UNIVERSITI PUTRA MALAYSIA

TRADE LIBERALIZATION IMPACT ON THE INDONESIAN PALM OIL INDUSTRY

ERNAWATI.

FEP 2004 6

TRADE LIBERALIZATION IMPACT ON THE INDONESIAN PALM OIL INDUSTRY

By

ERNAWATI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

July 2004

UPM

Dedication

To my beloved Husband and all of my family

To my beloved Indonesia and her citizens

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Doctor of Philosophy

TRADE LIBERALIZATION IMPACT ON THE INDONESIAN PALM OIL INDUSTRY

By

ERNAWATI

July 2004

Chairman : Professor Fatimah Mohd. Arshad, Ph.D.

Faculty : Economics and Management

The palm oil industry has been an important sector in the Indonesian economy for the past three decades. The important role of this industry to the Indonesian economy is not only due to the fact that Indonesia today depends substantially on oil palm for its foreign exchange earnings, but also because Indonesia is the largest consumer of palm oil among developing countries. This study was conducted to analyze the implications of various trade liberalization policies (reduction of export duty and import tariff) on the Indonesian palm oil industry.

An econometric approach, mainly the error correction model on a simultaneous equation model, was employed. The model incorporated specific equations for acreage, harvested area, yield, domestic demand, rest of the world excess supply, Indonesian excess demand to India, China, Europe, and rest of the world, rest of the world excess demand and export price. The model was estimated using error correction and simultaneous model technique. Then the model was estimated by the two stage least squared (2SLS) method. The structural equations were assessed based on the economic and statistical criteria. The economic criteria were evaluated

based on the signs and magnitude of the hypotheses, while the statistical criteria used the coefficient of multiple determination (R^2), the F statistic, autocorrelation (h statistic), and t ratios to assess the model. Validation of the model was undertaken using Theil's inequality coefficient and root mean percentage square error.

The results show that the net social welfare effects of export duty reduction at 10% showed a net gain for $ 857.56 thousand, which can be explained by gains in Indonesian producer surplus as a result of higher prices and by transferring the production resources from palm oil production to more efficient sectors. Indonesian consumers' surplus decreased by $12.89 million, while Indonesian producers' surplus gained $17.38 million. On the other hand, when import tariff was reduced by 10%, the estimation yielded a gain in Indonesian producers' surplus of $ 5.42 million, a gain of $ 1.38 million in efficiency attributable to the transfers of production resources to more efficient sectors and a loss in consumer surplus of $4.04 million due to increased production at higher prices. These numbers increased along with the increase in the percentage reduction of export duty.

Reduction in both export duty and import tariff has the same implication as individually reducing export duty and import duty. Producer surplus increased by $ 22.83 million and efficiency gain rose by $ 1.51 million, meanwhile the loss in consumer surplus was $16.54 million. Then, the calculations of the welfare effects showed that the Indonesian palm oil industry will be better off without any intervention.

PERPUSTAKAAN SULTAN ABDUL SAMAD
UNIVERSITI PUTRA MALAYSIA

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

LIBERALISASI PERDAGANGAN MINYAK KELAPA SAWIT DAN KESANNYA KE ATAS INDUSTRI MINYAK SAWIT INDONESIA

Oleh

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Industri minyak kelapa sawit adalah antara sektor yang penting di Indonesia untuk hampir tiga dekad. Kepentingan industri kelapa sawit Indonesia bukan hanya kerana Indonesia bergantung kepada industri ini untuk pendapatan tukaran wang asing, tetapi juga kerana Indonesia adalah negara pengguna minyak kelapa sawit yang terbesar di kalangan negara-negara membangun. Kajian ini adalah bertujuan untuk menganalisa kesan pelbagai polisi perdagangan bebas ke atas industri minyak kelapa sawit Indonesia.

Pendekatan ekonometri, terutamanya model pembetulan kesalahan ke atas model persamaan serentak adalah digunakan di dalam kajian ini. Model ini diterangkan oleh sebelas persamaan tingkah laku dan telah diaplikasikan kepada analisis penawaran dan permintaan. Khususnya, model ini telah menggunakan persamaan untuk kawasan tanaman, keluasan kawasan penuaian, dapatan (yield), permintaan domestik / dalam negeri, lebihan penawaran sisa dunia, lebihan permintaan Indonesia ke India, China dan Eropah dan sisa dunia, lebihan eksport. Model ini dianggarkan menggunakan teknik-teknik pembetulan kesalahan dan persamaan

serentak. Model ini dianggarkan menggunakan kaedah dua peringkat kuasa dua terkecil (two stage least squared) (2SLS). Kriteria ekonomi adalah dinilai berdasarkan tanda dan magnitud hipotesis-hipotesis, manakala kritieria statistik dianggarkan menggunakan koefisien "multiple determination" (R^2), F-statistik, autokorelasi (statistik-h), dan nisbah t. Untuk menentukan kesahihan model ini, ketaksamaan koefisien Theil dan kesalahan punca kuasa dua peratusan purata (root mean percentage square error).

Keputusan kajian menunjukkan kesan bersih kebajikan oleh kerana penurunan duti eksport sebanyak 10 peratus menunjukkan keuntungan bersih sebanyak $857.56 ribu, di mana ianya adalah keuntungan ke atas lebihan pengeluar hasil daripada kenaikan harga dan juga kerana pemindahan sumber pengeluaran kelapa sawit kepada sektor industri yang lebih efisyen. Lebihan pengguna Indonesia turun sebanyak $12.89 juta, manakala lebihan pengeluar Indonesia mengaut keuntungan sebanyak $17.38 juta. Walaubagaimanapun, apabila cukai import dikurangkan sebanyak 10 peratus, anggaran menunjukkan bahawa lebihan pengeluar Indonesia adalah $5.42 juta, kadar efisyen meningkat ke $1.38 juta oleh kerana pemindahan sumber pengeluaran kepada sektor yang lebih efisyen dan lebihan pengguna menurun kepada $4.04 juta oleh kerana kenaikan pengeluaran disebabkan harga yang lebih tinggi. Anggaran ini turut meningkat sejajar dengan peningkatan peratusan penurunan cukai eksport.

Pengurangan kedua-dua cukai eksport dan cukai import mempunyai implikasi yang sama dengan sekiranya penurunan cukai eksport dan cukai import dibuat secara berasingan. Lebihan pengeluar meningkat sebanyak $22.83 juta dan keuntungan

kadar efisyen juga meningkat sebanyak $1.51 juta, manakala lebihan pengguna mengalami penurunan sebanyak $16.54 juta oleh kerana kenaikan pengeluaran yang disebabkan harga yang lebih tinggi, yang meningkat kerana peningkatan peratusan penurunan cukai eksport. Pengiraan ke atas kesan kabajikan turut menunjukkan bahawa industri minyak kelapa sawit Indonesia adalah lebih baik dengan tiada campurtangan.

ACKNOWLEDGEMENTS

All praise due to Allah, the Most Gracious and Merciful, for giving me the strength, courage, and determination to complete this study.

I would like to express my deepest gratitude and sincere appreciation to the International Rotary Club, the Rotary Club Surabaya Rungkut, Rotary Club Surabaya Metropolitan, and in particular the Scholarship Committee of Indonesian Rotary Club for affording me the opportunity to complete this study. Indeed it was an invaluable opportunity.

I would also like to thank my supervisor, Prof. Dr. Fatimah Mohd Arshad, for her invaluable guidance, encouragement, and constructive criticisms throughout the study period, and for giving me total freedom to explore my research. Her enthusiasm and patience have left a feeling of indebtedness that cannot be fully expressed.

Furthermore, I would like to sincerely and earnestly record my indebtedness to Professor Dr. Mad Nasir Shamsudin, Head of the Department of Agribusiness and Information System, Faculty of Agriculture, UPM, and a member of my supervisory committee, for his advice, guidance, critical assessment and useful suggestions during the entire course of this study. My grateful appreciation also goes to Associate Professor Dr. Zainal Abidin Mohamed, from the Department of Agribusiness and Information System, Faculty of Agriculture, UPM, and a member of the supervisory committee, for his advice and supervision. In addition, I must

thank Professor Dr. Mohammed Yusoff, a member of the supervisory committee, for his learned suggestions and cooperation at the initial stage of this study.

My heartfelt appreciation and gratitude also goes to the staff members of the Faculty of Economics and Management, Universiti Putra Malaysia, for their generous guidance and help during the entire length of my stay in Malaysia. Special thanks go to Prof. Dr. Ahmad Zubaidi Baharumshah, Deputy Dean of the Faculty of Economics and Management.

I shall be failing my duty if I do not put on record my thanks and appreciation to my many friends and colleagues in UPM, who extended a helping hand whenever I need it throughout the duration of my study. Special thanks goes to Dr. Adnan Al Sanoy, Dr. M.S. Safa, Riyadh Abbas, Rita Hasheem, Dhekra, Aliasuddin, Vidya, Rohana, Rini Yanti and all the students in the Department of Economics.

I would like to express my thank to Wijaya Kusuma University, and Professor Dr. H.S.M. Soeatmadji and Dr. A.W. Batara Goa, MA., MSc. for their invaluable guidance and encouragement, throughout the study period.

Last but by no means the least, I would like to express my deepest gratitude to my Rotary-Club host canselor, Dato' Mohd. Hanif bin Sher Mohammad and his family for their advice, guidance, useful suggestions, and care during the entire course of this study

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LIST OF ABBREVIATIONS

CU	Custom Union
UR	Uruguay Round
EU	European Union
USA	United States of America
ASEAN	Association of South East Asian Nation
AFTA	ASEAN Free Trade Area
CEPT	Common Effective Preferential Tariff
WTO	World Trade Organization
NIE	Newly Industrialized Economies
IOPRI	Indonesian Palm Oil Research Institute
CPO	Crude Palm Oil
APEC	Asia Pacific Economic Concerns
USSR	Union of Soviet Socialist Republic
GATT	General Agreement of Tariff and Trade
AoA	Agreement on Agriculture
URAA	Uruguay Round Agreement on Agriculture
AFAS	ASEAN Framework Agreement on Services
TEL	Temporary Exclusion List
IL	Inclusion List
SL	Sensitive List
NAFTA	North American Free Trade Area
CIS	Centre for International Studies

MPOB	Malaysian Palm Oil Board
GOE	Government Owned Estates
NES	Nucleus Estate and Smallholders
GDP	Gross Domestic Product
PKO	Palm Kernel Oil
PK	Palm Kernel
OECD	Organization for Economic Cooperation and Development
NTBs	Non-Trade Barriers
GTAP	Global Trade Analysis Project
PTPs	Perseroan Terbatas Perkebunan
PNPs	Perusahaan Negara Perkebunan
BOI	Bank of Indonesia
JMO	Joint Marketing Office
BULOG	Badan Urusan Logistic (National Logistic Board)
AMS	Aggregate Measure of Support
RIA	Regional Integration Agreements
MERCUSOR	Southern Common Market Agreement
ANDEAN	Trade Block among Countries Surrounding Andean
IMF	International Monetary Fund
CGE	Computable General Equilibrium
ADB	Asian Development Bank
FAO	Food and Agricultural Organization
GAPKI	Indonesian Palm Oil Producers Association
ADF	Augmented Dickey Fuller
PP	Phillips-Perron

VECM	Vector Error Correction Model
2SLS	Two Stage Least Square

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Over the last decade, South East Asia has become one of the fastest growing regions in the world. This is due to the rapid expansion of intra and inter regional trades and flows of foreign direct investment into the region. However, these benefits came about not without price such as the negative impact of liberalization. Liberalization is always followed by a series of structural adjustment in various sectors and the agricultural sector always seems to be at the receiving end of the negative effects.

The oils and fats market is one among many sectors that is affected by trade liberalization. It has undergone major changes in the last four decades. Basiron's (2000) believed that vegetable oil has displaced animal fats as a major source of oils as shown in Table 1.1. From the table, animal fats have declined from 32.7 percent of total oils and fats production during 1976-1980 period to 21.3 percent in 1996-2000, thus illustrating the evidence of vegetable oil dominancy.

Among the categories of oils, the palm oil economy has become one of the fastest growing sectors. Moreover, it has become more market oriented which might be due to the several multilateral trade negotiations and regional trade initiatives.

Table 1.1 : Production, Share and Annual Growth of the World Fats and Oils, 1976-2000 ('000 ton)

Oils and fats	1976-1980	Share (%)	Growth (%)	1981-1985	Share (%)	Growth (%)	1986-1990	Share (%)	Growth (%)	1991-1995	Share (%)	Growth (%)	1996-2000	Share (%)	Growth (%)	1976-2000	Share (%)	Growth (%)
Vegetable Oils	32971	62.64	4.81	41707	66.11	4.78	52690	69.62	3.84	63609	73.26	4.39	78868	76.23	2.58	53969	69.57	4.08
From Oilseeds																		
Soybean oil	11231	21.34	3.8	13532	21.45	2.47	15290	20.2	3.21	17909	20.63	4.87	22842	22.08	3.03	16160.8	21.14	3.48
Sunflower	4216	8.01	5.93	5622	8.91	5.23	7254	9.59	1.89	7965	9.17	2.79	9141	8.84	3.34	6839.6	8.90	3.84
Cottonseed	2832	5.37	2.91	3267	5.18	2.23	3648	4.82	1.54	3938	4.54	0.3	3997	3.86	2.33	3536.4	4.75	1.86
Groundnut	3008	5.71	0.91	3147	4.99	3.15	3675	4.86	2.05	4086	4.69	2.58	4621	4.47	-38.4	3707.4	4.94	-5.94
Rapeseed	3001	5.7	11.01	5059	8.02	8.21	7505	9.92	5.18	9662	11.13	5.39	12560	12.14	4.02	7557.4	9.38	6.76
From Tree Crops																		
Olive	1679	3.19	0.99	1764	2.8	0.45	1804	2.38	1.7	1963	2.26	4.26	2418	2.34	0.8	1925.6	2.59	1.64
Coconut	2855	5.42	-1.1	2702	4.28	2.61	3074	4.06	-0.3	3029	3.49	0.46	3099	3	0	2951.8	4.05	0.33
Palm	3688	7.01	9.78	5880	9.32	9.42	9224	12.19	7.68	13353	15.38	6.07	17932	17.33	5.58	10015.4	12.25	7.71
Palm K. oil	463	0.88	9.65	734	1.16	10.59	1214	1.6	7.24	1722	1.98	5.57	2258	2.18	5.51	1278.2	1.56	7.71
Animal Fats	17218	32.71	1.57	18615	29.51	1.32	19873	26.26	-0.05	1963	22.83	0.89	20719	20.03	0.89	15677.6	26.27	0.92
Fish	1127	2.14	3.06	1310	2.08	3.1	1526	2.02	-3.47	1279	1.47	-2.85	1107	1.07	0.43	1269.8	1.76	0.05
Butter	5599	10.64	1.96	6168	9.78	0.69	6383	8.43	-1.66	5871	6.76	-0.4	5754	5.56	0	5955	8.23	0.12
Lard	4253	8.08	1.66	4619	7.32	2.28	5171	6.83	0.85	5394	6.21	2.84	6205	6	0	5128.4	6.89	1.53
Tallow	6239	11.85	0.88	6518	10.33	0.83	6793	8.96	1.39	7277	8.38	1.01	7653	7.4	1.51	6896	9.38	1.12
Others	2450	4.65	2.43	2762	4.38	2.45	3117	4.12	1.74	3397	3.91	2.63	103455	3.74	22.13	23036.2	4.16	6.28
Total 17 Oils and Fats	52639	100	3.69	63084	100	3.7	75680	100	2.79	86827	100	3.57	3868	100	3.25	56419.6	100.00	3.40

Source : Oil World (2001)