ภาคผนวก

ภาคผนวก ก

ข้อมูลดัชนีตลาดหลักทรัพย์ และหลักทรัพย์ในกลุ่มขนส่ง

DATE	SET	ASIMAR	BECL	JUTHA	RCL	THAI	TTA	UTL	PSL
21/12/97	385.25	2.35714	27	4.3	32.5	49.25	0.5	5	25
28/12/97	357.13	2.42857	24.75	4	37	47	0.45	3.9	31.5
11/1/98	349.67	2.64285	26.5	4	23	55	0.59	3	29.75
18/1/98	383.01	2.60714	28.75	4.1	22	55	0.71	3.2	27
1/2/98	495.23	2.71428	40.25	4.2	32.5	63.5	0.6	3.4	22
8/2/98	535.98	2.46428	40.5	4.7	45	62.5	1.1	4.4	21.5
15/2/98	499.97	2.57143	37.5	4.7	40	53.5	0.99	3.8	20.5
1/3/98	528.42	1.71428	40.25	5.4	40	53	0.95	3.9	14
8/3/98	508.07	1.60714	37.5	4	40	50.5	0.85	3.7	19
15/3/98	514.24	1.17143	42	4	39	45.75	1	3.5	17
29/3/98	469.85	1.28571	36.25	5.5	40	45.75	1.5	4.5	24.5
5/4/98	442.96	1.4	33	4.8	32	43.75	1.2	3.1	21.5
26/4/98	424.79	1.2	34.75	4.2	35	38.5	1.2	3	20
17/5/98	369.43	1.21428	27.25	4.5	32	39	1.4	2.3	18.5
31/5/98	325.59	1.14286	23.25	3.5	30.25	38.75	1.375	2	19
7/6/98	318.16	0.85714	22.75	3	32.5	39.5	1.45	2.6	15
19/7/98	295.28	1.11428	25	2.6	30	40.5	1.4	1.5	13.5
13/9/98	212.7	0.62857	21	3.3	30	30.25	0.7	1.5	12
20/9/98	221.85	0.55714	23.5	3.1	30	30.5	0.6	1.6	11.5
4/10/98	251.56	0.42857	29	3.5	33	32.5	0.6	1.6	11
11/10/98	292.5	0.54286	33.75	3.1	34	41.5	0.55	2	9
25/10/98	321.57	0.55714	27.5	4.2	31.75	47	0.67	3.5	5.4
1/11/98	331.29	0.61429	29	4.4	34	48	0.84	4.3	8

DATE	SET	ASIMAR	BECL	JUTHA	RCL	THAI	TTA	UTL	PSL
8/11/98	376.6	0.57143	35.25	4.7	31.5	45	0.75	3.8	6.8
15/11/98	333.59	0.45714	33	4.1	30	49	0.58	3.4	6.1
22/11/98	371.93	0.64286	34.25	4	29	50.5	0.68	4.4	10
29/11/98	373.09	0.61429	34	3.8	30	46.75	0.58	4.3	8.3
6/12/98	337.63	0.6	32.5	4.2	29	45	0.6	4	9.3
13/12/98	360.3	0.61429	33.25	4.2	28	45.5	0.61	3.8	8.6
20/12/98	341.92	0.6	32.5	3	25	46.25	0.58	3.7	7.5
3/1/99	355.81	0.62857	36	4	19	47	0.48	3.6	7
10/1/99	399.43	0.61429	37.25	3.5	24	60	0.47	4.4	7.8
17/1/99	381.82	0.61429	34.5	3.7	24.75	54.5	0.52	3.9	7.5
31/1/99	363	0.72857	33.75	3.5	23.75	50	0.57	4	8.5
14/2/99	347.43	0.62857	31.25	3.8	19.75	52	0.53	3.5	8.1
21/2/99	336.57	0.62857	31	3.7	20	49	0.52	4.1	8.7
28/2/99	340.94	0.57143	29	3.7	21.25	49	0.5	3.5	8.3
7/3/99	336.21	0.6	28.75	3.2	19.5	50.5	0.46	3.5	6.4
14/3/99	345.79	0.57143	28.5	2.6	18	55	0.43	3.2	6.5
21/3/99	367.69	0.6	29.25	2.8	17	55	0.46	2.8	7.2
28/3/99	366.91	0.58571	28.25	2.8	17.25	56	0.45	2.7	7.7
4/4/99	357.1	0.61429	27.75	2.8	17	57	0.43	2.6	7.6
18/4/99	402.54	0.61429	30	2.8	18	61	0.45	2.5	7.4
25/4/99	401.07	0.57143	29.75	2.6	18	63.5	0.46	2.7	7.4
2/5/99	459.35	0.6	31.75	3.3	25	69	0.57	3.2	7.3
9/5/99	488.35	0.65714	30.75	3.5	30.25	71.5	0.59	3.6	8.3
16/5/99	474.9	0.71429	31	3.6	30.75	68	0.64	3.7	7.8
23/5/99	479.33	1.07143	28	3.6	32	66.5	0.78	3.8	7.2
30/5/99	453.6	1.07143	26.5	3.6	29.5	63	0.88	3.9	7.4
6/6/99	476.47	1.07143	27.5	4.4	30.5	71	1.05	4.5	7.8
13/6/99	507.06	1.46428	26.25	7.8	34	68	1.25	8.9	11.75

DATE	SET	ASIMAR	BECL	JUTHA	RCL	THAI	TTA	UTL	PSL
20/6/99	518.81	2.03571	27.5	7.7	39	66.5	1.55	8.3	14.25
27/6/99	543.85	1.85714	27	8	58	69.5	1.65	8.6	16.5
4/7/99	533.33	1.89286	26.75	7	59	68	1.775	7.8	15.5
11/7/99	509.58	1.78571	28.75	6.6	58	70.5	1.55	8.7	13.75
18/7/99	488.51	1.85714	27.5	5.9	59.5	69	1.4	7.8	13.25
25/7/99	475.73	1.67857	26	6.2	59.5	70	1.3	12.5	16.5
1/8/99	456.81	1.67857	24.75	6	56	66	1.15	11	12.75
8/8/99	437.04	1.31428	23	5.5	45.75	66	1.05	12.5	11.25
15/8/99	423.78	1.32857	23.25	5.1	46.5	68	1	10.5	10
22/8/99	440.51	1.5	23.5	5	53	68.5	1.1	9.8	12
29/8/99	457.54	1.4	22.75	4.6	58.5	70	1.175	10.5	11
5/9/99	431.12	1.4	19.75	4.5	56	68	1.15	8.5	11.75
12/9/99	430.91	1.22857	19.75	4.7	55	62	1.15	10.25	11.25
19/9/99	438.16	1.3	20	4.6	49	61	1	10.5	11.25
26/9/99	382.01	1.27143	17.75	3.9	45	56.5	0.9	7.4	10
3/10/99	407.23	1.18571	18.75	3.7	47.5	57	0.89	7.8	11.25
10/10/99	393.02	1.18571	17.25	4.2	46.5	51.5	0.89	7.3	10.5
17/10/99	385.4	1.15714	16.25	4	46	49	0.88	6.3	10.75
24/10/99	377.16	1.17143	17	3.9	47	47.25	0.87	8.1	10.5
7/11/99	418.47	1.18571	18.5	4.1	47	53	0.88	8.5	12.5
14/11/99	432.02	1.21428	20.25	4	51	59.5	0.86	9.5	11.5
21/11/99	411.55	1.17143	19	4	47.5	56.5	0.79	7.1	12
28/11/99	412.31	1.07143	18.25	3.8	48	53	0.76	7	10.25
12/12/99	419.77	1.07143	17.25	3.8	46	54.5	0.8	5.5	10
19/12/99	439.32	1.14286	18	3.8	40	55	0.74	5.4	10.75
23/1/00	478.92	1.14286	18	4	41.75	52.5	0.69	5.1	12
30/1/00	477.45	1.21428	17.5	4.2	40.5	52.5	0.68	5.9	11.75
6/2/00	470.34	1.1	16.25	4.2	39.75	51.5	0.67	5	12

DATE	SET	ASIMAR	BECL	JUTHA	RCL	THAI	TTA	UTL	PSL
13/2/00	456.12	1.1	15.75	3.6	37.75	42.75	0.61	5	11.5
20/2/00	408.35	1.14286	12.5	3.6	37	42.75	0.65	5.3	12.5
27/2/00	406.66	1.07143	12	3.7	38	42	0.59	3.9	11.5
5/3/00	383.13	0.85714	11	3.5	38.25	34.75	0.53	4	11
12/3/00	402.4	0.85714	11.25	3.4	36.75	36.25	0.58	4	10
19/3/00	399.74	0.71429	10.75	3.2	45	41	0.6	5.2	10.25
9/4/00	403.45	0.71429	11	3.3	40.75	44.25	0.57	4.5	10
30/4/00	390.4	0.71429	12	3.2	42.75	41	0.59	4.6	10.5
4/6/00	339.28	0.62857	10	2.5	33.75	38.5	0.55	4	9.7
11/6/00	341.35	0.58571	9.9	2.5	33.25	38.5	0.54	3.2	10
18/6/00	344.49	0.57143	10	2.5	34	37.75	0.6	3	10
25/6/00	333.31	0.57143	9.9	2.7	35.25	38.5	0.64	3.5	10.25
9/7/00	322.87	0.54286	9.9	2.8	34.5	40.75	0.61	3	10.25
6/8/00	311.42	0.51429	8.4	2.4	31	40.5	0.6	3.6	10
13/8/00	316.6	0.54286	8.2	2.4	31.5	40.5	0.61	3	10.25
20/8/00	319.22	0.52857	8	2.3	35	41.25	0.59	3	12.75
8/10/00	267.68	0.38571	6	2.4	34	33.25	0.56	3	9.8
26/11/00	285.42	0.4	5.8	2.4	28	33	0.6	3	9.8
28/1/01	332.13	0.5	5.7	2.7	29	36.25	0.57	2.7	10.75
18/2/01	316	0.4	10	2.9	29.5	32	0.56	3.5	11
11/3/01	307	0.41429	10	2.8	26	30.25	0.53	3.5	10.25
25/3/01	290.25	0.41429	9.6	2.8	26.25	28.25	0.44	2.8	11
22/4/01	292.58	0.4	10.5	2.6	24.75	27	0.45	2.9	10.75
29/4/01	297.21	0.42857	10.5	2.9	24.25	27.25	0.44	3	11
6/5/01	306.48	0.38571	10.5	2.8	24.5	31.75	0.47	3	11
20/5/01	300.64	0.38571	11.25	2.8	25.75	29.25	0.61	3.9	11.25
10/6/01	312.29	0.55714	10	3	26	28.25	0.95	4	12.5
17/6/01	323.97	0.64286	10.25	2.9	26.5	28.5	0.95	4.5	12.75

DATE	SET	ASIMAR	BECL	JUTHA	RCL	THAI	TTA	UTL	PSL
24/6/01	318.67	0.57143	10	3	27	28	1.1	4.1	12.75
1/7/01	322.55	0.61429	10	3.4	29.5	27.75	1.4	5.1	12.75
8/7/01	324.88	0.84286	9.9	3.8	31.75	28.5	1.275	6.2	15
15/7/01	314.31	0.84286	9.3	4.2	33.25	27.25	1.175	6.7	15
22/7/01	312.27	1.1	9.8	4.2	31.5	26.75	1.175	7.5	14.75
29/7/01	301.09	1.12857	9.7	3.6	30	27	1.3	9	15
5/8/01	315.95	1.12857	9.9	3.3	31.5	27	1.225	8	14.5
12/8/01	315.87	1.15714	9.8	3.6	34	27.25	1.5	9.3	18.5
19/8/01	323.25	1.02857	9.9	3.8	35	28.5	1.6	9.2	17.5
26/8/01	332.17	1.07143	10.25	3.6	35.5	30	1.7	9.5	19
2/9/01	335.57	0.95714	9.9	3.5	34.75	28.75	1.65	8.8	18
9/9/01	342.32	0.88571	10.25	3.2	37	31.25	1.6	8.6	18
16/9/01	288.1	0.57143	9.2	1.8	30	22.75	1.275	5.5	16
23/9/01	274.6	0.54286	8.7	1.7	30	19.5	1.275	4.9	13.75
30/9/01	277.04	0.54286	8.9	1.7	29.5	17.75	1.3	5	13.75
7/10/01	280.88	0.62857	9.1	1.8	30	18.25	1.275	5.9	14
14/10/01	284.97	0.68571	9.2	1.9	30	18	1.3	6	14
21/10/01	284.72	0.68571	9.2	1.9	29.75	18	1.3	6	14
28/10/01	280.6	0.7	9.1	1.7	30.25	18.5	1.325	5.9	14
4/11/01	274.22	0.65714	8.6	1.7	31.75	17.5	1.3	5.9	13.5
11/11/01	268.11	0.72857	8.35	1.42	30.5	16.8	1.35	5.85	14
18/11/01	275.54	0.62857	9.1	1.62	30.75	16.9	1.36	6.45	14
25/11/01	296.77	0.65714	9.35	1.73	31.75	21.6	1.39	6.45	14.6
2/12/01	302.62	0.67143	9.6	1.72	33	19.7	1.44	6.4	18
9/12/01	304.05	0.64286	9.65	1.82	33.25	19.8	1.32	6.6	15.5
16/12/01	294	0.62	9.4	1.77	33	19.1	1.4	6.3	13.7
23/12/01	296.69	0.68571	9.45	1.77	32	19	1.4	6.35	13.6
30/12/01	303.85	0.6	9.75	1.7	33.5	19.5	1.43	6.2	14.3

DATE	SET	ASIMAR	BECL	JUTHA	RCL	THAI	TTA	UTL	PSL
13/1/02	322.55	0.58571	10.9	1.83	33.75	20.3	1.4	6.55	13.9
20/1/02	317.52	0.6	10.9	1.83	31.25	20.5	1.44	6.55	14.1
27/1/02	338.99	0.54857	13.9	1.82	33.75	28.25	1.51	6.4	14.2
3/2/02	336.65	0.57143	14.2	1.96	34.5	26.75	1.52	6.35	13.5
10/2/02	353.59	0.59143	14.9	2.16	36.25	31.75	1.79	6.8	14.8
17/2/02	373.02	0.71429	15.8	2.32	45.25	31.5	2.33	7.5	17.3
24/2/02	351.32	0.64286	15.2	2.22	46.5	29.25	2.07	7.2	17.1
3/3/02	380.65	0.64286	16	2.26	41	31.75	2.2	7.55	18.1
10/3/02	390.65	0.71429	16.4	2.1	44.25	32.25	2.19	7.35	17.9
17/3/02	377.39	0.71	17.5	2	44.5	31	2.02	7.3	17.2
31/3/02	373.95	0.71	14.3	2.1	44.75	30.25	2.38	8.1	17
7/4/02	369.99	0.71	13.7	2	44.5	30.75	2.5	9.2	18.9
14/4/02	379.63	0.73	15.5	2.34	45.5	30	3	9.65	19.2
21/4/02	386.51	0.71	15.6	2.28	44	32.25	2.9	9.05	19
28/4/02	376.44	0.83	15.1	2.52	44	34.75	2.925	8.9	20.3
5/5/02	374.05	0.86	15.3	2.74	47.75	34.75	3.1	10.3	20.5
12/5/02	382.09	0.86	15.8	2.68	47.25	34.75	3.35	10.4	20.9
19/5/02	378.23	0.91	15.8	2.4	47.75	32.25	3.25	9	21.1
26/5/02	392.09	1	16.7	2.34	48	34.5	3.3	9	22.3
2/6/02	407.96	0.98	18.6	2.5	51.5	38	3.5	8.9	22.4
9/6/02	417.33	0.97	18.9	2.54	57	39.25	3.6	8.9	23.1
16/6/02	422.44	0.93	19.4	2.7	56	45.25	3.775	8.6	23.3
23/6/02	395.46	0.8	16.9	2.54	53.5	39.75	3.6	8.35	22.7
30/6/02	389.1	0.83	16.1	2.62	53	40.25	3.6	8.4	22.5
7/7/02	401.1	0.84	16.7	2.6	53.5	40.25	3.575	8.5	20
21/7/02	394.27	0.86	17.5	2.98	52	41	3.55	8.6	18.3
28/7/02	366.47	0.98	16.1	3.32	48	37.25	3.375	8	16.2
4/8/02	370.46	1.5	16.4	3.12	49.25	38	3.6	9.65	17

DATE	SET	ASIMAR	BECL	JUTHA	RCL	THAI	TTA	UTL	PSL
11/8/02	367.07	1.29	16.3	2.9	50.5	37.25	3.425	8	17.2
18/8/02	373.03	1.21	16.8	2.72	52	39	3.55	7.95	18
25/8/02	367.01	1.13	16.4	2.74	51	39	3.525	7.65	17.5
1/9/02	361.16	1.13	16.4	2.54	50	37	3.55	8.25	17
8/9/02	353.55	1.13	15.7	2.44	48.25	33	3.325	7.9	19.7
15/9/02	357.15	1.45	16	2.4	48	33.5	3.3	7.05	18.2
22/9/02	351.52	1.15	15.3	2.3	48	30.25	3.4	7	16.6
29/9/02	338.72	1.14	14.8	2.16	48.25	27.25	3.375	7.05	17.1
6/10/02	340.92	1.21	14.8	2.1	46.75	26.25	3.55	7.5	17.3
13/10/02	330.41	1.15	14.9	2.02	46.5	25.5	3.575	7.1	17.8
20/10/02	342.46	1.22	15.5	2.06	46.75	25.5	3.45	6.7	18.2
27/10/02	348.46	1.24	15.6	2.18	47.25	29	3.525	7	18
17/11/02	356.24	1.25	15.3	2.04	46.75	31.25	3.66	6.5	17.5
24/11/02	362.59	1.31	15.8	2.22	47.5	33.25	3.72	6.25	17.1
1/12/02	364.9	1.46	15.3	2.2	48	35.75	3.78	6.4	17.5
8/12/02	365.09	1.67	15	2.16	48.5	36.5	3.94	6.45	17.8
15/12/02	356.2	1.66	14.7	2.04	47.5	36.5	3.84	6.5	22
22/12/02	350.01	1.61	14.5	2.04	48.25	33.5	3.84	7	20
29/12/02	356.48	1.48	14.9	2.04	53	32.5	3.9	5.3	20

การทดสอบ Unit Root ของตัวแปรต่าง ๆ ในแบบจำลอง

SET

ADF Test Statistic	-9.045355	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SET)
Method: Least Squares
Date: 05/01/03 Time: 13:39
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SET(-1)	-0.885537	0.097900	-9.045355	0.0000
D(SET(-1))	0.032193	0.074507	0.432088	0.6662

R-squared	0.431219	Mean dependent var	0.050820
Adjusted R-squared	0.428023	S.D. dependent var	8.260321
S.E. of regression	6.247209	Akaike info criterion	6.513196
Sum squared resid	6946.916	Schwarz criterion	6.548673
Log likelihood	-584.1876	Durbin-Watson stat	1.997226

ASIMAR

ADF Test Statistic	-9.180482	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ASIMAR)
Method: Least Squares
Date: 05/01/03 Time: 13:39
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ASIMAR(-1)	-0.996615	0.108558	-9.180482	0.0000
D(ASIMAR(-1))	-0.050182	0.074921	-0.669800	0.5039

R-squared	0.525427	Mean dependent var	-0.061694
Adjusted R-squared	0.522761	S.D. dependent var	19.98753
S.E. of regression	13.80789	Akaike info criterion	8.099406

Sum squared resid	33937.08	Schwarz criterion	8.134883
Log likelihood	-726.9465	Durbin-Watson stat	2.004592

BECL

ADF Test Statistic	-9.766027	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(BECL)
Method: Least Squares
Date: 05/01/03 Time: 13:40
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BECL(-1)	-1.027256	0.105187	-9.766027	0.0000
D(BECL(-1))	0.039542	0.074658	0.529650	0.5970

R-squared	0.495713	Mean dependent var	0.061622
Adjusted R-squared	0.492880	S.D. dependent var	13.79285
S.E. of regression	9.822221	Akaike info criterion	7.418220
Sum squared resid	17172.73	Schwarz criterion	7.453698
Log likelihood	-665.6398	Durbin-Watson stat	1.988730

JUTHA

ADF Test Statistic	-9.341002	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(JUTHA)
Method: Least Squares
Date: 05/01/03 Time: 13:40
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
JUTHA(-1)	-0.992994	0.106305	-9.341002	0.0000
D(JUTHA(-1))	-0.014271	0.074864	-0.190621	0.8490

R-squared	0.504278	Mean dependent var	0.038760
Adjusted R-squared	0.501493	S.D. dependent var	16.72372
S.E. of regression	11.80779	Akaike info criterion	7.786445
Sum squared resid	24817.46	Schwarz criterion	7.821922
Log likelihood	-698.7801	Durbin-Watson stat	1.997469

PSL

ADF Test Statistic	-10.18207	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(PSL)
Method: Least Squares
Date: 05/01/03 Time: 13:41
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PSL(-1)	-1.173149	0.115217	-10.18207	0.0000
D(PSL(-1))	-0.020281	0.074176	-0.273415	0.7849

R-squared	0.604574	Mean dependent var	-0.144444
Adjusted R-squared	0.602353	S.D. dependent var	20.05260
S.E. of regression	12.64503	Akaike info criterion	7.923454
Sum squared resid	28461.61	Schwarz criterion	7.958931
Log likelihood	-711.1109	Durbin-Watson stat	1.999143

RCL

ADF Test Statistic	-10.00490	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RCL)
Method: Least Squares
Date: 05/01/03 Time: 13:42
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RCL(-1)	-0.997549	0.099706	-10.00490	0.0000
D(RCL(-1))	0.110127	0.073252	1.503400	0.1345

R-squared	0.456627	Mean dependent var	-0.022231
Adjusted R-squared	0.453574	S.D. dependent var	13.66220
S.E. of regression	10.09918	Akaike info criterion	7.473835
Sum squared resid	18154.84	Schwarz criterion	7.509312
Log likelihood	-670.6452	Durbin-Watson stat	1.831158

THAI

ADF Test Statistic	-9.047664	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(THAI)
Method: Least Squares
Date: 05/01/03 Time: 13:42
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
THAI(-1)	-0.944095	0.104347	-9.047664	0.0000
D(THAI(-1))	-0.022032	0.075050	-0.293562	0.7694

R-squared	0.483201	Mean dependent var	0.008797
Adjusted R-squared	0.480297	S.D. dependent var	11.77303
S.E. of regression	8.487222	Akaike info criterion	7.126049
Sum squared resid	12821.86	Schwarz criterion	7.161527
Log likelihood	-639.3444	Durbin-Watson stat	1.962702

TTA

ADF Test Statistic	-8.716186	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TTA)
Method: Least Squares
Date: 05/01/03 Time: 13:42
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TTA(-1)	-0.879481	0.100902	-8.716186	0.0000
D(TTA(-1))	-0.037423	0.074710	-0.500913	0.6171

R-squared	0.458291	Mean dependent var	0.064236
Adjusted R-squared	0.455247	S.D. dependent var	18.20006
S.E. of regression	13.43298	Akaike info criterion	8.044352
Sum squared resid	32119.21	Schwarz criterion	8.079829
Log likelihood	-721.9917	Durbin-Watson stat	1.962118

UTL

ADF Test Statistic	-9.102768	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(UTL)
Method: Least Squares
Date: 05/01/03 Time: 13:43
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UTL(-1)	-0.993054	0.109094	-9.102768	0.0000
D(UTL(-1))	-0.062221	0.074371	-0.836625	0.4039

R-squared	0.531070	Mean dependent var	-0.012698
Adjusted R-squared	0.528435	S.D. dependent var	24.10894
S.E. of regression	16.55575	Akaike info criterion	8.462393
Sum squared resid	48788.52	Schwarz criterion	8.497870
Log likelihood	-759.6154	Durbin-Watson stat	1.989235

ภาคผนวก ค

ผลการวิเคราะห์ถดถอยอย่างง่ายโดยวิธีกำลังสองน้อยที่สุด (OLS)

ASIMAR

Dependent Variable: ASIMAR
Method: Least Squares
Date: 05/01/03 Time: 13:44
Sample: 1 182
Included observations: 182

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.555494	0.976597	0.568806	0.5702
SET	0.627724	0.155561	4.035231	0.0001

R-squared	0.082957	Mean dependent var	0.668514
Adjusted R-squared	0.077862	S.D. dependent var	13.71432
S.E. of regression	13.16959	Akaike info criterion	8.004626
Sum squared resid	31218.85	Schwarz criterion	8.039835
Log likelihood	-726.4209	F-statistic	16.28309
Durbin-Watson stat	2.088230	Prob(F-statistic)	0.000081

BECL

Dependent Variable: BECL
Method: Least Squares
Date: 05/01/03 Time: 13:45
Sample: 1 182
Included observations: 182

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.013559	0.620023	-0.021869	0.9826
SET	0.812638	0.098763	8.228194	0.0000

R-squared	0.273324	Mean dependent var	0.132754
Adjusted R-squared	0.269287	S.D. dependent var	9.781177
S.E. of regression	8.361123	Akaike info criterion	7.095991
Sum squared resid	12583.51	Schwarz criterion	7.131200
Log likelihood	-643.7352	F-statistic	67.70318
Durbin-Watson stat	2.154220	Prob(F-statistic)	0.000000

JUTHA

Dependent Variable: JUTHA
Method: Least Squares
Date: 05/01/03 Time: 13:48
Sample: 1 182
Included observations: 182
Weighting series: RESIDJUTHA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.142155	0.045375	3.132889	0.0020
SET	0.457127	0.006361	71.86511	0.0000

Weighted Statistics			
R-squared	0.981742	Mean dependent var	0.965696
Adjusted R-squared	0.981641	S.D. dependent var	10.20845
S.E. of regression	1.383217	Akaike info criterion	3.497629
Sum squared resid	344.3919	Schwarz criterion	3.532837
Log likelihood	-316.2842	F-statistic	5164.594
Durbin-Watson stat	2.099335	Prob(F-statistic)	0.000000

PSL

Dependent Variable: PSL
Method: Least Squares
Date: 05/01/03 Time: 13:51
Sample: 1 182
Included observations: 182
Weighting series: RESIDPSL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.596212	0.040857	14.59278	0.0000
SET	0.208325	0.018160	11.47181	0.0000

Weighted Statistics			
R-squared	0.613278	Mean dependent var	0.271805
Adjusted R-squared	0.611130	S.D. dependent var	2.587454
S.E. of regression	1.613523	Akaike info criterion	3.805645
Sum squared resid	468.6219	Schwarz criterion	3.840854
Log likelihood	-344.3137	F-statistic	131.6025
Durbin-Watson stat	2.196012	Prob(F-statistic)	0.000000

RCL

Dependent Variable: RCL
Method: Least Squares
Date: 05/01/03 Time: 13:54
Sample: 1 182
Included observations: 182
Weighting series: RESIDRCL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.485160	0.013764	35.24788	0.0000
SET	0.676192	0.003868	174.8217	0.0000

Weighted Statistics			
R-squared	0.995658	Mean dependent var	0.388171
Adjusted R-squared	0.995634	S.D. dependent var	10.96992
S.E. of regression	0.724867	Akaike info criterion	2.205270
Sum squared resid	94.57768	Schwarz criterion	2.240479
Log likelihood	-198.6796	F-statistic	30562.64
Durbin-Watson stat	2.106972	Prob(F-statistic)	0.000000

THAI

Dependent Variable: THAI
Method: Least Squares
Date: 05/01/03 Time: 13:55
Sample: 1 182
Included observations: 182

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001797	0.512182	-0.003508	0.9972
SET	0.773453	0.081585	9.480357	0.0000

R-squared	0.333030	Mean dependent var	0.137461
Adjusted R-squared	0.329325	S.D. dependent var	8.433828
S.E. of regression	6.906865	Akaike info criterion	6.713837
Sum squared resid	8586.861	Schwarz criterion	6.749046
Log likelihood	-608.9592	F-statistic	89.87717
Durbin-Watson stat	2.144723	Prob(F-statistic)	0.000000

TTA

Dependent Variable: TTA
Method: Least Squares
Date: 05/01/03 Time: 20:17
Sample: 1 182
Included observations: 182
Weighting series: RESIDTTA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.776240	0.039657	44.79059	0.0000
SET	0.552218	0.017463	31.62269	0.0000

Weighted Statistics

R-squared	0.958370	Mean dependent var	1.468472
Adjusted R-squared	0.958139	S.D. dependent var	7.967834
S.E. of regression	1.630224	Akaike info criterion	3.826241
Sum squared resid	478.3737	Schwarz criterion	3.861450
Log likelihood	-346.1879	F-statistic	999.9944
Durbin-Watson stat	1.807944	Prob(F-statistic)	0.000000

UTL

Dependent Variable: UTL
Method: Least Squares
Date: 05/01/03 Time: 13:58
Sample: 1 182
Included observations: 182

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.266691	1.186520	1.067568	0.2871
SET	0.746492	0.188999	3.949705	0.0001

R-squared	0.079755	Mean dependent var	1.401094
Adjusted R-squared	0.074643	S.D. dependent var	16.63326
S.E. of regression	16.00045	Akaike info criterion	8.394038
Sum squared resid	46082.57	Schwarz criterion	8.429247
Log likelihood	-761.8575	F-statistic	15.60017
Durbin-Watson stat	2.308855	Prob(F-statistic)	0.000112

ภาคผนวก ง

วิธีการประมาณการ และการทดสอบของ Granger

ASIMAR

ADF Test Statistic	-9.415297	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESIDASIMAR)
Method: Least Squares
Date: 05/01/03 Time: 14:08
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDASIMAR(-1)	-1.021572	0.108501	-9.415297	0.0000
D(RESIDASIMAR(-1))	-0.023077	0.074999	-0.307699	0.7587

R-squared	0.522734	Mean dependent var	-0.093595
Adjusted R-squared	0.520053	S.D. dependent var	19.07591
S.E. of regression	13.21545	Akaike info criterion	8.011699
Sum squared resid	31087.36	Schwarz criterion	8.047176
Log likelihood	-719.0529	Durbin-Watson stat	2.000610

BECL

ADF Test Statistic	-10.42350	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESIDBECL)
Method: Least Squares
Date: 05/01/03 Time: 14:09
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDBECL(-1)	-1.144363	0.109787	-10.42350	0.0000
D(RESIDBECL(-1))	0.062463	0.074767	0.835441	0.4046

R-squared	0.540407	Mean dependent var	0.020323
Adjusted R-squared	0.537825	S.D. dependent var	12.29890
S.E. of regression	8.361219	Akaike info criterion	7.096135

Sum squared resid	12443.98	Schwarz criterion	7.131612
Log likelihood	-636.6521	Durbin-Watson stat	1.987663

JUTHA

ADF Test Statistic	-10.14445	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESIDJUTHA)
Method: Least Squares
Date: 05/01/03 Time: 14:10
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDJUTHA(-1)	-1.108715	0.109293	-10.14445	0.0000
D(RESIDJUTHA(-1))	0.040592	0.074870	0.542167	0.5884

R-squared	0.533646	Mean dependent var	0.015474
Adjusted R-squared	0.531026	S.D. dependent var	16.67435
S.E. of regression	11.41887	Akaike info criterion	7.719461
Sum squared resid	23209.54	Schwarz criterion	7.754939
Log likelihood	-692.7515	Durbin-Watson stat	2.008504

RCL

ADF Test Statistic	-9.723699	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESIDRCL)
Method: Least Squares
Date: 05/01/03 Time: 14:11
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDRCL(-1)	-1.016270	0.104515	-9.723699	0.0000
D(RESIDRCL(-1))	0.035713	0.072733	0.491014	0.6240

R-squared	0.495174	Mean dependent var	-0.056408
Adjusted R-squared	0.492338	S.D. dependent var	12.85513
S.E. of regression	9.159333	Akaike info criterion	7.278473
Sum squared resid	14933.02	Schwarz criterion	7.313950
Log likelihood	-653.0626	Durbin-Watson stat	1.808527

PSL

ADF Test Statistic	-10.13305	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESIDPSL)
Method: Least Squares
Date: 05/01/03 Time: 14:12
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDPSL(-1)	-1.172142	0.115675	-10.13305	0.0000
D(RESIDPSL(-1))	-0.029203	0.074083	-0.394192	0.6939

R-squared	0.610296	Mean dependent var	-0.154929
Adjusted R-squared	0.608107	S.D. dependent var	19.99563
S.E. of regression	12.51755	Akaike info criterion	7.903189
Sum squared resid	27890.63	Schwarz criterion	7.938666
Log likelihood	-709.2870	Durbin-Watson stat	1.998992

THAI

ADF Test Statistic	-9.593250	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESIDTHAI)
Method: Least Squares
Date: 05/01/03 Time: 14:13
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDTHAI(-1)	-1.058301	0.110317	-9.593250	0.0000
D(RESIDTHAI(-1))	-0.014279	0.075255	-0.189742	0.8497

R-squared	0.536397	Mean dependent var	-0.030510
Adjusted R-squared	0.533793	S.D. dependent var	10.14295
S.E. of regression	6.925541	Akaike info criterion	6.719358
Sum squared resid	8537.436	Schwarz criterion	6.754836
Log likelihood	-602.7423	Durbin-Watson stat	1.962790

TTA

ADF Test Statistic	-8.341543	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESIDTTA)
Method: Least Squares
Date: 05/01/03 Time: 20:22
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDTTA(-1)	-0.849153	0.101798	-8.341543	0.0000
D(RESIDTTA(-1))	-0.082501	0.074806	-1.102873	0.2716

R-squared	0.466245	Mean dependent var	0.003704
Adjusted R-squared	0.463247	S.D. dependent var	2.707949
S.E. of regression	1.983937	Akaike info criterion	4.219093
Sum squared resid	700.6093	Schwarz criterion	4.254570
Log likelihood	-377.7183	Durbin-Watson stat	2.014286

UTL

ADF Test Statistic	-9.812618	1% Critical Value*	-2.5770
		5% Critical Value	-1.9415
		10% Critical Value	-1.6166

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESIDUTL)
Method: Least Squares
Date: 05/01/03 Time: 14:14
Sample(adjusted): 3 182
Included observations: 180 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESIDUTL(-1)	-1.126204	0.114771	-9.812618	0.0000
D(RESIDUTL(-1))	-0.032133	0.074901	-0.429000	0.6684

R-squared	0.580040	Mean dependent var	-0.050635
Adjusted R-squared	0.577681	S.D. dependent var	24.18371
S.E. of regression	15.71605	Akaike info criterion	8.358291
Sum squared resid	43964.98	Schwarz criterion	8.393768
Log likelihood	-750.2462	Durbin-Watson stat	1.983527

ภาคผนวก จ

วิธีประมาณการและการทดสอบของ Johansen

ASIMAR

Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

****

181 observations from 2 to 182. Order of VAR = 1.

List of variables included in the cointegrating vector:

ASIMAR SET Intercept

List of eigenvalues in descending order:

.52710 .42904 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	135.5471	15.8700	13.8100
r<= 1	r = 2	101.4390	9.1600	7.5300

****

Cointegration LR Test Based on Trace of the Stochastic Matrix

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r>= 1	236.9860	20.1800	17.8800
r<= 1	r = 2	101.4390	9.1600	7.5300

****

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

Estimated Cointegrated Vectors in Johansen Estimation (Normalized in Brackets)

Cointegration with restricted intercepts and no trends in the VAR

****

181 observations from 2 to 182. Order of VAR = 1, chosen r =2.

List of variables included in the cointegrating vector:

```
ASIMAR      SET         Intercept
*******************************************************************************
            Vector 1    Vector 2
ASIMAR       .0055506    -.0011494
            ( -1.0000)  ( -1.0000)
SET          -.0011015    .012293
            (  .19845)  ( 10.6956)
Intercept    -.0034756   -.0011573
            (  .62617)  ( -1.0069)
*******************************************************************************
 ECM for variable ASIMAR estimated by OLS based on cointegrating VAR(1)
*******************************************************************************
Dependent variable is dASIMAR
181 observations used for estimation from  2 to  182
*******************************************************************************
Regressor        Coefficient     Standard Error     T-Ratio[Prob]
ecm1(-1)          -1.0769         .076304          -14.1137[.000]
ecm2(-1)          .0073718        .015800           .46657[.641]
*******************************************************************************
List of additional temporary variables created:
dASIMAR = ASIMAR-ASIMAR(-1)
ecm1 =  1.0000*ASIMAR  -.19845*SET  -.62617;ecm2 =  1.0000*ASIMAR -10.
6956*SET +  1.0069
*******************************************************************************
R-Squared                .52697   R-Bar-Squared              .52432
S.E. of Regression       13.7469  F-stat.  F( 1, 179) 199.4095[.000]
Mean of Dependent Variable -.061876  S.D. of Dependent Variable   19.9319
Residual Sum of Squares    33826.9  Equation Log-likelihood    -730.1895
Akaike Info. Criterion   -732.1895  Schwarz Bayesian Criterion -735.3880
DW-statistic             2.0034   System Log-likelihood      -1310.0
*******************************************************************************
                    Diagnostic Tests
*******************************************************************************
*  Test Statistics *      LM Version      *       F Version       *
```

****

* A:Serial Correlation*CHSQ(1)= .24293[.622]*F(1, 178)= .23923[.625]*

* B:Functional Form *CHSQ(1)= .0072269[.932]*F(1, 178)= .0071074[.933]*

* C:Normality *CHSQ(2)= 108.9417[.000]* Not applicable *

* D:Heteroscedasticity*CHSQ(1)= .91707[.338]*F(1, 179)= .91156[.341]*

****

A:Lagrange multiplier test of residual serial correlation B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals D:Based on the regression of squared residuals on squared fitted values

BECL

Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

****

177 observations from 6 to 182. Order of VAR = 5.

List of variables included in the cointegrating vector:

BECL SET Intercept

List of eigenvalues in descending order:

.20959 .17366 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	41.6310	15.8700	13.8100
r<= 1	r = 2	33.7629	9.1600	7.5300

****

Cointegration LR Test Based on Trace of the Stochastic Matrix

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r>= 1	75.3939	20.1800	17.8800
r<= 1	r = 2	33.7629	9.1600	7.5300

****

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

Estimated Cointegrated Vectors in Johansen Estimation (Normalized in Brackets)

Cointegration with restricted intercepts and no trends in the VAR

****

177 observations from 6 to 182. Order of VAR = 5, chosen r =2.

List of variables included in the cointegrating vector:

BECL SET Intercept

****

	Vector 1	Vector 2
BECL	-.020393	-.0090141
	(-1.0000)	(-1.0000)
SET	.027754	-.014272
	(1.3610)	(-1.5834)
Intercept	-.0022410	-.0026503
	(-.10989)	(-.29402)

****

ECM for variable BECL estimated by OLS based on cointegrating VAR(5)

****

Dependent variable is dBECL

177 observations used for estimation from 6 to 182

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dBECL1	-.020616	.18221	-.11315[.910]
dSET1	.049231	.25165	.19564[.845]
dBECL2	-.067998	.15666	-.43404[.665]
dSET2	.13800	.22188	.62198[.535]
dBECL3	.052129	.12456	.41849[.676]
dSET3	-.20094	.18294	-1.0984[.274]
dBECL4	.019408	.084289	.23026[.818]
dSET4	-.14334	.13593	-1.0545[.293]
ecm1(-1)	-.65320	.18873	-3.4611[.001]
ecm2(-1)	-.42211	.083422	-5.0599[.000]

****

List of additional temporary variables created:

dBECL = BECL-BECL(-1)

dBECL1 = BECL(-1)-BECL(-2)

dSET1 = SET(-1)-SET(-2)

dBECL2 = BECL(-2)-BECL(-3)

dSET2 = SET(-2)-SET(-3)

dBECL3 = BECL(-3)-BECL(-4)

dSET3 = SET(-3)-SET(-4)

dBECL4 = BECL(-4)-BECL(-5)

dSET4 = SET(-4)-SET(-5)

ecm1 = 1.0000*BECL -1.3610*SET + .10989;ecm2 = 1.0000*BECL + 1.58
34*SET + .29402

****

R-Squared .56410 R-Bar-Squared .54061

S.E. of Regression 9.2548 F-stat. F(9, 167) 24.0128[.000]

Mean of Dependent Variable -.21040 S.D. of Dependent Variable 13.6545

Residual Sum of Squares 14303.7 Equation Log-likelihood -639.8550

Akaike Info. Criterion -649.8550 Schwarz Bayesian Criterion -665.7358

DW-statistic 1.9258 System Log-likelihood -1174.4

****

Diagnostic Tests

****

* Test Statistics * LM Version * F Version *

****

* A:Serial Correlation*CHSQ(1)= 2.5792[.108]*F(1, 166)= 2.4546[.119]*

* B:Functional Form *CHSQ(1)= 1.7476[.186]*F(1, 166)= 1.6553[.200]*

* C:Normality *CHSQ(2)= 2391.4[.000]* Not applicable *

* D:Heteroscedasticity*CHSQ(1)= .011259[.915]*F(1, 175)= .011133[.916]*

****

A:Lagrange multiplier test of residual serial correlation B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals D:Based on the regression of squared residuals on squared fitted values

JUTHA

Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

****

177 observations from 6 to 182. Order of VAR = 5.

List of variables included in the cointegrating vector:

JUTHA SET Intercept

List of eigenvalues in descending order:

.19810 .16948 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	39.0765	15.8700	13.8100
r<= 1	r = 2	32.8689	9.1600	7.5300

****

Cointegration LR Test Based on Trace of the Stochastic Matrix

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r>= 1	71.9454	20.1800	17.8800
r<= 1	r = 2	32.8689	9.1600	7.5300

****

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

Estimated Cointegrated Vectors in Johansen Estimation (Normalized in Brackets)

Cointegration with restricted intercepts and no trends in the VAR

****

177 observations from 6 to 182. Order of VAR = 5, chosen r =2.

List of variables included in the cointegrating vector:

JUTHA SET Intercept

****

	Vector 1	Vector 2
JUTHA	-.016867	-.0029421
	(-1.0000)	(-1.0000)

SET .017575 -.021533

(1.0420) (-7.3189)

Intercept .0033797 -.4737E-3

(.20038) (-.16100)

****

ECM for variable JUTHA estimated by OLS based on cointegrating VAR(5)

****

Dependent variable is dJUTHA

177 observations used for estimation from 6 to 182

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dJUTHA1	.17437	.17333	1.0060[.316]
dSET1	-.22299	.28329	-.78713[.432]
dJUTHA2	.15872	.14350	1.1061[.270]
dSET2	-.042441	.24601	-.17252[.863]
dJUTHA3	.037874	.11297	.33526[.738]
dSET3	.066757	.19763	.33778[.736]
dJUTHA4	.039452	.076597	.51505[.607]
dSET4	-.34270	.14630	-2.3424[.020]
ecm1(-1)	-1.1166	.19360	-5.7676[.000]
ecm2(-1)	-.086757	.033770	-2.5690[.011]

****

List of additional temporary variables created:

dJUTHA = JUTHA-JUTHA(-1)

dJUTHA1 = JUTHA(-1)-JUTHA(-2)

dSET1 = SET(-1)-SET(-2)

dJUTHA2 = JUTHA(-2)-JUTHA(-3)

dSET2 = SET(-2)-SET(-3)

dJUTHA3 = JUTHA(-3)-JUTHA(-4)

dSET3 = SET(-3)-SET(-4)

dJUTHA4 = JUTHA(-4)-JUTHA(-5)

dSET4 = SET(-4)-SET(-5)

ecm1 = 1.0000*JUTHA -1.0420*SET -.20038;ecm2 = 1.0000*JUTHA + 7.3

189*SET + .16100

```
*******************************************************************************
R-Squared                .56002   R-Bar-Squared              .53631
S.E. of Regression       11.4784  F-stat.   F( 9, 167)  23.6178[.000]
Mean of Dependent Variable -.013780  S.D. of Dependent Variable   16.8564
Residual Sum of Squares   22002.9  Equation Log-likelihood    -677.9682
Akaike Info. Criterion   -687.9682  Schwarz Bayesian Criterion  -703.8489
DW-statistic             2.0235   System Log-likelihood      -1231.3
*******************************************************************************
                    Diagnostic Tests
*******************************************************************************
*  Test Statistics *      LM Version      *      F Version       *
*******************************************************************************
* A:Serial Correlation*CHSQ(  1)=  .80568[.369]*F(  1, 166)=  .75906[.385]*
* B:Functional Form  *CHSQ(  1)=  .57451[.448]*F(  1, 166)=  .54056[.463]*
* C:Normality        *CHSQ(  2)=  1009.7[.000]*     Not applicable     *
* D:Heteroscedasticity*CHSQ(  1)=  .20874[.648]*F(  1, 175)=  .20662[.650]*
*******************************************************************************
```

A:Lagrange multiplier test of residual serial correlation B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals D:Based on the regression of squared residuals on squared fitted values

PSL

Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

```
*******************************************************************************
181 observations from   2 to  182. Order of VAR = 1.
List of variables included in the cointegrating vector:
PSL          SET          Intercept
List of eigenvalues in descending order:
.61073    .43119     0.00
*******************************************************************************
Null   Alternative   Statistic    95% Critical Value    90% Critical Value
```

r = 0	r = 1	170.7702	15.8700	13.8100
r<= 1	r = 2	102.1215	9.1600	7.5300

****

Cointegration LR Test Based on Trace of the Stochastic Matrix

****

181 observations from 2 to 182. Order of VAR = 1.

List of variables included in the cointegrating vector:

PSL SET Intercept

List of eigenvalues in descending order:

.61073 .43119 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r>= 1	272.8917	20.1800	17.8800
r<= 1	r = 2	102.1215	9.1600	7.5300

****

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

Estimated Cointegrated Vectors in Johansen Estimation (Normalized in Brackets)

Cointegration with restricted intercepts and no trends in the VAR

****

181 observations from 2 to 182. Order of VAR = 1, chosen r =2.

List of variables included in the cointegrating vector:

PSL SET Intercept

****

	Vector 1	Vector 2
PSL	.0057496	.4545E-3
	(-1.0000)	(-1.0000)
SET	-.0021183	.011684
	(.36843)	(-25.7093)
Intercept	-.0033601	-.0020910
	(.58441)	(4.6011)

****

ECM for variable PSL estimated by OLS based on cointegrating VAR(1)

****

Dependent variable is dPSL

181 observations used for estimation from 2 to 182

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
ecm1(-1)	-1.2024	.072955	-16.4811[.000]
ecm2(-1)	-.012162	.0057666	-2.1091[.036]

****

List of additional temporary variables created:

dPSL = PSL-PSL(-1)

ecm1 = 1.0000*PSL -.36843*SET -.58441;ecm2 = 1.0000*PSL + 25.7093*SET -4.6011

****

R-Squared	.60666	R-Bar-Squared	.60446
S.E. of Regression	12.6888	F-stat. F(1, 179)	276.0733[.000]
Mean of Dependent Variable	.054751	S.D. of Dependent Variable	20.1756
Residual Sum of Squares	28820.2	Equation Log-likelihood	-715.6932
Akaike Info. Criterion	-717.6932	Schwarz Bayesian Criterion	-720.8917
DW-statistic	1.9658	System Log-likelihood	-1302.4

****

Diagnostic Tests

****

* Test Statistics *	LM Version	*	F Version	*

****

* A:Serial Correlation*	CHSQ(1)= .23878[.625]*	F(1, 178)=	.23513[.628]*
* B:Functional Form *	CHSQ(1)= .45083[.502]*	F(1, 178)=	.44446[.506]*
* C:Normality *	CHSQ(2)= 255.5305[.000]*	Not applicable	*
* D:Heteroscedasticity*	CHSQ(1)= 2.6123[.106]*	F(1, 179)=	2.6213[.107]*

****

A:Lagrange multiplier test of residual serial correlation B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals D:Based on the regression of squared residuals on squared fitted values

RCL

Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

****

173 observations from 10 to 182. Order of VAR = 9.

List of variables included in the cointegrating vector:

RCL SET Intercept

List of eigenvalues in descending order:

.15451 .069487 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	29.0361	15.8700	13.8100
r<= 1	r = 2	12.4593	9.1600	7.5300

****

Cointegration LR Test Based on Trace of the Stochastic Matrix

****

173 observations from 10 to 182. Order of VAR = 9.

List of variables included in the cointegrating vector:

RCL SET Intercept

List of eigenvalues in descending order:

.15451 .069487 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r>= 1	41.4953	20.1800	17.8800
r<= 1	r = 2	12.4593	9.1600	7.5300

****

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

Estimated Cointegrated Vectors in Johansen Estimation (Normalized in Brackets)

Cointegration with restricted intercepts and no trends in the VAR

****

173 observations from 10 to 182. Order of VAR = 9, chosen r =2.

List of variables included in the cointegrating vector:

RCL SET Intercept

****

	Vector 1	Vector 2
RCL	-.6974E-3	-.027140
	(-1.0000)	(-1.0000)
SET	-.034386	.018357
	(-49.3025)	(.67638)
Intercept	.9612E-3	.013655
	(1.3782)	(.50314)

****

ECM for variable RCL estimated by OLS based on cointegrating VAR(9)

****

Dependent variable is dRCL

173 observations used for estimation from 10 to 182

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dRCL1	-.18028	.21545	-.83679[.404]
dSET1	.10766	.30337	.35487[.723]
dRCL2	-.19099	.20084	-.95096[.343]
dSET2	.0020658	.28091	.0073539[.994]
dRCL3	-.20139	.18319	-1.0993[.273]
dSET3	.17224	.25632	.67198[.503]
dRCL4	-.17426	.16814	-1.0364[.302]
dSET4	-.089952	.23810	-.37780[.706]
dRCL5	-.11210	.14840	-.75537[.451]
dSET5	-.040379	.21499	-.18782[.851]
dRCL6	-.24624	.12429	-1.9812[.049]
dSET6	.025060	.19620	.12773[.899]
dRCL7	-.23489	.10335	-2.2728[.024]
dSET7	.14596	.16379	.89117[.374]
dRCL8	-.097096	.069926	-1.3886[.167]
dSET8	.23072	.12238	1.8853[.061]
ecm1(-1)	-.0055301	.0058305	-.94849[.344]
ecm2(-1)	-.75954	.22688	-3.3477[.001]

```
*******************************************************************************
List of additional temporary variables created:
dRCL = RCL-RCL(-1)
dRCL1 = RCL(-1)-RCL(-2)
dSET1 = SET(-1)-SET(-2)
dRCL2 = RCL(-2)-RCL(-3)
dSET2 = SET(-2)-SET(-3)
dRCL3 = RCL(-3)-RCL(-4)
dSET3 = SET(-3)-SET(-4)
dRCL4 = RCL(-4)-RCL(-5)
dSET4 = SET(-4)-SET(-5)
dRCL5 = RCL(-5)-RCL(-6)
dSET5 = SET(-5)-SET(-6)
dRCL6 = RCL(-6)-RCL(-7)
dSET6 = SET(-6)-SET(-7)
dRCL7 = RCL(-7)-RCL(-8)
dSET7 = SET(-7)-SET(-8)
dRCL8 = RCL(-8)-RCL(-9)
dSET8 = SET(-8)-SET(-9)
ecm1 =   1.0000*RCL +  49.3025*SET   -1.3782;ecm2 =   1.0000*RCL   -.67638*
SET   -.50314
*******************************************************************************
R-Squared                .55311   R-Bar-Squared              .50410
S.E. of Regression       8.3598   F-stat.   F( 17, 155)   11.2850[.000]
Mean of Dependent Variable  .056905   S.D. of Dependent Variable   11.8713
Residual Sum of Squares    10832.3   Equation Log-likelihood    -603.3266
Akaike Info. Criterion   -621.3266   Schwarz Bayesian Criterion  -649.7062
DW-statistic             1.9646   System Log-likelihood       -1132.5
*******************************************************************************
                    Diagnostic Tests
*******************************************************************************
*   Test Statistics  *       LM Version       *       F Version       *
*******************************************************************************
* A:Serial Correlation*CHSQ(   1)=   1.4493[.229]*F(   1, 154)=   1.3010[.256]*
```

* B:Functional Form *CHSQ(1)= .83416[.361]*F(1, 154)= .74615[.389]*

* C:Normality *CHSQ(2)= 240.2482[.000]* Not applicable *

* D:Heteroscedasticity*CHSQ(1)= .030958[.860]*F(1, 171)= .030605[.861]*

****

A:Lagrange multiplier test of residual serial correlation B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals D:Based on the regression of squared residuals on squared fitted values

THAI

Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

****

181 observations from 2 to 182. Order of VAR = 1.

List of variables included in the cointegrating vector:

THAI SET Intercept

List of eigenvalues in descending order:

.53973 .42895 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	140.4468	15.8700	13.8100
r<= 1	r = 2	101.4103	9.1600	7.5300

****

Cointegration LR Test Based on Trace of the Stochastic Matrix

****

181 observations from 2 to 182. Order of VAR = 1.

List of variables included in the cointegrating vector:

THAI SET Intercept

List of eigenvalues in descending order:

.53973 .42895 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r>= 1	241.8571	20.1800	17.8800

r<= 1 r = 2 101.4103 9.1600 7.5300

****

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

Estimated Cointegrated Vectors in Johansen Estimation (Normalized in Brackets)

Cointegration with restricted intercepts and no trends in the VAR

****

181 observations from 2 to 182. Order of VAR = 1, chosen r =2.

List of variables included in the cointegrating vector:

THAI SET Intercept

****

	Vector 1	Vector 2
THAI	-.010638	.0018875
	(-1.0000)	(-1.0000)
SET	.010303	.010171
	(.96853)	(-5.3884)
Intercept	-.3354E-3	-.0017716
	(-.031530)	(.93857)

****

ECM for variable THAI estimated by OLS based on cointegrating VAR(1)

****

Dependent variable is dTHAI

181 observations used for estimation from 2 to 182

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
ecm1(-1)	-.92347	.089461	-10.3226[.000]
ecm2(-1)	-.12916	.015874	-8.1364[.000]

****

List of additional temporary variables created:

dTHAI = THAI-THAI(-1)

ecm1 = 1.0000*THAI -.96853*SET + .031530;ecm2 = 1.0000*THAI + 5.38 84*SET -.93857

****

R-Squared .49112 R-Bar-Squared .48828

S.E. of Regression 8.4099 F-stat. F(1, 179) 172.7539[.000]

Mean of Dependent Variable -.036847 S.D. of Dependent Variable 11.7563

Residual Sum of Squares 12659.9 Equation Log-likelihood -641.2444

Akaike Info. Criterion -643.2444 Schwarz Bayesian Criterion -646.4429

DW-statistic 1.9852 System Log-likelihood -1193.1

****

Diagnostic Tests

****

* Test Statistics * LM Version * F Version *

****

* A:Serial Correlation*CHSQ(1)= .37490[.540]*F(1, 178)= .36945[.544]*

* B:Functional Form *CHSQ(1)= 1.8286[.176]*F(1, 178)= 1.8167[.179]*

* C:Normality *CHSQ(2)= 101.6701[.000]* Not applicable *

* D:Heteroscedasticity*CHSQ(1)= .20067[.654]*F(1, 179)= .19867[.656]*

****

A:Lagrange multiplier test of residual serial correlation B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals D:Based on the regression of squared residuals on squared fitted values

TTA

Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

****

171 observations from 12 to 182. Order of VAR = 11.

List of variables included in the cointegrating vector:

TTA SET Intercept

List of eigenvalues in descending order:

.18452 .099749 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	34.8806	15.8700	13.8100
r<= 1	r = 2	17.9690	9.1600	7.5300

****

Cointegration LR Test Based on Trace of the Stochastic Matrix

****

171 observations from 12 to 182. Order of VAR = 11.

List of variables included in the cointegrating vector:

TTA SET Intercept

List of eigenvalues in descending order:

.18452 .099749 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r>= 1	52.8496	20.1800	17.8800
r<= 1	r = 2	17.9690	9.1600	7.5300

****

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

Estimated Cointegrated Vectors in Johansen Estimation (Normalized in Brackets)

Cointegration with restricted intercepts and no trends in the VAR

****

171 observations from 12 to 182. Order of VAR = 11, chosen r =2.

List of variables included in the cointegrating vector:

TTA SET Intercept

****

	Vector 1	Vector 2
TTA	-.012542	-.014821
	(-1.0000)	(-1.0000)
SET	.044459	-.015770
	(3.5448)	(-1.0640)
Intercept	.011291	.017682
	(.90020)	(1.1930)

****

ECM for variable TTA estimated by OLS based on cointegrating VAR(11)

****

Dependent variable is dTTA

171 observations used for estimation from 12 to 182

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dTTA1	.10257	.19606	.52316[.602]
dSET1	-1.0195	.46250	-2.2043[.029]
dTTA2	.025992	.18829	.13804[.890]
dSET2	-.69229	.43164	-1.6039[.111]
dTTA3	.24383	.17900	1.3622[.175]
dSET3	-.67291	.39757	-1.6926[.093]
dTTA4	.13486	.16982	.79410[.428]
dSET4	-.73186	.36616	-1.9988[.047]
dTTA5	.0085489	.15406	.055489[.956]
dSET5	-.65933	.33127	-1.9903[.048]
dTTA6	-.7493E-3	.14458	-.0051825[.996]
dSET6	-.63152	.31131	-2.0286[.044]
dTTA7	.0036637	.13144	.027873[.978]
dSET7	-.38713	.27664	-1.3994[.164]
dTTA8	-.088274	.11840	-.74554[.457]
dSET8	-.25280	.24653	-1.0254[.307]
dTTA9	-.056840	.095446	-.59552[.552]
dSET9	-.17645	.19938	-.88500[.378]
dTTA10	-.034518	.067356	-.51248[.609]
dSET10	-.23863	.14835	-1.6085[.110]
ecm1(-1)	-.47825	.13299	-3.5961[.000]
ecm2(-1)	-.50136	.15716	-3.1902[.002]

List of additional temporary variables created:

dTTA = TTA-TTA(-1)

dTTA1 = TTA(-1)-TTA(-2)

dSET1 = SET(-1)-SET(-2)

dTTA2 = TTA(-2)-TTA(-3)

dSET2 = SET(-2)-SET(-3)

dTTA3 = TTA(-3)-TTA(-4)

dSET3 = SET(-3)-SET(-4)

dTTA4 = TTA(-4)-TTA(-5)

dSET4 = SET(-4)-SET(-5)

dTTA5 = TTA(-5)-TTA(-6)

dSET5 = SET(-5)-SET(-6)

dTTA6 = TTA(-6)-TTA(-7)

dSET6 = SET(-6)-SET(-7)

dTTA7 = TTA(-7)-TTA(-8)

dSET7 = SET(-7)-SET(-8)

dTTA8 = TTA(-8)-TTA(-9)

dSET8 = SET(-8)-SET(-9)

dTTA9 = TTA(-9)-TTA(-10)

dSET9 = SET(-9)-SET(-10)

dTTA10 = TTA(-10)-TTA(-11)

dSET10 = SET(-10)-SET(-11)

ecm1 = 1.0000*TTA -3.5448*SET -.90020;ecm2 = 1.0000*TTA + 1.0640* SET -1.1930

****

R-Squared .53195 R-Bar-Squared .46599

S.E. of Regression 10.6036 F-stat. F(21, 149) 8.0640[.000]

Mean of Dependent Variable -.28326 S.D. of Dependent Variable 14.5103

Residual Sum of Squares 16753.0 Equation Log-likelihood -634.6279

Akaike Info. Criterion -656.6279 Schwarz Bayesian Criterion -691.1862

DW-statistic 1.6915 System Log-likelihood -1146.2

****

Diagnostic Tests

****

* Test Statistics * LM Version * F Version *

****

* A:Serial Correlation*CHSQ(1)= 23.7005[.000]*F(1, 148)= 23.8132[.000]*

* B:Functional Form *CHSQ(1)= 1.1277[.288]*F(1, 148)= .98252[.323]*

* C:Normality *CHSQ(2)= 108.4972[.000]* Not applicable *

* D:Heteroscedasticity*CHSQ(1)= 4.1495[.042]*F(1, 169)= 4.2030[.042]*

****

A:Lagrange multiplier test of residual serial correlation B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals D:Based on the regression of squared residuals on squared fitted values

UTL

Cointegration with restricted intercepts and no trends in the VAR

Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

****

173 observations from 10 to 182. Order of VAR = 9.

List of variables included in the cointegrating vector:

UTL SET Intercept

List of eigenvalues in descending order:

.15252 .087900 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	28.6296	15.8700	13.8100
r<= 1	r = 2	15.9170	9.1600	7.5300

****

Cointegration LR Test Based on Trace of the Stochastic Matrix

****

173 observations from 10 to 182. Order of VAR = 9.

List of variables included in the cointegrating vector:

UTL SET Intercept

List of eigenvalues in descending order:

.15252 .087900 0.00

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r>= 1	44.5467	20.1800	17.8800
r<= 1	r = 2	15.9170	9.1600	7.5300

****

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

Estimated Cointegrated Vectors in Johansen Estimation (Normalized in Brackets)

Cointegration with restricted intercepts and no trends in the VAR

****

173 observations from 10 to 182. Order of VAR = 9, chosen r =2.

List of variables included in the cointegrating vector:

UTL SET Intercept

****

	Vector 1	Vector 2
UTL	-.0043765	-.015143
	(-1.0000)	(-1.0000)
SET	-.028186	.028246
	(-6.4403)	(1.8654)
Intercept	.0062652	.021739
	(1.4316)	(1.4356)

****

ECM for variable UTL estimated by OLS based on cointegrating VAR(9)

****

Dependent variable is dUTL

173 observations used for estimation from 10 to 182

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dUTL1	-.19339	.23403	-.82636[.410]
dSET1	.56578	.57440	.98500[.326]
dUTL2	-.12678	.22297	-.56860[.570]
dSET2	.65698	.52673	1.2473[.214]
dUTL3	-.086935	.21143	-.41117[.682]
dSET3	.79231	.47022	1.6850[.094]
dUTL4	-.035974	.19472	-.18475[.854]
dSET4	.034819	.43457	.080125[.936]
dUTL5	-.017666	.17481	-.10106[.920]
dSET5	.041788	.39200	.10660[.915]
dUTL6	.15510	.14904	1.0407[.300]
dSET6	.23297	.35636	.65374[.514]
dUTL7	.17691	.11889	1.4880[.139]
dSET7	.33662	.29002	1.1607[.248]
dUTL8	.15557	.076968	2.0212[.045]

dSET8	.13043	.21447	.60815[.544]
ecm1(-1)	-.21198	.068041	-3.1155[.002]
ecm2(-1)	-.73473	.23542	-3.1209[.002]

****

List of additional temporary variables created:

dUTL = UTL-UTL(-1)

dUTL1 = UTL(-1)-UTL(-2)

dSET1 = SET(-1)-SET(-2)

dUTL2 = UTL(-2)-UTL(-3)

dSET2 = SET(-2)-SET(-3)

dUTL3 = UTL(-3)-UTL(-4)

dSET3 = SET(-3)-SET(-4)

dUTL4 = UTL(-4)-UTL(-5)

dSET4 = SET(-4)-SET(-5)

dUTL5 = UTL(-5)-UTL(-6)

dSET5 = SET(-5)-SET(-6)

dUTL6 = UTL(-6)-UTL(-7)

dSET6 = SET(-6)-SET(-7)

dUTL7 = UTL(-7)-UTL(-8)

dSET7 = SET(-7)-SET(-8)

dUTL8 = UTL(-8)-UTL(-9)

dSET8 = SET(-8)-SET(-9)

ecm1 = 1.0000*UTL + 6.4403*SET -1.4316;ecm2 = 1.0000*UTL -1.8654*SET -1.4356

****

R-Squared	.62699	R-Bar-Squared	.58608
S.E. of Regression	15.5470	F-stat. F(17, 155)	15.3257[.000]
Mean of Dependent Variable	-.11074	S.D. of Dependent Variable	24.1651
Residual Sum of Squares	37465.0	Equation Log-likelihood	-710.6623
Akaike Info. Criterion	-728.6623	Schwarz Bayesian Criterion	-757.0419
DW-statistic	1.9721	System Log-likelihood	-1244.5

****

Diagnostic Tests

****

```
*  Test Statistics *       LM Version       *       F Version        *
**********************************************************************************
* A:Serial Correlation*CHSQ(   1)=   .18946[.663]*F(   1, 154)=   .16884[.682]*
* B:Functional Form   *CHSQ(   1)=  .094402[.759]*F(   1, 154)=  .084080[.772]*
* C:Normality         *CHSQ(   2)= 413.8004[.000]*      Not applicable      *
* D:Heteroscedasticity*CHSQ(   1)=  .019481[.889]*F(   1, 171)=  .019258[.890]*
**********************************************************************************
```

A:Lagrange multiplier test of residual serial correlation B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals D:Based on the regression of squared residuals on squared fitted values

ภาคผนวก ฉ

สรุปความสัมพันธ์ระยะยาวและการปรับตัวระยะสั้นโดยวิธี Johansen

กรณีข้อมูลมีลักษณะนิ่ง (Stationary) เมื่อ run regression จะไม่เกิดปัญหาความสัมพันธ์ที่ไม่แท้จริง (Spurious Regression) และหากข้อมูล Non-Stationary ก็สามารถใช้วิธี Cointegration เพื่อแก้ปัญหาด้านข้อมูลได้

แต่อย่างไรก็ตามกรณีที่ตัวแปร Stationary แสดงถึงการมีความสัมพันธ์กันและถ้าตัว residual มีลักษณะนิ่ง (Stationary) แสดงถึงการมีความสัมพันธ์ระยะยาว (Long term relationship) หรือมีความสัมพันธ์ในเชิงดุลยภาพระยะยาว (Long-run equilibrium relationship) ซึ่งอาจเกิด shock ออกนอกจุดดุลยภาพ (equilibrium) จึงมีกระบวนการปรับเข้าสู่จุดดุลยภาพระยะยาว ซึ่งเป็นการปรับตัวระยะสั้นของตัวแปรต่างๆในสมการ (Error – Correction Mechanisms; ECM) ตามหลัก Granger Representation Theorem (Engle and Granger, 1987) ว่าถ้า Cointegration มีอยู่จริง Error – Correction Mechanisms ย่อมมีอยู่จริง

จากการศึกษา วิธีการของ Johansen แนะนำให้ประมาณการ rank ซึ่งกรณีที่ได้ full rank อันดับที่ n แสดงว่าตัวแปรทุกตัวใน VAR Model เป็น I(0) คือ Stationary ซึ่งตัวทดสอบที่ Johansen ใช้ทดสอบหาจำนวน Cointegrating Vectors r ใน VAR Model ได้แก่ Trace Test และ Maximal Eigenvalue Test

ในการศึกษาตัวแปรมี 2 ตัวแปร คือ $X_t = (X_{1t} + X_{2t})$ rank เท่ากับ "r" และ $0 < r < 2$ ซึ่ง "r" คือ Cointegrating vectors สำหรับตัวแปรใน X_t กรณี $r = 2$ แสดงว่า full rank ตัวแปรทุกตัวแปรเป็น I(0) คือ Stationary ตัวทดสอบ

Trace Test	H_0 : จำนวน cointegrating vectors $\leq r$
	H_1 : จำนวน cointegrating vectors $\geq r$
Maximal Eigenvalue Test	H_0 : จำนวน cointegrating vectors $\leq r$
	H_1 : จำนวน cointegrating vectors $= r+1$

ผลการศึกษาความสัมพันธ์ระยะยาวระหว่างอัตราผลตอบแทนของหลักทรัพย์กลุ่มขนส่งแต่ละหลักทรัพย์ กับ อัตราผลตอบแทนของตลาด ในการศึกษาพบว่ามีความสัมพันธ์ระยะยาว และแต่ละหลักทรัพย์มีสมการการปรับตัวระยะสั้น ดังนี้

แบบจำลองการปรับตัวระยะสั้น โดยวิธีของ Johansen

โดยคำนึงถึงค่าสถิติที่ดีที่สุด ซึ่งรูปแบบที่เหมาะสมคือ VAR model ไม่มีแนวโน้มเวลาแต่จำกัดค่าคงที่ใน cointegrating vector ซึ่งได้ผลการศึกษาดังนี้

ASIMAR

D(RASIM) = -1.0769*(RASIM(-1) – 0.19845*RM(-1) - 0.62617)
+ 0.0073718*(RASIM(-1) -10.6956*RM(-1) + 1.0069)

BECL

D(RBECL) = - 0.020616*D(RBECL(-1)) + 0.049231*D(RM(-1)) –
0.067998*D(RBECL(-2)) + 0.13800*D(RM(-2)) + 0.052129*D(RBECL(-3)) –
0.20094*D(RM(-3)) + 0.019408*D(RBECL(-4)) – 0.14334*D(RM(-4)) – 0.65320*(RBECL(1) -
1.3610*RM(-1)+0.10989) – 0.42211*(RBECL(-1) + 1.5834*RM(-1) + 0.29402)

JUTHA

D(RJUTH) = 0.17437*D(RJUTH(-1)) - 0.22299*D(RM(-1)) + 0.15872*D(RJUTH(2))
– 0.042441*D(RM(-2)) + 0.037874*D(RUTH(-3)) + 0.066757*D(RM(-3)) +
0.039452*D(RUTH(-4)) - 0.34270*D(RM(-4)) – 1.1166*(RJUTH(-1) – 1.0420*RM(-1) +
0.20038) – 0.086757*(RJUTH(-1) + 7.3189*RM(-1) + 0.16100)

PSL

D(RPSL) = -1.2024*(RPSL(-1) – 0.36843*RM(-1) – 0.58441) – 0.012162*(RPSL(1) +
25.7093*RM(-1) – 4.6011)

RCL

D(RRCL) = -0.18028*D(RRCL(-1)) + 0.10766*D(RM(-1)) – 0.19099*D(RRCL(-2)) +
0.0020658*D(RM(-2)) – 0.20139*D(RRCL(-3)) + 0.17224*D(RM(-3)) –0.17426*D(RRCL(-4))
– 0.089952*D(RM(-4)) – 0.11210*D(RRCL(-5)) – 0.040379*D(RM(5)) – 0.24624*D(RRCL(-6))
+ 0.025060*D(RM(-6)) – 0.23489*D(RRCL(7)) + 0.14596*D(RM(-7)) – 0.097096*D(RRCL(-

8)) + 0.23072*D(RM(8)) – 0.0055301*(RRCL(-1) + 49.3025*RM(-1) – 1.3782) – 0.75954*(RRCL(-1) - 0.67638*RM(-1) –0.50314)

THAI

D(RTHAI) = - 0.92347*(RTHAI(-1)) – 0.96853*RM(-1) + 0.031530) – 0.12916*(RTHAI(-1) + 5.3884*RM(-1) - 0.93857)

TTA

D(RTTA) = 0.10257*D(RTTA(-1)) – 1.0195*D(RM(-1)) + 0.025992*D(RTTA(-2)) – 0.69229*D(RM(-2)) + 0.24383*D(RTTA(-3)) – 0.67291*D(RM(-3)) + 0.13486*D(RTTA(-4)) – 0.73186*D(RM(-4)) + 0.0085489*D(RTTA(-5)) – 0.65933*D(RM(-5)) – 0.7493E-3*D(RTTA(-6)) – 0.63152*D(RM(-6)) + 0.0036637*D(RTTA(-7)) – 0.38713*D(RM(-7)) – 0.088274*D(RTTA(-8)) - 0.25280*D(RM(-8)) – 0.056840*D(RTTA(-9)) – 0.17645*D(RM(9)) – 0.034518*D(RTTA(-10)) - 0.23863*D(RM(-10)) – 0.47825*(RTTA(-1) – 3.5448*RM(-1) – 0.90020) – 0.50136*(RTTA(-1) + 1.0640*RM(-1) – 1.1930)

UTL

D(RUTL) = - 0.19339*D(RUTL(-1)) + 0.56578*D(RM(-1)) – 0.12678*D(RUTL(-2)) + 0.65698*D(RM(-2)) – 0.086935*D(RUTL(-3)) + 0.79231*D(RM(-3)) – 0.035974*D(RUTL(-4)) + 0.034819*D(RM(-4)) – 0.017666*D(RUTL(-5)) + 0.041788*D(RM(-5)) + 0.15510*D(RUTL(-6)) +0.23297*D(RM(-6)) + 0.17691*D(RUTL(7)) + 0.33662*D(RM(-7)) + 0.15557*D(RUTL(-8)) + 0.13043*D(RM(-8)) – 0.21198*(RUTL(-1) + 6.4403*RM(-1) – 1.4316) – 0.73473 (RUTL(-1) – 1.8654RM(-1) – 1.4356)

ประวัติผู้เขียน

ชื่อ	นางสาวรุ่งระวี สิทธิกร
วัน เดือน ปีเกิด	26 มีนาคม 2520
ประวัติการศึกษา	สำเร็จการศึกษามัธยมศึกษาตอนปลาย โรงเรียนส่วนบุญโญปถัมภ์ ลำพูน ปีการศึกษา 2538 สำเร็จการศึกษาปริญญาเศรษฐศาสตรบัณฑิต มหาวิทยาลัยเชียงใหม่ ปีการศึกษา 2542
ประสบการณ์	2542 – 2543 เจ้าหน้าที่ กรอ. (คณะกรรมการร่วมภาครัฐและเอกชนเพื่อแก้ไขปัญหาเศรษฐกิจ) ฝ่ายนโยบายและแผน สำนักงานจังหวัดลำพูน 2543 – ปัจจุบัน เจ้าหน้าที่ประเมินราคาทรัพย์สิน กรมธนารักษ์ กรุงเทพฯ