**Lampiran 1 :** *Volatility Spillover* **dengan** *Maximum Likelihood – Normal Distribution* **dan** *Optimization Algorithm – Marquardt***.**

**Lampiran 1.1 GARCH** *Variance Series*

Rangkuman Signifikansi Pembentukan GARCH *Variance Series*

| | | Coefficient | Z Statistic | Prob |
|---|---|---|---|---|
| **J C I** | Normal | 0.706792* | 12.8025600 | 0.0000000 |
| | Krisis | 0.808642* | 19.8914000 | 0.0000000 |
| **D J I** | Normal | 0.920296* | 37.3495400 | 0.0000000 |
| | Krisis | 0.913209* | 14.6512100 | 0.0000000 |
| **H S I** | Normal | 0.918723* | 35.3711800 | 0.0000000 |
| | Krisis | 0.782612* | 14.4279800 | 0.0000000 |

**JCI Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:21
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 17 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.001033 | 0.000268 | 3.860471 | 0.0001 |
| R_JCI_G(-1) | 0.043476 | 0.056293 | 0.772318 | 0.4399 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | 4.62E-06 | 1.33E-06 | 3.473276 | 0.0005 |
| RESID(-1)^2 | 0.188851 | 0.042004 | 4.496002 | 0.0000 |
| GARCH(-1) | 0.706792 | 0.055207 | 12.80256 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | -0.004696 | Mean dependent var | 0.000824 |
| Adjusted R-squared | -0.013548 | S.D. dependent var | 0.006525 |
| S.E. of regression | 0.006569 | Akaike info criterion | -7.389848 |
| Sum squared resid | 0.019590 | Schwarz criterion | -7.344870 |
| Log likelihood | 1700.970 | Hannan-Quinn criter. | -7.372135 |
| Durbin-Watson stat | 2.115644 | | |

**Lampiran 1.1 GARCH *Variance Series* (lanjutan)**

**JCI Krisis**

Dependent Variable: R_JCI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:03
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 69 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001099 | 0.000760 | -1.445136 | 0.1484 |
| R_JCI_R(-1) | 0.172328 | 0.088106 | 1.955929 | 0.0505 |
| Variance Equation | | | | |
| C | 5.38E-06 | 2.53E-06 | 2.125341 | 0.0336 |
| RESID(-1)^2 | 0.135003 | 0.048327 | 2.793529 | 0.0052 |
| GARCH(-1) | 0.808642 | 0.040653 | 19.89140 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.045506 | Mean dependent var | -0.001997 |
| Adjusted R-squared | 0.025517 | S.D. dependent var | 0.011711 |
| S.E. of regression | 0.011560 | Akaike info criterion | -6.372435 |
| Sum squared resid | 0.025525 | Schwarz criterion | -6.288810 |
| Log likelihood | 629.4986 | Hannan-Quinn criter. | -6.338580 |
| F-statistic | 2.276508 | Durbin-Watson stat | 1.859868 |
| Prob(F-statistic) | 0.062568 | | |

**DJI Normal**

Dependent Variable: R_DJI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:17
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 18 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000296 | 0.000154 | 1.915300 | 0.0555 |
| R_DJI_G(-1) | -0.060546 | 0.059398 | -1.019326 | 0.3080 |
| Variance Equation | | | | |
| C | 3.03E-07 | 1.13E-07 | 2.685799 | 0.0072 |
| RESID(-1)^2 | 0.058720 | 0.018624 | 3.152990 | 0.0016 |
| GARCH(-1) | 0.920296 | 0.024640 | 37.34954 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.006910 | Mean dependent var | 0.000152 |
| Adjusted R-squared | -0.001839 | S.D. dependent var | 0.003573 |
| S.E. of regression | 0.003576 | Akaike info criterion | -8.551292 |
| Sum squared resid | 0.005806 | Schwarz criterion | -8.506313 |
| Log likelihood | 1967.521 | Hannan-Quinn criter. | -8.533578 |
| F-statistic | 0.789771 | Durbin-Watson stat | 2.068386 |
| Prob(F-statistic) | 0.532219 | | |

**Lampiran 1.1 GARCH *Variance Series* (lanjutan)**

### DJI Krisis

Dependent Variable: R_DJI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:00
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 12 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000694 | 0.000480 | -1.446181 | 0.1481 |
| R_DJI_R(-1) | -0.168004 | 0.076947 | -2.183389 | 0.0290 |
| Variance Equation | | | | |
| C | 4.07E-07 | 1.57E-06 | 0.259140 | 0.7955 |
| RESID(-1)^2 | 0.099479 | 0.042664 | 2.331688 | 0.0197 |
| GARCH(-1) | 0.913209 | 0.062330 | 14.65121 | 0.0000 |
| R-squared | 0.014490 | Mean dependent var | | -0.000918 |
| Adjusted R-squared | -0.006149 | S.D. dependent var | | 0.010110 |
| S.E. of regression | 0.010141 | Akaike info criterion | | -6.782849 |
| Sum squared resid | 0.019642 | Schwarz criterion | | -6.699224 |
| Log likelihood | 669.7192 | Hannan-Quinn criter. | | -6.748994 |
| F-statistic | 0.702067 | Durbin-Watson stat | | 1.936102 |
| Prob(F-statistic) | 0.591425 | | | |

### HSI Normal

Dependent Variable: R_HSI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:19
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 14 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000607 | 0.000233 | 2.598653 | 0.0094 |
| R_HSI_G(-1) | -0.023790 | 0.054983 | -0.432684 | 0.6652 |
| Variance Equation | | | | |
| C | 4.27E-07 | 2.74E-07 | 1.558809 | 0.1190 |
| RESID(-1)^2 | 0.071992 | 0.021211 | 3.394021 | 0.0007 |
| GARCH(-1) | 0.918723 | 0.025974 | 35.37118 | 0.0000 |
| R-squared | 0.001153 | Mean dependent var | | 0.000581 |
| Adjusted R-squared | -0.007648 | S.D. dependent var | | 0.005915 |
| S.E. of regression | 0.005937 | Akaike info criterion | | -7.634175 |
| Sum squared resid | 0.016003 | Schwarz criterion | | -7.589196 |
| Log likelihood | 1757.043 | Hannan-Quinn criter. | | -7.616462 |
| F-statistic | 0.130969 | Durbin-Watson stat | | 2.019097 |
| Prob(F-statistic) | 0.971050 | | | |

**Lampiran 1.1 GARCH *Variance Series* (lanjutan)**

**HSI Krisis**

Dependent Variable: R_HSI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:01
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 22 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001033 | 0.000693 | -1.490665 | 0.1360 |
| R_HSI_R(-1) | -0.098995 | 0.089234 | -1.109384 | 0.2673 |
| Variance Equation | | | | |
| C | 4.52E-06 | 2.77E-06 | 1.631265 | 0.1028 |
| RESID(-1)^2 | 0.188506 | 0.058833 | 3.204072 | 0.0014 |
| GARCH(-1) | 0.782612 | 0.054243 | 14.42798 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.009938 | Mean dependent var | -0.001670 |
| Adjusted R-squared | -0.010796 | S.D. dependent var | 0.014564 |
| S.E. of regression | 0.014642 | Akaike info criterion | -6.057668 |
| Sum squared resid | 0.040950 | Schwarz criterion | -5.974042 |
| Log likelihood | 598.6515 | Hannan-Quinn criter. | -6.023812 |
| F-statistic | 0.479293 | Durbin-Watson stat | 2.021920 |
| Prob(F-statistic) | 0.750918 | | |

**Lampiran 1.2** *Contemporaneous Volatility Spillover* **Amerika ke Indonesia**

**Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:30
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 37 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_DJI_G

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000921 | 0.000588 | 1.566596 | 0.1172 |
| R_JCI_G(-1) | 0.059832 | 0.056009 | 1.068266 | 0.2854 |
| R_DJI_G | 0.158612 | 0.070921 | 2.236455 | 0.0253 |
| V_DJI_G | 1.285406 | 48.17961 | 0.026679 | 0.9787 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | 2.92E-06 | 1.39E-06 | 2.109869 | 0.0349 |
| RESID(-1)^2 | 0.193071 | 0.046796 | 4.125823 | 0.0000 |
| GARCH(-1) | 0.646438 | 0.072840 | 8.874715 | 0.0000 |
| V_DJI_G | 0.313524 | 0.162316 | 1.931561 | 0.0534 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.011195 | Mean dependent var | | 0.000824 |
| Adjusted R-squared | -0.004152 | S.D. dependent var | | 0.006525 |
| S.E. of regression | 0.006538 | Akaike info criterion | | -7.393330 |
| Sum squared resid | 0.019280 | Schwarz criterion | | -7.321364 |
| Log likelihood | 1704.769 | Hannan-Quinn criter. | | -7.364989 |
| F-statistic | 0.729449 | Durbin-Watson stat | | 2.192701 |
| Prob(F-statistic) | 0.647087 | | | |

**Recesion**

Dependent Variable: R_JCI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:06
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 99 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_DJI_R

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -4.67E-05 | 0.000939 | -0.049740 | 0.9603 |
| R_JCI_R(-1) | 0.166035 | 0.072024 | 2.305280 | 0.0212 |
| R_DJI_R | 0.214121 | 0.078321 | 2.733894 | 0.0063 |
| V_DJI_R | -14.09116 | 14.27627 | -0.987034 | 0.3236 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | -2.16E-06 | 4.04E-06 | -0.534978 | 0.5927 |
| RESID(-1)^2 | 0.086287 | 0.051747 | 1.667469 | 0.0954 |
| GARCH(-1) | 0.708808 | 0.055171 | 12.84754 | 0.0000 |
| V_DJI_R | 0.299992 | 0.102770 | 2.919064 | 0.0035 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.094850 | Mean dependent var | | -0.001997 |
| Adjusted R-squared | 0.061147 | S.D. dependent var | | 0.011711 |
| S.E. of regression | 0.011347 | Akaike info criterion | | -6.456242 |
| Sum squared resid | 0.024206 | Schwarz criterion | | -6.322441 |
| Log likelihood | 640.7117 | Hannan-Quinn criter. | | -6.402073 |
| F-statistic | 2.814326 | Durbin-Watson stat | | 1.936211 |
| Prob(F-statistic) | 0.008247 | | | |

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## Lampiran 1.3 *Contemporaneous Volatility Spillover* Hongkong ke Indonesia

### Normal

Dependent Variable: R_JCI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:35
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 34 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_HSI_G

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000466 | 0.000335 | 1.390030 | 0.1645 |
| R_JCI_G(-1) | 0.037092 | 0.038544 | 0.962332 | 0.3359 |
| R_HSI_G | 0.685646 | 0.032710 | 20.96128 | 0.0000 |
| V_HSI_G | 3.338206 | 9.303172 | 0.358825 | 0.7197 |
| Variance Equation | | | | |
| C | 2.60E-06 | 1.03E-06 | 2.522276 | 0.0117 |
| RESID(-1)^2 | 0.170711 | 0.047768 | 3.573790 | 0.0004 |
| GARCH(-1) | 0.692628 | 0.072532 | 9.549303 | 0.0000 |
| V_HSI_G | 0.012576 | 0.020079 | 0.626327 | 0.5311 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.480075 | Mean dependent var | | 0.000824 |
| Adjusted R-squared | 0.472005 | S.D. dependent var | | 0.006525 |
| S.E. of regression | 0.004741 | Akaike info criterion | | -7.974181 |
| Sum squared resid | 0.010138 | Schwarz criterion | | -7.902215 |
| Log likelihood | 1838.075 | Hannan-Quinn criter. | | -7.945840 |
| F-statistic | 59.49034 | Durbin-Watson stat | | 2.108660 |
| Prob(F-statistic) | 0.000000 | | | |

### Krisis

Dependent Variable: R_JCI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:12
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 61 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_HSI_R

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -9.59E-05 | 0.000624 | -0.153548 | 0.8780 |
| R_JCI_R(-1) | 0.193019 | 0.063321 | 3.048252 | 0.0023 |
| R_HSI_R | 0.543381 | 0.032761 | 16.58637 | 0.0000 |
| V_HSI_R | -2.702326 | 2.720403 | -0.993355 | 0.3205 |
| Variance Equation | | | | |
| C | 4.24E-05 | 1.36E-05 | 3.125184 | 0.0018 |
| RESID(-1)^2 | 0.136527 | 0.053616 | 2.546379 | 0.0109 |
| GARCH(-1) | -0.709235 | 0.140984 | -5.030600 | 0.0000 |
| V_HSI_R | 0.282948 | 0.071093 | 3.979956 | 0.0001 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.477731 | Mean dependent var | | -0.001997 |
| Adjusted R-squared | 0.458285 | S.D. dependent var | | 0.011711 |
| S.E. of regression | 0.008619 | Akaike info criterion | | -6.954063 |
| Sum squared resid | 0.013967 | Schwarz criterion | | -6.820262 |
| Log likelihood | 689.4982 | Hannan-Quinn criter. | | -6.899894 |
| F-statistic | 24.56684 | Durbin-Watson stat | | 1.976648 |
| Prob(F-statistic) | 0.000000 | | | |

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**Lampiran 1.4** *Contemporaneous Volatility Spillover* **Indonesia ke Amerika**

**Normal**

Dependent Variable: R_DJI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:38
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 78 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_JCI_G

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000383 | 0.000274 | 1.396040 | 0.1627 |
| R_DJI_G(-1) | -0.124188 | 0.060522 | -2.051957 | 0.0402 |
| R_JCI_G | 0.091952 | 0.026255 | 3.502252 | 0.0005 |
| V_JCI_G | -4.141960 | 6.512975 | -0.635955 | 0.5248 |
| Variance Equation | | | | |
| C | -3.39E-08 | 1.51E-07 | -0.224314 | 0.8225 |
| RESID(-1)^2 | 0.042478 | 0.013451 | 3.158078 | 0.0016 |
| GARCH(-1) | 0.913911 | 0.023118 | 39.53245 | 0.0000 |
| V_JCI_G | 0.014339 | 0.005564 | 2.577322 | 0.0100 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.038926 | Mean dependent var | | 0.000152 |
| Adjusted R-squared | 0.024010 | S.D. dependent var | | 0.003573 |
| S.E. of regression | 0.003530 | Akaike info criterion | | -8.578948 |
| Sum squared resid | 0.005619 | Schwarz criterion | | -8.506982 |
| Log likelihood | 1976.869 | Hannan-Quinn criter. | | -8.550607 |
| F-statistic | 2.609559 | Durbin-Watson stat | | 2.029278 |
| Prob(F-statistic) | 0.011945 | | | |

**Krisis**

Dependent Variable: R_DJI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:10
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 111 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_JCI_R

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000599 | 0.000718 | -0.833841 | 0.4044 |
| R_DJI_R(-1) | -0.201760 | 0.072140 | -2.796779 | 0.0052 |
| R_JCI_R | 0.141164 | 0.052469 | 2.690424 | 0.0071 |
| V_JCI_R | 0.936869 | 4.628099 | 0.202431 | 0.8396 |
| Variance Equation | | | | |
| C | -3.01E-07 | 1.29E-06 | -0.232354 | 0.8163 |
| RESID(-1)^2 | 0.073949 | 0.030639 | 2.413513 | 0.0158 |
| GARCH(-1) | 0.957863 | 0.048380 | 19.79876 | 0.0000 |
| V_JCI_R | -0.003693 | 0.002995 | -1.233195 | 0.2175 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.073847 | Mean dependent var | | -0.000918 |
| Adjusted R-squared | 0.039363 | S.D. dependent var | | 0.010110 |
| S.E. of regression | 0.009909 | Akaike info criterion | | -6.792005 |
| Sum squared resid | 0.018458 | Schwarz criterion | | -6.658204 |
| Log likelihood | 673.6165 | Hannan-Quinn criter. | | -6.737836 |
| F-statistic | 2.141467 | Durbin-Watson stat | | 1.956712 |
| Prob(F-statistic) | 0.041301 | | | |

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**Lampiran 1.5** *Contemporaneous Volatility Spillover* **Indonesia ke Hong Kong**

**Normal**

Dependent Variable: R_HSI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:43
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 25 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_JCI_G

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -4.93E-05 | 0.000253 | -0.195036 | 0.8454 |
| R_HSI_G(-1) | -0.026672 | 0.037599 | -0.709376 | 0.4781 |
| R_JCI_G | 0.560209 | 0.028413 | 19.71648 | 0.0000 |
| V_JCI_G | 5.813580 | 5.124258 | 1.134521 | 0.2566 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | 2.28E-07 | 2.42E-07 | 0.940402 | 0.3470 |
| RESID(-1)^2 | 0.057601 | 0.021426 | 2.688285 | 0.0072 |
| GARCH(-1) | 0.919277 | 0.032423 | 28.35218 | 0.0000 |
| V_JCI_G | 0.004750 | 0.004589 | 1.035150 | 0.3006 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.486017 | Mean dependent var | | 0.000581 |
| Adjusted R-squared | 0.478040 | S.D. dependent var | | 0.005915 |
| S.E. of regression | 0.004273 | Akaike info criterion | | -8.252819 |
| Sum squared resid | 0.008235 | Schwarz criterion | | -8.180853 |
| Log likelihood | 1902.022 | Hannan-Quinn criter. | | -8.224478 |
| F-statistic | 60.92304 | Durbin-Watson stat | | 2.026552 |
| Prob(F-statistic) | 0.000000 | | | |

**Krisis**

Dependent Variable: R_HSI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:17
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 33 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_JCI_R

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000535 | 0.000905 | -0.591593 | 0.5541 |
| R_HSI_R(-1) | -0.141583 | 0.059400 | -2.383563 | 0.0171 |
| R_JCI_R | 0.759774 | 0.064268 | 11.82194 | 0.0000 |
| V_JCI_R | -1.772389 | 8.580981 | -0.206549 | 0.8364 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | 1.62E-05 | 1.28E-05 | 1.265880 | 0.2056 |
| RESID(-1)^2 | 0.270073 | 0.102461 | 2.635866 | 0.0084 |
| GARCH(-1) | 0.299228 | 0.246786 | 1.212500 | 0.2253 |
| V_JCI_R | 0.202086 | 0.135592 | 1.490396 | 0.1361 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.463357 | Mean dependent var | | -0.001670 |
| Adjusted R-squared | 0.443376 | S.D. dependent var | | 0.014564 |
| S.E. of regression | 0.010866 | Akaike info criterion | | -6.517182 |
| Sum squared resid | 0.022196 | Schwarz criterion | | -6.383382 |
| Log likelihood | 646.6839 | Hannan-Quinn criter. | | -6.463013 |
| F-statistic | 23.18946 | Durbin-Watson stat | | 2.048301 |
| Prob(F-statistic) | 0.000000 | | | |

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**Lampiran 1.6** *Dynamic Volatility Spillover* **Amerika ke Indonesia**

**Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:48
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 25 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_DJI_G(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000556 | 0.000544 | 1.021719 | 0.3069 |
| R_JCI_G(-1) | 0.023714 | 0.046715 | 0.507631 | 0.6117 |
| R_DJI_G(-1) | 0.676323 | 0.077533 | 8.723023 | 0.0000 |
| V_DJI_G(-1) | 10.01317 | 41.09543 | 0.243657 | 0.8075 |

|  | Variance Equation | | | |
|---|---|---|---|---|
| C | 3.10E-06 | 1.02E-06 | 3.050959 | 0.0023 |
| RESID(-1)^2 | 0.197294 | 0.048702 | 4.051012 | 0.0001 |
| GARCH(-1) | 0.681078 | 0.058801 | 11.58280 | 0.0000 |
| V_DJI_G(-1) | 0.124213 | 0.105840 | 1.173588 | 0.2406 |

| | | | |
|---|---|---|---|
| R-squared | 0.132569 | Mean dependent var | 0.000804 |
| Adjusted R-squared | 0.119076 | S.D. dependent var | 0.006518 |
| S.E. of regression | 0.006118 | Akaike info criterion | -7.553372 |
| Sum squared resid | 0.016844 | Schwarz criterion | -7.481287 |
| Log likelihood | 1737.722 | Hannan-Quinn criter. | -7.524981 |
| F-statistic | 9.824770 | Durbin-Watson stat | 2.324372 |
| Prob(F-statistic) | 0.000000 | | |

**Krisis**

Dependent Variable: R_JCI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:19
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 38 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_DJI_R(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000259 | 0.000907 | -0.285083 | 0.7756 |
| R_JCI_R(-1) | 0.131374 | 0.077951 | 1.685346 | 0.0919 |
| R_DJI_R(-1) | 0.253418 | 0.071051 | 3.566724 | 0.0004 |
| V_DJI_R(-1) | -9.855908 | 13.20752 | -0.746234 | 0.4555 |

|  | Variance Equation | | | |
|---|---|---|---|---|
| C | 1.99E-07 | 4.10E-06 | 0.048444 | 0.9614 |
| RESID(-1)^2 | 0.115125 | 0.053266 | 2.161319 | 0.0307 |
| GARCH(-1) | 0.667356 | 0.048360 | 13.79979 | 0.0000 |
| V_DJI_R(-1) | 0.271171 | 0.098915 | 2.741450 | 0.0061 |

| | | | |
|---|---|---|---|
| R-squared | 0.104670 | Mean dependent var | -0.001942 |
| Adjusted R-squared | 0.071155 | S.D. dependent var | 0.011716 |
| S.E. of regression | 0.011291 | Akaike info criterion | -6.471363 |
| Sum squared resid | 0.023842 | Schwarz criterion | -6.337086 |
| Log likelihood | 638.9579 | Hannan-Quinn criter. | -6.416996 |
| F-statistic | 3.123091 | Durbin-Watson stat | 1.923395 |
| Prob(F-statistic) | 0.003848 | | |

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## Normal

Dependent Variable: R_JCI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:53
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 56 iterations
Presample variance: backcast (parameter = 0.7)
$GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V\_HSI\_G(-1)$

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000987 | 0.000471 | 2.093951 | 0.0363 |
| R_JCI_G(-1) | 0.002145 | 0.071103 | 0.030172 | 0.9759 |
| R_HSI_G(-1) | 0.061236 | 0.073864 | 0.829036 | 0.4071 |
| V_HSI_G(-1) | 3.310062 | 14.72505 | 0.224791 | 0.8221 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | 4.38E-06 | 1.49E-06 | 2.928975 | 0.0034 |
| RESID(-1)^2 | 0.247670 | 0.052932 | 4.678991 | 0.0000 |
| GARCH(-1) | 0.576841 | 0.076426 | 7.547659 | 0.0000 |
| V_HSI_G(-1) | 0.109048 | 0.048231 | 2.260938 | 0.0238 |

| | | | | |
|---|---|---|---|---|
| R-squared | -0.007452 | Mean dependent var | | 0.000804 |
| Adjusted R-squared | -0.023123 | S.D. dependent var | | 0.006518 |
| S.E. of regression | 0.006593 | Akaike info criterion | | -7.389087 |
| Sum squared resid | 0.019563 | Schwarz criterion | | -7.317002 |
| Log likelihood | 1700.101 | Hannan-Quinn criter. | | -7.360696 |
| Durbin-Watson stat | 2.111567 | | | |

## Krisis

Dependent Variable: R_JCI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:23
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 217 iterations
Presample variance: backcast (parameter = 0.7)
$GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V\_HSI\_R(-1)$

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001402 | 0.000891 | -1.574122 | 0.1155 |
| R_JCI_R(-1) | 0.193133 | 0.094192 | 2.050408 | 0.0403 |
| R_HSI_R(-1) | -0.024381 | 0.071816 | -0.339487 | 0.7342 |
| V_HSI_R(-1) | 2.928339 | 6.317863 | 0.463501 | 0.6430 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | 4.85E-06 | 3.70E-06 | 1.309775 | 0.1903 |
| RESID(-1)^2 | 0.127973 | 0.057980 | 2.207198 | 0.0273 |
| GARCH(-1) | 0.661777 | 0.127321 | 5.197710 | 0.0000 |
| V_HSI_R(-1) | 0.102252 | 0.068167 | 1.500014 | 0.1336 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.056469 | Mean dependent var | | -0.001942 |
| Adjusted R-squared | 0.021149 | S.D. dependent var | | 0.011716 |
| S.E. of regression | 0.011591 | Akaike info criterion | | -6.388929 |
| Sum squared resid | 0.025126 | Schwarz criterion | | -6.254652 |
| Log likelihood | 630.9206 | Hannan-Quinn criter. | | -6.334562 |
| F-statistic | 1.598802 | Durbin-Watson stat | | 1.876417 |
| Prob(F-statistic) | 0.138029 | | | |

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**Normal**

Dependent Variable: R_DJI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:51
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 34 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_JCI_G(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000565 | 0.000243 | 2.325391 | 0.0201 |
| R_DJI_G(-1) | -0.044109 | 0.057098 | -0.772516 | 0.4398 |
| R_JCI_G(-1) | -0.068508 | 0.028371 | -2.414687 | 0.0157 |
| V_JCI_G(-1) | -5.742762 | 5.022404 | -1.143429 | 0.2529 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | -3.09E-08 | 1.33E-07 | -0.231890 | 0.8166 |
| RESID(-1)^2 | 0.043347 | 0.013515 | 3.207253 | 0.0013 |
| GARCH(-1) | 0.925005 | 0.022922 | 40.35413 | 0.0000 |
| V_JCI_G(-1) | 0.010873 | 0.005771 | 1.884277 | 0.0595 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.017879 | Mean dependent var | | 0.000149 |
| Adjusted R-squared | 0.002602 | S.D. dependent var | | 0.003576 |
| S.E. of regression | 0.003572 | Akaike info criterion | | -8.570274 |
| Sum squared resid | 0.005740 | Schwarz criterion | | -8.498189 |
| Log likelihood | 1970.593 | Hannan-Quinn criter. | | -8.541883 |
| F-statistic | 1.170287 | Durbin-Watson stat | | 2.033311 |
| Prob(F-statistic) | 0.318415 | | | |

**Krisis**

Dependent Variable: R_DJI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:21
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 36 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_JCI_R(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000913 | 0.000691 | -1.321795 | 0.1862 |
| R_DJI_R(-1) | -0.148191 | 0.080770 | -1.834736 | 0.0665 |
| R_JCI_R(-1) | -0.070555 | 0.056017 | -1.259511 | 0.2078 |
| V_JCI_R(-1) | 2.657875 | 4.813850 | 0.552131 | 0.5809 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | 2.11E-07 | 1.48E-06 | 0.142074 | 0.8870 |
| RESID(-1)^2 | 0.090027 | 0.038509 | 2.337811 | 0.0194 |
| GARCH(-1) | 0.935653 | 0.058267 | 16.05802 | 0.0000 |
| V_JCI_R(-1) | -0.005479 | 0.003932 | -1.393340 | 0.1635 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.009880 | Mean dependent var | | -0.000874 |
| Adjusted R-squared | -0.027183 | S.D. dependent var | | 0.010117 |
| S.E. of regression | 0.010253 | Akaike info criterion | | -6.768029 |
| Sum squared resid | 0.019660 | Schwarz criterion | | -6.633752 |
| Log likelihood | 667.8828 | Hannan-Quinn criter. | | -6.713662 |
| F-statistic | 0.266584 | Durbin-Watson stat | | 1.932839 |
| Prob(F-statistic) | 0.966105 | | | |

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## Normal

Dependent Variable: R_HSI_G
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 01:56
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 21 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_JCI_G(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000337 | 0.000362 | 0.931629 | 0.3515 |
| R_HSI_G(-1) | -0.032438 | 0.074625 | -0.434681 | 0.6638 |
| R_JCI_G(-1) | 0.016330 | 0.058505 | 0.279115 | 0.7802 |
| V_JCI_G(-1) | 6.235308 | 7.608108 | 0.819561 | 0.4125 |
| Variance Equation | | | | |
| C | 3.69E-07 | 3.45E-07 | 1.069196 | 0.2850 |
| RESID(-1)^2 | 0.067078 | 0.021576 | 3.108910 | 0.0019 |
| GARCH(-1) | 0.920559 | 0.025264 | 36.43707 | 0.0000 |
| V_JCI_G(-1) | 0.003842 | 0.011415 | 0.336558 | 0.7365 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.008598 | Mean dependent var | | 0.000566 |
| Adjusted R-squared | -0.006824 | S.D. dependent var | | 0.005912 |
| S.E. of regression | 0.005933 | Akaike info criterion | | -7.628719 |
| Sum squared resid | 0.015838 | Schwarz criterion | | -7.556634 |
| Log likelihood | 1754.977 | Hannan-Quinn criter. | | -7.600328 |
| F-statistic | 0.557519 | Durbin-Watson stat | | 2.042406 |
| Prob(F-statistic) | 0.790386 | | | |

## Krisis

Dependent Variable: R_HSI_R
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/17/09   Time: 02:25
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 33 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*V_JCI_R(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001267 | 0.001136 | -1.115962 | 0.2644 |
| R_HSI_R(-1) | -0.113168 | 0.107117 | -1.056493 | 0.2907 |
| R_JCI_R(-1) | 0.047686 | 0.109726 | 0.434588 | 0.6639 |
| V_JCI_R(-1) | -0.853608 | 13.81291 | -0.061798 | 0.9507 |
| Variance Equation | | | | |
| C | -5.37E-06 | 1.27E-05 | -0.421474 | 0.6734 |
| RESID(-1)^2 | 0.203814 | 0.102146 | 1.995316 | 0.0460 |
| GARCH(-1) | 0.575242 | 0.249155 | 2.308775 | 0.0210 |
| V_JCI_R(-1) | 0.396201 | 0.450368 | 0.879727 | 0.3790 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.014767 | Mean dependent var | | -0.001625 |
| Adjusted R-squared | -0.022113 | S.D. dependent var | | 0.014588 |
| S.E. of regression | 0.014748 | Akaike info criterion | | -6.051559 |
| Sum squared resid | 0.040674 | Schwarz criterion | | -5.917282 |
| Log likelihood | 598.0270 | Hannan-Quinn criter. | | -5.997192 |
| F-statistic | 0.400401 | Durbin-Watson stat | | 2.043623 |
| Prob(F-statistic) | 0.901225 | | | |

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**Lampiran 2** *Volatility Spillover* **dengan** *Maximum Likelihood – Normal Distribution* **dan** *Optimization Algorithm – Berndt-Hall-Hall-Hausman (BHHH)*

**Lampiran 2.1 GARCH** *Variance Series*

Rangkuman Signifikansi Pembentukan GARCH *Variance Series*

|  |  | Coefficient | Z Statistic | Prob |
|---|---|---|---|---|
| **J C I** | Normal | 0.706932* | 12.81359 | 0.000000 |
|  | Krisis | 0.808649* | 19.89129 | 0.000000 |
| **D J I** | Normal | 0.920298* | 37.34887 | 0.000000 |
|  | Krisis | 0.913218* | 14.65045 | 0.000000 |
| **H S I** | Normal | 0.918724* | 35.36945 | 0.000000 |
|  | Krisis | 0.782612* | 14.42798 | 0.000000 |

**JCI Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:05
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 16 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.001033 | 0.000268 | 3.859958 | 0.0001 |
| R_JCI_G(-1) | 0.043456 | 0.056283 | 0.772093 | 0.4401 |
| Variance Equation | | | | |
| C | 4.62E-06 | 1.33E-06 | 3.473038 | 0.0005 |
| RESID(-1)^2 | 0.188771 | 0.04197 | 4.497716 | 0 |
| GARCH(-1) | 0.706932 | 0.05517 | 12.81359 | 0 |

| | | | |
|---|---|---|---|
| R-squared | -0.004692 | Mean dependent var | 0.000824 |
| Adjusted R-squared | -0.013544 | S.D. dependent var | 0.006525 |
| S.E. of regression | 0.006569 | Akaike info criterion | -7.38985 |
| Sum squared resid | 0.01959 | Schwarz criterion | -7.34487 |
| Log likelihood | 1700.97 | Hannan-Quinn criter. | -7.37214 |
| Durbin-Watson stat | 2.11561 | | |

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**Lampiran 2.1 GARCH *Variance Series* (lanjutan)**

## JCI Krisis

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Normal
distribution
Date: 11/16/09   Time: 01:09
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 33 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001099 | 0.00076 | -1.445104 | 0.1484 |
| R_JCI_R(-1) | 0.17233 | 0.088105 | 1.955954 | 0.0505 |
| Variance Equation | | | | |
| C | 5.38E-06 | 2.53E-06 | 2.125302 | 0.0336 |
| RESID(-1)^2 | 0.135 | 0.048325 | 2.793569 | 0.0052 |
| GARCH(-1) | 0.808649 | 0.040653 | 19.89129 | 0 |
| R-squared | 0.045506 | Mean dependent var | | -0.002 |
| Adjusted R-squared | 0.025517 | S.D. dependent var | | 0.011711 |
| S.E. of regression | 0.01156 | Akaike info criterion | | -6.37244 |
| Sum squared resid | 0.025525 | Schwarz criterion | | -6.28881 |
| Log likelihood | 629.4986 | Hannan-Quinn criter. | | -6.33858 |
| F-statistic | 2.276517 | Durbin-Watson stat | | 1.859871 |
| Prob(F-statistic) | 0.062567 | | | |

## DJI Normal

Dependent Variable: R_DJI_G
Method: ML - ARCH (BHHH) - Normal
distribution
Date: 11/16/09   Time: 01:00
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 29 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000296 | 0.000154 | 1.915304 | 0.0555 |
| R_DJI_G(-1) | -0.060558 | 0.059399 | -1.019519 | 0.308 |
| Variance Equation | | | | |
| C | 3.03E-07 | 1.13E-07 | 2.685661 | 0.0072 |
| RESID(-1)^2 | 0.058718 | 0.018624 | 3.15281 | 0.0016 |
| GARCH(-1) | 0.920298 | 0.024641 | 37.34887 | 0.0000 |
| R-squared | 0.006911 | Mean dependent var | | 0.000152 |
| Adjusted R-squared | -0.001838 | S.D. dependent var | | 0.003573 |
| S.E. of regression | 0.003576 | Akaike info criterion | | -8.55129 |
| Sum squared resid | 0.005806 | Schwarz criterion | | -8.50631 |
| Log likelihood | 1967.521 | Hannan-Quinn criter. | | -8.53358 |
| F-statistic | 0.789881 | Durbin-Watson stat | | 2.068361 |
| Prob(F-statistic) | 0.532148 | | | |

**Lampiran 2.1 GARCH *Variance Series* (lanjutan)**

**DJI Krisis**

Dependent Variable: R_DJI_R
Method: ML - ARCH (BHHH) - Normal
distribution
Date: 11/16/09   Time: 01:06
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 17 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000694 | 0.00048 | -1.446116 | 0.1481 |
| R_DJI_R(-1) | -0.168003 | 0.076946 | -2.183395 | 0.029 |
| Variance Equation | | | | |
| C | 4.07E-07 | 1.57E-06 | 0.258977 | 0.7957 |
| RESID(-1)^2 | 0.099474 | 0.042667 | 2.331405 | 0.0197 |
| GARCH(-1) | 0.913218 | 0.062334 | 14.65045 | 0 |
| R-squared | 0.01449 | Mean dependent var | | -0.00092 |
| Adjusted R-squared | -0.006149 | S.D. dependent var | | 0.01011 |
| S.E. of regression | 0.010141 | Akaike info criterion | | -6.78285 |
| Sum squared resid | 0.019642 | Schwarz criterion | | -6.69922 |
| Log likelihood | 669.7192 | Hannan-Quinn criter. | | -6.74899 |
| F-statistic | 0.702058 | Durbin-Watson stat | | 1.936105 |
| Prob(F-statistic) | 0.591431 | | | |

**HSI Normal**

Dependent Variable: R_HSI_G
Method: ML - ARCH (BHHH) - Normal
distribution
Date: 11/16/09   Time: 01:04
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 12 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000607 | 0.000233 | 2.598504 | 0.0094 |
| R_HSI_G(-1) | -0.023798 | 0.054984 | -0.432823 | 0.6651 |
| Variance Equation | | | | |
| C | 4.27E-07 | 2.74E-07 | 1.558646 | 0.1191 |
| RESID(-1)^2 | 0.07199 | 0.021213 | 3.393747 | 0.0007 |
| GARCH(-1) | 0.918724 | 0.025975 | 35.36945 | 0 |
| R-squared | 0.001153 | Mean dependent var | | 0.000581 |
| Adjusted R-squared | -0.007648 | S.D. dependent var | | 0.005915 |
| S.E. of regression | 0.005937 | Akaike info criterion | | -7.63418 |
| Sum squared resid | 0.016003 | Schwarz criterion | | -7.5892 |
| Log likelihood | 1757.043 | Hannan-Quinn criter. | | -7.61646 |
| F-statistic | 0.130993 | Durbin-Watson stat | | 2.019083 |
| Prob(F-statistic) | 0.97104 | | | |

**Lampiran 2.1 GARCH *Variance Series* (lanjutan)**

**HSI Krisis**

Dependent Variable: R_HSI_R
Method: ML - ARCH (BHHH) - Normal
distribution
Date: 11/16/09   Time: 01:08
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 13 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001033 | 0.000693 | -1.490668 | 0.136 |
| R_HSI_R(-1) | -0.098996 | 0.089234 | -1.109389 | 0.2673 |
| Variance Equation | | | | |
| C | 4.52E-06 | 2.77E-06 | 1.631258 | 0.1028 |
| RESID(-1)^2 | 0.188506 | 0.058833 | 3.204074 | 0.0014 |
| GARCH(-1) | 0.782612 | 0.054243 | 14.42798 | 0 |
| R-squared | 0.009938 | Mean dependent var | | -0.00167 |
| Adjusted R-squared | -0.010796 | S.D. dependent var | | 0.014564 |
| S.E. of regression | 0.014642 | Akaike info criterion | | -6.05767 |
| Sum squared resid | 0.04095 | Schwarz criterion | | -5.97404 |
| Log likelihood | 598.6515 | Hannan-Quinn criter. | | -6.02381 |
| F-statistic | 0.479294 | Durbin-Watson stat | | 2.021919 |
| Prob(F-statistic) | 0.750916 | | | |

**Lampiran 2.2 Kesimpulan**

| | | Normal | Krisis | |
|---|---|---|---|---|
| Amerika ke Indonesia | Contemporaneous | Signifikan *** | Signifikan * | Contagion |
| | Dynamic | - | Signifikan * | Contagion |
| Hongkong ke Indonesia | Contemporaneous | - | Signifikan * | Contagion |
| | Dynamic | Signifikan ** | - | - |
| Indonesia ke Amerika | Contemporaneous | Signifikan * | - | - |
| | Dynamic | Signifikan *** | - | - |
| Indonesia ke Hongkong | Contemporaneous | - | - | - |
| | Dynamic | - | - | - |

*Contemporaneous Volatility Spillover* **Pasar Asing ke Indonesia**

| | $\gamma_0$ | $\gamma_1$ | $\gamma_2$ | $\gamma_3$ | $\alpha_0$ | $\alpha_1$ | $\alpha_2$ | $\delta_1$ |
|---|---|---|---|---|---|---|---|---|
| **Amerika (Normal)** | 0.000921 | 0.059831 | 0.158614** | 1.285853 | 0.00000292** | 0.193064* | 0.64645* | 0.313508*** |
| | 1.566576 | 1.068264 | 2.236471 | 0.026689 | 2.109877 | 4.125797 | 8.875085 | 1.931526 |
| **Amerika (Krisis)** | -0.0000467 | 0.166036** | 0.214122* | -14.09053 | -0.00000216 | 0.086291*** | 0.708804* | 0.299986* |
| | -0.049787 | 2.305285 | 2.733904 | -0.986995 | -0.534878 | 1.667506 | 12.84719 | 2.919032 |
| **Hongkong (Normal)** | 0.000466 | 0.037092 | 0.685646* | 3.338214 | 0.0000026** | 0.170711* | 0.692629* | 0.012576 |
| | 1.390026 | 0.962332 | 20.96129 | 0.358825 | 2.522275 | 3.573794 | 9.54935 | 0.626313 |
| **Hongkong (Krisis)** | -0.001302*** | 0.193164* | 0.585132* | 1.263925 | 0.0000522* | 0.116388* | -0.667936* | 0.280264* |
| | -1.768229 | 2.705488 | 13.19571 | 0.360689 | 2.955171 | 5.219288 | -3.087854 | 3.394946 |

*Maximum Likelihood – Normal Distribution* **dan** *Optimization Algorithm – Berndt-Hall-Hall-Hausman (BHHH).*

**Universitas Indonesia**

**Lampiran 2.3 Ringkasan Hasil (lanjutan)**

*Contemporaneous Volatility Spillover* **Pasar Indonesia ke Pasar Asing**

| | $\theta_0$ | $\theta_1$ | $\theta_2$ | $\theta_3$ | $\beta_0$ | $\beta_1$ | $\beta_2$ | $\varphi_1$ |
|---|---|---|---|---|---|---|---|---|
| **Amerika (Normal)** | 0.000383 | -0.124188** | 0.091951* | -4.143357 | -0.0000000339* | 0.042481* | 0.913905* | 0.014339* |
| | 1.396198 | -2.051962 | 3.502219 | -0.636158 | -0.223997 | 3.158158 | 39.52954 | 2.577296 |
| **Amerika (Krisis)** | -0.000599 | -0.20176* | 0.141164* | 0.936928 | -3.01E-07 | 0.073948** | 0.957863* | -0.003693 |
| | -0.833836 | -2.796776 | 2.690428 | 0.202447 | -0.232367 | 2.413476 | 19.79871 | -1.233195 |
| **Hongkong (Normal)** | -0.0000494 | -0.026672 | 0.560209* | 5.815866 | 0.000000228 | 0.0576* | 0.919277* | 0.00475 |
| | -0.195368 | -0.709384 | 19.71652 | 1.134858 | 0.940452 | 2.688276 | 28.35206 | 1.035132 |
| **Hongkong (Krisis)** | -0.000535 | -0.141583** | 0.759773* | -1.773239 | 0.0000162 | 0.27007* | 0.299212 | 0.202089 |
| | -0.591482 | -2.383576 | 11.82194 | -0.206651 | 1.265931 | 2.63594 | 1.212402 | 1.490475 |

*Maximum Likelihood – Normal Distribution* **dan** *Optimization Algorithm – Berndt-Hall-Hall-Hausman (BHHH).*

**Universitas Indonesia**

**Lampiran 2.3 Ringkasan Hasil (lanjutan)**

*Dynamic Volatility Spillover* **Pasar Asing ke Indonesia**

| | $\gamma_0$ | $\gamma_1$ | $\gamma_2$ | $\gamma_3$ | $\alpha_0$ | $\alpha_1$ | $\alpha_2$ | $\delta_1$ |
|---|---|---|---|---|---|---|---|---|
| **Amerika (Normal)** | 0.000556 | 0.023714 | 0.676325* | 10.01332 | 0.0000031* | 0.197293* | 0.681082* | 0.124211 |
| | 1.021708 | 0.507633 | 8.723028 | 0.243658 | 3.05094 | 4.050992 | 11.58291 | 1.173574 |
| **Amerika (Krisis)** | -0.000259 | 0.131378*** | 0.253413* | -9.855147 | 0.0000002 | 0.11513** | 0.667363* | 0.271134* |
| | -0.28515 | 1.685374 | 3.566692 | -0.74622 | 0.048717 | 2.161439 | 13.79964 | 2.741395 |
| **Hongkong (Normal)** | 0.000987** | 0.002145 | 0.061236 | 3.310028 | 0.00000438* | 0.247669* | 0.576842* | 0.109047** |
| | 2.093945 | 0.030173 | 0.829036 | 0.224788 | 2.928966 | 4.678988 | 7.54771 | 2.260935 |
| **Hongkong (Krisis)** | -0.001402 | 0.19315** | -0.024384 | 2.92847 | 0.00000485 | 0.127965** | 0.661781* | 0.10225 |
| | -1.573963 | 2.0506 | -0.339544 | 0.463514 | 1.310058 | 2.206951 | 5.197646 | 1.499924 |

*Maximum Likelihood – Normal Distribution* **dan** *Optimization Algorithm – Berndt-Hall-Hall-Hausman (BHHH).*

**Universitas Indonesia**

*Dynamic Volatility Spillover* **Pasar Indonesia ke Asing**

| | $\theta_0$ | $\theta_1$ | $\theta_2$ | $\theta_3$ | $\beta_0$ | $\beta_1$ | $\beta_2$ | $\varphi_1$ |
|---|---|---|---|---|---|---|---|---|
| **Amerika (Normal)** | 0.000565** | -0.044109 | -0.068507** | -5.744148 | -3.09E-08 | 0.043351* | 0.925* | 0.010873*** |
| | 2.325459 | -0.772529 | -2.414702 | -1.14357 | -0.23168 | 3.207397 | 40.35243 | 1.884334 |
| **Amerika (Krisis)** | -0.000914 | -0.148196*** | -0.070564 | 2.66416 | 0.00000021 | 0.090017** | 0.935676* | -0.005481 |
| | -1.322568 | -1.834695 | -1.259451 | 0.553265 | 0.141726 | 2.336766 | 16.0541 | -1.393632 |
| **Hongkong (Normal)** | 0.000337 | -0.032436 | 0.016328 | 6.234126 | 0.000000369 | 0.06708* | 0.92056* | 0.003837 |
| | 0.931715 | -0.43465 | 0.279094 | 0.819316 | 1.069551 | 3.109095 | 36.43715 | 0.336208 |
| **Hongkong (Krisis)** | -0.001267 | -0.113167 | 0.047689 | -0.854288 | -0.00000537 | 0.203816** | 0.575237** | 0.396199 |
| | -1.115889 | -1.056492 | 0.434625 | -0.061848 | -0.421454 | 1.995252 | 2.308836 | 0.879757 |

*Maximum Likelihood – Normal Distribution* **dan** *Optimization Algorithm – Berndt-Hall-Hall-Hausman (BHHH).*

**Lampiran 2.4** *Contemporaneous Volatility Spillover* **Amerika ke Indonesia**

**Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Normal
distribution
Date: 11/16/09   Time: 01:12
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 20 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VDJI_G

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000921 | 0.000588 | 1.566576 | 0.1172 |
| R_JCI_G(-1) | 0.059831 | 0.056008 | 1.068264 | 0.2854 |
| R_DJI_G | 0.158614 | 0.070922 | 2.236471 | 0.0253 |
| VDJI_G | 1.285853 | 48.17981 | 0.026689 | 0.9787 |
| Variance Equation | | | | |
| C | 2.92E-06 | 1.39E-06 | 2.109877 | 0.0349 |
| RESID(-1)^2 | 0.193064 | 0.046794 | 4.125797 | 0 |
| GARCH(-1) | 0.64645 | 0.072839 | 8.875085 | 0 |
| VDJI_G | 0.313508 | 0.162311 | 1.931526 | 0.0534 |
| R-squared | 0.011195 | Mean dependent var | | 0.000824 |
| Adjusted R-squared | -0.004152 | S.D. dependent var | | 0.006525 |
| S.E. of regression | 0.006538 | Akaike info criterion | | -7.39333 |
| Sum squared resid | 0.01928 | Schwarz criterion | | -7.321364 |
| Log likelihood | 1704.769 | Hannan-Quinn criter. | | -7.364989 |
| F-statistic | 0.729466 | Durbin-Watson stat | | 2.1927 |
| Prob(F-statistic) | 0.647072 | | | |

**Krisis**

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Normal
distribution
Date: 11/16/09   Time: 01:17
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 91 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VDJI_R

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -4.67E-05 | 0.000939 | -0.049787 | 0.9603 |
| R_JCI_R(-1) | 0.166036 | 0.072024 | 2.305285 | 0.0212 |
| R_DJI_R | 0.214122 | 0.078321 | 2.733904 | 0.0063 |
| VDJI_R | -14.09053 | 14.27618 | -0.986995 | 0.3236 |
| Variance Equation | | | | |
| C | -2.16E-06 | 4.04E-06 | -0.534878 | 0.5927 |
| RESID(-1)^2 | 0.086291 | 0.051749 | 1.667506 | 0.0954 |
| GARCH(-1) | 0.708804 | 0.055172 | 12.84719 | 0 |
| VDJI_R | 0.299986 | 0.102769 | 2.919032 | 0.0035 |
| R-squared | 0.09485 | Mean dependent var | | -0.001997 |
| Adjusted R-squared | 0.061148 | S.D. dependent var | | 0.011711 |
| S.E. of regression | 0.011347 | Akaike info criterion | | -6.456239 |
| Sum squared resid | 0.024206 | Schwarz criterion | | -6.322438 |
| Log likelihood | 640.7114 | Hannan-Quinn criter. | | -6.40207 |
| F-statistic | 2.81435 | Durbin-Watson stat | | 1.936215 |
| Prob(F-statistic) | 0.008246 | | | |

**Universitas Indonesia**

## Normal

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:19
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 42 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VHSI_G

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000466 | 0.000335 | 1.390026 | 0.1645 |
| R_JCI_G(-1) | 0.037092 | 0.038544 | 0.962332 | 0.3359 |
| R_HSI_G | 0.685646 | 0.03271 | 20.96129 | 0 |
| VHSI_G | 3.338214 | 9.303184 | 0.358825 | 0.7197 |
| Variance Equation | | | | |
| C | 2.60E-06 | 1.03E-06 | 2.522275 | 0.0117 |
| RESID(-1)^2 | 0.170711 | 0.047767 | 3.573794 | 0.0004 |
| GARCH(-1) | 0.692629 | 0.072532 | 9.54935 | 0 |
| VHSI_G | 0.012576 | 0.020079 | 0.626313 | 0.5311 |
| R-squared | 0.480075 | Mean dependent var | | 0.000824 |
| Adjusted R-squared | 0.472005 | S.D. dependent var | | 0.006525 |
| S.E. of regression | 0.004741 | Akaike info criterion | | -7.974181 |
| Sum squared resid | 0.010138 | Schwarz criterion | | -7.902215 |
| Log likelihood | 1838.075 | Hannan-Quinn criter. | | -7.94584 |
| F-statistic | 59.49034 | Durbin-Watson stat | | 2.10866 |
| Prob(F-statistic) | 0 | | | |

## Krisis

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:21
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Failure to improve Likelihood after 7 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VHSI_R

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001302 | 0.000736 | -1.768229 | 0.077 |
| R_JCI_R(-1) | 0.193164 | 0.071397 | 2.705488 | 0.0068 |
| R_HSI_R | 0.585132 | 0.044343 | 13.19571 | 0 |
| VHSI_R | 1.263925 | 3.5042 | 0.360689 | 0.7183 |
| Variance Equation | | | | |
| C | 5.22E-05 | 1.76E-05 | 2.955171 | 0.0031 |
| RESID(-1)^2 | 0.116388 | 0.0223 | 5.219288 | 0 |
| GARCH(-1) | -0.667936 | 0.216311 | -3.087854 | 0.002 |
| VHSI_R | 0.280264 | 0.082553 | 3.394946 | 0.0007 |
| R-squared | 0.48538 | Mean dependent var | | -0.001997 |
| Adjusted R-squared | 0.466218 | S.D. dependent var | | 0.011711 |
| S.E. of regression | 0.008556 | Akaike info criterion | | -6.887517 |
| Sum squared resid | 0.013762 | Schwarz criterion | | -6.753716 |
| Log likelihood | 682.9767 | Hannan-Quinn criter. | | -6.833348 |
| F-statistic | 25.33111 | Durbin-Watson stat | | 2.028045 |
| Prob(F-statistic) | 0 | | | |

**Universitas Indonesia**

**Lampiran 2.6 *Contemporaneous Volatility Spillover* Indonesia ke Amerika**

## Normal

Dependent Variable: R_DJI_G
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:22
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 72 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCI_G

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000383 | 0.000274 | 1.396198 | 0.1627 |
| R_DJI_G(-1) | -0.124188 | 0.060522 | -2.051962 | 0.0402 |
| R_JCI_G | 0.091951 | 0.026255 | 3.502219 | 0.0005 |
| VJCI_G | -4.143357 | 6.513093 | -0.636158 | 0.5247 |
| Variance Equation | | | | |
| C | -3.39E-08 | 1.51E-07 | -0.223997 | 0.8228 |
| RESID(-1)^2 | 0.042481 | 0.013451 | 3.158158 | 0.0016 |
| GARCH(-1) | 0.913905 | 0.02312 | 39.52954 | 0 |
| VJCI_G | 0.014339 | 0.005564 | 2.577296 | 0.01 |
| R-squared | 0.038927 | Mean dependent var | | 0.000152 |
| Adjusted R-squared | 0.02401 | S.D. dependent var | | 0.003573 |
| S.E. of regression | 0.00353 | Akaike info criterion | | -8.578949 |
| Sum squared resid | 0.005619 | Schwarz criterion | | -8.506983 |
| Log likelihood | 1976.869 | Hannan-Quinn criter. | | -8.550607 |
| F-statistic | 2.609589 | Durbin-Watson stat | | 2.029277 |
| Prob(F-statistic) | 0.011945 | | | |

## Krisis

Dependent Variable: R_DJI_R
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:24
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 104 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCI_R

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000599 | 0.000718 | -0.833836 | 0.4044 |
| R_DJI_R(-1) | -0.20176 | 0.07214 | -2.796776 | 0.0052 |
| R_JCI_R | 0.141164 | 0.052469 | 2.690428 | 0.0071 |
| VJCI_R | 0.936928 | 4.628025 | 0.202447 | 0.8396 |
| Variance Equation | | | | |
| C | -3.01E-07 | 1.29E-06 | -0.232367 | 0.8163 |
| RESID(-1)^2 | 0.073948 | 0.03064 | 2.413476 | 0.0158 |
| GARCH(-1) | 0.957863 | 0.04838 | 19.79871 | 0 |
| VJCI_R | -0.003693 | 0.002995 | -1.233195 | 0.2175 |
| R-squared | 0.073847 | Mean dependent var | | -0.000918 |
| Adjusted R-squared | 0.039363 | S.D. dependent var | | 0.01011 |
| S.E. of regression | 0.009909 | Akaike info criterion | | -6.792005 |
| Sum squared resid | 0.018458 | Schwarz criterion | | -6.658204 |
| Log likelihood | 673.6165 | Hannan-Quinn criter. | | -6.737836 |
| F-statistic | 2.141464 | Durbin-Watson stat | | 1.956713 |
| Prob(F-statistic) | 0.041301 | | | |

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**Lampiran 2.7** *Contemporaneous Volatility Spillover* **Indonesia ke Hong Kong**

**Normal**

Dependent Variable: R_HSI_G
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:28
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 18 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCI_G

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -4.94E-05 | 0.000253 | -0.195368 | 0.8451 |
| R_HSI_G(-1) | -0.026672 | 0.037599 | -0.709384 | 0.4781 |
| R_JCI_G | 0.560209 | 0.028413 | 19.71652 | 0 |
| VJCI_G | 5.815866 | 5.124752 | 1.134858 | 0.2564 |
| Variance Equation | | | | |
| C | 2.28E-07 | 2.42E-07 | 0.940452 | 0.347 |
| RESID(-1)^2 | 0.0576 | 0.021426 | 2.688276 | 0.0072 |
| GARCH(-1) | 0.919277 | 0.032424 | 28.35206 | 0 |
| VJCI_G | 0.00475 | 0.004589 | 1.035132 | 0.3006 |
| R-squared | 0.486018 | Mean dependent var | | 0.000581 |
| Adjusted R-squared | 0.478041 | S.D. dependent var | | 0.005915 |
| S.E. of regression | 0.004273 | Akaike info criterion | | -8.252821 |
| Sum squared resid | 0.008235 | Schwarz criterion | | -8.180855 |
| Log likelihood | 1902.022 | Hannan-Quinn criter. | | -8.224479 |
| F-statistic | 60.92332 | Durbin-Watson stat | | 2.026555 |
| Prob(F-statistic) | 0 | | | |

**Krisis**

Dependent Variable: R_HSI_R
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:30
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 27 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCI_R

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000535 | 0.000905 | -0.591482 | 0.5542 |
| R_HSI_R(-1) | -0.141583 | 0.059399 | -2.383576 | 0.0171 |
| R_JCI_R | 0.759773 | 0.064268 | 11.82194 | 0 |
| VJCI_R | -1.773239 | 8.580849 | -0.206651 | 0.8363 |
| Variance Equation | | | | |
| C | 1.62E-05 | 1.28E-05 | 1.265931 | 0.2055 |
| RESID(-1)^2 | 0.27007 | 0.102457 | 2.63594 | 0.0084 |
| GARCH(-1) | 0.299212 | 0.246793 | 1.212402 | 0.2254 |
| VJCI_R | 0.202089 | 0.135587 | 1.490475 | 0.1361 |
| R-squared | 0.463357 | Mean dependent var | | -0.00167 |
| Adjusted R-squared | 0.443376 | S.D. dependent var | | 0.014564 |
| S.E. of regression | 0.010866 | Akaike info criterion | | -6.517182 |
| Sum squared resid | 0.022196 | Schwarz criterion | | -6.383382 |
| Log likelihood | 646.6839 | Hannan-Quinn criter. | | -6.463014 |
| F-statistic | 23.18946 | Durbin-Watson stat | | 2.048303 |
| Prob(F-statistic) | 0 | | | |

**Universitas Indonesia**

**Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:32
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 28 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VDJI_G(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000556 | 0.000544 | 1.021708 | 0.3069 |
| R_JCI_G(-1) | 0.023714 | 0.046715 | 0.507633 | 0.6117 |
| R_DJI_G(-1) | 0.676325 | 0.077533 | 8.723028 | 0 |
| VDJI_G(-1) | 10.01332 | 41.0958 | 0.243658 | 0.8075 |
| Variance Equation | | | | |
| C | 3.10E-06 | 1.02E-06 | 3.05094 | 0.0023 |
| RESID(-1)^2 | 0.197293 | 0.048702 | 4.050992 | 0.0001 |
| GARCH(-1) | 0.681082 | 0.058801 | 11.58291 | 0 |
| VDJI_G(-1) | 0.124211 | 0.10584 | 1.173574 | 0.2406 |
| R-squared | 0.132569 | Mean dependent var | | 0.000804 |
| Adjusted R-squared | 0.119076 | S.D. dependent var | | 0.006518 |
| S.E. of regression | 0.006118 | Akaike info criterion | | -7.553372 |
| Sum squared resid | 0.016844 | Schwarz criterion | | -7.481287 |
| Log likelihood | 1737.722 | Hannan-Quinn criter. | | -7.524981 |
| F-statistic | 9.824769 | Durbin-Watson stat | | 2.324373 |
| Prob(F-statistic) | 0 | | | |

**Krisis**

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:34
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 22 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VDJI_R(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000259 | 0.000907 | -0.28515 | 0.7755 |
| R_JCI_R(-1) | 0.131378 | 0.077952 | 1.685374 | 0.0919 |
| R_DJI_R(-1) | 0.253413 | 0.07105 | 3.566692 | 0.0004 |
| VDJI_R(-1) | -9.855147 | 13.20675 | -0.74622 | 0.4555 |
| Variance Equation | | | | |
| C | 2.00E-07 | 4.10E-06 | 0.048717 | 0.9611 |
| RESID(-1)^2 | 0.11513 | 0.053265 | 2.161439 | 0.0307 |
| GARCH(-1) | 0.667363 | 0.048361 | 13.79964 | 0 |
| VDJI_R(-1) | 0.271134 | 0.098904 | 2.741395 | 0.0061 |
| R-squared | 0.104671 | Mean dependent var | | -0.001942 |
| Adjusted R-squared | 0.071156 | S.D. dependent var | | 0.011716 |
| S.E. of regression | 0.011291 | Akaike info criterion | | -6.471361 |
| Sum squared resid | 0.023842 | Schwarz criterion | | -6.337084 |
| Log likelihood | 638.9577 | Hannan-Quinn criter. | | -6.416994 |
| F-statistic | 3.12312 | Durbin-Watson stat | | 1.923401 |
| Prob(F-statistic) | 0.003847 | | | |

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## Normal

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:36
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 68 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VHSI_G(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000987 | 0.000471 | 2.093945 | 0.0363 |
| R_JCI_G(-1) | 0.002145 | 0.071103 | 0.030173 | 0.9759 |
| R_HSI_G(-1) | 0.061236 | 0.073864 | 0.829036 | 0.4071 |
| VHSI_G(-1) | 3.310028 | 14.72508 | 0.224788 | 0.8221 |
| Variance Equation | | | | |
| C | 4.38E-06 | 1.49E-06 | 2.928966 | 0.0034 |
| RESID(-1)^2 | 0.247669 | 0.052932 | 4.678988 | 0 |
| GARCH(-1) | 0.576842 | 0.076426 | 7.54771 | 0 |
| VHSI_G(-1) | 0.109047 | 0.048231 | 2.260935 | 0.0238 |
| R-squared | -0.007452 | Mean dependent var | | 0.000804 |
| Adjusted R-squared | -0.023123 | S.D. dependent var | | 0.006518 |
| S.E. of regression | 0.006593 | Akaike info criterion | | -7.389087 |
| Sum squared resid | 0.019563 | Schwarz criterion | | -7.317002 |
| Log likelihood | 1700.101 | Hannan-Quinn criter. | | -7.360696 |
| Durbin-Watson stat | 2.111567 | | | |

## Krisis

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:37
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 50 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VHSI_R(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001402 | 0.000891 | -1.573963 | 0.1155 |
| R_JCI_R(-1) | 0.19315 | 0.094192 | 2.0506 | 0.0403 |
| R_HSI_R(-1) | -0.024384 | 0.071815 | -0.339544 | 0.7342 |
| VHSI_R(-1) | 2.92847 | 6.317974 | 0.463514 | 0.643 |
| Variance Equation | | | | |
| C | 4.85E-06 | 3.70E-06 | 1.310058 | 0.1902 |
| RESID(-1)^2 | 0.127965 | 0.057983 | 2.206951 | 0.0273 |
| GARCH(-1) | 0.661781 | 0.127323 | 5.197646 | 0 |
| VHSI_R(-1) | 0.10225 | 0.06817 | 1.499924 | 0.1336 |
| R-squared | 0.056468 | Mean dependent var | | -0.001942 |
| Adjusted R-squared | 0.021149 | S.D. dependent var | | 0.011716 |
| S.E. of regression | 0.011591 | Akaike info criterion | | -6.388929 |
| Sum squared resid | 0.025126 | Schwarz criterion | | -6.254652 |
| Log likelihood | 630.9206 | Hannan-Quinn criter. | | -6.334562 |
| F-statistic | 1.598784 | Durbin-Watson stat | | 1.876438 |
| Prob(F-statistic) | 0.138035 | | | |

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## Normal

Dependent Variable: R_DJI_G
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:39
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 36 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCI_G(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000565 | 0.000243 | 2.325459 | 0.02 |
| R_DJI_G(-1) | -0.044109 | 0.057097 | -0.772529 | 0.4398 |
| R_JCI_G(-1) | -0.068507 | 0.028371 | -2.414702 | 0.0157 |
| VJCI_G(-1) | -5.744148 | 5.022995 | -1.14357 | 0.2528 |
| Variance Equation | | | | |
| C | -3.09E-08 | 1.33E-07 | -0.23168 | 0.8168 |
| RESID(-1)^2 | 0.043351 | 0.013516 | 3.207397 | 0.0013 |
| GARCH(-1) | 0.925 | 0.022923 | 40.35243 | 0 |
| VJCI_G(-1) | 0.010873 | 0.00577 | 1.884334 | 0.0595 |
| R-squared | 0.01788 | Mean dependent var | | 0.000149 |
| Adjusted R-squared | 0.002603 | S.D. dependent var | | 0.003576 |
| S.E. of regression | 0.003572 | Akaike info criterion | | -8.570274 |
| Sum squared resid | 0.00574 | Schwarz criterion | | -8.498189 |
| Log likelihood | 1970.593 | Hannan-Quinn criter. | | -8.541883 |
| F-statistic | 1.170354 | Durbin-Watson stat | | 2.033313 |
| Prob(F-statistic) | 0.318376 | | | |

## Krisis

Dependent Variable: R_DJI_R
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:41
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 21 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCI_R(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000914 | 0.000691 | -1.322568 | 0.186 |
| R_DJI_R(-1) | -0.148196 | 0.080774 | -1.834695 | 0.0666 |
| R_JCI_R(-1) | -0.070564 | 0.056028 | -1.259451 | 0.2079 |
| VJCI_R(-1) | 2.66416 | 4.815337 | 0.553265 | 0.5801 |
| Variance Equation | | | | |
| C | 2.10E-07 | 1.48E-06 | 0.141726 | 0.8873 |
| RESID(-1)^2 | 0.090017 | 0.038522 | 2.336766 | 0.0195 |
| GARCH(-1) | 0.935676 | 0.058283 | 16.0541 | 0 |
| VJCI_R(-1) | -0.005481 | 0.003933 | -1.393632 | 0.1634 |
| R-squared | 0.009869 | Mean dependent var | | -0.000874 |
| Adjusted R-squared | -0.027195 | S.D. dependent var | | 0.010117 |
| S.E. of regression | 0.010253 | Akaike info criterion | | -6.768029 |
| Sum squared resid | 0.01966 | Schwarz criterion | | -6.633752 |
| Log likelihood | 667.8828 | Hannan-Quinn criter. | | -6.713662 |
| F-statistic | 0.266276 | Durbin-Watson stat | | 1.9328 |
| Prob(F-statistic) | 0.966214 | | | |

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## Normal

Dependent Variable: R_HSI_G
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:43
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 19 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCI_G(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000337 | 0.000362 | 0.931715 | 0.3515 |
| R_HSI_G(-1) | -0.032436 | 0.074625 | -0.43465 | 0.6638 |
| R_JCI_G(-1) | 0.016328 | 0.058505 | 0.279094 | 0.7802 |
| VJCI_G(-1) | 6.234126 | 7.608937 | 0.819316 | 0.4126 |
| Variance Equation | | | | |
| C | 3.69E-07 | 3.45E-07 | 1.069551 | 0.2848 |
| RESID(-1)^2 | 0.06708 | 0.021576 | 3.109095 | 0.0019 |
| GARCH(-1) | 0.92056 | 0.025264 | 36.43715 | 0 |
| VJCI_G(-1) | 0.003837 | 0.011414 | 0.336208 | 0.7367 |
| R-squared | 0.008595 | Mean dependent var | | 0.000566 |
| Adjusted R-squared | -0.006827 | S.D. dependent var | | 0.005912 |
| S.E. of regression | 0.005933 | Akaike info criterion | | -7.628718 |
| Sum squared resid | 0.015838 | Schwarz criterion | | -7.556633 |
| Log likelihood | 1754.976 | Hannan-Quinn criter. | | -7.600327 |
| F-statistic | 0.557299 | Durbin-Watson stat | | 2.042403 |
| Prob(F-statistic) | 0.79056 | | | |

## Krisis

Dependent Variable: R_HSI_R
Method: ML - ARCH (BHHH) - Normal distribution
Date: 11/16/09   Time: 01:44
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 33 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCI_R(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001267 | 0.001136 | -1.115889 | 0.2645 |
| R_HSI_R(-1) | -0.113167 | 0.107115 | -1.056492 | 0.2907 |
| R_JCI_R(-1) | 0.047689 | 0.109725 | 0.434625 | 0.6638 |
| VJCI_R(-1) | -0.854288 | 13.81264 | -0.061848 | 0.9507 |
| Variance Equation | | | | |
| C | -5.37E-06 | 1.27E-05 | -0.421454 | 0.6734 |
| RESID(-1)^2 | 0.203816 | 0.102151 | 1.995252 | 0.046 |
| GARCH(-1) | 0.575237 | 0.249146 | 2.308836 | 0.021 |
| VJCI_R(-1) | 0.396199 | 0.45035 | 0.879757 | 0.379 |
| R-squared | 0.014767 | Mean dependent var | | -0.001625 |
| Adjusted R-squared | -0.022114 | S.D. dependent var | | 0.014588 |
| S.E. of regression | 0.014748 | Akaike info criterion | | -6.051558 |
| Sum squared resid | 0.040674 | Schwarz criterion | | -5.917281 |
| Log likelihood | 598.0269 | Hannan-Quinn criter. | | -5.997191 |
| F-statistic | 0.400399 | Durbin-Watson stat | | 2.043631 |
| Prob(F-statistic) | 0.901226 | | | |

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**Lampiran 3.1 GARCH *Variance Series***

Rangkuman Signifikansi Pembentukan GARCH *Variance Series*

|  |  | Coefficient | Z Statistic | Prob |
|---|---|---|---|---|
| **J C I** | **Normal** | 0.714153* | 7.051056 | 0.0000 |
|  | **Krisis** | 0.766946* | 9.470478 | 0.0000 |
| **D J I** | **Normal** | 0.928239* | 27.31492 | 0.0000 |
|  | **Krisis** | 0.915779* | 12.07501 | 0.0000 |
| **H S I** | **Normal** | 0.923096* | 26.58122 | 0.0000 |
|  | **Krisis** | 0.783011* | 11.80626 | 0.0000 |

**JCI Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:06
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 11 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.0012 | 0.000224 | 5.356075 | 0 |
| R_JCI_G(-1) | -0.01485 | 0.047003 | -0.315886 | 0.7521 |
| Variance Equation | | | | |
| C | 4.82E-06 | 2.38E-06 | 2.024671 | 0.0429 |
| RESID(-1)^2 | 0.164714 | 0.065999 | 2.495699 | 0.0126 |
| GARCH(-1) | 0.714153 | 0.101283 | 7.051056 | 0.0000 |
| GED PARAMETER | 1.187431 | 0.094047 | 12.62596 | 0.0000 |
| R-squared | -0.00286 | Mean dependent var | | 0.000824 |
| Adjusted R-squared | -0.01393 | S.D. dependent var | | 0.006525 |
| S.E. of regression | 0.00657 | Akaike info criterion | | -7.47508 |
| Sum squared resid | 0.019554 | Schwarz criterion | | -7.42111 |
| Log likelihood | 1721.531 | Hannan-Quinn criter. | | -7.45382 |
| Durbin-Watson stat | 1.996952 | | | |

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**Lampiran 3.1 GARCH *Variance Series* (lanjutan)**

### JCI Krisis

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:12
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 28 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.0006 | 0.000564 | -1.070057 | 0.2846 |
| R_JCI_R(-1) | 0.138996 | 0.074653 | 1.86189 | 0.0626 |
| Variance Equation | | | | |
| C | 6.52E-06 | 3.99E-06 | 1.634771 | 0.1021 |
| RESID(-1)^2 | 0.167612 | 0.092442 | 1.813166 | 0.0698 |
| GARCH(-1) | 0.766946 | 0.080983 | 9.470478 | 0.0000 |
| GED PARAMETER | 1.247288 | 0.14635 | 8.522651 | 0.0000 |
| R-squared | 0.034044 | Mean dependent var | | -0.002 |
| Adjusted R-squared | 0.008625 | S.D. dependent var | | 0.011711 |
| S.E. of regression | 0.01166 | Akaike info criterion | | -6.44098 |
| Sum squared resid | 0.025832 | Schwarz criterion | | -6.34063 |
| Log likelihood | 637.2163 | Hannan-Quinn criter. | | -6.40036 |
| F-statistic | 1.339286 | Durbin-Watson stat | | 1.78471 |
| Prob(F-statistic) | 0.249415 | | | |

### DJI Normal

Dependent Variable: R_DJI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 08:59
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Failure to improve Likelihood after 32 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000327 | 0.000118 | 2.758609 | 0.0058 |
| R_DJI_G(-1) | -0.04459 | 0.043393 | -1.027493 | 0.3042 |
| Variance Equation | | | | |
| C | 1.85E-07 | 1.48E-07 | 1.249671 | 0.2114 |
| RESID(-1)^2 | 0.062575 | 0.029172 | 2.145088 | 0.0319 |
| GARCH(-1) | 0.928239 | 0.033983 | 27.31492 | 0.0000 |
| GED PARAMETER | 1.159515 | 0.095896 | 12.09144 | 0.0000 |
| R-squared | 0.004633 | Mean dependent var | | 0.000152 |
| Adjusted R-squared | -0.00635 | S.D. dependent var | | 0.003573 |
| S.E. of regression | 0.003584 | Akaike info criterion | | -8.63588 |
| Sum squared resid | 0.005819 | Schwarz criterion | | -8.58191 |
| Log likelihood | 1987.935 | Hannan-Quinn criter. | | -8.61463 |
| F-statistic | 0.421666 | Durbin-Watson stat | | 2.099371 |
| Prob(F-statistic) | 0.833669 | | | |

**Lampiran 3.1 GARCH *Variance Series* (lanjutan)**

**DJI Krisis**

Dependent Variable: R_DJI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:09
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 20 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.00037 | 0.000491 | -0.749748 | 0.4534 |
| R_JCI_R(-1) | -0.04411 | 0.049638 | -0.888602 | 0.3742 |
| Variance Equation | | | | |
| C | 2.23E-07 | 1.93E-06 | 0.11554 | 0.908 |
| RESID(-1)^2 | 0.101577 | 0.056035 | 1.812751 | 0.0699 |
| GARCH(-1) | 0.915779 | 0.075841 | 12.07501 | 0.0000 |
| GED PARAMETER | 1.39164 | 0.250939 | 5.545739 | 0.0000 |
| R-squared | -0.0002 | Mean dependent var | | -0.00092 |
| Adjusted R-squared | -0.02652 | S.D. dependent var | | 0.01011 |
| S.E. of regression | 0.010243 | Akaike info criterion | | -6.77627 |
| Sum squared resid | 0.019934 | Schwarz criterion | | -6.67592 |
| Log likelihood | 670.0746 | Hannan-Quinn criter. | | -6.73565 |
| Durbin-Watson stat | 2.20585 | | | |

**HSI Normal**

Dependent Variable: R_HSI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:03
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 21 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000756 | 0.00021 | 3.596293 | 0.0003 |
| R_HSI_G(-1) | -0.0545 | 0.04867 | -1.119711 | 0.2628 |
| Variance Equation | | | | |
| C | 3.65E-07 | 3.80E-07 | 0.960753 | 0.3367 |
| RESID(-1)^2 | 0.070899 | 0.028583 | 2.48046 | 0.0131 |
| GARCH(-1) | 0.923096 | 0.034727 | 26.58122 | 0.0000 |
| GED PARAMETER | 1.340314 | 0.144861 | 9.252384 | 0.0000 |
| R-squared | 0.000382 | Mean dependent var | | 0.000581 |
| Adjusted R-squared | -0.01065 | S.D. dependent var | | 0.005915 |
| S.E. of regression | 0.005946 | Akaike info criterion | | -7.65935 |
| Sum squared resid | 0.016015 | Schwarz criterion | | -7.60537 |
| Log likelihood | 1763.82 | Hannan-Quinn criter. | | -7.63809 |
| F-statistic | 0.034632 | Durbin-Watson stat | | 1.96116 |
| Prob(F-statistic) | 0.999371 | | | |

**Lampiran 3.1 GARCH *Variance Series* (lanjutan)**

**HSI Krisis**

Dependent Variable: R_HSI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:11
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 25 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.00097 | 0.000686 | -1.411119 | 0.1582 |
| R_HSI_R(-1) | -0.08606 | 0.087528 | -0.983226 | 0.3255 |
| Variance Equation | | | | |
| C | 4.78E-06 | 3.36E-06 | 1.422306 | 0.1549 |
| RESID(-1)^2 | 0.185361 | 0.06769 | 2.738406 | 0.0062 |
| GARCH(-1) | 0.783011 | 0.066322 | 11.80626 | 0.0000 |
| GED PARAMETER | 1.762142 | 0.251086 | 7.018094 | 0.0000 |
| R-squared | 0.009023 | Mean dependent var | | -0.00167 |
| Adjusted R-squared | -0.01706 | S.D. dependent var | | 0.014564 |
| S.E. of regression | 0.014688 | Akaike info criterion | | -6.05136 |
| Sum squared resid | 0.040988 | Schwarz criterion | | -5.95101 |
| Log likelihood | 599.0335 | Hannan-Quinn criter. | | -6.01074 |
| F-statistic | 0.346 | Durbin-Watson stat | | 2.048406 |
| Prob(F-statistic) | 0.88437 | | | |

**Lampiran 3.2 Kesimpulan**

| | | Normal | Krisis | |
|---|---|---|---|---|
| **Amerika ke Indonesia** | **Contemporaneous** | No Sig | Signifikan ** | Contagion |
| | **Dynamic** | No Sig | No Sig | - |
| **Hongkong ke Indonesia** | **Contemporaneous** | No Sig | Signifikan * | Contagion |
| | **Dynamic** | No Sig | No Sig | - |
| **Indonesia ke Amerika** | **Contemporaneous** | Signifikan *** | No Sig | - |
| | **Dynamic** | No Sig | No Sig | - |
| **Indonesia ke Hongkong** | **Contemporaneous** | No Sig | No Sig | - |
| | **Dynamic** | No Sig | No Sig | - |

*Contemporaneous Volatility Spillover* **Pasar Asing ke Indonesia**

| | $\gamma_0$ | $\gamma_1$ | $\gamma_2$ | $\gamma_3$ | $\alpha_0$ | $\alpha_1$ | $\alpha_2$ | $\delta_1$ |
|---|---|---|---|---|---|---|---|---|
| **Amerika (Normal)** | 0.001089** | -0.003332 | 0.10777 | 7.127813 | 3.64E-06 | 0.158755** | 0.686137* | 0.190944 |
| | 2.538487 | -0.070404 | 1.627276 | 0.2167 | 1.625079 | 2.355798 | 5.564543 | 1.004113 |
| **Amerika (Krisis)** | 0.000245 | 0.149634** | 0.167824** | -12.10865 | -7.61E-07 | 0.117391 | 0.632418* | 0.331859** |
| | 0.310106 | 2.056374 | 2.142108 | -1.077362 | -0.131485 | 1.330597 | 5.295756 | 2.075644 |
| **Hongkong (Normal)** | 0.000523*** | 0.018405 | 0.649793* | 4.672497 | 0.00000312** | 0.186461* | 0.64553* | 0.016263 |
| | 1.684309 | 0.490493 | 19.45276 | 0.590746 | 2.113377 | 2.858217 | 6.250273 | 0.564379 |
| **Hongkong (Krisis)** | -0.001437*** | 0.192577* | 0.5878* | 1.792367 | 0.0000534** | 0.11563 | -0.639135** | 0.279641* |
| | -1.882903 | 2.615186 | 12.59997 | 0.553891 | 2.495795 | 1.572964 | -2.251035 | 2.977121 |

*Maximum Likelihood – GED Distribution* **dan** *Optimization Algorithm – Berndt-Hall-Hall-Hausman (BHHH)*

**Universitas Indonesia**

**Lampiran 3.3 Ringkasan Hasil (lanjutan)**

*Contemporaneous Volatility Spillover* **Pasar Indonesia ke Pasar Asing**

| | $\theta_0$ | $\theta_1$ | $\theta_2$ | $\theta_3$ | $\beta_0$ | $\beta_1$ | $\beta_2$ | $\varphi_1$ |
|---|---|---|---|---|---|---|---|---|
| **Amerika (Normal)** | 0.000453** | -0.091823*** | 0.063584* | -3.080612 | -1.04E-07 | 0.048711*** | 0.919542* | 0.013526*** |
| | 2.112379 | -1.957902 | 2.885343 | -0.583404 | -0.488386 | 1.938438 | 28.04079 | 1.717778 |
| **Amerika (Krisis)** | -0.000415 | -0.178933** | 0.136387* | 2.185055 | -3.95E-07 | 0.076231*** | 0.957998* | -0.003938 |
| | -0.667974 | -2.564779 | 2.70496 | 0.551468 | -0.248286 | 1.943197 | 15.97978 | -0.851908 |
| **Hongkong (Normal)** | -0.0000941 | -0.026728 | 0.550611* | 7.887448 | 0.000000182 | 0.054859** | 0.924921* | 0.005042 |
| | -0.361733 | -0.741864 | 20.26236 | 1.431654 | 0.653524 | 2.269363 | 26.1788 | 0.89416 |
| **Hongkong (Krisis)** | -0.000632 | -0.135435** | 0.761678* | -1.715307 | 0.0000154 | 0.247328** | 0.312804 | 0.215564 |
| | -0.717045 | -2.236354 | 11.87361 | -0.210387 | 1.137818 | 2.318758 | 1.121141 | 1.367518 |

*Maximum Likelihood – GED Distribution* **dan** *Optimization Algorithm – Berndt-Hall-Hall-Hausman (BHHH)*

**Universitas Indonesia**

**Lampiran 3.3 Ringkasan Hasil (lanjutan)**

*Dynamic Volatility Spillover* **Pasar Asing ke Indonesia**

| | $\gamma_0$ | $\gamma_1$ | $\gamma_2$ | $\gamma_3$ | $\alpha_0$ | $\alpha_1$ | $\alpha_2$ | $\delta_1$ |
|---|---|---|---|---|---|---|---|---|
| **Amerika (Normal)** | 0.000497 | 0.008611 | 0.607711* | 22.80855 | 0.00000417*** | 0.212366** | 0.603727* | 0.184997 |
| | 1.357854 | 0.213271 | 10.4843 | 0.826353 | 1.780549 | 2.353252 | 4.53592 | 0.968341 |
| **Amerika (Krisis)** | 0.000404 | 0.110865 | 0.27181* | -11.33989 | 4.04E-06 | 0.206409 | 0.561676* | 0.244688 |
| | 0.601708 | 1.552503 | 3.924923 | -1.302976 | 0.616291 | 1.492805 | 4.642976 | 1.594517 |
| **Hongkong (Normal)** | 0.001053* | -0.032138 | 0.022982 | 5.706858 | 0.00000472*** | 0.189144** | 0.637714* | 0.067503 |
| | 2.958502 | -0.546112 | 0.406491 | 0.587304 | 1.833839 | 2.391406 | 4.627884 | 0.964762 |
| **Hongkong (Krisis)** | -0.001084 | 0.18746** | -0.078381 | 3.445761 | 7.23E-06 | 0.167009 | 0.681173* | 0.047984 |
| | -1.504436 | 2.187954 | -1.211868 | 0.797096 | 1.344534 | 1.59278 | 3.93698 | 0.6388 |

*Maximum Likelihood – GED Distribution* **dan** *Optimization Algorithm – Berndt-Hall-Hall-Hausman (BHHH)*

**Universitas Indonesia**

**Lampiran 3.3 Ringkasan Hasil (lanjutan)**

*Dynamic Volatility Spillover* **Pasar Indonesia ke Asing**

|  | $\theta_0$ | $\theta_1$ | $\theta_2$ | $\theta_3$ | $\beta_0$ | $\beta_1$ | $\beta_2$ | $\varphi_1$ |
|---|---|---|---|---|---|---|---|---|
| **Amerika (Normal)** | 0.000626* | -0.028127 | -0.047143** | -5.148816 | -1.19E-07 | 0.050226** | 0.925361* | 0.011876 |
|  | 3.06412 | -0.635396 | -2.21447 | -1.063768 | -0.593327 | 2.038037 | 29.63294 | 1.450372 |
| **Amerika (Krisis)** | -0.00066 | -0.131953*** | -0.037694 | 2.903663 | -1.19E-08 | 0.088207*** | 0.94025* | -0.004445 |
|  | -1.078717 | -1.792297 | -0.762603 | 0.763097 | -0.006629 | 1.944408 | 14.00883 | -0.82869 |
| **Hongkong (Normal)** | 0.000449 | -0.070498 | 0.031921 | 8.341282 | 0.000000354 | 0.067999** | 0.921788* | 0.003533 |
|  | 1.282496 | -1.097926 | 0.627984 | 1.03045 | 0.697348 | 2.310676 | 27.49028 | 0.213967 |
| **Hongkong (Krisis)** | -0.001336 | -0.096202 | 0.041458 | 0.636915 | -0.00000548 | 0.179269*** | 0.589953* | 0.406481 |
|  | -1.236206 | -0.903343 | 0.385323 | 0.04819 | -0.471331 | 1.842571 | 2.589305 | 0.982304 |

*Maximum Likelihood – GED Distribution* **dan** *Optimization Algorithm – Berndt-Hall-Hall-Hausman (BHHH)*

**Universitas Indonesia**

**Lampiran 3.4** *Contemporaneous Volatility Spillover* **Amerika ke Indonesia**

**Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:19
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Failure to improve Likelihood after 24 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VDJIG

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.001089 | 0.000429 | 2.538487 | 0.0111 |
| R_JCI_G(-1) | -0.003332 | 0.047333 | -0.070404 | 0.9439 |
| R_DJI_G | 0.10777 | 0.066227 | 1.627276 | 0.1037 |
| VDJIG | 7.127813 | 32.89248 | 0.2167 | 0.8284 |
| Variance Equation | | | | |
| C | 3.64E-06 | 2.24E-06 | 1.625079 | 0.1041 |
| RESID(-1)^2 | 0.158755 | 0.067389 | 2.355798 | 0.0185 |
| GARCH(-1) | 0.686137 | 0.123305 | 5.564543 | 0 |
| VDJIG | 0.190944 | 0.190162 | 1.004113 | 0.3153 |
| GED PARAMETER | 1.204334 | 0.09547 | 12.61484 | 0 |
| R-squared | 0.008912 | Mean dependent var | | 0.000824 |
| Adjusted R-squared | -0.008708 | S.D. dependent var | | 0.006525 |
| S.E. of regression | 0.006553 | Akaike info criterion | | -7.470139 |
| Sum squared resid | 0.019325 | Schwarz criterion | | -7.389178 |
| Log likelihood | 1723.397 | Hannan-Quinn criter. | | -7.438256 |
| F-statistic | 0.505789 | Durbin-Watson stat | | 2.04844 |
| Prob(F-statistic) | 0.852126 | | | |

**Krisis**

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:20
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 28 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VDJIR

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000245 | 0.00079 | 0.310106 | 0.7565 |
| R_JCI_R(-1) | 0.149634 | 0.072766 | 2.056374 | 0.0397 |
| R_DJI_R | 0.167824 | 0.078345 | 2.142108 | 0.0322 |
| VDJIR | -12.10865 | 11.23916 | -1.077362 | 0.2813 |
| Variance Equation | | | | |
| C | -7.61E-07 | 5.79E-06 | -0.131485 | 0.8954 |
| RESID(-1)^2 | 0.117391 | 0.088224 | 1.330597 | 0.1833 |
| GARCH(-1) | 0.632418 | 0.11942 | 5.295756 | 0 |
| VDJIR | 0.331859 | 0.159883 | 2.075644 | 0.0379 |
| GED PARAMETER | 1.433184 | 0.209442 | 6.842878 | 0 |
| R-squared | 0.087633 | Mean dependent var | | -0.001997 |
| Adjusted R-squared | 0.048602 | S.D. dependent var | | 0.011711 |
| S.E. of regression | 0.011423 | Akaike info criterion | | -6.474203 |
| Sum squared resid | 0.024399 | Schwarz criterion | | -6.323678 |
| Log likelihood | 643.4719 | Hannan-Quinn criter. | | -6.413263 |
| F-statistic | 2.245182 | Durbin-Watson stat | | 1.884122 |
| Prob(F-statistic) | 0.026001 | | | |

**Universitas Indonesia**

**Lampiran 3. 5** *Contemporaneous Volatility Spillover* **Hongkong ke Indonesia**

**Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:23
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 34 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VHSIG

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000523 | 0.000311 | 1.684309 | 0.0921 |
| R_JCI_G(-1) | 0.018405 | 0.037524 | 0.490493 | 0.6238 |
| R_HSI_G | 0.649793 | 0.033404 | 19.45276 | 0 |
| VHSIG | 4.672497 | 7.909487 | 0.590746 | 0.5547 |
| Variance Equation | | | | |
| C | 3.12E-06 | 1.47E-06 | 2.113377 | 0.0346 |
| RESID(-1)^2 | 0.186461 | 0.065237 | 2.858217 | 0.0043 |
| GARCH(-1) | 0.64553 | 0.10328 | 6.250273 | 0 |
| VHSIG | 0.016263 | 0.028816 | 0.564379 | 0.5725 |
| GED PARAMETER | 1.537609 | 0.120909 | 12.71712 | 0 |
| R-squared | 0.47439 | Mean dependent var | | 0.000824 |
| Adjusted R-squared | 0.465046 | S.D. dependent var | | 0.006525 |
| S.E. of regression | 0.004772 | Akaike info criterion | | -7.989597 |
| Sum squared resid | 0.010249 | Schwarz criterion | | -7.908636 |
| Log likelihood | 1842.613 | Hannan-Quinn criter. | | -7.957713 |
| F-statistic | 50.76849 | Durbin-Watson stat | | 2.062794 |
| Prob(F-statistic) | 0 | | | |

**Krisis**

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:25
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Failure to improve Likelihood after 10 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VHSIR

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001437 | 0.000763 | -1.882903 | 0.0597 |
| R_JCI_R(-1) | 0.192577 | 0.073638 | 2.615186 | 0.0089 |
| R_HSI_R | 0.5878 | 0.046651 | 12.59997 | 0 |
| VHSIR | 1.792367 | 3.235957 | 0.553891 | 0.5797 |
| Variance Equation | | | | |
| C | 5.34E-05 | 2.14E-05 | 2.495795 | 0.0126 |
| RESID(-1)^2 | 0.11563 | 0.073511 | 1.572964 | 0.1157 |
| GARCH(-1) | -0.639135 | 0.283929 | -2.251035 | 0.0244 |
| VHSIR | 0.279641 | 0.09393 | 2.977121 | 0.0029 |
| GED PARAMETER | 1.943166 | 0.384332 | 5.055952 | 0 |
| R-squared | 0.485136 | Mean dependent var | | -0.001997 |
| Adjusted R-squared | 0.46311 | S.D. dependent var | | 0.011711 |
| S.E. of regression | 0.008581 | Akaike info criterion | | -6.881013 |
| Sum squared resid | 0.013769 | Schwarz criterion | | -6.730487 |
| Log likelihood | 683.3393 | Hannan-Quinn criter. | | -6.820073 |
| F-statistic | 22.02532 | Durbin-Watson stat | | 2.027161 |
| Prob(F-statistic) | 0 | | | |

**Universitas Indonesia**

**Lampiran 3. 6 *Contemporaneous Volatility Spillover* Indonesia ke Amerika**

**Normal**

Dependent Variable: R_DJI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:28
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 53 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCIG

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000453 | 0.000215 | 2.112379 | 0.0347 |
| R_DJI_G(-1) | -0.091823 | 0.046899 | -1.957902 | 0.0502 |
| R_JCI_G | 0.063584 | 0.022037 | 2.885343 | 0.0039 |
| VJCIG | -3.080612 | 5.280411 | -0.583404 | 0.5596 |
| Variance Equation | | | | |
| C | -1.04E-07 | 2.14E-07 | -0.488386 | 0.6253 |
| RESID(-1)^2 | 0.048711 | 0.025129 | 1.938438 | 0.0526 |
| GARCH(-1) | 0.919542 | 0.032793 | 28.04079 | 0 |
| VJCIG | 0.013526 | 0.007874 | 1.717778 | 0.0858 |
| GED PARAMETER | 1.20226 | 0.102468 | 11.73307 | 0 |
| R-squared | 0.030997 | Mean dependent var | | 0.000152 |
| Adjusted R-squared | 0.013771 | S.D. dependent var | | 0.003573 |
| S.E. of regression | 0.003548 | Akaike info criterion | | -8.650293 |
| Sum squared resid | 0.005665 | Schwarz criterion | | -8.569331 |
| Log likelihood | 1994.242 | Hannan-Quinn criter. | | -8.618409 |
| F-statistic | 1.799383 | Durbin-Watson stat | | 2.062319 |
| Prob(F-statistic) | 0.075147 | | | |

**Krisis**

Dependent Variable: R_DJI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:32
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 25 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCIR

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000415 | 0.000621 | -0.667974 | 0.5042 |
| R_DJI_R(-1) | -0.178933 | 0.069765 | -2.564779 | 0.0103 |
| R_JCI_R | 0.136387 | 0.050421 | 2.70496 | 0.0068 |
| VJCIR | 2.185055 | 3.962252 | 0.551468 | 0.5813 |
| Variance Equation | | | | |
| C | -3.95E-07 | 1.59E-06 | -0.248286 | 0.8039 |
| RESID(-1)^2 | 0.076231 | 0.03923 | 1.943197 | 0.052 |
| GARCH(-1) | 0.957998 | 0.059951 | 15.97978 | 0 |
| VJCIR | -0.003938 | 0.004622 | -0.851908 | 0.3943 |
| GED PARAMETER | 1.358401 | 0.236252 | 5.749787 | 0 |
| R-squared | 0.067509 | Mean dependent var | | -0.000918 |
| Adjusted R-squared | 0.027616 | S.D. dependent var | | 0.01011 |
| S.E. of regression | 0.009969 | Akaike info criterion | | -6.808942 |
| Sum squared resid | 0.018585 | Schwarz criterion | | -6.658416 |
| Log likelihood | 676.2763 | Hannan-Quinn criter. | | -6.748002 |
| F-statistic | 1.692268 | Durbin-Watson stat | | 1.980048 |
| Prob(F-statistic) | 0.102634 | | | |

**Universitas Indonesia**

**Lampiran 3.7** *Contemporaneous Volatility Spillover* **Indonesia ke Hong Kong**

**Normal**

Dependent Variable: R_HSI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09  Time: 09:47
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments
Convergence achieved after 17 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCIG

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -9.41E-05 | 0.00026 | -0.361733 | 0.7176 |
| R_HSI_G(-1) | -0.026728 | 0.036028 | -0.741864 | 0.4582 |
| R_JCI_G | 0.550611 | 0.027174 | 20.26236 | 0 |
| VJCIG | 7.887448 | 5.509327 | 1.431654 | 0.1522 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | 1.82E-07 | 2.78E-07 | 0.653524 | 0.5134 |
| RESID(-1)^2 | 0.054859 | 0.024174 | 2.269363 | 0.0232 |
| GARCH(-1) | 0.924921 | 0.035331 | 26.1788 | 0 |
| VJCIG | 0.005042 | 0.005638 | 0.89416 | 0.3712 |

| GED PARAMETER | 1.633322 | 0.181949 | 8.976836 | 0 |
|---|---|---|---|---|

| R-squared | 0.484537 | Mean dependent var | 0.000581 |
|---|---|---|---|
| Adjusted R-squared | 0.475373 | S.D. dependent var | 0.005915 |
| S.E. of regression | 0.004284 | Akaike info criterion | -8.256742 |
| Sum squared resid | 0.008258 | Schwarz criterion | -8.17578 |
| Log likelihood | 1903.922 | Hannan-Quinn criter. | -8.224858 |
| F-statistic | 52.8752 | Durbin-Watson stat | 2.027447 |
| Prob(F-statistic) | 0 | | |

**Krisis**

Dependent Variable: R_HSI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09  Time: 09:49
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments
Convergence achieved after 29 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCIR

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.000632 | 0.000882 | -0.717045 | 0.4733 |
| R_HSI_R(-1) | -0.135435 | 0.06056 | -2.236354 | 0.0253 |
| R_JCI_R | 0.761678 | 0.064149 | 11.87361 | 0 |
| VJCIR | -1.715307 | 8.153121 | -0.210387 | 0.8334 |

| Variance Equation | | | | |
|---|---|---|---|---|
| C | 1.54E-05 | 1.35E-05 | 1.137818 | 0.2552 |
| RESID(-1)^2 | 0.247328 | 0.106664 | 2.318758 | 0.0204 |
| GARCH(-1) | 0.312804 | 0.279005 | 1.121141 | 0.2622 |
| VJCIR | 0.215564 | 0.157632 | 1.367518 | 0.1715 |

| GED PARAMETER | 1.775142 | 0.320108 | 5.545452 | 0 |
|---|---|---|---|---|

| R-squared | 0.461973 | Mean dependent var | -0.00167 |
|---|---|---|---|
| Adjusted R-squared | 0.438955 | S.D. dependent var | 0.014564 |
| S.E. of regression | 0.010909 | Akaike info criterion | -6.51105 |
| Sum squared resid | 0.022253 | Schwarz criterion | -6.360524 |
| Log likelihood | 647.0829 | Hannan-Quinn criter. | -6.45011 |
| F-statistic | 20.07074 | Durbin-Watson stat | 2.058023 |
| Prob(F-statistic) | 0 | | |

**Universitas Indonesia**

**Lampiran 3.8** *Dynamic Volatility Spillover* **Amerika ke Indonesia**

**Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/29/09   Time: 09:43
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 16 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VDJIG(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000497 | 0.000366 | 1.357854 | 0.1745 |
| R_JCI_G(-1) | 0.008611 | 0.040375 | 0.213271 | 0.8311 |
| R_DJI_G(-1) | 0.607711 | 0.057964 | 10.4843 | 0 |
| VDJIG(-1) | 22.80855 | 27.60148 | 0.826353 | 0.4086 |
| Variance Equation | | | | |
| C | 4.17E-06 | 2.34E-06 | 1.780549 | 0.075 |
| RESID(-1)^2 | 0.212366 | 0.090243 | 2.353252 | 0.0186 |
| GARCH(-1) | 0.603727 | 0.133099 | 4.53592 | 0 |
| VDJIG(-1) | 0.184997 | 0.191045 | 0.968341 | 0.3329 |
| GED PARAMETER | 1.104373 | 0.081954 | 13.47549 | 0 |
| R-squared | 0.133486 | Mean dependent var | | 0.000804 |
| Adjusted R-squared | 0.118047 | S.D. dependent var | | 0.006518 |
| S.E. of regression | 0.006122 | Akaike info criterion | | -7.661818 |
| Sum squared resid | 0.016826 | Schwarz criterion | | -7.580722 |
| Log likelihood | 1763.556 | Hannan-Quinn criter. | | -7.629878 |
| F-statistic | 8.646022 | Durbin-Watson stat | | 2.266096 |
| Prob(F-statistic) | 0 | | | |

**Krisis**

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:55
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence not achieved after 500 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VDJIR(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000404 | 0.000671 | 0.601708 | 0.5474 |
| R_JCI_R(-1) | 0.110865 | 0.071411 | 1.552503 | 0.1205 |
| R_DJI_R(-1) | 0.27181 | 0.069252 | 3.924923 | 0.0001 |
| VDJIR(-1) | -11.33989 | 8.703068 | -1.302976 | 0.1926 |
| Variance Equation | | | | |
| C | 4.04E-06 | 6.56E-06 | 0.616291 | 0.5377 |
| RESID(-1)^2 | 0.206409 | 0.138269 | 1.492805 | 0.1355 |
| GARCH(-1) | 0.561676 | 0.120973 | 4.642976 | 0 |
| VDJIR(-1) | 0.244688 | 0.153456 | 1.594517 | 0.1108 |
| GED PARAMETER | 1.196737 | 0.171124 | 6.993393 | 0 |
| R-squared | 0.0981 | Mean dependent var | | -0.001942 |
| Adjusted R-squared | 0.059308 | S.D. dependent var | | 0.011716 |
| S.E. of regression | 0.011363 | Akaike info criterion | | -6.526458 |
| Sum squared resid | 0.024017 | Schwarz criterion | | -6.375397 |
| Log likelihood | 645.3297 | Hannan-Quinn criter. | | -6.465295 |
| F-statistic | 2.528898 | Durbin-Watson stat | | 1.884221 |
| Prob(F-statistic) | 0.012356 | | | |

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**Normal**

Dependent Variable: R_JCI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:57
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 17 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VHSIG(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.001053 | 0.000356 | 2.958502 | 0.0031 |
| R_JCI_G(-1) | -0.032138 | 0.058848 | -0.546112 | 0.585 |
| R_HSI_G(-1) | 0.022982 | 0.056538 | 0.406491 | 0.6844 |
| VHSIG(-1) | 5.706858 | 9.717036 | 0.587304 | 0.557 |
| Variance Equation | | | | |
| C | 4.72E-06 | 2.57E-06 | 1.833839 | 0.0667 |
| RESID(-1)^2 | 0.189144 | 0.079093 | 2.391406 | 0.0168 |
| GARCH(-1) | 0.637714 | 0.137798 | 4.627884 | 0 |
| VHSIG(-1) | 0.067503 | 0.069968 | 0.964762 | 0.3347 |
| GED PARAMETER | 1.186511 | 0.099899 | 11.8771 | 0 |

| | | | | |
|---|---|---|---|---|
| R-squared | -0.004077 | Mean dependent var | | 0.000804 |
| Adjusted R-squared | -0.021967 | S.D. dependent var | | 0.006518 |
| S.E. of regression | 0.00659 | Akaike info criterion | | -7.470757 |
| Sum squared resid | 0.019497 | Schwarz criterion | | -7.389662 |
| Log likelihood | 1719.803 | Hannan-Quinn criter. | | -7.438818 |
| Durbin-Watson stat | 1.992462 | | | |

**Krisis**

Dependent Variable: R_JCI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 09:59
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Failure to improve Likelihood after 88 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VHSIR(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001084 | 0.000721 | -1.504436 | 0.1325 |
| R_JCI_R(-1) | 0.18746 | 0.085678 | 2.187954 | 0.0287 |
| R_HSI_R(-1) | -0.078381 | 0.064678 | -1.211868 | 0.2256 |
| VHSIR(-1) | 3.445761 | 4.322891 | 0.797096 | 0.4254 |
| Variance Equation | | | | |
| C | 7.23E-06 | 5.38E-06 | 1.344534 | 0.1788 |
| RESID(-1)^2 | 0.167009 | 0.104854 | 1.59278 | 0.1112 |
| GARCH(-1) | 0.681173 | 0.173019 | 3.93698 | 0.0001 |
| VHSIR(-1) | 0.047984 | 0.075116 | 0.6388 | 0.523 |
| GED PARAMETER | 1.254667 | 0.167233 | 7.502495 | 0 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.040171 | Mean dependent var | | -0.001942 |
| Adjusted R-squared | -0.001112 | S.D. dependent var | | 0.011716 |
| S.E. of regression | 0.011722 | Akaike info criterion | | -6.434407 |
| Sum squared resid | 0.02556 | Schwarz criterion | | -6.283346 |
| Log likelihood | 636.3547 | Hannan-Quinn criter. | | -6.373244 |
| F-statistic | 0.973059 | Durbin-Watson stat | | 1.750033 |
| Prob(F-statistic) | 0.458464 | | | |

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## Normal

Dependent Variable: R_DJI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 10:02
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 26 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCIG(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000626 | 0.000204 | 3.06412 | 0.0022 |
| R_DJI_G(-1) | -0.028127 | 0.044266 | -0.635396 | 0.5252 |
| R_JCI_G(-1) | -0.047143 | 0.021289 | -2.21447 | 0.0268 |
| VJCIG(-1) | -5.148816 | 4.840168 | -1.063768 | 0.2874 |
| Variance Equation | | | | |
| C | -1.19E-07 | 2.01E-07 | -0.593327 | 0.553 |
| RESID(-1)^2 | 0.050226 | 0.024644 | 2.038037 | 0.0415 |
| GARCH(-1) | 0.925361 | 0.031227 | 29.63294 | 0 |
| VJCIG(-1) | 0.011876 | 0.008188 | 1.450372 | 0.147 |
| GED PARAMETER | 1.1966 | 0.096869 | 12.35271 | 0 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.01354 | Mean dependent var | 0.000149 |
| Adjusted R-squared | -0.004036 | S.D. dependent var | 0.003576 |
| S.E. of regression | 0.003583 | Akaike info criterion | -8.642454 |
| Sum squared resid | 0.005766 | Schwarz criterion | -8.561358 |
| Log likelihood | 1988.122 | Hannan-Quinn criter. | -8.610514 |
| F-statistic | 0.770367 | Durbin-Watson stat | 2.083026 |
| Prob(F-statistic) | 0.629114 | | |

## Krisis

Dependent Variable: R_DJI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 10:04
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 128 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCIR(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.00066 | 0.000611 | -1.078717 | 0.2807 |
| R_DJI_R(-1) | -0.131953 | 0.073622 | -1.792297 | 0.0731 |
| R_JCI_R(-1) | -0.037694 | 0.049428 | -0.762603 | 0.4457 |
| VJCIR(-1) | 2.903663 | 3.805101 | 0.763097 | 0.4454 |
| Variance Equation | | | | |
| C | -1.19E-08 | 1.79E-06 | -0.006629 | 0.9947 |
| RESID(-1)^2 | 0.088207 | 0.045365 | 1.944408 | 0.0518 |
| GARCH(-1) | 0.94025 | 0.067118 | 14.00883 | 0 |
| VJCIR(-1) | -0.004445 | 0.005363 | -0.82869 | 0.4073 |
| GED PARAMETER | 1.377426 | 0.257601 | 5.347123 | 0 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.009378 | Mean dependent var | -0.000874 |
| Adjusted R-squared | -0.033229 | S.D. dependent var | 0.010117 |
| S.E. of regression | 0.010284 | Akaike info criterion | -6.777919 |
| Sum squared resid | 0.01967 | Schwarz criterion | -6.626858 |
| Log likelihood | 669.8471 | Hannan-Quinn criter. | -6.716756 |
| F-statistic | 0.220103 | Durbin-Watson stat | 1.968594 |
| Prob(F-statistic) | 0.987014 | | |

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## Normal

Dependent Variable: R_HSI_G
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 10:06
Sample (adjusted): 1/05/2006 1/09/2008
Included observations: 458 after adjustments
Convergence achieved after 27 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCIG(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000449 | 0.00035 | 1.282496 | 0.1997 |
| R_HSI_G(-1) | -0.070498 | 0.06421 | -1.097926 | 0.2722 |
| R_JCI_G(-1) | 0.031921 | 0.050832 | 0.627984 | 0.53 |
| VJCIG(-1) | 8.341282 | 8.094794 | 1.03045 | 0.3028 |
| Variance Equation | | | | |
| C | 3.54E-07 | 5.08E-07 | 0.697348 | 0.4856 |
| RESID(-1)^2 | 0.067999 | 0.029428 | 2.310676 | 0.0209 |
| GARCH(-1) | 0.921788 | 0.033531 | 27.49028 | 0 |
| VJCIG(-1) | 0.003533 | 0.016511 | 0.213967 | 0.8306 |
| GED PARAMETER | 1.344095 | 0.147535 | 9.110369 | 0 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.00824 | Mean dependent var | 0.000566 |
| Adjusted R-squared | -0.009431 | S.D. dependent var | 0.005912 |
| S.E. of regression | 0.00594 | Akaike info criterion | -7.653824 |
| Sum squared resid | 0.015844 | Schwarz criterion | -7.572728 |
| Log likelihood | 1761.726 | Hannan-Quinn criter. | -7.621885 |
| F-statistic | 0.466284 | Durbin-Watson stat | 1.992708 |
| Prob(F-statistic) | 0.879818 | | |

## Krisis

Dependent Variable: R_HSI_R
Method: ML - ARCH (BHHH) - Generalized error distribution (GED)
Date: 11/22/09   Time: 10:08
Sample (adjusted): 1/16/2008 11/24/2008
Included observations: 195 after adjustments
Convergence achieved after 25 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(5) + C(6)*RESID(-1)^2 + C(7)*GARCH(-1) + C(8)*VJCIR(-1)

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.001336 | 0.00108 | -1.236206 | 0.2164 |
| R_HSI_R(-1) | -0.096202 | 0.106495 | -0.903343 | 0.3663 |
| R_JCI_R(-1) | 0.041458 | 0.107592 | 0.385323 | 0.7 |
| VJCIR(-1) | 0.636915 | 13.21687 | 0.04819 | 0.9616 |
| Variance Equation | | | | |
| C | -5.48E-06 | 1.16E-05 | -0.471331 | 0.6374 |
| RESID(-1)^2 | 0.179269 | 0.097293 | 1.842571 | 0.0654 |
| GARCH(-1) | 0.589953 | 0.227842 | 2.589305 | 0.0096 |
| VJCIR(-1) | 0.406481 | 0.413804 | 0.982304 | 0.326 |
| GED PARAMETER | 1.903862 | 0.325628 | 5.84673 | 0 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.013099 | Mean dependent var | -0.001625 |
| Adjusted R-squared | -0.029348 | S.D. dependent var | 0.014588 |
| S.E. of regression | 0.0148 | Akaike info criterion | -6.048631 |
| Sum squared resid | 0.040742 | Schwarz criterion | -5.89757 |
| Log likelihood | 598.7416 | Hannan-Quinn criter. | -5.987468 |
| F-statistic | 0.308593 | Durbin-Watson stat | 2.071233 |
| Prob(F-statistic) | 0.96211 | | |

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**Lampiran 4 :   Augmented Dickey Fuller Test.**

**Lampiran  4.1 ADF Test** *Jakarta Composite Index* **(JCI)**
**periode** *normal*

Null Hypothesis: R_JCI_G has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=17)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -21.7306 | 0.00000 |
| Test critical values: | 1% level | -3.444373 | |
| | 5% level | -2.867617 | |
| | 10% level | -2.57007 | |

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(R_JCI_G)
Method: Least Squares
Date: 11/06/09   Time: 18:24
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| R_JCI_G(-1) | -1.015946 | 0.046752 | -21.7306 | 0.00000 |
| C | 0.000837 | 0.000307 | 2.724481 | 0.0067 |

| | | | |
|---|---|---|---|
| R-squared | 0.508189 | Mean dependent var | -2.74E-06 |
| Adjusted R-squared | 0.507113 | S.D. dependent var | 0.009303 |
| S.E. of regression | 0.006531 | Akaike info criterion | -7.220133 |
| Sum squared resid | 0.019494 | Schwarz criterion | -7.202141 |
| Log likelihood | 1659.02 | Hannan-Quinn criter. | -7.213047 |
| F-statistic | 472.219 | Durbin-Watson stat | 2.000997 |
| Prob(F-statistic) | 0 | | |

**Lampiran  4.2 ADF Test** *Dow Jones Industrial Average* **(DJI)**
**periode** *normal*

Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=17)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -23.58213 | 0.00000 |
| Test critical values: | 1% level | -3.444373 | |
| | 5% level | -2.867617 | |
| | 10% level | -2.57007 | |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(R_DJI_G)
Method: Least Squares
Date: 11/06/09   Time: 18:23
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| R_DJI_G(-1) | -1.099384 | 0.046619 | -23.58213 | 0.00000 |
| C | 0.000166 | 0.000166 | 1.000618 | 0.3175 |

| | | | |
|---|---|---|---|
| R-squared | 0.548917 | Mean dependent var | 5.45E-06 |
| Adjusted R-squared | 0.54793 | S.D. dependent var | 0.005293 |
| S.E. of regression | 0.003559 | Akaike info criterion | -8.434336 |
| Sum squared resid | 0.005789 | Schwarz criterion | -8.416345 |
| Log likelihood | 1937.68 | Hannan-Quinn criter. | -8.427251 |
| F-statistic | 556.1169 | Durbin-Watson stat | 1.991799 |
| Prob(F-statistic) | 0 | | |

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## Lampiran 4.3 ADF Test *Hang Seng Index (*HSI) periode *normal*

Null Hypothesis: R_HSI_G has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=17)

|  |  | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic |  | -22.13797 | 0.00000 |
| Test critical values: | 1% level | -3.444373 |  |
|  | 5% level | -2.867617 |  |
|  | 10% level | -2.57007 |  |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(R_HSI_G)
Method: Least Squares
Date: 11/06/09   Time: 18:24
Sample (adjusted): 1/04/2006 1/09/2008
Included observations: 459 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| R_HSI_G(-1) | -1.036276 | 0.04681 | -22.13797 | 0.00000 |
| C | 0.000601 | 0.000277 | 2.167124 | 0.0307 |
| R-squared | 0.517469 | Mean dependent var |  | 2.38E-05 |
| Adjusted R-squared | 0.516413 | S.D. dependent var |  | 0.008509 |
| S.E. of regression | 0.005917 | Akaike info criterion |  | -7.417598 |
| Sum squared resid | 0.016 | Schwarz criterion |  | -7.399607 |
| Log likelihood | 1704.339 | Hannan-Quinn criter. |  | -7.410513 |
| F-statistic | 490.0899 | Durbin-Watson stat |  | 1.996004 |
| Prob(F-statistic) | 0 |  |  |  |

## Lampiran 4.4 ADF Test *Jakarta Composite Index* (JCI) periode *krisis*

Null Hypothesis: R_JCI_R has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=14)

|  |  | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic |  | -11.08244 | 0.000000 |
| Test critical values: | 1% level | -3.463749 |  |
|  | 5% level | -2.876123 |  |
|  | 10% level | -2.574622 |  |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(R_JCI_R)
Method: Least Squares
Date: 11/06/09   Time: 18:25
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| R_JCI_R(-1) | -0.775311 | 0.069959 | -11.08244 | 0.000000 |
| C | -0.001547 | 0.000829 | -1.865335 | 0.0636 |
| R-squared | 0.387666 | Mean dependent var |  | 6.18E-06 |
| Adjusted R-squared | 0.38451 | S.D. dependent var |  | 0.014583 |
| S.E. of regression | 0.011441 | Akaike info criterion |  | -6.093148 |
| Sum squared resid | 0.025392 | Schwarz criterion |  | -6.059698 |
| Log likelihood | 599.1285 | Hannan-Quinn criter. |  | -6.079606 |
| F-statistic | 122.8206 | Durbin-Watson stat |  | 1.961791 |
| Prob(F-statistic) | 0 |  |  |  |

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**Lampiran 4.5 ADF Test** *Dow Jones Industrial Average* **(DJI)**
**periode** *krisis*

Null Hypothesis: R_DJI_R has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=14)

|  |  | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic |  | -15.72645 | 0.000000 |
| Test critical values: | 1% level | -3.463749 |  |
|  | 5% level | -2.876123 |  |
|  | 10% level | -2.574622 |  |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(R_DJI_R)
Method: Least Squares
Date: 11/06/09   Time: 18:24
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| R_DJI_R(-1) | -1.132846 | 0.072034 | -15.72645 | 0.000000 |
| C | -0.001053 | 0.000721 | -1.459939 | 0.1459 |
| R-squared | 0.560411 | Mean dependent var |  | 9.93E-05 |
| Adjusted R-squared | 0.558145 | S.D. dependent var |  | 0.015116 |
| S.E. of regression | 0.010048 | Akaike info criterion |  | -6.352723 |
| Sum squared resid | 0.019587 | Schwarz criterion |  | -6.319273 |
| Log likelihood | 624.5669 | Hannan-Quinn criter. |  | -6.339181 |
| F-statistic | 247.3213 | Durbin-Watson stat |  | 1.999378 |
| Prob(F-statistic) | 0 |  |  |  |

**Lampiran 4.6 ADF Test** *Hang Seng Index* **(HSI) periode**
*krisis*

Null Hypothesis: R_HSI_R has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=14)

|  |  | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic |  | -15.68087 | 0.000000 |
| Test critical values: | 1% level | -3.463749 |  |
|  | 5% level | -2.876123 |  |
|  | 10% level | -2.574622 |  |

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(R_HSI_R)
Method: Least Squares
Date: 11/06/09   Time: 18:25
Sample (adjusted): 1/15/2008 11/24/2008
Included observations: 196 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| R_HSI_R(-1) | -1.11492 | 0.071101 | -15.68087 | 0.000000 |
| C | -0.001868 | 0.001043 | -1.790911 | 0.0749 |
| R-squared | 0.55898 | Mean dependent var |  | 5.85E-05 |
| Adjusted R-squared | 0.556707 | S.D. dependent var |  | 0.021784 |
| S.E. of regression | 0.014504 | Akaike info criterion |  | -5.618623 |
| Sum squared resid | 0.040811 | Schwarz criterion |  | -5.585173 |
| Log likelihood | 552.625 | Hannan-Quinn criter. |  | -5.605081 |
| F-statistic | 245.8898 | Durbin-Watson stat |  | 1.994767 |
| Prob(F-statistic) | 0 |  |  |  |

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