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MALAYSIAN MARKET MODEL FOR PALM OIL: SOME POLICY SIMULATIONS

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MALAYSIAN MARKET MODEL FOR PALM OIL: SOME POLICY SIMULATIONS

By

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UPM

DEDICATED TO THE LOVING MEMORY
OF MY LATE FATHER AND MOTHER

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LIST OF ABBREVIATIONS

ASA	=	American Soyabean Association
ASEAN	=	Association of South-East Asian Nations
CIF	=	Cost, Insurance and Freight
CPO	=	Crude Palm Oil
EEC	=	European Economic Community
FAO	=	U.N. Food and Agriculture Organization
FELCRA	=	Federal Land Consolidation and Rehabilitation Authority (Malaysia)
FELDA	=	Federal Land Development Authority (Malaysia)
ffb	=	fresh fruit bunch
FOB	=	Free on Board
GATT	=	General Agreement on Tariff and Trade
GCP	=	Ghee Corporation of Pakistan
GDP	=	Gross Domestic Product
GSP	=	Generalised Scheme of Preferences
GNP	=	Gross National Product
IMF	=	International Monetary Fund
KLCE	=	Kuala Lumpur Commodity Exchange
NAP	=	National Agriculture Policy

PORAM = Palm Oil Refiners Association of Malaysia

PORIM = Palm Oil Research Institute of Malaysia

PORLA = Palm Oil Registration and Licencing Authority (Malaysia)

PKO = Palm Kernel Oil

PPO = Processed Palm Oil

RISDA = Rubber Industry Smallholders Development Authority (Malaysia)

RM = Ringgit Malaysia (Malaysian Ringgit)

STC = State Trading Company of India

UK = The United Kingdom

USA = The United States of America

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Faculty : Economics and Management

Malaysian palm oil market is vulnerable to the market variables and policy instruments. This study is undertaken to model Malaysian palm oil market and evaluate the impact of the market variables and policy instruments on Malaysian palm oil market. Eleven structural equations and six identities are specified and identified. The structural equations are estimated by means of the two-stage least square with principal component employed in the first stage regression. The effects of variations in the market variables and policy instruments on Malaysian palm oil market are obtained by simulating the market models and by deducting the simulated values from the base solutions.

The results show that estate production is determined by production lagged one period, current price, domestic price lagged four to six periods and

rubber price. The adjustment coefficient of estate production is low at 0.2834. The price elasticity of estate supply is inelastic at 0.1721.

Smallholder production is influenced by production lagged one period, domestic price lagged five and six periods and re-planting grant. The price elasticity of supply for smallholder and its adjustment coefficient are inelastic at 0.0577 and low at 0.1924 respectively.

Domestic demand is determined by the price of groundnut oil, Malaysian industrial production index and domestic demand lagged one period. The elasticities of domestic demand with respect to own price and substitute prices are inelastic. The adjustment coefficient of domestic demand is also low at 0.4872.

Except for the United States and the rest of EEC, price of Malaysian palm oil in the world market is an important determinant of Malaysian palm oil export to the importing countries. Export of Malaysian palm oil is also influenced by prices of its substitutes, industrial production index in each country and lagged of one period of its export. The elasticities of the export demand to all of the countries with respect to own price and its substitute prices are inelastic.

The main determinants influencing Malaysian palm oil price in the world market are world consumption of palm oil and lagged one period of Malaysian palm oil price in the world market.

The effects of policy variations, such as reduction in export duty, appreciation and depreciation of Malaysian ringgit against the US dollar are substantial on domestic price, palm oil production and domestic demand in initial years. However, the effects are less pronounced on Malaysian palm oil price in the world market and quantities exported. The effects of imposition of the import duties by India and the EEC are also substantial on domestic price and palm oil production, but less on domestic demand, Malaysian palm oil price in the world market and quantities exported. The results of the effects of policy variations also indicate that Malaysia as a leading palm oil producer and exporter remains basically a price taker in the world palm oil market.

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MODEL PASARAN MINYAK SAWIT MALAYSIA: BEBERAPA SIMULASI POLISI

Oleh

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Pasaran minyak sawit Malaysia adalah sensitif kepada pembolehubah-pembolehubah pasaran dan polisi. Kajian ini dilaksanakan untuk memodel pasaran minyak sawit Malaysia dan menilai kesan pembolehubah-pembolehubah pasaran dan polisi keatas pasaran minyak sawit. Sejumlah sebelas persamaan struktur dan enam identiti telah dispesifikasi dan dikenal pasti. Kesebelas persamaan struktur itu telah dianggarkan dengan menggunakan ganda dua terkecil dua tahap di mana komponen utama digunakan dalam persamaan regresi tahap pertama. Kesan variasi dalam pembolehubah-pembolehubah pasaran dan polisi keatas pasaran minyak sawit Malaysia diperolehi dengan mensimulasikan model-model pasaran dan dengan menolakkan nilai-nilai yang telah disimulasikan daripada penyelesaian asas.

Penemuan kajian menunjukkan pengeluaran estet dipengaruhi oleh pengeluaran lat satu jangka masa lalu, harga kini, harga domestik lat empat hingga enam jangka masa lalu dan harga getah. Koeffisien penyesuaian bagi pengeluaran estet adalah rendah pada 0.2834. Keanjalan harga bagi pengeluaran estet adalah tak anjal pada 0.1721.

Pengeluaran pekebun kecil dipengaruhi oleh pengeluaran lat satu jangka masa lalu, harga domestik lat lima dan enam jangka masa lalu dan geran tanam semula. Keanjalan harga bagi pengeluaran pekebun kecil adalah tak anjal pada 0.0577 dan koeffisien penyesuaian adalah rendah pada 0.1924.

Permintaan domestik keatas minyak sawit ditentukan oleh harga minyak kacang tanah, indeks keluaran industri Malaysia dan permintaaan domestik lat satu jangka masa lalu. Keanjalan permintaan domestik dengan harga sendiri dan harga-harga gantian adalah tak anjal. Koeffisien penyesuaian bagi permintaan domestik juga rendah pada 0.4872.

Terkecuali untuk Amerika Syarikat dan lain-lain negara Kesatuan Ekonomi Eropah, harga minyak sawit Malaysia dalam pasaran dunia adalah merupakan penentu penting untuk eksport minyak sawit Malaysia ke negara-negara pengimport. Eksport minyak sawit Malaysia adalah juga dipengaruhi oleh harga-harga minyak gantian, indeks keluaran industri untuk

masing-masing negara pengimport dan eksport lat satu jangka masa lalu. Keanjalan permintaan eksport bagi kesemua negara dengan harga sendiri dan harga minyak gantian adalah tak anjal.

Penentu-penentu penting yang mempengaruhi harga minyak sawit Malaysia di pasaran dunia ialah penggunaan minyak sawit dunia dan harga minyak sawit Malaysia lat satu jangka masa lalu.

Kesan-kesan variasi polisi, seperti penurunan duti eksport, naik-turun ringgit Malaysia dibandingkan dengan dollar Amerika Syarikat adalah besar bagi harga domestik, keluaran minyak sawit dan permintaan domestik pada tahun-tahun yang terawal. Tetapi, kesannya adalah kurang ke atas harga minyak sawit Malaysia di pasaran dunia dan kuantiti yang dieksport. Kesan-kesan penguatkuasaan duti import oleh India dan negara-negara kesatuan ekonomi Eropah adalah ketara pada harga domestik dan pengeluaran minyak sawit Malaysia, tetapi kurang ketara bagi permintaan domestik, harga minyak sawit Malaysia di pasaran dunia dan kuantiti yang dieksport. Keputusan-keputusan kesan variasi polisi juga menunjukkan Malaysia sebagai pengeluar dan pengeksport utama minyak sawit pada asasnya hanya berdaya sebagai penerima harga di pasaran minyak sawit dunia.

CHAPTER I

INTRODUCTION

Agricultural Sector in Malaysian Economy

Malaysia is situated in the central part of Southeast Asia, covering an area of 329,758 sq km. The mainland, known as Peninsular Malaysia covers 131,598 sq km (39.91 %), while the states of Sabah and Sarawak on the island of Borneo occupy 73,711 sq km (22.35 %) and 124,449 sq km (37.74 %) respectively.

The total population was reported to be 17.75 million in 1990 which grew at an average annual growth rate of 2.6 percent between 1980 and 1990. About 83 percent of the people live in Peninsular Malaysia which has 40 percent of the total land area, while 8 percent live in Sabah and 9 percent in Sarawak which together have 61 percent of the total land area.

Malaysia has pursued an export oriented pattern of production. She is the leading producer of rubber, tropical hardwood, tin and palm oil. She has also adequate supplies of oil and gas. However, the openness of the Malaysian economy has made it vulnerable to external forces, particularly on the demand for primary commodities from developed countries. Hence the Malaysian economy has become less oriented towards primary sector in the last 20 years

and more oriented towards industrial sector. This is indicated by the declining contribution of agriculture sector during the period (Table 1).

Table 1

Percentage Distribution of Gross Domestic Product by Industrial Origin in Malaysia

Industry	1970	1975	1985	1987	1988	1989	1990
Agriculture	33	30	21	21	21	20	19
Mining and Quarrying	6	4	10	10	10	10	10
Manufacturing	12	14	20	22	24	25	27
Construction	4	5	5	3	3	3	3
Electricity, Gas and Water	2	3	2	2	2	2	2
Transport, Storage and Communication	6	7	6	7	7	7	7
Wholesale and Retail Trade,Hotels & Rest.	13	14	12	10	11	11	11
Government Services	7	8	12	12	12	11	11
Other Services*	17	15	12	13	10	11	10

* Includes finance, insurance, real estate and business

Source: Ministry of Finance, Economic and International Division, Economic Report, various issues.

Agriculture's share of Gross Domestic Product (GDP) fell from 33 percent in 1970 to 19 percent in 1990. However, the contribution of agriculture to the national economy is expected to remain important to the end of the century. This is evident in the objectives of the National Agriculture Policy (NAP) which seek to increase the share of agriculture in nominal Gross National Product (GNP) through higher productivity in the sector. In addition, agriculture sector continues to be the major source of employment although the trend is declining. In 1975 employment provided by agriculture sector was 44 percent and decreased to 30 percent in 1990. On the contrary, employment

provided by manufacturing and service sectors was gradually increasing (Table 2).

Table 2

Percentage of Major Source of Employment

Sector	1975	1980	1985	1988	1989	1990
Agriculture*	43.60	40.57	31.30	31.30	30.70	29.90
Manufacturing	14.24	15.76	15.20	16.60	17.30	17.60
Government Services	13.19	13.94	14.60	13.90	13.50	12.90
Other Services	5.09	5.24	22.60	23.90	24.00	24.90
Construction	4.70	5.16	7.60	5.90	6.00	6.40
Transport, Storage and Communication	3.88	3.79	4.30	4.30	4.20	4.20
Others	15.30	15.54	4.40	4.10	4.30	4.10

* Includes forestry and fishery

Source: Ministry of Finance, Economic and International Division, Economic Report, various issues.

The decline of the share of agricultural employment in total employment was due largely to the sluggish world economy during parts of the period which also affected the agricultural sector. The low employment generation in agriculture has also been due to the structural shift to industrialisation and partly, to the modernization of the agricultural sector itself. Therefore, the linkages between agriculture and the non- agricultural sectors are important as their interaction reinforces each other's growth.

The importance of the perennial crops to the Malaysian economy became visible when the government encouraged crop diversification programme to reduce the nation's economic dependence upon rubber, tin and iron ore beginning in the late 1960's. The diversification programme

included in the palm oil sector which was encouraged by the availability of large tracks of suitable land for oil palm cultivation, the growing world demand for oil and fats and good world vegetable oil prices in 1960's. As a result, Malaysia had emerged as the world's leading exporter of palm oil since 1966, and as the world's leading producer since 1969.

In 1990, oil palm covered about one third of the country's cultivated land (about 2.02 million hectares) and the industry contributed about 10 percent of the GNP. It provided the main source of livelihood for more than 200,000 rural families in various land schemes such as FELDA, FELCRA, RISDA and smallholdings, and another 90,000 families employed in the oil palm estates. Export earnings from palm oil were valued at RM 2.60 billion in 1980 and increased by 5.41 percent per year to RM 4.41 billion in 1990. The increase was due to larger export volume rather than a more favourable price. Hence, palm oil and its products preserved its position as the third largest export earner of the country after petroleum and timber (Department of Statistics of Malaysia, 1990).

Rapid increase in world production of palm oil during the period 1960s to 1980s has helped to elevate the status of palm oil on the world market of vegetable oils. It contributed two percent of the world vegetable oil production and exports in 1960, 17 percent in 1984 and about 20 percent in 1989 (PORLA, 1990). Currently, palm oil is the world's second most important vegetable oil product after soyabean oil, and Malaysia maintained its world

market leadership with a production and net export share of 56 and 68 percent respectively (PORLA, 1990).

As the world's largest producer and exporter of palm oil, Malaysia has played a stabilizing role in the global supply of vegetable oils. Malaysian palm oil is expected to play an even more prominent role in the expanding vegetable oil market in the future. Hence, Malaysia should be able to take advantage of the growing opportunities, given its leadership position and the favourable climatic condition as well as extensive areas which are suited for development of this crop.

Palm Oil Industry

Historical Background

Development of the palm oil industry in Malaysia can be divided into five stages (PORLA,1990). The first stage occupied from 1876 to 1917 during which the seeds were taken from various sources, particularly through Singapore. From 1903 to 1917, the oil palm was generally grown for ornamental purposes, but during the period Department of Agriculture of Malaysia made several trials to encourage commercial planting of the oil palm.

The second stage (1917-1960) started with the commercial planting of the oil palm. This stage was an exciting period when the palm oil industry gradually increased in importance and laid the foundation for its rapid take off in the sixties. During this period, the area planted with oil palm increased from 409