**LAMPIRAN**

**Lampiran 1. Output *Common Effect Model(CEM) Fixed Effect Model(CEM)* dan *Random Effect Model(REM)***

**Output *Common Effect Model(CEM)***

|  |  |  |
| --- | --- | --- |
| Dependent Variable: LOG(KREDIT\_UMKM?) |  |  |
| Method: Pooled Least Squares |  |  |  |
| Date: 11/18/20 Time: 13:40 |  |  |  |
| Sample: 1 24 |  |  |  |  |
| Included observations: 24 |  |  |  |
| Cross-sections included: 6 |  |  |  |
| Total pool (balanced) observations: 144 |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic |  | Prob.   |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| LDR? | 0.019105 | 0.004921 | 3.882663 |  | 0.0002 |
| ROA? | 2.729122 | 0.180519 | 15.11816 |  | 0.0000 |
| CAR? | -0.164898 | 0.014450 | -11.41165 |  | 0.0000 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| R-squared | 0.469592 |     Mean dependent var |  | 3.661307 |
| Adjusted R-squared | 0.462068 |     S.D. dependent var |  | 2.111406 |
| S.E. of regression | 1.548586 |     Akaike info criterion |  | 3.733175 |
| Sum squared resid | 338.1346 |     Schwarz criterion |  | 3.795046 |
| Log likelihood | -265.7886 |     Hannan-Quinn criter. |  | 3.758316 |
| Durbin-Watson stat | 0.281214 |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Output *Fixed Effect Model(FEM)***

|  |  |
| --- | --- |
| Dependent Variable: LOG(KREDIT\_UMKM?) |  |
| Method: Pooled Least Squares |  |  |
| Date: 11/18/20 Time: 13:41 |  |  |
| Sample: 1 24 |  |  |  |
| Included observations: 24 |  |  |
| Cross-sections included: 6 |  |  |
| Total pool (balanced) observations: 144 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.680623 | 0.715179 | 3.748184 | 0.0003 |
| LDR? | 0.010524 | 0.004580 | 2.297772 | 0.0231 |
| ROA? | 0.218450 | 0.089928 | 2.429179 | 0.0164 |
| CAR? | -0.020629 | 0.015404 | -1.339186 | 0.1828 |
| Fixed Effects (Cross) |  |  |  |  |
| BANK\_ASING--C | -3.331956 |  |  |  |
| BANK\_CAMPURAN--C | -2.063078 |  |  |  |
| BANK\_PERSERO--C | 2.380033 |  |  |  |
| BPD--C | 0.606140 |  |  |  |
| BSND--C | 2.118782 |  |  |  |
| BSNND--C | 0.290080 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Effects Specification |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section fixed (dummy variables) |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.989695 |     Mean dependent var | 3.661307 |
| Adjusted R-squared | 0.989084 |     S.D. dependent var | 2.111406 |
| S.E. of regression | 0.220599 |     Akaike info criterion | -0.124483 |
| Sum squared resid | 6.569600 |     Schwarz criterion | 0.061130 |
| Log likelihood | 17.96279 |     Hannan-Quinn criter. | -0.049060 |
| F-statistic | 1620.636 |     Durbin-Watson stat | 1.263314 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |
| --- | --- |
| **Output *Random Effect Model(REM)***Dependent Variable: LOG(KREDIT\_UMKM?) |  |
| Method: Pooled EGLS (Cross-section random effects) |
| Date: 11/18/20 Time: 13:50 |  |  |
| Sample: 1 24 |  |  |  |
| Included observations: 24 |  |  |
| Cross-sections included: 6 |  |  |
| Total pool (balanced) observations: 144 |  |
| Swamy and Arora estimator of component variances |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.287829 | 0.878849 | 3.741062 | 0.0003 |
| LDR? | 0.008056 | 0.004513 | 1.785001 | 0.0764 |
| ROA? | 0.210030 | 0.089602 | 2.344035 | 0.0205 |
| CAR? | -0.033166 | 0.014687 | -2.258161 | 0.0255 |
| Random Effects (Cross) |  |  |  |  |
| BANK\_ASING--C | -2.956019 |  |  |  |
| BANK\_CAMPURAN--C | -2.065206 |  |  |  |
| BANK\_PERSERO--C | 2.280226 |  |  |  |
| BPD--C | 0.475705 |  |  |  |
| BSND--C | 2.001857 |  |  |  |
| BSNND--C | 0.263438 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Effects Specification |  |  |
|  |  |  | S.D.   | Rho   |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section random | 1.344585 | 0.9738 |
| Idiosyncratic random | 0.220599 | 0.0262 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Weighted Statistics |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.072432 |     Mean dependent var | 0.122547 |
| Adjusted R-squared | 0.052555 |     S.D. dependent var | 0.233298 |
| S.E. of regression | 0.227085 |     Sum squared resid | 7.219468 |
| F-statistic | 3.644085 |     Durbin-Watson stat | 1.157883 |
| Prob(F-statistic) | 0.014335 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Unweighted Statistics |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.140451 |     Mean dependent var | 3.661307 |
| Sum squared resid | 547.9616 |     Durbin-Watson stat | 0.015255 |
|  |  |  |  |  |
|  |  |  |  |  |

**Lampiran 2. Uji Chow**

|  |  |  |
| --- | --- | --- |
| Redundant Fixed Effects Tests |  |  |
| Pool: BANK |  |  |  |
| Test cross-section fixed effects |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Effects Test | Statistic   | d.f.  | Prob.  |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section F | 428.222575 | (5,135) | 0.0000 |
| Cross-section Chi-square | 406.792744 | 5 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section fixed effects test equation: |  |
| Dependent Variable: LOG(KREDIT\_UMKM?) |  |
| Method: Panel Least Squares |  |  |
| Date: 11/18/20 Time: 13:42 |  |  |
| Sample: 1 24 |  |  |  |
| Included observations: 24 |  |  |
| Cross-sections included: 6 |  |  |
| Total pool (balanced) observations: 144 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 9.583055 | 0.565291 | 16.95242 | 0.0000 |
| LDR? | -0.048952 | 0.004910 | -9.970512 | 0.0000 |
| ROA? | 0.838047 | 0.152299 | 5.502658 | 0.0000 |
| CAR? | -0.105571 | 0.009007 | -11.72045 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.826252 |     Mean dependent var | 3.661307 |
| Adjusted R-squared | 0.822529 |     S.D. dependent var | 2.111406 |
| S.E. of regression | 0.889479 |     Akaike info criterion | 2.631022 |
| Sum squared resid | 110.7641 |     Schwarz criterion | 2.713517 |
| Log likelihood | -185.4336 |     Hannan-Quinn criter. | 2.664543 |
| F-statistic | 221.9218 |     Durbin-Watson stat | 0.359346 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Lampiran 3. Uji Hausman**

|  |  |
| --- | --- |
| Correlated Random Effects - Hausman Test |  |
| Pool: BANK |  |  |  |
| Test cross-section random effects |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob.  |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section random | 11.354252 | 3 | 0.0100 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section random effects test comparisons: |
|  |  |  |  |  |
| Variable | Fixed   | Random  | Var(Diff.)  | Prob.  |
|  |  |  |  |  |
|  |  |  |  |  |
| LDR? | 0.010524 | 0.008056 | 0.000001 | 0.0016 |
| ROA? | 0.218450 | 0.210030 | 0.000058 | 0.2709 |
| CAR? | -0.020629 | -0.033166 | 0.000022 | 0.0070 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section random effects test equation: |  |
| Dependent Variable: LOG(KREDIT\_UMKM?) |  |
| Method: Panel Least Squares |  |  |
| Date: 11/18/20 Time: 13:49 |  |  |
| Sample: 1 24 |  |  |  |
| Included observations: 24 |  |  |
| Cross-sections included: 6 |  |  |
| Total pool (balanced) observations: 144 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.680623 | 0.715179 | 3.748184 | 0.0003 |
| LDR? | 0.010524 | 0.004580 | 2.297772 | 0.0231 |
| ROA? | 0.218450 | 0.089928 | 2.429179 | 0.0164 |
| CAR? | -0.020629 | 0.015404 | -1.339186 | 0.1828 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Effects Specification |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Cross-section fixed (dummy variables) |  |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.989695 |     Mean dependent var | 3.661307 |
| Adjusted R-squared | 0.989084 |     S.D. dependent var | 2.111406 |
| S.E. of regression | 0.220599 |     Akaike info criterion | -0.124483 |
| Sum squared resid | 6.569600 |     Schwarz criterion | 0.061130 |
| Log likelihood | 17.96279 |     Hannan-Quinn criter. | -0.049060 |
| F-statistic | 1620.636 |     Durbin-Watson stat | 1.263314 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Lampiran 4. Uji struktur Varians Kovalians kovarians**

**Uji Lagrange Multiplier (LM)**

Hipotesis uji LM

$H\_{0 }: σ\_{i}^{2}$ = $σ^{2}$ (Homoskedastisitas)

$H\_{0 }: σ\_{i}^{2}\ne $ $σ^{2}$ (Heteroskedastisitas)

Statistik Uji :

**Output R**

plmtest(g,effect="twoways",type="bp") #Lagrange Multiplier Test - two-ways effects (Breusch-Pagan)

##
## Lagrange Multiplier Test - two-ways effects (Breusch-Pagan) for
## balanced panels
##
## data: Kredit\_UMKM ~ LDR + ROA + CAR
## chisq = 1040.6, df = 2, p-value < 2.2e-16
## alternative hypothesis: significant effects

Keputusan : Tolak H0 (p-value (<2.2e-16)) lebih kecil dari 0.05)

Kesimpulan :

Dengan tingkat signifikansi 5 %, terdapat cukup bukti untuk menyatakan bahwa struktur varians-covarian residual bersifat heteroskedastisitas

**Uji** $λ\_{LM} $**(serial Cross corellation)**

Hipotesis uji $λ\_{LM}$

$H\_{0 }: cov(v\_{it},v\_{jt}$) $=$ 0 dimana $i\ne j$ (tidak terdapat korelasi antar individu)

$H\_{0 }: cov(v\_{it},v\_{jt}$) $\ne $ 0 dimana $i\ne j$ (terdapat korelasi antar individu)

Statistik Uji :

**Output R**

fixed<- plm(Kredit\_UMKM~LDR+ROA+CAR,data=datapanel,index=c("Bank","Waktu"),model="within")
pbgtest(fixed)

##
## Breusch-Godfrey/Wooldridge test for serial correlation in panel models
##
## data: Kredit\_UMKM ~ LDR + ROA + CAR
## chisq = 68.979, df = 24, p-value = 3.119e-06
## alternative hypothesis: serial correlation in idiosyncratic errors

Keputusan: Tolak H0 (p-value (3.119e-06) lebih kecil dari 0.05)

Kesimpulan : dengan tingkat signifikansi 5 %, terdapat cukup bukti untuk menyatakan bahwa struktur varians-covarians terdapat korelasi antar individu.

Dikarenakan struktur variaans-covarians residual bersifat heteroskedastisitas dann terdapat korelasi antarindividu, maka metode estimasi yang digunakan adalah seemingly unrelated Regression (SUR)

**Lampiran 5. Hasil estimasi FEM-SUR**



Karena model yang terpilih FEM dan metode estimasi SUR, maka hanyaa perlu menguji asumsi kenormalan dan non-multikolinearitas.

**Lampiran 6. Pengujian Asumsi**

* 1. **Asumsi Normalitas**

Hipotesis Uji Jarque Berra

$H\_{0 }: u\_{it} \~ N(0,σ^{2}) $(error berdistibusi normal)

$H\_{0 }: u\_{it}≁N(0,σ^{2}) $(error tidak berdistibusi normal)

Statistik Uji: Uji Jarque Berra (JB)



Keputusan : Gagal Tolak H0 (p-value (0.8981) lebih kecil dari 0.05)

Kesimpulan : Dengan tingkat signifikansi 5 %, terdapat cukup bukti untuk menyatakan bahwa error berdistribusi normal

* 1. **Asumsi Multikolinearitas**

Matriks Korelasi Pearson

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ROA |  | LDR | CAR |
| ROA | 1 |  | -0.1315646 | 0.283707 |
| LDR | -0.13156 |  | 1 | 0.570961 |
| CAR | 0.283707 |  | 0.570961 | 1 |

Kesimpulan : Seluruh korelasi antar variabel bebas berada diantara nilai -0,8 dan 0,8 yang berarti tidak terdapat multikolinearitas.