the economy remains dependent on primary commodities, limiting the growth benefits of trade (UNCTAD, 2022; World Bank, 2023). Moreover, key macroeconomic factors such as foreign direct investment (FDI) and exchange rate dynamics influence the trade–growth relationship. FDI contributes to capital accumulation and technology transfer, although its impact depends on domestic capacity (Borensztein *et al*., 1998; Asongu and Odhiambo, 2020). Exchange rate movements also affect competitiveness and external balance (Baye and Khan, 2007).

This study therefore examines the short-run and long-run effects of trade liberalization on economic growth in Cameroon (1980-2024) using the ARDL framework (Pesaran *et al*., 2001; Narayan, 2005).

Statement of The Problem

Despite sustained trade liberalization efforts, Cameroon's economic growth remains modest and volatile. Since the mid-1980s reforms, policies aimed at improving openness and macroeconomic stability have yielded inconsistent growth outcomes (IMF, 2001; World Bank, 2023). Growth performance continues to be influenced by external shocks and commodity price fluctuations, reflecting structural weaknesses in the economy (Fosu, 2013; Rodrik, 2017).

A major constraint is the country's reliance on primary commodity exports, which limits diversification and reduces the potential gains from trade (UNCTAD, 2022; World Bank, 2023). As a result, increased trade openness has not consistently translated into sustained economic growth (McMillan *et al*., 2014). Empirical evidence for Cameroon remains inconclusive, with some studies reporting positive

effects of trade on growth, while others highlight weak or insignificant relationships due to structural rigidities and low industrial capacity (Amin, 2002; Bakari, 2017; Njikam, 2017).

In addition, the role of complementary macroeconomic variables complicates the trade growth nexus. While FDI is expected to enhance growth, its impact in Cameroon is constrained by institutional and absorptive capacity limitations (Borensztein *et al*., 1998; Asongu and Odhiambo, 2020). Similarly, exchange rate fluctuations, particularly following the 1994 CFA franc devaluation, have produced mixed effects on competitiveness and growth (Baye and Khan, 2007).

Given these issues, there remains a gap in understanding how trade liberalization interacts with FDI and exchange rate dynamics to influence economic growth in both the short run and long run. This study addresses this gap by providing empirical evidence for Cameroon over the period 1980-2024.

Justification of the Study

This study is justified on both empirical and policy grounds. Empirically, despite extensive literature on trade liberalization and growth, evidence for Cameroon remains limited and inconclusive, particularly with respect to the interaction between trade, FDI, and exchange rate dynamics over a long time horizon. By employing the ARDL framework, this study provides robust country-specific evidence that captures both short-run adjustments and long-run equilibrium relationships. From a policy perspective, Cameroon continues to pursue trade and macroeconomic reforms under regional and global integration frameworks, yet growth outcomes remain volatile. Understanding the channels through which trade liberalization affects growth is therefore essential for designing effective policies. The inclusion of FDI and exchange rate dynamics further enhances the relevance of the study by reflecting the broader macroeconomic environment within which trade policies operate.

Literature Review

Theoretical Literature

The theoretical relationship between trade liberalization and economic growth is grounded in classical and modern economic theories. Classical trade theory,

particularly the principle of comparative advantage, posits that countries benefit from specialization and international trade, leading to increased efficiency and output (Ricardo, 1817; Krugman *et al*., 2018). Neoclassical growth models further emphasize capital accumulation and resource allocation efficiency as key drivers of growth in open economies (Solow, 1956).

Endogenous growth theory extends this framework by highlighting the role of trade openness in facilitating technological diffusion, innovation, and human capital development (Romer, 1990; Grossman and Helpman, 1991). Trade liberalization enhances competition and encourages firms to adopt more efficient production techniques, thereby increasing productivity (Melitz, 2003). However, structuralist perspectives argue that the benefits of trade openness depend on domestic conditions such as institutional quality, infrastructure, and industrial capacity (Rodrik, 2008).

Empirical Literature

Empirical studies on the relationship between trade liberalization and economic growth have evolved considerably, with recent evidence providing more nuanced and context-specific findings. Early cross-country analyses established a strong positive association between trade openness and economic growth, suggesting that more open economies tend to grow faster due to improved resource allocation and access to larger markets (Sachs and Warner, 1995; Frankel and Romer, 1999). Subsequent studies employing more rigorous econometric techniques have largely confirmed these findings, emphasizing that trade liberalization enhances growth through efficiency gains, increased investment, and technological diffusion (Edwards, 1998; Wacziarg and Welch, 2008). More recent contributions further highlight that trade openness promotes innovation and productivity growth, particularly when supported by sound macroeconomic and institutional frameworks (Aghion *et al*., 2021; Rodrik, 2018).

Recent empirical studies using time-series and panel methodologies continue to validate the long-run growth effects of trade openness, especially in developing economies. For instance, Shahbaz *et al*. (2017) find that trade openness significantly promotes economic growth through financial development channels, while Uddin *et*

al. (2020) confirm the existence of a stable long-run relationship between trade openness and economic growth using the ARDL bounds testing approach. Similarly, Nguyen *et al*. (2019) demonstrate that trade openness enhances economic growth when complemented by strong institutional quality and human capital development. Global evidence also indicates that integration into global value chains has become a key mechanism through which trade liberalization drives long-term economic performance (UNCTAD, 2022; World Bank, 2020).

However, the empirical literature also shows that the growth effects of trade liberalization are not automatic but depend on complementary macroeconomic factors. Foreign direct investment (FDI) has been widely identified as an important transmission channel through which trade openness affects growth by facilitating capital accumulation, knowledge transfer, and productivity spillovers (Borensztein *et al*., 1998; Iamsiraroj, 2016). More recent studies confirm that the interaction between trade openness and FDI significantly enhances economic growth, particularly in countries with sufficient absorptive capacity (Pegkas, 2015; Nguyen *et al*., 2019). Exchange rate dynamics also play a crucial role, as a stable and competitive exchange rate supports export performance and macroeconomic stability (Rodrik, 2008; Habib *et al*., 2017). Conversely, exchange rate volatility has been found to weaken the positive impact of trade openness by increasing uncertainty and discouraging investment (Asteriou *et al*., 2016).

In the African context, empirical findings remain mixed but increasingly refined. Fosu (2013) shows that trade liberalization has contributed to economic growth in Sub-Saharan Africa, although the magnitude of the effect varies significantly across countries due to structural constraints. Similarly, Osabuohien *et al*. (2019) emphasize that institutional quality, infrastructure, and financial development play critical roles in mediating the trade–growth relationship in Africa. More recent studies further confirm that while trade openness can promote growth, its effectiveness depends on macroeconomic stability and policy coherence (Osuma and Nzimande, 2024).

For Cameroon, empirical evidence remains limited and somewhat inconclusive. Earlier studies suggest that trade openness has a positive but relatively weak impact on economic growth due to structural rigidities, limited industrialization, and heavy

dependence on primary commodity exports (Amin, 2002; Njikam, 2017). Recent reports also indicate that although trade liberalization has increased trade volumes, its contribution to sustained economic growth is constrained by weak economic diversification and vulnerability to external shocks (UNCTAD, 2022; World Bank, 2023). These inconsistencies highlight the need for updated and robust empirical analysis that incorporates key macroeconomic variables such as FDI and exchange rate dynamics. Accordingly, this study contributes to the literature by employing the ARDL bounds testing approach to examine both the short-run and long-run effects of trade liberalization on economic growth in Cameroon over the period 1980-2024.

Theoretical Framework

This study is grounded in the endogenous growth theory, which posits that long-run economic growth is driven by internal factors such as human capital accumulation, innovation, and knowledge spillovers rather than exogenous forces (Romer, 1990; Lucas, 1988). Within this framework, trade liberalization (trade openness) enhances economic performance by expanding market size, promoting competition, and facilitating access to advanced technologies, thereby improving productivity and growth outcomes (Grossman and Helpman, 1991; Melitz, 2003). Foreign direct investment (FDI) is incorporated as a key transmission channel through which trade openness influences growth, as it contributes to capital accumulation, technological diffusion, and managerial efficiency (Borensztein *et al*., 1998). However, the growth-enhancing effect of FDI depends on the host country's absorptive capacity, including human capital development and financial system efficiency (Alfaro *et al*., 2004; Iamsiraroj, 2016). In this study, GDP growth is treated as the dependent variable reflecting the combined influence of trade openness, FDI, and structural economic conditions.

In addition, the study draws on open economy macroeconomic theory, which emphasizes the role of exchange rate dynamics in shaping trade competitiveness and macroeconomic stability (Rodrik, 2008). A stable and competitive exchange rate promotes export performance and supports economic growth, whereas excessive volatility can deter investment and disrupt trade flows (Fischer, 1993; Habib *et al*., 2017). The inclusion of a structural break dummy (1994) captures the effects of the

CFA franc devaluation, a major macroeconomic adjustment that significantly influenced Cameroon's external competitiveness and growth trajectory (Devarajan *et al*., 1999). The interaction between trade openness, FDI, exchange rate, and structural shocks provides a comprehensive framework for analyzing both short-run dynamics and long-run growth relationships, consistent with modern empirical growth literature.

METHODOLOGY

Research Design

This study employs a quantitative and explanatory research design based on time-series econometric techniques to examine the determinants of economic growth. This approach is appropriate as it allows for the analysis of both short-run dynamics and long-run equilibrium relationships among macroeconomic variables (Wooldridge, 2019; Stock and Watson, 2020). Specifically, the study adopts the Autoregressive Distributed Lag (ARDL) modelling framework, which is widely used in empirical macroeconomic analysis due to its flexibility in handling variables integrated of different orders and its suitability for small sample sizes (Pesaran *et al*., 2001; Asteriou and Hall, 2016).

Data and Variables

The study utilizes annual time-series data covering the period 1980-2024, yielding a total of 45 observations. The dependent variable is GDP growth, which serves as a proxy for economic performance, consistent with macroeconomic literature (Barro, 1991). The independent variables include trade openness (Trade), foreign direct investment (FDI), and exchange rate (Exchange Rate), all of which are theoretically and empirically linked to economic growth (Grossman and Helpman, 1991; Borensztein *et al*., 1998; Fischer, 1993). In addition, a dummy variable (dummy94) is incorporated to capture the structural break associated with the 1994 CFA franc devaluation, a major macroeconomic policy shifts with potential growth implications (Devarajan *et al*., 1999).

Model Specification

To empirically examine the relationship between the variables, the study specifies the following functional model:

$$GDP\_growth_t = f(Trade_t, FDI_t, Exchange\ Rate_t, Dummy94_t)$$

This is econometrically expressed in an ARDL framework as:

$$\Delta GDP\_growth_t = \alpha_0 + \sum_{i=1}^{p} \beta_i \Delta GDP\_growth_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta Trade_{t-j} + \sum_{k=0}^{r} \delta_k \Delta FDI_{t-K} + \sum_{l=0}^{s} \emptyset_l \Delta ExchangeRate_{t-l} + \sum_{m=0}^{u} \omega_m \Delta Dummy94_{t-m} + \lambda ECT_{t-1} + \epsilon_t$$

This relationship is estimated within an ARDL framework, which integrates both short-run and long-run dynamics in a single reduced-form equation (Pesaran *et al*., 2001). The inclusion of lagged variables helps capture dynamic adjustments and mitigate issues of omitted variable bias (Gujarati and Porter, 2009). The model is further reparameterized into an error correction model (ECM) to estimate the speed of adjustment toward long-run equilibrium following short-run shocks, consistent with the theoretical framework of cointegration (Engle and Granger, 1987).

Estimation Technique

The empirical analysis proceeds in several stages. First, descriptive statistics and correlation analysis are conducted to summarize the distribution and linear associations among variables (Gujarati and Porter, 2009). Second, the Augmented Dickey-Fuller (ADF) unit root test is applied to determine the stationarity properties of the variables and their order of integration (Dickey and Fuller, 1979). Given the presence of a mixture of I(0) and I(1) variables, the study employs the ARDL bounds testing approach to cointegration to test for the existence of a long-run relationship (Pesaran *et al*., 2001). The optimal lag structure is selected using the Akaike Information Criterion (AIC), which balances model fit and parsimony (Akaike, 1974).

Upon establishing cointegration, the ARDL model is estimated to obtain both long-run coefficients and short-run dynamics, with the latter captured through the ECM representation. The coefficient of the error correction term (ECT) is expected to be negative and statistically significant, indicating convergence toward long-run equilibrium (Narayan, 2005; Kripfganz and Schneider, 2020).

Diagnostic and Stability Tests

To ensure the robustness and validity of the estimated model, several post-estimation diagnostic tests are conducted. The Breusch-Godfrey LM test is used to detect serial correlation in the residuals (Breusch, 1978; Godfrey, 1978), while the Breusch-Pagan and White tests are employed to examine the presence of heteroskedasticity (Breusch and Pagan, 1979; White, 1980). The Jarque-Bera test is used to assess the normality of the residuals (Jarque and Bera, 1987). These tests ensure that the classical linear regression assumptions are satisfied, thereby enhancing the reliability of statistical inference (Greene, 2018). Additionally, goodness-of-fit measures such as the R-squared and adjusted R-squared are used to evaluate the explanatory power of the model (Stock and Watson, 2020).

Results of Findings

Table 1 presents the summary statistics of the variables over the study period (n = 45). GDP growth records a low mean value (0.254) with a relatively high standard deviation (4.27), indicating substantial volatility in economic performance. The wide range, from -10.53 to 13.04, reflects periods of both contraction and expansion, suggesting an unstable growth pattern over time. Trade openness has a mean of 44.70 with moderate dispersion (standard deviation = 8.72), indicating a relatively high but fluctuating level of integration into international markets. The range (26.16-65.02) suggests variability in trade intensity, likely driven by external shocks and policy shifts.

FDI shows a low average inflow (mean = 1.29) and moderate variability (standard deviation = 1.15), with a negative minimum value (-0.92) indicating periods of disinvestment. This suggests that foreign investment inflows are inconsistent and potentially sensitive to macroeconomic and institutional conditions. The exchange

rate exhibits a high mean (484.99) and considerable variability (standard deviation = 132.78), with values ranging from 211.28 to 732.40. This indicates significant currency fluctuations over time, reflecting episodes of depreciation and macroeconomic instability.

Table 1: Summary of Descriptive Statistics (n=45)

Variable	Mean	Std. Dev.	Min	Max
GDP_growth	.2537327	4.27029	-10.53432	13.04342
Trade	44.70032	8.724853	26.15884	65.02459
FDI	1.288805	1.152178	-.9162491	4.068985
Exchane_Rate	484.9972	132.7758	211.2796	732.3977

Source: Author, (2026)

Table 2 presents the pairwise correlation results among the variables, providing preliminary insights into their linear associations. GDP growth is positively and significantly correlated with trade ($r = 0.5912$, $p < 0.01$), FDI ($r = 0.4089$, $p < 0.01$), and exchange rate ($r = 0.3865$, $p < 0.01$), suggesting that increases in these variables are associated with improvements in economic performance. The strong correlation between trade and GDP growth supports the theoretical proposition that trade openness enhances growth through efficiency gains and market expansion, as argued by Grossman and Helpman (1991). Similarly, the positive association between FDI and growth is consistent with the view that foreign capital inflows contribute to technology transfer and productivity improvements (Borensztein *et al*., 1998). However, the correlation between trade and exchange rate is weak and statistically insignificant ($r = -0.0241$, $p > 0.05$), indicating no meaningful linear relationship between these variables over the period. The positive and significant correlation between FDI and exchange rate ($r = 0.3214$, $p < 0.05$) suggests that exchange rate movements may influence foreign investment decisions, in line with Blonigen, 2005; Goldberg and Kolstad, 1995. While the correlations indicate meaningful associations, they do not imply causality, and the relatively moderate coefficients suggest no immediate concern for severe multicollinearity, consistent with the arguments of Gujarati and Porter (2009).

Table 2: Pairwise Correlation Analyses

	(1)	(2)	(3)	(4)
GDP_growth	1.0000			
Trade	0.5912	1.0000		
	0.0000			
FDI	0.4089	0.3178	1.0000	
	0.0053	0.0334		
Exchane_Rate	0.3865	-0.0241	0.3214	1.0000
	0.0087	0.8750	0.0314	

Source: Author, (2026)

Table 3 presents the lag length selection results based on multiple information criteria. The findings consistently indicate that lag 1 is the optimal specification, as it minimizes the Akaike Information Criterion (AIC = 24.5977), Hannan-Quinn Information Criterion (HQIC = 24.9021), Schwarz Bayesian Information Criterion (SBIC = 25.4336), and Final Prediction Error (FPE = 568,664), while also showing a statistically significant likelihood ratio (LR) test ($p < 0.01$). Although higher lag orders slightly improve the log-likelihood values, they are penalized by the information criteria for over-parameterization, making them less efficient. This selection is consistent with standard econometric practice, which emphasizes parsimony to avoid loss of degrees of freedom and overfitting, particularly in small samples (Akaike, 1974). The preference for lower lag structures is further supported by the Bayesian framework, which imposes stricter penalties on model complexity (Schwarz, 1978), as well as by the Hannan-Quinn criterion, known for its consistency in large samples (Hannan and Quinn, 1979). Moreover, the use of multiple criteria enhances robustness in model selection, as recommended in time-series literature (Lütkepohl, 2005). The choice of lag 1 ensures a balance between model fit and parsimony, thereby providing a reliable foundation for subsequent ARDL estimation.

Table 3: Selection-order criteria

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-540.252				4.0e+06	26.5489	26.6098	26.7161
1	-484.252	112*	16	0.000	568664*	24.5977*	24.9021*	25.4336*
2	-473.017	22.471	16	0.129	734996	24.8301	25.378	26.3347
3	-460.408	25.218	16	0.066	922198	24.9955	25.7869	27.1688
4	-448.173	24.47	16	0.080	1.3e+06	25.1791	26.2141	28.0212

Source: Author, (2026)

Table 4 presents the results of the unit root tests, providing evidence on the stationarity properties of the variables. The findings reveal a mixed order of integration among the series, thereby justifying the use of the ARDL modeling approach. Specifically, GDP growth is found to be stationary at level, as its test statistic (-2.788) is close to the 5% critical value and significant at the 10% level ($p = 0.060$), indicating that it is integrated of order zero, I(0). In contrast, Trade, FDI, and Exchange Rate are all non-stationary at levels but become stationary after first differencing, as their test statistics exceed the critical values at conventional significance levels ($p < 0.01$), implying they are integrated of order one, I(1). This combination of I(0) and I(1) variables satisfies the key requirement for applying the ARDL bounds testing framework, which does not require all variables to be integrated of the same order, unlike traditional cointegration techniques (Pesaran *et al*., 2001). The results are consistent with standard time series econometric theory, which emphasizes the need to establish stationarity to avoid spurious regression outcomes (Dickey and Fuller, 1979). Moreover, the presence of mixed integration orders further supports the flexibility and appropriateness of the ARDL approach in small sample contexts (Narayan, 2005). The unit root results confirm that none of the variables is integrated of order two, thereby validating the suitability of the empirical strategy adopted in this study.

Table 4: Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variable	Test Statistic	1% Critical	5% Critical	10% Critical	p-value	Order of Integration
GDP_growth	-2.788	-3.628	-2.950	-2.608	0.0600	I(0)*
Trade	-5.552	-3.634	-2.952	-2.610	0.0000	I(1)
FDI	-7.497	-3.634	-2.952	-2.610	0.0000	I(1)
Exchange Rate	-4.799	-3.634	-2.952	-2.610	0.0001	I(1)

Source: Author, (2026)

The results presented in Table 5 provide strong evidence of a stable long-run relationship between economic growth, trade openness, foreign direct investment (FDI), and exchange rate dynamics in Cameroon. The ARDL bounds test confirms cointegration in both model specifications, as the computed F-statistics (22.949 and 13.562) exceed the upper critical bounds. This indicates that the variables move together over time despite short-run fluctuations.

The error correction term (ECT) is negative and highly statistically significant in both models (-0.790 and -0.711), confirming the existence of a long-run equilibrium relationship. The magnitude of the ECT suggests that approximately 71% to 79% of short-run deviations from equilibrium are corrected within one period, indicating a rapid adjustment process toward long-run stability.

In the long run, trade openness exhibits a positive and statistically significant effect on economic growth in both models (0.2579 and 0.2724 at the 1% level). This implies that increased integration into international markets contributes significantly to economic performance. Similarly, FDI shows a positive effect on growth, although it is only weakly significant (10% level), suggesting a less robust but still meaningful contribution to economic activity.

The exchange rate also has a positive and statistically significant effect on economic growth, indicating that exchange rate movements play an important role in shaping economic outcomes. In Model 2, the inclusion of the 1994 dummy variable yields a

positive but statistically insignificant long-run coefficient, suggesting that while the structural break does not significantly alter long-run relationships, it may still capture important policy shifts.

In the short run, FDI has a negative and statistically significant impact on economic growth in both models, indicating the presence of short-term adjustment costs associated with foreign investment. The short-run effect of the 1994 dummy variable is positive and weakly significant, suggesting that the CFA franc devaluation may have generated temporary improvements in economic performance.

The diagnostic tests confirm the robustness of the model. The Breusch-Godfrey test indicates no serial correlation, while the Breusch-Pagan and White tests confirm the absence of heteroskedasticity. These results suggest that the model is well specified and that the estimated coefficients are reliable. The relatively high R-squared values (0.7145 and 0.7470) further indicate strong explanatory power.

Table 5: ARDL Bounds Test and Long-Run Estimates

Variables	**Model 1: Without Dummy**	**Model 2: With Dummy (1994)**
Adjustment (ECT)	-0.790***	-0.711***
	(0.0918)	(0.0970)
Long-Run Coefficients		
Trade	0.2579***	0.2724***
	(0.0418)	(0.0462)
FDI	0.792*	0.9437*
	(0.4593)	(0.4990)
Exchange Rate	0.0157***	0.0113*
	(0.0035)	(0.0059)
Dummy 1994	-	1.4395
	-	(1.5644)
Short-Run Dynamics		
ΔFDI	-0.6739**	-0.6790**

	(0.2620)	(0.2537)
ΔDummy 1994	-	3.7008*
	-	(1.9491)
Constant	-15.9687***	-14.2821***
	(2.2343)	(2.3351)
Model Diagnostics		
Observations	43	43
R-squared	0.7145	0.7470
Adj. R-squared	0.6760	0.6965
Root MSE	1.7501	1.6938
Decision based on Pesaran, Shin, and Smith (2001) bounds test		
F-statistic	22.949***	13.562***
t-statistic	-8.608***	-7.325***
Decision	Cointegration	Cointegration
Breusch-Godfrey LM test for autocorrelation	chi2 0.428 Prob > chi2 0.5128	chi2 1.247 Prob > chi2 0.2642
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity Ho: Constant variance Variables: fitted values of D.GDP_growth	chi2(1) = 0.22 Prob > chi2 = 0.6402	chi2(1) = 0.08 Prob > chi2 = 0.7745
White's test for Ho: homoskedasticity against Ha: unrestricted heteroskedasticity	chi2(20) = 27.31 Prob > chi2 = 0.1267	chi2(42) = 43.00 Prob > chi2 = 0.4282

Source: Author, (2026) *** p < 0.01, ** p < 0.05, * p < 0.10

Discussion of Findings

The confirmation of a long-run relationship among economic growth, trade openness, FDI, and exchange rate dynamics is consistent with the theoretical and empirical literature on open-economy growth models. The ARDL bounds test results align with the framework developed by Pesaran *et al*., (2001), which demonstrates that macroeconomic variables can exhibit stable long-run relationships even when integrated at different orders. The significant and negative error correction term further supports the existence of a stable equilibrium, consistent with the cointegration theory of Engle and Granger (1987). The strong positive impact of trade openness on economic growth supports the trade-led growth hypothesis, which posits that openness enhances productivity through specialization, economies of scale, and access to global markets (Grossman and Helpman, 1991; Krugman *et al*., 2018). This finding is also consistent with empirical evidence showing that countries with higher levels of trade integration tend to experience faster economic growth due to improved resource allocation and technological diffusion (Frankel and Romer, 1999; Wacziarg and Welch, 2008). However, the literature also emphasizes that the benefits of trade depend on domestic structural conditions, including institutional quality and industrial capacity (Rodrik, 2008; Stiglitz, 2017).

The positive but weakly significant effect of FDI in the long run suggests that while foreign investment contributes to economic growth, its impact is conditional. This result aligns with the findings of Borensztein *et al*., (1998), who argue that FDI promotes growth primarily when the host country has sufficient human capital to absorb new technologies. Similarly, Alfaro *et al*. (2004) show that the growth effects of FDI depend on the development of local financial markets. The negative short-run effect of FDI observed in this study is also consistent with the literature, which highlights that foreign investment may initially generate adjustment costs, including market disruptions and resource reallocation, before yielding long-term benefits. The positive and significant impact of the exchange rate on economic growth is consistent with open-economy macroeconomic theory, which emphasizes the role of exchange rate competitiveness in promoting exports and economic activity (Fischer, 1993; Rodrik, 2008). A competitive exchange rate can enhance export performance

and stimulate domestic production, particularly in developing economies. However, the literature also notes that excessive exchange rate volatility can have adverse effects by increasing uncertainty and discouraging investment (Aghion *et al*., 2009). The short-run positive effect of the 1994 structural break suggests that the CFA franc devaluation may have temporarily improved Cameroon's external competitiveness. This finding is consistent with studies on exchange rate adjustments in developing economies, which show that currency devaluation can boost exports and growth in the short term, although long-run outcomes depend on broader structural reforms (Devarajanet *al*., 1999).

Finally, the diagnostic test results confirm that the model satisfies the classical linear regression assumptions, reinforcing the reliability of the findings. This is consistent with econometric literature, which emphasizes the importance of diagnostic testing in ensuring valid inference (Gujarati and Porter, 2009; Greene, 2018). The results suggest that trade openness and exchange rate dynamics are key drivers of economic growth in Cameroon, while FDI plays a supportive but conditional role. These findings highlight the importance of complementary policies aimed at strengthening institutional capacity, improving financial systems, and enhancing human capital to fully realize the benefits of globalization.

Conclusion

This study provides robust evidence of a stable long-run relationship between economic growth, trade, foreign direct investment, and exchange rate dynamics, with significant short-run adjustments indicating rapid convergence to equilibrium. The findings reveal that trade openness and exchange rate movements are consistent and significant drivers of economic growth, while foreign direct investment exerts a positive but conditional effect, reflecting underlying structural and absorptive capacity constraints. The inclusion of a structural break improves the robustness of the model without altering the core results, underscoring the stability of the estimated relationships. These results suggest that sustained economic growth depends on policies that promote trade integration, ensure exchange rate stability, and strengthen institutional and financial systems to better harness the benefits of foreign investment. Nonetheless, the study is limited by data constraints and the use of

aggregate variables, and future research may extend the analysis by incorporating sectoral data, institutional quality measures, or nonlinear dynamics to provide deeper insights.

Contribution of the Study

This study makes several important contributions to the existing literature on economic growth and macroeconomic dynamics. First, it employs the ARDL bounds testing approach to simultaneously capture both short-run and long-run relationships among trade, foreign direct investment, exchange rate, and economic growth, providing a more comprehensive understanding of their interactions. Second, the study incorporates a structural break (dummy for 1994), which allows for the examination of regime shifts and enhances the robustness of the empirical analysis an aspect often overlooked in similar studies on developing economies. Third, by focusing on a country-specific context over an extended time period, the study provides updated and context-relevant empirical evidence that reflects recent economic realities. The combination of methodological rigor, inclusion of structural dynamics, and updated data distinguishes this study from previous works and strengthens its empirical relevance.

Policy Recommendations

The findings of this study carry important policy implications for sustaining economic growth. Given the strong and consistent positive impact of trade on growth, policymakers should prioritize trade liberalization, diversification of exports, and reduction of trade barriers to enhance international competitiveness. The positive role of the exchange rate suggests the need for effective exchange rate management policies that maintain stability while supporting export performance. Although foreign direct investment contributes positively in the long run, its relatively weak significance indicates the need to improve the domestic environment through stronger institutions, better financial systems, and enhanced human capital to maximize its benefits. Additionally, the short-run adjustment dynamics highlight the importance of maintaining macroeconomic stability to mitigate transitional shocks. A

coordinated policy framework that promotes openness, stability, and institutional development is essential for achieving sustained economic growth.

Limitations of the Study

Despite its contributions, this study is subject to certain limitations. The analysis relies on aggregate macroeconomic data, which may mask sector-specific dynamics and heterogeneous effects across different industries. Furthermore, the study does not explicitly account for other potentially important determinants of economic growth, such as institutional quality, political stability, and technological innovation, which may influence the observed relationships. The use of a single structural break may also not fully capture multiple regime shifts that could have occurred over the study period. In addition, the relatively small sample size, typical of time-series studies, may limit the generalizability of the findings. Future research could address these limitations by incorporating disaggregated data, additional control variables, multiple structural breaks, or nonlinear modeling approaches to provide deeper and more nuanced insights.

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