



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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ภาคผนวก ก

ผลการทดสอบยูนิตรูท (Unit Root Test) ด้วยวิธี Augmented Dickey-Fuller Test

1) ผลการทดสอบยูนิตรูท (Unit Root Test) ของการส่งออกเครื่องคอมพิวเตอร์ อุปกรณ์และ
ส่วนประกอบ

1.1) Level without Trend and Intercept

Null Hypothesis: GX has a unit root

Exogenous: None

Lag Length: 11 (Automatic based on AIC, MAXLAG=13)

| | t-Statistic | Prob.* |
|--|-------------|--------|
| Augmented Dickey-Fuller test statistic | -4.900507 | 0.0000 |
| Test critical values: | | |
| 1% level | -2.579967 | |
| 5% level | -1.942896 | |
| 10% level | -1.615342 | |

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GX)

Method: Least Squares

Date: 02/20/11 Time: 14:10

Sample (adjusted): 13 167

Included observations: 155 after adjustments

| | Coefficient | Std. Error | t-Statistic | Prob. |
|------------|-------------|------------|-------------|--------|
| GX(-1) | -2.085815 | 0.425632 | -4.900507 | 0.0000 |
| D(GX(-1)) | 0.636847 | 0.396263 | 1.607132 | 0.1102 |
| D(GX(-2)) | 0.401575 | 0.364752 | 1.100952 | 0.2728 |
| D(GX(-3)) | 0.361771 | 0.335254 | 1.079095 | 0.2824 |
| D(GX(-4)) | 0.192720 | 0.306068 | 0.629663 | 0.5299 |
| D(GX(-5)) | -0.059961 | 0.276716 | -0.216687 | 0.8288 |
| D(GX(-6)) | -0.117548 | 0.246763 | -0.476358 | 0.6345 |
| D(GX(-7)) | -0.186920 | 0.216723 | -0.862481 | 0.3899 |
| D(GX(-8)) | -0.268837 | 0.190054 | -1.414532 | 0.1594 |
| D(GX(-9)) | -0.151705 | 0.163423 | -0.928298 | 0.3548 |
| D(GX(-10)) | -0.189519 | 0.125828 | -1.506179 | 0.1342 |
| D(GX(-11)) | -0.200970 | 0.075046 | -2.677943 | 0.0083 |

| | | | |
|--------------------|----------|-----------------------|-----------|
| R-squared | 0.795908 | Mean dependent var | 0.001377 |
| Adjusted R-squared | 0.780209 | S.D. dependent var | 0.293612 |
| S.E. of regression | 0.137651 | Akaike info criterion | -1.053933 |
| Sum squared resid | 2.709533 | Schwarz criterion | -0.818313 |
| Log likelihood | 93.67981 | Hannan-Quinn criter. | -0.958230 |
| Durbin-Watson stat | 1.963091 | | |

1.2) Level with Intercept

Null Hypothesis: GX has a unit root

Exogenous: Constant

Lag Length: 11 (Automatic based on AIC, MAXLAG=13)

| | t-Statistic | Prob.* |
|--|-------------|--------|
| Augmented Dickey-Fuller test statistic | -4.812038 | 0.0001 |
| Test critical values: | | |
| 1% level | -3.472813 | |
| 5% level | -2.880088 | |
| 10% level | -2.576739 | |

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GX)

Method: Least Squares

Date: 02/20/11 Time: 14:10

Sample (adjusted): 13 167

Included observations: 155 after adjustments

| | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| GX(-1) | -2.103008 | 0.437031 | -4.812038 | 0.0000 |
| D(GX(-1)) | 0.653458 | 0.407578 | 1.603271 | 0.1111 |
| D(GX(-2)) | 0.417357 | 0.375760 | 1.110700 | 0.2686 |
| D(GX(-3)) | 0.376462 | 0.345600 | 1.089301 | 0.2779 |
| D(GX(-4)) | 0.205980 | 0.315326 | 0.653229 | 0.5147 |
| D(GX(-5)) | -0.048219 | 0.284788 | -0.169316 | 0.8658 |
| D(GX(-6)) | -0.107562 | 0.253392 | -0.424487 | 0.6719 |
| D(GX(-7)) | -0.178674 | 0.221961 | -0.804980 | 0.4222 |
| D(GX(-8)) | -0.262172 | 0.194057 | -1.351006 | 0.1788 |
| D(GX(-9)) | -0.146730 | 0.166159 | -0.883073 | 0.3787 |
| D(GX(-10)) | -0.186366 | 0.127395 | -1.462894 | 0.1457 |
| D(GX(-11)) | -0.199627 | 0.075649 | -2.638876 | 0.0092 |
| C | 0.002115 | 0.011407 | 0.185391 | 0.8532 |
| R-squared | 0.795958 | Mean dependent var | | 0.001377 |
| Adjusted R-squared | 0.778714 | S.D. dependent var | | 0.293612 |
| S.E. of regression | 0.138118 | Akaike info criterion | | -1.041272 |
| Sum squared resid | 2.708877 | Schwarz criterion | | -0.786017 |
| Log likelihood | 93.69857 | Hannan-Quinn criter. | | -0.937593 |
| F-statistic | 46.16113 | Durbin-Watson stat | | 1.962621 |
| Prob(F-statistic) | 0.000000 | | | |

1.3) Level with Trend and Intercept

Null Hypothesis: GX has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 11 (Automatic based on AIC, MAXLAG=13)

| | t-Statistic | Prob.* |
|--|-------------|--------|
| Augmented Dickey-Fuller test statistic | -4.692061 | 0.0011 |
| Test critical values: | | |
| 1% level | -4.018349 | |
| 5% level | -3.439075 | |
| 10% level | -3.143887 | |

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GX)
 Method: Least Squares
 Date: 02/20/11 Time: 14:11
 Sample (adjusted): 13 167
 Included observations: 155 after adjustments

| | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| GX(-1) | -2.088089 | 0.445026 | -4.692061 | 0.0000 |
| D(GX(-1)) | 0.638658 | 0.415827 | 1.535874 | 0.1268 |
| D(GX(-2)) | 0.402931 | 0.384102 | 1.049022 | 0.2960 |
| D(GX(-3)) | 0.362567 | 0.353894 | 1.024507 | 0.3074 |
| D(GX(-4)) | 0.193378 | 0.322818 | 0.599033 | 0.5501 |
| D(GX(-5)) | -0.059554 | 0.291506 | -0.204296 | 0.8384 |
| D(GX(-6)) | -0.117478 | 0.259202 | -0.453229 | 0.6511 |
| D(GX(-7)) | -0.186795 | 0.226509 | -0.824670 | 0.4110 |
| D(GX(-8)) | -0.268454 | 0.197318 | -1.360516 | 0.1758 |
| D(GX(-9)) | -0.151376 | 0.168388 | -0.898972 | 0.3702 |
| D(GX(-10)) | -0.189361 | 0.128732 | -1.470969 | 0.1435 |
| D(GX(-11)) | -0.200883 | 0.076174 | -2.637165 | 0.0093 |
| C | -0.002444 | 0.025845 | -0.094572 | 0.9248 |
| @TREND(1) | 5.00E-05 | 0.000254 | 0.196736 | 0.8443 |
| R-squared | 0.796014 | Mean dependent var | | 0.001377 |
| Adjusted R-squared | 0.777206 | S.D. dependent var | | 0.293612 |
| S.E. of regression | 0.138588 | Akaike info criterion | | -1.028643 |
| Sum squared resid | 2.708134 | Schwarz criterion | | -0.753753 |
| Log likelihood | 93.71984 | Hannan-Quinn criter. | | -0.916989 |
| F-statistic | 42.32479 | Durbin-Watson stat | | 1.963270 |
| Prob(F-statistic) | 0.000000 | | | |

2) ผลการทดสอบยูนิตรูท (Unit Root Test) ของอัตราแลกเปลี่ยน

2.1) Level without Trend and Intercept

Null Hypothesis: GEX has a unit root
 Exogenous: None
 Lag Length: 9 (Automatic based on AIC, MAXLAG=13)

| | t-Statistic | Prob.* |
|--|-------------|--------|
| Augmented Dickey-Fuller test statistic | -5.833397 | 0.0000 |
| Test critical values: | | |
| 1% level | -2.579774 | |
| 5% level | -1.942869 | |
| 10% level | -1.615359 | |

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GEX)
 Method: Least Squares
 Date: 02/20/11 Time: 14:12
 Sample (adjusted): 11 167
 Included observations: 157 after adjustments

| | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| GEX(-1) | -0.952377 | 0.163263 | -5.833397 | 0.0000 |
| D(GEX(-1)) | 0.351338 | 0.151588 | 2.317718 | 0.0218 |
| D(GEX(-2)) | 0.112224 | 0.141923 | 0.790739 | 0.4304 |
| D(GEX(-3)) | 0.098493 | 0.129979 | 0.757765 | 0.4498 |
| D(GEX(-4)) | 0.022045 | 0.123080 | 0.179112 | 0.8581 |
| D(GEX(-5)) | 0.189112 | 0.115772 | 1.633480 | 0.1045 |
| D(GEX(-6)) | 0.226775 | 0.104885 | 2.162137 | 0.0322 |
| D(GEX(-7)) | 0.019940 | 0.093220 | 0.213904 | 0.8309 |
| D(GEX(-8)) | 0.153264 | 0.080668 | 1.899944 | 0.0594 |
| D(GEX(-9)) | 0.100021 | 0.070239 | 1.424024 | 0.1566 |
| R-squared | 0.454831 | Mean dependent var | | -0.000240 |
| Adjusted R-squared | 0.421454 | S.D. dependent var | | 0.034619 |
| S.E. of regression | 0.026332 | Akaike info criterion | | -4.374466 |
| Sum squared resid | 0.101928 | Schwarz criterion | | -4.179800 |
| Log likelihood | 353.3956 | Hannan-Quinn criter. | | -4.295405 |
| Durbin-Watson stat | 2.030954 | | | |

2.2) Level with Intercept

Null Hypothesis: GEX has a unit root

Exogenous: Constant

Lag Length: 9 (Automatic based on AIC, MAXLAG=13)

| | t-Statistic | Prob.* |
|--|-------------|--------|
| Augmented Dickey-Fuller test statistic | -5.803678 | 0.0000 |
| Test critical values: | | |
| 1% level | -3.472259 | |
| 5% level | -2.879846 | |
| 10% level | -2.576610 | |

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GEX)

Method: Least Squares

Date: 02/20/11 Time: 14:12

Sample (adjusted): 11 167

Included observations: 157 after adjustments

| | Coefficient | Std. Error | t-Statistic | Prob. |
|------------|-------------|------------|-------------|--------|
| GEX(-1) | -0.949731 | 0.163643 | -5.803678 | 0.0000 |
| D(GEX(-1)) | 0.346675 | 0.152067 | 2.279761 | 0.0241 |
| D(GEX(-2)) | 0.106209 | 0.142517 | 0.745233 | 0.4573 |
| D(GEX(-3)) | 0.092508 | 0.130574 | 0.708475 | 0.4798 |
| D(GEX(-4)) | 0.015417 | 0.123760 | 0.124572 | 0.9010 |
| D(GEX(-5)) | 0.183783 | 0.116302 | 1.580217 | 0.1162 |
| D(GEX(-6)) | 0.222563 | 0.105301 | 2.113596 | 0.0363 |
| D(GEX(-7)) | 0.017032 | 0.093517 | 0.182129 | 0.8557 |
| D(GEX(-8)) | 0.151095 | 0.080901 | 1.867663 | 0.0638 |
| D(GEX(-9)) | 0.098614 | 0.070414 | 1.400488 | 0.1635 |
| C | -0.001357 | 0.002117 | -0.640973 | 0.5225 |

| | | | |
|--------------------|----------|-----------------------|-----------|
| R-squared | 0.456361 | Mean dependent var | -0.000240 |
| Adjusted R-squared | 0.419126 | S.D. dependent var | 0.034619 |
| S.E. of regression | 0.026385 | Akaike info criterion | -4.364537 |
| Sum squared resid | 0.101642 | Schwarz criterion | -4.150405 |
| Log likelihood | 353.6162 | Hannan-Quinn criter. | -4.277571 |
| F-statistic | 12.25607 | Durbin-Watson stat | 2.033522 |
| Prob(F-statistic) | 0.000000 | | |

2.3) Level with Trend and Intercept

Null Hypothesis: GEX has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 11 (Automatic based on AIC, MAXLAG=13)

| | t-Statistic | Prob.* |
|--|-------------|--------|
| Augmented Dickey-Fuller test statistic | -11.87127 | 0.0000 |
| Test critical values: | | |
| 1% level | -4.018349 | |
| 5% level | -3.439075 | |
| 10% level | -3.143887 | |

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

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GEX)
 Method: Least Squares
 Date: 02/20/11 Time: 14:13
 Sample (adjusted): 13 167
 Included observations: 155 after adjustments

| | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| GEX(-1) | -1.976046 | 0.166456 | -11.87127 | 0.0000 |
| D(GEX(-1)) | 1.046173 | 0.144829 | 7.223503 | 0.0000 |
| D(GEX(-2)) | 0.790726 | 0.134762 | 5.867567 | 0.0000 |
| D(GEX(-3)) | 0.604170 | 0.124218 | 4.863805 | 0.0000 |
| D(GEX(-4)) | 0.387654 | 0.112993 | 3.430792 | 0.0008 |
| D(GEX(-5)) | 0.377045 | 0.102460 | 3.679921 | 0.0003 |
| D(GEX(-6)) | 0.283526 | 0.096344 | 2.942848 | 0.0038 |
| D(GEX(-7)) | 0.195882 | 0.091513 | 2.140486 | 0.0340 |
| D(GEX(-8)) | 0.254955 | 0.081403 | 3.132006 | 0.0021 |
| D(GEX(-9)) | 0.222660 | 0.071023 | 3.135026 | 0.0021 |
| D(GEX(-10)) | 0.098454 | 0.061441 | 1.602427 | 0.1113 |
| D(GEX(-11)) | 0.127667 | 0.052383 | 2.437172 | 0.0160 |
| C | 0.001666 | 0.003733 | 0.446239 | 0.6561 |
| @TREND(1) | -6.29E-05 | 3.79E-05 | -1.660126 | 0.0991 |
| R-squared | 0.704631 | Mean dependent var | | -0.001063 |
| Adjusted R-squared | 0.677398 | S.D. dependent var | | 0.033862 |
| S.E. of regression | 0.019233 | Akaike info criterion | | -4.978408 |
| Sum squared resid | 0.052157 | Schwarz criterion | | -4.703518 |
| Log likelihood | 399.8266 | Hannan-Quinn criter. | | -4.866753 |
| F-statistic | 25.87453 | Durbin-Watson stat | | 1.133623 |
| Prob(F-statistic) | 0.000000 | | | |

ภาคผนวก ข

การประมาณค่าพารามิเตอร์

1) การประมาณค่าพารามิเตอร์ของการส่งออกเครื่องคอมพิวเตอร์ อุปกรณ์และส่วนประกอบ
 1.1) ผลการประมาณค่าสมการเฉลี่ย

Dependent Variable: GX
 Method: Least Squares
 Date: 02/20/11 Time: 14:14
 Sample (adjusted): 10 167
 Included observations: 158 after adjustments
 Convergence achieved after 8 iterations
 MA Backcast: 9

| | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | -0.001545 | 0.008088 | -0.191077 | 0.8487 |
| AR(9) | 0.274822 | 0.074373 | 3.695188 | 0.0003 |
| MA(1) | -0.513357 | 0.069989 | -7.334802 | 0.0000 |
| R-squared | 0.293992 | Mean dependent var | | 0.002228 |
| Adjusted R-squared | 0.284882 | S.D. dependent var | | 0.176207 |
| S.E. of regression | 0.149009 | Akaike info criterion | | -0.950820 |
| Sum squared resid | 3.441555 | Schwarz criterion | | -0.892669 |
| Log likelihood | 78.11476 | Hannan-Quinn criter. | | -0.927204 |
| F-statistic | 32.27216 | Durbin-Watson stat | | 1.915675 |
| Prob(F-statistic) | 0.000000 | | | |
| Inverted AR Roots | .87 | .66+.56i | .66-.56i | .15+.85i |
| | .15-.85i | -.43-.75i | -.43+.75i | -.81+.30i |
| | -.81-.30i | | | |
| Inverted MA Roots | .51 | | | |

1.2) ผลการประมาณค่าพารามิเตอร์จากแบบจำลอง ARMA – GARCH (ARCH1

GARCH1)

Dependent Variable: GX

Method: ML - ARCH (Marquardt) - Normal distribution

Date: 02/20/11 Time: 14:16

Sample (adjusted): 10 167

Included observations: 158 after adjustments

Convergence achieved after 4 iterations

MA Backcast: 9

Presample variance: backcast (parameter = 0.7)

GARCH = C(4) + C(5)*RESID(-1)^2 + C(6)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|-------|-------------|------------|-------------|--------|
| C | 0.006493 | 0.010535 | 0.616282 | 0.5377 |
| AR(9) | 0.325503 | 0.090642 | 3.591075 | 0.0003 |
| MA(1) | -0.502942 | 0.082968 | -6.061893 | 0.0000 |

| Variance Equation | | | | |
|-------------------|-----------|----------|-----------|--------|
| C | 0.006532 | 0.007789 | 0.838631 | 0.4017 |
| RESID(-1)^2 | -0.030342 | 0.014509 | -2.091189 | 0.0365 |
| GARCH(-1) | 0.755679 | 0.314612 | 2.401940 | 0.0163 |

| | | | |
|--------------------|----------|-----------------------|-----------|
| R-squared | 0.287459 | Mean dependent var | 0.002228 |
| Adjusted R-squared | 0.264020 | S.D. dependent var | 0.176207 |
| S.E. of regression | 0.151167 | Akaike info criterion | -0.897393 |
| Sum squared resid | 3.473402 | Schwarz criterion | -0.781092 |
| Log likelihood | 76.89405 | Hannan-Quinn criter. | -0.850162 |
| F-statistic | 12.26422 | Durbin-Watson stat | 1.889985 |
| Prob(F-statistic) | 0.000000 | | |

| | | | | |
|-------------------|-----------|-----------|-----------|-----------|
| Inverted AR Roots | .88 | .68+.57i | .68-.57i | .15-.87i |
| | .15+.87i | -.44-.76i | -.44+.76i | -.83-.30i |
| | -.83+.30i | | | |
| Inverted MA Roots | .50 | | | |

2) การประมาณค่าพารามิเตอร์ของอัตราแลกเปลี่ยน

2.1) ผลการประมาณค่าสมการเฉลี่ย

Dependent Variable: GEX

Method: Least Squares

Date: 02/20/11 Time: 14:15

Sample (adjusted): 2 167

Included observations: 166 after adjustments

Convergence achieved after 7 iterations

MA Backcast: -5 1

| | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| C | 0.000339 | 0.002952 | 0.114811 | 0.9087 |
| AR(1) | 0.390975 | 0.072343 | 5.404477 | 0.0000 |
| MA(7) | -0.244778 | 0.076026 | -3.219669 | 0.0015 |
| R-squared | 0.175315 | Mean dependent var | | 0.000902 |
| Adjusted R-squared | 0.165197 | S.D. dependent var | | 0.033061 |
| S.E. of regression | 0.030207 | Akaike info criterion | | -4.143589 |
| Sum squared resid | 0.148730 | Schwarz criterion | | -4.087348 |
| Log likelihood | 346.9179 | Hannan-Quinn criter. | | -4.120760 |
| F-statistic | 17.32566 | Durbin-Watson stat | | 1.892012 |
| Prob(F-statistic) | 0.000000 | | | |
| Inverted AR Roots | .39 | | | |
| Inverted MA Roots | .82 | .51+.64i | .51-.64i | -.18-.80i |
| | -.18+.80i | -.74-.35i | -.74+.35i | |

2.2) ผลการประมาณค่าพารามิเตอร์จากแบบจำลอง ARMA – GARCH (ARCH1

GARCH1)

Dependent Variable: GEX

Method: ML - ARCH (Marquardt) - Normal distribution

Date: 02/20/11 Time: 14:16

Sample (adjusted): 2 167

Included observations: 166 after adjustments

Convergence achieved after 20 iterations

MA Backcast: -5 1

Presample variance: backcast (parameter = 0.7)

GARCH = C(4) + C(5)*RESID(-1)^2 + C(6)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|-------|-------------|------------|-------------|--------|
| C | -0.002484 | 0.001796 | -1.382919 | 0.1667 |
| AR(1) | 0.336147 | 0.062040 | 5.418226 | 0.0000 |
| MA(7) | -0.076987 | 0.087099 | -0.883894 | 0.3768 |

| Variance Equation | | | | |
|-------------------|----------|----------|----------|--------|
| C | 1.74E-05 | 6.09E-06 | 2.858164 | 0.0043 |
| RESID(-1)^2 | 0.077471 | 0.022899 | 3.383090 | 0.0007 |
| GARCH(-1) | 0.842972 | 0.023874 | 35.30891 | 0.0000 |

| | | | |
|--------------------|----------|-----------------------|-----------|
| R-squared | 0.147555 | Mean dependent var | 0.000902 |
| Adjusted R-squared | 0.120916 | S.D. dependent var | 0.033061 |
| S.E. of regression | 0.030998 | Akaike info criterion | -5.061584 |
| Sum squared resid | 0.153737 | Schwarz criterion | -4.949103 |
| Log likelihood | 426.1115 | Hannan-Quinn criter. | -5.015927 |
| F-statistic | 5.539066 | Durbin-Watson stat | 1.835878 |
| Prob(F-statistic) | 0.000098 | | |

| | | | | |
|-------------------|-----------|-----------|-----------|-----------|
| Inverted AR Roots | .34 | | | |
| Inverted MA Roots | .69 | .43+.54i | .43-.54i | -.15+.68i |
| | -.15-.68i | -.62-.30i | -.62+.30i | |

ภาคผนวก ค

ผลการทดสอบ ARCH effect

1) ผลการทดสอบ ARCH effect ของการส่งออกเครื่องคอมพิวเตอร์ อุปกรณ์และ
ส่วนประกอบ

Heteroskedasticity Test: ARCH

| | | | |
|---------------|----------|---------------------|--------|
| F-statistic | 2.684002 | Prob. F(1,155) | 0.1034 |
| Obs*R-squared | 2.672359 | Prob. Chi-Square(1) | 0.1021 |

Test Equation:

Dependent Variable: WGT_RESID^2

Method: Least Squares

Date: 02/20/11 Time: 14:18

Sample (adjusted): 11 167

Included observations: 157 after adjustments

| | Coefficient | Std. Error | t-Statistic | Prob. |
|-----------------|-------------|------------|-------------|--------|
| C | 0.803586 | 0.138166 | 5.816077 | 0.0000 |
| WGT_RESID^2(-1) | 0.130430 | 0.079613 | 1.638292 | 0.1034 |

| | | | |
|--------------------|-----------|-----------------------|----------|
| R-squared | 0.017021 | Mean dependent var | 0.924005 |
| Adjusted R-squared | 0.010680 | S.D. dependent var | 1.473806 |
| S.E. of regression | 1.465915 | Akaike info criterion | 3.615493 |
| Sum squared resid | 333.0804 | Schwarz criterion | 3.654426 |
| Log likelihood | -281.8162 | Hannan-Quinn criter. | 3.631305 |
| F-statistic | 2.684002 | Durbin-Watson stat | 1.974333 |
| Prob(F-statistic) | 0.103389 | | |

2) ผลการทดสอบ ARCH effect ของอัตราแลกเปลี่ยน

Heteroskedasticity Test: ARCH

| | | | |
|---------------|----------|---------------------|--------|
| F-statistic | 0.136861 | Prob. F(1,163) | 0.7119 |
| Obs*R-squared | 0.138424 | Prob. Chi-Square(1) | 0.7099 |

Test Equation:

Dependent Variable: WGT_RESID^2

Method: Least Squares

Date: 02/20/11 Time: 14:18

Sample (adjusted): 3 167

Included observations: 165 after adjustments

| | Coefficient | Std. Error | t-Statistic | Prob. |
|-----------------|-------------|------------|-------------|--------|
| C | 1.015485 | 0.180396 | 5.629188 | 0.0000 |
| WGT_RESID^2(-1) | 0.028945 | 0.078242 | 0.369947 | 0.7119 |

| | | | |
|--------------------|-----------|-----------------------|----------|
| R-squared | 0.000839 | Mean dependent var | 1.045642 |
| Adjusted R-squared | -0.005291 | S.D. dependent var | 2.061699 |
| S.E. of regression | 2.067145 | Akaike info criterion | 4.302261 |
| Sum squared resid | 696.5137 | Schwarz criterion | 4.339909 |
| Log likelihood | -352.9366 | Hannan-Quinn criter. | 4.317544 |
| F-statistic | 0.136861 | Durbin-Watson stat | 2.004983 |
| Prob(F-statistic) | 0.711902 | | |

ภาคผนวก ง

การประมาณค่าพารามิเตอร์ (BIVARIATE – GARCH)

การประมาณค่าพารามิเตอร์ของการส่งออกเครื่องคอมพิวเตอร์ อุปกรณ์และส่วนประกอบ
และอัตราแลกเปลี่ยน

MV_GARCH, CC - Estimation by BFGS

Convergence in 120 Iterations. Final criterion was 0.0000000 < 0.0000100

Robust Standard Error Calculations

Usable Observations 166

Log Likelihood 499.74679144

| Variable | Coeff | Std Error | T-Stat | Signif |
|----------------|------------|-----------|------------|------------|
| ***** | | | | |
| **** | | | | |
| 1. Constant | 0.003725 | 0.001517 | 2.45536 | 0.01407433 |
| 2. LNR{1} | -0.061900 | 0.004795 | -12.90948 | 0.00000000 |
| 3. Mvg Avge{1} | -0.692009 | 0.015112 | -45.79190 | 0.00000000 |
| 4. Constant | -0.002059 | 0.000456 | -4.51531 | 0.00000632 |
| 5. LNS{1} | 0.358283 | 0.004171 | 85.89000 | 0.00000000 |
| 6. Mvg Avge{1} | -0.002298 | 0.000696 | -3.29952 | 0.00096850 |
| 7. C(1) | 0.026872 | 0.002942 | 9.13427 | 0.00000000 |
| 8. C(2) | 0.000002 | 0.000000 | 1332.35352 | 0.00000000 |
| 9. A(1,1) | 0.207688 | 0.030787 | 6.74604 | 0.00000000 |
| 10. A(1,2) | 0.664701 | 0.169171 | 3.92916 | 0.00008524 |
| 11. A(2,1) | 0.027517 | 0.000248 | 111.15998 | 0.00000000 |
| 12. A(2,2) | -0.034152 | 0.000154 | -221.28192 | 0.00000000 |
| 13. B(1,1) | -1.605457 | 0.073086 | -21.96682 | 0.00000000 |
| 14. B(1,2) | 137.491173 | 12.249757 | 11.22399 | 0.00000000 |
| 15. B(2,1) | 0.009090 | 0.000331 | 27.50194 | 0.00000000 |
| 16. B(2,2) | 1.003209 | 0.001031 | 973.30190 | 0.00000000 |
| 17. R(2,1) | 0.099220 | 0.004280 | 23.18484 | 0.00000000 |

MV_GARCH, DCC - Estimation by BFGS

Convergence in 5 Iterations. Final criterion was 0.0000000 < 0.0000100

Robust Standard Error Calculations

Usable Observations 166

Log Likelihood 454.35362163

| Variable | Coeff | Std Error | T-Stat | Signif |
|----------------|--------------|-------------|-------------|------------|
| ***** | | | | |
| **** | | | | |
| 1. Constant | 0.004704566 | 0.007304064 | 0.64410 | 0.51950894 |
| 2. LNR{1} | -0.168069874 | 0.081927463 | -2.05145 | 0.04022340 |
| 3. Mvg Avge{1} | -0.388636827 | 0.071267256 | -5.45323 | 0.00000005 |
| 4. Constant | -0.002442109 | 0.001754698 | -1.39175 | 0.16399683 |
| 5. LNS{1} | 0.119414009 | 0.027173512 | 4.39450 | 0.00001110 |
| 6. Mvg Avge{1} | -0.020342968 | 0.004029061 | -5.04906 | 0.00000044 |
| 7. C(1) | 0.022829953 | 0.002409865 | 9.47354 | 0.00000000 |
| 8. C(2) | 0.000386576 | 0.000013128 | 29.44741 | 0.00000000 |
| 9. A(1,1) | 0.071787819 | 0.097222325 | 0.73839 | 0.46027857 |
| 10. A(1,2) | 0.145090950 | 0.353344592 | 0.41062 | 0.68134996 |
| 11. A(2,1) | 0.063263387 | 0.010506858 | 6.02115 | 0.00000000 |
| 12. A(2,2) | 0.225127157 | 0.071298318 | 3.15754 | 0.00159107 |
| 13. B(1,1) | 0.058137317 | 0.088112341 | 0.65981 | 0.50937639 |
| 14. B(1,2) | 0.134986971 | 1.065287468 | 0.12671 | 0.89916666 |
| 15. B(2,1) | 0.056923997 | 0.023513487 | 2.42091 | 0.01548178 |
| 16. B(2,2) | 0.079378319 | 0.026538530 | 2.99106 | 0.00278011 |
| 17. DCC(1) | 0.073754462 | 0.045631357 | 1.61631 | 0.10602710 |
| 18. DCC(2) | 0.000000000 | 0.082404443 | 5.90114e-14 | 1.00000000 |

ประวัติผู้เขียน

ชื่อ – สกุล

นางสาวชนม์นิภา หมั่นตาบุตร

วัน เดือน ปี เกิด

19 พฤศจิกายน 2528

ประวัติการศึกษา

สำเร็จการศึกษามัธยมศึกษาตอนปลาย โรงเรียนจุฬารัตนราชวิทยาลัย
เชียงราย ปีการศึกษา 2546สำเร็จการศึกษาระดับปริญญาตรี วิทยาศาสตร์บัณฑิต สาขาวิชาสถิติ
มหาวิทยาลัยเชียงใหม่ ปีการศึกษา 2550

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
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