



APPENDIX

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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Appendix A. Data of the Study

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Appendix A.1 Real GDP, INF, EMP and K

Year	Real GDP (Kyats)	INF (Kyats)	EMP (person)	K (Kyats)
1988-1989	47141	132801.3	16036	386354.6
1989-1990	48883.1	135975.6	15221	377565.3
1990-1991	50259	147011.63	15737	383601.8
1991-1992	49933.3	144928.13	16007	387576.1
1992-1993	54756.6	154101	16469	392437.3
1993-1994	58063.9	159971.6	16820	396371.3
1994-1995	62406.1	168527.9	17230	405659.9
1995-1996	66741.6	174260.6	17587	428148.8
1996-1997	71042	178101.6	17964	453365.8
1997-1998	75123	182456.1	18359	471219.8
1998-1999	79460	194539.9	19069	499998
1999-2000	88157	203361.1	19425	528325.5
2000-2001	100274.8	217935	19781	569116
2001-2002	111650	220439.5	20137	610372.4
2002-2003	125076.5	231085.4	20493	628162.6
2003-2004	142387.7	234661.1	21522	646844.9
2004-2005	216758.4696	237342.8	25829	657932
2005-2006	283150.863	246474.4	26132	663063.4
2006-2007	325915.3687	253597	26435	679281.9
2007-2008	371973.9366	259152.6	26720	713812.8
2008-2009	37694.10733	263486	27054	759416.7
2009-2010	384784.4387	269500.9	27373	823498.4

Appendix A.1 Real GDP, INF, EMP and K

Year	Real GDP (Kyats)	INF (Kyats)	EMP (person)	K (Kyats)
2010-2011	430391.3103	274252.7	27740	915780.5
2011-2012	463078.877	278006.6	28163	929256.1
2012-2013	464915.51	280972.2	28571	944787.7

Source: Ministry of National Planning and Economic Development issued the review of the Financial, Economic and Social Development



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Appendix B. Unit Root Test

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Appendix B.1 Augmented Dickey-Fuller Unit Root Test for LNGDP

Null Hypothesis: LNGDP has a unit root

Exogenous: Constant

Lag Length: 5 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.611638	0.4576
Test critical values:		
1% level	-3.831511	
5% level	-3.029970	
10% level	-2.655194	

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

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGDP)

Method: Least Squares

Date: 08/11/16 Time: 10:17

Sample (adjusted): 1994 2012

Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP(-1)	-1.295748	0.803995	-1.611638	0.1330
D(LNGDP(-1))	1.103948	1.334012	0.827540	0.4241
D(LNGDP(-2))	1.120500	1.370204	0.817761	0.4294
D(LNGDP(-3))	0.516240	1.056551	0.488609	0.6339
D(LNGDP(-4))	-0.122993	0.735804	-0.167154	0.8700
D(LNGDP(-5))	9.857904	6.204879	1.588734	0.1381
C	14.05401	8.481473	1.657024	0.1234
R-squared	0.642055	Mean dependent var		0.109490
Adjusted R-squared	0.463082	S.D. dependent var		0.774670
S.E. of regression	0.567637	Akaike info criterion		1.982641
Sum squared resid	3.866541	Schwarz criterion		2.330592
Log likelihood	-11.83509	Hannan-Quinn criter.		2.041528
F-statistic	3.587445	Durbin-Watson stat		2.168011
Prob(F-statistic)	0.028414			

Appendix B.2 Augmented Dickey-Fuller Unit Root Test for LNGDP

Null Hypothesis: LNGDP has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.121057	0.0021
Test critical values:		
1% level	-4.394309	
5% level	-3.612199	
10% level	-3.243079	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGDP)

Method: Least Squares

Date: 08/11/16 Time: 10:18

Sample (adjusted): 1989 2012

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP(-1)	-1.107806	0.216324	-5.121057	0.0000
C	11.58348	2.264523	5.115196	0.0000
@TREND("1988")	0.110538	0.024968	4.427116	0.0002
R-squared	0.556509	Mean dependent var		0.095363
Adjusted R-squared	0.514272	S.D. dependent var		0.686061
S.E. of regression	0.478145	Akaike info criterion		1.478662
Sum squared resid	4.801070	Schwarz criterion		1.625919
Log likelihood	-14.74395	Hannan-Quinn criter.		1.517729
F-statistic	13.17579	Durbin-Watson stat		2.043711
Prob(F-statistic)	0.000196			

Appendix B.3 Augmented Dickey-Fuller Unit Root Test for LNGDP

Null Hypothesis: LNGDP has a unit root

Exogenous: None

Lag Length: 4 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	2.803603	0.9975
Test critical values:		
1% level	-2.685718	
5% level	-1.959071	
10% level	-1.607456	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGDP)

Method: Least Squares

Date: 08/11/16 Time: 10:18

Sample (adjusted): 1993 2012

Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP(-1)	0.036695	0.013088	2.803603	0.0134
D(LNGDP(-1))	-1.046234	0.241025	-4.340780	0.0006
D(LNGDP(-2))	-1.043645	0.319124	-3.270345	0.0052
D(LNGDP(-3))	-1.071940	0.375689	-2.853262	0.0121
D(LNGDP(-4))	-1.049061	0.427297	-2.455113	0.0268
R-squared	0.556765	Mean dependent var		0.106948
Adjusted R-squared	0.438569	S.D. dependent var		0.754094
S.E. of regression	0.565033	Akaike info criterion		1.908453
Sum squared resid	4.788935	Schwarz criterion		2.157386
Log likelihood	-14.08453	Hannan-Quinn criter.		1.957047
Durbin-Watson stat	1.988548			

Appendix B.4 Augmented Dickey-Fuller Unit Root Test for LNGDP

Null Hypothesis: D(LNGDP) has a unit root

Exogenous: Constant

Lag Length: 3 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.380527	0.0030
Test critical values:		
1% level	-3.808546	
5% level	-3.020686	
10% level	-2.650413	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGDP,2)

Method: Least Squares

Date: 08/11/16 Time: 10:18

Sample (adjusted): 1993 2012

Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	-5.154892	1.176774	-4.380527	0.0005
D(LNGDP(-1),2)	3.138703	1.019399	3.078973	0.0076
D(LNGDP(-2),2)	2.116689	0.764408	2.769057	0.0143
D(LNGDP(-3),2)	1.054750	0.426521	2.472913	0.0258
C	0.427608	0.151269	2.826800	0.0128
R-squared	0.851950	Mean dependent var		-0.004413
Adjusted R-squared	0.812470	S.D. dependent var		1.301073
S.E. of regression	0.563426	Akaike info criterion		1.902756
Sum squared resid	4.761730	Schwarz criterion		2.151689
Log likelihood	-14.02756	Hannan-Quinn criter.		1.951350
F-statistic	21.57931	Durbin-Watson stat		1.982534
Prob(F-statistic)	0.000004			

Appendix B.5 Augmented Dickey-Fuller Unit Root Test for LNGDP

Null Hypothesis: D(LNGDP) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 3 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.183102	0.0185
Test critical values:		
1% level	-4.498307	
5% level	-3.658446	
10% level	-3.268973	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGDP,2)

Method: Least Squares

Date: 08/11/16 Time: 10:19

Sample (adjusted): 1993 2012

Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	-5.128918	1.226104	-4.183102	0.0009
D(LNGDP(-1),2)	3.112032	1.065382	2.921047	0.0112
D(LNGDP(-2),2)	2.091014	0.804343	2.599656	0.0210
D(LNGDP(-3),2)	1.036217	0.453968	2.282575	0.0386
C	0.367805	0.380900	0.965621	0.3506
@TREND("1988")	0.004086	0.023728	0.172192	0.8658
R-squared	0.852263	Mean dependent var		-0.004413
Adjusted R-squared	0.799500	S.D. dependent var		1.301073
S.E. of regression	0.582585	Akaike info criterion		2.000640
Sum squared resid	4.751666	Schwarz criterion		2.299360
Log likelihood	-14.00640	Hannan-Quinn criter.		2.058953
F-statistic	16.15261	Durbin-Watson stat		1.991147
Prob(F-statistic)	0.000022			

Appendix B.6 Augmented Dickey-Fuller Unit Root Test for LNGDP

Null Hypothesis: D(LNGDP) has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.681054	0.0000
Test critical values:		
1% level	-2.669359	
5% level	-1.956406	
10% level	-1.608495	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNGDP,2)

Method: Least Squares

Date: 08/11/16 Time: 10:19

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	-1.456722	0.189651	-7.681054	0.0000

R-squared	0.728390	Mean dependent var	-0.001406
Adjusted R-squared	0.728390	S.D. dependent var	1.209327
S.E. of regression	0.630255	Akaike info criterion	1.957121
Sum squared resid	8.738878	Schwarz criterion	2.006491
Log likelihood	-21.50689	Hannan-Quinn criter.	1.969537
Durbin-Watson stat	2.224804		

Appendix B.7 Augmented Dickey-Fuller Unit Root Test for LNINF

Null Hypothesis: LNINF has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.997501	0.2858
Test critical values:		
1% level	-3.737853	
5% level	-2.991878	
10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNINF)

Method: Least Squares

Date: 08/11/16 Time: 10:36

Sample (adjusted): 1989 2012

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF(-1)	-0.035861	0.017953	-1.997501	0.0583
C	0.469163	0.219284	2.139524	0.0437

R-squared	0.153521	Mean dependent var	0.031225
Adjusted R-squared	0.115045	S.D. dependent var	0.022059
S.E. of regression	0.020751	Akaike info criterion	-4.832797
Sum squared resid	0.009473	Schwarz criterion	-4.734626
Log likelihood	59.99357	Hannan-Quinn criter.	-4.806753
F-statistic	3.990012	Durbin-Watson stat	2.819854
Prob(F-statistic)	0.058285		

Appendix B.8 Augmented Dickey-Fuller Unit Root Test for LNINF

Null Hypothesis: LNINF has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.658164	0.9651
Test critical values:		
1% level	-4.394309	
5% level	-3.612199	
10% level	-3.243079	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNINF)

Method: Least Squares

Date: 08/11/16 Time: 10:36

Sample (adjusted): 1989 2012

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF(-1)	-0.091238	0.138625	-0.658164	0.5176
C	1.121636	1.634390	0.686272	0.5000
@TREND("1988")	0.001904	0.004725	0.403003	0.6910

R-squared	0.160017	Mean dependent var	0.031225
Adjusted R-squared	0.080019	S.D. dependent var	0.022059
S.E. of regression	0.021158	Akaike info criterion	-4.757168
Sum squared resid	0.009401	Schwarz criterion	-4.609912
Log likelihood	60.08602	Hannan-Quinn criter.	-4.718101
F-statistic	2.000258	Durbin-Watson stat	2.688646
Prob(F-statistic)	0.160265		

Appendix B.9 Augmented Dickey-Fuller Unit Root Test for LNINF

Null Hypothesis: LNINF has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	6.820521	1.0000
Test critical values:		
1% level	-2.664853	
5% level	-1.955681	
10% level	-1.608793	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNINF)

Method: Least Squares

Date: 08/11/16 Time: 10:36

Sample (adjusted): 1989 2012

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF(-1)	0.002543	0.000373	6.820521	0.0000

R-squared	-0.022607	Mean dependent var	0.031225
Adjusted R-squared	-0.022607	S.D. dependent var	0.022059
S.E. of regression	0.022306	Akaike info criterion	-4.727106
Sum squared resid	0.011444	Schwarz criterion	-4.678020
Log likelihood	57.72527	Hannan-Quinn criter.	-4.714083
Durbin-Watson stat	2.424694		

Appendix B.10 Augmented Dickey-Fuller Unit Root Test for LNINF

Null Hypothesis: D(LNINF) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.927624	0.0001
Test critical values:		
1% level	-3.752946	
5% level	-2.998064	
10% level	-2.638752	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNINF,2)

Method: Least Squares

Date: 08/11/16 Time: 10:37

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNINF(-1))	-1.269402	0.214150	-5.927624	0.0000
C	0.040209	0.008291	4.849474	0.0001
R-squared	0.625913	Mean dependent var		-0.000566
Adjusted R-squared	0.608100	S.D. dependent var		0.035464
S.E. of regression	0.022201	Akaike info criterion		-4.694383
Sum squared resid	0.010351	Schwarz criterion		-4.595644
Log likelihood	55.98540	Hannan-Quinn criter.		-4.669550
F-statistic	35.13672	Durbin-Watson stat		1.528286
Prob(F-statistic)	0.000007			

Appendix B.11 Augmented Dickey-Fuller Unit Root Test for LNINF

Null Hypothesis: D(LNINF) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.693197	0.0000
Test critical values:		
1% level	-4.416345	
5% level	-3.622033	
10% level	-3.248592	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNINF,2)

Method: Least Squares

Date: 08/11/16 Time: 10:38

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNINF(-1))	-1.469707	0.191040	-7.693197	0.0000
C	0.071908	0.012315	5.839067	0.0000
@TREND("1988")	-0.001943	0.000623	-3.121530	0.0054
R-squared	0.748462	Mean dependent var		-0.000566
Adjusted R-squared	0.723308	S.D. dependent var		0.035464
S.E. of regression	0.018655	Akaike info criterion		-5.004320
Sum squared resid	0.006960	Schwarz criterion		-4.856212
Log likelihood	60.54968	Hannan-Quinn criter.		-4.967071
F-statistic	29.75542	Durbin-Watson stat		1.668085
Prob(F-statistic)	0.000001			

Appendix B.12 Augmented Dickey-Fuller Unit Root Test for LNEMP

Null Hypothesis: LNEMP has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	0.031979	0.9528
Test critical values:		
1% level	-3.737853	
5% level	-2.991878	
10% level	-2.635542	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNEMP)

Method: Least Squares

Date: 08/11/16 Time: 10:40

Sample (adjusted): 1989 2012

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP(-1)	0.001203	0.037630	0.031979	0.9748
C	0.012117	0.373689	0.032426	0.9744

R-squared	0.000046	Mean dependent var	0.024065
Adjusted R-squared	-0.045406	S.D. dependent var	0.037939
S.E. of regression	0.038790	Akaike info criterion	-3.581639
Sum squared resid	0.033103	Schwarz criterion	-3.483468
Log likelihood	44.97967	Hannan-Quinn criter.	-3.555594
F-statistic	0.001023	Durbin-Watson stat	1.705552
Prob(F-statistic)	0.974777		

Appendix B.13 Augmented Dickey-Fuller Unit Root Test for LNEMP

Null Hypothesis: LNEMP has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.647542	0.2646
Test critical values:		
1% level	-4.394309	
5% level	-3.612199	
10% level	-3.243079	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNEMP)

Method: Least Squares

Date: 08/11/16 Time: 10:40

Sample (adjusted): 1989 2012

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP(-1)	-0.394781	0.149112	-2.647542	0.0151
C	3.789317	1.425284	2.658641	0.0147
@TREND("1988")	0.012345	0.004533	2.723601	0.0127

R-squared	0.261066	Mean dependent var	0.024065
Adjusted R-squared	0.190691	S.D. dependent var	0.037939
S.E. of regression	0.034130	Akaike info criterion	-3.800806
Sum squared resid	0.024462	Schwarz criterion	-3.653549
Log likelihood	48.60967	Hannan-Quinn criter.	-3.761739
F-statistic	3.709660	Durbin-Watson stat	1.504406
Prob(F-statistic)	0.041721		

Appendix B.14 Augmented Dickey-Fuller Unit Root Test for LNEMP

Null Hypothesis: LNEMP has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	3.107472	0.9989
Test critical values:		
1% level	-2.664853	
5% level	-1.955681	
10% level	-1.608793	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNEMP)

Method: Least Squares

Date: 08/11/16 Time: 10:40

Sample (adjusted): 1989 2012

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNEMP(-1)	0.002423	0.000780	3.107472	0.0050

R-squared	-0.000001	Mean dependent var	0.024065
Adjusted R-squared	-0.000001	S.D. dependent var	0.037939
S.E. of regression	0.037939	Akaike info criterion	-3.664925
Sum squared resid	0.033105	Schwarz criterion	-3.615839
Log likelihood	44.97910	Hannan-Quinn criter.	-3.651902
Durbin-Watson stat	1.707648		

Appendix B.15 Augmented Dickey-Fuller Unit Root Test for LNEMP

Null Hypothesis: D(LNEMP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.777279	0.0010
Test critical values:		
1% level	-3.752946	
5% level	-2.998064	
10% level	-2.638752	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNEMP,2)

Method: Least Squares

Date: 08/11/16 Time: 10:40

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNEMP(-1))	-0.941633	0.197107	-4.777279	0.0001
C	0.025950	0.008891	2.918704	0.0082
R-squared	0.520793	Mean dependent var		0.002893
Adjusted R-squared	0.497974	S.D. dependent var		0.050541
S.E. of regression	0.035810	Akaike info criterion		-3.738244
Sum squared resid	0.026929	Schwarz criterion		-3.639506
Log likelihood	44.98981	Hannan-Quinn criter.		-3.713412
F-statistic	22.82240	Durbin-Watson stat		1.918803
Prob(F-statistic)	0.000102			

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Appendix B.16 Augmented Dickey-Fuller Unit Root Test for LNEMP

Null Hypothesis: D(LNEMP) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.586153	0.0070
Test critical values:		
1% level	-4.416345	
5% level	-3.622033	
10% level	-3.248592	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNEMP,2)

Method: Least Squares

Date: 08/11/16 Time: 10:41

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNEMP(-1))	-0.935762	0.204041	-4.586153	0.0002
C	0.028745	0.017042	1.686745	0.1072
@TREND("1988")	-0.000226	0.001165	-0.194022	0.8481

R-squared	0.521693	Mean dependent var	0.002893
Adjusted R-squared	0.473863	S.D. dependent var	0.050541
S.E. of regression	0.036660	Akaike info criterion	-3.653168
Sum squared resid	0.026879	Schwarz criterion	-3.505060
Log likelihood	45.01143	Hannan-Quinn criter.	-3.615919
F-statistic	10.90709	Durbin-Watson stat	1.932564
Prob(F-statistic)	0.000627		

Appendix B.17 Augmented Dickey-Fuller Unit Root Test for LNEMP

Null Hypothesis: D(LNEMP) has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.282095	0.0022
Test critical values:		
1% level	-2.669359	
5% level	-1.956406	
10% level	-1.608495	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNEMP,2)

Method: Least Squares

Date: 08/11/16 Time: 10:41

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNEMP(-1))	-0.629340	0.191750	-3.282095	0.0034

R-squared	0.326398	Mean dependent var	0.002893
Adjusted R-squared	0.326398	S.D. dependent var	0.050541
S.E. of regression	0.041480	Akaike info criterion	-3.484695
Sum squared resid	0.037853	Schwarz criterion	-3.435325
Log likelihood	41.07399	Hannan-Quinn criter.	-3.472278
Durbin-Watson stat	1.904145		

Appendix B.18 Augmented Dickey-Fuller Unit Root Test for LNK

Null Hypothesis: LNK has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.262206	0.9165
Test critical values:		
1% level	-3.752946	
5% level	-2.998064	
10% level	-2.638752	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNK)

Method: Least Squares

Date: 08/11/16 Time: 10:43

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNK(-1)	-0.005195	0.019811	-0.262206	0.7958
D(LNK(-1))	0.531190	0.192826	2.754766	0.0122
C	0.088325	0.258663	0.341469	0.7363

R-squared	0.311501	Mean dependent var	0.039879
Adjusted R-squared	0.242651	S.D. dependent var	0.027364
S.E. of regression	0.023814	Akaike info criterion	-4.515970
Sum squared resid	0.011342	Schwarz criterion	-4.367862
Log likelihood	54.93366	Hannan-Quinn criter.	-4.478722
F-statistic	4.524354	Durbin-Watson stat	1.824850
Prob(F-statistic)	0.023935		

Appendix B.19 Augmented Dickey-Fuller Unit Root Test for LNK

Null Hypothesis: LNK has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 1 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.793113	0.2133
Test critical values:		
1% level	-4.416345	
5% level	-3.622033	
10% level	-3.248592	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNK)

Method: Least Squares

Date: 08/11/16 Time: 10:43

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNK(-1)	-0.284570	0.101883	-2.793113	0.0116
D(LNK(-1))	0.498566	0.167181	2.982194	0.0077
C	3.626125	1.291316	2.808085	0.0112
@TREND("1988")	0.012236	0.004399	2.781747	0.0119

R-squared	0.510755	Mean dependent var	0.039879
Adjusted R-squared	0.433506	S.D. dependent var	0.027364
S.E. of regression	0.020596	Akaike info criterion	-4.770665
Sum squared resid	0.008060	Schwarz criterion	-4.573188
Log likelihood	58.86265	Hannan-Quinn criter.	-4.721000
F-statistic	6.611795	Durbin-Watson stat	1.918443
Prob(F-statistic)	0.003028		

Appendix B.20 Augmented Dickey-Fuller Unit Root Test for LNK

Null Hypothesis: LNK has a unit root

Exogenous: None

Lag Length: 1 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	2.566710	0.9961
Test critical values:		
1% level	-2.669359	
5% level	-1.956406	
10% level	-1.608495	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNK)

Method: Least Squares

Date: 08/11/16 Time: 10:43

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNK(-1)	0.001567	0.000610	2.566710	0.0180
D(LNK(-1))	0.501044	0.167784	2.986244	0.0070

R-squared	0.307487	Mean dependent var	0.039879
Adjusted R-squared	0.274510	S.D. dependent var	0.027364
S.E. of regression	0.023308	Akaike info criterion	-4.597114
Sum squared resid	0.011408	Schwarz criterion	-4.498375
Log likelihood	54.86681	Hannan-Quinn criter.	-4.572281
Durbin-Watson stat	1.776164		

Appendix B.21 Augmented Dickey-Fuller Unit Root Test for LNK

Null Hypothesis: D(LNK) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.981671	0.0517
Test critical values:		
1% level	-3.752946	
5% level	-2.998064	
10% level	-2.638752	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNK,2)

Method: Least Squares

Date: 08/11/16 Time: 10:43

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNK(-1))	-0.493077	0.165369	-2.981671	0.0071
C	0.020536	0.007961	2.579491	0.0175

R-squared	0.297432	Mean dependent var	0.001721
Adjusted R-squared	0.263977	S.D. dependent var	0.027136
S.E. of regression	0.023280	Akaike info criterion	-4.599495
Sum squared resid	0.011381	Schwarz criterion	-4.500757
Log likelihood	54.89420	Hannan-Quinn criter.	-4.574663
F-statistic	8.890364	Durbin-Watson stat	1.787157
Prob(F-statistic)	0.007113		

Appendix B.22 Augmented Dickey-Fuller Unit Root Test for LNK

Null Hypothesis: D(LNK) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.618572	0.2760
Test critical values:		
1% level	-4.416345	
5% level	-3.622033	
10% level	-3.248592	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LNK,2)

Method: Least Squares

Date: 08/11/16 Time: 10:44

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNK(-1))	-0.506742	0.193519	-2.618572	0.0165
C	0.019432	0.011119	1.747641	0.0959
@TREND("1988")	0.000125	0.000856	0.145957	0.8854

R-squared	0.298180	Mean dependent var	0.001721
Adjusted R-squared	0.227998	S.D. dependent var	0.027136
S.E. of regression	0.023842	Akaike info criterion	-4.513603
Sum squared resid	0.011369	Schwarz criterion	-4.365495
Log likelihood	54.90644	Hannan-Quinn criter.	-4.476355
F-statistic	4.248668	Durbin-Watson stat	1.766602
Prob(F-statistic)	0.028991		



Appendix C. ARDL Model

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Appendix C.1 Estimated Equation for ARDL Model

Dependent Variable: LNGDP
 Method: ARDL
 Date: 08/11/16 Time: 10:46
 Sample (adjusted): 1992 2012
 Included observations: 21 after adjustments
 Maximum dependent lags: 4 (Automatic selection)
 Model selection method: Akaike info criterion (AIC)
 Dynamic regressors (4 lags, automatic): LNINF LNEMP LNK
 Fixed regressors: C
 Number of models evaluated: 500
 Selected Model: ARDL(4, 4, 4, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGDP(-1)	-1.083558	0.177169	-6.115961	0.1032
LNGDP(-2)	-1.030061	0.316003	-3.259656	0.1895
LNGDP(-3)	-1.251998	0.366254	-3.418385	0.1812
LNGDP(-4)	-1.082950	0.506366	-2.138670	0.2784
LNINF	-5.220716	4.769894	-1.094514	0.4713
LNINF(-1)	-8.678732	5.583156	-1.554449	0.3639
LNINF(-2)	5.263603	6.223198	0.845804	0.5531
LNINF(-3)	3.627462	5.836859	0.621475	0.6460
LNINF(-4)	5.211383	5.088865	1.024076	0.4924
LNEMP	-1.803385	2.846729	-0.633494	0.6405
LNEMP(-1)	3.081737	3.380551	0.911608	0.5294
LNEMP(-2)	3.650775	2.000486	1.824944	0.3191
LNEMP(-3)	6.221099	1.720262	3.616366	0.1717
LNEMP(-4)	-8.872626	2.198314	-4.036105	0.1546
LNK	8.342030	6.009457	1.388150	0.3974
LNK(-1)	-7.006909	6.252669	-1.120627	0.4638
LNK(-2)	-3.265646	10.14246	-0.321978	0.8017
LNK(-3)	5.539835	11.72097	0.472643	0.7189
LNK(-4)	6.053992	10.50938	0.576056	0.6673
C	-88.48478	36.43671	-2.428451	0.2487
R-squared	0.998651	Mean dependent var		11.84125
Adjusted R-squared	0.973018	S.D. dependent var		0.826040
S.E. of regression	0.135686	Akaike info criterion		-2.296702
Sum squared resid	0.018411	Schwarz criterion		-1.301918
Log likelihood	44.11537	Hannan-Quinn criter.		-2.080808
F-statistic	38.96006	Durbin-Watson stat		3.029763
Prob(F-statistic)	0.125593			

*Note: p-values and any subsequent tests do not account for model selection.

Appendix C.2 Bounds Test for Long Run Relationship

ARDL Bounds Test

Date: 08/11/16 Time: 10:47

Sample: 1992 2012

Included observations: 21

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	31.62044	3

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.37	3.2
5%	2.79	3.67
2.5%	3.15	4.08
1%	3.65	4.66

Test Equation:

Dependent Variable: D(LNGDP)

Method: Least Squares

Date: 08/11/16 Time: 10:47

Sample: 1992 2012

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	3.365009	1.115321	3.017078	0.2038
D(LNGDP(-2))	2.334947	0.849206	2.749564	0.2221
D(LNGDP(-3))	1.082950	0.506366	2.138670	0.2784
D(LNINF)	-5.220716	4.769894	-1.094514	0.4713
D(LNINF(-1))	-14.10245	6.776834	-2.080979	0.2852
D(LNINF(-2))	-8.838845	5.998091	-0.920896	0.5262
D(LNINF(-3))	-5.211383	5.088865	-1.024076	0.4924
D(LNEMP)	-1.803385	2.846729	-0.633494	0.6405
D(LNEMP(-1))	-0.999247	4.191739	-0.238385	0.8510
D(LNEMP(-2))	2.651528	3.103560	0.854350	0.5499
D(LNEMP(-3))	8.872626	2.198314	4.036105	0.1546
D(LNK)	8.342030	6.009457	1.388150	0.3974
D(LNK(-1))	-8.328181	3.757532	-2.216396	0.2698
D(LNK(-2))	-11.59383	8.409288	-1.378693	0.3995
D(LNK(-3))	-6.053992	10.50938	-0.576056	0.6673
C	-88.48478	36.43671	-2.428451	0.2487
LNINF(-1)	0.203000	5.206930	0.038986	0.9752
LNEMP(-1)	2.277599	5.945299	0.383092	0.7671
LNK(-1)	9.663302	3.449119	2.801673	0.2183
LNGDP(-1)	-5.448567	1.268339	-4.295827	0.1456
R-squared	0.998296	Mean dependent var		0.106246
Adjusted R-squa...	0.965921	S.D. dependent var		0.735007
S.E. of regression	0.135686	Akaike info criterion		-2.296702
Sum squared re...	0.018411	Schwarz criterion		-1.301918
Log likelihood	44.11537	Hannan-Quinn criter.		-2.080808
F-statistic	30.83516	Durbin-Watson stat		3.029763
Prob(F-statistic)	0.141007			

Appendix C.3 Cointegration and Long Run Form with ARDL Model

ARDL Cointegrating And Long Run Form

Dependent Variable: LNGDP

Selected Model: ARDL(4, 4, 4, 4)

Date: 08/11/16 Time: 10:48

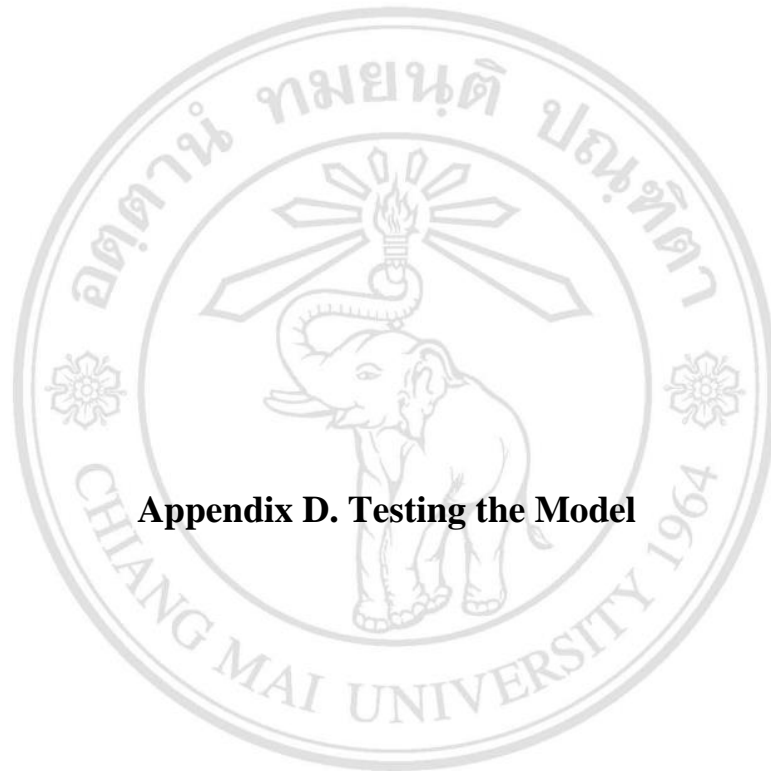
Sample: 1988 2012

Included observations: 21

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	3.365009	0.165938	20.278759	0.0314
D(LNGDP(-2))	2.334947	0.143079	16.319338	0.0390
D(LNGDP(-3))	1.082950	0.089142	12.148541	0.0523
D(LNINF)	-5.220716	1.040164	-5.019128	0.1252
D(LNINF(-1))	-14.102448	1.558262	-9.050114	0.0701
D(LNINF(-2))	-8.838845	1.092318	-8.091821	0.0783
D(LNINF(-3))	-5.211383	0.870890	-5.983974	0.1054
D(LNEMP)	-1.803385	0.678351	-2.658482	0.2290
D(LNEMP(-1))	-0.999247	0.493142	-2.026285	0.2919
D(LNEMP(-2))	2.651528	0.407632	6.504704	0.0971
D(LNEMP(-3))	8.872626	0.460736	19.257524	0.0330
D(LNK)	8.342030	1.406799	5.929796	0.1064
D(LNK(-1))	-8.328181	1.566846	-5.315252	0.1184
D(LNK(-2))	-11.593827	2.437081	-4.757260	0.1319
D(LNK(-3))	-6.053992	2.010642	-3.010975	0.2041
CointEq(-1)	-5.448567	0.193789	-28.116029	0.0226

$$\text{Cointeq} = \text{LNGDP} - (0.0373 \cdot \text{LNINF} + 0.4180 \cdot \text{LNEMP} + 1.7735 \cdot \text{LNK} - 16.2400)$$

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF	0.037257	0.947907	0.039305	0.9750
LNEMP	0.418018	1.084575	0.385421	0.7658
LNK	1.773549	0.844200	2.100864	0.2828
C	-16.240010	3.030950	-5.358060	0.1175



Appendix D. Testing the Model

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Appendix D.1 Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.475500	Prob. F(19,1)	0.8367
Obs*R-squared	18.90722	Prob. Chi-Square(19)	0.4628
Scaled explained SS	0.040790	Prob. Chi-Square(19)	1.0000

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

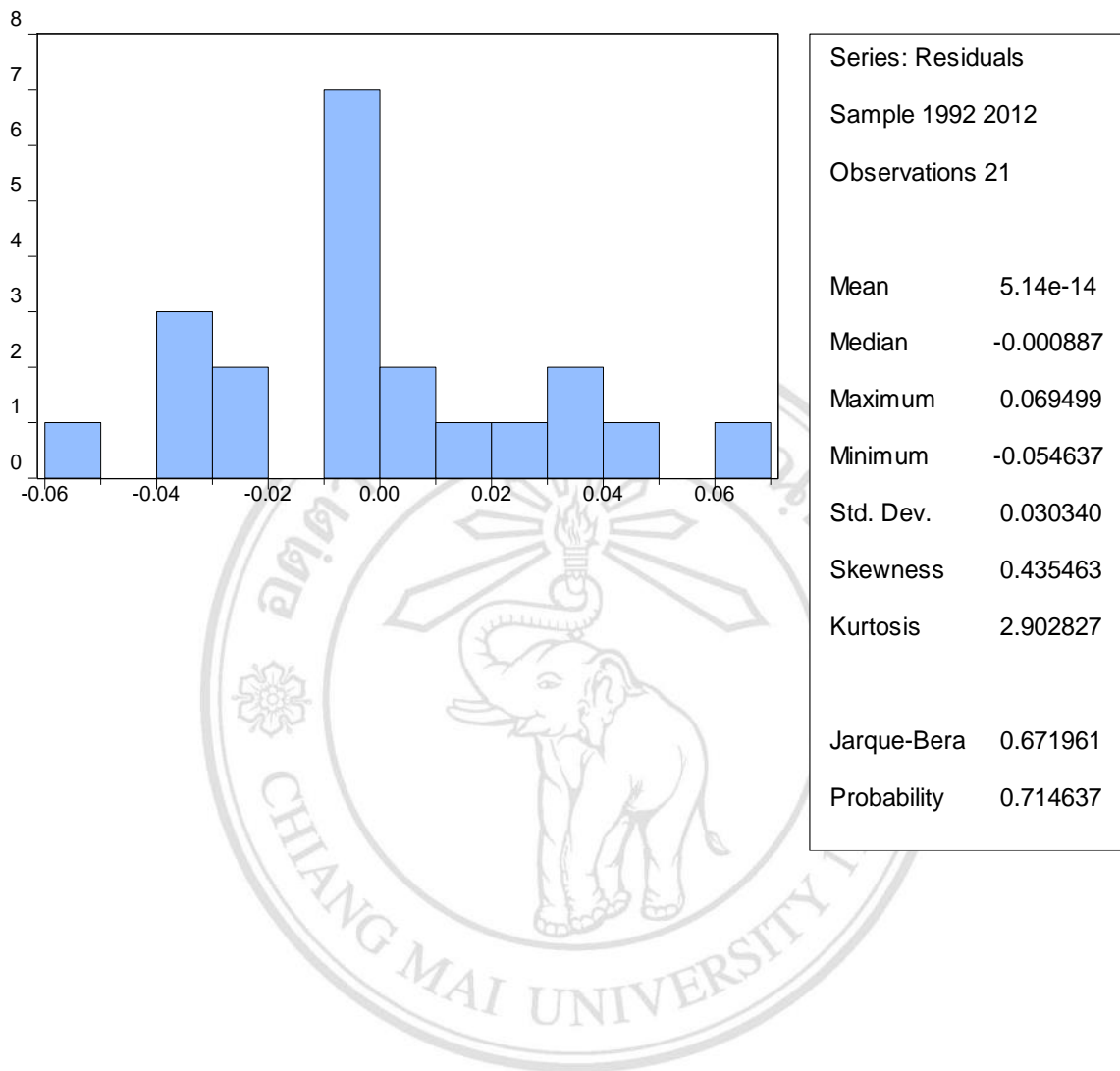
Date: 08/11/16 Time: 10:49

Sample: 1992 2012

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.019490	0.469805	-0.041486	0.9736
LNGDP(-1)	7.16E-05	0.002284	0.031351	0.9800
LNGDP(-2)	0.000710	0.004074	0.174136	0.8902
LNGDP(-3)	-0.000684	0.004722	-0.144919	0.9084
LNGDP(-4)	-0.004360	0.006529	-0.667739	0.6252
LNINF	-0.009522	0.061502	-0.154822	0.9022
LNINF(-1)	-0.043616	0.071988	-0.605878	0.6532
LNINF(-2)	-0.038891	0.080240	-0.484680	0.7127
LNINF(-3)	0.049745	0.075259	0.660982	0.6282
LNINF(-4)	0.080150	0.065614	1.221526	0.4367
LNEMP	-0.040966	0.036705	-1.116076	0.4651
LNEMP(-1)	-0.003609	0.043588	-0.082793	0.9474
LNEMP(-2)	-0.014872	0.025794	-0.576567	0.6670
LNEMP(-3)	-0.008888	0.022181	-0.400731	0.7574
LNEMP(-4)	0.004644	0.028344	0.163833	0.8966
LNK	0.038289	0.077484	0.494151	0.7078
LNK(-1)	0.040536	0.080620	0.502806	0.7034
LNK(-2)	-0.170691	0.130774	-1.305236	0.4162
LNK(-3)	0.075075	0.151127	0.496767	0.7065
LNK(-4)	0.035778	0.135505	0.264034	0.8357
R-squared	0.900344	Mean dependent var		0.000877
Adjusted R-squared	-0.993122	S.D. dependent var		0.001239
S.E. of regression	0.001750	Akaike info criterion		-10.99873
Sum squared resid	3.06E-06	Schwarz criterion		-10.00395
Log likelihood	135.4867	Hannan-Quinn criter.		-10.78284
F-statistic	0.475500	Durbin-Watson stat		3.029763
Prob(F-statistic)	0.836686			

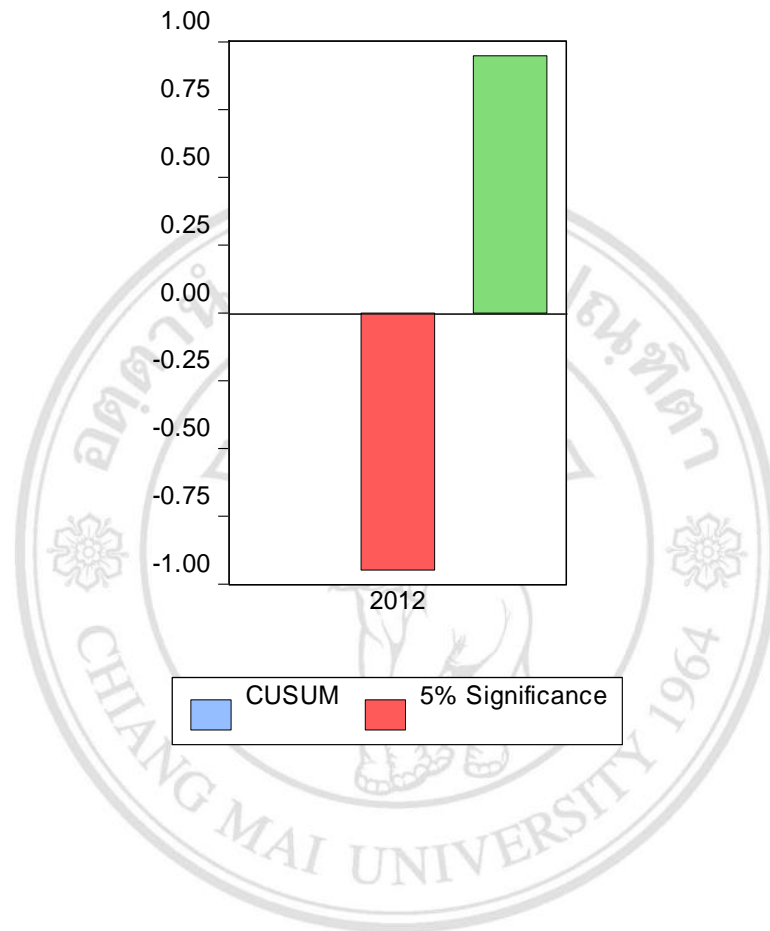
Appendix D.2 Normality Test



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Appendix D.3 CUSUM Test

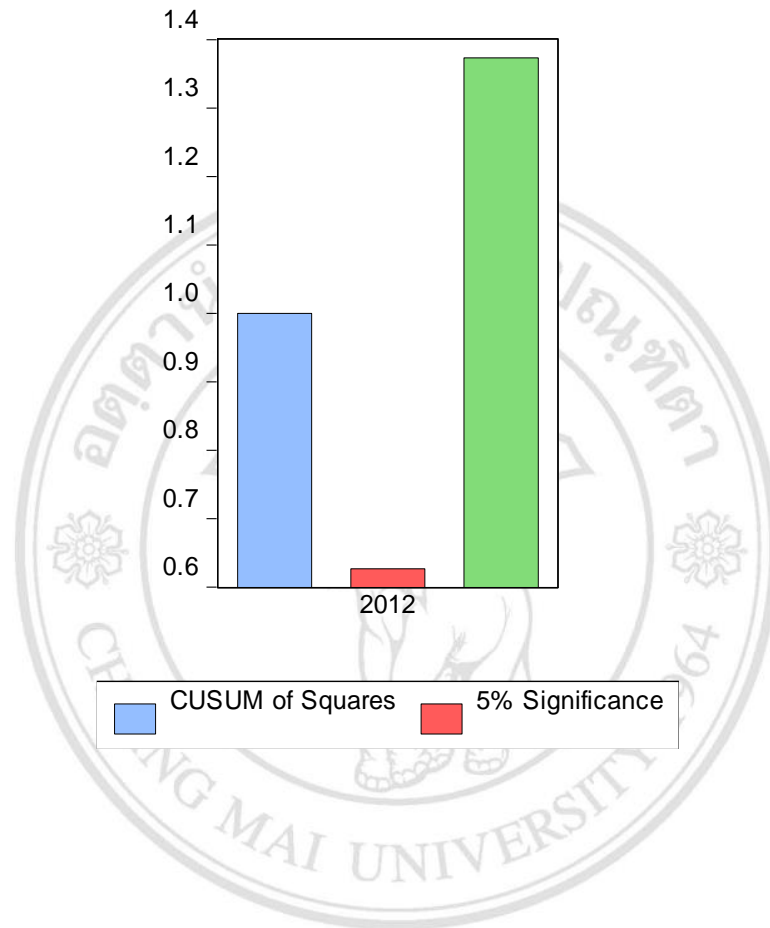
CUSUM Test



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Appendix D.4 CUSUM Square Test

CUSUM Square Test



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