Augmented Dickey-Fuller Unit Root Test on LRGDP_US

Null Hypothesis: LRGDP_US has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on Modified AIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.808330	0.3757
Test critical values:	1% level	-3.463924	
	5% level	-2.876200	
	10% level	-2.574663	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LRGDP_US)
Method: Least Squares
Date: 05/21/23 Time: 12:57
Sample (adjusted): 2 196
Included observations: 195 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRGDP_US(-1)	-0.003774	0.002087	-1.808330	0.0721
C	0.041604	0.019387	2.145923	0.0331

R-squared	0.016661	Mean dependent var	0.006576
Adjusted R-squared	0.011566	S.D. dependent var	0.011470
S.E. of regression	0.011403	Akaike info criterion	-6.099591
Sum squared resid	0.025098	Schwarz criterion	-6.066022
Log likelihood	596.7102	Hannan-Quinn criter.	-6.086000
F-statistic	3.270059	Durbin-Watson stat	2.056714
Prob(F-statistic)	0.072112		

Phillips-Perron Unit Root Test on LRGDP_US

Null Hypothesis: LRGDP_US has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.807622	0.3761
Test critical values:	1% level	-3.463924	
	5% level	-2.876200	
	10% level	-2.574663	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.000129
HAC corrected variance (Bartlett kernel)	0.000129

Phillips-Perron Test Equation
Dependent Variable: D(LRGDP_US)
Method: Least Squares
Date: 05/21/23 Time: 13:03
Sample (adjusted): 2 196
Included observations: 195 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRGDP_US(-1)	-0.003774	0.002087	-1.808330	0.0721
C	0.041604	0.019387	2.145923	0.0331

R-squared	0.016661	Mean dependent var	0.006576
Adjusted R-squared	0.011566	S.D. dependent var	0.011470
S.E. of regression	0.011403	Akaike info criterion	-6.099591
Sum squared resid	0.025098	Schwarz criterion	-6.066022
Log likelihood	596.7102	Hannan-Quinn criter.	-6.086000
F-statistic	3.270059	Durbin-Watson stat	2.056714
Prob(F-statistic)	0.072112		

KPSS Unit Root Test on LRGDP_US

Null Hypothesis: LRGDP_US is stationary
Exogenous: Constant
Bandwidth: 11 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		1.725855
Asymptotic critical values*:	1% level	0.739000
	5% level	0.463000
	10% level	0.347000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.153967
HAC corrected variance (Bartlett kernel)	1.745439

KPSS Test Equation
Dependent Variable: LRGDP_US
Method: Least Squares
Date: 05/21/23 Time: 13:05
Sample: 1 196
Included observations: 196

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.284550	0.028099	330.4182	0.0000

R-squared	0.000000	Mean dependent var	9.284550
Adjusted R-squared	0.000000	S.D. dependent var	0.393391
S.E. of regression	0.393391	Akaike info criterion	0.977066
Sum squared resid	30.17758	Schwarz criterion	0.993791
Log likelihood	-94.75243	Hannan-Quinn criter.	0.983837
Durbin-Watson stat	0.001125		

DF-GLS Unit Root Test on LRGDP_US

Null Hypothesis: LRGDP_US has a unit root
Exogenous: Constant
Lag Length: 11 (Automatic - based on Modified AIC, maxlag=14)

		t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic		0.834696
Test critical values:	1% level	-2.577590
	5% level	-1.942564
	10% level	-1.615553

*MacKinnon (1996)

DF-GLS Test Equation on GLS Detrended Residuals
Dependent Variable: D(GLSRESID)
Method: Least Squares
Date: 05/21/23 Time: 13:09
Sample (adjusted): 13 196
Included observations: 184 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GLSRESID(-1)	0.001498	0.001795	0.834696	0.4050
D(GLSRESID(-1))	0.008013	0.076739	0.104421	0.9170
D(GLSRESID(-2))	0.077299	0.094783	0.815534	0.4159
D(GLSRESID(-3))	0.119614	0.135620	0.881977	0.3790
D(GLSRESID(-4))	0.104070	0.132622	0.784713	0.4337
D(GLSRESID(-5))	0.044009	0.132807	0.331377	0.7408
D(GLSRESID(-6))	0.157403	0.131124	1.200413	0.2316
D(GLSRESID(-7))	-0.034947	0.131557	-0.265644	0.7908
D(GLSRESID(-8))	-0.201448	0.129473	-1.555913	0.1216
D(GLSRESID(-9))	0.190851	0.130312	1.464571	0.1449
D(GLSRESID(-10))	0.137779	0.129713	1.062183	0.2896
D(GLSRESID(-11))	0.107482	0.122402	0.878103	0.3811

R-squared	-0.019111	Mean dependent var	0.006598
Adjusted R-squared	-0.084287	S.D. dependent var	0.011466
S.E. of regression	0.011940	Akaike info criterion	-5.954920
Sum squared resid	0.024519	Schwarz criterion	-5.745250
Log likelihood	559.8526	Hannan-Quinn criter.	-5.869938
Durbin-Watson stat	1.989926		

ERS Point-Optimal Unit Root Test on LRGDP_US

Null Hypothesis: LRGDP_US has a unit root
Exogenous: Constant
Lag length: 0 (Spectral OLS AR based on Modified AIC, maxlag=14)
Sample: 1 196
Included observations: 196

	P-Statistic
Elliott-Rothenberg-Stock test statistic	1430.628
Test critical values: 1% level	1.911600
5% level	3.167600
10% level	4.323600

*Elliott-Rothenberg-Stock (1996, Table 1)

HAC corrected variance (Spectral OLS autoregression)	0.000129

Ng-Perron Modified Unit Root Tests on LRGDP_US

Null Hypothesis: LRGDP_US has a unit root
Exogenous: Constant
Lag length: 11 (Spectral GLS-detrended AR based on Modified AIC, maxlag=
Sample: 1 196
Included observations: 196

		MZa	MZt	MSB	MPT
Ng-Perron test statistics		1.02897	1.22878	1.19418	97.2801
Asymptotic critical values*:	1%	-13.8000	-2.58000	0.17400	1.78000
	5%	-8.10000	-1.98000	0.23300	3.17000
	10%	-5.70000	-1.62000	0.27500	4.45000

*Ng-Perron (2001, Table 1)

HAC corrected variance (Spectral GLS-detrended AR) 0.001586