

The Relationship between Tourism Investment and Economic Growth in Algeria: An Empirical Study for the Period (1995-2020)

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Abstract

This research paper aims to find out the impact of tourism investment on economic growth during the period (1995-2020) Where GDP was used as a dependent variable and domestic spending on tourism and unemployment rate as explanatory variables, where the boundary methodology was used and the ArDL model was estimated The results of the benchmark study found a positive and moral impact of tourism investment on economic growth.

Keywords: tourism investment; economic growth border methodology; ardl model.

Jel Classification Codes : O11, Z3

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1. INTRODUCTION

Tourism is considered one of the vital sectors that play an increasing role in supporting the national economy, as it has become one of the most prominent sources of foreign income and an effective means of diversifying the economy and reducing dependence on traditional resources. In this context, tourism investment emerges as a strategic tool to enhance the contribution of the tourism sector to the Gross Domestic Product (GDP) by developing tourism infrastructure, stimulating the establishment of related projects, and creating job opportunities. Therefore, like other countries, Algeria had to increase spending directed toward this sector and improve the tourism investment climate. It has worked on implementing a strategy aimed at encouraging tourism investment in order to achieve economic diversification outside the hydrocarbons sector.

A. Research Problem:

- What is the impact of tourism investment on economic growth in Algeria during the period (1995–2020)?

B. Research Hypotheses:

- Tourism investment has a positive and significant impact on economic growth in Algeria.
- Tourism investment has a negative impact on economic growth in Algeria.

C. Research Methodology:

The study relied on the econometric approach, represented by the Bound Testing methodology and the estimation of the ARDL model. The data were processed using the EVIEWS12 software.

D. Previous Studies:

- Study by Najem Chawki and BoufensWassila, entitled The Impact of Tourism Investment on Economic Growth Outside the Hydrocarbons Sector in Algeria during the Period (1996–2018), published in the Oases Journal for Research and Studies, Volume 15, Issue 02. The study concluded that there is a long-term equilibrium relationship between the study variables, and a positive relationship between tourism investment and economic growth.
- Study by Abdelkader Abderrahmane and Mohamed El Mediani, entitled The Impact of Tourism Investment on Economic Growth in Algeria, published in the Journal of Human Sciences, Volume 17, Issue 48. The study found a positive long-term relationship between tourism investment and economic growth.
- Study by Kebir Mouloud, Kacham Ismail, and Ben Saada Abdelhalim, entitled Tourism Development and its Impact on Economic Growth in Algeria and Some Developing Countries during (1991–2028), published in the Journal of Human Sciences, Volume 21, Issue 02. The study concluded that there is a positive relationship between tourism revenues and economic growth.

2.The Nature of Tourism Investment:

Tourism investment is one of the most important determinants of the growth of the tourism sector and one of the most prominent factors contributing to increased productivity and economic development.

2.1. Definition of Tourism Investment:

Tourism investment is the productive capacity aimed at forming physical capital, preparing human capital in the field of the tourism industry, improving its productive and operational capacities, and providing the best various services for this activity.(Najem Chawki and BoufensWassila,, (2022), pp. 1277–1300.)

Tourism investment is also defined as "the total amount spent in the tourism sector and the foreign investments attracted by the state directed to this sector."(Ben Slimane Mohamed and Khalifi Mohamed, , (2022), pp. 583–592.)

2.2. Types of Tourism Investment:

Types of tourism investment are as follows:(Djamel Kettal and Leila Rachida Bougatab,, (2018) pp. 28–48.)

2.2.1. Investment in the field of tourism services: It includes many

- essential sectors in tourism activity, such as accommodation services, transportation services, and communication services.

2.2.2. Investment in tourism wealth: It includes many areas owned by the state, including:

- Investment in natural resources, by taking care of and preserving the natural resources of the host country.
- Investment in cultural resources by encouraging and organizing cultural festivals, preserving antiquities, and opening archaeological sites to the public and private sectors for investment.

2.3. The Importance of Tourism Investment:(Abdelkader Abderrahmane and Mohamed Mediani,, (2017) , pp. 511–531.)

Tourism investment holds great importance in the economies of countries that aim to develop the tourism sector for their benefit. Experts indicate that tourism investment projects are considered one of the most important sources for providing the capital necessary to drive economic development and increase productive capacities in any country. Investment spending is considered highly effective and strongly influential on both the Gross Domestic Product (GDP) in particular and economic development in general, as an increase in investment spending on tourism projects not only leads to a noticeable increase in the GDP but also contributes to creating more job opportunities and providing foreign currency, thus strengthening the current account balance of the host country.

2.4. Reasons for Tourism Investment in Algeria:(Djellit Tahar,, (2018) pp. 171–193.)

Tourism investment is considered a real opportunity to achieve economic development from the perspective of the state or the economy and to achieve profit from the perspective of the investor. Among the reasons for investment in the tourism sector in Algeria are several causes that can be summarized as follows:

- The awareness of various governments of the economic importance of tourism, as most governments of tourist countries have taken a more active role in tourism development by increasing facilities and encouraging the growth of inbound international tourism, which allowed Algeria to benefit from this awareness and foreign policies by moving toward investment in the tourism sector.
- The necessity of diversifying the Algerian economy and seeking other alternatives to reduce dependence on oil revenues, especially with the recent decline in income from this sector. The Algerian authorities have given attention to this sector through several projects and plans aimed at its development.
- Tourism investment is considered one of the promising activities due to the great opportunities it offers for success and achieving significant financial returns.
- Investment in the tourism sector is considered one of the main approaches on which global economies rely to reach levels of economic and social development.

- The multiplicity and diversity of Algeria's regions and landscapes lead to a variety of its tourism products, in addition to homogeneous and complementary climates, landmarks that allow for a 12-month tourist season throughout the year, and distinctive natural and historical resources, as well as a diverse and varied cultural heritage depending on the regions.
- The diversity of tourist attractions in Algeria, including desert attractions, etc.
- The multiplicity and diversity of climatic regions in Algeria allow tourists to stay throughout the season and the year.
- Algeria's possession of historical, cultural, and heritage resources, among others.
- The diversity of tourism in Algeria includes coastal tourism, business tourism, desert tourism, cultural and sports tourism, hunting and game tourism, rally racing tourism, long-distance tourism, health tourism, thermal spa tourism, archaeological site tourism, etc.
- The privatization process provides a real opportunity for investment in the tourism sector, as the sector's institutions are offered for privatization to local and foreign investors in various forms, such as full sale of the institution, handing over management to the private sector, or through partnership with a foreign institution.

3.The Nature of Economic Growth:

3.1. Definition of Economic Growth:

Economists agreed in defining the concept of economic growth that economic growth is the quantitative growth of the economy, meaning the improvement of the individual's standard of living through the increase of his share of total income. This can only occur if the growth rate of total income (national output) exceeds the population growth rate. Furthermore, economic growth will not occur unless the rate of increase in monetary income is greater than the inflation rate.(Baouti Leila,, (2017), pp. 775–800.)

3.2. Types of Economic Growth:(Laakab Yousra Oumaya and Darwish Ammar, (2022 pp. 612–631.)

3.2.1. Natural or Automatic Economic Growth:

It is the growth that occurs as a result of market forces (supply and demand) without any state intervention.

3.2.2. Transitory Growth:

Transitory growth results from reasons lacking stability and intentionality, such that the disappearance of these factors leads to the disappearance and decline of the achieved increase in economic growth, such as economic growth linked to oil and petroleum prices.

3.2.3. Targeted and Planned Growth:

Planned growth is targeted within a comprehensive planning process, and achieving economic growth in this case depends on the realism of the specified plans and the extent to which the methods used are available and integrated.

3.3. Determinants of Economic Growth:

The main determinants of economic growth are:(El Oualid Kassoum Messaoui and Mounir Benhaj, , (2021),pp. 95–114.)

- Capital accumulation.
- Technological progress.
- Labor force.
- Natural resources.

4. Applied Study:

4.1. Defining the Study Model:

The study variables were determined based on economic theory and previous studies on this topic. The Gross Domestic Product (Gdp) was tested as the dependent variable representing economic growth, while the explanatory variables were tourism investment represented by domestic expenditure on tourism (Expp) and the unemployment rate (Tco). The natural logarithm was applied to the model, and the equation became as follows:

$$LGdp = \beta_0 + \beta_1 LExpp + \beta_2 LTco + \varepsilon_i$$

where:

- $\beta_0, \beta_1, \beta_2$ represent the model parameters
- ε_i represents the random error term

4.2. Study of the Stationarity of Time Series

Econometric studies require, before estimation, the study of the stationarity of time series to ensure their stability in order to obtain non-biased estimators and avoid falling into spurious regression. For this purpose, we conducted the Augmented Dickey-Fuller test (ADF) and the inflation, as shown in the following table:

Table (1): Result of ADF Test (see Appendix 01)

Variables	At First Difference			At Level		
	Type of Model					
	Fo urth	Fifth	Sixt h	Fo urth	Fifth	Sixt h
	Ø	Ø	b	Ø	Ø	b
LGdp	0. 00	0 ,18	0 ,11	0. 99	- .08	0 ,40
LExpp	0. 00	0 .18	0 .16	- .25	0 .04	0 ,50
LTCo	0, 000	0 ,35	0 ,13	0. 09	0 ,16	0 ,44

❖ By examining the results of the previous table and based on the Dickey-Fuller methodology, we find that all the variables (LGDP), (LExpp), and (LTco) are non-stationary at the level, as the p-value associated with the test statistic is greater than 5%. However, they became stationary at the first difference, where the p-value associated with the Dickey-Fuller statistic became less than the 5% significance level. Accordingly, all variables are integrated of the first order I(1).

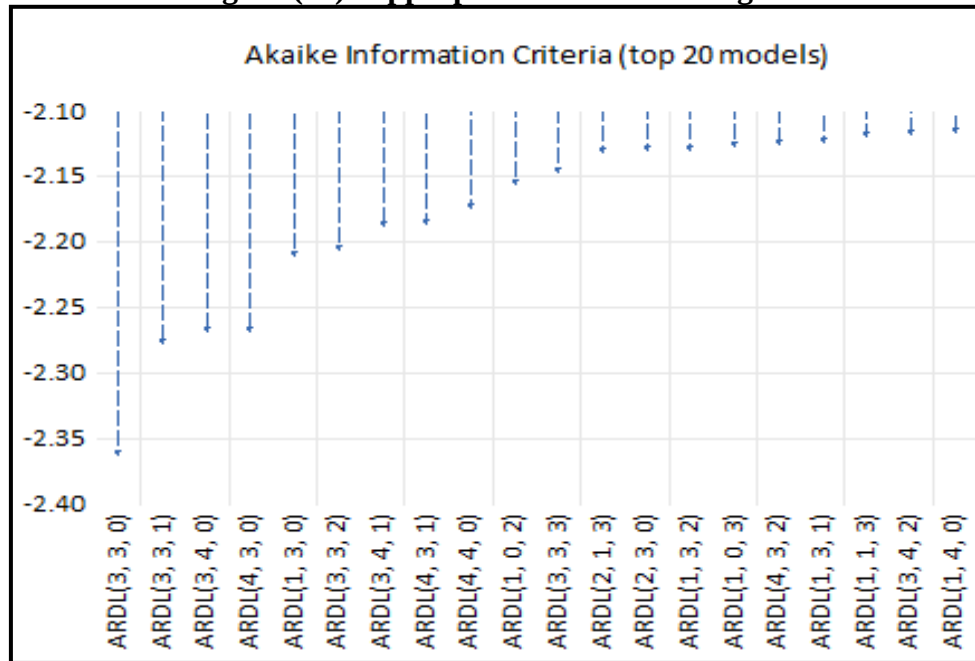
4.3. Cointegration Test

After confirming the stationarity of the time series and the existence of the integration order I(1), it became possible to apply the Bound Testing methodology.

4.3.1. Determining the Number of Lags

When determining the number of lags, we test the lowest value of the (AIC) criterion.

Figure (01): Appropriate Number of Lags



Source: Prepared by the researchers based on Eviews12 outputs

- ❖ According to the figure, we find that the optimal number of lags is (3,3,0), corresponding to the lowest value of the AIC criterion.

4.3.2 Bound Test for Cointegration

The null hypothesis in the Bound Test states that there is no cointegration, meaning no long-term relationship between the variables, and it is represented as follows:(Rafiq Nazari and Haroun Tahar,, pp. 501–518.)

- $H_0: \alpha_1 = \alpha_2 = \alpha_3 = 0$
- Against: $H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq 0$

Table (02): Result of the Bound Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic k	5.267263 2	Asymptotic: n=1000		
		10%	2.63	3.35
		5%	3.1	3.87
		2.5%	3.55	4.38
Actual Sample Size	22	1%	4.13	5
		Finite Sample: n=35		
		10%	2.845	3.623
		5%	3.478	4.335
		1%	4.948	6.028
		Finite Sample: n=30		
		10%	2.915	3.695
		5%	3.538	4.428
		1%	5.155	6.265

Source: Prepared by the researchers based on Eviews12 outputs

- ❖ Through Table 02, we find that the value of the F-statistic associated with the cointegration test using the ARDL model estimation is (5.26), which is greater than the upper bound critical value at the 1% significance level.(5) Accordingly, we reject the null hypothesis and accept the alternative hypothesis, meaning there is a cointegration relationship between the study variables.

4.4. Estimation of the ARDL Model

4.4.1 Estimation of the ARDL Error Correction Model with Short-Term Dynamics:

Table (3): Estimation Result in the Short Term:

ARDL Error Correction Regression Dependent Variable: D(DLGDP) Selected Model: ARDL(3, 3, 0) Case 2: Restricted Constant and No Trend Date: 04/22/25 Time: 13:14 Sample: 1995 2020 Included observations: 22				
ECM Regression Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DLGDP(-1))	0.806095	0.335924	2.399637	0.0321
D(DLGDP(-2))	0.473644	0.192491	2.460609	0.0286
D(DLEXPP)	0.775609	0.108469	7.150506	0.0000
D(DLEXPP(-1))	-0.837478	0.297069	-2.819135	0.0145
D(DLEXPP(-2))	-0.699826	0.185673	-3.769121	0.0023
CointEq(-1)*	-2.164832	0.425122	-5.092263	0.0002
R-squared	0.904343	Mean dependent var		-0.007277
Adjusted R-squared	0.874451	S.D. dependent var		0.159315
S.E. of regression	0.056450	Akaike info criterion		-2.683920
Sum squared resid	0.050986	Schwarz criterion		-2.386363
Log likelihood	35.52312	Hannan-Quinn criter.		-2.613825
Durbin-Watson stat	1.758064			

Source: Prepared by the researchers based on Eviews12 outputs

- ❖ It is clear from the results of Table (03) that the error correction coefficient, shown as CointEq(-1), appeared with a negative and statistically significant sign at all levels. Its value (-16.2) measures the speed of return to equilibrium in the short term.
- ❖ As for the parameter estimates, we find that the estimated coefficient of (LExp) has a positive sign and is statistically significant, which is consistent with the theoretical proposition, meaning that an increase of one unit in domestic expenditure on tourism leads to an increase in economic growth by 0.77 units. The model is statistically acceptable, as the adjusted R-squared reached 87%, which is a good percentage.

4.4.2 Estimation of the ARDL Model in the Long Term

Table (04): Estimation Result in the Long Term

Levels Equation Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLEXPP	0.883763	0.103593	8.531120	0.0000
DLTCO	-0.059664	0.078126	-0.763692	0.4587
C	-0.003088	0.008892	-0.347266	0.7339
EC = DLGDP - (0.8838*DLEXPP - 0.0597*DLTCO - 0.0031)				

Source: Prepared by the researchers based on Eviews12 outputs

- ❖ The results of Table (04) indicate a positive and significant relationship between economic growth and domestic expenditure on tourism, as an increase of one unit in

domestic expenditure on tourism leads to an increase in economic growth by 0.88 units.

4.5. Study and Analysis of the Residuals of the (3,3,0) ARDL Model

After estimating the (3,3,0) ARDL model, the stage of studying its validity econometrically and statistically follows.

4.5.1. Test of Autocorrelation for the ARDL Model

Table (05): Result of the LM Test:

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	3.204723	Prob. F(2,11)	0.0800
Obs*R-squared	8.099500	Prob. Chi-Square(2)	0.0174

Source: Prepared by the researchers based on Eviews12 outputs

- ❖ The result of the autocorrelation test for the residuals of the (3,3,0) ARDL model indicates the absence of correlation between the model residuals, as the p-value associated with the F-statistic is greater than the 5% significance level.

4.5.2. Test of the Stability of Variance of the ARDL Model

Table (06): Result of the ARCH Test

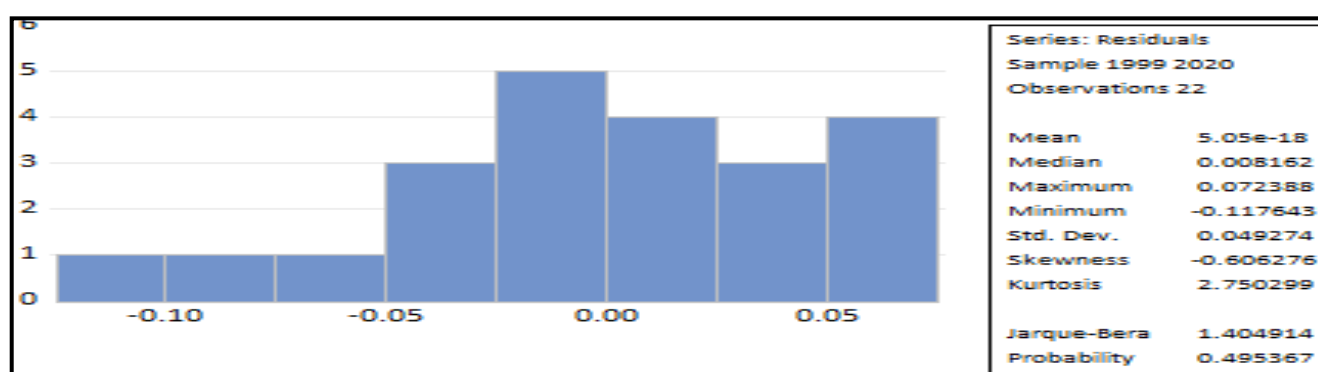
Heteroskedasticity Test: ARCH			
F-statistic	0.010657	Prob. F(1,19)	0.9189
Obs*R-squared	0.011772	Prob. Chi-Square(1)	0.9136

Source: Prepared by the researchers based on Eviews12 outputs

- ❖ Through Table (6), we find that the p-value associated with the F-statistic is greater than the 5% significance level. Accordingly, we accept the hypothesis that states the stability of the variance of the residuals of the ARDL model.

4.6. Test of Normal Distribution

Figure (02): Result of the Normality Test:

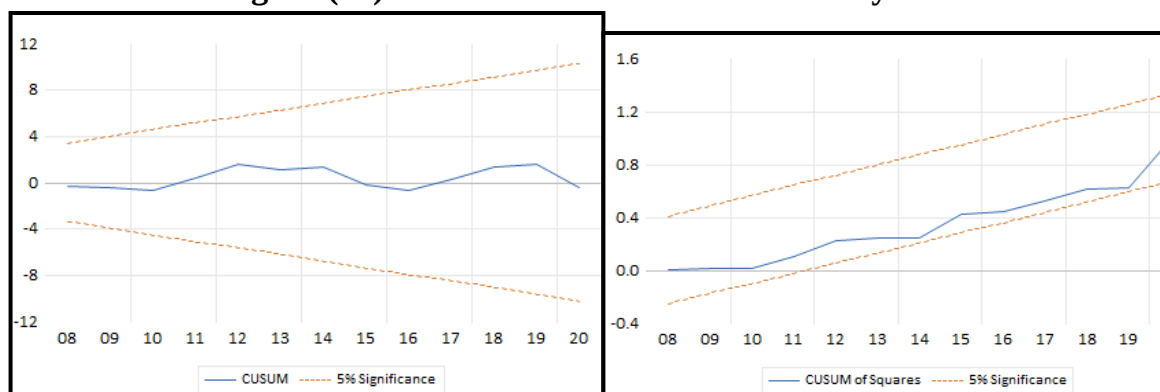


Source: Prepared by the researchers based on Eviews12 outputs

- ❖ The result of the Jarque-Bera test supports the acceptance of the hypothesis that the residuals follow a normal distribution at the 5% significance level.

4.7. Selection of Structural Stability of the ARDL-ECM Model

Figure (03): Result of the Structural Stability Test



Source: Prepared by the researchers based on Eviews12 outputs

- ❖ It is clear from Figure 03 that the estimated coefficients are structurally stable throughout the study period, as the graphical representation of the test statistics falls within the critical bounds at the 5% significance level.

5. CONCLUSION

- The results of the ADF test showed that the variables are stationary at the first difference, meaning they are integrated of the first order.
- The Bounds Test confirmed that there is a cointegration relationship between the variables, allowing the application of the Bound methodology.
- The results of estimating the ARDL model showed a positive relationship between tourism investment and economic growth in both the short and long term. This aligns with economic theory, as tourism investment contributes to increasing production capacity and creating new job opportunities, thereby boosting economic growth. It also provides capital and technology, as foreign tourism investment can bring in capital and modern technology, enhancing labor productivity.
- The value of the coefficient of determination was approximately 90%, which is a good percentage.
- The results of the Fisher test showed that the model is fully acceptable.
- The results of the LM, ARCH, and Jarque-Bera tests indicated that the model does not suffer from econometric problems.
- The estimated model is economically, statistically, and econometrically acceptable and can be relied upon.

Based on the results of the econometric study, we present some suggestions:

- Encouraging both foreign and domestic tourism investment by granting certain privileges, such as tax exemptions.
 - Highlighting areas with tourist sites and allocating the necessary investments for them.
 - Utilizing modern technology in attracting tourists.
 - Promoting and advertising various regions of the country through all media channels.
- Focusing on training and qualifying human resources in the field of tourism investment

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7. Appendices

Null Hypothesis: D(LGDP) has a unit root Exogenous: None Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic				
Test critical values:				
	1% level		-2.664853	
	5% level		-1.955681	
	10% level		-1.608793	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation Dependent Variable: D(LGDP.2) Method: Least Squares Date: 04/22/25 Time: 15:20 Sample (adjusted): 1997 2020 Included observations: 24 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-1))	-0.651187	0.198640	-3.278232	0.0033

Null Hypothesis: LGDP has a unit root Exogenous: None Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic				
Test critical values:				
	1% level		-2.660720	
	5% level		-1.955020	
	10% level		-1.609070	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation Dependent Variable: D(LGDP) Method: Least Squares Date: 04/22/25 Time: 15:19 Sample (adjusted): 1996 2020 Included observations: 25 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP(-1)	0.002118	0.000963	2.198890	0.0378

Null Hypothesis: D(LEXP) has a unit root Exogenous: None Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-2.669792	0.0099
Test critical values:	1% level		-2.664853	
	5% level		-1.955681	
	10% level		-1.608793	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation Dependent Variable: D(LEXP,2) Method: Least Squares Date: 04/22/25 Time: 15:21 Sample (adjusted): 1997 2020 Included observations: 24 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LEXP(-1))	-0.453915	0.170019	-2.669792	0.0137

Null Hypothesis: LEXP has a unit root Exogenous: Constant, Linear Trend Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-0.124849	0.9912
Test critical values:	1% level		-4.374307	
	5% level		-3.603202	
	10% level		-3.238054	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation Dependent Variable: D(LEXP) Method: Least Squares Date: 04/22/25 Time: 15:20 Sample (adjusted): 1996 2020 Included observations: 25 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEXP(-1)	-0.011127	0.089126	-0.124849	0.9018
C	0.390292	1.882390	0.207339	0.8377
@TREND("1995")	-0.005666	0.008272	-0.685015	0.5005

Null Hypothesis: LTCO has a unit root Exogenous: Constant Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-1.689077	0.4243
Test critical values:	1% level		-3.724070	
	5% level		-2.986225	
	10% level		-2.632604	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation Dependent Variable: D(LTCO) Method: Least Squares Date: 04/22/25 Time: 15:23 Sample (adjusted): 1996 2020 Included observations: 25 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTCO(-1)	-0.088300	0.052277	-1.689077	0.1047
C	0.211368	0.146265	1.445100	0.1619

Null Hypothesis: LTCO has a unit root Exogenous: Constant, Linear Trend Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-0.117462	0.9914
Test critical values:	1% level		-4.374307	
	5% level		-3.603202	
	10% level		-3.238054	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation Dependent Variable: D(LTCO) Method: Least Squares Date: 04/22/25 Time: 15:22 Sample (adjusted): 1996 2020 Included observations: 25 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTCO(-1)	-0.012864	0.109521	-0.117462	0.9076
C	-0.064379	0.380647	-0.169129	0.8672
@TREND("1995")	0.005172	0.006581	0.785807	0.4404

Null Hypothesis: D(LTCO) has a unit root Exogenous: None Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.950984	0.0004
Test critical values:	1% level		-2.664853	
	5% level		-1.955681	
	10% level		-1.608793	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation Dependent Variable: D(LTCO,2) Method: Least Squares Date: 04/22/25 Time: 15:24 Sample (adjusted): 1997 2020 Included observations: 24 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LTCO(-1))	-0.818201	0.206565	-3.950984	0.0006

Null Hypothesis: LTCO has a unit root Exogenous: None Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-1.650813	0.0923
Test critical values:	1% level		-2.660720	
	5% level		-1.955020	
	10% level		-1.609070	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation Dependent Variable: D(LTCO) Method: Least Squares Date: 04/22/25 Time: 15:24 Sample (adjusted): 1996 2020 Included observations: 25 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTCO(-1)	-0.013666	0.008278	-1.650813	0.1118

Null Hypothesis: D(LTCO) has a unit root Exogenous: None Lag Length: 0 (Automatic - based on SIC, maxlag=5)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.950984	0.0004
Test critical values:	1% level		-2.664853	
	5% level		-1.955681	
	10% level		-1.608793	
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Augmented Dickey-Fuller Test Equation Dependent Variable: D(LTCO,2) Method: Least Squares Date: 04/22/25 Time: 15:24 Sample (adjusted): 1997 2020 Included observations: 24 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LTCO(-1))	-0.818201	0.206565	-3.950984	0.0006