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THE IMPACT OF ECONOMIC SHOCKS ON THE GDP GROWTH RATE IN ALGERIA DURING THE PERIOD 1980–2024 USING THE AUTOREGRESSIVE DISTRIBUTED LAG (ARDL) MODEL

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ABSTRACT:
This study aims to examine the relationship between economic growth and key macroeconomic variables in Algeria, including oil revenues, exchange rates, and inflation, over the period 1980–2024. The research focuses on analyzing the short- and long-run effects of these variables to understand the dynamics shaping economic growth in a resource-dependent economy. The study employs the Autoregressive Distributed Lag (ARDL) approach, which allows for estimating both long- and short-run relationships within a single framework, while accounting for the different properties of the time series. Statistical analysis and estimations were conducted using EViews 13, based on comprehensive annual data covering the study period. The results indicate the existence of a long-run equilibrium relationship, with oil revenues exhibiting a strong positive impact on economic growth and inflation having a significant negative effect. The exchange rate showed a limited long-term effect, while short-run dynamics revealed varying interactions among the variables. These findings provide an integrated analytical framework to understand how macroeconomic factors influence Algeria's economic growth and offer valuable insights for economic policy formulation.

Keywords: Economic Growth, Economic Shocks, Dynamic ARDL, Algeria

I. INTRODUCTION

Economic growth is one of the key indicators reflecting a country's development and its capacity to improve citizens' welfare. Gross Domestic Product (GDP) serves as a central measure of this growth, representing the total value of goods and services produced within an economy over a specific period. In the case of the Algerian economy, macroeconomic variables such as oil revenues, exchange rates, and inflation have played a crucial role in shaping economic growth, due to the economy's heavy reliance on hydrocarbons as the main source of revenue and foreign currency.

This econometric study covers the period from 1980 to 2024, a time marked by significant transformations in Algeria's economy resulting from oil price fluctuations,

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changes in economic policies, and attempts to diversify the economy, which faced substantial challenges in enhancing the contribution of non-hydrocarbon sectors to GDP. Therefore, analyzing the impact of these macroeconomic variables on economic growth is essential for understanding growth dynamics and guiding future economic policies.

Despite the importance of economic growth in promoting citizens' welfare and achieving sustainable development, the Algerian economy has remained highly exposed to volatility due to its dependence on oil revenues, unstable monetary policies and exchange rates, and fluctuating inflation.

The central research problem of this study can thus be formulated as follows:

To what extent do macroeconomic variables, particularly oil revenues, exchange rates, and inflation, affect economic growth in Algeria during the period 1980–2024?

Research Objectives

This study aims to:

- Assess the impact of oil revenues on Algeria's economic growth during 1980–2024.
- Analyze the effect of the exchange rate on GDP, focusing on the relationship between currency fluctuations and economic growth.
- Examine the relationship between inflation and economic growth to determine its nature in the Algerian economy.
- Provide an integrated analytical framework that combines key macroeconomic variables to understand growth dynamics in Algeria using an econometric approach.

Significance of the Study:

This study examines the nature of the Algerian economy, which is highly dependent on the hydrocarbon sector, by analyzing the impact of hydrocarbon revenues and key macroeconomic variables on economic growth during the period 1980–2024. Academically, the study contributes to the literature on rentier economies through the application of modern econometric methods. From a policy perspective, the findings provide useful insights for decision-makers to support economic diversification, reduce vulnerability to external shocks, and promote sustainable economic growth.

II. PRELIMINARY CONCEPTS

1. Definition :

1.1 Economic growth : Economic growth is defined as a sustained increase in real gross domestic product (GDP) over time, reflecting an expansion in an economy's productive capacity and an improvement in real income levels. It is considered a central indicator of macroeconomic performance, particularly for developing economies seeking long-term development and structural transformation (Samuelson & Nordhaus, 2010, p. 529).

1.2 Oil revenues : Oil revenues refer to income generated from the extraction and export of hydrocarbon resources and represent a primary source of public finance in resource-

dependent economies. These revenues can stimulate economic growth through increased public spending and investment; however, excessive reliance on oil revenues exposes economic growth to volatility due to fluctuations in international oil prices (Auty, 2001, pp. 3).

1.3 The exchange rate : The exchange rate is defined as the price of one currency in terms of another and plays a crucial role in shaping external competitiveness, trade flows, and capital movements. Changes in the exchange rate affect exports, imports, inflationary pressures, and investment decisions, thereby influencing economic growth dynamics (Krugman, Obstfeld & Melitz, 2018, pp. 309).

1.4 Inflation : Inflation refers to a persistent increase in the general price level, resulting in a decline in the purchasing power of money. Inflation has a complex relationship with economic growth: moderate inflation may support economic activity by encouraging production and investment, while high and unstable inflation undermines macroeconomic stability and hampers long-term growth (Friedman, 1968, pp. 1–5; Mishkin, 2019, pp. 10–14).

2. Theoretical Background of the Relationship between Economic Variables and Economic Growth

Economic literature indicates a close relationship between oil revenues and economic growth, particularly in resource-dependent economies, where such revenues contribute to financing public expenditure and investment in infrastructure and productive sectors, thereby positively affecting growth rates. However, this positive impact remains conditional on the efficiency of oil revenue allocation, as excessive dependence on these revenues may lead to structural imbalances, most notably the phenomenon known as the Dutch disease, which weakens the competitiveness of non-oil sectors and limits the sustainability of long-term economic growth.

The relationship between the exchange rate and economic growth is considered one of the most complex issues in macroeconomic analysis, as the exchange rate influences growth through several channels, primarily foreign trade and investment. A depreciation of the national currency may enhance export competitiveness and stimulate domestic production; however, it may also increase import costs and intensify inflationary pressures, thereby reducing the expected positive effect on economic growth, especially in economies that are highly dependent on imports.

With regard to inflation, economic schools of thought differ in their interpretation of its impact on economic growth. The Keynesian school argues that moderate inflation rates may stimulate economic activity by encouraging investment and consumption, whereas the monetarist school emphasizes that high and unstable inflation constitutes an obstacle to growth due to the distortions it creates in economic decision-making and the instability it

generates in the investment environment. Consequently, the effect of inflation on economic growth depends on its level, stability, and the effectiveness of economic policies in controlling it.

Overall, the interaction between oil revenues, exchange rates, and inflation forms an integrated analytical framework for understanding the dynamics of economic growth, particularly in developing economies, where external factors interact with domestic policies to shape the growth trajectory and its sustainability.

3. Specific Features of the Algerian Economy (with Data and Sources)

The Algerian economy is characterized by its rentier nature, with a strong dependence on the hydrocarbon sector, which constitutes the main source of public revenues and foreign exchange earnings. Over the period 1980–2024, hydrocarbons have consistently played a dominant role in the structure of the Algerian economy. According to World Bank and IMF data, the hydrocarbon sector accounts for approximately 10–15% of GDP, around 40–50% of government revenues, and more than 90% of total export earnings, highlighting the high degree of dependence on this sector for fiscal and external balances (World Bank, 2023; IMF, 2022).

This structural dependence has made Algeria's economic growth highly sensitive to fluctuations in international oil prices, leading to volatility in growth rates and macroeconomic imbalances. Several studies indicate that oil price shocks have had significant effects on Algeria's GDP growth, inflation dynamics, and exchange rate stability throughout the study period, confirming the central role of oil revenues in shaping macroeconomic performance (IMF, 2012; World Bank, 2020).

Despite efforts to diversify the economic base, non-hydrocarbon sectors continue to play a relatively limited role in driving economic growth. Although recent years have witnessed moderate growth in agriculture, services, and construction, these sectors have not yet succeeded in reducing the economy's vulnerability to external shocks. For instance, World Bank reports show that between 2019 and 2023, hydrocarbons still accounted for over 80% of total exports and nearly half of fiscal revenues, indicating the persistence of the rentier economic structure (World Bank, 2023).

Furthermore, the Algerian economy is marked by a strong role of the state in economic activity, mainly through public expenditure and public investment financed largely by oil revenues. While this model has supported growth during periods of high oil prices, it has also constrained private sector development and reduced economic flexibility. In terms of monetary policy, Algeria operates under a managed exchange rate regime, which aims to absorb external shocks and maintain macroeconomic stability. However, the high import

dependency of the economy makes it vulnerable to inflationary pressures in the event of currency depreciation, negatively affecting purchasing power and economic activity.

Overall, the specific characteristics of the Algerian economy—namely its rentier structure, dependence on hydrocarbon revenues, dominant role of the state, and exposure to external shocks—justify the importance of analyzing the relationship between oil revenues, exchange rates, inflation, and economic growth within an integrated analytical framework, as adopted in this study.

III. METHODOLOGY AND TOOLS

This research investigates the effect of fluctuations in selected explanatory variables on Algeria's economic growth. To achieve this objective, the Autoregressive Distributed Lag (ARDL) approach is employed, given its robustness and suitability for examining long-run equilibrium relationships among economic variables. The analysis is grounded in established economic theory and utilizes annual data spanning the period 1980–2024. The data set was obtained from the World Bank's WDI database, while all empirical analyses were conducted using EViews 13**.**

The empirical model of the study adopts the GDP growth rate as the dependent variable, given its central role as a key indicator of economic performance. The independent variables include oil revenues, the inflation rate, and the exchange rate. The model was formulated in accordance with economic theory and supported by evidence from previous empirical studies to ensure its relevance to the Algerian economic context over the period under consideration. The model is therefore specified as follows:

$$TGDP_t = \beta_0 + \beta_1 OilRT_t + \beta_2 TC_t + \beta_3 INF_t + \varepsilon_t$$

$\mathbf{TGDP_t}$**:** GDP growth rate (annual %)
$\mathbf{OilRT_t}$**:** Oil revenues (% of GDP)
$\mathbf{TC_t}$**:** Official exchange rate (local currency units per US dollar, period average)
$\mathbf{INF_t}$**:** Inflation, GDP deflator (annual %)

IV. ESTIMATION MODEL AND RESULTS

1. Stationary of time series (Unit root test)

To ensure the suitability of applying the ARDL methodology, the stationarity properties of the time series under investigation were examined. In this context, the Augmented Dickey–Fuller (ADF) test and the Phillips–Perron (PP) test were employed, as they are among the most widely used and reliable unit root tests in econometric analysis. These tests allow for determining the order of integration of the variables and identifying whether they are stationary at level or after differencing. We obtained the results presented in the following table, which form the basis for selecting the appropriate modelling approach.

Table 01 : Unit root test results for all variables.

Variables	ADF		PP		Stationarity
	level	First difference	level	First difference	
TGD_t	-4.578483 (0.0501)	/	-4.488112 (0.0008)	/	**I(0)**
$(OilRt_t)$	-2.929040 (0.1606)	/	-3.010747 (0.0416)	/	**I(0)**
TC_t	-5.236396 (0.0007)	-4.409949 (0.0005)	-2.042635 (0.5623)	-4.338704 (0.0067)	**I(1)**
(INF_t),	-3.943783 (0.0038)	/	-3.923264 (0.0040)	/	**I(0)**

Source : Prepared by the researcher based on the outputs of EViews 13.

The results of the unit root tests (ADF and PP) indicated that the time series under study differ in their orders of integration. It was found that the GDP growth variable is stationary at level, and similarly, oil revenue as a percentage of GDP is also stationary at level. Likewise, the inflation variable achieves stationarity at level without the need for differencing. In contrast, the exchange rate variable was not stationary at level, but it became stationary after first differencing. Thus, the studied variables are distributed between the integration orders I(0) and I(1).

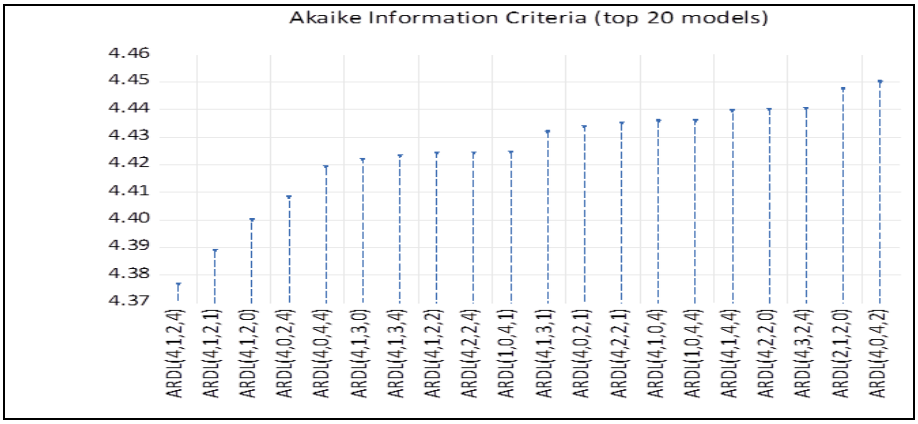
The difference in integration orders between I(0) and I(1), with no variable integrated of order two I(2), makes the ARDL methodology an appropriate and suitable choice for analyzing the relationship among the variables under study. The dynamic autoregressive model with lagged differences (ARDL) is distinguished by its ability to handle a mix of variables that are stationary at level and variables that are stationary after first differencing, in addition to its ability to estimate both short-term and long-term relationships within a single framework. Based on the results obtained from the stationarity tests, it is possible to proceed with applying the ARDL model to examine the effect of the mentioned variables on economic growth.

2. Lag Selection in the ARDL Model:

After confirming the stationarity of all variables at their appropriate levels, the ARDL cointegration model was applied to the annual data for Algeria over the period 1900–2015. To determine the optimal lag length for each variable, the Akaike Information Criterion (AIC) was used. The software tests different lag lengths for each variable and presents the results in a table and/or graphical form, highlighting the lowest criterion values. These final values serve as a guide for selecting the optimal lags, ensuring that the model accurately

captures the dynamic relationships among variables and provides reliable estimates for both short-term and long-term effects.

Figure 01 : Results of optimal lag length test.



Source : Outputs of EViews 13.

From the graph obtained and carefully examined, the optimal lag lengths for the variables were determined as follows: **4, 2, 1, and 4**, according to the order of the variables in the model. These values represent the previous periods included in the model to accurately capture the dynamic relationships among the variables. The results reflect the model's ability to reliably estimate both short-term and long-term effects and provide clear evidence of the validity of the selected lag lengths, as visually illustrated in the graph.

3. ARDL Bounds Test

After determining the optimal lag lengths for each variable in the ARDL model, the next step is to verify the existence of a long-run relationship (cointegration) among the variables. For this purpose, the Bounds Test is conducted, which compares the computed F-statistic from the ARDL model with the lower and upper critical values provided by Pesaran and Pesaran (2009). If the computed F-statistic exceeds the upper critical value at the 5% significance level, this indicates the presence of a long-run relationship among the variables, whereas a value below the lower critical value indicates the absence of cointegration. Cases falling between the two critical values are considered inconclusive.

The results are presented in the following table.

Table 02 : Cointegration Test Using the Bounds Test.

Significance level	Lower bound I(0)	Upper bound I(1)	F-stat
1%	4.31	5.544	
5%	3.100	4.088	4.459765
10%	2.592	3.454	

Source : Prepared by the researcher based on the outputs of EViews 13.

According to the results of the Bounds Test we conducted, the computed F-statistic exceeded the upper bounds for significance levels of 5%, confirming the existence of a long-run relationship between economic growth and the explanatory variables in our model. (see appendix n° I)

4. Estimation Results

After confirming the existence of a long-run relationship between economic growth and the explanatory variables using the Bounds Test, we proceeded to estimate the ARDL model within the framework of the final Error Correction Model (ECM) to extract the long-run and short-run coefficients, in addition to the error correction term (ECT). The long-run coefficients represent the stable impact of the explanatory variables on economic growth at equilibrium, while the short-run coefficients reflect the immediate effects of the explanatory variables on changes in economic growth. The error correction term (ECT) indicates the speed of adjustment toward the long-run equilibrium whenever any deviation from the stable relationship occurs.

5. Estimation of the Error Correction Model (ECM):

The ECM is considered more suitable for estimating the relationship among the study variables, and it is used to estimate a short-run equilibrium relationship when cointegration exists.

Table 03 : Short-Run Coefficient Estimates.

Dependent Variable: D(TGDP)
Method: ARDL
Date: 12/10/25 Time: 19:48
Sample: 1984 2024
Included observations: 41
Dependent lags: 4 (Automatic)
Automatic-lag linear regressors (4 max. lags): TC OILRT INF
Deterministics: Restricted constant and no trend (Case 2)
Model selection method: Akaike info criterion (AIC)
Number of models evaluated: 500
Selected model: ARDL(4,2,1,4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-1.275521	0.251462	-5.072417	0.0000
D(TGDP(-1))	0.290382	0.209999	1.382776	0.1769
D(TGDP(-2))	0.438111	0.171706	2.551512	0.0161
D(TGDP(-3))	0.377984	0.133424	2.832945	0.0082
D(TC)	-0.039268	0.057248	-0.685923	0.4980
D(TC(-1))	0.154882	0.056583	2.737243	0.0103
D(OILRT)	0.411913	0.098060	4.200616	0.0002
D(INF)	-0.104786	0.037604	-2.786604	0.0091
D(INF(-1))	-0.026804	0.030408	-0.881495	0.3851
D(INF(-2))	-0.026710	0.030016	-0.889863	0.3806
D(INF(-3))	-0.070736	0.028545	-2.478070	0.0191

R-squared	0.692433	Mean dependent var	-0.051220
Adjusted R-squared	0.589911	S.D. dependent var	2.732959
S.E. of regression	1.750137	Akaike info criterion	4.181476
Sum squared resid	91.88941	Schwarz criterion	4.641215
Log likelihood	-74.72026	Hannan-Quinn criter.	4.348888
F-statistic	6.753981	Durbin-Watson stat	2.159506
Prob(F-statistic)	0.000021		

* p-values are incompatible with t-Bounds distribution.

Source : Outputs of EViews 13.

The results of the Error Correction Model (ECM) indicate the presence of a long-run equilibrium relationship between GDP growth and the variables of exchange rate, oil resource revenues, and inflation. This is confirmed by the highly significant and negative error-correction term (COINTEQ*), which equals –1.27. This coefficient implies that the economy adjusts very rapidly toward long-run equilibrium, as more than 100% of the deviation is corrected within one year, indicating strong stability in the long-run relationship among the variables.

This outcome is reasonable in the case of the Algerian economy, given the sharp shocks it faces—particularly those related to oil prices, inflation, and the exchange rate—which tend to induce a relatively fast and strong adjustment mechanism to short-run disequilibria.

Regarding the short-run dynamics, the results show that:

- Economic growth depends on its own past values, as the second and third lags of ΔTGDP were positive and significant, indicating that previous growth momentum positively influences current growth.

- The exchange rate exhibited no immediate effect in the current period, but its lagged value had a positive and significant impact, suggesting that exchange-rate changes influence growth over time rather than instantly.

- Oil resource revenues (OILRT) showed a strong, positive, and significant short-run effect, indicating that an increase in oil revenues contributes to stimulating the economy and boosting growth.

- Inflation (INF) had a negative and significant effect in the short run, both in the current period and after three years, indicating that higher inflation harms economic activity and reduces growth.

Furthermore, the model's statistical diagnostic indicators show that the R-squared value reached approximately 69.24%, reflecting the model's ability to explain a substantial portion of the variation in economic growth. Additionally, the significance of the F-statistic and the absence of autocorrelation confirm the model's adequacy and explanatory power.

6. Long-Run Equation Estimation of the ARDL Model (Autoregressive Distributed Lag Model)

Table 04: Long-Run Equation Estimation of the ARDL Model.

Deterministics: Rest. constant (Case 2)

CE = TGDP(-1) - (-0.018224*TC(-1) + 0.190904*OILRT(-1) - 0.104678 *INF(-1) + 1.306151)

Variable *	Coefficient	Std. Error	t-Statistic	Prob.
TC(-1)	-0.018224	0.009505	-1.917265	0.0630
OILRT(-1)	0.190904	0.058943	3.238787	0.0025
INF(-1)	-0.104678	0.046933	-2.230353	0.0319
C	1.306151	1.210334	1.079166	0.2875

Note: * Coefficients derived from the CEC regression.

Source : Outputs of EViews 13.

The long-term relationship results indicate the existence of a cointegrating relationship between economic growth and the independent variables, yielding the following equation:

TGDP = 1.306 - 0.018 TC + 0.191 OILRT - 0.105 INF

The results show that the effect of the exchange rate on economic growth is not statistically significant, as the coefficient of TC is negative at –0.018 with a p-value of 0.063, which is above the 5% significance level. This indicates that there is no strong statistical evidence of a stable effect of the exchange rate on growth in the long run. This can be explained by the nature of the Algerian economy, which relies primarily on oil revenues, in addition to the fact that the official exchange rate does not always reflect its true market value, limiting its transmission to real economic activity.

In contrast, both oil revenues (OILRT) and inflation (INF) show high statistical significance, with coefficients of 0.1909 (p-value = 0.0025) and –0.1046 (p-value = 0.031), respectively, indicating that they are the main determinants of the GDP growth rate in the long run. The positive coefficient of oil revenues reflects the rentier nature of the Algerian

economy; an increase in oil revenues directly translates into higher GDP growth through government spending, investment support, and the stimulation of overall economic activity.

On the other hand, inflation has a negative coefficient, indicating that higher overall price levels exert pressure on GDP growth and limit its dynamism. This is due to the erosion of household purchasing power and rising production costs, which lead to lower aggregate demand and reduced investment, thus slowing down economic growth. Therefore, controlling inflation and maintaining price stability are crucial factors for ensuring sustainable long-term economic growth.

7. Assessing the Validity of the Model

To assess the validity and reliability of the estimated model, a series of diagnostic tests will be conducted. These tests aim to examine key assumptions, including normality of residuals, Autocorrelation Test of the Errors, Heteroscedasticity test, and structural stability of the coefficients.

❖ Normality Test of the Random Errors :

To assess whether the residuals follow a normal distribution, the Jarque–Bera (JB) test was employed. This statistical test evaluates the deviation of the residuals from the expected skewness and kurtosis of a normal distribution. Since the test's p-value (0.501) exceeds the 5% significance level, there is sufficient statistical evidence to accept the null hypothesis.

Accordingly, it can be concluded that the residuals follow a normal distribution. (see appendix n° II)

Table 05 : Normality Test of the Random Errors.

Test	Khi-deux	Prob
Jarque–Bera (JB)	1.381704	0.5011

Source : Prepared by the researcher based on the outputs of EViews 13.

❖ Autocorrelation Test of the Errors

The purpose of the autocorrelation test is to verify whether the random errors (residuals) in the regression model are correlated with their past values over time or whether they are independent. The presence of autocorrelation indicates a specification problem in the model and may lead to inefficient estimates and biased standard errors of the coefficients, which negatively affects the reliability of statistical inferences.

Table Nº 6: The Breusch–Godfrey LM Test.

Test	F	Prob
Breusch–Godfrey LM	0.398605	0.6756

Source : Prepared by the researcher based on the outputs of EViews 13.

The Breusch–Godfrey Serial Correlation LM Test showed that the F-statistic was not significant, as the corresponding p-value 0.6756 exceeded the 5% significance level. Therefore, the null hypothesis of no autocorrelation cannot be rejected. Accordingly, it can be concluded that the model does not suffer from the problem of serial autocorrelation. (see appendix n° II)

❖ **Heteroscedasticity test**

The heteroscedasticity test is used to examine whether the residuals in the regression model exhibit constant variance. Among the commonly employed approaches, the ARCH (Autoregressive Conditional Heteroscedasticity) test assesses whether the variance of the residuals changes over time.

In this study, the results of the ARCH test indicate a p-value of 0.533, which exceeds the 5% significance level. This implies that there is insufficient statistical evidence to reject the null hypothesis of constant variance. Accordingly, it can be concluded that the residuals in the model maintain stable variance over time, and no heteroscedasticity problem affects the reliability of the results. (see appendix n° II)

Table 07 : Heteroscedasticity ARCH test

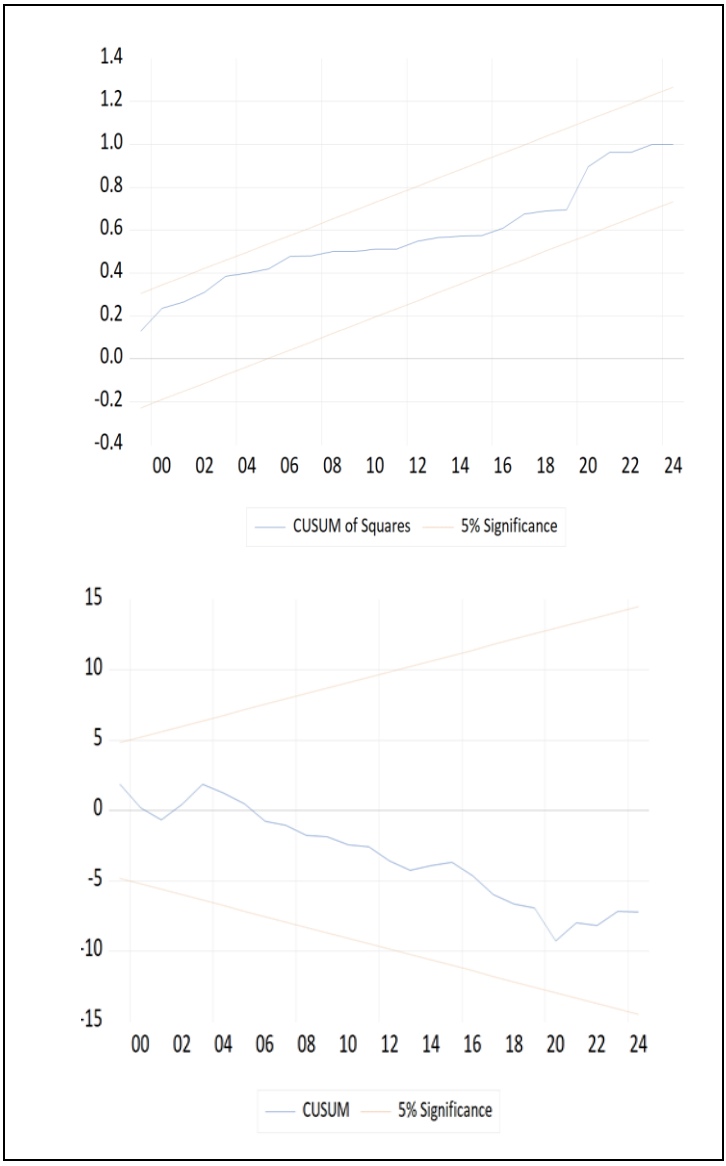
Test	F	Prob
ARCH	0.395496	0.5332

Source : Prepared by the researcher based on the outputs of EViews 13.

❖ **Structural Stability Test of Model Coefficients**

The structural stability test is employed to verify that the estimated coefficients in a regression model, the coefficients maintain stability and are not affected by structural changes in the short or long run. The test is based on plotting the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUM of Squares). The model is considered stable if the plots of both tests remain within the critical boundaries at the 5% significance level, thereby supporting the alternative hypothesis of coefficient stability over the study period.

Figure 02 : Graphical results of the CUSUM and CUSUM of Squares tests.



Source : Outputs of EViews 13.

The graphs presented in the two figures indicate that the cumulative sums of squared recursive residuals remain within the model's critical boundaries. Accordingly, it can be concluded that the model is stable at the 5% significance level and exhibits consistency between short-run and long-run results, confirming the stability of the model's coefficients throughout the study period.

V. CONCLUSIONS

This study provides a comprehensive overview of the impact of economic variables on Algeria's GDP growth during 1980–2024. Unit root tests (ADF and PP) indicated that the variables are a mix of I(0) and I(1), justifying the use of the ARDL model. The Bounds Test confirmed the existence of a long-run equilibrium relationship, with the error correction term (ECT) equal to –1.27, indicating a rapid adjustment to any deviation from long-term equilibrium.

Regarding the independent variables, oil revenues demonstrated a strong positive effect both in the long run (0.191, p=0.0025) and short run, whereas inflation had a negative impact in both the long run (–0.105, p=0.031) and short run. The exchange rate did not show a significant long-run effect (–0.018, p=0.063) but exhibited a delayed positive impact in the short run. GDP growth also depends on its past values, reflecting the effect of previous momentum.

Diagnostic tests confirmed the validity of the ARDL model, showing normally distributed residuals, absence of serial correlation, and homoscedasticity, while structural stability tests (CUSUM and CUSUM of Squares) confirmed the stability of the coefficients. This reinforces the reliability of the results in both the short and long run and indicates that the model accurately captures the relationship between economic growth and key economic variables.

Based on the results, it can be concluded that Algerian economic growth is primarily influenced by oil revenues and inflation, whereas the long-run impact of the exchange rate remains limited. The strong effect of oil revenues reflects the rentier nature of the economy, as any increase directly translates into higher government spending, investment, and overall economic activity. In contrast, inflation acts as a constraining factor, eroding households' purchasing power, raising production costs, and reducing investment and aggregate demand. The results also indicate the economy's capacity to quickly adjust to deviations from long-term equilibrium, reflecting Algeria’s resilience to shocks, particularly those related to oil prices, inflation, and the exchange rate. Additionally, the influence of previous GDP momentum points to internal dynamics that help sustain economic performance at certain levels.

From a policy perspective, the study highlights the importance of controlling inflation and maintaining financial and monetary stability, alongside managing oil revenues sustainably to reduce dependency on rent-based sources and promote long-term growth. The results also underscore the need to consider the temporal dynamics of variable effects, as the exchange rate shows a delayed impact, requiring long-term policy planning.

Overall, this study provides a comprehensive understanding of the factors affecting Algerian economic growth in both the short and long term and offers clear guidance for policymakers to achieve a balance between macroeconomic stability and reliance on oil revenues, ensuring sustainable and resilient growth amid domestic and global economic fluctuations.

Recommendations

1. Manage oil revenues sustainably to reduce dependence on rents and support long-term growth.
2. Implement effective policies to control inflation and support purchasing power and investment.
3. Maintain financial and monetary stability to ensure the economy's resilience to shocks.
4. Design economic policies that account for delayed effects of certain variables, such as the exchange rate.
5. Strengthen the economy’s capacity to adapt rapidly to domestic and global economic shocks.

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Appendix I : The Bounds Test

Table Nº 1 : Cointegration Test Using the Bounds Test