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ภาคผนวก ก

ข้อมูลราคาส่งออกน้ำตาลรายเดือนของประเทศไทยตั้งแต่ปี พ.ศ. 2537-2547

ข้อมูลราคาส่งออกน้ำตาลดิบของไทย

(หน่วย : บาท/ตัน)

เดือน/ปี	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547
มค.	6,065.91	7,647.14	6,662.91	6,553.04	14,309.67	7,252.60	5,126.97	9,898.70	7,089.67	6,485.71	5,812.65
กพ.	6,082.32	7,374.59	6,619.55	6,719.82	13,307.54	7,124.03	5,532.36	9,691.03	6,290.66	7,017.29	5,505.74
มีค.	6,211.82	8,018.71	6,482.51	6,606.33	11,408.10	6,376.36	4,575.40	8,586.14	6,290.10	7,230.98	-
เมย.	6,203.25	7,231.83	6,520.99	6,643.94	9,685.91	6,373.25	4,662.55	8,785.01	5,969.18	7,182.53	-
พค.	6,153.07	7,446.33	6,582.04	6,641.80	10,215.74	5,103.08	5,278.04	9,208.60	5,889.57	7,254.33	-
มิย.	6,701.50	7,797.35	7,409.77	6,720.79	10,520.41	5,034.97	5,551.93	9,055.82	6,176.43	7,303.21	-
กค.	6,467.82	7,476.11	7,943.26	7,824.49	11,362.83	6,004.45	6,283.43	9,960.55	6,700.68	6,663.86	-
สค.	6,646.98	7,474.31	7,384.91	9,015.94	9,707.55	2,967.06	7,686.20	9,580.65	6,769.22	6,433.49	-
กย.	6,700.17	7,714.84	7,569.07	8,966.19	8,590.27	5,548.07	7,060.90	9,472.77	6,758.59	6,433.70	-
ตค.	6,486.27	7,076.05	8,778.37	9,613.78	8,125.16	5,901.31	8,464.04	8,565.81	6,803.90	6,772.75	-
พย.	6,581.06	7,252.22	7,192.30	7,982.01	9,215.02	5,442.19	8,651.20	6,540.31	8,919.47	6,201.66	-
ธค.	7,090.92	6,777.15	6,558.03	11,509.89	6,991.48	5,192.93	8,866.25	7,024.98	6,172.31	6,828.09	-

ที่มา: กระทรวงพาณิชย์ (2547: ออนไลน์)

ข้อมูลราคาส่งออกน้ำตาลทรายขาวของไทย

(หน่วย : บาท/ตัน)

เดือน/ปี	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547
มก.	6,485.10	7,674.72	7,537.58	7,619.84	15,755.60	8,145.66	6,134.50	10,029.52	8,918.60	8,551.86	7,253.70
กพ.	6,640.21	7,930.76	7,727.63	8,177.80	14,484.86	8,107.65	6,145.93	9,771.16	8,979.16	8,549.38	7,057.89
มีค.	7,051.95	8,331.90	7,899.93	8,045.80	13,138.29	8,124.47	5,755.08	9,707.06	8,468.43	8,803.52	-
เมย.	6,762.59	8,268.29	8,478.60	8,002.80	11,246.43	7,787.66	6,250.32	9,441.91	8,341.00	8,448.30	-
พค.	6,924.79	8,437.00	8,696.35	8,539.19	10,708.08	6,645.62	6,115.77	9,981.76	7,925.85	8,589.59	-
มิย.	7,141.72	8,502.42	8,251.67	7,962.97	12,039.01	6,913.14	6,614.96	10,479.57	8,307.55	8,449.52	-
กค.	7,408.72	8,211.52	9,169.75	9,904.46	11,413.37	7,188.36	7,060.12	11,049.91	7,897.68	8,452.04	-
ตค.	8,605.54	9,248.45	8,517.01	10,055.97	11,186.67	7,388.41	8,067.25	11,209.19	6,839.50	8,183.86	-
กย.	8,198.01	9,404.26	8,992.64	11,197.08	11,158.35	7,840.34	8,246.79	10,526.14	8,392.62	7,929.30	-
ตค.	7,422.64	9,002.28	8,884.15	11,911.42	9,760.41	7,691.39	9,138.62	10,653.18	9,474.04	7,711.11	-
พย.	7,846.84	8,987.89	10,278.05	12,509.73	9,548.21	7,729.38	9,541.64	11,278.19	9,320.15	7,651.00	-
ธค.	9,627.42	8,006.65	8,045.39	13,836.13	8,550.86	7,571.12	10,388.15	10,418.64	8,970.33	7,852.98	-

ที่มา: กระทรวงพาณิชย์ (2547: ออนไลน์)

ภาคผนวก ข

การหา Lag Length

ข้อมูลนำตาลด

ที่ Level รูปแบบ None

ADF Test Statistic	-0.137509	1% Critical Value*	-2.5828
		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(SP)

Method: Least Squares

Date: 05/24/04 Time: 14:08

Sample(adjusted): 3 122

Included observations: 120 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SP(-1)	-0.000184	0.001337	-0.137509	0.8909
D(SP(-1))	-0.308204	0.087633	-3.516987	0.0006
R-squared	0.095012	Mean dependent var		-0.000830
Adjusted R-squared	0.087342	S.D. dependent var		0.136165
S.E. of regression	0.130082	Akaike info criterion		-1.224770
Sum squared resid	1.996730	Schwarz criterion		-1.178312
Log likelihood	75.48622	F-statistic		12.38843
Durbin-Watson stat	2.083216	Prob(F-statistic)		0.000615

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ข้อมูลนำตาลด

ที่ Level รูปแบบ Trend and intercept

ADF Test Statistic	-2.563603	1% Critical Value*	-4.0367
		5% Critical Value	-3.4475
		10% Critical Value	-3.1486

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SP)

Method: Least Squares

Date: 05/24/04 Time: 14:14

Sample(adjusted): 3 122

Included observations: 120 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SP(-1)	-0.142372	0.055536	-2.563603	0.0116
D(SP(-1))	-0.239411	0.090282	-2.651824	0.0091
C	1.280189	0.494780	2.587388	0.0109
@TREND(1)	-0.000272	0.000336	-0.809584	0.4198

R-squared	0.146715	Mean dependent var	-0.000830
Adjusted R-squared	0.124647	S.D. dependent var	0.136165
S.E. of regression	0.127396	Akaike info criterion	-1.250266
Sum squared resid	1.882654	Schwarz criterion	-1.157349
Log likelihood	79.01593	F-statistic	6.648409
Durbin-Watson stat	2.042466	Prob(F-statistic)	0.000350

ข้อมูลนำทาคติ

ที่ Level รูปแบบ Intercept and without trend

ADF Test Statistic	-2.530901	1% Critical Value*	-3.4856
		5% Critical Value	-2.8855
		10% Critical Value	-2.5794

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SP)

Method: Least Squares

Date: 05/24/04 Time: 14:15

Sample(adjusted): 3 122

Included observations: 120 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SP(-1)	-0.140183	0.055388	-2.530901	0.0127
D(SP(-1))	-0.237671	0.090123	-2.637185	0.0095
C	1.243993	0.492030	2.528286	0.0128
R-squared	0.141894	Mean dependent var		-0.000830
Adjusted R-squared	0.127225	S.D. dependent var		0.136165
S.E. of regression	0.127208	Akaike info criterion		-1.261298
Sum squared resid	1.893292	Schwarz criterion		-1.191611
Log likelihood	78.67787	F-statistic		9.673389
Durbin-Watson stat	2.038523	Prob(F-statistic)		0.000129

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ข้อมูลน้ำตาลทรายขาว
ที่ Level รูปเมฆ None

ADF Test Statistic	0.043775	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(SP1)

Method: Least Squares

Date: 05/24/04 Time: 14:34

Sample(adjusted): 2 122

Included observations: 121 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SP1(-1)	3.55E-05	0.000812	0.043775	0.9652
R-squared	-0.000059	Mean dependent var		0.000699
Adjusted R-squared	-0.000059	S.D. dependent var		0.080939
S.E. of regression	0.080941	Akaike info criterion		-2.181961
Sum squared resid	0.786174	Schwarz criterion		-2.158856
Log likelihood	133.0087	Durbin-Watson stat		2.048034

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ข้อมูลนำตาลทรายขาว

ที่ Level รูปแบบ Trend and intercept

ADF Test Statistic	-2.534754	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(SP1)

Method: Least Squares

Date: 05/24/04 Time: 14:36

Sample(adjusted): 2 122

Included observations: 121 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SP1(-1)	-0.099859	0.039396	-2.534754	0.0126
C	0.916080	0.356577	2.569094	0.0114
@TREND(1)	-0.000166	0.000207	-0.805477	0.4222
R-squared	0.058868	Mean dependent var		0.000699
Adjusted R-squared	0.042917	S.D. dependent var		0.080939
S.E. of regression	0.079183	Akaike info criterion		-2.209635
Sum squared resid	0.739850	Schwarz criterion		-2.140318
Log likelihood	136.6829	F-statistic		3.690464
Durbin-Watson stat	1.969476	Prob(F-statistic)		0.027886

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ข้อมูลนำตาลทรายขาว

ที่ Level รูปแบบ Intercept and without trend

ADF Test Statistic	-2.598473	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(SP1)

Method: Least Squares

Date: 05/24/04 Time: 14:39

Sample(adjusted): 2 122

Included observations: 121 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SP1(-1)	-0.101988	0.039249	-2.598473	0.0105
C	0.925229	0.355870	2.599909	0.0105
R-squared	0.053693	Mean dependent var		0.000699
Adjusted R-squared	0.045741	S.D. dependent var		0.080939
S.E. of regression	0.079066	Akaike info criterion		-2.220680
Sum squared resid	0.743918	Schwarz criterion		-2.174469
Log likelihood	136.3512	F-statistic		6.752064
Durbin-Watson stat	1.954567	Prob(F-statistic)		0.010547

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ภาคผนวก ก

การทดสอบความนิ่งโดยวิธี Augmented Dickey Fuller Test

ข้อมูลนำตาลด

ที่ 1" Differencing รูปแบบ None

ADF Test Statistic	-10.06212	1% Critical Value*	-2.5830	
		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(SP,2)				
Method: Least Squares				
Date: 05/24/04 Time: 14:17				
Sample(adjusted): 4 122				
Included observations: 119 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic Prob.	
D(SP(-1))	-1.500452	0.149119	-10.06212	0.0000
D(SP(-1),2)	0.146438	0.092255	1.587329	0.1151
R-squared	0.661157	Mean dependent var	-0.000633	
Adjusted R-squared	0.658260	S.D. dependent var	0.221093	
S.E. of regression	0.129248	Akaike info criterion	-1.237508	
Sum squared resid	1.954481	Schwarz criterion	-1.190801	
Log likelihood	75.63175	F-statistic	228.2922	
Durbin-Watson stat	1.975597	Prob(F-statistic)	0.000000	

ข้อมูลนำคาดคิด

ที่ 1st Differencing รูปแบบ Trend and Intercept

ADF Test Statistic	-10.02197	1% Critical Value*	-4.0373
		5% Critical Value	-3.4478
		10% Critical Value	-3.1488

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SP,2)

Method: Least Squares

Date: 05/24/04 Time: 14:20

Sample(adjusted): 4 122

Included observations: 119 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SP(-1))	-1.506372	0.150307	-10.02197	0.0000
D(SP(-1),2)	0.148976	0.092918	1.603302	0.1116
C	0.014387	0.024636	0.583979	0.5604
@TREND(1)	-0.000248	0.000348	-0.713901	0.4767

R-squared	0.662672	Mean dependent var	-0.000633
Adjusted R-squared	0.653872	S.D. dependent var	0.221093
S.E. of regression	0.130075	Akaike info criterion	-1.208378
Sum squared resid	1.945738	Schwarz criterion	-1.114962
Log likelihood	75.89851	F-statistic	75.30492
Durbin-Watson stat	1.977362	Prob(F-statistic)	0.000000

ข้อมูลนำตาถคิบ

ที่ 1" Differencing รูปแบบ Intercept and without Trend

ADF Test Statistic	-10.01893	1% Critical Value*	-3.4861
		5% Critical Value	-2.8857
		10% Critical Value	-2.5795

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SP,2)

Method: Least Squares

Date: 05/24/04 Time: 14:21

Sample(adjusted): 4 122

Included observations: 119 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SP(-1))	-1.500403	0.149757	-10.01893	0.0000
D(SP(-1),2)	0.146385	0.092651	1.579968	0.1168
C	-0.001003	0.011899	-0.084317	0.9330
R-squared	0.661177	Mean dependent var		-0.000633
Adjusted R-squared	0.655336	S.D. dependent var		0.221093
S.E. of regression	0.129800	Akaike info criterion		-1.220763
Sum squared resid	1.954361	Schwarz criterion		-1.150701
Log likelihood	75.63540	F-statistic		113.1810
Durbin-Watson stat	1.975715	Prob(F-statistic)		0.000000

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ข้อมูลนำตาลทรายขาว

ที่ 1" Differencing รูปแบบ None

ADF Test Statistic	-11.18155	1% Critical Value*	-2.5828
		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(SP1,2)

Method: Least Squares

Date: 05/24/04 Time: 14:41

Sample(adjusted): 3 122

Included observations: 120 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SP1(-1))	-1.024819	0.091653	-11.18155	0.0000
R-squared	0.512343	Mean dependent var		-0.000425
Adjusted R-squared	0.512343	S.D. dependent var		0.116317
S.E. of regression	0.081227	Akaike info criterion		-2.174836
Sum squared resid	0.785144	Schwarz criterion		-2.151607
Log likelihood	131.4901	Durbin-Watson stat		1.997929

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ข้อมูลน้ำตาทรายขาว

ที่ 1" Differencing รูปแบบ Trend and intercept

ADF Test Statistic	-11.16919	1% Critical Value*	-4.0367
		5% Critical Value	-3.4475
		10% Critical Value	-3.1486

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SP1,2)

Method: Least Squares

Date: 05/24/04 Time: 14:42

Sample(adjusted): 3 122

Included observations: 120 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SP1(-1))	-1.032152	0.092411	-11.16919	0.0000
C	0.013036	0.015227	0.856081	0.3937
@TREND(1)	-0.000203	0.000216	-0.941572	0.3484
R-squared	0.516031	Mean dependent var		-0.000425
Adjusted R-squared	0.507758	S.D. dependent var		0.116317
S.E. of regression	0.081608	Akaike info criterion		-2.149094
Sum squared resid	0.779206	Schwarz criterion		-2.079407
Log likelihood	131.9457	F-statistic		62.37547
Durbin-Watson stat	1.998411	Prob(F-statistic)		0.000000

ข้อมูลนำตาลทรายขาว

ที่ 1" Differencing รูปแบบ intercept and without trend

ADF Test Statistic	-11.13479	1% Critical Value*	-3.4856
		5% Critical Value	-2.8855
		10% Critical Value	-2.5794

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(SP1,2)

Method: Least Squares

Date: 05/24/04 Time: 14:43

Sample(adjusted): 3 122

Included observations: 120 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SP1(-1))	-1.024895	0.092044	-11.13479	0.0000
C	0.000532	0.007447	0.071386	0.9432
R-squared	0.512364	Mean dependent var		-0.000425
Adjusted R-squared	0.508231	S.D. dependent var		0.116317
S.E. of regression	0.081569	Akaike info criterion		-2.158212
Sum squared resid	0.785111	Schwarz criterion		-2.111754
Log likelihood	131.4927	F-statistic		123.9836
Durbin-Watson stat	1.997863	Prob(F-statistic)		0.000000

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ภาคผนวก ง
การประมาณค่าแบบจำลอง

แบบจำลอง MA(1) MA(17) SMA(12)

Dependent Variable: D(SP)				
Method: Least Squares				
Included observations: 121 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000587	0.003770	-0.155629	0.8766
MA(1)	-0.386961	0.081481	-4.749075	0.0000
MA(17)	-0.251493	0.084467	-2.977419	0.0035
SMA(12)	-0.203612	0.091473	-2.225933	0.0279
R-squared	0.197653	Mean dependent var		-0.000801
Adjusted R-squared	0.177080	S.D. dependent var		0.135597
S.E. of regression	0.123006	Akaike info criterion		-1.320662
Sum squared resid	1.770277	Schwarz criterion		-1.228239
Log likelihood	83.90004	F-statistic		9.607392
Durbin-Watson stat	1.998091	Prob(F-statistic)		0.000010
Inverted MA Roots	.95	.89 -.33i	.89+.33i	.88
	.76+.44i	.76 -.44i	.71 -.62i	.71+.62i
	.44 -.76i	.44+.76i	.43+.82i	.43 -.82i
	.11+.91i	.11 -.91i	.00 -.88i	-.00+.88i
	-.23+.88i	-.23 -.88i	-.44+.76i	-.44 -.76i
	-.54+.73i	-.54 -.73i	-.76+.44i	-.76 -.44i
	-.76 -.48i	-.76+.48i	-.88	-.89 -.17i
	-.89+.17i			

แบบจำลอง AR(30) MA(30)

Dependent Variable: D(SP1)				
Method: Least Squares				
Included observations: 91 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000617	0.007205	-0.085703	0.9319
AR(30)	-0.479043	0.077572	-6.175445	0.0000
MA(30)	0.737761	0.000151	4893.113	0.0000
R-squared	0.491293	Mean dependent var		-0.002877
Adjusted R-squared	0.479732	S.D. dependent var		0.080724
S.E. of regression	0.058226	Akaike info criterion		-2.816562
Sum squared resid	0.298342	Schwarz criterion		-2.733787
Log likelihood	131.1536	F-statistic		42.49388
Durbin-Watson stat	1.826467	Prob(F-statistic)		0.000000
Inverted AR Roots	.97+.10i	.97-.10i	.93+.30i	.93-.30i
	.85-.49i	.85+.49i	.73+.65i	.73-.65i
	.57-.79i	.57+.79i	.40-.89i	.40+.89i
	.20-.95i	.20+.95i	-.00-.98i	-.00+.98i
	-.20+.95i	-.20-.95i	-.40-.89i	-.40+.89i
	-.57-.79i	-.57+.79i	-.73+.65i	-.73-.65i
	-.85+.49i	-.85-.49i	-.93-.30i	-.93+.30i
	-.97+.10i	-.97-.10i		
Inverted MA Roots	.98+.10i	.98-.10i	.94+.31i	.94-.31i
	.86-.49i	.86+.49i	.74+.66i	.74-.66i
	.58-.80i	.58+.80i	.40-.90i	.40+.90i
	.21-.97i	.21+.97i	-.00-.99i	-.00+.99i
	-.21+.97i	-.21-.97i	-.40-.90i	-.40+.90i
	-.58-.80i	-.58+.80i	-.74+.66i	-.74-.66i
	-.86+.49i	-.86-.49i	-.94-.31i	-.94+.31i
	-.98+.10i	-.98-.10i		

ประวัติผู้เขียน

- ชื่อ นางสาวเปรมมา จันทบุตร
- วัน เดือน ปีเกิด 7 กุมภาพันธ์ 2523
- ประวัติการศึกษา สำเร็จการศึกษาระดับมัธยมศึกษาตอนปลายจากโรงเรียนเบ็ญจะมะมหาราช จังหวัดอุบลราชธานี ปีการศึกษา 2540
สำเร็จการศึกษาระดับปริญญาเศรษฐศาสตรบัณฑิต จากมหาวิทยาลัยเชียงใหม่
ปีการศึกษา 2545

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
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