

ภาคผนวก ก ผลการทดสอบ Unit roots

ตาราง 1ก ผลการทดสอบ unit root ที่ระดับ level, I(0), lag0 ของ ENERGY index รูปแบบสมการ

none

ADF Test Statistic	0.831785	1% Critical Value*	-2.5813
		5% Critical Value	-1.9423
		10% Critical Value	-1.6170

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE)

Method: Least Squares

Date: 05/23/05 Time: 00:19

Sample(adjusted): 2 132

Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CLOSE(-1)	0.008230	0.009895	0.831785	0.4071
R-squared	-0.004852	Mean dependent var		62.16359
Adjusted R-squared	-0.004852	S.D. dependent var		617.8920
S.E. of regression	619.3890	Akaike info criterion		15.70295
Sum squared resid	49873557	Schwarz criterion		15.72490
Log likelihood	-1027.543	Durbin-Watson stat		2.189180

ตาราง 2ก ผลการทดสอบ unit root ที่ระดับ level, I(0), lag0 ของ ENERGY index รูปแบบสมการ

intercept

ADF Test Statistic	-0.583620	1% Critical Value*	-3.4811
		5% Critical Value	-2.8835
		10% Critical Value	-2.5783

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE)

Method: Least Squares

Date: 05/23/05 Time: 00:20

Sample(adjusted): 2 132

Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CLOSE(-1)	-0.014869	0.025477	-0.583620	0.5605
C	137.0988	139.3383	0.983928	0.3270
R-squared	0.002633	Mean dependent var		62.16359
Adjusted R-squared	-0.005098	S.D. dependent var		617.8920
S.E. of regression	619.4650	Akaike info criterion		15.71074
Sum squared resid	49502056	Schwarz criterion		15.75463
Log likelihood	-1027.053	F-statistic		0.340612
Durbin-Watson stat	2.155156	Prob(F-statistic)		0.560495

ตาราง 3ก ผลการทดสอบ unit root ที่ระดับ level, I(0), lag 0 ของ ENERGY index รูปแบบสมการ

trend and intercept

ADF Test Statistic	-0.697935	1% Critical Value*	-4.0303
		5% Critical Value	-3.4445
		10% Critical Value	-3.1468

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE)

Method: Least Squares

Date: 05/23/05 Time: 00:21

Sample(adjusted): 2 132

Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CLOSE(-1)	-0.017893	0.025637	-0.697935	0.4865
C	53.95095	160.8026	0.335510	0.7378
@TREND(1)	1.490732	1.440229	1.035066	0.3026
R-squared	0.010912	Mean dependent var		62.16359
Adjusted R-squared	-0.004542	S.D. dependent var		617.8920
S.E. of regression	619.2937	Akaike info criterion		15.71767
Sum squared resid	49091162	Schwarz criterion		15.78351
Log likelihood	-1026.507	F-statistic		0.706081
Durbin-Watson stat	2.166626	Prob(F-statistic)		0.495487

ตาราง 4ก ผลการทดสอบ unit root ที่ระดับ 1st different, I(1), lag0 ของ ENERGY index รูปแบบ

สมการ none

ADF Test Statistic	-12.32234	1% Critical Value*	-2.5816
		5% Critical Value	-1.9424
		10% Critical Value	-1.6170

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01,2)

Method: Least Squares

Date: 04/23/05 Time: 11:26

Sample(adjusted): 4 132

Included observations: 129 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SER01(-1))	-1.082805	0.087873	-12.32234	0.0000
R-squared	0.542586	Mean dependent var		-4.301318
Adjusted R-squared	0.542586	S.D. dependent var		919.2886
S.E. of regression	621.7371	Akaike info criterion		15.71063
Sum squared resid	49479294	Schwarz criterion		15.73280
Log likelihood	-1012.336	Durbin-Watson stat		1.985738

ตาราง 5ก ผลการทดสอบ unit root ที่ระดับ 1^{st} different, $I(1)$, lag0 ของ ENERGY index รูปแบบ

สัมถการ intercept

ADF Test Statistic	-12.39006	1% Critical Value*	-3.4819
		5% Critical Value	-2.8838
		10% Critical Value	-2.5785

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01,2)

Method: Least Squares

Date: 04/23/05 Time: 11:57

Sample(adjusted): 4 132

Included observations: 129 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SER01(-1))	-1.092774	0.088198	-12.39006	0.0000
C	62.90694	54.94296	1.144950	0.2544
R-squared	0.547259	Mean dependent var		-4.301318
Adjusted R-squared	0.543694	S.D. dependent var		919.2886
S.E. of regression	620.9833	Akaike info criterion		15.71587
Sum squared resid	48973780	Schwarz criterion		15.76021
Log likelihood	-1011.673	F-statistic		153.5135
Durbin-Watson stat	1.985494	Prob(F-statistic)		0.000000

ตาราง 6ก ผลการทดสอบ unit root ที่ระดับ 1^{st} different, $I(1)$, lag0 ของ ENERGY index รูปแบบ

สัมถการ trend and intercept

ADF Test Statistic	-12.45476	1% Critical Value*	-4.0314
		5% Critical Value	-3.4450
		10% Critical Value	-3.1471

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01,2)

Method: Least Squares

Date: 04/23/05 Time: 11:58

Sample(adjusted): 4 132

Included observations: 129 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SER01(-1))	-1.101234	0.088419	-12.45476	0.0000
C	-48.04763	112.4602	-0.427241	0.6699
@TREND(1)	1.663804	1.471926	1.130358	0.2605
R-squared	0.551804	Mean dependent var		-4.301318
Adjusted R-squared	0.544690	S.D. dependent var		919.2886
S.E. of regression	620.3055	Akaike info criterion		15.72128
Sum squared resid	48482144	Schwarz criterion		15.78779

Log likelihood	-1011.023	F-statistic	77.56346
Durbin-Watson stat	1.988192	Prob(F-statistic)	0.000000

ตาราง 7ก ผลการทดสอบ unit root ที่ระดับ level, I(0), lag9 ของอัตราดอกเบี้ยเงินฝากประจำ 12 เดือน

รูปแบบสมการ none

ADF Test Statistic	-1.228794	1% Critical Value*	-2.5825
		5% Critical Value	-1.9426
		10% Critical Value	-1.6171

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LLL)

Method: Least Squares

Date: 05/23/05 Time: 00:34

Sample(adjusted): 11 132

Included observations: 122 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LLL(-1)	-0.004987	0.004059	-1.228794	0.2217
D(LLL(-1))	0.700274	0.094006	7.449262	0.0000
D(LLL(-2))	-0.243840	0.114929	-2.121655	0.0361
D(LLL(-3))	0.052559	0.117194	0.448476	0.6547
D(LLL(-4))	0.031008	0.117022	0.264971	0.7915
D(LLL(-5))	0.045611	0.116820	0.390438	0.6970
D(LLL(-6))	-0.002555	0.116678	-0.021900	0.9826
D(LLL(-7))	-0.021151	0.116335	-0.181813	0.8561
D(LLL(-8))	-0.001168	0.113925	-0.010255	0.9918
D(LLL(-9))	0.042167	0.092434	0.456189	0.6491
R-squared	0.368787	Mean dependent var		-0.061749
Adjusted R-squared	0.318064	S.D. dependent var		0.377095
S.E. of regression	0.311402	Akaike info criterion		0.582951
Sum squared resid	10.86080	Schwarz criterion		0.812788
Log likelihood	-25.55999	F-statistic		7.270672
Durbin-Watson stat	2.000882	Prob(F-statistic)		0.000000

ตาราง 8ก ผลการทดสอบ unit root ที่ระดับ level, I(0) lag9 ของอัตราดอกเบี้ยเงินฝากประจำ 12 เดือน

รูปแบบสมการ intercept

ADF Test Statistic	-0.829003	1% Critical Value*	-3.4847
		5% Critical Value	-2.8851
		10% Critical Value	-2.5792

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LLL)

Method: Least Squares

Date: 05/23/05 Time: 00:36

Sample(adjusted): 11 132
 Included observations: 122 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LLL(-1)	-0.006628	0.007995	-0.829003	0.4089
D(LLL(-1))	0.701542	0.094554	7.419509	0.0000
D(LLL(-2))	-0.242200	0.115620	-2.094783	0.0385
D(LLL(-3))	0.054007	0.117847	0.458279	0.6476
D(LLL(-4))	0.032409	0.117665	0.275433	0.7835
D(LLL(-5))	0.047111	0.117483	0.401004	0.6892
D(LLL(-6))	-0.000871	0.117385	-0.007423	0.9941
D(LLL(-7))	-0.019285	0.117089	-0.164702	0.8695
D(LLL(-8))	-0.000234	0.114475	-0.002047	0.9984
D(LLL(-9))	0.045672	0.093981	0.485970	0.6279
C	0.013699	0.057427	0.238551	0.8119
R-squared	0.369110	Mean dependent var		-0.061749
Adjusted R-squared	0.312273	S.D. dependent var		0.377095
S.E. of regression	0.312722	Akaike info criterion		0.598832
Sum squared resid	10.85524	Schwarz criterion		0.851653
Log likelihood	-25.52873	F-statistic		6.494195
Durbin-Watson stat	2.001463	Prob(F-statistic)		0.000000

ตาราง 9ก ผลการทดสอบ unit root ที่ระดับ level, I(0) lag9 ของอัตราดอกเบี้ยเงินฝากประจำ 12 เดือน

รูปแบบสมการ trend and intercept

ADF Test Statistic	-2.921615	1% Critical Value*	-4.0355
		5% Critical Value	-3.4469
		10% Critical Value	-3.1482

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LLL)

Method: Least Squares

Date: 05/23/05 Time: 00:37

Sample(adjusted): 11 132

Included observations: 122 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LLL(-1)	-0.055633	0.019042	-2.921615	0.0042
D(LLL(-1))	0.682524	0.091977	7.420563	0.0000
D(LLL(-2))	-0.212861	0.112649	-1.889592	0.0614
D(LLL(-3))	0.066632	0.114415	0.582367	0.5615
D(LLL(-4))	0.041910	0.114200	0.366991	0.7143
D(LLL(-5))	0.054022	0.114001	0.473872	0.6365
D(LLL(-6))	0.014042	0.114001	0.123175	0.9022
D(LLL(-7))	-0.008672	0.113654	-0.076299	0.9393
D(LLL(-8))	0.000814	0.111056	0.007330	0.9942
D(LLL(-9))	0.063628	0.091396	0.696175	0.4878
C	0.699123	0.249538	2.801673	0.0060
@TREND(1)	-0.005603	0.001988	-2.817901	0.0057
R-squared	0.411586	Mean dependent var		-0.061749

Adjusted R-squared	0.352745	S.D. dependent var	0.377095
S.E. of regression	0.303381	Akaike info criterion	0.545525
Sum squared resid	10.12439	Schwarz criterion	0.821330
Log likelihood	-21.27700	F-statistic	6.994835
Durbin-Watson stat	2.006662	Prob(F-statistic)	0.000000

ตาราง 10ก ผลการทดสอบ unit root ที่ระดับ 1^{st} different, I(1) lag9 ของอัตราดอกเบี้ยเงินฝากประจำ

12 เดือน รูปแบบสมการ none

ADF Test Statistic	-2.783282	1% Critical Value*	-2.5827
		5% Critical Value	-1.9426
		10% Critical Value	-1.6171

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LLL,2)

Method: Least Squares

Date: 05/23/05 Time: 00:44

Sample(adjusted): 12 132

Included observations: 121 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LLL(-1))	-0.388077	0.139431	-2.783282	0.0063
D(LLL(-1),2)	0.094047	0.146083	0.643788	0.5210
D(LLL(-2),2)	-0.148883	0.140657	-1.058483	0.2921
D(LLL(-3),2)	-0.092150	0.135199	-0.681587	0.4969
D(LLL(-4),2)	-0.066409	0.129564	-0.512557	0.6093
D(LLL(-5),2)	-0.027978	0.124168	-0.225322	0.8221
D(LLL(-6),2)	-0.027299	0.117316	-0.232697	0.8164
D(LLL(-7),2)	-0.057480	0.108853	-0.528049	0.5985
D(LLL(-8),2)	-0.052963	0.096865	-0.546767	0.5856
D(LLL(-9),2)	-0.036606	0.093225	-0.392658	0.6953

R-squared	0.254101	Mean dependent var	-0.002443
Adjusted R-squared	0.193622	S.D. dependent var	0.349569
S.E. of regression	0.313908	Akaike info criterion	0.599592
Sum squared resid	10.93771	Schwarz criterion	0.830650
Log likelihood	-26.27534	F-statistic	4.201518
Durbin-Watson stat	2.017288	Prob(F-statistic)	0.000108

ตาราง 11ก ผลการทดสอบ unit root ที่ระดับ 1^{st} different, I(1) lag9 ของอัตราดอกเบี้ยเงินฝากประจำ

12 เดือน รูปแบบสมการ intercept

ADF Test Statistic	-2.948889	1% Critical Value*	-3.4852
		5% Critical Value	-2.8853
		10% Critical Value	-2.5793

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LLL,2)
 Method: Least Squares
 Date: 05/23/05 Time: 00:45
 Sample(adjusted): 12 132
 Included observations: 121 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LLL(-1))	-0.426584	0.144659	-2.948889	0.0039
D(LLL(-1),2)	0.124188	0.149166	0.832548	0.4069
D(LLL(-2),2)	-0.121265	0.143347	-0.845955	0.3994
D(LLL(-3),2)	-0.069384	0.137106	-0.506060	0.6138
D(LLL(-4),2)	-0.048058	0.130860	-0.367245	0.7141
D(LLL(-5),2)	-0.012838	0.125090	-0.102627	0.9184
D(LLL(-6),2)	-0.014440	0.118021	-0.122350	0.9028
D(LLL(-7),2)	-0.047853	0.109279	-0.437897	0.6623
D(LLL(-8),2)	-0.046362	0.097091	-0.477514	0.6339
D(LLL(-9),2)	-0.031314	0.093376	-0.335350	0.7380
C	-0.029610	0.029632	-0.999279	0.3199
R-squared	0.260811	Mean dependent var		-0.002443
Adjusted R-squared	0.193612	S.D. dependent var		0.349569
S.E. of regression	0.313910	Akaike info criterion		0.607085
Sum squared resid	10.83932	Schwarz criterion		0.861247
Log likelihood	-25.72861	F-statistic		3.881173
Durbin-Watson stat	2.016985	Prob(F-statistic)		0.000157

ตาราง 12 ผลการทดสอบ unit root 1st different, I(1) lag9 ของอัตราดอกเบี้ยเงินฝากประจำ 12 เดือน

รูปแบบสมการ trend and intercept

ADF Test Statistic	-2.887716	1% Critical Value*	-4.0361
		5% Critical Value	-3.4472
		10% Critical Value	-3.1484

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LLL,2)
 Method: Least Squares
 Date: 05/23/05 Time: 00:47
 Sample(adjusted): 12 132
 Included observations: 121 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LLL(-1))	-0.434704	0.150536	-2.887716	0.0047
D(LLL(-1),2)	0.131606	0.154079	0.854146	0.3949
D(LLL(-2),2)	-0.114219	0.147976	-0.771873	0.4419
D(LLL(-3),2)	-0.062821	0.141338	-0.444476	0.6576
D(LLL(-4),2)	-0.041888	0.134796	-0.310750	0.7566
D(LLL(-5),2)	-0.007284	0.128492	-0.056689	0.9549
D(LLL(-6),2)	-0.009757	0.120694	-0.080843	0.9357
D(LLL(-7),2)	-0.043936	0.111390	-0.394431	0.6940
D(LLL(-8),2)	-0.043571	0.098452	-0.442563	0.6590
D(LLL(-9),2)	-0.029227	0.094329	-0.309844	0.7573
C	-0.017522	0.065749	-0.266506	0.7904

@TREND(1)	-0.000176	0.000854	-0.206180	0.8370
R-squared	0.261099	Mean dependent var		-0.002443
Adjusted R-squared	0.186531	S.D. dependent var		0.349569
S.E. of regression	0.315285	Akaike info criterion		0.623224
Sum squared resid	10.83509	Schwarz criterion		0.900492
Log likelihood	-25.70502	F-statistic		3.501491
Durbin-Watson stat	2.015659	Prob(F-statistic)		0.000323

ตาราง 13ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag0 ของอัตราเงินเฟ้อ รูปแบบสมการ none

ADF Test Statistic	-6.40531509937	1% Critical Value*	-2.58134683139
		5% Critical Value	-1.94233810902
		10% Critical Value	-1.61698166924

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01)

Method: Least Squares

Date: 04/22/05 Time: 23:19

Sample(adjusted): 2 132

Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SER01(-1)	-0.073839	0.472965418949	-0.15627	2.5188001724e-09
R-squared	0.239807186828	Mean dependent var		-
Adjusted R-squared	0.239807186828	var		0.005257328244
S.E. of regression	0.438677855851	S.D. dependent var		0.503134192251
Sum squared resid	25.0169739578	Akaike info criterion		1.19750140516
Log likelihood	-77.4363420382	Schwarz criterion		1.21944947633
		Durbin-Watson stat		2.16130513525

ตาราง 14ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag0 ของอัตราเงินเฟ้อ รูปแบบสมการ intercept

ADF Test Statistic	-8.066826	1% Critical Value*	-3.4811
		5% Critical Value	-2.8835
		10% Critical Value	-2.5783

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01)

Method: Least Squares

Date: 04/23/05 Time: 12:10
 Sample(adjusted): 2 132
 Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SER01(-1)	-0.668869	0.082916	-8.066826	0.0000
C	0.185284	0.043039	4.305046	0.0000
R-squared	0.335304	Mean dependent var		-0.005257
Adjusted R-squared	0.330151	S.D. dependent var		0.503134
S.E. of regression	0.411787	Akaike info criterion		1.078526
Sum squared resid	21.87430	Schwarz criterion		1.122422
Log likelihood	-68.64347	F-statistic		65.07368
Durbin-Watson stat	2.013808	Prob(F-statistic)		0.000000

ตาราง 15ก ผลการทดสอบ unit root ที่ระดับ level, I(0), lag0 ของอัตราเงินเฟ้อ รูปแบบสมการ trend and intercept

ADF Test Statistic	-8.768236	1% Critical Value*	-4.0303
		5% Critical Value	-3.4445
		10% Critical Value	-3.1468

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01)

Method: Least Squares

Date: 04/23/05 Time: 12:12

Sample(adjusted): 2 132

Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SER01(-1)	-0.749952	0.085531	-8.768236	0.0000
C	0.393702	0.084031	4.685202	0.0000
@TREND(1)	-0.002808	0.000981	-2.861064	0.0049
R-squared	0.375257	Mean dependent var		-0.005257
Adjusted R-squared	0.365495	S.D. dependent var		0.503134
S.E. of regression	0.400776	Akaike info criterion		1.031804
Sum squared resid	20.55950	Schwarz criterion		1.097649
Log likelihood	-64.58319	F-statistic		38.44208
Durbin-Watson stat	1.976707	Prob(F-statistic)		0.000000

ตาราง 16ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag9 ของราคาน้ำมันดิบ DUBAI ที่มีการซื้อ

ขายล่วงหน้า 1 เดือน รูปแบบสมการ none

ADF Test Statistic	0.914521	1% Critical Value*	-2.5825
		5% Critical Value	-1.9426
		10% Critical Value	-1.6171

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE)

Method: Least Squares

Date: 05/23/05 Time: 10:47

Sample(adjusted): 11 132

Included observations: 122 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CLOSE(-1)	0.007380	0.008070	0.914521	0.3624
D(CLOSE(-1))	-0.066206	0.096090	0.688995	0.4923
D(CLOSE(-2))	-0.122435	0.096161	-1.273235	0.2056
D(CLOSE(-3))	-0.062398	0.097420	-0.640500	0.5232
D(CLOSE(-4))	0.009868	0.098391	0.100296	0.9203
D(CLOSE(-5))	-0.022647	0.099005	-0.228750	0.8195
D(CLOSE(-6))	-0.012739	0.103039	-0.123636	0.9018
D(CLOSE(-7))	-0.075035	0.105365	-0.712142	0.4779
D(CLOSE(-8))	-0.024707	0.103845	-0.237919	0.8124
D(CLOSE(-9))	0.048260	0.102513	0.470768	0.6387
R-squared	0.029861	Mean dependent var		0.157470
Adjusted R-squared	-0.048096	S.D. dependent var		1.726947
S.E. of regression	1.767989	Akaike info criterion		4.055974
Sum squared resid	350.0878	Schwarz criterion		4.285812
Log likelihood	-237.4144	F-statistic		0.383046
Durbin-Watson stat	1.999979	Prob(F-statistic)		0.941122

ตาราง 17ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag9 ของราคาน้ำมันดิบ DUBAI ที่มีการซื้อ

ขายล่วงหน้า 1 เดือน รูปแบบสมการ intercept

ADF Test Statistic	-0.607178	1% Critical Value*	-3.4847
		5% Critical Value	-2.8851
		10% Critical Value	-2.5792

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE)

Method: Least Squares

Date: 05/23/05 Time: 10:48

Sample(adjusted): 11 132

Included observations: 122 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CLOSE(-1)	-0.018525	0.030510	-0.607178	0.5450
D(CLOSE(-1))	0.087310	0.099128	0.880779	0.3803
D(CLOSE(-2))	-0.100647	0.099387	-1.012680	0.3134
D(CLOSE(-3))	-0.040049	0.100767	-0.397441	0.6918
D(CLOSE(-4))	0.028638	0.100770	0.284188	0.7768
D(CLOSE(-5))	-0.002286	0.101767	-0.022459	0.9821
D(CLOSE(-6))	0.001540	0.104410	0.014749	0.9883
D(CLOSE(-7))	-0.057793	0.107273	-0.538747	0.5911
D(CLOSE(-8))	-0.012768	0.104830	-0.121799	0.9033
D(CLOSE(-9))	0.062280	0.103844	0.599749	0.5499
C	0.560741	0.636839	0.880507	0.3805
R-squared	0.036590	Mean dependent var	0.157470	
Adjusted R-squared	-0.050203	S.D. dependent var	1.726947	
S.E. of regression	1.769765	Akaike info criterion	4.065407	
Sum squared resid	347.6595	Schwarz criterion	4.318229	
Log likelihood	-236.9899	F-statistic	0.421579	
Durbin-Watson stat	2.006703	Prob(F-statistic)	0.933573	

ตาราง 18ก ผลการทดสอบ unit root ที่ระดับ level, I(0), lag9 ของราคาน้ำมันดิบ DUBAI ที่มีการซื้อขายล่วงหน้า 1 เดือน รูปแบบสมการ trend and intercept

ADF Test Statistic	-2.165767	1% Critical Value*	-4.0355
		5% Critical Value	-3.4469
		10% Critical Value	-3.1482

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE)

Method: Least Squares

Date: 05/23/05 Time: 10:50

Sample(adjusted): 11 132

Included observations: 122 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CLOSE(-1)	-0.109683	0.050644	-2.165767	0.0325
D(CLOSE(-1))	0.137635	0.099967	1.376801	0.1714
D(CLOSE(-2))	-0.048967	0.100353	-0.487943	0.6266
D(CLOSE(-3))	0.004667	0.101009	0.046206	0.9632
D(CLOSE(-4))	0.069455	0.100680	0.689854	0.4917
D(CLOSE(-5))	0.041645	0.101903	0.408668	0.6836
D(CLOSE(-6))	0.041549	0.104136	0.398989	0.6907
D(CLOSE(-7))	-0.013388	0.107256	-0.124821	0.9009
D(CLOSE(-8))	0.018147	0.103923	0.174617	0.8617
D(CLOSE(-9))	0.098491	0.103308	0.953371	0.3425
C	1.217906	0.691445	1.761392	0.0810
@TREND(1)	0.017349	0.007769	2.233195	0.0276
R-squared	0.078375	Mean dependent var	0.157470	
Adjusted R-squared	-0.013788	S.D. dependent var	1.726947	

S.E. of regression	1.738811	Akaike info criterion	4.037461
Sum squared resid	332.5810	Schwarz criterion	4.313266
Log likelihood	-234.2851	F-statistic	0.850398
Durbin-Watson stat	2.023903	Prob(F-statistic)	0.590619

ตาราง 19ก ผลการทดสอบ unit root 1st different, I(1) lag9 ของราคาน้ำมันดิบ DUBAI ที่มีการซื้อขาย

ล่วงหน้า 1 เดือน รูปแบบสมการ none

ADF Test Statistic	-2.971962	1% Critical Value*	-2.5827
		5% Critical Value	-1.9426
		10% Critical Value	-1.6171

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE,2)

Method: Least Squares

Date: 05/23/05 Time: 10:53

Sample(adjusted): 12 132

Included observations: 121 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CLOSE(-1))	-0.930303	0.313027	-2.971962	0.0036
D(CLOSE(-1),2)	0.004508	0.297801	0.015137	0.9880
D(CLOSE(-2),2)	-0.100705	0.279427	-0.360400	0.7192
D(CLOSE(-3),2)	-0.141448	0.261002	-0.541943	0.5889
D(CLOSE(-4),2)	-0.113051	0.239992	-0.471063	0.6385
D(CLOSE(-5),2)	-0.125351	0.220300	-0.569003	0.5705
D(CLOSE(-6),2)	-0.117868	0.192996	-0.610728	0.5426
D(CLOSE(-7),2)	-0.186615	0.167812	-1.112045	0.2685
D(CLOSE(-8),2)	-0.169785	0.131244	-1.293660	0.1985
D(CLOSE(-9),2)	-0.131088	0.102145	-1.283348	0.2020
R-squared	0.479449	Mean dependent var	-0.018189	
Adjusted R-squared	0.437243	S.D. dependent var	2.357796	
S.E. of regression	1.768752	Akaike info criterion	4.057454	
Sum squared resid	347.2615	Schwarz criterion	4.288511	
Log likelihood	-235.4760	F-statistic	11.35953	
Durbin-Watson stat	2.034492	Prob(F-statistic)	0.000000	

ตาราง 20ก ผลการทดสอบ unit root 1st different, I(1) lag9 ของราคาน้ำมันดิบ DUBAI ที่มีการซื้อขาย

ล่วงหน้า 1 เดือน รูปแบบสมการ intercept

ADF Test Statistic	-3.127572	1% Critical Value*	-3.4852
		5% Critical Value	-2.8853
		10% Critical Value	-2.5793

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE,2)

Method: Least Squares

Date: 05/23/05 Time: 10:54

Sample(adjusted): 12 132

Included observations: 121 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CLOSE(-1))	-1.033866	0.330565	-3.127572	0.0023
D(CLOSE(-1),2)	0.097743	0.312790	0.312486	0.7553
D(CLOSE(-2),2)	-0.017580	0.292160	-0.060171	0.9521
D(CLOSE(-3),2)	-0.069815	0.271166	-0.257460	0.7973
D(CLOSE(-4),2)	-0.051892	0.248078	-0.209177	0.8347
D(CLOSE(-5),2)	-0.075030	0.226291	-0.331564	0.7408
D(CLOSE(-6),2)	-0.077138	0.197491	-0.390591	0.6969
D(CLOSE(-7),2)	-0.156574	0.170643	-0.917555	0.3609
D(CLOSE(-8),2)	-0.151177	0.132647	-1.139694	0.2569
D(CLOSE(-9),2)	-0.121596	0.102628	-1.184823	0.2386
C	0.165888	0.169872	0.976546	0.3309
R-squared	0.483924	Mean dependent var	-0.018189	
Adjusted R-squared	0.437007	S.D. dependent var	2.357796	
S.E. of regression	1.769121	Akaike info criterion	4.065351	
Sum squared resid	344.2768	Schwarz criterion	4.319513	
Log likelihood	-234.9537	F-statistic	10.31467	
Durbin-Watson stat	2.028656	Prob(F-statistic)	0.000000	

ตาราง 21 ผลการทดสอบ unit root 1st different, I(1) lag9 ของราคาน้ำมันดิบ DUBAI ที่มีการซื้อขาย

ล่วงหน้า 1 เดือน รูปแบบสมการ trend and intercept

ADF Test Statistic	-3.225051	1% Critical Value*	-4.0361
		5% Critical Value	-3.4472
		10% Critical Value	-3.1484

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE,2)

Method: Least Squares

Date: 05/23/05 Time: 10:56

Sample(adjusted): 12 132

Included observations: 121 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CLOSE(-1))	-1.097176	0.340204	-3.225051	0.0017
D(CLOSE(-1),2)	0.153860	0.320867	0.479515	0.6325
D(CLOSE(-2),2)	0.031714	0.298894	0.106105	0.9157
D(CLOSE(-3),2)	-0.029918	0.276032	-0.108386	0.9139
D(CLOSE(-4),2)	-0.020015	0.251571	-0.079562	0.9367
D(CLOSE(-5),2)	-0.051901	0.228442	-0.227193	0.8207
D(CLOSE(-6),2)	-0.058564	0.199129	-0.294100	0.7692
D(CLOSE(-7),2)	-0.144867	0.171522	-0.844598	0.4002

D(CLOSE(-8),2)	-0.143689	0.133178	-1.078926	0.2830
D(CLOSE(-9),2)	-0.118313	0.102869	-1.150125	0.2526
C	-0.096581	0.366282	-0.263680	0.7925
@TREND(1)	0.003847	0.004754	0.809170	0.4202
R-squared	0.487005	Mean dependent var	-0.018189	
Adjusted R-squared	0.435235	S.D. dependent var	2.357796	
S.E. of regression	1.771904	Akaike info criterion	4.075891	
Sum squared resid	342.2211	Schwarz criterion	4.353159	
Log likelihood	-234.5914	F-statistic	9.407066	
Durbin-Watson stat	2.025995	Prob(F-statistic)	0.000000	

ตาราง 22ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag0 ของดัชนีอุตสาหกรรม รูปแบบสมการ

none

ADF Test Statistic	0.414742	1% Critical Value*	-2.5813
		5% Critical Value	-1.9423
		10% Critical Value	-1.6170

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDP)

Method: Least Squares

Date: 05/23/05 Time: 11:11

Sample(adjusted): 2 132

Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	0.002018	0.004866	0.414742	0.6790
R-squared	-0.002314	Mean dependent var	0.382443	
Adjusted R-squared	-0.002314	S.D. dependent var	6.362637	
S.E. of regression	6.369996	Akaike info criterion	6.548679	
Sum squared resid	5274.990	Schwarz criterion	6.570627	
Log likelihood	-427.9385	Durbin-Watson stat	2.956284	

ตาราง 23ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag0 ของดัชนีอุตสาหกรรม รูปแบบสมการ

intercept

ADF Test Statistic	-1.797406	1% Critical Value*	-3.4811
		5% Critical Value	-2.8835
		10% Critical Value	-2.5783

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDP)

Method: Least Squares

Date: 05/23/05 Time: 11:19

Sample(adjusted): 2 132
 Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	-0.058231	0.032397	-1.797406	0.0746
C	6.968971	3.705686	1.880616	0.0623
R-squared	0.024432	Mean dependent var		0.382443
Adjusted R-squared	0.016870	S.D. dependent var		6.362637
S.E. of regression	6.308741	Akaike info criterion		6.536899
Sum squared resid	5134.228	Schwarz criterion		6.580795
Log likelihood	-426.1669	F-statistic		3.230670
Durbin-Watson stat	2.858239	Prob(F-statistic)		0.074610

ตาราง 24ก ผลการทดสอบ unit root ที่ระดับ level, I(0), lag0 ของดัชนีอุตสาหกรรม รูปแบบสมการ

trend and intercept

ADF Test Statistic	-4.180905	1% Critical Value*	-4.0303
		5% Critical Value	-3.4445
		10% Critical Value	-3.1468

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDP)

Method: Least Squares

Date: 05/23/05 Time: 11:19

Sample(adjusted): 2 132

Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	-0.240304	0.057477	-4.180905	0.0001
C	21.15395	5.170518	4.091263	0.0001
@TREND(1)	0.097110	0.025859	3.755284	0.0003
R-squared	0.121247	Mean dependent var		0.382443
Adjusted R-squared	0.107517	S.D. dependent var		6.362637
S.E. of regression	6.010869	Akaike info criterion		6.447650
Sum squared resid	4624.710	Schwarz criterion		6.513494
Log likelihood	-419.3211	F-statistic		8.830480
Durbin-Watson stat	2.622329	Prob(F-statistic)		0.000256

ตาราง 25 ผลการทดสอบ unit root Ist different, I(1) lag0 ของดัชนีอุตสาหกรรม รูปแบบสมการ

none

ADF Test Statistic	-18.64095	1% Critical Value*	-2.5817
		5% Critical Value	-1.9424
		10% Critical Value	-1.6170

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01,2)

Method: Least Squares

Date: 04/23/05 Time: 11:45

Sample(adjusted): 3 130

Included observations: 128 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SER01(-1))	-1.470260	0.078873	-18.64095	0.0000
R-squared	0.732333	Mean dependent var		0.059375
Adjusted R-squared	0.732333	S.D. dependent var		10.94990
S.E. of regression	5.665093	Akaike info criterion		6.314306
Sum squared resid	4075.847	Schwarz criterion		6.336587
Log likelihood	-403.1156	Durbin-Watson stat		1.997914

ตาราง 26ก ผลการทดสอบ unit root 1^{st} different, I(1) lag0 ของดัชนีอุตสาหกรรม รูปแบบสมการ

intercept

ADF Test Statistic	-18.71835	1% Critical Value*	-3.4823
		5% Critical Value	-2.8840
		10% Critical Value	-2.5786

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01,2)

Method: Least Squares

Date: 04/23/05 Time: 11:52

Sample(adjusted): 3 130

Included observations: 128 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SER01(-1))	-1.476007	0.078853	-18.71835	0.0000
C	0.615184	0.500607	1.228876	0.2214
R-squared	0.735503	Mean dependent var		0.059375
Adjusted R-squared	0.733404	S.D. dependent var		10.94990
S.E. of regression	5.653750	Akaike info criterion		6.318017
Sum squared resid	4027.576	Schwarz criterion		6.362580
Log likelihood	-402.3531	F-statistic		350.3768
Durbin-Watson stat	2.010730	Prob(F-statistic)		0.000000

ตาราง 27ก ผลการทดสอบ unit root 1^{st} different, I(1) lag0 ของดัชนีอุตสาหกรรม รูปแบบสมการ

trend and intercept

ADF Test Statistic	-18.71567	1% Critical Value*	-4.0320
		5% Critical Value	-3.4452
		10% Critical Value	-3.1473

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01,2)

Method: Least Squares

Date: 04/23/05 Time: 11:52

Sample(adjusted): 3 130

Included observations: 128 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SER01(-1))	-1.478381	0.078992	-18.71567	0.0000
C	-0.135774	1.018236	-0.133343	0.8941
@TREND(1)	0.011479	0.013548	0.847238	0.3985
R-squared	0.737014	Mean dependent var		0.059375
Adjusted R-squared	0.732806	S.D. dependent var		10.94990
S.E. of regression	5.660091	Akaike info criterion		6.327916
Sum squared resid	4004.579	Schwarz criterion		6.394760
Log likelihood	-401.9866	F-statistic		175.1549
Durbin-Watson stat	2.017685	Prob(F-statistic)		0.000000

ตาราง 28ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag2 ของอัตราแลกเปลี่ยนเงินดอลลาร์กับเงิน

บาท รูปแบบสมการ none

ADF Test Statistic	0.359975	1% Critical Value*	-2.5816
		5% Critical Value	-1.9424
		10% Critical Value	-1.6170

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01)

Method: Least Squares

Date: 05/23/05 Time: 11:57

Sample(adjusted): 4 132

Included observations: 129 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SER01(-1)	0.000146	0.000407	0.359975	0.7195
D(SER01(-1))	1.107827	0.087322	12.68662	0.0000
D(SER01(-2))	-0.200133	0.087607	-2.284441	0.0240
R-squared	0.851730	Mean dependent var		0.115147
Adjusted R-squared	0.849377	S.D. dependent var		0.414493
S.E. of regression	0.160866	Akaike info criterion		-0.793512
Sum squared resid	3.260602	Schwarz criterion		-0.727005
Log likelihood	54.18151	F-statistic		361.9011
Durbin-Watson stat	1.980415	Prob(F-statistic)		0.000000

ตาราง 29ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag2 ของอัตราแลกเปลี่ยนเงินดอลลาร์กับเงิน

บาท รูปแบบสมการ intercept

ADF Test Statistic	-1.635050	1% Critical Value*	-3.4819
		5% Critical Value	-2.8838
		10% Critical Value	-2.5785

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01)

Method: Least Squares

Date: 05/23/05 Time: 12:00

Sample(adjusted): 4 132

Included observations: 129 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SER01(-1)	-0.003061	0.001872	-1.635050	0.1046
D(SER01(-1))	1.084684	0.087610	12.38086	0.0000
D(SER01(-2))	-0.182828	0.087451	-2.090624	0.0386
C	0.118969	0.067809	1.754476	0.0818
R-squared	0.855294	Mean dependent var	0.115147	
Adjusted R-squared	0.851821	S.D. dependent var	0.414493	
S.E. of regression	0.159555	Akaike info criterion	-0.802335	
Sum squared resid	3.182238	Schwarz criterion	-0.713659	
Log likelihood	55.75062	F-statistic	246.2728	
Durbin-Watson stat	1.977768	Prob(F-statistic)	0.000000	

ตาราง 30ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag2 ของอัตราแลกเปลี่ยนเงินดอลลาร์กับเงิน

บาท รูปแบบสมการ trend and intercept

ADF Test Statistic	-2.318756	1% Critical Value*	-4.0314
		5% Critical Value	-3.4450
		10% Critical Value	-3.1471

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01)

Method: Least Squares

Date: 05/23/05 Time: 12:00

Sample(adjusted): 4 132

Included observations: 129 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SER01(-1)	-0.010001	0.004313	-2.318756	0.0220
D(SER01(-1))	1.058203	0.088118	12.00896	0.0000
D(SER01(-2))	-0.138168	0.090247	-1.531005	0.1283
C	0.256634	0.102388	2.506468	0.0135
@TREND(1)	0.001570	0.000881	1.782582	0.0771
R-squared	0.858909	Mean dependent var	0.115147	

Adjusted R-squared	0.854358	S.D. dependent var	0.414493
S.E. of regression	0.158183	Akaike info criterion	-0.812134
Sum squared resid	3.102728	Schwarz criterion	-0.701289

ตาราง 31 ผลการทดสอบ unit root 1st different, I(1) lag2 ของอัตราแลกเปลี่ยนเงินดอลลาร์กับเงิน

บาท รูปแบบสมการ none

ADF Test Statistic	-2.434031	1% Critical Value*	-2.5817
		5% Critical Value	-1.9424
		10% Critical Value	-1.6170

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01,2)

Method: Least Squares

Date: 05/23/05 Time: 12:04

Sample(adjusted): 5 132

Included observations: 128 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SER01(-1))	-0.084490	0.034712	-2.434031	0.0163
D(SER01(-1),2)	0.203020	0.088117	2.303979	0.0229
D(SER01(-2),2)	-0.050882	0.089356	-0.569435	0.5701

R-squared	0.077041	Mean dependent var	-0.000441
Adjusted R-squared	0.062274	S.D. dependent var	0.166654
S.E. of regression	0.161382	Akaike info criterion	-0.786930
Sum squared resid	3.255508	Schwarz criterion	-0.720085
Log likelihood	53.36351	F-statistic	5.217001
Durbin-Watson stat	1.984549	Prob(F-statistic)	0.006666

ตาราง 32 ผลการทดสอบ unit root 1st different, I(1) lag2 ของอัตราแลกเปลี่ยนเงินดอลลาร์กับเงิน

บาท รูปแบบสมการ intercept

ADF Test Statistic	-2.524904	1% Critical Value*	-3.4823
		5% Critical Value	-2.8840
		10% Critical Value	-2.5786

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01,2)

Method: Least Squares

Date: 05/23/05 Time: 12:05

Sample(adjusted): 5 132

Included observations: 128 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SER01(-1))	-0.091599	0.036278	-2.524904	0.0128
D(SER01(-1),2)	0.206018	0.088409	2.330282	0.0214
D(SER01(-2),2)	-0.046723	0.089746	-0.520617	0.6036
C	0.010288	0.014908	0.690101	0.4914

R-squared	0.080572	Mean dependent var	-0.000441
Adjusted R-squared	0.058328	S.D. dependent var	0.166654
S.E. of regression	0.161721	Akaike info criterion	-0.775138
Sum squared resid	3.243053	Schwarz criterion	-0.686012
Log likelihood	53.60885	F-statistic	3.622174
Durbin-Watson stat	1.985201	Prob(F-statistic)	0.015048

ตาราง 33 ผลการทดสอบ unit root 1st different, I(1) lag2 ของอัตราแลกเปลี่ยนเงินดอลลาร์กับเงินบาท

รูปแบบสมการ trend and intercept

ADF Test Statistic	-2.603526	1% Critical Value*	-4.0320
		5% Critical Value	-3.4452
		10% Critical Value	-3.1473

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SER01,2)

Method: Least Squares

Date: 05/23/05 Time: 12:06

Sample(adjusted): 5 132

Included observations: 128 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SER01(-1))	-0.095971	0.036862	-2.603526	0.0104
D(SER01(-1),2)	0.206475	0.088586	2.330777	0.0214
D(SER01(-2),2)	-0.045237	0.089948	-0.502928	0.6159
C	0.029755	0.031084	0.957263	0.3403
@TREND(1)	-0.000281	0.000393	-0.714153	0.4765

R-squared	0.084369	Mean dependent var	-0.000441
Adjusted R-squared	0.054592	S.D. dependent var	0.166654
S.E. of regression	0.162041	Akaike info criterion	-0.763651
Sum squared resid	3.229661	Schwarz criterion	-0.652244
Log likelihood	53.87367	F-statistic	2.833399
Durbin-Watson stat	1.986046	Prob(F-statistic)	0.027378

ตาราง 34ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag2 หลังจาก destructural change ของอัตราแลกเปลี่ยนเงินดอลลาร์กับเงินบาท รูปแบบสมการ none

ADF Test Statistic	-3.436190	1% Critical Value*	-2.5817
		5% Critical Value	-1.9424
		10% Critical Value	-1.6170

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RE01)

Method: Least Squares

Date: 05/23/05 Time: 12:07

Sample(adjusted): 5 132
 Included observations: 128 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RE01(-1)	-0.159918	0.046539	-3.436190	0.0008
D(RE01(-1))	0.202346	0.087620	2.309370	0.0226
D(RE01(-2))	0.029239	0.089400	0.327059	0.7442
R-squared	0.104311	Mean dependent var		0.000975
Adjusted R-squared	0.089980	S.D. dependent var		0.180094
S.E. of regression	0.171800	Akaike info criterion		-0.661811
Sum squared resid	3.689412	Schwarz criterion		-0.594967
Log likelihood	45.35592	F-statistic		7.278700

ตาราง 35ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag2 หลังจาก destructural change ของอัตรา

แลกเปลี่ยนเงินดอลลาร์กับเงินบาท รูปแบบสมการ intercept

ADF Test Statistic	-3.422468	1% Critical Value*	-3.4823
		5% Critical Value	-2.8840
		10% Critical Value	-2.5786

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RE01)

Method: Least Squares

Date: 05/23/05 Time: 12:13

Sample(adjusted): 5 132

Included observations: 128 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RE01(-1)	-0.159918	0.046726	-3.422468	0.0008
D(RE01(-1))	0.202317	0.087972	2.299777	0.0231
D(RE01(-2))	0.029201	0.089761	0.325321	0.7455
C	0.000906	0.015247	0.059419	0.9527
R-squared	0.104337	Mean dependent var		0.000975
Adjusted R-squared	0.082667	S.D. dependent var		0.180094
S.E. of regression	0.172489	Akaike info criterion		-0.646215
Sum squared resid	3.689307	Schwarz criterion		-0.557089
Log likelihood	45.35774	F-statistic		4.814961
Durbin-Watson stat	2.010246	Prob(F-statistic)		0.003315

ตาราง 36ก ผลการทดสอบ unit root ที่ระดับ level, I(0),lag2 หลังจาก destructural change ของอัตรา

แลกเปลี่ยนเงินดอลลาร์กับเงินบาท รูปแบบสมการ trend and intercept

ADF Test Statistic	-3.409386	1% Critical Value*	-4.0320
		5% Critical Value	-3.4452
		10% Critical Value	-3.1473

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RE01)

Method: Least Squares

Date: 05/23/05 Time: 12:13

Sample(adjusted): 5 132

Included observations: 128 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RE01(-1)	-0.159954	0.046916	-3.409386	0.0009
D(RE01(-1))	0.202305	0.088326	2.290421	0.0237
D(RE01(-2))	0.029217	0.090122	0.324194	0.7463
C	0.003396	0.031881	0.106523	0.9153
@TREND(1)	-3.69E-05	0.000414	-0.089043	0.9292
R-squared	0.104394	Mean dependent var	0.000975	
Adjusted R-squared	0.075269	S.D. dependent var	0.180094	
S.E. of regression	0.173183	Akaike info criterion	-0.630654	
Sum squared resid	3.689069	Schwarz criterion	-0.519247	

ภาคผนวก ข ผลการทดสอบ cointegration โดยวิธี Johansen and Juselius

ตาราง 1ข ผลการทดสอบการหา lag length โดยวิธี Test Statistics and Choice Criteria for Selecting the Order of the VAR Model

Test Statistics and Choice Criteria for Selecting the Order of the VAR Model

Based on 108 observations from 1996M1 to 2004M12. Order of VAR = 24

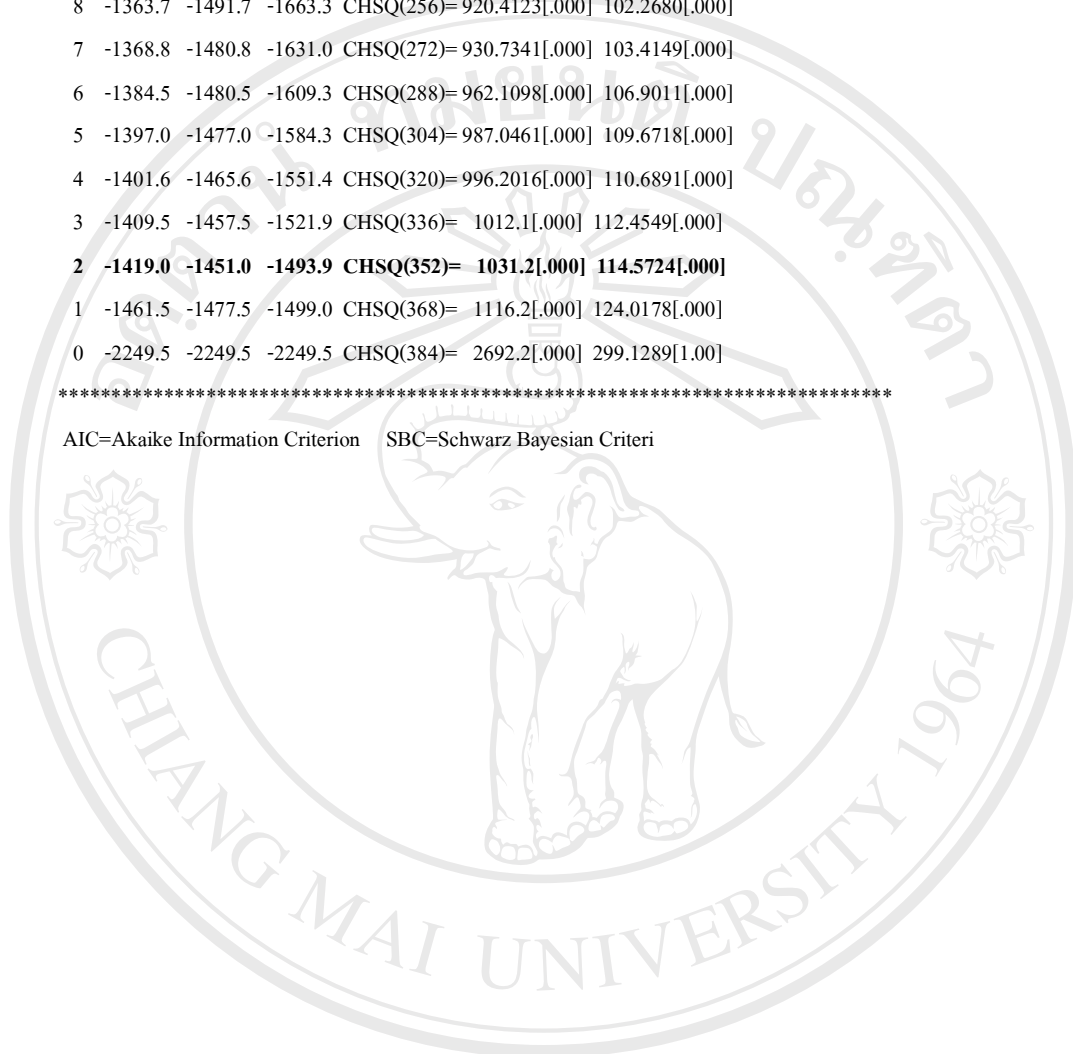
List of variables included in the unrestricted VAR:

ENGY GDP OIL INTEREST

Order	LL	AIC	SBC	LR test	Adjusted LR test
24	-903.4542	-1287.5	-1802.4	-----	-----
23	-983.4625	-1351.5	-1845.0	CHSQ(16)= 160.0166[.000]	17.7796[.337]
22	-1007.2	-1359.2	-1831.2	CHSQ(32)= 207.4189[.000]	23.0465[.877]
21	-1053.3	-1389.3	-1839.9	CHSQ(48)= 299.7868[.000]	33.3096[.947]
20	-1101.6	-1421.6	-1850.7	CHSQ(64)= 396.2669[.000]	44.0297[.973]
19	-1132.7	-1436.7	-1844.4	CHSQ(80)= 458.5885[.000]	50.9543[.995]
18	-1160.7	-1448.7	-1835.0	CHSQ(96)= 514.5470[.000]	57.1719[1.00]
17	-1189.9	-1461.9	-1826.7	CHSQ(112)= 572.9595[.000]	63.6622[1.00]
16	-1203.0	-1459.0	-1802.3	CHSQ(128)= 599.0329[.000]	66.5592[1.00]
15	-1216.4	-1456.4	-1778.2	CHSQ(144)= 625.8666[.000]	69.5407[1.00]
14	-1234.9	-1458.9	-1759.3	CHSQ(160)= 662.9626[.000]	73.6625[1.00]
13	-1254.7	-1462.7	-1741.6	CHSQ(176)= 702.4153[.000]	78.0461[.000]
12	-1293.4	-1485.4	-1742.9	CHSQ(192)= 779.8802[.000]	86.6534[.000]
11	-1332.9	-1508.9	-1744.9	CHSQ(208)= 858.8570[.000]	95.4286[.000]
10	-1347.0	-1507.0	-1721.6	CHSQ(224)= 887.1880[.000]	98.5764[.000]

9	-1353.2	-1497.2	-1690.3	CHSQ(240)=	899.5364[.000]	99.9485[.000]
8	-1363.7	-1491.7	-1663.3	CHSQ(256)=	920.4123[.000]	102.2680[.000]
7	-1368.8	-1480.8	-1631.0	CHSQ(272)=	930.7341[.000]	103.4149[.000]
6	-1384.5	-1480.5	-1609.3	CHSQ(288)=	962.1098[.000]	106.9011[.000]
5	-1397.0	-1477.0	-1584.3	CHSQ(304)=	987.0461[.000]	109.6718[.000]
4	-1401.6	-1465.6	-1551.4	CHSQ(320)=	996.2016[.000]	110.6891[.000]
3	-1409.5	-1457.5	-1521.9	CHSQ(336)=	1012.1[.000]	112.4549[.000]
2	-1419.0	-1451.0	-1493.9	CHSQ(352)=	1031.2[.000]	114.5724[.000]
1	-1461.5	-1477.5	-1499.0	CHSQ(368)=	1116.2[.000]	124.0178[.000]
0	-2249.5	-2249.5	-2249.5	CHSQ(384)=	2692.2[.000]	299.1289[1.00]

AIC=Akaike Information Criterion SBC=Schwarz Bayesian Criteri



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ตาราง 2ข Cointegration with no intercepts or trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST

List of eigenvalues in descending order:

.16324 .041027 .011136 .0047239

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	23.1677	23.9200	21.5800
r <= 1	r = 2	5.4460	17.6800	15.5700
r <= 2	r = 3	1.4558	11.0300	9.2800
r <= 3	r = 4	.61556	4.1600	3.0400

Use the above table to determine r (the number of cointegrating vectors).

Cointegration with no intercepts or trends in the VAR

Cointegration LR Test Based on Trace of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST

List of eigenvalues in descending order:

.16324 .041027 .011136 .0047239

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r >= 1	30.6851	39.8100	36.6900
r <= 1	r >= 2	7.5174	24.0500	21.4600
r <= 2	r >= 3	2.0714	12.3600	10.2500
r <= 3	r = 4	.61556	4.1600	3.0400

.....

Use the above table to determine r (the number of cointegrating vectors)

ตาราง 3๗ Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST Intercept

List of eigenvalues in descending order:

.16526 .10852 .038876 .0091931 0.00

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	23.4821	28.2700	25.8000
r <= 1	r = 2	14.9339	22.0400	19.8600
r <= 2	r = 3	5.1548	15.8700	13.8100
r <= 3	r = 4	1.2006	9.1600	7.5300

Use the above table to determine r (the number of cointegrating vectors).

Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Trace of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST Intercept

List of eigenvalues in descending order:

.16526 .10852 .038876 .0091931 0.00

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r >= 1	44.7714	53.4800	49.9500
r <= 1	r >= 2	21.2893	34.8700	31.9300
r <= 2	r >= 3	6.3554	20.1800	17.8800
r <= 3	r = 4	1.2006	9.1600	7.5300

.....

Use the above table to determine r (the number of cointegrating vectors).

ตาราง 4๗ Cointegration with unrestricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST

List of eigenvalues in descending order:

.15539 .10738 .026711 .0011735

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	21.9545	27.4200	24.9900
r ≤ 1	r = 2	14.7672	21.1200	19.0200
r ≤ 2	r = 3	3.5196	14.8800	12.9800
r ≤ 3	r = 4	.15265	8.0700	6.5000

Use the above table to determine r (the number of cointegrating vectors).

Cointegration with unrestricted intercepts and no trends in the VAR

Cointegration LR Test Based on Trace of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST

List of eigenvalues in descending order:

.15539 .10738 .026711 .0011735

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r ≥ 1	40.3940	48.8800	45.7000
r ≤ 1	r ≥ 2	18.4394	31.5400	28.7800
r ≤ 2	r ≥ 3	3.6722	17.8600	15.7500
r ≤ 3	r = 4	.15265	8.0700	6.5000

.....

Use the above table to determine r (the number of cointegrating vectors).

ตาราง 5๗ Cointegration with unrestricted intercepts and restricted trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST Trend

List of eigenvalues in descending order:

.18151 .10767 .091982 .021142 0.00

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	26.0375	31.7900	29.1300
r ≤ 1	r = 2	14.8091	25.4200	23.1000
r ≤ 2	r = 3	12.5439	19.2200	17.1800
r ≤ 3	r = 4	2.7779	12.3900	10.5500

Use the above table to determine r (the number of cointegrating vectors).

Cointegration with unrestricted intercepts and restricted trends in the VAR

Cointegration LR Test Based on Trace of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST Trend

List of eigenvalues in descending order:

.18151 .10767 .091982 .021142 0.00

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r ≥ 1	56.1684	63.0000	59.1600
r ≤ 1	r ≥ 2	30.1309	42.3400	39.3400
r ≤ 2	r ≥ 3	15.3218	25.7700	23.0800
r ≤ 3	r = 4	2.7779	12.3900	10.5500

.....

Use the above table to determine r (the number of cointegrating vectors).

ตาราง 6๗ Cointegration with unrestricted intercepts and unrestricted trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST

List of eigenvalues in descending order:

.18108 .10754 .089746 .0026190

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	25.9700	31.0000	28.3200
r <= 1	r = 2	14.7899	24.3500	22.2600
r <= 2	r = 3	12.2242	18.3300	16.2800
r <= 3	r = 4	.34092	11.5400	9.7500

Use the above table to determine r (the number of cointegrating vectors).

Cointegration with unrestricted intercepts and unrestricted trends in the VAR

Cointegration LR Test Based on Trace of the Stochastic Matrix

130 observations from 1994M3 to 2004M12. Order of VAR = 2.

List of variables included in the cointegrating vector:

ENGY GDP OIL INTEREST

List of eigenvalues in descending order:

.18108 .10754 .089746 .0026190

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r >= 1	53.3250	58.9300	55.0100
r <= 1	r >= 2	27.3550	39.3300	36.2800
r <= 2	r >= 3	12.5651	23.8300	21.2300
r <= 3	r = 4	.34092	11.5400	9.7500

.....

Use the above table to determine r (the number of cointegrating vectors).

ตาราง 7ข ผลการทดสอบใน VAR in the first difference

Date: 05/23/05 Time: 15:55

Sample(adjusted): 4 132

Included observations: 129 after adjusting endpoints

Standard errors & t-statistics in parentheses

	D(ENGY)	D(MPI)	D(INTEREST)	D(OIL)
D(ENGY(-1))	-0.076131 (0.08994) (-0.84646)	0.000388 (0.00083) (0.46991)	5.22E-05 (4.4E-05) (1.19636)	-0.000232 (0.00024) (-0.95461)
D(ENGY(-2))	0.033024 (0.09029) (0.36577)	0.000459 (0.00083) (0.55349)	-3.47E-05 (4.4E-05) (-0.79385)	0.000128 (0.00024) (0.52436)
D(MPI(-1))	-5.375426 (9.94762) (-0.54037)	-0.524651 (0.09134) (-5.74372)	0.006082 (0.00482) (1.26121)	-0.022639 (0.02685) (-0.84321)
D(MPI(-2))	12.70214 (10.2209) (1.24276)	-0.060312 (0.09385) (-0.64262)	0.000510 (0.00496) (0.10294)	0.028352 (0.02759) (1.02773)
D(INTEREST(-1))	-125.5555 (183.996) (-0.68238)	-1.823205 (1.68954) (-1.07912)	0.736665 (0.08920) (8.25842)	-0.423426 (0.49661) (-0.85263)
D(INTEREST(-2))	258.7805 (184.498) (1.40262)	0.200551 (1.69414) (0.11838)	-0.220149 (0.08944) (-2.46128)	0.680770 (0.49797) (1.36710)
D(OIL(-1))	4.740582 (33.5156) (0.14144)	-0.017301 (0.30775) (-0.05622)	-0.012465 (0.01625) (-0.76717)	0.108260 (0.09046) (1.19677)
D(OIL(-2))	28.67634 (32.9727) (0.86970)	0.285827 (0.30277) (0.94404)	0.005082 (0.01599) (0.31794)	-0.139705 (0.08899) (-1.56981)
C	60.18767 (56.9040) (1.05771)	0.418700 (0.52252) (0.80131)	-0.024619 (0.02759) (-0.89241)	0.192455 (0.15359) (1.25307)
R-squared	0.053344	0.251288	0.395013	0.070039
Adj. R-squared	-0.009766	0.201374	0.354681	0.008042
Sum sq. resid	46674257	3935.448	10.96996	340.0137
S.E. equation	623.6603	5.726727	0.302351	1.683285
Log likelihood	-1008.572	-403.5020	-24.07305	-245.5548
Akaike AIC	-1008.432	-403.3624	-23.93351	-245.4152
Schwarz SC	-1008.232	-403.1629	-23.73399	-245.2157
Mean dependent	61.76457	0.365891	-0.044658	0.174226
S.D. dependent	620.6370	6.408180	0.376378	1.690094
Determinant Residual Covariance	2425069.			
Log Likelihood	-1680.411			

Akaike Information Criteria -1679.853
 Schwarz Criteria -1679.054

ภาคผนวก ก ผลการทดสอบ cointegration โดยวิธี Engle and Granger

ตาราง 1ค ผลการทดสอบ Least Squares ของดัชนีอุตสาหกรรม อัตราดอกเบี้ยเงินฝากประจำ 12 เดือน และราคาน้ำมันดิบ DUBAI ที่มีการซื้อขายล่วงหน้า 1 เดือน

Dependent Variable: ENGY
 Method: Least Squares
 Date: 05/23/05 Time: 14:31
 Sample: 1 132
 Included observations: 132

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-13258.62	1671.348	-7.932891	0.0000
GDP	113.5490	14.92609	7.607417	0.0000
INTEREST	551.6032	61.34870	8.991277	0.0000
OIL	105.4845	39.37261	2.679135	0.0084
R-squared	0.503298	Mean dependent var	5085.776	
Adjusted R-squared	0.491657	S.D. dependent var	2189.130	
S.E. of regression	1560.810	Akaike info criterion	17.57363	
Sum squared resid	3.12E+08	Schwarz criterion	17.66099	
Log likelihood	-1155.860	F-statistic	43.23333	
Durbin-Watson stat	0.362511	Prob(F-statistic)	0.000000	

ตาราง 2ค ผลการทดสอบ unit root ที่ระดับ level, I(0)ของ residual ที่ได้จากการ make residual series

ADF Test Statistic	-3.249038	1% Critical Value*	-2.5813
		5% Critical Value	-1.9423
		10% Critical Value	-1.6170

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RESID01)

Method: Least Squares

Date: 05/23/05 Time: 14:36

Sample(adjusted): 2 132

Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01(-1)	-0.168344	0.051813	-3.249038	0.0015
R-squared	0.074454	Mean dependent var	24.59914	
Adjusted R-squared	0.074454	S.D. dependent var	932.1618	
S.E. of regression	896.7890	Akaike info criterion	16.44312	
Sum squared resid	1.05E+08	Schwarz criterion	16.46507	
Log likelihood	-1076.025	Durbin-Watson stat	2.293967	

ตาราง 3ก ผลการทดสอบ ECM: Error-Correction Model

Dependent Variable: D(ENGY)

Method: Least Squares

Date: 05/25/05 Time: 13:53

Sample(adjusted): 2 132

Included observations: 131 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	51.26007	54.93732	0.933065	0.3526
E(-1)	-0.044681	0.037398	-1.194768	0.2344
D(GDP)	10.14639	8.902651	1.139704	0.2566
D(OIL)	23.30595	32.68058	0.713144	0.4771
D(INTEREST)	-47.81053	147.4594	-0.324228	0.7463
R-squared	0.021874	Mean dependent var		62.16359
Adjusted R-squared	-0.009177	S.D. dependent var		617.8920
S.E. of regression	620.7208	Akaike info criterion		15.73706
Sum squared resid	48547079	Schwarz criterion		15.84680
Log likelihood	-1025.777	F-statistic		0.704450
Durbin-Watson stat	2.086591	Prob(F-statistic)		0.590325

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ประวัติผู้เขียน

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