REGRESI DATA PANEL

Deskriptif

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date: 03/02/25 Time: 14:51 |  |  |  |  |
| Sample: 2019 2023 | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | X1\_LIK | X2\_STRBI | Z\_PRO | Y\_EFKE |
|  |  |  |  |  |
|  |  |  |  |  |
| Mean | 3.108668 | 3.575268 | 0.048004 | 0.049865 |
| Median | 2.385810 | 2.386030 | 0.035400 | 0.029200 |
| Maximum | 10.47979 | 15.82231 | 0.212200 | 0.423100 |
| Minimum | 0.874820 | 0.731920 | 0.001700 | 0.000200 |
| Std. Dev. | 2.399343 | 3.190628 | 0.040423 | 0.063488 |
| Skewness | 1.352725 | 2.016478 | 1.526890 | 3.166861 |
| Kurtosis | 3.978252 | 6.914758 | 5.935662 | 17.39926 |
|  |  |  |  |  |
| Jarque-Bera | 25.86388 | 98.71897 | 56.07402 | 773.2959 |
| Probability | 0.000002 | 0.000000 | 0.000000 | 0.000000 |
|  |  |  |  |  |
| Sum | 233.1501 | 268.1451 | 3.600300 | 3.739900 |
| Sum Sq. Dev. | 426.0068 | 753.3281 | 0.120917 | 0.298272 |
|  |  |  |  |  |
| Observations | 75 | 75 | 75 | 75 |

Pooled Least Square atau Common Effect (CE)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: Y\_EFKE | | |  |  |
| Method: Panel Least Squares | | |  |  |
| Date: 03/02/25 Time: 14:53 | | |  |  |
| Sample: 2019 2023 | | |  |  |
| Periods included: 5 | | |  |  |
| Cross-sections included: 15 | | |  |  |
| Total panel (balanced) observations: 75 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.081997 | 0.017522 | 4.679576 | 0.0000 |
| X1\_LIK | -0.008574 | 0.003024 | -2.835228 | 0.0060 |
| X2\_STRBI | 0.001288 | 0.002272 | 0.566796 | 0.5726 |
| Z\_PRO | -0.210064 | 0.177827 | -1.181284 | 0.2414 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.120301 | Mean dependent var | | 0.049865 |
| Adjusted R-squared | 0.083130 | S.D. dependent var | | 0.063488 |
| S.E. of regression | 0.060792 | Akaike info criterion | | -2.710868 |
| Sum squared resid | 0.262390 | Schwarz criterion | | -2.587268 |
| Log likelihood | 105.6575 | Hannan-Quinn criter. | | -2.661516 |
| F-statistic | 3.236461 | Durbin-Watson stat | | 2.230223 |
| Prob(F-statistic) | 0.027195 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

FE (Fixed Effects)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: Y\_EFKE | | |  |  |
| Method: Panel Least Squares | | |  |  |
| Date: 03/02/25 Time: 14:53 | | |  |  |
| Sample: 2019 2023 | | |  |  |
| Periods included: 5 | | |  |  |
| Cross-sections included: 15 | | |  |  |
| Total panel (balanced) observations: 75 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.090310 | 0.019180 | 4.708661 | 0.0000 |
| X1\_LIK | -0.008615 | 0.003403 | -2.531380 | 0.0141 |
| X2\_STRBI | -0.000686 | 0.002479 | -0.276941 | 0.7828 |
| Z\_PRO | -0.233525 | 0.187287 | -1.246881 | 0.2175 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Effects Specification | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section fixed (dummy variables) | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.287477 | Mean dependent var | | 0.049865 |
| Adjusted R-squared | 0.074970 | S.D. dependent var | | 0.063488 |
| S.E. of regression | 0.061062 | Akaike info criterion | | -2.548302 |
| Sum squared resid | 0.212526 | Schwarz criterion | | -1.992105 |
| Log likelihood | 113.5613 | Hannan-Quinn criter. | | -2.326219 |
| F-statistic | 1.352789 | Durbin-Watson stat | | 2.754596 |
| Prob(F-statistic) | 0.195428 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Chow Test

Chow Test digunakan untuk menentukan model yang terbaik antara CE dan FE. Jika P Value terima H1 maka pilhan terbaik adalah FE, sedangkan sebaliknya jika P Value terima H0 maka pilihan terbaik adalah CE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Redundant Fixed Effects Tests | | |  |  |
| Equation: FEM2 | |  |  |  |
| Test cross-section fixed effects | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Effects Test | | Statistic | d.f. | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section F | | 0.955263 | (14,57) | 0.5085 |
| Cross-section Chi-square | | 15.807612 | 14 | 0.3253 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section fixed effects test equation: | | | |  |
| Dependent Variable: Y\_EFKE | | |  |  |
| Method: Panel Least Squares | | |  |  |
| Date: 03/02/25 Time: 14:53 | | |  |  |
| Sample: 2019 2023 | | |  |  |
| Periods included: 5 | | |  |  |
| Cross-sections included: 15 | | |  |  |
| Total panel (balanced) observations: 75 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.081997 | 0.017522 | 4.679576 | 0.0000 |
| X1\_LIK | -0.008574 | 0.003024 | -2.835228 | 0.0060 |
| X2\_STRBI | 0.001288 | 0.002272 | 0.566796 | 0.5726 |
| Z\_PRO | -0.210064 | 0.177827 | -1.181284 | 0.2414 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.120301 | Mean dependent var | | 0.049865 |
| Adjusted R-squared | 0.083130 | S.D. dependent var | | 0.063488 |
| S.E. of regression | 0.060792 | Akaike info criterion | | -2.710868 |
| Sum squared resid | 0.262390 | Schwarz criterion | | -2.587268 |
| Log likelihood | 105.6575 | Hannan-Quinn criter. | | -2.661516 |
| F-statistic | 3.236461 | Durbin-Watson stat | | 2.230223 |
| Prob(F-statistic) | 0.027195 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Nilai Cross-section Chi-square: 15.807612 dg p value: 0.3253 > 0,05 maka terima H0 atau yang berarti model yang lebih baik adalah CE dari pada FE.

Sehingga selanjutnya adalah uji RE kemudian bandingkan RE atau CE melalui uji LM.

Pilihan chow test jatuh pada FE, maka dilanjutkan dengan Uji Hausman. Agar dapat melakukan uji hausman, terlebih dahulu melakukan uji Random Effects (RE).

RE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: Y\_EFKE | | |  |  |
| Method: Panel EGLS (Cross-section random effects) | | | | |
| Date: 03/02/25 Time: 14:54 | | |  |  |
| Sample: 2019 2023 | | |  |  |
| Periods included: 5 | | |  |  |
| Cross-sections included: 15 | | |  |  |
| Total panel (balanced) observations: 75 | | | |  |
| Swamy and Arora estimator of component variances | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.081997 | 0.017600 | 4.658891 | 0.0000 |
| X1\_LIK | -0.008574 | 0.003037 | -2.822695 | 0.0062 |
| X2\_STRBI | 0.001288 | 0.002282 | 0.564291 | 0.5743 |
| Z\_PRO | -0.210064 | 0.178616 | -1.176062 | 0.2435 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Effects Specification | |  |  |
|  |  |  | S.D. | Rho |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section random | | | 0.000000 | 0.0000 |
| Idiosyncratic random | | | 0.061062 | 1.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Weighted Statistics | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.120301 | Mean dependent var | | 0.049865 |
| Adjusted R-squared | 0.083130 | S.D. dependent var | | 0.063488 |
| S.E. of regression | 0.060792 | Sum squared resid | | 0.262390 |
| F-statistic | 3.236461 | Durbin-Watson stat | | 2.230223 |
| Prob(F-statistic) | 0.027195 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Unweighted Statistics | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.120301 | Mean dependent var | | 0.049865 |
| Sum squared resid | 0.262390 | Durbin-Watson stat | | 2.230223 |
|  |  |  |  |  |
|  |  |  |  |  |

Sehingga selanjutnya adalah uji LM atau Lagrangian Multiplier Test (LM Test) untuk menentukan apakah yang terbaik RE ataukah CE.

|  |  |  |  |
| --- | --- | --- | --- |
| Lagrange Multiplier Tests for Random Effects | | | |
| Null hypotheses: No effects | | |  |
| Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided | | | |
| (all others) alternatives | | |  |
|  |  |  |  |
|  |  |  |  |
|  | Test Hypothesis | | |
|  | Cross-section | Time | Both |
|  |  |  |  |
|  |  |  |  |
| Breusch-Pagan | 0.096753 | 0.283158 | 0.379912 |
|  | (0.7558) | (0.5946) | (0.5377) |
|  |  |  |  |
| Honda | -0.311052 | -0.532126 | -0.596217 |
|  | -- | -- | -- |
|  |  |  |  |
| King-Wu | -0.311052 | -0.532126 | -0.615923 |
|  | -- | -- | -- |
|  |  |  |  |
| Standardized Honda | -0.181489 | 0.052979 | -4.095552 |
|  | -- | (0.4789) |  |
|  |  |  | -- |
| Standardized King-Wu | -0.181489 | 0.052979 | -3.790469 |
|  | -- | (0.4789) | -- |
| Gourierioux, et al.\* | -- | -- | 0.000000 |
|  |  |  | (>= 0.10) |
|  |  |  |  |
|  |  |  |  |
| \*Mixed chi-square asymptotic critical values: | | | |
| 1% | 7.289 |  |  |
| 5% | 4.321 |  |  |
| 10% | 2.952 |  |  |
|  |  |  |  |
|  |  |  |  |

Nilai Cross-section Breusch-Pagan 0.096753 dg p value 0.7558 > 0,05 maka terima H0 atau yang berarti model CE lebih baik dari pada RE.

Model Akhir: CE (Berdasarkan pemilihan model dengan Lagrangian Multiplier Test (LM Test))

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: Y\_EFKE | | |  |  |
| Method: Panel Least Squares | | |  |  |
| Date: 03/02/25 Time: 14:53 | | |  |  |
| Sample: 2019 2023 | | |  |  |
| Periods included: 5 | | |  |  |
| Cross-sections included: 15 | | |  |  |
| Total panel (balanced) observations: 75 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.081997 | 0.017522 | 4.679576 | 0.0000 |
| X1\_LIK | -0.008574 | 0.003024 | -2.835228 | 0.0060 |
| X2\_STRBI | 0.001288 | 0.002272 | 0.566796 | 0.5726 |
| Z\_PRO | -0.210064 | 0.177827 | -1.181284 | 0.2414 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.120301 | Mean dependent var | | 0.049865 |
| Adjusted R-squared | 0.083130 | S.D. dependent var | | 0.063488 |
| S.E. of regression | 0.060792 | Akaike info criterion | | -2.710868 |
| Sum squared resid | 0.262390 | Schwarz criterion | | -2.587268 |
| Log likelihood | 105.6575 | Hannan-Quinn criter. | | -2.661516 |
| F-statistic | 3.236461 | Durbin-Watson stat | | 2.230223 |
| Prob(F-statistic) | 0.027195 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Uji Normalitas pada Residual (galat taksiran atau selisih antara Y dengan Y Prediksi) menggunakan Uji Jarque Bera.

*Catatan: Residual yang digunakan adalah residual hasil persamaan regresi halaman 8.*



P Value 0.0000 < 0,05 maka terima H1 atau yang berarti residual tidak berdistribusi normal. Sehingga asumsi normalitas tidak terpenuhi.

Uji Heteroskedastisitas menggunakan Metode Glejser

Uji heteroskedastisitas: Menggunakan metode GLEJSER, yaitu dengan meregresikan antara variable bebas dengan absolut residual. Terjadi heteroskedastisitas jika sebagian besar p value t parsial < 0,05 dan p value uji f < 0,05.

*Catatan: Residual yang digunakan adalah residual hasil persamaan regresi halaman 8.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: RESABS2 | | |  |  |
| Method: Panel Least Squares | | |  |  |
| Date: 03/02/25 Time: 14:58 | | |  |  |
| Sample: 2019 2023 | | |  |  |
| Periods included: 5 | | |  |  |
| Cross-sections included: 15 | | |  |  |
| Total panel (balanced) observations: 75 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.066595 | 0.012438 | 5.354330 | 0.0000 |
| X1\_LIK | -0.006670 | 0.002146 | -3.107586 | 0.0027 |
| X2\_STRBI | -0.000327 | 0.001613 | -0.202617 | 0.8400 |
| Z\_PRO | -0.128504 | 0.126223 | -1.018066 | 0.3121 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.125052 | Mean dependent var | | 0.038522 |
| Adjusted R-squared | 0.088083 | S.D. dependent var | | 0.045187 |
| S.E. of regression | 0.043151 | Akaike info criterion | | -3.396383 |
| Sum squared resid | 0.132200 | Schwarz criterion | | -3.272784 |
| Log likelihood | 131.3644 | Hannan-Quinn criter. | | -3.347031 |
| F-statistic | 3.382575 | Durbin-Watson stat | | 2.113633 |
| Prob(F-statistic) | 0.022799 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Sebagian besar variabel memiliki p value t parsial (PROB) > 0,05 atau terima H0, dan p value uji f: 0.022799 < 0,05 atau terima H1 maka model terdapat masalah heteroskedastisitas sehingga model tidak memenuhi syarat atau asumsi non homokedastisitas.

Uji Autokorelasi menggunakan uji Serial Korelasi Breusch Godfrey LM Test

Uji Serial Korelasi Breusch Godfrey LM Test dilakukan dengan cara meregresikan semua variable bebas ditambah Lag 1 residual dan Lag 2 residual terhadap residual.

Catatan: Lag 1 residual adalah residual 1 periode sebelumnya dan lag 2 residual adalah residual 2 periode sebelumnya. Sedangkan residual adalah galat taksiran yaitu selisih antara y dengan y prediksi. DImana Y adalah nilai variable terikat actual sedangkan Y Prediksi adalah Y hasil dari persamaan regresi yang terbentuk (persamaan regresi pada halaman 8).

*Catatan: Residual yang digunakan adalah residual hasil persamaan regresi halaman 8.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: RESID02 | | |  |  |
| Method: Panel Least Squares | | |  |  |
| Date: 03/02/25 Time: 14:58 | | |  |  |
| Sample (adjusted): 2021 2023 | | |  |  |
| Periods included: 3 | | |  |  |
| Cross-sections included: 15 | | |  |  |
| Total panel (balanced) observations: 45 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | -0.039790 | 0.013309 | -2.989615 | 0.0048 |
| RESID02(-2) | 0.017558 | 0.069702 | 0.251897 | 0.8024 |
| RESID02(-1) | 0.043644 | 0.075710 | 0.576465 | 0.5676 |
| X1\_LIK | 0.004075 | 0.002106 | 1.934809 | 0.0603 |
| X2\_STRBI | 0.003051 | 0.001376 | 2.217891 | 0.0325 |
| Z\_PRO | 0.060986 | 0.146436 | 0.416466 | 0.6794 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.159932 | Mean dependent var | | -0.009244 |
| Adjusted R-squared | 0.052231 | S.D. dependent var | | 0.032706 |
| S.E. of regression | 0.031841 | Akaike info criterion | | -3.932584 |
| Sum squared resid | 0.039539 | Schwarz criterion | | -3.691695 |
| Log likelihood | 94.48313 | Hannan-Quinn criter. | | -3.842783 |
| F-statistic | 1.484967 | Durbin-Watson stat | | 1.558844 |
| Prob(F-statistic) | 0.216912 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Nilai p value t parsial (PROB) sebagian besar > 0,05 atau terima H0 namun p value uji f: 0.216912 > 0,05 atau terima H0 maka tidak terdapat serial korelasi, sehingga tidak terjadi autokorelasi yang berarti model memenuhi syarat atau asumsi Autokorelasi.

Uji ketergantungan antar individu atau cross section

|  |  |  |  |
| --- | --- | --- | --- |
| Residual Cross-Section Dependence Test | | | |
| Null hypothesis: No cross-section dependence (correlation) in residuals | | | |
| Equation: CEM2 | |  |  |
| Periods included: 5 | | |  |
| Cross-sections included: 15 | | |  |
| Total panel observations: 75 | | |  |
| Note: non-zero cross-section means detected in data | | | |
| Cross-section means were removed during computation of correlations | | | |
|  |  |  |  |
|  |  |  |  |
| Test | Statistic | d.f. | Prob. |
|  |  |  |  |
|  |  |  |  |
| Breusch-Pagan LM | 139.9426 | 105 | 0.0128 |
| Pesaran scaled LM | 1.376170 |  | 0.1688 |
| Pesaran CD | -1.099895 |  | 0.2714 |
|  |  |  |  |
|  |  |  |  |

Nilai p value uji Breusch-Pagan LM 0.0128 < 0,05 maka terdapat ketergantungan antar cross sectional atau antar individu (wilayah).

Kesimpulan:

Terdapat masalah pelanggaran asumsi normalitas, homogenitas dan ketergantungan cross section. Solusinya menggunakan CE dengan Perhitungan General Least Square (Cross Section Weight dengan Koefisien Estimasi Cross Section Weight (PSCE).

Catatan: Pelajari tentang Cross Section Weight (PSCE) dalam lampiran tentang “Literatur Koefisien Estimasi Data Panel.” Bahwa Cross Section Weight (PSCE) membuat model menjadi kebal atau robust terhadap pelanggaran asumsi heteroskedastisitas, serial autokorelasi dan ketergantungan antar cross sectional.

Lihat halaman di bawah ini (halaman 13)!

**Feasible General Least Square (FGLS) dengan koefisien estimasi Cross Section Weight (PCSE)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: Y\_EFKE | | |  |  |
| Method: Panel EGLS (Cross-section weights) | | | |  |
| Date: 03/02/25 Time: 14:58 | | |  |  |
| Sample: 2019 2023 | | |  |  |
| Periods included: 5 | | |  |  |
| Cross-sections included: 15 | | |  |  |
| Total panel (balanced) observations: 75 | | | |  |
| Linear estimation after one-step weighting matrix | | | | |
| Cross-section weights (PCSE) standard errors & covariance (d.f. corrected) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.056698 | 0.010385 | 5.459772 | 0.0000 |
| X1\_LIK | -0.006391 | 0.001293 | -4.941082 | 0.0000 |
| X2\_STRBI | 0.003198 | 0.001334 | 2.398028 | 0.0191 |
| Z\_PRO | -0.180310 | 0.075922 | -2.374950 | 0.0203 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Weighted Statistics | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.292196 | Mean dependent var | | 0.067165 |
| Adjusted R-squared | 0.262289 | S.D. dependent var | | 0.061925 |
| S.E. of regression | 0.056823 | Sum squared resid | | 0.229253 |
| F-statistic | 9.770097 | Durbin-Watson stat | | 1.497000 |
| Prob(F-statistic) | 0.000018 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Unweighted Statistics | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.080477 | Mean dependent var | | 0.049865 |
| Sum squared resid | 0.274268 | Durbin-Watson stat | | 2.131716 |
|  |  |  |  |  |
|  |  |  |  |  |

Perhitungan general least square atau cross section weight pada CE atau yang disebut dengan FEASIBLE GENERAL LEAST SQUARE (FGLS) dengan koefisien estimasi Cross Section Weight (PCSE) membuat model menjadi kebal atau robust terhadap pelanggaran asumsi antara lain autokorelasi, heteroskedastisitas dan ketergantungan antar cross sectional. Sehingga tidak perlu lagi dilakukan uji normalitas, autokorelasi heteroskedastisitas dan ketergantungan antar cross sectional.

Uji Normalitas Residual Menggunakan uji Jarque Bera

*Catatan: Residual yang digunakan adalah residual hasil persamaan regresi halaman 13.*



P Value 0.065918 > 0,05 maka terima H0 atau yang berarti residual berdistribusi normal. Sehingga asumsi normalitas terpenuhi.

DETEKSI MULTIKOLINEARITAS:

Di bawah ini adalah Deteksi Multikolinear dengan menggunakan Matrix Korelasi Antar Variabel Bebas.

|  |  |  |  |
| --- | --- | --- | --- |
|  | X1\_LIK | X2\_STRBI | Z\_PRO |
|  |  |  |  |
|  |  |  |  |
| X1\_LIK | 1.000000 | -0.193310 | -0.143913 |
| X2\_STRBI | -0.193310 | 1.000000 | 0.138735 |
| Z\_PRO | -0.143913 | 0.138735 | 1.000000 |

Hasil uji korelasi antar variabel bebas diatas, tidak ada korelasi kuat antar variable bebas yg nilai koefisien korelasinya > 0,9 atau < -0,9 maka model tidak terdapat masalah multikolinearitas.

Confident Interval

Di bawah ini adalah batas bawah dan atas dari Koefisien estimasi yang di dapat dari uji regresi (halaman 13) pada derajat kepercayaan 95%. Misalnya X1\_LIK koefisien estimasinya adalah -0.006391. Pada derajat kepercayaan 95%, maka koefisien estimasi tersebut bisa meleset dalam kisaran -0.008970 sampai dengan -0.003812.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Coefficient Confidence Intervals | | | | |
| Date: 03/02/25 Time: 22:33 | | | |  |
| Sample: 2019 2023 | | |  |  |
| Included observations: 75 | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | 95% CI | |
| Variable | Coefficient |  | Low | High |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.056698 |  | 0.035992 | 0.077405 |
| X1\_LIK | -0.006391 |  | -0.008970 | -0.003812 |
| X2\_STRBI | 0.003198 |  | 0.000539 | 0.005857 |
| Z\_PRO | -0.180310 |  | -0.331693 | -0.028927 |
|  |  |  |  |  |
|  |  |  |  |  |

Persamaan Regresi FGLS dengan koefisien estimasi Cross Section Weight (PCSE):

Di bawah ini adalah persamaan hasil regresi FGLS dengan koefisien estimasi Cross Section Weight (PCSE) (halaman 13).

Estimation Command:

=========================

LS(?, WGT=CXDIAG, COV=CXDIAG) Y\_EFKE C X1\_LIK X2\_STRBI Z\_PRO

Estimation Equation:

=========================

Y\_EFKE = C(1) + C(2)\*X1\_LIK + C(3)\*X2\_STRBI + C(4)\*Z\_PRO

Substituted Coefficients:

=========================

Y\_EFKE = 0.0566981900655 - 0.00639117368983\*X1\_LIK + 0.00319810429751\*X2\_STRBI - 0.18030987106\*Z\_PRO

Maka Persamaan Regresi FGLS dengan Koefisien estimasi CROSS SECTION WEIGHT (PSCE) adalah:

Y\_EFKE = 0.0566981900655 - 0.00639117368983\*X1\_LIK + 0.00319810429751\*X2\_STRBI - 0.18030987106\*Z\_PRO

Dimana 0.0566981900655 adalah konstanta yang kemudian sebagai intersept.

Penjelasan Hasil FGLS atau CE dengan cross section weights dengan koefisien estimasi Cross Section Weight (PCSE):

*Catatan: persamaan dibawah ini adalah persamaan halaman 13)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: Y\_EFKE | | |  |  |
| Method: Panel EGLS (Cross-section weights) | | | |  |
| Date: 03/02/25 Time: 14:58 | | |  |  |
| Sample: 2019 2023 | | |  |  |
| Periods included: 5 | | |  |  |
| Cross-sections included: 15 | | |  |  |
| Total panel (balanced) observations: 75 | | | |  |
| Linear estimation after one-step weighting matrix | | | | |
| Cross-section weights (PCSE) standard errors & covariance (d.f. corrected) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.056698 | 0.010385 | 5.459772 | 0.0000 |
| X1\_LIK | -0.006391 | 0.001293 | -4.941082 | 0.0000 |
| X2\_STRBI | 0.003198 | 0.001334 | 2.398028 | 0.0191 |
| Z\_PRO | -0.180310 | 0.075922 | -2.374950 | 0.0203 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Weighted Statistics | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.292196 | Mean dependent var | | 0.067165 |
| Adjusted R-squared | 0.262289 | S.D. dependent var | | 0.061925 |
| S.E. of regression | 0.056823 | Sum squared resid | | 0.229253 |
| F-statistic | 9.770097 | Durbin-Watson stat | | 1.497000 |
| Prob(F-statistic) | 0.000018 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Unweighted Statistics | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.080477 | Mean dependent var | | 0.049865 |
| Sum squared resid | 0.274268 | Durbin-Watson stat | | 2.131716 |
|  |  |  |  |  |
|  |  |  |  |  |

**Ringkasan Hasil Regresi Data Panel Model COMMON EFFECTS**

1. Periods Include: Merupakan jumlah periode atau runtut waktu yang dilibatkan dalam analisis. Dimana dalam regresi data panel ini, periode yang digunakan adalah 5 tahun
2. Cross section Include: Merupakan jumlah cross section atau panel yang dilibatkan dalam analisis. Dimana dalam regresi data panel ini, panel yang digunakan adalah sebanyak 15 wilayah.
3. Total Panel (Balanced) observations: adalah jumlah observasi yang dilibatkan dalam analisis. Istilah Balanced artinya balance, yaitu jumlah waktu (time series) yang digunakan setiap panel (cross section) adalah sama, Sehingga jumlah observasi: 5 x 15 = 75 observasi.
4. Kolom Variable: adalah daftar variabel yang dianalisis. Dimana dalam regresi data panel ini menggunakan **Y\_EFKE** sebagai variabel response. Sedangkan variabel prediktor adalah semua var bebas. Dan C sebagai residual atau error dari persamaan regresi data panel.

**Koefisien Regresi Data Panel Model COMMON EFFECTS**

1. Coefficient: adalah koefisien beta regresi data panel sesuai dengan variabel yang ada pada kolom variabel. Nilai koefisien ini digunakan untuk membentuk Persamaan Regresi Data Panel.

Koefisien estimasi dalam regresi ini adalah

|  |  |
| --- | --- |
| Variable | Coefficient |
|  |  |
|  |  |
| C | 0.056698 |
| X1\_LIK | -0.006391 |
| X2\_STRBI | 0.003198 |
| Z\_PRO | -0.180310 |

1. Standar error: adalah Standar Error dari nilai koefisien pada kolom coefficient.

|  |  |  |
| --- | --- | --- |
| Variable | Coefficient | Std. Error |
|  |  |  |
|  |  |  |
| C | 0.056698 | 0.010385 |
| X1\_LIK | -0.006391 | 0.001293 |
| X2\_STRBI | 0.003198 | 0.001334 |
| Z\_PRO | -0.180310 | 0.075922 |

1. t-statistics: adalah nilai t parsial regresi data panel sesuai per variabel pada kolom variable. Nilai t ini menunjukkan pengaruh parsial variabel prediktor terhadap variabel response di dalam model regresi data panel.

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Coefficient | Std. Error | t-Statistic |
|  |  |  |  |
|  |  |  |  |
| C | 0.056698 | 0.010385 | 5.459772 |
| X1\_LIK | -0.006391 | 0.001293 | -4.941082 |
| X2\_STRBI | 0.003198 | 0.001334 | 2.398028 |
| Z\_PRO | -0.180310 | 0.075922 | -2.374950 |

1. Prob: adalah nilai p value atau tingkat signifikansi dari t parsial di kolom t-statistics. Nilai p value ini menunjukkan tingkat signifikansi t parsial dalam rangka menjawab hipotesis uji parsial. Jika nilai p value kurang dari batas kritis, misalnya 0,05 maka jawaban hipotesis adalah menerima H1 atau yang berarti variabel prediktor yang bersangkutan memiliki pengaruh yang bermakna terhadap variabel response secara statistik. Dan sebaliknya jika p value lebih dari batas kritis maka menerima H0 atau yang berarti variabel prediktor yang bersangkutan tidak memiliki pengaruh yang bermakna terhadap variabel response secara statistik.

Nilai uji t parsial regresi ini adalah:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | Coefficient | Std. Error | t-Statistic | **Prob.** | Kesimpulan | Jawaban Hipotesis | Pengaruh Terhadap Cashetr |
| C | 0.056698 | 0.010385 | 5.459772 | 0.0000 |  |  |  |
| X1\_LIK | -0.006391 | 0.001293 | -4.941082 | 0.0000 | < 0,05 | Tolak H0 | Berpengaruh signifikan secara parsial |
| X2\_STRBI | 0.003198 | 0.001334 | 2.398028 | 0.0191 | < 0,05 | Tolak H0 | Berpengaruh signifikan secara parsial |
| Z\_PRO | -0.180310 | 0.075922 | -2.374950 | 0.0203 | < 0,05 | Tolak H0 | Berpengaruh signifikan secara parsial |

Uji Simultan: Nilai F hitung atau F-statistic: 9.770097 dg p value atau Prob(F-statistic): 0.000018 < 0,05 maka terima H1 atau yang berarti secara serentak semua var bebas signifikan dalam mempengaruhi var terikat.

|  |  |
| --- | --- |
| R-squared | 0.292196 |
| Adjusted R-squared | 0.262289 |
| S.E. of regression | 0.056823 |
| F-statistic | 9.770097 |
| Prob(F-statistic) | 0.000018 |

Koefisien Determinasi:

Nilai R Squared 0.292196 dengan Adjusted R Square: 0.262289 maka sekumpulan var bebas mampu menjelaskan var terikat sebesar 0.262289 atau 26.22% dimana < 0,5 maka sekumpulan var bebas lemah dalam menjelaskan var terikat dan signifikan sebab uji simultan menunjukkan terima H1. Sehingga terdapat 100%-26.22% = 73.78% nilai var terikat yang dipengaruhi oleh factor diluar variable bebas dalam penelitian.

Berdasarkan nilai coefficient diatas, maka dibentuk persamaan regresi sebagai berikut:

Y\_EFKE = 0.0566981900655 - 0.00639117368983\*X1\_LIK + 0.00319810429751\*X2\_STRBI - 0.18030987106\*Z\_PRO

***Persamaan diatas itulah yang digunakan sebagai model peramalan.***