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Appendices

Figure A.2.1 : The Map of Thailand and the Seventy Three Provinces
(See also accompanying Table A.2.1)
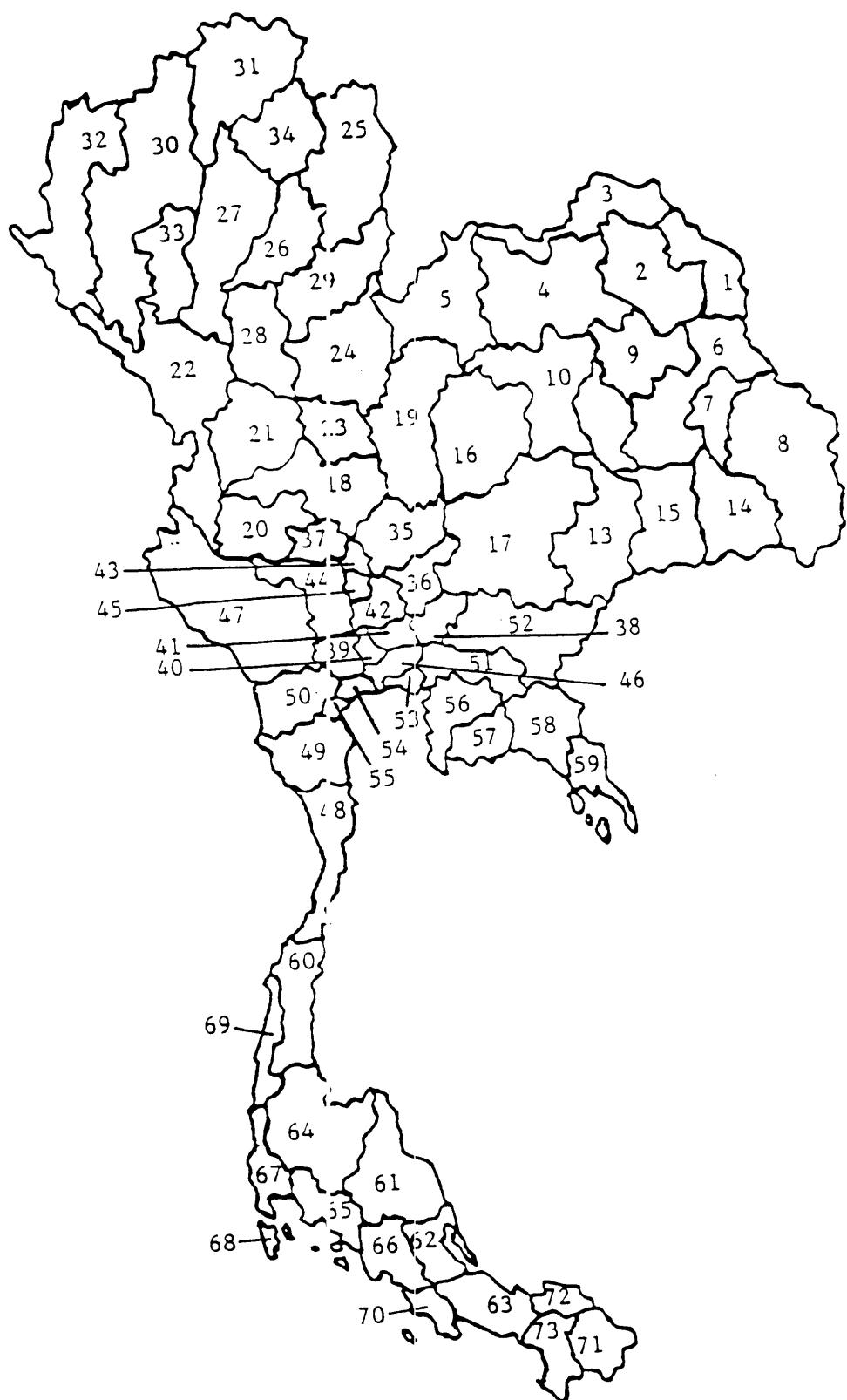
Table A.2.1

List of Provinces and Regions of Thailand

	North-Eastern Region		Central Plain Region
1.	Nakhon Phanom	35.	Lop Buri
2.	Sakon Nakhon	36.	Saraburi
3.	Nong Khai	37.	Chai Nat
4.	Udon Thani	38.	Nakhon Nayok
5.	Loei	39.	Nakhon Pathom
6.	Mukdahan	40.	Nonthaburi
7.	Yasothon	41.	Pathum Thani
8.	Ubon Ratchathani	42.	Ayutthaya
9.	Kalasin	43.	Sing Buri
10.	Khon Kaen	44.	Suphan Buri
11.	Maha Sarakham	45.	Ang Thong
12.	Roi Et	46.	Bangkok Metropolis
13.	Buri Ram	47.	Kanchanaburi
14.	Si Sa Ket	48.	Prachuap Khiri Khan
15.	Surin	49.	Phetchaburi
16.	Chaiyaphum	50.	Ratchaburi
17.	Nakhon Ratchasima	51.	Chachoengsao
		52.	Prachin Buri
		53.	Samut Prakan
		54.	Samut Sakhon
	Northern Region	56.	Chon Buri
18.	Nakhon Sawan	57.	Rayong
19.	Phetchabun	58.	Chanthaburi
20.	Uthai Thani	59.	Trat
21.	Kamphaeng Phet		
22.	Tak		
23.	Phichit		
24.	Phitsanulok		**Southern Region**
25.	Nan	60.	Chumphon
26.	Phrae	61.	Nakhon Si Thammarat
27.	Lampang	62.	Phatthalung
28.	Sukhothai	63.	Songkhla
29.	Uttaradit	64.	Surat Thani
30.	Chiang Mai	65.	Krabi
31.	Chiang Rai	66.	Trang
32.	Mae Hong Son	67.	Phangnga
33.	Lamphun	68.	Phuket
34.	Phayao	69.	Ranong
		70.	Satun
		71.	Narathiwat
		72.	Pattani
		73.	Yala

Table A.4.1

Cost of Soybean Meal (North)

Unit: *Baht*/kg

Cost Item	Private			Social		
	Tradable	Non-Tradable	Total	Tradable	Non-Tradable	Total
1. Fixed Cost						
Land rent		0.68	0.68		0.68	0.66
Depreciation	0.02		0.02	0.02		0.02
2. Operating Cost	1.52	3.47	4.99	1.42	3.41	4.83
3. Transportation Cost	0.06	0.13	0.19	0.05	0.13	0.18
4. Processing Cost	1.63		1.63	0.72		0.72
Total Cost	3.23	4.28	7.50	2.21	4.21	6.42
Total Revenue at border price			12.18			9.90
soybean meal			7.67			6.35
crude oil			4.51			3.55
Profit			4.68			3.48

Source: Setboonsarng *et al* (1989)

Table A.4.2

Cost of Soybean Meal (North-east)

Unit: *Baht*/kg

Cost Item	Private			Social		
	Tradable	Non-Tradable	Total	Tradable	Non-Tradable	Total
1. Fixed Cost						
Land rent		0.62	0.62		0.62	0.62
Depreciation		0.02	0.02	0.02		0.02
2. Operating Cost	1.68	3.81	5.49	1.58	3.74	5.32
3. Transportation Cost	0.06	0.17	0.23	0.05	0.17	0.22
4. Processing Cost	1.63		1.63	0.72		0.72
Total Cost	3.40	4.59	7.99	2.37	4.53	6.20
Total Revenue at border price			12.05			9.78
soybean meal			7.56			6.25
crude oil			4.49			3.53
Profit			4.06			2.88

Source: Setboonsarng *et al* (1989)

Table A.4.3

Cost of Soybean Meal (Central)

Unit: *Baht*/kg

Cost Item	Private			Social		
	Tradable	Non-Tradable	Total	Tradable	Non-Tradable	Total
1. Fixed Cost						
Land rent		0.71	0.71		0.71	0.71
Depreciation	0.02		0.02	0.02		0.02
2. Operating Cost	1.69	3.79	5.48	1.59	3.72	5.30
3. Transportation Cost	0.06	0.13	0.19	0.06	0.13	0.19
4. Processing Cost	1.63		1.63	0.72		0.72
Total Cost	3.40	4.63	8.03	2.39	4.55	6.94
Total Revenue at border price			11.84			9.52
soybean meal			7.35			6.04
crude oil			4.49			3.48
Profit			3.81			2.58

Source: Setboonsarng *et al* (1989)

Table A.4.4

Private and Social Profitability of Soybean Meal Production, 1986/87

Unit: *Baht*/kg

Region	Private			Social		
	Domestic Price	Cost	Profit	Border Price	Cost	Profit
Northeast	10.17	8.21	1.96	5.85	8.12	-2.27
North	10.17	7.87	2.30	5.85	7.78	-1.93
Central	10.17	8.00	2.17	5.85	7.93	-2.08

Source: Katikran *et al* (1989)

Table A.4.5

Private   Profitability   of   Soybean   Production,   1986/87,   by   Region

Unit: *Baht*/Ha

Region	Yield (kg/ha)	Farm Gate Price	Revenue	Tradable	Domestic	Total	Private Profit
Northeast	1 225	6.65	8 146	1 119.40	3 774.03	4 893.43	3 252.57
North	1 244	6.43	7 959	1 024.41	3 651.71	4 676.12	3 322.88
Central	1 194	6.62	7 904	1 044.14	3 603.84	4 647.98	3 256.02

Source: Katikran *et al* (1989)

Table A.4.6

Social Profitability of Soybean Production, 1986/87, by Region

Unit: *Baht*/Ha

Region	Yield (kg/ha)	Farm Gate Price	Revenue	Tradable	Domestic	Total	Social Profit
Northeast	1 225	5.54	6 786.50	1 049.50	3 772.37	4 771.963	2 014.54
North	1 244	5.56	6 916.64	960.40	3 588.40	4 548.802	2 367.84
Central	1 194	5.59	6 0674.46	979.50	3 545.58	4 525.08	2 149.38

Source: Katikran *et al* (1989)

Table A.4.7

Estimation of Standard Conversion Factor and Shadow Exchange Rate

Unit : million Baht

Items	1988	1989	1990	1991	1992
Total Value of Imports (M)	513114	662679	844448	958832	1033242
Total Value of Exports (X)	203003	269125	589813	725629	824644
Import Duty	55401	68916	89870	91998	85082
Export Duty	1072	512	54	13	11
Export Tax Rebate	9478	14811	18899	21165	27499

	1988	1989	1990	1991	1992
Average Import Tax Rate (tm)	0.108	0.104	0.106	0.096	0.082
Average Export Tax Rate (tx)	-0.041	-0.053	-0.032	-0.029	-0.033
SCF = (M+X)/(M(1+tm) + X(1-tx))	0.918	0.918	0.930	0.937	0.943
OER (B/$)	25.240	25.690	25.290	25.280	25.090
SER = OER/SCF (B/$)	27.489	27.984	27.207	26.978	26.610

Note : The 1990 shadow exchange rate (27.207) is used in the social valuation of tradable inputs in
   subsequent tables.

Source : Bank of Thailand and estimation.

Table A.4.8

Selected Social Conversion Factor Used in the Analysis

Items	Conversion Factor
(1) Public Administration	0.911
(2) Banking, Insurance and Real Estate	0.854
(3) Trade	0.887
(4) Building and Construction	0.809
(5) Capital Goods	0.916
(6) Vehicles and Parts	0.792
(7) Fuel and Lubricant	0.930
(8) Electricity, Gas and Water	0.932
(9) Wages	0.920
(10) Chemical Industry	0.940
(11) Farm Tractors, Tools and Machinery	0.818
(12) Seeds for Sowing	0.942

Source :

(1) to (8) Termkunanon (199()

(9) and (10) Ahmed (1983)

(11) and (12) World Bank (1984)

Table A.4.9

Private and Social Values of Transportation Cost (Ten-Wheel Truck), 1990

Unit : Baht/km.

Items	Private				Social		
	Value	TI	NTI	TAX	Value	TI	NTI
Depreciation	2.429	.355	1.703	.372	2.084	.382	1.703
Maintenance	2.973	1.115	1.189	.669	2.389	1.199	1.189
Fuel	2.334	.742	.693	.899	1.492	.799	.693
Wage and Allowance	.930	.000	.930	.000	.856	.000	.856
Insurance	.480	.000	.480	.000	.410	.000	.410
Admin. Cost	.915	.000	.915	.000	.915	.000	.915
Tax and License	.044	.000	.000	.044	.000	.000	.000
Total	10.105	2.212	5.910	1.983	8.145	2.379	5.766
Proportions	1.000	.219	.585	.196	.806	.235	.571

Note : (a) TI and NTI represent tradable input and non-tradable input respectively.

(b) The proportions on the last row are used in the decomposition of transportation cost in subsequent tables.

Source : The initial values of the first column are adapted from Termkunanon (1990).

Cost decompositions are based on information from interview with various concerned agents, including the Petroleum Authority of Thailand.

Table A.4.10

Import Parity Price of Soybeans Classified by Region
Crop Year 1989/90

Unit : Baht/tonnes, unless otherwise specified

		Private	Social
(1)	Exchange Rate (B $)	25.290	27.207
(2)	CIF ($/T)	258.350	258.350
(3) = (1)*(2)	CIF	6533.672	7028.930
(4)	Tax	424.689	0.000
(5)	Marketing & Marl:ed up	268.328	238.007
(6)	Transportaion:Por: to Factory	100.000	80.600
(7) = Sum(3...6)	Price of Imported Grains a: Factory	7326.688	7347.537
(8) = (9)-(7)	Price Divergence	742.312	0.000
(9)	Price of Local Grain at Factory	8069.000	7347.537
(10)	Marketing & Marl:ed up	300.000	266.100
(11)	Transportation:Faim to Factory		
	North	557.960	449.716
	Northeast	577.560	465.513
	Centre	174.078	140.307
	Country Avera:e	436.533	351.845
(12) = (9)-(10)-(11)	Farm Price		
	North	7211.040	6631.721
	Northeast	7191.440	6615.923
	Centre	7594.922	6941.130
	Country Avera:e	7332.467	6729.592
(13) = (12)/1000	Farm Price (B/kg)		
	North	7.211	6.632
	Northeast	7.191	6.616
	Centre	7.595	6.941
	Country Avera:e	7.332	6.730

Note : (a) Differences in Regional farm-gate parity price are due mainly to differences in
transportation cost from farms to Banjkok. The average distances from the North,
The average distances from the North, the Northeast and the Central region to Bangkok
are 529.25, 458.17 and 145.29 kms. respectively, whereas the weighted distances (with grain
output in 1990) are 464.97, 481.30 ard 145.07 kms for the three regions respectively.
The private transportation cost is app oximated as 1 baht per km of weighted distance.
(b) Price divergence is due mainly to the import ban policy which further deviates the
farm-gate price from the social parity price as is evident from Figure 3.13 in Chapter 3.
Source : Table A.4.7, Office of Agricultural Economics and interview.

Table A.4.11

Private and Social Price of Fertilizers , Crop Year 1989/90

Unit : Baht/tonne unless otherwise specified

Items	Private				Social		
	Value	TI	NTI	TAX	Value	TI	NTI
Exchange Rate (B/$)	25.290				27.207		
CIF Bangkok ($)	184.000				184.000		
CIF Bangkok	4653.360	4653. i60			5006.089	5006.089	
Bank Charge	46.534		46.534		39.740		39.740
Port charge	30.000		30.000		27.330		27.330
Loading/Unloading	69.000		69.000		63.480		63.480
Transportation	100.000	21.)00	58.500	19.600	80.600	23.500	57.100
Weight Loss	46.000	46.)00			49.487	49.487	
Sack	180.000		180.000		180.000		180.000
Warehousing	30.000		30.000		24.270		24.270
Insurance	4.000		4.000		3.416		3.416
Excise & Municipal Tax	85.590			85.590	0.000		
Marketing & Marked up	500.000		500.000		443.500		443.500
Transportation to Farm:							
North	558.000	122. ?02	326.430	109.368	449.748	131.130	318.618
Northeast	578.000	126. i82	338.130	113.288	465.868	135.830	330.038
Centre	174.000	38. L06	101.790	34.104	140.244	40.890	99.354
Farm Price:							
North	6302.484	4843. l62	1244.464	214.558	6367.660	5210.206	1157.454
Northeast	6322.484	4847. ?42	1256.164	218.478	6383.780	5214.906	1168.874
Centre	5918.484	4759. l66	1019.824	139.294	6058.156	5119.966	938.190
Proportion:							
North	1.000	0. ?69	0.197	0.034	1.010	0.827	0.184
Northeast	1.000	0. ?67	0.199	0.035	1.010	0.825	0.185
Centre	1.000	0. 304	0.172	0.024	1.024	0.865	0.159

Note : (a) TI and NTI represent tradable input and non-tradable input respectively.

(b) The proportions are used in cost decon position in Table A.4.13 to A.4.15.

Source : Table A.4.7 to A.4.9 and OAE

Table A.4.12

Private and Social Prices of Pesticides , Crop Year 1989/90

Unit : Baht/1000lits unless otherwise specified

Items	Private				Social		
	Value	TI	NTI	TAX	Value	TI	NTI
Exchange Rate (B/$)	25.290				27.207		
CIF Bangkok ($)	4844.000				4844.000		
CIF Bangkok	122504.760	122504.750			131790.735	131790.735	
Import Duty	6125.238			6125.238			
Bank Charge	1225.048		1225.048		1046.191		1046.191
Port charge	720.000		720.000		655.920		655.920
Loading/Unloading	222.000		222.000		204.240		204.240
Transportation	150.000	32.850	87.750	29.400	120.900	35.250	85.650
Packaging	12209.000		12209.000		12209.000		12209.000
Warehousing	150.000		150.000		121.350		121.350
Insurance	105.000		105.000		89.670		89.670
Excise & Municipal Tax	180.404			180.404			
Marketing & Mark up	91878.570		91878.570		81496.292		81496.292
Transportation to Farm:							
North	837.000	183.303	489.645	164.052	674.622	196.695	477.927
Northeast	867.000	189.873	507.195	169.932	698.802	203.745	495.057
Centre	261.000	57.159	152.685	51.156	210.366	61.335	149.031
Farm Price:							
North	236307.019	122720.013	107087.013	6499.094	228408.919	132022.680	96386.239
Northeast	236337.019	122727.483	107104.563	6504.974	228433.099	132029.730	96403.369
Centre	235731.019	122594.769	106750.053	6386.198	227944.663	131887.320	96057.343
Proportion:							
North	1.000	0.519	0.453	0.028	0.967	0.559	0.408
Northeast	1.000	0.519	0.453	0.028	0.967	0.559	0.408
Centre	1.000	0.520	0.453	0.027	0.967	0.559	0.407

Note : (a) TI and NTI represent tradable input anc non-tradable input respectively.

(b) The proportions are used in cost decon position in Table A.4.13 to A.4.15.

Source : Table A.4.7 to A.4.9, OAE and DCFEC (1993)

Table A.4.13

Farm Budget and Domestic Resource Cost of Soybean Production
in The Northern Region, Crop Year 1989/90

| Items | Unit | Private | | | | | | | Social | | | | | |
		Price (B)	Value (B)	TI Share	NTI Share	TIV (B)	NTIV (B)	CF	Price (B)	Value (B)	TI Share	NTI Share	TIV (B)	NTIV (B)
Revenue :														
Output (kg)	206.000	7.211	1485.474						6.632	1366.135				
Cost :														
Tractor Service (hr)	1.032	124.292	128.269	0.000	1.000	0.000	128.269	0.818	101.671	104.924	0.000	1.000	0.000	104.924
Draft Animal (hr)	0.000	23.810	0.000	0.000	1.000	0.000	0.000	1.000	23.810	0.000	0.000	1.000	0.000	0.000
Fertilizers (kg)	4.451	6.302	28.050	0.769	0.231	21.571	6.480	1.010	6.365	28.331	0.818	0.182	23.175	5.156
Pesticides (lit)	0.192	236.307	45.371	0.519	0.481	23.548	21.823	0.967	228.509	43.874	0.578	0.422	25.362	18.511
Other Chemicals (per rai)	1.000	14.310	14.310	1.000	0.000	14.310	0.000	0.940	13.451	13.451	1.000	0.000	13.451	0.000
Seeds (kg)	18.540	12.123	224.870	1.000	0.000	224.870	0.000	0.942	11.420	211.827	1.000	0.000	211.827	0.000
Water (per rai)	1.000	70.000	70.000	0.000	1.000	0.000	70.000	0.932	65.240	65.240	0.000	1.000	0.000	65.240
Small Machinery (per rai)	1.000	141.970	141.970	0.000	1.000	0.000	141.970	0.818	116.131	116.131	0.000	1.000	0.000	116.131
Farm Tools (per rai)	1.000	24.270	24.270	0.000	1.000	0.000	24.270	0.818	19.853	19.853	0.000	1.000	0.000	19.853
Labor (hr)	75.203	5.014	377.068	0.000	1.000	0.000	377.068	0.992	4.974	374.051	0.000	1.000	0.000	374.051
Land (rai)	1.000	168.370	168.370	0.000	1.000	0.000	168.370	1.000	168.370	168.370	0.000	1.000	0.000	168.370
Water Subsidy			-70.000				-70.000							
Total Costs (B/rai)			1152.548			284.298	868.250			1146.053			273.815	872.237
Total Costs (B/ton)			5594.893			1380.086	4214.807			5563.363			1329.201	4234.162
Profit :														
Profit (B/rai)			332.926							220.082				
Profit (B/ton)			1616.147							1068.358				

DRC = 872.237/(1366.135-273.815) = 0.799

Note :   (a) Farm Tools includes repair and depreciation costs. Small Machinery includes water pump, local made truck & spray machine.

(b) TI, NTI, TIV, NTIV and CF respectively represent tradable input, non-tradable input, value of tradable input, value of non-tradable input and conversion factor.

(c) Based on interview, the off-farm wage rate and water cost are assumed as 9.875 B/hr. and 70 B/rai respectively.

Source : Table A.4.7 to A.4.12, OAE, Department of Irrigation and Interviewd with various concerned agencies & private companies.

Table A.4.14

Farm Budget and Domestic Resource Cost of Soybean Production in The Northeastern Region, Crop Year 1989/90

Items	Unit	Private						Social						
		Price (B)	Value (B)	TI Share	NTI Share	TIV (B)	NTIV (B)	CF	Price (B)	Value (B)	TI Share	NTI Share	TIV (B)	NTIV (B)
Revenue :														
Output (kg)	211.000	7.191	1517.394						6.616	1395.960				
Cost :														
Tractor Service (hr)	0.760	124.292	94.462	0.000	1.000	0.000	94.462	0.818	101.671	77.270	0.000	1.000	0.000	77.270
Draft Animal (hr)	0.015	23.810	0.357	0.000	1.000	0.000	0.357	1.000	23.810	0.357	0.000	1.000	0.000	0.357
Fertilizers (kg)	4.209	6.322	26.609	0.767	0.233	20.409	6.200	1.010	6.385	26.875	0.817	0.183	21.953	4.923
Pesticides (lit)	0.146	236.337	34.505	0.519	0.481	17.908	16.597	0.967	228.538	33.367	0.578	0.422	19.288	14.078
Other Chemicals (per rai)	1.000	7.820	7.820	1.000	0.000	7.820	0.000	0.940	7.351	7.351	1.000	0.000	7.351	0.000
Seeds (kg)	17.431	13.294	231.728	1.000	0.000	231.728	0.000	0.942	12.525	218.288	1.000	0.000	218.288	0.000
Water (per rai)	1.000	70.000	70.000	0.000	1.000	0.000	70.000	0.932	65.240	65.240	0.000	1.000	0.000	65.240
Small Machinery (per rai)	1.000	134.030	134.030	0.000	1.000	0.000	134.030	0.818	109.637	109.637	0.000	1.000	0.000	109.637
Farm Tools (per rai)	1.000	15.870	15.870	0.000	1.000	0.000	15.870	0.818	12.982	12.982	0.000	1.000	0.000	12.982
Labor (hr)	90.731	4.937	447.939	0.000	1.000	0.000	447.939	1.000	4.937	447.962	0.000	1.000	0.000	447.962
Land (rai)	1.000	139.430	139.430	0.000	1.000	0.000	139.430	1.000	139.430	139.430	0.000	1.000	0.000	139.430
Water Subsidy			-70.000				-70.000							
Total Costs (B/rai)			1132.750			277.865	854.885			1138.757			266.879	871.878
Total Costs (B/ton)			5368.485			1316.897	4051.588			5396.953			1264.831	4132.122
Profit :														
Profit (B/rai)			384.644							257.203				
Profit (B/ton)			1822.955							1218.971				

DRC = 871.878/(1395.96-266.879) = 0.772

Note : (a) Farm Tools includes repair and depreciation costs. Small Machinery includes water pump, local made truck & spray machine.

(b) TI, NTI, TIV, NTIV and CF respectively represent tradable input, non-tradable input, value of tradable input, value of non-tradable input and conversion factor.

(c) Based on interview, the off-farm wage rate and water cost are assumed as 9.875 B/hr. and 70 B/rai respectively.

Source : Table A.4.7 to A.4.12, OAE, Department of Irrigation and Interviewd with various concerned agencies & private companies.

Table A.4.15

Farm Budget and Domestic Resource Cost of Soybean Production in The Central Region, Crop Year 1989/90

Items	Unit	Private Price (B)	Private Value (B)	Private TI Share	Private NTI Share	Private TIV (B)	Private NTIV (B)	CF	Social Price (B)	Social Value (B)	Social TI Share	Social NTI Share	Social TIV (B)	Social NTIV (B)
Revenue:														
Output (kg)	179.000	7.595	1359.491						6.941	1242.462				
Cost:														
Tractor Service (hr)	0.999	124.292	124.168	0.000	1.000	0.000	124.168	0.818	101.671	101.569	0.000	1.000	0.000	101.569
Draft Animal (hr)	0.000	24.405	0.000	0.000	1.000	0.000	0.000	1.000	24.405	0.000	0.000	1.000	0.000	0.000
Fertilizers (kg)	3.067	5.918	18.151	0.804	0.196	14.593	3.557	1.024	6.060	18.586	0.845	0.155	15.700	2.886
Pesticides (lit)	0.103	235.731	24.280	0.520	0.480	12.626	11.655	0.967	227.952	23.479	0.578	0.422	13.573	9.906
Other Chemicals (per rai)	1.000	18.760	18.760	1.000	0.000	18.760	0.000	0.940	17.634	17.634	1.000	0.000	17.634	0.000
Seeds (kg)	15.067	13.027	196.278	1.000	0.000	196.278	0.000	0.942	12.271	184.874	1.000	0.000	184.874	0.000
Water (per rai)	1.000	70.000	70.000	0.000	1.000	0.000	70.000	0.932	65.240	65.240	0.000	1.000	0.000	65.240
Small Machinery (per rai)	1.000	110.660	110.660	0.000	1.000	0.000	110.660	0.818	90.520	90.520	0.000	1.000	0.000	90.520
Farm Tools (per rai)	1.000	15.170	15.170	0.000	1.000	0.000	15.170	0.818	12.409	12.409	0.000	1.000	0.000	12.409
Labor (hr)	75.900	5.082	385.724	0.000	1.000	0.000	385.724	0.986	5.010	380.240	0.000	1.000	0.000	380.240
Land (rai)	1.000	147.910	147.910	0.000	1.000	0.000	147.910	1.000	147.910	147.910	0.000	1.000	0.000	147.910
Water Subsidy			-70.000				-70.000							
Total Costs (B/rai)			1041.100			242.257	798.844			1042.481			231.801	810.680
Total Costs (B/ton)			5816.202			1353.389	4462.813			5823.918			1294.977	4528.941
Profit:														
Profit (B/rai)			318.391							199.981				
Profit (B/ton)			1778.720							1117.211				

$$DRC = 810.680/(1242.462 - 231.801) = 0.802$$

Note : (a) Farm Tools includes repair and depreciation costs. Small Machinery includes water pump, local made truck & spray machine.

(b) TI, NTI, TIV, NTIV and CF respectively represent tradable input, non-tradable input, value of tradable input, value of non-tradable input and conversion factor.

(c) The off-farm wage rate and water cost are assumed as 9.875 B/hr. and 70 B/rai respectively.

Source : Table A.4.7 to A.4.12, OAE, Department of Irrigation and Interviewd with various concerned agencies & private companies.

Table A.4.16

Cost of a Soybean Oil Extraction Plant
(Daily Capacity : 40) Tonnes of Soybeans)

Unit : 1000 Baht

Items	Cost
Imported :	
Magnetic Separator	200
Scale	50
Cracking Roll	3,000
Flaking Roll	7,000
Expander	10,000
Extractor	6,000
Desolventizer Toaster	5,000
Refining Set	8,000
Total	**39,250**
Locally Purchased :	
Land	10,000
Building and Construction	10,000
Equipment	15,000
Utilities	22,500
Motor Vehicles	2,000
Total	**59,500**
Total Plant Cost	**98,750**

Note : (1) Equipment includes insulat on system, electrical appliances,

   machineries and tools.

   (2) Utilities includes piping, el ectronic systems, air conditioning system

   and a boiler.

Source : Interviewed with an oil extr action plant consaltant engineer,

   Sun Engineering Co.,Ltd., I angkok, Thailand.

Table A.4.17

Private and Social Prices for Imported Machineries

Item	Private				Social		
	Total	TI	NTI	Tax	Total	TI	NTI
(1) Exchange Rate (B/$)	25.29				27.21		
(2) CIF ($)	1105411.00	1105411.00			1105411.00	1105411.00	
(3) CIF (B)	27955844.19	27955844.19			30078233.31	30078233.31	
(4) Tax (B)	1397792.21			1397792.21			
(5) Port Handling (B)	698896.10		698896.10		698896.10		698896.10
(6) Transportation (B)	139779.22	25587.75	91413.46	22778.01	118694.24	27280.80	91413.44
(7) Marketing and Mark up	9057688.27		9057688.27		8034169.50		8034169.50
(8) Total cost (B)	39250000.00	27931431.94	9847997.84	1420570.22	38929993.15	30105514.11	8824479.05
(9) Salvage Value	1962500.00	1399071.60	492399.89	71028.51	1946499.66	1505275.71	441223.95
(10) Initial Cost (B)	37287500.00	26532360.34	9355597.95	1349541.71	36983493.50	28600238.40	8383255.10
(11) Uselife (Year)	10.00				10.00		
(12) Hours of Use / Year	6000.00				6000.00		
(13) Depreciation (B/hour)	621.46	443.04	155.93	22.49	616.39	476.67	139.72
(14) Depreciation (B/ton)	37.28	26.58	9.35	1.35	36.98	28.59	8.38

Source : Table A.4.7, TVO(1993) and interview.

Table A.4.18

Processing Cost of Soybean Oil Extraction (Per Tonne of Soybeans, 1990)

Unit : 1000Baht/Tonne

Items	Private				Social		
	Total	TI	NTI	Tax	Total	TI	NTI
Fixed Cost							
(1) Depreciation :							
- Building and Construction (5%/Yr)	9.50		9.50		7.68		7.68
- Equipment (10%/Yr)	13.50		13.50		11.88		11.88
- Utilities (10%/Yr)	20.25		20.25		16.38		16.38
- Motor Vehicles (20%/Yr)	1.60		1.60		1.27		1.27
- Imported Machineries (10%/Yr)	37.28	26.58	9.35	1.35	36.98	28.59	8.38
(2) Capital Cost							
- Fixed Asset	69.32		69.32		43.48		43.48
- Land	15.62		15.62		9.80		9.80
Total Fixed Cost	167.06	26.58	139.13	1.35	127.45	28.59	98.86
Variable Cost (Excluding Cost of Soybeans)							
(3) Hexane (1.2 Kg)	48.00	48.00			45.12	45.12	
(4) Fuel Oil (800 MT)	74.62		74.62		69.40		69.40
(5) Electricity (36 KW)	42.48		42.48		39.59		39.59
(6) Water (0.72 m3)	7.20		7.20		6.71		6.71
(7) Unskilled Labour (1.06 Man-Hr)	10.47		10.47		9.63		9.63
(8) Administration Cost	589.31		589.31		589.31		589.31
(9) Corporate Income Tax (1.9 % of Revenue)	186.61			186.61			
(10) Maintenance Cost (25% of Depreciation)	20.53	6.65	13.55	0.34	18.54	7.15	11.40
Total Variable Cost	979.22	54.65	737.62	186.95	778.30	52.27	726.03

Source : (1) Table A.4.16 to A.4.17
      (2) Table A.4.16
      (3) to (7) Bartholomia (1987)
      (8) and (9) Annual report of Thai Vegetable Oill Co.,Ltd.
      (10) Assumed

Table A.4.19

Processing Budget and Domestic Resource Cost of Soybean Oil Extraction
Classified by Locally Produced Soybeans from Different Regions, 1990

(a) Cost   Unit : Baht/Tonne of soybeans

Items	Private				Social		
	Total	TI	NTI	Tax	Total	TI	NTI
(1) Processing Cost :							
Fixed	167.060	26.580	139.130	1.350	127.450	28.590	98.860
Variable	979.220	54.650	737.620	186.950	778.300	52.270	726.030
(2) Cost of Soybeans (Variable)							
North:							
Production*	7211.040	1380.086	5830.954		5563.363	1329.201	4234.162
Transportation	557.960	122.193	326.407	109.360	449.716	131.121	318.595
Marketing	300.000		300.000		266.100		266.100
Northeast:							
Production*	7191.440	1316.897	5874.543		5396.953	1264.831	4132.122
Transportation	577.560	126.486	337.873	113.202	465.513	135.727	329.787
Marketing	300.000		300.000		266.100		266.100
Centre:							
Production*	7594.922	353.389	6241.533		5823.918	1294.977	4528.941
Transportation	174.078	38.123	101.836	34.119	140.307	40.908	99.399
Marketing	300.000		300.000		266.100		266.100
(3) Total Cost :							
North	9215.280	1583.509	7334.111	297.660	7184.929	1541.182	5643.747
Northeast	9215.280	1524.613	7389.166	301.502	7034.316	1481.418	5552.898
Centre	9215.280	1472.742	7520.119	222.419	7136.075	1416.746	5719.330
Country Average	9215.280	1526.954	7414.465	273.860	7118.440	1479.782	5638.658
(4) Total Variable Cost :							
North	9048.220	1556.929	7194.981	296.310	7057.479	1512.592	5544.887
Northeast	9048.220	1498.033	7250.036	300.152	6906.866	1452.828	5454.038
Centre	9048.220	1446.162	7380.989	221.069	7008.625	1388.156	5620.470
Country Average	9048.220	1500.374	7275.335	272.510	6990.990	1451.192	5539.798

Table A.4.19 (continued)

(b) Revenue and Profit

Items	Meal	Oil	Meal & Oil
Ex-factory Price (B/kg)	8.800	19.650	
Import Parity Price (B/kg)	7.242	18.128	
Output (kg/Tonne of Soybeans)	770.000	155.000	
Private Revenue	6776.000	3045.750	9821.750
Social Revenue***	5576.340	2809.840	8386.180
Private Profit			
North			606.470
Northeast			606.470
Centre			606.470
Country Average			606.470
Social Profit			
North			1201.251
Northeast			1351.864
Centre			1250.105
Country Average			1267.740

(c) DRC Estimation for Meal & Oil

North	DRC = 5643.747/(8386.18-1541.182) = 0.825
Northeast	DRC = 5552.898/(8386.18-1481.418) = 0.804
Centre	DRC = 5719.33/(8386.18-1416.746) = 0.821
Country Average	DRC = 5638.658/(8386.18-1479.782) = 0.816

Note : * NTI of the private budget includes farm profit, sin :e that is wh it actually paid by the oil processing plant.

For the social budget the item excludes profit to r flect what tl e society would pay for the raw material.

The profit will eventually accrue to the final soci il profit of oil processing.

Source: (a) Tables A.4.8, A.4.9, A.4.10, A.4.13, A.4.14, A 4.15 and A.4.18

(b) OAE

Table A.5.1

Description of Data Appearing in Table A.5.2

The data used in the estimation of econometric models can be listed as follows:

(1)	T	=	linear time trend
(2)	CPI	=	general consumer price index for Thailand (1987 = 100)
(3)	LCPI	=	lagged value of CPI
(4)	IPC	=	income per capita in Thailand (1000 baht)
(5)	L	=	livestock index (number of chickens, million birds)
(6)	SB	=	domestic supply of soybeans (1000 tonnes)
(7)	Y	=	yield of soybeans (kg per rai)
(8)	PB	=	farm price of soybeans (baht per kg)
(9)	LPC	=	one year − agged farm price of corn (baht per kg)
(10)	MBA	=	adjusted quantity imported of soybeans (1000 tonnes)
(11)	XBA	=	adjusted quantity exported of soybeans (1000 tonnes)
(12)	MOA	=	adjusted quantity imported of soybean oil (1000 tonnes)
(13)	XOA	=	adjusted quantity exported of soybean oil (1000 tonnes)
(14)	MMA	=	adjusted quantity imported of soybean meal (1000 tonnes)
(15)	XMA	=	adjusted quantity exported of soybean meal (1000 tonnes)
(16)	PMA	=	adjusted wholesale price of soybean meal (baht per kg)
(17)	POA	=	adjusted wholesale price of soybean oil (baht per kg)
(18)	PFM	=	wholesale price of fishmeal (baht per kg)
(19)	DP	=	demand for soybeans used in oil processing (1000 tonnes)
(20)	POC	=	percentage of palm oil relative to total oil consumption
(21)	CE	=	consumption expenditure (million baht)

Table A.5.2

Observations on the Variables Used in the Econometric Model Estimation

Crop Year	(1) T	(2) CPI	(3) LCPI	(4) PC	(5) L	(6) SB	(7) Y	(8) PB	(9) LPC	(10) MBA
1970/71	1	30.6	30.6	4.06	58.79	50	137	2.32	0.76	*
1971/72	2	30.7	30.6	4.10	53.98	54	151	2.52	0.84	–
1972/73	3	32.2	30.7	4.42	52.78	72	138	2.51	0.70	–
1973/74	4	37.2	32.2	5.62	61.82	104	136	3.41	0.86	–
1974/75	5	46.3	37.2	6.92	47.80	110	134	3.99	1.35	*
1975/76	6	48.7	46.3	7.33	53.86	114	154	4.16	2.06	0.02
1976/77	7	50.6	48.7	8.14	49.89	114	179	4.70	1.86	0.04
1977/78	8	54.4	50.6	9.23	56.31	96	101	5.61	1.67	14.81
1978/79	9	58.7	54.4	0.86	65.32	159	157	5.39	1.64	–
1979/80	10	64.5	58.7	2.10	60.54	102	150	5.26	1.61	9.74
1980/81	11	77.2	64.5	3.98	56.04	100	127	5.78	2.09	5.58
1981/82	12	87.1	77.2	5.67	63.26	132	165	6.81	2.43	3.22
1982/83	13	91.6	87.1	6.56	65.21	113	146	5.12	2.18	*
1983/84	14	95.0	91.6	8.16	78.19	179	178	6.07	2.04	0.11
1984/85	15	95.9	95.0	8.96	78.20	246	196	6.00	2.49	–
1985/86	16	98.2	95.9	19.29	78.72	309	203	6.09	2.33	–
1986/87	17	100.0	98.2	20.38	79.27	356	198	6.15	1.82	–
1987/88	18	102.5	100.0	22.96	84.50	338	150	8.01	1.60	33.78
1988/89	19	106.4	102.5	27.18	86.68	517	206	8.46	2.48	–
1989/90	20	112.1	106.4	31.61	89.40	672	209	7.33	2.64	*

Table A.5.2 (continued)

Crop Year	(11) XBA	(12) MOA	(13) XOA	(14) MMA	(15) XMA	(16) PMA	(17) POA	(18) PFM	(19) DP	(20) POC	(21) CE
1970/71	5.38	0.15	0.02	0.31	4.28	2.46	14.76	3.34	30.10	NA	99079
1971/72	8.28	0.15	0.02	0.04	0.20	2.59	14.86	3.81	34.00	NA	110254
1972/73	12.96	0.19	*	0.76	4.26	3.33	15.43	4.11	47.00	NA	138034
1973/74	6.88	0.28	*	1.19	0.97	5.00	16.72	5.05	80.00	NA	178028
1974/75	16.60	0.14	*	8.38	–	5.14	16.83	6.50	66.60	NA	198514
1975/76	17.51	0.45	–	10.37	0.16	5.32	16.98	6.74	61.59	NA	225044
1976/77	11.52	1.05	–	23.71	*	5.98	17.47	7.01	60.00	16.53	260506
1977/78	7.43	2.26	–	112.08	–	5.39	17.02	7.56	69.30	16.42	300470
1978/79	9.56	1.62	–	38.8€	0.05	5.80	17.35	6.85	80.72	28.42	353309
1979/80	5.64	12.39	–	131.85	0.10	6.82	18.12	7.02	67.86	42.09	437960
1980/81	2.70	11.09	–	138.5€	–	7.73	18.82	10.15	93.05	41.25	511537
1981/82	1.89	12.09	–	188.8€	0.55	7.70	18.79	10.33	78.60	38.62	554732
1982/83	0.73	14.10	–	200.8€	–	7.07	18.31	10.18	84.86	42.06	618636
1983/84	1.18	37.89	0.04	240.3€	0.35	7.96	20.53	10.59	67.86	32.80	655236
1984/85	1.94	25.01	0.03	223.1€	–	6.70	19.17	10.42	120.97	45.39	662665
1985/86	2.45	3.36	*	229.1€	0.01	7.60	18.17	9.09	174.84	47.52	7.5665
1986/87	0.34	2.30	*	225.2€	–	7.80	18.16	10.75	138.84	53.58	794623
1987/88	0.46	3.43	*	232.1€	*	10.13	22.13	10.85	250.75	51.26	885008
1988/89	0.02	6.29	0.03	191.00	*	10.34	20.71	14.06	400.91	52.27	1030563
1989/90	0.02	5.74	0.04	187.8€	–	8.80	19.65	14.34	543.91	62.15	1223922

Note: For (17), the first 13 items are generated data.

 * = insignificant quantity;

 – = no import or export;

 NA = data are not available.

Source: (2) to (4) from NESDB (1990); (5) to (9) from MOAC (1976, 1981, 1983, 1986, 1990);

 (10) to (17) adjusted from file data provided by the Centre of Statistics, OAE; (18) from

 Klaitong (1990) and file data provided by the Department of Commercial Economic; (19) from

 Virakul and Sasanavin (1988) and f le data provided by OAE; (20) from TDRI (1993); (21)

 from Bank of Thailand.

Table A.6.1

Initial Data Required for the Estimation of the Values Listed in Table 6.2

(a)	Estimates of slope coefficients		
	dSB/dPBR	=	83.16
	dSM/dPMAR	=	6.11
	dSO/dPOAR	=	1.03
	dDB/dPBR	=	−38.61
	dDB/dPOAR	=	6.63
	dDB/dPMAR	=	7.93
	dDF/dPBR	=	−17.95
	dDM/dPMAR	=	−12.82
	dDO/dPOAR	=	−3.08
	dPBR/dPOAR	=	0.054
	dPBR/dPMAR	=	0.065

(b)	Fixed conversion factors and price deflator		
	CFO	=	0.155
	CFM	=	0.77
	PD	=	0.892

(c)	The real tariff and surcharge rates		
	T	=	1.36
	S	=	1.39

(d)	Some initial post-policy prices and quantities		
	WPB	=	6.17
	PMA	=	8.80
	MOA − XOA	=:	5.70
	PB	=	7.33
	QB$_5$	=	672.00
	MMA − XMA	::	137.83
	POA	=:	19.65
	QP$_4$	=:	543.91

Note: WPB is the Rotterdam price of soybeans.

Source: (a), (b) and (c) from section 5.6; (d) from Table A.6.2. and DIT (1990).

Table A.6.2

Outline of the Estimation of the Values Listed in Table 6.2

PB_1	=	(WPB) (PD)		
	=	(6.17) (0.892)	=	5.50
PB_2	=	$PB_4 - (T)(dPBR/dPOAR) - (S) (dPBR/dPMAR)$		
	=	$6.54 - (1.36) (0.054) - (1.39) (0.065)$	=	6.38
PB_3	=	$PB_4 - (S) (dPBR/dPMAR)$		
	=	$6.54 - (1.39) (0.065)$	=	6.45
PB_4	=	(PB) (PD)		
	=	(7.33) (0.892)	=	6.54
PO_1	=	$PO_2 - T$		
	=	$17.53 - 1.36$	=	16.17
PO_2	=	(POA) (PD)		
	=	(19.65) (0.892)	=	17.53
PM_1	=	$PM_2 - S$		
	=	$7.85 - 1.39$	=	6.46
PM_2	=	(PMA) (PD)		
	=	(8.80) (0.892)	=	7.85
QB_1	=	$QB_5 - (PB_4 - PB_1) (dSB/dPBR)$		
	=	$672 - (6.54 - 5.50) (83.16)$	=	585.51
QB_2	=	$QB_3 - (PB_2 - PB_1) (dDB/dPBR)$		
		$658.69 - (6.38 - 5.50) (-38.61)$	=	692.67
QB_3	=	$QB_4 - (PB_3 - PB_2) (dSB/dPBR)$		
	=	$664.51 - (6.45 - 6.38) (83.16)$	=	658.69
QB_4	=	$QB_5 - (PB_4 - PB_3) (dSB/dPBR)$		
	=	$672 - (6.54 - 6.45) (83.16)$	=	664.51
QB_5	=	existing soybean output and consumption	=	672.00

Table A.6.2 (continued)

QP_1	=	$QB_2 - QF_1$		
	=	$692.67 - 146.77$	=	545.90
QP_2	=	$QB_3 - QF_2$		
	=	$658.69 - 130.97$	=	527.72
QP_3	=	$QB_4 - QF_3$		
	=	$664.51 - 129.71$	=	534.80
QP_4	=	existing demand for beans in oil processing	=	543.91
QF_1	=	$QF_2 - (PB_2 - PB_1)\ (dDF/dPBR)$		
	=	$130.97 - (0.88)\ (-17.95)$	=	146.77
QF_2	=	$QF_3 - (PB_3 - PB_2)\ (dDF/dPBR)$		
	=	$129.71 - (0.07)\ (-17.95)$	=	130.97
QF_3	=	$QF_4 - (PB_4 - PB_3)\ (dDF/dPBR)$		
	=	$128.09 - (0.09)\ (-17.95)$	=	129.71
QF_4	=	$QB_5 - QP_4$		
	=	$672 - 543.91$	=	128.09
QO_1	=	$(QP_1)\ (CFO)$		
	=	$(545.90)\ (0.155)$	=	84.61
QO_2	=	$QO_5 - (T)\ (dDO/dPOAR)$		
	=	$90.01 - (1.36)\ (-3.08)$	=	94.20
QO_3	=	$(QP_2)\ (CFO)$		
	=	$(527.72)\ (0.155)$	=	81.80
QO_4	=	$(QP_3)\ (CFO)$		
	=	$(534.80\ (0.155)$	=	82.89
QO_5	=	$QO_6 + (MOA - XOA)$		
	=	$84.31 + 5.7$	=	90.01
QO_6	=	$(QP_4)\ (CFO)$		
	=	$(543.91)\ (0.155)$	=	84.31

Table A.6.2 (continued)

QM_1	=	(QP_1) (CFM)		
	=	(545.90) (0.77)	=	420.34
QM_2	=	$QM_6 - (S)$ (dDM/dPMA λ)		
	=	$606.64 - (1.39) (-12.81)$	=	624.45
QM_3	=	(QP_2) (CFM)		
	=	(527.72) (0.77)	=	406.34
QM_4	=	(QP_3) (CFM)		
	=	(534.80) (0.77)	=	411.80
QM_5	=	(QP_4) (CFM)		
	=	(543.91) (0.77)	=	418.81
QM_6	=	$QM_5 + (MMA - XMA)$		
	=	$418.8 + 187.83$	=	606.63
QB_t	=	$QP_t + QF_1$		
	=	$554.90 + 146.77$	=	701.67
QP_t	=	$QO_t/(CFO)$		
	=	86.01/(0.155)	=	554.90
QO_t	=	$QO_1 + (T)$ (dSO/dPOAR)		
	=	$84.61 + (1.36) (1.03)$	=	86.01
QM_t	=	(QP_t) (CFM)		
	=	(554.90) (0.77)	=	427.27
QB_s	=	$QP_s + QF_1$		
	=	$556.92 + 146.77$	=	703.69
QP_s	=	$(QM_s)/(CFM)$		
	=	(428.83)/(0.77)	=	556.92
QO_s	=	(QP_s) (CFO)		
	=	(556.92) (0.155)	=	86.32
QM_s	=	$QM_1 + (S)$ (dSM/dPMAR)		
	=	$420.34 + (1.39) (6.11)$	=	428.83

Source: From Table A.6.1 and Figures 3.14, 3.15 and 3.19

Table A.6.3

Summary of the Impacts of an Import Ban Policy on Soybeans

(a) Impacts on Price and Quantity   Unit: 1000 tonnes, unless otherwise specified

Items	Pre-intervention		Post-intervention		Impact
	Symbol	Value	Symbol	Value	
Bean:					
Price (*baht* per kg)	PB_1	5.50	PB_2	6.38	0.88
Production	QB_1	585.51	QB_3	658.69	73.18
Consumption (P)	QP_1	545.90	QP_2	527.72	-18.18
(F)	QF_1	146.77	QF_2	130.97	-15.80
(B)	QB_2	692.67	QB_3	658.69	-33.98
Net Import		107.16		0.00	-107.16
Oil:					
Price (*baht* per kg)	PO_1	16.17	PO_1	16.17	0.00
Production	QO_1	84.61	QO_3	81.80	-2.81
Consumption	QO_2	94.20	QO_2	94.20	0.00
Net Import		9.59		12.40	2.81
Meal:					
Price (*baht* per kg)	PM_1	6.46	PM_1	6.46	0.00
Production	QM	420.34	QM_3	406.34	-14.00
Consumption	QM_2	624.45	QM_2	624.45	0.00
Net Import		204.11		218.11	14.00

(b) Welfare Impacts   Unit: million *baht*

Items	PS	CS	NELP	NELC	DL	GR	BT
Bean (P)		-472.39		8.00			
(F)		-122.21		6.95			
(B)	547.45		32.20		47.15	0.00	589.38
Oil							-45.44
Meal							-90.44
				Total	47.15	0.00	453.50

Source: Estimation based on Table 6 2 and Figure 3.13.

Table A.6.4

Summary of the Impacts of ar Import Tariff Policy on Soybean Oil

(a) Impacts on Price and Quantity   Unit: 1000 tonnes, unless otherwise specified

Items	Pre-intervention		Post-intervention		Impact
	Symbol	Value	Symbol	Value	
Bean:					
Price (*baht* per kg)	PB_1	5.50	PB_1	5.50	0.00
Production	QB_1	585.51	QB_1	585.51	0.00
Consumption (P)	QP_1	545.90	(QP_t)	554.90	9.00
(F)	QF_1	146.77	QF_1	146.77	0.00
(B)	QB_2	692.67	(QB_t)	701.67	9.00
Net Import		107.16		116.16	9.00
Oil:					
Price (*baht* per kg)	PO_1	16.17	PO_2	17.53	1.36
Production	QO_1	84.61	(QO_t)	86.01	1.40
Consumption	QO_2	94.20	(QO_5)	90.01	-4.19
Net Import		9.59		4.00	-5.59
Meal:					
Price (*baht* per kg)	PM_1	6.46	PM_1	6.46	0.00
Production	QM	420.34	(QM_t)	427.27	6.93
Consumption	QM_2	624.45	QM_2	624.45	0.00
Net Import		204.11		197.18	-6.93

(b) Welfare Impacts   Unit: million *baht*

Items	PS	CS	NELP	NELC	DL	GR	BT
Bean (P)							
(F)							
(B)							-49.50
Oil	116.02	-125.26	0.95	2.85	3.8	5.44	90.39
Meal							44.77
				Total	3.8	5.44	85.66

Source: Estimation based on Table 6 2 and Figure 3.14.

Table A.6.5

Summary of the Impacts of an Inport Surchage Policy on Soybean Meal

(a) Impacts on Price and Quantity　　　　　Unit: 1000 tonnes, unless otherwise specified

Items	Pre-intervention		Post-intervention		Impact
	Symbol	Value	Symbol	Value	
Bean:					
Price (*baht* per kg)	PB_1	5.50	PB_1	5.50	0.00
Production	QB_1	585.51	QB_1	585.51	0.00
Consumption (P)	QP_1	545.90	(QP_s)	556.92	11.02
(F)	QF_1	146.77	QF_1	146.77	0.00
(B)	QB_2	692.67	(QB_s)	703.69	11.02
Net Import		107.16		118.18	11.02
Oil:					
Price (*baht* per kg)	PO_1	16.17	PO_1	16.17	0.00
Production	QO_1	84.61	(QO_s)	86.32	1.71
Consumption	QO_2	94.20	QO_2	94.20	0.00
Net Import		9.59		7.88	-1.71
Meal:					
Price (*baht* per kg)	PM	6.46	PM_2	7.85	1.39
Production	QM	420.34	(QM_s)	428.83	8.49
Consumption	QM_2	624.45	(QM_6)	606.63	-17.82
Net Import		204.11		177.80	-26.31

(b) Welfare Impacts　　　　　　　　　　　Unit: million *baht*

Items	PS	CS	NELP	NELC	DL	GR	BT
Bean (P)							
(F)							
(B)							-60.61
Oil							27.65
Meal	590.17	-855.60	5.90	12.38	18.28	247.14	169.96
				Total	18.28	247.14	137.00

Source: Estimation based on Table 6 2 and Figure 3.15.

Table A.6.6

Summary of the Marginal Impacts of an Import Tariff on Soybean Oil with an Import Ban on Soybeans

(a) Impacts on Price and Quantity   Unit: 1000 tonnes, unless otherwise specified

Items	Pre-intervention		Post-intervention		Impact
	Symbol	Value	Symbol	Value	
Bean:					
Price (*baht* per kg)	PB_2	6.38	PB_3	6.45	0.07
Production	QB_3	658.69	QB_4	664.51	5.82
Consumption (P)	QP_2	527.72	QP_3	534.80	7.08
(F)	QF_2	130.97	QF_3	129.71	-1.26
(B)	QB_3	658.69	QB_4	664.51	5.82
Net Import		0.00		0.00	0.00
Oil:					
Price (*baht* per kg)	PO_1	16.17	PO_2	17.53	1.36
Production	QO_3	81.80	QO_4	82.89	1.09
Consumption	QO_2	94.20	QO_5	90.01	-4.19
Net Import		12.4		7.12	-5.28
Meal:					
Price (*baht* per kg)	PM_1	6.46	PM_1	6.46	0.00
Production	QM_3	406.34	QM_4	411.80	5.46
Consumption	QM_2	624.45	QM_2	624.45	0.00
Net Import		218.11		212.65	-5.46

(b) Welfare Impacts   Unit: million *baht*

Items	PS	CS	NELP	NELC	DL	GR	BT
Bean (P)		74.80					
(F)		-9.12					
(B)	46.31						
Oil	111.99	-125.26	0.74	2.85	3.59	9.68	85.38
Meal							35.27
Total					3.59	9.68	120.65

Note : CS(P) = PS(Oil) - PS(B) - CS(F)

Source: Estimation based on Table 6 2 and Figure 3.16.

Table A.6.7

Summary of the Total Impact of an Import Tariff on Soybean Oil and an Import Ban on Soybeans

(a) Impacts on Price and Quantity — Unit: 1000 tonnes, unless otherwise specified

Items	Pre-intervention		Post-intervention		Impact
	Symbol	Value	Symbol	Value	
Bean:					
Price (*baht* per kg)	PB_1	5.50	PB_3	6.45	0.95
Production	QB_1	585.51	QB_4	664.51	79.00
Consumption (P)	QP_1	545.90	QP_3	534.80	−11.10
(F)	QF_1	146.77	QF_3	129.71	−17.06
(B)	QB_2	692.67	QB_4	664.51	−28.16
Net Import		107.16		0.00	−107.16
Oil:					
Price (*baht* per kg)	PO_1	16.17	PO_2	17.53	1.36
Production	QO_1	84.61	QO_4	82.89	−1.72
Consumption	QO_2	94.20	QO_5	90.01	-4.19
Net Import		9.59		7.12	-2.47
Meal:					
Price (*baht* per kg)	PM_3	6.46	PM_1	6.46	0.00
Production	QM	420.34	QM_4	411.80	−8.54
Consumption	QM_3	624.45	QM_2	624.45	0.00
Net Import		204.11		212.65	8.54

(b) Welfare Impacts — Unit: million *baht*

Items	PS	CS	NELP	NELC	DL	GR	BT
Bean (P)		−397.60		8.00			
(F)		−131.32		6.95			
(B)	593.76		32.20		47.15		589.38
Oil	111.99	−125.26	0.74	2.85	3.59	9.68	39.94
Meal							−55.17
				Total	50.74	9.68	574.15

Note : The welfare impacts are those from Table A.6.3 plus those from Table A.6.6

Source: Estimation based on Table 6.2 and Figure 3.17.

Table A.6.8

Summary of the Marginal Impacts of Import Surcharge on Soybean Meal with an Import Tariff on Soybean Oil and an Import Ban on Soybeans

(a) Impacts on Price and Quantity   Unit: 1000 tonnes, unless otherwise specified

Items	Pre-intervention		Post-intervention		Impact
	Symbol	Value	Symbol	Value	
Bean:					
Price (*baht* per kg)	PB_3	6.45	PB_4	6.54	0.09
Production	QB_4	664.51	QB_5	672.00	7.49
Consumption (P)	QP_3	534.80	QP_4	543.91	9.11
(F)	QF_3	129.71	QF_4	128.09	-1.62
(B)	QB_4	664.51	QB_5	672.00	7.49
Net Import		0.00		0.00	0.00
Oil:					
Price (*baht* per kg)	PO_2	17.53	PO_2	17.53	0.00
Production	QO_4	82.89	QO_6	84.31	1.42
Consumption	QO_5	90.01	QO_5	90.01	0.00
Net Import		7.12		5.70	-1.42
Meal:					
Price (*baht* per kg)	PM_1	6.46	PM_2	7.85	1.39
Production	QM_4	411.80	QM_5	418.81	7.01
Consumption	QM_3	624.45	QM_6	606.63	-17.82
Net Import		212.65		187.82	-24.83

(b) Welfare Impacts   Unit: million *baht*

Items	PS	CS	NELP	NELC	DL	GR	BT
Bean (P)		528.74					
(F)		-11.60					
(B)	60.14						0.00
Oil							22.96
Meal	577.28	-855.60	4.87	12.38	17.25	261.07	160.40
				Total	17.25	261.07	183.36

Note : (1) Balance of trade for oil equal 1.42 multiplied by the world price (16.17)

rather than the market price (17.53)

(2) CS(P) = PS(Meal) - PS(B) - CS(F)

Source: Estimation based on Table 6.2 and Figure 3.18.

Table A.6.9

Summary of the Total Impacts of an Import Surcharge on Soybean Meal with an Import Tariff on Soybean Oil and an Import Ban on Soybeans

(a) Impacts on Price and Quantity   Unit: 1000 tonnes, unless otherwise specified

Items	Pre-intervention		Post-intervention		Impact
	Symbol	Value	Symbol	Value	
Bean:					
Price (*baht* per kg)	PB_1	5.50	PB_4	6.54	1.04
Production	QB_1	585.51	QB_5	672.00	86.49
Consumption (P)	QP_1	545.90	QP_4	543.91	−1.99
(F)	QF_1	146.77	QF_4	128.09	−18.68
(B)	QB_2	692.67	QB_5	672.00	−20.67
Net Import		107.16		0.00	−107.16
Oil:					
Price (*baht* per kg)	PO_1	16.17	PO_2	17.53	1.36
Production	QO_1	84.61	QO_6	84.31	−0.30
Consumption	QO_2	94.20	QO_5	90.01	-4.19
Net Import		9.59		5.70	-3.89
Meal:					
Price (*baht* per kg)	PM_1	6.46	PM_2	7.85	1.39
Production	QM	420.34	QM_5	418.81	−1.53
Consumption	QM_2	624.45	QM_6	606.83	−17.82
Net Import		204.11		187.82	−16.29

(b) Welfare Impacts   Unit: million *baht*

Items	PS	CS	NELP	NELC	DL	GR	BT
Bean (P)		131.14		8.00			
(F)		−142.92		6.95			
(B)	653.90		32.20		47.15		589.38
Oil	111.99	−125.26	0.74	2.85	3.59	9.68	62.90
Meal	577.28	−855.60	4.87	12.38	17.25	261.07	105.23
				Total	67.99	270.75	757.58

Note : The welfare impacts are those from Table A.6.7 plus those from Table A.6.8

Source: Estimation based on Table 6.2 and Figure 3.19.

Table A.6.10

Deadweight Loss Functicn, Optimal Tariff and Surcharge and Pclicy Simulation

(a) Deadweight Loss Function and Op.imal Intervention

Scenario	Deadweight Loss	Optimal Intervention
T	$DL = 1.96T^2 - 3.13T$	$OT = 0.7985$
S	$DL = 8.89S^2 - 7.42S$	$OS = 0.4173$
T/B	$DL = 1.86T^2 - 3.08T$	$OT = 0.8279$
S(B/T)	$DL = 8.37S^2 - 7.42S$	$OS = 0.4432$

(b) Policy Simulation

T		S		T/B		S/(B+T)	
Tariff	DL	Surcharge	DL	Tariff	DL	Surcharge	DL
Baht/kg	million *Baht*	*Baht*/kg	million *Baht*	*Baht*/kg	million	*Baht*/kg	million *Baht*
0.3985	-0.936	0.0173	-0.126	0.4279	-0.977	0.0432	-0.305
0.4985	-1.073	0.1173	-0.748	0.5279	-1.108	0.1432	-0.891
0.5985	-1.171	0.2173	-1.193	0.6279	-1.201	0.2432	-1.309
0.6985	-1.230	0.3173	-1.459	0.7279	-1.256	0.3432	-1.561
0.7985	-1.250	0.4173	-1.548	0.8279	-1.275	0.4432	-1.644
0.8985	-1.230	0.5173	-1.459	0.9279	-1.256	0.5432	-1.561
0.9985	-1.171	0.6173	-1.193	1.0279	-1.201	0.6432	-1.310
1.0985	-1.073	0.7173	-0.748	1.1279	-1.108	0.7432	-0.891
1.1985	-0.936	0.8173	-0.126	1.2279	-0.978	0.8432	-0.306

Source : Estimation based on Table A.6.1, Table A.6.2, Figure 6.3 and Figure 6.4.