Financial Liberalization and Algerian Economic Growth:

An ARDL Analysis (1990–2024).

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Abstract:

This study analyzes the impact of financial liberalisation on Algeria's economic growth from 1990–2024 using the ARDL model. Results show that inflation is the only significant long-run determinant of GDP growth. A 1% increase in inflation raises GDP by 2.99%, reflecting demand effects from public spending. In the short run, money supply, private credit, and trade openness affect growth with a one-year lag. The Error Correction Term confirms a stable long-run relationship with a 40.76% adjustment speed. Granger causality reveals a one-way link from inflation to GDP. The study recommends improving credit allocation toward productive sectors to achieve sustainable and diversified growth.

Keywords: Financial liberalization; Economic growth; ARDL model; Granger causality; Algeria**.**

JEL Classification Codes: C22, E44, F43, O16, O55.

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1. Introduction :

Economic growth is a central objective of macroeconomic policy, as it reflects an economy's capacity to expand the production of goods and services over time and improve living standards. Among the key determinants of growth, financial development and financial liberalization have attracted significant attention in both theoretical and empirical literature. A well-functioning financial system is expected to mobilize savings, allocate resources efficiently, facilitate investment, and ultimately support sustainable economic growth.

Financial liberalization refers to the reduction of government intervention in financial markets through the deregulation of interest rates, credit allocation, and capital flows. Its main objective is to enhance financial efficiency and strengthen the contribution of the financial sector to economic performance. However, its effects remain theoretically ambiguous, as liberalization may also increase exposure to financial instability if not properly regulated.

In Algeria, financial sector reforms began in the early 1990s as part of broader structural adjustment policies aimed at modernizing the banking system and improving financial intermediation. Despite these reforms, the relationship between financial liberalization and economic growth remains inconclusive and continues to generate debate, which motivates further empirical investigation.

Accordingly, this study aims to examine the impact of financial liberalization on economic growth in Algeria over the period 1990–2024 using the ARDL approach. The study investigates both short-run and long-run dynamics between financial indicators and economic growth to provide evidence-based policy implications.

1.1. Background of Study

This study is theoretically grounded in the McKinnon-Shaw hypothesis (1973), which argues that what is commonly referred to as financial repression, characterized by interest rate ceilings, high reserve requirements, and government-directed credit allocation, hinders the process of economic growth.

According to this theory, the removal of such structural distortions allows economies, in principle, to increase savings rates, improve the efficiency of capital allocation, and foster a more competitive banking environment. As a result, the financial sector becomes a key driver of macroeconomic stability and sustainable economic growth.

1.2. Problem Statement

Despite financial reforms implemented in Algeria since the early 1990s under the financial liberalization process, the impact of the financial sector on economic growth remains unclear and widely debated. Although financial liberalization is expected to improve financial intermediation, enhance resource allocation, and stimulate investment, its effectiveness in Algeria may be limited due to structural weaknesses, banking inefficiencies, and macroeconomic instability. Accordingly, the main issue addressed in this study is whether financial liberalization has effectively contributed to economic growth in Algeria during the period 1990–2024.

Therefore, this study seeks to answer the following main research question:

What is the impact of financial liberalization on economic growth in Algeria over the period 1990–2024?

1.3. Research Questions

- What is the impact of financial liberalization on economic growth in Algeria?
- How do financial and macroeconomic variables affect GDP in the short and long run?
- Is there a long-run relationship between financial development and economic growth?

1.4. Objectives of the Study

- To analyze the relationship between financial liberalization and economic growth.
- To examine short-run and long-run effects.
- To test cointegration among variables.

2 Literature Review

2.1 Global and Theoretical Perspectives

The relationship between financial liberalization and economic growth remains a central theme in economic literature, characterized by significant debate and context-dependent findings. Theoretically, liberalization is expected to enhance financial development and resource allocation; however, empirical evidence suggests its success is contingent upon institutional readiness.

Bumann, Hermes, and Lensink (2013) provide a foundational meta-analysis on this nexus, concluding that while financial liberalization generally yields a positive effect on growth, this outcome is heavily conditioned by a country's institutional quality and existing level of financial development. Similarly, Wang (2007) argues that the mode of liberalization is critical. Examining East Asia, Wang highlights that while rapid liberalization can trigger instability, the controlled liberalization model seen in China offers a more sustainable path to economic growth by balancing reform with regulation.

balancing reform with regulation.

2.2 Evidence from Emerging and Developing Economies

In developing contexts, the focus often shifts toward the necessity of macroeconomic stability. Owusu and Odhiambo (2014) find a long-run relationship between financial liberalization and growth in Nigeria using an ARDL approach. However, they emphasize that these benefits are only realized when accompanied by robust macroeconomic policies. Without strong regulatory frameworks, liberalization often results in financial fragility rather than productive growth.

2.3 The Case of Algeria: Mixed Outcomes and Structural Inefficiencies

Research specifically focused on Algeria reveals a complex landscape where financial reforms often struggle to translate into tangible economic progress.

Financial Development vs. Real Growth: Yousfi and Hamrit (2025) identify a long-run equilibrium between financial development and growth but note a significant paradox: while broad money supply positively impacts growth, credit to the private sector has a negative effect. This suggests a systemic failure in the banking sector's ability to channel funds into productive, growth-oriented investments. This finding is echoed by Habib, Zegrier, and Belkhir (2024), whose ARDL analysis confirms that private sector credit hinders growth due to weak financial intermediation and banking inefficiencies.

Reform Effectiveness and External Factors: The impact of specific liberalization policies is often questioned. Benallal, Senouci Bereksi, and Bouri (2016) found no causal link between financial liberalization and growth in Algeria from 1980–2013. They argue that Algeria's economic growth has historically been driven by external shocks-such as oil price fluctuations and foreign exchange reserves-rather than internal financial reforms.

Stability and Public Debt: Bouyacoub and Belabbas (2022) introduce the role of the state and stability, finding that while public debt supports short-term activity via domestic demand, it is financial system stability that facilitates long-term efficiency. The consensus across the Algerian studies indicates a missing link between the financial sector and the real economy. Despite reforms, the inefficiency of the banking system (Habib et al., 2024), the over-reliance on oil (Benallal et al., 2016), and the negative impact of private credit (Yousfi & Hamrit, 2025) suggest that liberalization in Algeria requires deeper institutional and structural quality improvements to be effective. As illustrated in Table (01), the Synthesis of Previous Studies are as follows:

Table (01): Synthesis of Previous Studies

Authors (Year)	*Methodology*	*Key Findings*	*Conclusion*
Wang (2007)	Comparative	Gradual liberalization is more effective than rapid reform; unregulated shifts trigger crises.	Success requires strong regulation and a gradualist approach to avoid shocks.
Bumann et al. (2013)	Meta-analysis	Financial liberalization has a generally positive but conditional effect on growth.	Impact depends on reaching specific thresholds of institutional development.
Owusu & Odhiambo (2014)	ARDL-Bounds	Confirmed a long-run relationship between financial liberalization and growth.	Positive growth is only achievable when supported by macroeconomic stability.
Benallal et al. (2016)	Time-Series	Absence of causal link; growth was driven primarily by external factors (oil prices).	Financial reforms had limited effectiveness in driving economic diversification.
Bouyacoub & Belabbas (2022)	VAR Model	Bidirectional link between debt and growth; stability improves efficiency.	Financial stability is essential for facilitating transactions and domestic demand.
Habib et al. (2024)	ARDL Model	Private sector credit and govt spending negatively impact growth due to inefficiencies.	Banking flaws prevent credit from being channeled into productive sectors.
Yousfi & Hamrit (2025)	Cointegration	Money supply aids growth, but private sector credit quality is poor/negative.	Structural reforms are needed to improve resource allocation and sector efficiency.

Source: Author's compilation.

3. Econometric Model and Variable Description

3.1 Model Specification

The study models economic growth as a function of financial and macroeconomic variables:

$$lgdp = f(ldc, lm2, linf, lopen, lreer)$$

To ensure linearity and reduce heteroscedasticity, all variables are expressed in natural logarithms. The empirical model is specified as:

$$\ln(gdp) = \beta_0 + \beta_1 \ln(dc) + \beta_2 \ln(m2) + \beta_3 \ln(inf) + \beta_4 \ln(open) + \beta_5 \ln(reer) + \varepsilon_t$$

The ARDL approach is used to capture both short-run and long-run relationships between financial liberalization and economic growth in Algeria.

3.2 Description of Study Variables

Based on the theoretical relevance to the Algerian economic context and the availability of data from international financial institutions, the following variables were selected for this study. The details of these variables, their definitions, and their expected impacts on economic performance are summarized in Table (02).

Table (02): Variable description and data sources.

VARIABLE	DESCRIPTION	SIGN
GDP	**Economic Growth: Measured by Real Gross Domestic Product; the primary indicator of national economic performance.**	+
M2	**Financial Depth: Ratio of broad money supply to GDP, representing the size and liquidity of the financial sector.**	+
DC	**Financial Access: Domestic credit to the private sector (% of GDP); a proxy for banking efficiency and liberalization.**	+
INF	**Price Stability: Annual percentage change in consumer prices; measures macroeconomic stability.**	–
OPEN	**Trade Intensity: Sum of exports and imports as a percentage of GDP; reflects trade liberalization.**	+
REER	**Competitiveness: Real effective exchange rate; reflects external competitiveness and monetary policy impact.**	±

Source: Author's compilation based on World Bank indicators

4. Analysis and Discussion of Results:

4.1 Time Series Graph:

The graphs of the variables presented in Appendix 1 illustrate the main characteristics of the time series under study. It is observed that all variables follow a clear general trend, providing an initial indication of non-

stationarity at their levels. This graphical behavior suggests the possible presence of a unit root. However, to confirm or refute this, specific tests for time series stationarity must be performed.

4.2 Descriptive analysis of the study variables

The descriptive statistics in Table (03) show that GDP per capita averaged 2.61% with notable volatility, while M2 and trade openness followed a normal distribution. In contrast, domestic credit, inflation, and the real effective exchange rate displayed high kurtosis and positive skewness. The low probability values for these variables confirm a departure from normality, which is typical for macroeconomic data in developing economies subject to structural shifts. Consequently, the results reflect a mix of stable trends and sharp economic shocks characteristic of the study period.

Table (03): Descriptive analysis of the study variables

	GDP	M2	DC	INF	OPEN	REER
MEAN	2.605714	63.37007	15.33931	8.625402	54.89852	112.8793
MEDIAN	3.200002	62.98582	12.54887	4.858591	53.20462	102.9238
MAXIMUM	7.200000	96.01181	56.14322	31.66966	71.02849	220.9585
MINIMUM	-5.100000	33.00584	3.904611	0.339163	40.38976	86.79883
STD. DEV.	2.355837	16.58907	10.94676	8.767702	7.489258	25.19430
SKEWNESS	-1.100381	-0.11895	2.070954	1.550829	0.310183	2.532963
KURTOSIS	5.034353	2.125928	8.025160	4.107474	2.268204	10.90665
JARQUE-BERA	13.09868	1.196716	61.84447	15.81823	1.342220	128.5940
PROBABILITY	0.001431	0.549714	0.000000	0.000367	0.511141	0.000000

Source: Author's calculations using EViews.

4.3 Unit Root Test Results (ADF and PP):

The unit root test results in Table (04) show a mixed order of integration among the variables. Specifically, GDP, DC, and REER are stationary at level I(0), while M2, INF, and OPEN are integrated of order I(1). Because the variables are a mix of I(0) and I(1), and none are I(2), the ARDL approach is the most suitable method for analyzing these relationships.

Table (04): Unit Root Test Results (ADF and PP)

Variables	ADF		PP		Decision
	First difference	Level	First difference	Level	
GDP		-4.0708		-4.0509	**I (0)**
		(0.0033)		(0.0035)	
M2	-5.6219	-1.0332	-6.1975	-1.0795	**I (1)**
	(0.0000)	(0.7300)	(0.0000)	(0.7125)	

DC		-4.7960		-4.4439	**I (0)**
		(0.0005)		(0.0012)	
INF	-5.4367	-1.7278	-5.8100	-1.7044	**I (1)**
	(0.0001)	(0.4087)	(0.0000)	(0.4201)	
OPEN	-1.4267	-2.5259	-6.3415	-1.9877	**I (1)**
	(0.5554)	(0.1207)	(0.0000)	(0.2905)	
REER		-6.3852		-5.962371	**I (0)**
		(0.0000)		(0.0000)	

Source: Author's calculations using EViews.

4.4 Selection of Optimal Lag Structure:

To determine the optimal lag periods for the differences, the AIC was calculated for several structures (see Appendix 2). Based on these criteria, the ARDL (2, 2, 2, 2, 2, 0) model was selected as the superior fit.

4.5 ARDL Model Estimation and Diagnostic Summary

The estimation results presented in Table (05) reveal that the model possesses strong explanatory power, with an R-squared of 0.7389. This indicates that approximately 74% of the variations in GDP per capita are accounted for by the combined fluctuations in money supply (M2), domestic credit (DC), inflation (INF), trade openness (OPEN), and the real effective exchange rate (REER). The overall statistical significance of the model is confirmed by the F-statistic (3.208) and its corresponding p-value (0.0117). Since the probability is below the 0.05 threshold, it is evident that these independent variables jointly exert a significant influence on economic growth. Furthermore, the Durbin-Watson statistic (2.355) suggests that the model is free from significant autocorrelation, reinforcing the reliability of the ARDL framework.

Table (05): Results of the ARDL Model Estimation

R-SQUARED	0.738945	MEAN DEPENDENT VAR	2.775758
ADJUSTED R-SQUARED	0.508603	S.D. dependent var	2.304890
S.E. OF REGRESSION	1.615721	Akaike info criterion	4.103843
SUM SQUARED RESID	44.37944	Schwarz criterion	4.103843
LOG LIKELIHOOD	-51.71340	Hannan-Quinn criter.	4.347978
F-STATISTIC	3.208032	Durbin-Watson stat	2.355186
PROB(F-STATISTIC)	0.011685		

Source: Author's calculations using EViews.

4.6 Results of the Bounds Test

The ARDL Bounds Test results indicate the existence of a long-run relationship between GDP and the explanatory variables (LDC, LREER, LM2, LOPEN, and LINF). The calculated F-statistic is **3.469782**, which is higher than the upper bound critical value at the 5% significance level (**I(1) = 3.38**) for k = 5. Therefore, the null hypothesis of no

cointegration is rejected. This result confirms that GDP and the financial liberalization variables are cointegrated over the period 1990–2024, meaning they share a stable long-run equilibrium relationship

Table (06): Results of the Bounds Test

F-BOUNDS TEST		NULL HYPOTHESIS: NO LEVELS RELATIONSHIP		
TEST STATISTIC	Value	Signif.	I(0)	I(1)
F-STATISTIC	3.469782	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Author's calculations using EViews.

4.7 Estimation of Long-Run and Short-Run Dynamics

Following the confirmation of a cointegrating relationship using the ARDL bounds testing approach, the analysis proceeds to examine the equilibrium dynamics between GDP per capita (GDP) and the explanatory variables, namely domestic credit (DC), money supply (M2), inflation (INF), trade openness (OPEN), and the real effective exchange rate (REER). This section presents the empirical results for both the long-run relationships and the short-run error correction model.

4.8 Long-Run Coefficient Analysis:

Based on the ARDL long-run estimation results, the analysis reveals a clear variation in the significance and impact of the explanatory variables on GDP per capita. Inflation stands out as the only statistically significant determinant at the 5% level ($p = 0.0321$), with a positive coefficient of 2.99, indicating a strong long-run positive relationship. This elasticity implies that a 1% increase in inflation is associated with a 2.99% rise in GDP per capita, which may reflect a demand-pull effect commonly observed in developing economies, where moderate inflation is associated with higher aggregate demand and increased economic activity.

In contrast, although money supply (LM2) records the largest positive coefficient (44.69), it remains statistically insignificant ($p = 0.3624$). Similarly, domestic credit (LDC) exhibits a negative and insignificant effect ($p = 0.2947$), suggesting that liquidity and credit expansion do not serve as stable long-run drivers of economic growth, potentially due to their allocation toward consumption rather than productive investment.

Furthermore, both the real effective exchange rate (LREER) and trade openness (LOPEN) are statistically insignificant in the long run, indicating that changes in external competitiveness and the degree of global market integration did not translate into sustained improvements in per capita income during the study period. This may reflect structural constraints in competitiveness or reliance on low value-added exports.

Overall, the long-run results indicate that economic growth is primarily driven by inflation, while financial (money and credit) and external sector variables (trade openness and exchange rate) do not exert significant individual effects. This suggests that long-term growth policy should place greater emphasis on price stability and demand-side dynamics rather than relying solely on monetary expansion or trade liberalization. As illustrated in Table (07), the detailed estimation results for the long-run model are as follows:

Table (07): Long-Run Coefficient Estimation Results

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.390264	54.45904	-0.098978	0.9223
GDP(-1)*	-0.407663	0.263803	-1.545328	0.1407
LDC(-1)	-12.14345	8.729386	-1.391101	0.1821
LREER(-1)	-3.512401	16.64414	-0.211029	0.8354
LM2(-1)	18.22087	17.52947	1.039442	0.3132
LOPEN(-1)	-4.527198	7.561913	-0.598684	0.5573
LINF**	2.990409	1.280851	2.334704	0.0321
D(GDP(-1))	-0.477801	0.183669	-2.601428	0.0186
D(LDC)	-5.630861	7.576944	-0.743157	0.4675
D(LDC(-1))	8.701662	4.300569	2.023375	0.0590
D(LREER)	24.70927	26.21801	0.942454	0.3592
D(LREER(-1))	-19.73131	14.87814	-1.326195	0.2023
D(LM2)	-2.718410	11.64286	-0.233483	0.8182
D(LM2(-1))	26.56214	13.07602	2.031363	0.0582
D(LOPEN)	9.151070	11.32673	0.807918	0.4303
D(LOPEN(-1))	29.55479	13.32150	2.218578	0.0404

Source: Author's calculations using EViews

4.9 Short-Run Coefficient Analysis:

The short-run estimation reveals that the Algerian economy responds to macroeconomic shocks with specific time lags. The variables demonstrating a statistically significant impact are detailed below:

- Lagged GDP (D(GDP(-1))): There is a highly significant internal corrective mechanism (p = 0.0002). A 1% increase in the previous year's GDP growth is associated with a 0.47% decrease in current GDP growth, indicating a cyclical adjustment process toward the long-run mean.
- Lagged Domestic Credit (D(LDC(-1))): While immediate credit has a marginal impact, the lagged effect is highly significant (p = 0.0030). A 1% increase in the previous year's domestic credit is associated with an

8.70% increase in current GDP growth, suggesting that credit injections require a one-year gestation period to stimulate productive economic activity.

- Lagged Money Supply (D(LM2(-1))): The monetary sector shows a strong delayed influence (p = 0.0015). A 1% increase in the previous year's money supply is associated with a 26.56% increase in current GDP growth, confirming that liquidity expansion impacts the economy with a one-year lag.
- Lagged Trade Openness (D(LOPEN(-1))): Integration with global markets proves vital in the short term (p = 0.0063). A 1% increase in the previous year's trade openness is associated with a 29.55% increase in current GDP growth, highlighting the role of trade in facilitating immediate economic expansion.
- Error Correction Term (CointEq(-1)): The most critical significant result is the speed of adjustment coefficient (p = 0.0000). The value of -0.4076 confirms a stable long-run relationship, where a 1% deviation from the long-run equilibrium is associated with a 0.4076% adjustment (correction) back toward the equilibrium path within the following year.

Table (08): ARDL Short-Run Results and Error Correction Model (ECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.477801	0.098883	-4.831997	0.0002
D(LDC)	-5.630861	3.218555	-1.749500	0.0982
D(LDC(-1))	8.701662	2.517829	3.456018	0.0030
D(LREER)	24.70927	13.04948	1.893506	0.0754
D(LREER(-1))	-19.73131	10.26835	-1.921566	0.0716
D(LM2)	-2.718410	6.963081	-0.390403	0.7011
D(LM2(-1))	26.56214	7.027955	3.779498	0.0015
D(LOPEN)	9.151070	8.649170	1.058029	0.3048
D(LOPEN(-1))	29.55479	9.486688	3.115396	0.0063
CointEq(-1)*	-0.407663	0.071115	-5.732441	0.0000

Source: Author's calculations using Eviews.

4.10 Diagnostic Tests

- **Normality test**

As illustrated in Appendix 3, the Jarque-Bera normality test yields a p-value of 0.93, which is significantly higher than the standard 0.05 threshold. Consequently, we fail to reject the null hypothesis, confirming that the residuals follow a normal distribution. This result ensures that the model's error terms satisfy the normality assumption required for reliable statistical inference.

- **Breusch-Godfrey Serial Correlation LM Test:**

The diagnostic results for the Breusch–Godfrey Serial Correlation LM Test, as detailed in Table (09), indicate no evidence of serial correlation within the model's residuals. The F-statistic (1.074 , $p = 0.366$) and the R-squared (4.136 , $p = 0.126$) both yield p -values exceeding the 0.05 significance threshold. Consequently, we fail to reject the null hypothesis of no autocorrelation, confirming that the error terms are independent and the ARDL model is statistically well-specified.

Table (09): Results of LM Test

F-STATISTIC	1.074809	PROB. F(2,15)	0.3662
OBS*R-SQUARED	4.136384	Prob. Chi-Square(2)	0.1264

Source: Author's calculations using EViews

- **Heteroskedasticity Test: Breusch-Pagan-Godfrey**

To ensure the reliability of the estimates, the model was tested for heteroskedasticity using the Breusch–Pagan–Godfrey test. The resulting p-values (0.9597 and 0.8975) indicate that the null hypothesis of homoskedastic residuals cannot be rejected. This constant error variance suggests that the ARDL framework is correctly specified and the standard errors are efficient, making the model a robust basis for policy inference. Detailed results are reported in Table (10) below.

Table (10): Heteroskedasticity Diagnostic (Breusch–Pagan–Godfrey).

F-STATISTIC	0.399380	PROB. F (15,17)	0.9597
OBS*R-SQUARED	8.598826	Prob. Chi-Square (15)	0.8975

Source: Author's calculations using Eviews.

- **Stability Test (CUSUM and CUSUMSQ Results)**

As illustrated in Appendix 5, both the CUSUM and CUSUMSQ plots remain within the critical boundaries at the 5% significance level. The CUSUM test verifies the absence of systematic structural shifts in the coefficients across the 2008–2024 period, while the CUSUMSQ results confirm that error variance remains stable despite a minor recent upward trajectory. These diagnostics demonstrate that the long-term equilibrium is resilient against structural shocks, ensuring the overall reliability and stability of the model's parameters.

4.11 Model Fit and Residual Analysis

As illustrated in Appendix 4, the model's fitted series tracks actual observations with high precision, demonstrating strong predictive performance and robustness to volatility. The residuals behave as white noise, randomly distributed around zero, confirming the absence of specification errors. These diagnostics verify that the model is reliable, statistically adequate, and valid for inference.

4.12 Granger Causality Test Results:

The results of the Granger causality test, presented in Table (11), provide insights into the direction of the relationship between financial liberalization variables and economic growth. The findings indicate that inflation Granger-causes GDP (p = 0.0444), while no significant causal relationships are found between GDP and other variables such as domestic credit (DC), money supply (M2), trade openness (OPEN), and the real effective exchange rate (REER).

Table (11): Results of the Granger Causality Analysis

NULL HYPOTHESIS:	OBS	F-STATISTIC	PROB.
LDC DOES NOT GRANGER CAUSE GDP	33	2.67345	0.0866
GDP DOES NOT GRANGER CAUSE LDC		1.14955	0.3313
LINF DOES NOT GRANGER CAUSE GDP	33	0.91500	0.4122
GDP DOES NOT GRANGER CAUSE LINF		3.48920	0.0444
LM2 DOES NOT GRANGER CAUSE GDP	33	0.96920	0.3918
GDP DOES NOT GRANGER CAUSE LM2		1.04293	0.3657
LOPEN DOES NOT GRANGER CAUSE GDP	33	0.69164	0.5091
GDP DOES NOT GRANGER CAUSE LOPEN		0.29361	0.7478
LREER DOES NOT GRANGER CAUSE GDP	33	0.79522	0.4614
GDP DOES NOT GRANGER CAUSE LREER		0.79179	0.4629

Source: Author's calculations using Eviews.

5. Conclusion and Recommendations:

This study investigated the impact of financial liberalization on economic growth in Algeria from 1990 to 2024 using the ARDL bound testing approach. The empirical results confirm the existence of a long-run cointegrated relationship between the variables. While the short-run dynamics reveal significant time lags, specifically a one,year "gestation period" for credit and money supply to stimulate activity, the Error Correction Term (-0.4076) proves that the economy possesses a stable mechanism to return to equilibrium following macroeconomic shocks. However, the findings suggest that the transition from a rent-based economy to a diversified productive system remains incomplete. Financial liberalization in Algeria has provided the necessary liquidity, but the efficiency of credit allocation must be improved to transform financial depth into sustained, non-hydrocarbon growth.

To maximize the benefits of financial liberalization and ensure long-term economic stability, the following policy measures are recommended:

- **Enhance Credit Allocation Efficiency:** Shift from passive credit distribution toward targeted financing for productive private sectors, particularly SMEs and manufacturing, to reduce dependence on oil revenues.

- **Strengthen Monetary Transmission:** Since money supply and credit impact growth with a one-year lag, the Central Bank should adopt proactive rather than reactive monetary policies to manage liquidity cycles effectively.
- **Modernize the Financial Infrastructure:** Accelerate the digitalization of the banking sector and improve transparency to increase the velocity of capital and reduce the informal economy's footprint.
- **Deepen Trade Integration:** Given the positive impact of lagged trade openness, Algeria should continue diversifying its export base beyond hydrocarbons to mitigate the risks of global price volatility.
- **Maintain Exchange Rate Stability:** Implement balanced exchange rate policies that support export competitiveness without triggering inflationary pressures that could erode short-term growth gains.

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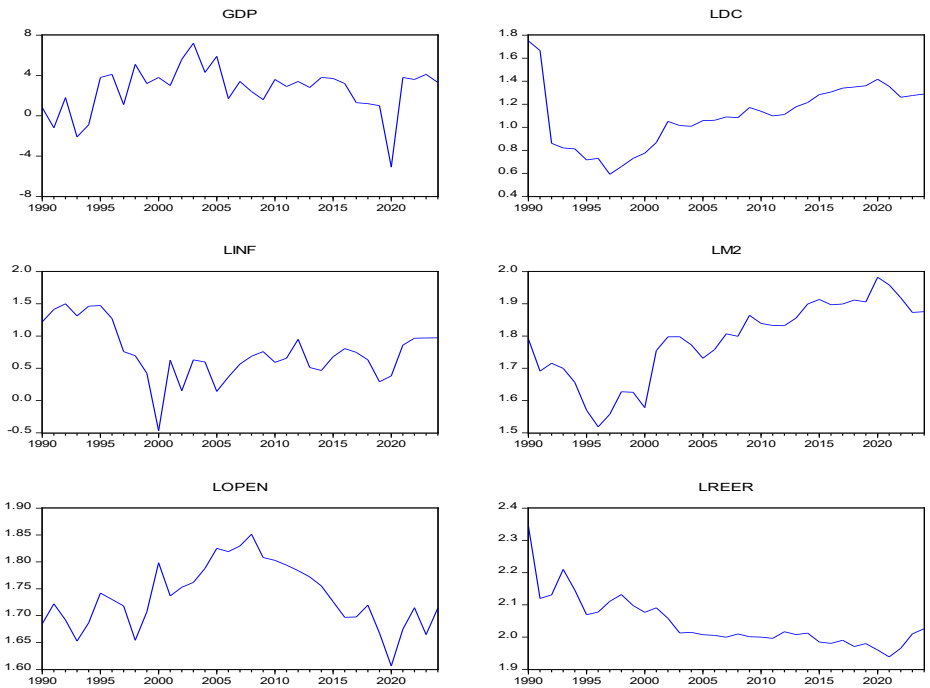
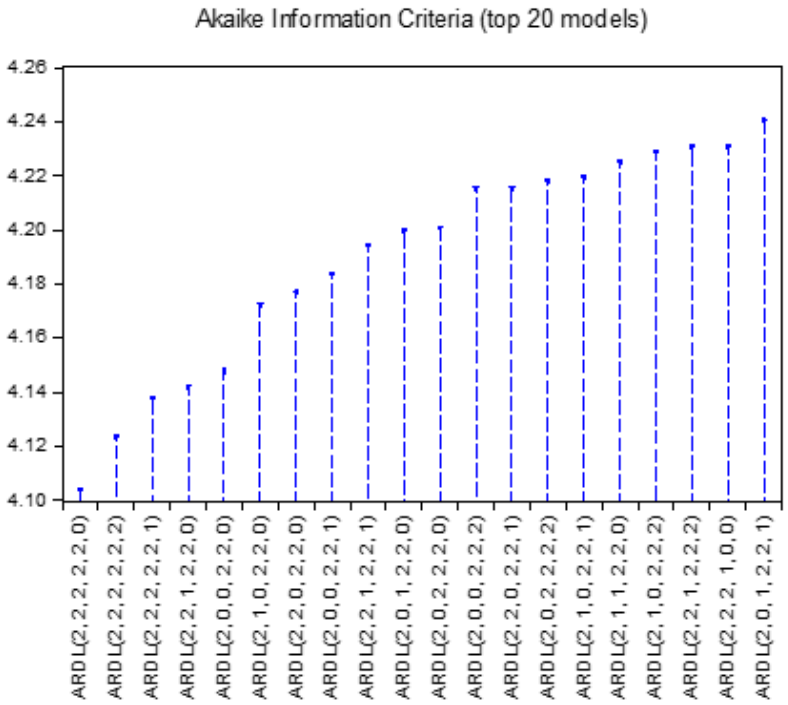
7. Appendices:

Appendix 1: Graphical Representation of the Time Series of the Study Variables



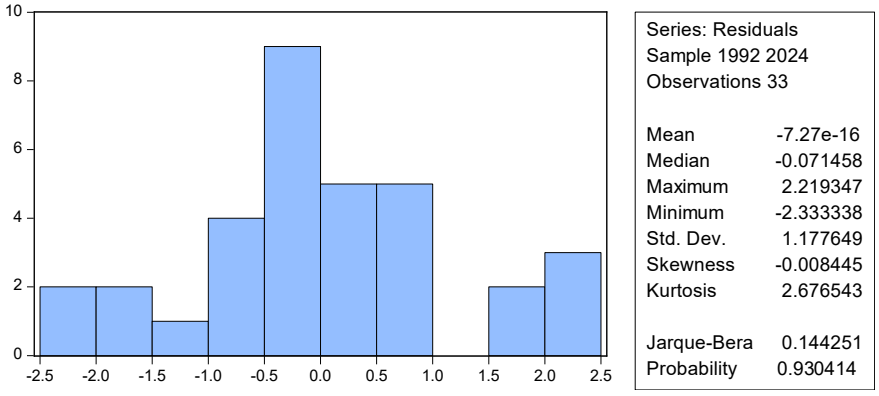
Source: Author's calculations using EViews.

Appendix (02): Optimal number of lag periods



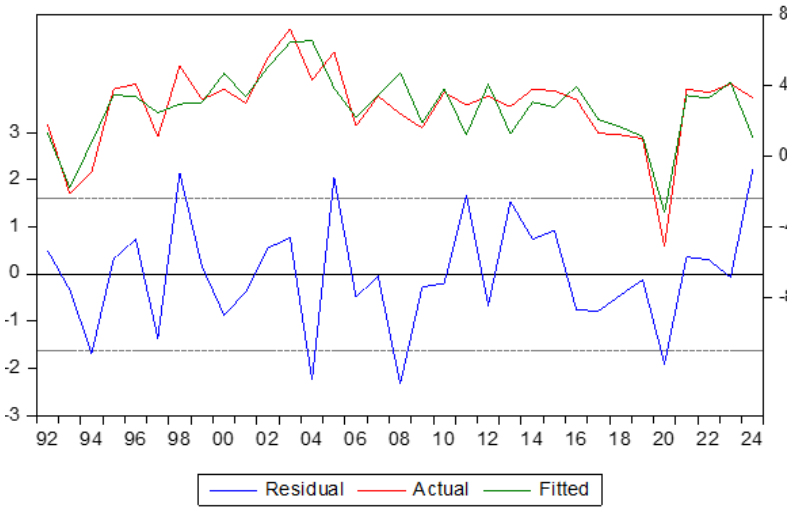
Source: Author's calculations using EViews.

Appendix (03): Jarque-Bera Test for Normality



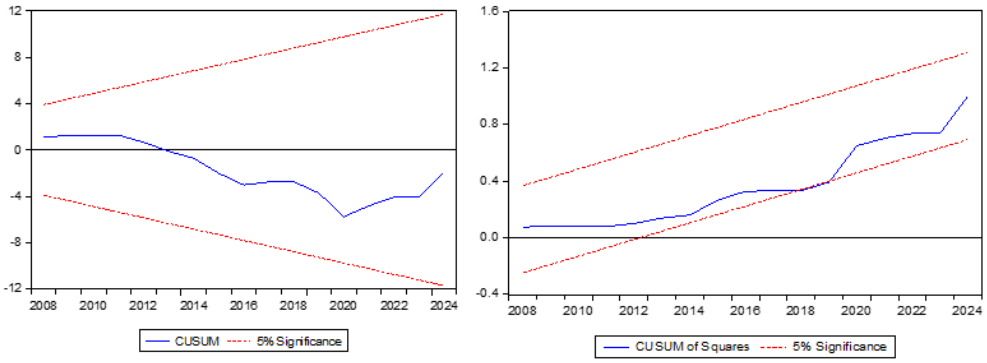
Source: Author's calculations using EViews.

Appendix (04): Actual, Fitted, and Residual Values of the Estimated Model



Source: Author's calculations using Eviews.

Appendix (05): CUSUM and CUSUMSQ Stability Tests



Source: Author's calculations using Eviews.