**Lampiran 1.** Data Variabel $X_1$, $X_2$, $X_3$, $X_4$, $X_5$ dan Y
Perusahaan Otomotif dan Komponen Di BEI Periode 2015-2018

| Kode | Nama Perusahaan | | ROE | Current Ratio |
|---|---|---|---|---|
| ASII | Astra International Tbk | 2015 | 12,34 | 137,93 |
| | | 2016 | 13,08 | 123,94 |
| | | 2017 | 14,82 | 122,86 |
| | | 2018 | 15,70 | 114,72 |
| AUTO | Astra Auto Part Tbk | 2015 | 3,18 | 132,29 |
| | | 2016 | 4,59 | 150,51 |
| | | 2017 | 5,09 | 155,87 |
| | | 2018 | 6,00 | 150,00 |
| BRAM | Indo Kordsa Tbk | 2015 | 6,87 | 180,65 |
| | | 2016 | 11,28 | 189,08 |
| | | 2017 | 11,32 | 238,89 |
| | | 2018 | 8,32 | 214,88 |
| GDYR | Goodyear Indonesia Tbk | 2015 | -0,20 | 93,66 |
| | | 2016 | 2,94 | 86,00 |
| | | 2017 | -1,67 | 80,07 |
| | | 2018 | 0,93 | 68,89 |
| GJTL | Gajah Tunggal Tbk | 2015 | -5,81 | 177,81 |
| | | 2016 | 10,71 | 173,05 |
| | | 2017 | 0,79 | 162,99 |
| | | 2018 | -1,30 | 150,00 |
| IMAS | Indomobil Sukses International Tbk | 2015 | -0,34 | 93,53 |
| | | 2016 | -4,66 | 92,42 |
| | | 2017 | -0,69 | 83,77 |
| | | 2018 | 0,96 | 77,00 |
| INDS | Indospring Tbk | 2015 | 0,10 | 223,13 |
| | | 2016 | 2,40 | 303,27 |
| | | 2017 | 5,30 | 512,54 |
| | | 2018 | 5,00 | 521,10 |
| LPIN | Multi Prima Sejahtera Tbk | 2015 | -15,60 | 78,97 |
| | | 2016 | -124,12 | 71,35 |
| | | 2017 | 82,94 | 520,65 |
| | | 2018 | 12,00 | 790,00 |
| MASA | Multistrada Arah Sarana Tbk | 2015 | -7,78 | 128,52 |
| | | 2016 | -1,98 | 105,36 |
| | | 2017 | -2,40 | 94,98 |
| | | 2018 | -6,00 | 106,00 |
| PRAS | Prima Alloy Steel Universal Tbk | 2015 | 0,89 | 100,50 |
| | | 2016 | -0,39 | 100,71 |
| | | 2017 | -0,48 | 95,71 |
| | | 2018 | 1,20 | 100,00 |
| SMSM | Selamat Sempurna Tbk | 2015 | 32,03 | 239,38 |
| | | 2016 | 31,78 | 286,03 |
| | | 2017 | 30,38 | 373,91 |
| | | 2018 | 29,00 | 394,00 |

| Kode | Nama Perusahaan | | Fixed Assets | Total Assets | FAR |
|---|---|---|---|---|---|
| ASII | Astra International Tbk | 2015 | 41.702.000 | 245.435.000 | 0,170 |
| | | 2016 | 43.237.000 | 261.855.000 | 0,165 |
| | | 2017 | 48.402.000 | 295.646.000 | 0,164 |
| | | 2018 | 57.733.000 | 344.711.000 | 0,167 |
| AUTO | Astra Auto Part Tbk | 2015 | 3.507.217 | 14.339.110 | 0,245 |
| | | 2016 | 3.599.815 | 14.612.274 | 0,246 |
| | | 2017 | 3.526.867 | 14.762.309 | 0,239 |
| | | 2018 | 3.498.912 | 15.889.648 | 0,220 |
| BRAM | Indo Kordsa Tbk | 2015 | 2.565.895 | 4.277.420 | 0,600 |
| | | 2016 | 2.239.563 | 3.977.869 | 0,563 |
| | | 2017 | 2.304.444 | 4.125.144 | 0,559 |
| | | 2018 | 2.421.521 | 4.446.000 | 0,545 |
| GDYR | Goodyear Indonesia Tbk | 2015 | 814.474 | 1.748.813 | 0,466 |
| | | 2016 | 801.930 | 1.516.130 | 0,529 |
| | | 2017 | 799.617 | 1.676.776 | 0,477 |
| | | 2018 | 952.098 | 1.890.245 | 0,504 |
| GJTL | Gajah Tunggal Tbk | 2015 | 8.733.925 | 17.509.505 | 0,499 |
| | | 2016 | 9.130.997 | 18.697.779 | 0,488 |
| | | 2017 | 8.900.168 | 18.191.176 | 0,489 |
| | | 2018 | 9.341.227 | 19.711.478 | 0,474 |
| IMAS | Indomobil Sukses International Tbk | 2015 | 4.593.404 | 24.860.958 | 0,185 |
| | | 2016 | 3.864.990 | 25.633.342 | 0,151 |
| | | 2017 | 4.638.599 | 31.375.311 | 0,148 |
| | | 2018 | 7.081.169 | 40.955.996 | 0,173 |
| INDS | Indospring Tbk | 2015 | 1.447.375 | 2.533.928 | 0,571 |
| | | 2016 | 1.361.197 | 2.477.273 | 0,549 |
| | | 201 | | | 0,509 |

| | | | | | |
|---|---|---|---|---|---|
| | | 7 | 1.238.823 | 2.434.617 | |
| | | 2018 | 1.220.185 | 2.482.338 | 0,492 |
| LPIN | Multi Prima Sejahtera Tbk | 2015 | 69.344 | 324.055 | 0,214 |
| | | 2016 | 136.749 | 477.838 | 0,286 |
| | | 2017 | 5.604 | 268.116 | 0,021 |
| | | 2018 | 5.011 | 301.596 | 0,017 |
| MASA | Multistrada Arah Sarana Tbk | 2015 | 5.839.298 | 8.771.177 | 0,666 |
| | | 2016 | 5.478.038 | 8.192.537 | 0,669 |
| | | 2017 | 5.958.284 | 8.909.285 | 0,669 |
| | | 2018 | 5.781.023 | 9.650.423 | 0,599 |
| PRAS | Prima Alloy Steel Universal Tbk | 2015 | 859.544 | 1.531.742 | 0,561 |
| | | 2016 | 897.064 | 1.596.467 | 0,562 |
| | | 2017 | 863.440 | 1.542.244 | 0,560 |
| | | 2018 | 965.432 | 1.635.543 | 0,590 |
| SMSM | Selamat Sempurna Tbk | 2015 | 714.935 | 2.220.108 | 0,322 |
| | | 2016 | 658.258 | 2.254.740 | 0,292 |
| | | 2017 | 683.803 | 2.443.341 | 0,280 |
| | | 2018 | 749.122 | 2.801.000 | 0,267 |

| Kode | Nama Perusahaan | | Revenue | Growth |
|---|---|---|---|---|
| ASII | Astra International Tbk | 2014 | 201.701.000 | |
| | | 2015 | 184.196.000 | -8,68 |
| | | 2016 | 181.084.000 | -1,69 |
| | | 2017 | 206.057.000 | 13,79 |
| | | 2018 | 239.205.000 | 16,09 |
| AUTO | Astra Auto Part Tbk | 2014 | 12.255.427 | |
| | | 2015 | 11.723.787 | -4,34 |
| | | 2016 | 12.806.867 | 9,24 |
| | | 2017 | 13.549.857 | 5,80 |
| | | 2018 | 15.356.381 | 13,33 |
| BRAM | Indo Kordsa Tbk | 2014 | 2.583.169 | |
| | | 2015 | 3.046.700 | 17,94 |
| | | 2016 | 2.959.937 | -2,85 |
| | | 2017 | 3.275.673 | 10,67 |
| | | 2018 | 3.966.600 | 21,09 |
| GDYR | Goodyear Indonesia Tbk | 2014 | 1.999.274 | |
| | | 2015 | 2.263.032 | 13,19 |
| | | 2016 | 2.075.931 | -8,27 |
| | | 2017 | 2.184.771 | 5,24 |
| | | 2018 | 2.398.923 | 9,80 |
| GJTL | Gajah Tunggal Tbk | 2014 | 13.070.734 | |
| | | 2015 | 12.970.237 | -0,77 |
| | | 2016 | 13.633.556 | 5,11 |
| | | 2017 | 14.146.918 | 3,77 |
| | | 2018 | 15.349.939 | 8,50 |
| IMAS | Indomobil Sukses International Tbk | 2014 | 19.458.165 | |
| | | 2015 | 18.099.980 | -6,98 |
| | | 2016 | 15.049.532 | -16,85 |
| | | 2017 | 19.359.437 | 28,64 |
| | | 2018 | 17.545.000 | -9,37 |
| INDS | Indospring Tbk | 2014 | 1.866.977 | |
| | | 2015 | 1.659.506 | -11,11 |
| | | 2016 | 1.637.037 | -1,35 |
| | | 2017 | 1.967.983 | 20,22 |
| | | 2018 | 2.400.062 | 21,96 |
| LPIN | Multi Prima Sejahtera Tbk | 2014 | 70.155 | |
| | | 2015 | 77.790 | 10,88 |
| | | 2016 | 141.747 | 82,22 |
| | | 2017 | 102.949 | -27,37 |
| | | 2018 | 95.213 | -7,51 |
| MASA | Multistrada Arah Sarana Tbk | 2014 | 3.535.615 | |
| | | 2015 | 3.474.035 | -1,74 |
| | | 2016 | 3.087.600 | -11,12 |
| | | 2017 | 3.806.647 | 23,29 |
| | | 2018 | 4.752.930 | 24,86 |
| PRAS | Prima Alloy Steel Universal Tbk | 2014 | 445.665 | |

| Kode | Nama Perusahaan | | Revenue | Growth |
|---|---|---|---|---|
| | | 2015 | 469.645 | 5,38 |
| | | 2016 | 366.710 | -21,92 |
| | | 2017 | 348.471 | -4,97 |
| | | 2018 | 574.870 | 64,97 |
| SMSM | Selamat Sempurna Tbk | 2014 | 2.632.860 | |
| | | 2015 | 2.802.924 | 6,46 |
| | | 2016 | 2.879.876 | 2,75 |
| | | 2017 | 3.339.964 | 15,98 |
| | | 2018 | 3.933.000 | 17,76 |

| Kode | Nama Perusahaan | | Jumlah saham institusional | Jumlah Saham Beredar | Kepemilikan Institusional | DER |
|---|---|---|---|---|---|---|
| ASII | Astra International Tbk | 2015 | 20.288.255.040 | 40.483.553.140 | 50,11 | 0,94 |
| | | 2016 | 20.288.255.040 | 40.483.553.140 | 50,11 | 0,87 |
| | | 2017 | 20.288.255.040 | 40.483.553.140 | 50,11 | 0,89 |
| | | 2018 | 20.288.255.040 | 40.483.553.140 | 50,11 | 0,98 |
| AUTO | Astra Auto Part Tbk | 2015 | 3.855.786.337 | 4.819.733.000 | 80,00 | 0,41 |
| | | 2016 | 3.855.786.337 | 4.819.733.000 | 80,00 | 0,39 |
| | | 2017 | 3.855.786.337 | 4.819.733.000 | 80,00 | 0,40 |
| | | 2018 | 3.855.786.337 | 4.819.733.000 | 80,00 | 0,40 |
| BRAM | Indo Kordsa Tbk | 2015 | 410.024.410 | 450.000.000 | 91,12 | 0,60 |
| | | 2016 | 410.024.410 | 450.000.000 | 91,12 | 0,50 |
| | | 2017 | 410.024.410 | 450.000.000 | 91,12 | 0,40 |
| | | 2018 | 410.024.410 | 450.000.000 | 91,12 | 0,34 |
| GDYR | Goodyear Indonesia Tbk | 2015 | 377.547.400 | 410.000.000 | 92,08 | 1,15 |
| | | 2016 | 377.547.400 | 410.000.000 | 92,08 | 1,01 |
| | | 2017 | 377.547.400 | 410.000.000 | 92,08 | 1,31 |
| | | 2018 | 377.547.400 | 410.000.000 | 92,08 | 1,32 |
| GJTL | Gajah Tunggal Tbk | 2015 | 2.073.452.443 | 3.484.800.000 | 59,50 | 2,25 |
| | | 2016 | 2.073.452.443 | 3.484.800.000 | 59,50 | 2,20 |
| | | 2017 | 2.073.452.443 | 3.484.800.000 | 59,50 | 2,20 |
| | | 2018 | 2.073.452.443 | 3.484.800.000 | 59,50 | 2,40 |
| IMAS | Indomobil Sukses International Tbk | 2015 | 2.479.277.424 | 2.765.278.412 | 89,66 | 2,71 |
| | | 2016 | 2.479.277.424 | 2.765.278.412 | 89,66 | 2,82 |
| | | 2017 | 2.479.277.424 | 2.765.278.412 | 89,66 | 2,38 |
| | | 2018 | 2.479.277.424 | 2.765.278.412 | 89,66 | 2,97 |
| INDS | Indospring Tbk | 2015 | 578.210.207 | 656.249.710 | 88,11 | 0,33 |
| | | 2016 | 578.210.207 | 656.249.710 | 88,11 | 0,20 |
| | | 2017 | 578.210.207 | 656.249.710 | 88,11 | 0,14 |
| | | 2018 | 578.210.207 | 656.249.710 | 88,11 | 0,13 |
| LPIN | Multi Prima Sejahtera Tbk | 2015 | 86.811.600 | 106.250.000 | 81,71 | 1,78 |
| | | 2016 | 86.811.600 | 106.250.000 | 81,71 | 8,26 |
| | | 2017 | 86.811.600 | 106.250.000 | 81,71 | 0,16 |
| | | 2018 | 86.811.600 | 106.250.000 | 81,71 | 0,10 |
| MASA | Multistrada Arah Sarana Tbk | 2015 | 4.790.927.999 | 9.182.946.945 | 52,17 | 0,73 |
| | | 2016 | 4.790.927.999 | 9.182.946.945 | 52,17 | 0,80 |
| | | 2017 | 4.790.927.999 | 9.182.946.945 | 52,17 | 0,95 |

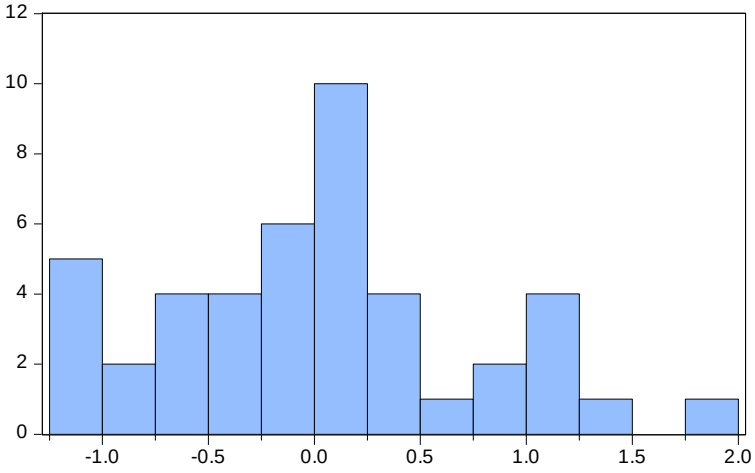
| Kode | Nama Perusahaan | | Jumlah saham institusional | Jumlah Saham Beredar | Kepemilikan Institusional | DER |
|---|---|---|---|---|---|---|
| | | 2018 | 4.790.927.999 | 9.182.946.945 | 52,17 | 0,10 |
| PRAS | Prima Alloy Steel Universal Tbk | 2015 | 379.043.478 | 701.043.478 | 54,07 | 1,13 |
| | | 2016 | 379.043.478 | 701.043.478 | 54,07 | 1,30 |
| | | 2017 | 379.043.478 | 701.043.478 | 54,07 | 1,28 |
| | | 2018 | 379.043.478 | 701.043.478 | 54,07 | 1,37 |
| SMSM | Selamat Sempurna Tbk | 2015 | 3.347.263.708 | 5.758.675.440 | 58,13 | 0,54 |
| | | 2016 | 3.347.263.708 | 5.758.675.440 | 58,13 | 0,43 |
| | | 2017 | 3.347.263.708 | 5.758.675.440 | 58,13 | 0,34 |
| | | 2018 | 3.347.263.708 | 5.758.675.440 | 58,13 | 0,30 |

**Lampiran 2.** Hasil Olahan Data Eviews 10.
Deskripsi Data

| | Y | X1 | X2 | X3 | X4 | X5 |
|---|---|---|---|---|---|---|
| Mean | 1.186636 | 4.284545 | 190.8391 | 0.389993 | 7.545757 | 72.42298 |
| Median | 0.880000 | 2.670000 | 135.1100 | 0.475388 | 5.591110 | 80.00000 |
| Maximum | 8.260000 | 82.94000 | 790.0000 | 0.668772 | 82.21751 | 92.08473 |
| Minimum | 0.100000 | -124.1200 | 68.89000 | 0.016615 | -27.37130 | 50.11481 |
| Std. Dev. | 1.363261 | 25.18429 | 151.8025 | 0.190039 | 19.47445 | 16.81284 |
| Skewness | 3.352565 | -2.303817 | 2.133958 | -0.267276 | 1.633170 | -0.125229 |
| Kurtosis | 17.54043 | 18.47941 | 7.547082 | 1.708817 | 7.557834 | 1.227069 |
| | | | | | | |
| Jarque-Bera | 470.0355 | 478.2111 | 71.30027 | 3.580317 | 57.64518 | 5.877693 |
| Probability | 0.000000 | 0.000000 | 0.000000 | 0.166934 | 0.000000 | 0.052927 |
| | | | | | | |
| Sum | 52.21200 | 188.5200 | 8396.920 | 17.15971 | 332.0133 | 3186.611 |
| Sum Sq. Dev. | 79.91465 | 27272.69 | 990891.5 | 1.552932 | 16307.94 | 12154.89 |
| | | | | | | |
| Observations | 44 | 44 | 44 | 44 | 44 | 44 |

**Lampiran 3.** Hasil Olahan Data Eviews 10.
Uji Asumsi Klasik

1. = Uji Normalitas =




| Series: Residuals | |
|---|---|
| Sample 2015 2058 | |
| Observations 44 | |
| Mean | 3.56e-16 |
| Median | 0.012627 |
| Maximum | 1.906438 |
| Minimum | -1.224276 |
| Std. Dev. | 0.732897 |
| Skewness | 0.400220 |
| Kurtosis | 2.956444 |
| Jarque-Bera | 1.178104 |
| Probability | 0.554853 |

- - Ho : error term terdistribusi normal
- - H1 : error term tidak terdistribusi normal
- - Jika p-value < α, maka Ho ditolak
- - Karena p value = **0,554853** > 0,05, maka H0 diterima
- - Kesimpulannya adalah dengan tingkat keyakinan 95%, dapat dikatakan bahwa error term terdistribusi normal.

2. Uji Multikolinearitas

multikolinearitas berarti adanya hubungan linear yang sempurna atau pasti antara beberapa atau semua variabel yang menjelaskan model regresi. jika koefisien koreasi antara masing-masing variabel bebas lebih besar dari 0,8, berarti terjadi multikolinearitas dalam model regresi.

| | Y | X1 | X2 | X3 | X4 | X5 |
|---|---|---|---|---|---|---|
| Y | 1 | -0.7753987812093934 | -0.4067288423642567 | -0.1339866433445529 | 0.4192925748758324 | 0.06977440301617649 |
| X1 | -0.7753987812093934 | 1 | 0.4157935074253321 | -0.2013113743505587 | -0.5593480864074532 | -0.1168956730445237 |
| X2 | -0.4067288423642567 | 0.4157935074253321 | 1 | -0.2353696336337728 | -0.1214758620964637 | 0.1459574971742668 |
| X3 | -0.1339866433445529 | -0.2013113743505587 | -0.2353696336337728 | 1 | 0.1333771130474091 | -0.0955098079673142 3 |
| X4 | 0.4192925748758324 | -0.5593480864074532 | -0.1214758620964637 | 0.1333771130474091 | 1 | -0.0282500519241 0048 |
| X5 | 0.06977440301617649 | -0.1168956730445237 | 0.1459574971742668 | -0.0955098079673142 3 | -0.0282500519241 0048 | 1 |

dari output di atas dapat kita lihat bahwa tidak terdapat variabel yang memiliki nilai lebih dari 0,8, sehingga dapat disimpulkan tidak terjadi multikolinearitas dalam model regresi.

Variance Inflation Factors
Date: 02/22/20 Time: 05:05
Sample: 2015 2058
Included observations: 44

| Variable | Coefficient Variance | Uncentered VIF | Centered VIF |
|---|---|---|---|
| X1 | 4.24E-05 | 1.956895 | 1.900605 |
| X2 | 8.22E-07 | 3.507815 | 1.340298 |
| X3 | 0.424116 | 5.753211 | 1.083593 |
| X4 | 5.68E-05 | 1.758713 | 1.524512 |
| X5 | 5.48E-05 | 21.89131 | 1.095282 |
| C | 0.405173 | 29.33068 | NA |

3. Uji Heteroskedastisitas =

dengan hasil di atas kita menduga tidak terjadi heteroskedastisitas, karena residualnya tidak membentuk pola tertentu, dengan kata lainnya residualnya cenderung konstan.

- untuk membuktikan tidak ada heteroskedastisitas, maka kita akan melakukan uji Glesjer *heteroscedasticity*

Heteroskedasticity Test: Glejser

| | | | |
|---|---|---|---|
| F-statistic | 2.677924 | Prob. F(5,38) | 0.0361 |
| Obs*R-squared | 11.46425 | Prob. Chi-Square(5) | 0.1429 |
| Scaled explained SS | 11.39123 | Prob. Chi-Square(5) | 0.1442 |

Test Equation:
Dependent Variable: ARESID
Method: Least Squares
Date: 02/22/20 Time: 05:05
Sample: 2015 2058
Included observations: 44

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.264651 | 0.353917 | 3.573293 | 0.0010 |
| X1 | -0.004521 | 0.003619 | -1.249491 | 0.2191 |
| X2 | 0.000175 | 0.000504 | 0.346572 | 0.7308 |
| X3 | -1.255083 | 0.362096 | -3.466157 | 0.0013 |
| X4 | -0.003021 | 0.004191 | -0.720837 | 0.4754 |
| X5 | -0.002950 | 0.004115 | -0.716950 | 0.4778 |

| | | | |
|---|---|---|---|
| R-squared | 0.260551 | Mean dependent var | 0.552693 |
| Adjusted R-squared | 0.163255 | S.D. dependent var | 0.473882 |
| S.E. of regression | 0.433478 | Akaike info criterion | 1.292173 |
| Sum squared resid | 7.140325 | Schwarz criterion | 1.535472 |
| Log likelihood | -22.42780 | Hannan-Quinn criter. | 1.382400 |
| F-statistic | 2.677924 | Durbin-Watson stat | 1.318659 |
| Prob(F-statistic) | 0.036113 | | |

- Ho : tidak ada heteroskedastisitas
- H1 : ada heteroskedastisitas
- Jika p-value obs*-square < α, maka Ho ditolak
- Karena p value -obs*-square = 0.1442 > 0,01, maka H0 diterima

Kesimpulannya adalah dengan tingkat keyakinan 95%, dapat dikatakan bahwa tidak terdapat heteroskedastisitas dalam model regresi.

4 .= Uji Autokorelasi =

Breusch-Godfrey Serial Correlation LM Test:

| | | | |
|---|---|---|---|
| F-statistic | 9.700972 | Prob. F(2,36) | 0.1004 |
| Obs*R-squared | 15.40895 | Prob. Chi-Square(2) | 0.1005 |

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 02/22/20 Time: 05:06
Sample: 2015 2058
Included observations: 44
Presample missing value lagged residuals set to zero.

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| X1 | -0.000234 | 0.005536 | -0.042191 | 0.9666 |
| X2 | -0.000993 | 0.000784 | -1.265206 | 0.2139 |
| X3 | 0.251369 | 0.542408 | 0.463431 | 0.6458 |
| X4 | 0.006427 | 0.006427 | 1.000080 | 0.3239 |
| X5 | 6.24E-05 | 0.006175 | 0.010106 | 0.9920 |
| C | 0.040446 | 0.530624 | 0.076224 | 0.9397 |
| RESID(-1) | 0.709060 | 0.179065 | 3.959789 | 0.0003 |
| RESID(-2) | -0.084876 | 0.164612 | -0.515612 | 0.6093 |

| | | | |
|---|---|---|---|
| R-squared | 0.350203 | Mean dependent var | 3.56E-16 |
| Adjusted R-squared | 0.223854 | S.D. dependent var | 0.732897 |
| S.E. of regression | 0.645676 | Akaike info criterion | 2.125928 |
| Sum squared resid | 15.00831 | Schwarz criterion | 2.450326 |
| Log likelihood | -38.77041 | Hannan-Quinn criter. | 2.246230 |
| F-statistic | 2.771706 | Durbin-Watson stat | 2.218806 |
| Prob(F-statistic) | 0.020634 | | |

- Ho : tidak ada korelasi serial
- H1 : ada korelasi serial
- Jika p-value obs*-square < α, maka Ho ditolak
- Karena p value -obs*-square = 0.1005 > 0,01, maka H0 diterima
- Kesimpulannya adalah dengan tingkat keyakinan 95%, dapat dikatakan bahwa tidak terdapat autokorelasi dalam model regresi.

**Lampiran 4.** Hasil Olahan Data Eviews 10.
***Panel Least Square* atau *Common Effect***

Dependent Variable: Y?
Method: Pooled Least Squares
Date: 02/22/20 Time: 04:52
Sample: 2015 2018
Included observations: 4
Cross-sections included: 11
Total pool (balanced) observations: 44

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 2.727092 | 0.636532 | 4.284299 | 0.0001 |
| X1? | -0.041910 | 0.006508 | -6.439411 | 0.0000 |
| X2? | -0.001412 | 0.000907 | -1.557036 | 0.1278 |
| X3? | -2.374627 | 0.651242 | -3.646306 | 0.0008 |
| X4? | 0.000733 | 0.007538 | 0.097196 | 0.9231 |
| X5? | -0.002360 | 0.007401 | -0.318865 | 0.7516 |

| | | | |
|---|---|---|---|
| R-squared | 0.710980 | Mean dependent var | 1.186636 |
| Adjusted R-squared | 0.672951 | S.D. dependent var | 1.363261 |
| S.E. of regression | 0.779624 | Akaike info criterion | 2.466114 |
| Sum squared resid | 23.09693 | Schwarz criterion | 2.709413 |
| Log likelihood | -48.25452 | Hannan-Quinn criter. | 2.556341 |
| F-statistic | 18.69576 | Durbin-Watson stat | 0.824357 |
| Prob(F-statistic) | 0.000000 | | |

**Lampiran 5.** Hasil Olahan Data Eviews 10.

***Fixed Effect Model***

Uji fixed effect model dilakukan untuk melihat model manakah yang lebih tepat, model common atau fixed effect model dengan hipotes sebagai berikut :

**H0 : Common Effect Model**
**H1 : Fixed Effect Model**

**jika Chi Suare > 0,05 ==> Terima H0**
**Jika Chi Square < 0,05 ==> Tolak H0**

Dependent Variable: Y?
Method: Pooled Least Squares
Date: 02/22/20 Time: 04:52
Sample: 2015 2018
Included observations: 4
Cross-sections included: 11
Total pool (balanced) observations: 44

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.062548 | 0.687986 | -0.090915 | 0.9281 |
| X1? | 0.006665 | 0.014516 | 0.459154 | 0.6491 |
| X2? | -2.408270 | 1.435362 | -1.677814 | 0.1031 |
| X3? | -0.087341 | 0.049154 | -1.776872 | 0.0851 |
| X4? | 0.068390 | 0.147182 | 0.464662 | 0.6452 |
| X5? | 0.190085 | 0.375523 | 0.506187 | 0.6161 |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.326619 | Mean dependent var | 0.371854 |
| Adjusted R-squared | 0.040942 | S.D. dependent var | 0.850335 |
| S.E. of regression | 0.832746 | Akaike info criterion | 2.722130 |
| Sum squared resid | 22.88437 | Schwarz criterion | 3.306880 |
| Log likelihood | -50.33112 | Hannan-Quinn criter. | 2.943108 |
| F-statistic | 1.143316 | Durbin-Watson stat | 1.655915 |
| Prob(F-statistic) | 0.360443 | | |

Redundant Fixed Effects Tests
Pool: POOL01
Test cross-section fixed effects

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 1.287250 | (11,33) | 0.2745 |
| Cross-section Chi-square | 17.137593 | 11 | 0.1039 |

Cross-section fixed effects test equation:
Dependent Variable: Y?
Method: Panel Least Squares
Date: 02/22/20 Time: 04:52
Sample: 2015 2018
Included observations: 4
Cross-sections included: 11
Total pool (balanced) observations: 44

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 2.423317 | 0.285581 | 0.447027 | 0.6570 |
| X1? | -0.036371 | 0.011318 | -0.158478 | 0.8748 |
| X2? | 1.488710 | 0.872954 | 1.705369 | 0.1000 |
| X3? | 0.016262 | 0.021311 | 0.763078 | 0.4523 |
| X4? | 0.002015 | 0.111117 | 0.748363 | 0.4582 |
| X5? | 1.876094 | 0.134864 | 0.678878 | 0.5008 |

| | | | |
|---|---|---|---|
| R-squared | 0.037682 | Mean dependent var | 0.371854 |
| Adjusted R-squared | -0.027930 | S.D. dependent var | 0.850335 |
| S.E. of regression | 0.862128 | Akaike info criterion | 2.620830 |
| Sum squared resid | 32.70367 | Schwarz criterion | 2.776763 |
| Log likelihood | -58.89992 | Hannan-Quinn criter. | 2.679757 |
| F-statistic | 0.574316 | Durbin-Watson stat | 1.186967 |
| Prob(F-statistic) | 0.634927 | | |

- Jika dilihat dari hasil output di atas, dimana nilai chi-square nya 0.1039 lebih besar dari alpha 0,05 maka model yang tepat menggunakan **Common Effect Model**

**Lampiran 6.** Hasil Olahan Data Eviews 10.

***Random Effect Model***

Uji random effect dilakukan untuk melihat manakah yang lebih tepat model fixed atau random.

**H0 : Random Effect Model**
**H1 : Fixed Effect Model**

**Jika Chi Suare > 0,05 ==> Terima H0**
**Jika Chi Square < 0,05 ==> Tolak H0**

Dependent Variable: Y?
Method: Pooled EGLS (Cross-section random effects)
Date: 02/22/20 Time: 04:52
Sample: 2015 2018
Included observations: 4
Cross-sections included: 11
Total pool (balanced) observations: 44
Swamy and Arora estimator of component variances

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 2.423317 | 1.350236 | 1.794735 | 0.0807 |
| X1? | -0.036371 | 0.004862 | -7.480969 | 0.0000 |
| X2? | -0.002015 | 0.000885 | -2.276819 | 0.0285 |
| X3? | 1.876094 | 1.369482 | 1.369930 | 0.1787 |
| X4? | 0.004160 | 0.004930 | 2.843839 | 0.0040 |
| X5? | -5.56E-05 | 0.015683 | -0.003547 | 0.9972 |

Weighted Statistics

| | | | |
|---|---|---|---|
| R-squared | 0.830068 | Mean dependent var | 0.329670 |
| Adjusted R-squared | 0.807708 | S.D. dependent var | 1.060743 |
| S.E. of regression | 0.465148 | Sum squared resid | 8.221769 |
| F-statistic | 37.12364 | Durbin-Watson stat | 2.110221 |
| Prob(F-statistic) | 0.000000 | | |

Unweighted Statistics

| | | | |
|---|---|---|---|
| R-squared | 0.699935 | Mean dependent var | 1.186636 |
| Sum squared resid | 23.97956 | Durbin-Watson stat | 0.723523 |

Correlated Random Effects - Hausman Test
Pool: POOL01
Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 1.849807 | 4 | 0.7634 |

Cross-section random effects test comparisons:

| Variable | Fixed | Random | Var(Diff.) | Prob. |
|---|---|---|---|---|
| X1? | -0.031362 | -0.036371 | 0.000014 | 0.1767 |
| X2? | -0.000780 | -0.002015 | 0.000001 | 0.2896 |
| X3? | 3.704284 | -1.876094 | 20.405556 | 0.2167 |
| X4? | 0.005010 | 0.004160 | 0.000001 | 0.4716 |

Cross-section random effects test equation:
Dependent Variable: Y?
Method: Panel Least Squares
Date: 02/22/20 Time: 04:54
Sample: 2015 2018
Included observations: 4
Cross-sections included: 11
Total pool (balanced) observations: 44

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.012543 | 2.089535 | -0.006003 | 0.9953 |
| X1? | -0.031362 | 0.006114 | -5.129580 | 0.0000 |
| X2? | -0.000780 | 0.001464 | -0.532879 | 0.5983 |
| X3? | 3.704284 | 4.720279 | 0.784760 | 0.4392 |
| X4? | 0.005010 | 0.005069 | 0.988297 | 0.3315 |
| X5? | NA | NA | NA | NA |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.917807 | Mean dependent var | 1.186636 |
| Adjusted R-squared | 0.873776 | S.D. dependent var | 1.363261 |
| S.E. of regression | 0.484340 | Akaike info criterion | 1.663230 |
| Sum squared resid | 6.568400 | Schwarz criterion | 2.312027 |
| Log likelihood | -20.59107 | Hannan-Quinn criter. | 1.903835 |
| F-statistic | 20.84419 | Durbin-Watson stat | 2.559428 |
| Prob(F-statistic) | 0.000000 | | |

hasil dari uji hausman di atas dapat dilihat memiliki nilai probabilitaas lebih besar dari alpha 0,05 (**0,7634 > 0,05** ), maka model yang tepat adalah menggunakan **Random Effect Model**

**Lampiran 12.** Hasil Olahan Data Eviews 10.

***Uji Breusch Pagan***

**Lagrange Multiplier (LM)** adalah uji untuk mengetahui apakah model **Random Effect** atau model **Common Effect (OLS)** yang paling tepat digunakan. Uji signifikasi Random Effect ini dikembangkan oleh Breusch Pagan. Metode Breusch Pagan untuk uji signifikasi Random Effect didasarkan pada nilai residual dari metode OLS.

Hipotesis yang digunakan adalah :

$H_0$ : Common Effect Model

$H_1$ : Random Effect Model

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 | 1.305088 | 0.207199 | 1.512286 |
| | (0.0033) | (0.6490) | (0.2188) |

Berdasarkan nilai Prob. Breusch-Pagan (BP) sebesar 0,0033, menunjukkan bahwa $H_0$ ditolak $H_1$diterima. Artinya, bahwa **model *random effect*** dipilih dalam uji *Lagrange Multiplier*. Berdasarkan uji model *Chow-test* menunjukkan bahwa *Common Effect Model* yang dipilih. Di sisi lain, hasil dari uji model *Hausman* menunjukkan bahwa *Random Effect Model* yang dipilih dan hasil dari uji model *Lagrange Multiplier* menunjukkan bahwa ***Random Effect*** dipilih. Dari hasil tersebut terbukti model panel yang dipilih adalah model ***Random Effect Model*.**