Econometric Modeler Analysis

Summary of results from the Econometric Modeler App

Econometrics Toolbox Version 5.1 (R2018b)

20-Jun-2020

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Null Hypothesis: IRRADIANCIA1 contains a unit root







Tabela 1.1. Test Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Lags | Model | Test Statistic | Significance Level |
| 1 | 0 | AR | t1 | 0.05 |

Tabela 1.2. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | true | 0.001 | -21.4574 | -1.9416 |

1.5. KPSS Test

Null Hypothesis: IRRADIANCIA1 is trend stationary











Tabela 1.3. Test Parameters

|  |  |  |  |
| --- | --- | --- | --- |
|  | Lags | Include Trend | Significance Level |
| 1 | 0 | false | 0.05 |

Tabela 1.4. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | true | 0.01 | 167.0687 | 0.463 |

1.6. Leybourne-McCabe Test

Null Hypothesis: IRRADIANCIA1 is a trend stationary AR(p) Process













Tabela 1.5. Test Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Lags | Include Trend | Test | Significance Level |
| 1 | 0 | true | var2 | 0.05 |

Tabela 1.6. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | false | 0.1 | -222133.2632 | 0.146 |

1.7. Phillips-Perron Test

Null Hypothesis: IRRADIANCIA1 contains a unit root







Tabela 1.7. Test Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Lags | Model | Test Statistic | Significance Level |
| 1 | 0 | AR | t1 | 0.05 |

Tabela 1.8. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | true | 0.001 | -21.4574 | -1.9416 |

2.Time Series: IRRADIANCIA1Diff

Time series IRRADIANCIA1Diff is the first-order difference of time series IRRADIANCIA1.

2.1. Time Series Plot



Figura 2.1. Time Series Plot of IRRADIANCIA1Diff

2.2. Augmented Dickey-Fuller Test

Null Hypothesis: IRRADIANCIA1Diff contains a unit root







Tabela 2.1. Test Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Lags | Model | Test Statistic | Significance Level |
| 1 | 0 | AR | t1 | 0.05 |

Tabela 2.2. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | true | 0.001 | -712.8301 | -1.9416 |

2.3. KPSS Test

Null Hypothesis: IRRADIANCIA1Diff is trend stationary











Tabela 2.3. Test Parameters

|  |  |  |  |
| --- | --- | --- | --- |
|  | Lags | Include Trend | Significance Level |
| 1 | 0 | false | 0.05 |

Tabela 2.4. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | false | 0.1 | 0.00053979 | 0.463 |

2.4. Phillips-Perron Test

Null Hypothesis: IRRADIANCIA1Diff contains a unit root







Tabela 2.5. Test Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Lags | Model | Test Statistic | Significance Level |
| 1 | 0 | AR | t1 | 0.05 |

Tabela 2.6. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | true | 0.001 | -712.8301 | -1.9416 |

3.Time Series: IRRADIANCIA1DiffDiff

Time series IRRADIANCIA1DiffDiff is the first-order difference of time series IRRADIANCIA1Diff.

3.1. Time Series Plot



Figura 3.1. Time Series Plot of IRRADIANCIA1DiffDiff

3.2. Augmented Dickey-Fuller Test

Null Hypothesis: IRRADIANCIA1DiffDiff contains a unit root







Tabela 3.1. Test Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Lags | Model | Test Statistic | Significance Level |
| 1 | 0 | AR | t1 | 0.05 |

Tabela 3.2. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | true | 0.001 | -1444.2087 | -1.9416 |

3.3. KPSS Test

Null Hypothesis: IRRADIANCIA1DiffDiff is trend stationary











Tabela 3.3. Test Parameters

|  |  |  |  |
| --- | --- | --- | --- |
|  | Lags | Include Trend | Significance Level |
| 1 | 0 | false | 0.05 |

Tabela 3.4. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | false | 0.1 | 6.1781e-07 | 0.463 |

3.4. Phillips-Perron Test

Null Hypothesis: IRRADIANCIA1DiffDiff contains a unit root







Tabela 3.5. Test Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Lags | Model | Test Statistic | Significance Level |
| 1 | 0 | AR | t1 | 0.05 |

Tabela 3.6. Test Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Null Rejected | P-Value | Test Statistic | Critical Value |
| 1 | true | 0.001 | -1444.2087 | -1.9416 |

4.ARIMA(2,2,2) Model (Gaussian Distribution) (ARIMA\_IRRADIANCIA1)

Autoregressive integrated moving average model of time series IRRADIANCIA1 with the following equation:



4.1. Model Estimation

Tabela 4.1. Estimation Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Value | StandardError | TStatistic | PValue |
| Constant | 3.5716e-08 | 7.2569e-08 | 0.49217 | 0.6226 |
| AR{1} | 0.36223 | 0.00036116 | 1002.985 | 0 |
| AR{2} | -0.009317 | 0.00027004 | -34.5026 | 7.3259e-261 |
| MA{1} | -0.61335 | 0.0003577 | -1714.7097 | 0 |
| MA{2} | -0.38664 | 0.00035767 | -1081.0078 | 0 |
| Variance | 83.5762 | 0.0076159 | 10973.9847 | 0 |

Tabela 4.2. Goodness of Fit

|  |  |
| --- | --- |
| AIC | 14434182.2273 |
| BIC | 14434257.2407 |



Figura 4.1. Plot the fit of model ARIMA\_IRRADIANCIA1 time series IRRADIANCIA1



Figura 4.2. Plot of the residuals of model ARIMA\_IRRADIANCIA1