ภาคผนวก

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

ภาคผนวก ก

ผลการทดสอบความนิ่งของข้อมูล (unit root test)

ตารางภาคผนวก 1 การทดสอบความนิ่งของข้อมูล (unit root) ด้วยวิธี Augmented Dickey-Fuller Test Statistic (ADF) ของตัวแปรดัชนีการเปิดประเทศของประเทศไทยกับประเทศประเทศจีน ด้วย 3 แบบจำลอง ได้แก่ แบบจำลองที่มีจุดตัดแกน (with intercept) แบบจำลองที่มีแนวโน้มและจุดตัดแกน (with trend and intercept) และแบบจำลองที่ไม่มีทั้งแนวโน้มและจุดตัดแกน (none) ทำการทดสอบที่ order of integration เท่ากับ 0:I(0) และ 1:I(1)

Null Hypothesis: OPENNESS has a unit root
Exogenous: Constant
Lag Length: 9 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.299378	0.9179
Test critical values:	1% level	-3.555023	
	5% level	-2.915522	
	10% level	-2.595565	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPENNESS)
Method: Least Squares
Date: 05/16/11 Time: 13:42
Sample (adjusted): 11 65
Included observations: 55 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPENNESS(-1)	-0.006952	0.023222	-0.299378	0.7661
D(OPENNESS(-1))	-0.048464	0.150091	-0.322900	0.7483
D(OPENNESS(-2))	-0.230282	0.134382	-1.713635	0.0936
D(OPENNESS(-3))	-0.206570	0.137923	-1.497718	0.1413
D(OPENNESS(-4))	-0.252314	0.139982	-1.802467	0.0783
D(OPENNESS(-5))	-0.019828	0.144791	-0.136943	0.8917
D(OPENNESS(-6))	-0.294239	0.142602	-2.063351	0.0450
D(OPENNESS(-7))	0.326733	0.164790	1.982723	0.0537
D(OPENNESS(-8))	0.863029	0.227116	3.799957	0.0004
D(OPENNESS(-9))	-0.293172	0.258072	-1.136006	0.2621
C	0.646921	0.381421	1.696082	0.0969

R-squared	0.563566	Mean dependent var	0.531324
Adjusted R-squared	0.464377	S.D. dependent var	1.696476

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

S.E. of regression	1.241588	Akaike info criterion	3.447516
Sum squared resid	67.82782	Schwarz criterion	3.848983
Log likelihood	-83.80670	Hannan-Quinn criter.	3.602767
F-statistic	5.681709	Durbin-Watson stat	1.960674
Prob(F-statistic)	0.000021		

Null Hypothesis: OPENNESS has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 9 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.210138	0.4746
Test critical values:	1% level	-4.133838	
	5% level	-3.493692	
	10% level	-3.175693	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPENNESS)
Method: Least Squares
Date: 05/16/11 Time: 13:45
Sample (adjusted): 11 65
Included observations: 55 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPENNESS(-1)	-0.252209	0.114114	-2.210138	0.0325
D(OPENNESS(-1))	0.089729	0.157202	0.570788	0.5711
D(OPENNESS(-2))	-0.101309	0.141725	-0.714824	0.4786
D(OPENNESS(-3))	-0.112429	0.139123	-0.808126	0.4235
D(OPENNESS(-4))	-0.181818	0.138099	-1.316577	0.1950
D(OPENNESS(-5))	0.019822	0.140087	0.141497	0.8881
D(OPENNESS(-6))	-0.267916	0.137340	-1.950753	0.0576
D(OPENNESS(-7))	0.302533	0.158486	1.908898	0.0630
D(OPENNESS(-8))	0.828205	0.218475	3.790852	0.0005
D(OPENNESS(-9))	-0.245125	0.248565	-0.986160	0.3296
C	-0.725977	0.725541	-1.000601	0.3226
@TREND(1)	0.134612	0.061428	2.191387	0.0339

R-squared	0.607410	Mean dependent var	0.531324
Adjusted R-squared	0.506980	S.D. dependent var	1.696476
S.E. of regression	1.191187	Akaike info criterion	3.378009
Sum squared resid	61.01389	Schwarz criterion	3.815973
Log likelihood	-80.89525	Hannan-Quinn criter.	3.547373
F-statistic	6.048092	Durbin-Watson stat	1.960721
Prob(F-statistic)	0.000007		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Null Hypothesis: OPENNESS has a unit root
Exogenous: None
Lag Length: 8 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.128013	0.7190
Test critical values:	1% level	-2.606911	
	5% level	-1.946764	
	10% level	-1.613062	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPENNESS)
Method: Least Squares
Date: 05/16/11 Time: 13:46
Sample (adjusted): 10 65
Included observations: 56 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPENNESS(-1)	0.002498	0.019513	0.128013	0.8987
D(OPENNESS(-1))	-0.085892	0.128984	-0.665911	0.5087
D(OPENNESS(-2))	-0.183179	0.132163	-1.386016	0.1723
D(OPENNESS(-3))	-0.111760	0.131246	-0.851528	0.3988
D(OPENNESS(-4))	-0.195849	0.135840	-1.441765	0.1560
D(OPENNESS(-5))	0.035588	0.137401	0.259010	0.7968
D(OPENNESS(-6))	-0.216638	0.137308	-1.577748	0.1213
D(OPENNESS(-7))	0.434444	0.157147	2.764575	0.0081
D(OPENNESS(-8))	1.010974	0.215020	4.701765	0.0000

R-squared	0.520949	Mean dependent var	0.533238
Adjusted R-squared	0.439409	S.D. dependent var	1.681044
S.E. of regression	1.258642	Akaike info criterion	3.444168
Sum squared resid	74.45645	Schwarz criterion	3.769671
Log likelihood	-87.43671	Hannan-Quinn criter.	3.570365
Durbin-Watson stat	1.812959		

Null Hypothesis: D(OPENNESS) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.588743	0.0000
Test critical values:	1% level	-3.538362	
	5% level	-2.908420	
	10% level	-2.591799	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Dependent Variable: D(OPENNESS,2)
Method: Least Squares
Date: 05/16/11 Time: 13:46
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OPENNESS(-1))	-1.096111	0.127622	-8.588743	0.0000
C	0.526500	0.210794	2.497695	0.0152

R-squared	0.547365	Mean dependent var	0.018359
Adjusted R-squared	0.539945	S.D. dependent var	2.367595
S.E. of regression	1.605877	Akaike info criterion	3.816448
Sum squared resid	157.3093	Schwarz criterion	3.884484
Log likelihood	-118.2181	Hannan-Quinn criter.	3.843207
F-statistic	73.76650	Durbin-Watson stat	2.070967
Prob(F-statistic)	0.000000		

Null Hypothesis: D(OPENNESS) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.648970	0.0000
Test critical values:	1% level	-4.110440	
	5% level	-3.482763	
	10% level	-3.169372	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPENNESS,2)
Method: Least Squares
Date: 05/16/11 Time: 13:47
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OPENNESS(-1))	-1.110464	0.128393	-8.648970	0.0000
C	0.160375	0.419567	0.382239	0.7036
@TREND(1)	0.011296	0.011193	1.009197	0.3169

R-squared	0.554920	Mean dependent var	0.018359
Adjusted R-squared	0.540084	S.D. dependent var	2.367595
S.E. of regression	1.605634	Akaike info criterion	3.831362
Sum squared resid	154.6836	Schwarz criterion	3.933416
Log likelihood	-117.6879	Hannan-Quinn criter.	3.871500
F-statistic	37.40366	Durbin-Watson stat	2.088678
Prob(F-statistic)	0.000000		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright © by Chiang Mai University
All rights reserved

Null Hypothesis: D(OPENNESS) has a unit root
Exogenous: None
Lag Length: 7 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.731512	0.3952
Test critical values:	1% level	-2.606911	
	5% level	-1.946764	
	10% level	-1.613062	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OPENNESS,2)
Method: Least Squares
Date: 05/16/11 Time: 13:47
Sample (adjusted): 10 65
Included observations: 56 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OPENNESS(-1))	-0.238553	0.326110	-0.731512	0.4680
D(OPENNESS(-1),2)	-0.839348	0.320213	-2.621216	0.0117
D(OPENNESS(-2),2)	-1.012994	0.304491	-3.326849	0.0017
D(OPENNESS(-3),2)	-1.116613	0.300146	-3.720233	0.0005
D(OPENNESS(-4),2)	-1.305441	0.290137	-4.499390	0.0000
D(OPENNESS(-5),2)	-1.262051	0.272286	-4.635024	0.0000
D(OPENNESS(-6),2)	-1.470910	0.235000	-6.259184	0.0000
D(OPENNESS(-7),2)	-1.025642	0.180072	-5.695740	0.0000

R-squared	0.782300	Mean dependent var	0.014298
Adjusted R-squared	0.750552	S.D. dependent var	2.494114
S.E. of regression	1.245679	Akaike info criterion	3.408803
Sum squared resid	74.48241	Schwarz criterion	3.698139
Log likelihood	-87.44647	Hannan-Quinn criter.	3.520978
Durbin-Watson stat	1.819377		

ตารางภาคผนวก 2 การทดสอบความนิ่งของข้อมูล (unit root) ด้วยวิธีAugmented Dickey-Fuller Test Statistic (ADF) ของตัวแปรอัตราแลกเปลี่ยนที่แท้จริงของเงินบาทเทียบเงินหยวน ด้วย 3 แบบจำลอง คือ แบบจำลองที่มีจุดตัดแกน (with intercept) แบบจำลองที่มีแนวโน้มและจุดตัดแกน (with trend and intercept) และแบบจำลองที่ไม่มีทั้งแนวโน้มและจุดตัดแกน (none) ทำการทดสอบที่ order of integration เท่ากับ 0:I(0) และ 1:I(1)

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Null Hypothesis: CH has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.400823	0.1456
Test critical values:	1% level	-3.536587	
	5% level	-2.907660	
	10% level	-2.591396	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CH)
Method: Least Squares
Date: 05/16/11 Time: 13:20
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CH(-1)	-0.126255	0.052588	-2.400823	0.0194
C	1.321327	0.533902	2.474850	0.0161

R-squared	0.085059	Mean dependent var	0.051451
Adjusted R-squared	0.070302	S.D. dependent var	0.602907
S.E. of regression	0.581328	Akaike info criterion	1.783750
Sum squared resid	20.95245	Schwarz criterion	1.851215
Log likelihood	-55.07999	Hannan-Quinn criter.	1.810328
F-statistic	5.763952	Durbin-Watson stat	2.070375
Prob(F-statistic)	0.019372		

Null Hypothesis: CH has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.232087	0.4640
Test critical values:	1% level	-4.107947	
	5% level	-3.481595	
	10% level	-3.168695	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CH)
Method: Least Squares
Date: 05/16/11 Time: 17:38
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CH(-1)	-0.135690	0.060791	-2.232087	0.0293
C	1.369466	0.558926	2.450172	0.0172
@TREND(1)	0.001439	0.004547	0.316396	0.7528

R-squared	0.086558	Mean dependent var	0.051451
Adjusted R-squared	0.056609	S.D. dependent var	0.602907
S.E. of regression	0.585594	Akaike info criterion	1.813360
Sum squared resid	20.91812	Schwarz criterion	1.914558
Log likelihood	-55.02752	Hannan-Quinn criter.	1.853227
F-statistic	2.890199	Durbin-Watson stat	2.054253
Prob(F-statistic)	0.063207		

Null Hypothesis: CH has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.360327	0.7858
Test critical values:	1% level	-2.601596	
	5% level	-1.945987	
	10% level	-1.613496	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CH)
Method: Least Squares
Date: 05/16/11 Time: 13:23
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CH(-1)	0.002682	0.007443	0.360327	0.7198

R-squared	-0.005326	Mean dependent var	0.051451
Adjusted R-squared	-0.005326	S.D. dependent var	0.602907
S.E. of regression	0.604511	Akaike info criterion	1.846708
Sum squared resid	23.02231	Schwarz criterion	1.880440
Log likelihood	-58.09465	Hannan-Quinn criter.	1.859997
Durbin-Watson stat	2.143131		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Null Hypothesis: D(CH) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.939411	0.0001
Test critical values:	1% level	-3.540198	
	5% level	-2.909206	
	10% level	-2.592215	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CH,2)
Method: Least Squares
Date: 05/16/11 Time: 17:38
Sample (adjusted): 4 65
Included observations: 62 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CH(-1))	-0.936901	0.189679	-4.939411	0.0000
D(CH(-1),2)	-0.130772	0.129613	-1.008939	0.3171
C	0.048127	0.078759	0.611067	0.5435

R-squared	0.545220	Mean dependent var	0.004842
Adjusted R-squared	0.529804	S.D. dependent var	0.898090
S.E. of regression	0.615828	Akaike info criterion	1.915479
Sum squared resid	22.37541	Schwarz criterion	2.018405
Log likelihood	-56.37986	Hannan-Quinn criter.	1.955891
F-statistic	35.36659	Durbin-Watson stat	1.922406
Prob(F-statistic)	0.000000		

Null Hypothesis: D(CH) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.471084	0.0000
Test critical values:	1% level	-4.110440	
	5% level	-3.482763	
	10% level	-3.169372	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CH,2)
Method: Least Squares
Date: 05/16/11 Time: 13:24
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CH(-1))	-1.093362	0.129070	-8.471084	0.0000
C	0.194221	0.161312	1.204007	0.2333
@TREND(1)	-0.004174	0.004269	-0.977871	0.3321

R-squared	0.544662	Mean dependent var	0.006005
Adjusted R-squared	0.529484	S.D. dependent var	0.890866
S.E. of regression	0.611082	Akaike info criterion	1.899277
Sum squared resid	22.40528	Schwarz criterion	2.001331
Log likelihood	-56.82723	Hannan-Quinn criter.	1.939415
F-statistic	35.88513	Durbin-Watson stat	1.971082
Prob(F-statistic)	0.000000		

Null Hypothesis: D(CH) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.420054	0.0000
Test critical values:	1% level	-2.602185	
	5% level	-1.946072	
	10% level	-1.613448	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CH,2)
Method: Least Squares
Date: 05/16/11 Time: 13:25
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CH(-1))	-1.070174	0.127098	-8.420054	0.0000

R-squared	0.533453	Mean dependent var	0.006005
Adjusted R-squared	0.533453	S.D. dependent var	0.890866
S.E. of regression	0.608499	Akaike info criterion	1.860104
Sum squared resid	22.95684	Schwarz criterion	1.894122
Log likelihood	-57.59328	Hannan-Quinn criter.	1.873484
Durbin-Watson stat	1.974676		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright © by Chiang Mai University
All rights reserved

ตารางภาคผนวก 3 การทดสอบความนิ่งของข้อมูล (unit root) ด้วยวิธีAugmented Dickey-Fuller Test Statistic (ADF) ของตัวแปรอัตราแลกเปลี่ยนที่แท้จริงของเงินบาทเทียบเงินดอลลาร์ ด้วย 3 แบบจำลอง คือ แบบจำลองที่มีจุดตัดแกน (with intercept) แบบจำลองที่มีแนวโน้มและจุดตัดแกน (with trend and intercept) และแบบจำลองที่ไม่มีทั้งแนวโน้มและจุดตัดแกน (none) ทำการทดสอบที่ order of integration เท่ากับ 0:I(0) และ 1:I(1)

Null Hypothesis: USA has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.793578	0.0648
Test critical values:	1% level	-3.536587	
	5% level	-2.907660	
	10% level	-2.591396	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(USA)
Method: Least Squares
Date: 05/16/11 Time: 13:39
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
USA(-1)	-0.225510	0.080724	-2.793578	0.0069
C	1.840811	0.728875	2.525549	0.0141

R-squared	0.111800	Mean dependent var	-0.012104
Adjusted R-squared	0.097474	S.D. dependent var	2.544788
S.E. of regression	2.417584	Akaike info criterion	4.634165
Sum squared resid	362.3720	Schwarz criterion	4.701630
Log likelihood	-146.2933	Hannan-Quinn criter.	4.660743
F-statistic	7.804076	Durbin-Watson stat	1.788985

Null Hypothesis: USA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.802968	0.2017
Test critical values:	1% level	-4.107947	
	5% level	-3.481595	
	10% level	-3.168695	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(USA)
Method: Least Squares
Date: 05/16/11 Time: 13:39
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
USA(-1)	-0.227884	0.081301	-2.802968	0.0068
C	2.152982	0.929276	2.316839	0.0239
@TREND(1)	-0.009005	0.016476	-0.546563	0.5867

R-squared	0.116128	Mean dependent var	-0.012104
Adjusted R-squared	0.087149	S.D. dependent var	2.544788
S.E. of regression	2.431373	Akaike info criterion	4.660530
Sum squared resid	360.6060	Schwarz criterion	4.761728
Log likelihood	-146.1370	Hannan-Quinn criter.	4.700397
F-statistic	4.007268	Durbin-Watson stat	1.793524
Prob(F-statistic)	0.023167		

Null Hypothesis: USA has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.146742	0.2267
Test critical values:	1% level	-2.601596	
	5% level	-1.945987	
	10% level	-1.613496	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(USA)
Method: Least Squares
Date: 05/16/11 Time: 13:40
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
USA(-1)	-0.039985	0.034868	-1.146742	0.2558

R-squared	0.020424	Mean dependent var	-0.012104
Adjusted R-squared	0.020424	S.D. dependent var	2.544788
S.E. of regression	2.518667	Akaike info criterion	4.700838
Sum squared resid	399.6519	Schwarz criterion	4.734570
Log likelihood	-149.4268	Hannan-Quinn criter.	4.714127
Durbin-Watson stat	1.945120		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Null Hypothesis: D(USA) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.751926	0.0000
Test critical values:	1% level	-3.538362	
	5% level	-2.908420	
	10% level	-2.591799	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(USA,2)
Method: Least Squares
Date: 05/16/11 Time: 13:40
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(USA(-1))	-1.000660	0.129085	-7.751926	0.0000
C	-0.024737	0.325592	-0.075975	0.9397

R-squared	0.496252	Mean dependent var	-0.055016
Adjusted R-squared	0.487994	S.D. dependent var	3.611400
S.E. of regression	2.584122	Akaike info criterion	4.767880
Sum squared resid	407.3389	Schwarz criterion	4.835916
Log likelihood	-148.1882	Hannan-Quinn criter.	4.794639
F-statistic	60.09236	Durbin-Watson stat	1.965268
Prob(F-statistic)	0.000000		

Null Hypothesis: D(USA) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.699051	0.0000
Test critical values:	1% level	-4.110440	
	5% level	-3.482763	
	10% level	-3.169372	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(USA,2)
Method: Least Squares
Date: 05/16/11 Time: 13:41
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(USA(-1))	-1.001467	0.130077	-7.699051	0.0000
C	0.161197	0.679820	0.237117	0.8134
@TREND(1)	-0.005634	0.018041	-0.312261	0.7559

R-squared	0.497070	Mean dependent var	-0.055016
Adjusted R-squared	0.480305	S.D. dependent var	3.611400
S.E. of regression	2.603453	Akaike info criterion	4.798002
Sum squared resid	406.6780	Schwarz criterion	4.900056
Log likelihood	-148.1371	Hannan-Quinn criter.	4.838141
F-statistic	29.65040	Durbin-Watson stat	1.966916

Null Hypothesis: D(USA) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.816320	0.0000
Test critical values:	1% level	-2.602185	
	5% level	-1.946072	
	10% level	-1.613448	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(USA,2)
Method: Least Squares
Date: 05/16/11 Time: 13:42
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(USA(-1))	-1.000778	0.128037	-7.816320	0.0000

R-squared	0.496205	Mean dependent var	-0.055016
Adjusted R-squared	0.496205	S.D. dependent var	3.611400
S.E. of regression	2.563319	Akaike info criterion	4.736229
Sum squared resid	407.3775	Schwarz criterion	4.770247
Log likelihood	-148.1912	Hannan-Quinn criter.	4.749608
Durbin-Watson stat	1.964859		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright © by Chiang Mai University
All rights reserved

ตารางภาคผนวก 4 การทดสอบความนิ่งของข้อมูล (unit root) ด้วยวิธี Augmented Dickey-Fuller Test Statistic (ADF) ของตัวแปรอัตราแลกเปลี่ยนที่แท้จริงของเงินบาทเทียบเงินยูโร ด้วย 3 แบบจำลอง คือ แบบจำลองที่มีจุดตัดแกน (with Intercept) แบบจำลองที่มีแนวโน้มและจุดตัดแกน (with trend and intercept) และแบบจำลองที่ไม่มีทั้งแนวโน้มและจุดตัดแกน (none) ทำการทดสอบที่ order of integration เท่ากับ 0:I(0) และ 1:I(1)

Null Hypothesis: EURO has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.798615	0.3780
Test critical values:	1% level	-3.536587	
	5% level	-2.907660	
	10% level	-2.591396	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EURO)
Method: Least Squares
Date: 05/16/11 Time: 13:32
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EURO(-1)	-0.091114	0.050658	-1.798615	0.0769
C	4.063054	2.164245	1.877354	0.0652

R-squared	0.049590	Mean dependent var	0.207964
Adjusted R-squared	0.034261	S.D. dependent var	2.441403
S.E. of regression	2.399216	Akaike info criterion	4.618912
Sum squared resid	356.8867	Schwarz criterion	4.686377
Log likelihood	-145.8052	Hannan-Quinn criter.	4.645490
F-statistic	3.235017	Durbin-Watson stat	1.838541
Prob(F-statistic)	0.076947		

Null Hypothesis: EURO has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.611210	0.2770
Test critical values:	1% level	-4.107947	
	5% level	-3.481595	
	10% level	-3.168695	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EURO)
Method: Least Squares
Date: 05/16/11 Time: 13:33
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EURO(-1)	-0.204379	0.078270	-2.611210	0.0113
C	7.329010	2.746775	2.668224	0.0098
@TREND(1)	0.046964	0.025084	1.872307	0.0660

R-squared	0.101240	Mean dependent var	0.207964
Adjusted R-squared	0.071772	S.D. dependent var	2.441403
S.E. of regression	2.352159	Akaike info criterion	4.594285
Sum squared resid	337.4918	Schwarz criterion	4.695483
Log likelihood	-144.0171	Hannan-Quinn criter.	4.634152
F-statistic	3.435643	Durbin-Watson stat	1.740172
Prob(F-statistic)	0.038560		

Null Hypothesis: EURO has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.429002	0.8035
Test critical values:	1% level	-2.601596	
	5% level	-1.945987	
	10% level	-1.613496	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EURO)
Method: Least Squares
Date: 05/16/11 Time: 13:33
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EURO(-1)	0.003071	0.007159	0.429002	0.6694

R-squared	-0.004437	Mean dependent var	0.207964
Adjusted R-squared	-0.004437	S.D. dependent var	2.441403
S.E. of regression	2.446813	Akaike info criterion	4.642951
Sum squared resid	377.1743	Schwarz criterion	4.676684
Log likelihood	-147.5744	Hannan-Quinn criter.	4.656240
Durbin-Watson stat	1.910259		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Null Hypothesis: D(EURO) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.491871	0.0000
Test critical values:	1% level	-3.538362	
	5% level	-2.908420	
	10% level	-2.591799	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EURO,2)
Method: Least Squares
Date: 05/16/11 Time: 13:34
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EURO(-1))	-0.959812	0.128114	-7.491871	0.0000
C	0.215096	0.312890	0.687449	0.4944

R-squared	0.479203	Mean dependent var	0.036398
Adjusted R-squared	0.470665	S.D. dependent var	3.403541
S.E. of regression	2.476260	Akaike info criterion	4.682607
Sum squared resid	374.0436	Schwarz criterion	4.750643
Log likelihood	-145.5021	Hannan-Quinn criter.	4.709366
F-statistic	56.12813	Durbin-Watson stat	1.982638
Prob(F-statistic)	0.000000		

Null Hypothesis: D(EURO) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.440976	0.0000
Test critical values:	1% level	-4.110440	
	5% level	-3.482763	
	10% level	-3.169372	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EURO,2)
Method: Least Squares
Date: 05/16/11 Time: 13:34
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EURO(-1))	-0.961476	0.129214	-7.440976	0.0000
C	0.381132	0.653212	0.583473	0.5618
@TREND(1)	-0.005022	0.017304	-0.290223	0.7726

R-squared	0.479933	Mean dependent var	0.036398
Adjusted R-squared	0.462597	S.D. dependent var	3.403541
S.E. of regression	2.495059	Akaike info criterion	4.712950
Sum squared resid	373.5193	Schwarz criterion	4.815004
Log likelihood	-145.4579	Hannan-Quinn criter.	4.753088
F-statistic	27.68487	Durbin-Watson stat	1.982538

Null Hypothesis: D(EURO) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.493115	0.0000
Test critical values:	1% level	-2.602185	
	5% level	-1.946072	
	10% level	-1.613448	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EURO,2)
Method: Least Squares
Date: 05/16/11 Time: 13:35
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EURO(-1))	-0.953098	0.127196	-7.493115	0.0000

R-squared	0.475168	Mean dependent var	0.036398
Adjusted R-squared	0.475168	S.D. dependent var	3.403541
S.E. of regression	2.465705	Akaike info criterion	4.658578
Sum squared resid	376.9415	Schwarz criterion	4.692596
Log likelihood	-145.7452	Hannan-Quinn criter.	4.671958
Durbin-Watson stat	1.979136		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

ตารางภาคผนวก 5 การทดสอบความนิ่งของข้อมูล (unit root) ด้วยวิธี Augmented Dickey-Fuller Test Statistic (ADF) ของตัวแปรอัตราแลกเปลี่ยนที่แท้จริงของเงินบาทเทียบเงินปอนด์ด้วย 3 แบบจำลอง คือ แบบจำลองที่มีจุดตัดแกน (with intercept) แบบจำลองที่มีแนวโน้มและจุดตัดแกน (with trend and intercept) และแบบจำลองที่ไม่มีทั้งแนวโน้มและจุดตัดแกน (none) ทำการทดสอบที่ order of integration เท่ากับ 0:I(0) และ 1:I(1)

Null Hypothesis: ENG has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.681399	0.4357
Test critical values:	1% level	-3.536587	
	5% level	-2.907660	
	10% level	-2.591396	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ENG)
Method: Least Squares
Date: 05/16/11 Time: 13:26
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENG(-1)	-0.079963	0.047557	-1.681399	0.0977
C	4.996365	2.980995	1.676073	0.0988

R-squared	0.043610	Mean dependent var	0.045550
Adjusted R-squared	0.028184	S.D. dependent var	3.775736
S.E. of regression	3.722147	Akaike info criterion	5.497230
Sum squared resid	858.9716	Schwarz criterion	5.564695
Log likelihood	-173.9114	Hannan-Quinn criter.	5.523808
F-statistic	2.827102	Durbin-Watson stat	1.871266
Prob(F-statistic)	0.097717		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Null Hypothesis: ENG has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.187090	0.9045
Test critical values:	1% level	-4.107947	
	5% level	-3.481595	
	10% level	-3.168695	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ENG)
Method: Least Squares
Date: 05/16/11 Time: 13:27
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENG(-1)	-0.060199	0.050712	-1.187090	0.2398
C	4.739713	2.984552	1.588082	0.1174
@TREND(1)	-0.029753	0.026857	-1.107820	0.2723

R-squared	0.062472	Mean dependent var	0.045550
Adjusted R-squared	0.031733	S.D. dependent var	3.775736
S.E. of regression	3.715344	Akaike info criterion	5.508560
Sum squared resid	842.0306	Schwarz criterion	5.609758
Log likelihood	-173.2739	Hannan-Quinn criter.	5.548427
F-statistic	2.032365	Durbin-Watson stat	1.946898
Prob(F-statistic)	0.139803		

Null Hypothesis: ENG has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.163400	0.6233
Test critical values:	1% level	-2.601596	
	5% level	-1.945987	
	10% level	-1.613496	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ENG)
Method: Least Squares
Date: 05/16/11 Time: 13:28
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ENG(-1)	-0.001230	0.007528	-0.163400	0.8707

R-squared	0.000276	Mean dependent var	0.045550
Adjusted R-squared	0.000276	S.D. dependent var	3.775736
S.E. of regression	3.775215	Akaike info criterion	5.510293
Sum squared resid	897.8915	Schwarz criterion	5.544026
Log likelihood	-175.3294	Hannan-Quinn criter.	5.523582
Durbin-Watson stat	1.936392		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Null Hypothesis: D(ENG) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.594404	0.0000
Test critical values:	1% level	-3.538362	
	5% level	-2.908420	
	10% level	-2.591799	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ENG,2)
Method: Least Squares
Date: 05/16/11 Time: 13:29
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ENG(-1))	-0.972196	0.128015	-7.594404	0.0000
C	0.019383	0.482537	0.040168	0.9681

R-squared	0.485991	Mean dependent var	0.001787
Adjusted R-squared	0.477565	S.D. dependent var	5.298828
S.E. of regression	3.829976	Akaike info criterion	5.554825
Sum squared resid	894.7917	Schwarz criterion	5.622861
Log likelihood	-172.9770	Hannan-Quinn criter.	5.581584
F-statistic	57.67497	Durbin-Watson stat	1.984633
Prob(F-statistic)	0.000000		

Null Hypothesis: D(ENG) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.826290	0.0000
Test critical values:	1% level	-4.110440	
	5% level	-3.482763	
	10% level	-3.169372	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ENG,2)
Method: Least Squares
Date: 05/16/11 Time: 13:30
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ENG(-1))	-1.015920	0.129809	-7.826290	0.0000
C	1.379552	1.008561	1.367842	0.1765
@TREND(1)	-0.041193	0.026908	-1.530920	0.1310

R-squared	0.505314	Mean dependent var	0.001787
Adjusted R-squared	0.488825	S.D. dependent var	5.298828
S.E. of regression	3.788477	Akaike info criterion	5.548253
Sum squared resid	861.1534	Schwarz criterion	5.650307
Log likelihood	-171.7700	Hannan-Quinn criter.	5.588391
F-statistic	30.64458	Durbin-Watson stat	1.986507

Null Hypothesis: D(ENG) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.656193	0.0000
Test critical values:	1% level	-2.602185	
	5% level	-1.946072	
	10% level	-1.613448	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ENG,2)
Method: Least Squares
Date: 05/16/11 Time: 13:31
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ENG(-1))	-0.972171	0.126978	-7.656193	0.0000

R-squared	0.485977	Mean dependent var	0.001787
Adjusted R-squared	0.485977	S.D. dependent var	5.298828
S.E. of regression	3.799014	Akaike info criterion	5.523106
Sum squared resid	894.8154	Schwarz criterion	5.557124
Log likelihood	-172.9778	Hannan-Quinn criter.	5.536485
Durbin-Watson stat	1.984624		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

ตารางภาคผนวก 6 การทดสอบความนิ่งของข้อมูล (unit root) ด้วยวิธี Augmented Dickey-Fuller Test Statistic (ADF) ของตัวแปรอัตราแลกเปลี่ยนที่แท้จริงของเงินบาทเทียบเงินเยน ด้วย 3 แบบจำลองคือ แบบจำลองที่มีจุดตัดแกน (with intercept) แบบจำลองที่มีแนวโน้มและจุดตัดแกน (with trend and intercept) และแบบจำลองที่ไม่มีทั้งแนวโน้มและจุดตัดแกน (none) ทำการทดสอบที่ order of integration เท่ากับ 0:I(0) และ 1:I(1)

Null Hypothesis: JP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.179867	0.2155
Test critical values:	1% level	-3.536587	
	5% level	-2.907660	
	10% level	-2.591396	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(JP)
Method: Least Squares
Date: 05/16/11 Time: 13:36
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
JP(-1)	-0.146546	0.067227	-2.179867	0.0331
C	0.050943	0.023936	2.128275	0.0373

R-squared	0.071186	Mean dependent var	-0.000697
Adjusted R-squared	0.056205	S.D. dependent var	0.028229
S.E. of regression	0.027424	Akaike info criterion	-4.324011
Sum squared resid	0.046630	Schwarz criterion	-4.256546
Log likelihood	140.3684	Hannan-Quinn criter.	-4.297433
F-statistic	4.751819	Durbin-Watson stat	1.753355
Prob(F-statistic)	0.033073		

Null Hypothesis: JP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.432560	0.3599
Test critical values:	1% level	-4.107947	
	5% level	-3.481595	
	10% level	-3.168695	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(JP)
Method: Least Squares
Date: 05/16/11 Time: 13:36
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
JP(-1)	-0.174658	0.071800	-2.432560	0.0179
C	0.067945	0.028446	2.388517	0.0200
@TREND(1)	-0.000218	0.000198	-1.101556	0.2750

R-squared	0.089302	Mean dependent var	-0.000697
Adjusted R-squared	0.059443	S.D. dependent var	0.028229
S.E. of regression	0.027377	Akaike info criterion	-4.312458
Sum squared resid	0.045721	Schwarz criterion	-4.211260
Log likelihood	140.9987	Hannan-Quinn criter.	-4.272591
F-statistic	2.990801	Durbin-Watson stat	1.739909
Prob(F-statistic)	0.057666		

Null Hypothesis: JP has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.499623	0.4960
Test critical values:	1% level	-2.601596	
	5% level	-1.945987	
	10% level	-1.613496	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(JP)
Method: Least Squares
Date: 05/16/11 Time: 13:37
Sample (adjusted): 2 65
Included observations: 64 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
JP(-1)	-0.004943	0.009894	-0.499623	0.6191

R-squared	0.003330	Mean dependent var	-0.000697
Adjusted R-squared	0.003330	S.D. dependent var	0.028229
S.E. of regression	0.028182	Akaike info criterion	-4.284749
Sum squared resid	0.050037	Schwarz criterion	-4.251017
Log likelihood	138.1120	Hannan-Quinn criter.	-4.271460
Durbin-Watson stat	1.880233		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Null Hypothesis: D(JP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.393943	0.0000
Test critical values:	1% level	-3.538362	
	5% level	-2.908420	
	10% level	-2.591799	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(JP,2)
Method: Least Squares
Date: 05/16/11 Time: 13:37
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(JP(-1))	-0.944606	0.127754	-7.393943	0.0000
C	-0.000866	0.003604	-0.240239	0.8110

R-squared	0.472639	Mean dependent var	-4.27E-05
Adjusted R-squared	0.463994	S.D. dependent var	0.039051
S.E. of regression	0.028590	Akaike info criterion	-4.240289
Sum squared resid	0.049861	Schwarz criterion	-4.172253
Log likelihood	135.5691	Hannan-Quinn criter.	-4.213530
F-statistic	54.67040	Durbin-Watson stat	1.964639
Prob(F-statistic)	0.000000		

Null Hypothesis: D(JP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.332596	0.0000
Test critical values:	1% level	-4.110440	
	5% level	-3.482763	
	10% level	-3.169372	

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

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(JP,2)
Method: Least Squares
Date: 05/16/11 Time: 13:38
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(JP(-1))	-0.945283	0.128915	-7.332596	0.0000
C	-5.41E-05	0.007526	-0.007184	0.9943
@TREND(1)	-2.46E-05	0.000200	-0.123144	0.9024

R-squared	0.472773	Mean dependent var	-4.27E-05
Adjusted R-squared	0.455199	S.D. dependent var	0.039051
S.E. of regression	0.028824	Akaike info criterion	-4.208796
Sum squared resid	0.049848	Schwarz criterion	-4.106742
Log likelihood	135.5771	Hannan-Quinn criter.	-4.168658
F-statistic	26.90146	Durbin-Watson stat	1.964110
Prob(F-statistic)	0.000000		

Null Hypothesis: D(JP) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.446855	0.0000
Test critical values:	1% level	-2.602185	
	5% level	-1.946072	
	10% level	-1.613448	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(JP,2)
Method: Least Squares
Date: 05/16/11 Time: 13:38
Sample (adjusted): 3 65
Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(JP(-1))	-0.943658	0.126719	-7.446855	0.0000

R-squared	0.472141	Mean dependent var	-4.27E-05
Adjusted R-squared	0.472141	S.D. dependent var	0.039051
S.E. of regression	0.028372	Akaike info criterion	-4.271090
Sum squared resid	0.049908	Schwarz criterion	-4.237072
Log likelihood	135.5393	Hannan-Quinn criter.	-4.257710
Durbin-Watson stat	1.964252		

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

ภาคผนวก ข

ผลการวิเคราะห์เลือกความล่าช้า (lag length) ที่เหมาะสม

ตารางภาคผนวกที่ 7 ผลการวิเคราะห์เลือกความล่าช้า (lag length) ที่เหมาะสม

VAR Lag Order Selection Criteria

Endogenous variables: DOPENNESS DCH DENG DEURO DJP DUSA

Exogenous variables: C

Date: 05/16/11 Time: 14:14

Sample: 1 65

Included observations: 59

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-447.8644	NA	0.193591	15.38523	15.59651*	15.46771*
1	-419.1604	50.59687	0.249582	15.63256	17.11148	16.20987
2	-385.4722	52.53073	0.280198	15.71092	18.45750	16.78307
3	-329.8168	75.46489*	0.158809*	15.04464*	19.05886	16.61163
4	-307.9506	25.20181	0.313009	15.52375	20.80562	17.58558
5	-262.0974	43.52168	0.320788	15.18974	21.73927	17.74641

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

ภาคผนวก ค

ผลการทดสอบการเต็มระดับขั้น (full rank)

ตารางภาคผนวกที่ 8 ผลการทดสอบการเต็มระดับขั้น (full rank

Date: 06/10/11 Time: 10:54
Sample: 1 65
Included observations: 60
Series: DOPENNESS
Exogenous series: DCH DUSA DEURO DENG DJP
Warning: Rank Test critical values derived assuming no exogenous series
Lags interval: 1 to 3

Selected (0.05 level*) Number of Cointegrating Relations by Model

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	1	1	1	1	1
Max-Eig	1	1	1	1	1

*Critical values based on MacKinnon-Haug-Michelis (1999)

Information Criteria by Rank and Model

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Log Likelihood by Rank (rows) and Model (columns)					
0	-105.8536	-105.8536	-105.7309	-105.7309	-104.9420
1	-103.4846	-99.95115	-99.95115	-97.09221	-97.09221
Akaike Information Criteria by Rank (rows) and Model (columns)					
0	3.628452	3.628452	3.657698	3.657698	3.664732
1	3.616153	3.531705	3.531705	3.469740*	3.469740*
Schwarz Criteria by Rank (rows) and Model (columns)					
0	3.733169	3.733169	3.797321	3.797321	3.839261
1	3.790681	3.741140	3.741140	3.714081*	3.714081*

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

ภาคผนวก ง

ผลการประมาณค่าแบบจำลอง VARs

ตารางภาคผนวกที่ 9 ผลการประมาณค่าแบบจำลอง VARs

Vector Autoregression Estimates
Date: 05/16/11 Time: 13:59
Sample (adjusted): 5 65
Included observations: 61 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DOPENNESS	DCH	DENG	DEURO	DJP	DUSA
DOPENNESS(-1)	-0.342836	-0.002683	-0.727735	0.170322	-0.001900	-0.575124
	(0.17517)	(0.06913)	(0.41892)	(0.19453)	(0.00341)	(0.34040)
	[-1.95713]	[-0.03881]	[-1.73716]	[0.87555]	[-0.55735]	[-1.68956]
DOPENNESS(-2)	-0.595780	-0.024113	-1.332365	0.640333	-0.000757	-0.204962
	(0.17852)	(0.07045)	(0.42693)	(0.19825)	(0.00347)	(0.34690)
	[-3.33733]	[-0.34225]	[-3.12083]	[3.22996]	[-0.21796]	[-0.59083]
DOPENNESS(-3)	-0.111242	-0.038655	-1.069565	-0.083209	-0.002377	-0.208994
	(0.18738)	(0.07395)	(0.44813)	(0.20809)	(0.00365)	(0.36413)
	[-0.59365]	[-0.52269]	[-2.38675]	[-0.39987]	[-0.65196]	[-0.57396]
DCH(-1)	-1.193897	-0.241260	-2.044308	0.366958	0.004729	-0.302245
	(0.54012)	(0.21316)	(1.29170)	(0.59981)	(0.01051)	(1.04958)
	[-2.21041]	[-1.13181]	[-1.58265]	[0.61179]	[0.45000]	[-0.28797]
DCH(-2)	-0.799741	0.177958	-1.280855	0.973953	-0.009059	-1.231937
	(0.57508)	(0.22696)	(1.37529)	(0.63863)	(0.01119)	(1.11750)
	[-1.39066]	[0.78410]	[-0.93133]	[1.52506]	[-0.80963]	[-1.10240]
DCH(-3)	-0.635759	-0.484351	-1.922585	0.087146	-0.011651	-0.962942
	(0.55441)	(0.21880)	(1.32587)	(0.61568)	(0.01079)	(1.07734)
	[-1.14672]	[-2.21364]	[-1.45006]	[0.14154]	[-1.08011]	[-0.89381]
DENG(-1)	0.158614	0.062701	0.136872	-0.104903	0.000985	-0.065583
	(0.08867)	(0.03499)	(0.21205)	(0.09847)	(0.00173)	(0.17231)
	[1.78879]	[1.79175]	[0.64546]	[-1.06533]	[0.57070]	[-0.38062]
DENG(-2)	0.016835	-0.063526	0.132664	-0.203090	0.000317	0.161242
	(0.09514)	(0.03755)	(0.22753)	(0.10565)	(0.00185)	(0.18488)
	[0.17695]	[-1.69188]	[0.58307]	[-1.92222]	[0.17124]	[0.87216]

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

Vector Autoregression Estimates
Date: 05/16/11 Time: 13:59
Sample (adjusted): 5 65
Included observations: 61 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DOPENNESS	DCH	DENG	DEURO	DJP	DUSA
DENG(-3)	0.132623	0.038013	0.394469	0.504702	-0.000636	0.079839
	(0.09812)	(0.03872)	(0.23465)	(0.10896)	(0.00191)	(0.19067)
	[1.35165]	[0.98167]	[1.68109]	[4.63189]	[-0.33302]	[0.41873]
DEURO(-1)	-0.251675	-0.049694	-0.334576	0.138678	0.000915	0.111161
	(0.08899)	(0.03512)	(0.21283)	(0.09883)	(0.00173)	(0.17293)
	[-2.82803]	[-1.41490]	[-1.57206]	[1.40323]	[0.52867]	[0.64280]
DEURO(-2)	0.020626	-0.006046	-0.190860	0.049026	0.000628	-0.212621
	(0.09850)	(0.03887)	(0.23556)	(0.10939)	(0.00192)	(0.19141)
	[0.20940]	[-0.15553]	[-0.81023]	[0.44819]	[0.32777]	[-1.11083]
DEURO(-3)	-0.147697	-0.078082	-0.364846	0.187496	-0.002556	-0.145410
	(0.08906)	(0.03515)	(0.21298)	(0.09890)	(0.00173)	(0.17306)
	[-1.65845]	[-2.22159]	[-1.71306]	[1.89584]	[-1.47535]	[-0.84024]
DJP(-1)	-1.334201	2.471261	37.05581	-12.52727	-0.013964	6.977980
	(8.38690)	(3.30994)	(20.0571)	(9.31372)	(0.16318)	(16.2975)
	[-0.15908]	[0.74662]	[1.84751]	[-1.34503]	[-0.08557]	[0.42816]
DJP(-2)	5.600718	4.805828	12.76172	-5.396788	-0.147426	17.06613
	(7.97318)	(3.14667)	(19.0677)	(8.85429)	(0.15513)	(15.4936)
	[0.70244]	[1.52728]	[0.66928]	[-0.60951]	[-0.95033]	[1.10150]
DJP(-3)	-0.326915	-2.047648	-23.18064	0.747189	-0.027672	-2.380621
	(7.87413)	(3.10757)	(18.8308)	(8.74428)	(0.15320)	(15.3011)
	[-0.04152]	[-0.65892]	[-1.23099]	[0.08545]	[-0.18062]	[-0.15558]
DUSA(-1)	-0.040545	-0.028658	0.124057	0.100368	-0.000483	0.124367
	(0.08417)	(0.03322)	(0.20130)	(0.09347)	(0.00164)	(0.16357)
	[-0.48169]	[-0.86269]	[0.61629]	[1.07375]	[-0.29468]	[0.76035]
DUSA(-2)	0.031016	0.020860	0.309301	0.031142	-0.001473	0.015618
	(0.08551)	(0.03375)	(0.20449)	(0.09496)	(0.00166)	(0.16616)
	[0.36273]	[0.61816]	[1.51256]	[0.32796]	[-0.88539]	[0.09399]
DUSA(-3)	-0.062485	-0.021497	-0.152509	0.032231	-0.001831	-0.148764
	(0.08540)	(0.03370)	(0.20423)	(0.09484)	(0.00166)	(0.16595)
	[-0.73167]	[-0.63783]	[-0.74673]	[0.33985]	[-1.10182]	[-0.89643]
C	1.138187	0.138356	1.874426	-0.339383	0.001466	0.608144
	(0.28465)	(0.11234)	(0.68074)	(0.31611)	(0.00554)	(0.55314)
	[3.99854]	[1.23159]	[2.75352]	[-1.07363]	[0.26471]	[1.09944]
Adj. R-squared	0.226285	0.164259	0.214057	0.594298	0.013481	-0.152616
Sum sq. resids	85.96214	13.38891	491.6332	106.0110	0.032542	324.5999
S.E. equation	1.430635	0.564609	3.421338	1.588733	0.027836	2.780030
F-statistic	1.974883	1.655145	1.907856	5.882884	1.045551	0.558639
Log likelihood	-97.01776	-40.30362	-150.2045	-103.4117	143.2955	-137.5427
Akaike AIC	3.803861	1.944381	5.547687	4.013497	-4.075263	5.132547
Schwarz SC	4.461346	2.601866	6.205172	4.670982	-3.417777	5.790033
Mean dependent	0.478809	0.053330	0.050755	0.198149	-0.001606	-0.009554
S.D. dependent	1.626441	0.617607	3.859228	2.494293	0.028025	2.589448

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

ภาคผนวก จ

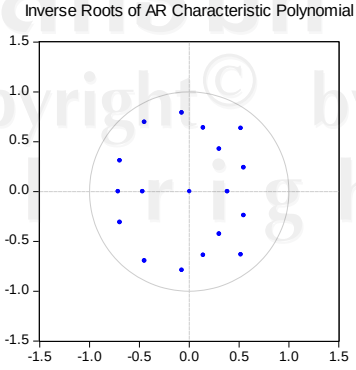
ผลการทดสอบคุณสมบัติความเสถียร (stationary) ของตัวแปร

ตารางภาคผนวกที่ 10 การทดสอบคุณสมบัติความเสถียร (stationary) ของตัวแปร

Roots of Characteristic Polynomial
Endogenous variables: DOPENNESS DCH DENG DEURO DJP DUSA
Exogenous variables: C
Lag specification: 1 3
Date: 05/16/11 Time: 14:08

Root	Modulus
-0.447519 + 0.695702i	0.827209
-0.447519 - 0.695702i	0.827209
0.519634 + 0.633873i	0.819643
0.519634 - 0.633873i	0.819643
-0.072407 + 0.790905i	0.794212
-0.072407 - 0.790905i	0.794212
-0.695458 - 0.308709i	0.760896
-0.695458 + 0.308709i	0.760896
-0.711713	0.711713
0.143121 - 0.639417i	0.655239
0.143121 + 0.639417i	0.655239
0.547226 + 0.240084i	0.597576
0.547226 - 0.240084i	0.597576
0.301582 + 0.426157i	0.522074
0.301582 - 0.426157i	0.522074
-0.467255	0.467255
0.383157	0.383157
0.005311	0.005311

No root lies outside the unit circle.
VAR satisfies the stability condition.

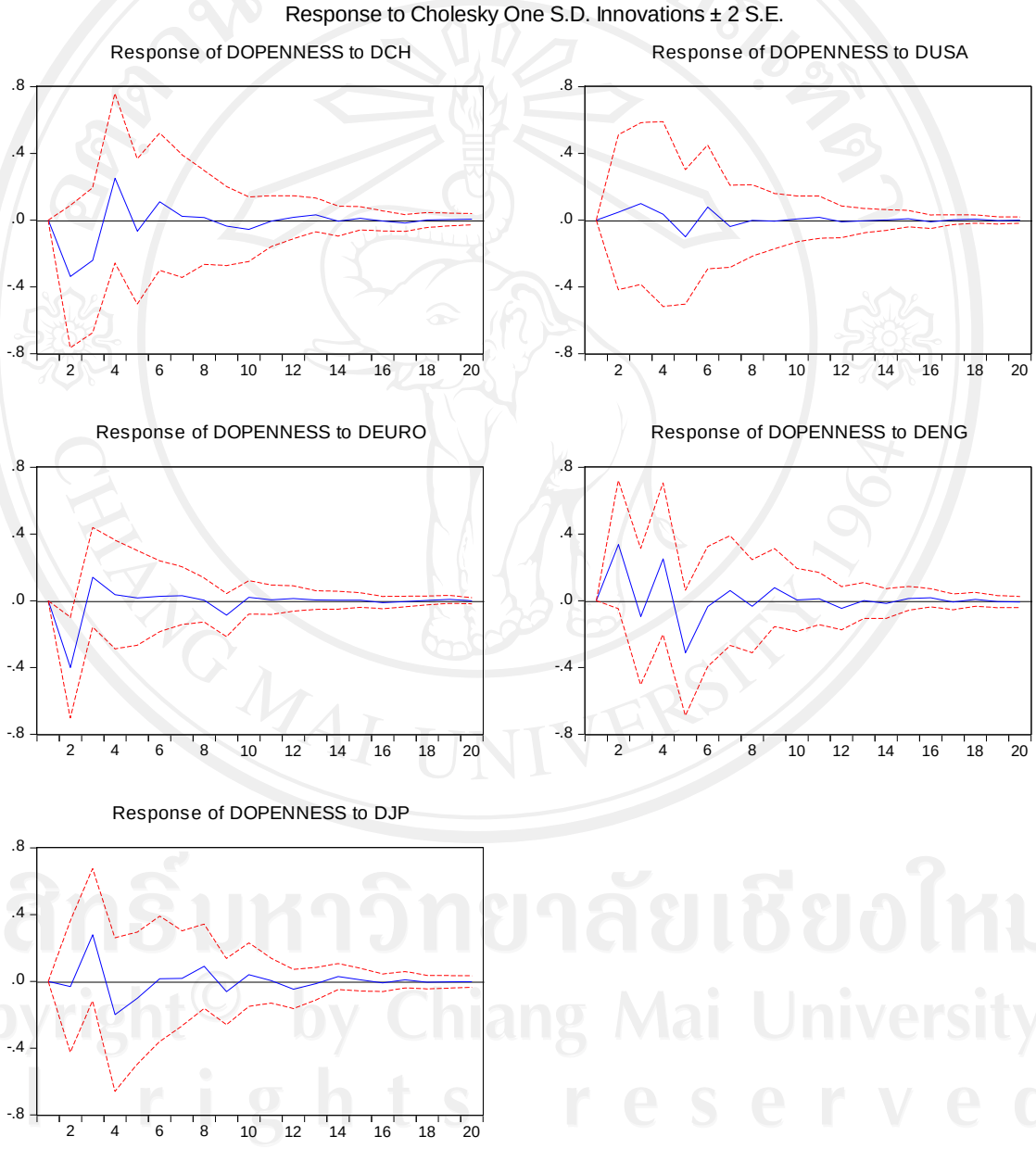


ภาพภาคผนวกที่ 1 การทดสอบคุณสมบัติ stationary ของตัวแปรในแบบจำลอง

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

ภาคผนวก ฉ

การวิเคราะห์ปฏิกิริยาตอบสนอง (impulse response function)



ภาพภาคผนวกที่ 2 การวิเคราะห์ปฏิกิริยาตอบสนอง (impulse response function)

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved

ประวัติผู้เขียน

ชื่อ-สกุล นางสาวสุพิญญา คำพรหม

วัน เดือน ปี เกิด 11 พฤศจิกายน 2529

ประวัติการศึกษา สำเร็จการศึกษาระดับปริญญาตรี วิทยาศาสตรบัณฑิต คณะอุตสาหกรรมเกษตร สาขาวิชาเทคโนโลยีการพัฒนาผลิตภัณฑ์ มหาวิทยาลัยเชียงใหม่ ปีการศึกษา 2551

ประสบการณ์ การตลาด ห้างหุ้นส่วนจำกัดเปอร์เฟคโต ผู้ผลิตและจัดจำหน่ายไอศกรีมอิตาเลี่ยน

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved