UNIVERSITI PUTRA MALAYSIA

A SHIFT-SHARE ANALYSIS OF THE COMPETITIVENESS OF THREE MAJOR CROP INDUSTRIES IN MALAYSIA

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By

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November 2007

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Agriculture is one of the main sectors in Malaysian economy. Palm oil, rubber and cocoa were the main agriculture industries in 1960's and 1970's. Malaysia's palm oil industry faced a tough competition from Indonesia. The share of Malaysia's palm oil export declined from 69.9 percent in 1990 to 50.3 percent in 2005. A similar trend is observed in the case of rubber and cocoa. In 1990, the share of Malaysia's rubber in the world market was 29.6 percent. By 2005, it has declined to 10.6 percent. In 1990/1991, the share of Malaysia's cocoa export was 8.8 percent and by 2004/2005, it has declined to 0.9 percent.

The study examines the competitiveness of three agricultural sectors; palm oil, rubber and cocoa. The Shift-Share Analysis is utilized to estimate the net shift in each industry.

The result shows that palm oil has the greatest potential for industrialization in the long-term. On the other hand, the rubber and cocoa industries show positive results for the short-term.

The research and development of palm oil in Malaysia has contributed to the growth of the industry. Currently palm oil is one of the major sectors that contributes to the country's export earning. Malaysia represents 50.3 percent of the world palm oil export in 2005. The study shows that the cocoa industry exhibits future potential for growth. Hence, it is recommended that more production incentives and supports are provided to revitalize this industry.

Abstrak tesis yang dikemukakan lepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

ANALISIS SYER BERALIH TERHADAP DAYA SAING TIGA INDUSTRI TANAMAN UTAMA DI MALAYSIA

Oleh

AHMAD ZALILI BIN ISHAK

November 2007

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Sektor pertanian merupakan salah satu sektor yang memainkan peranan yang penting dalam ekonomi Malaysia. Kelapa sawit, getah dan koko adalah antara tiga industri pertanian penting pada tahun 1960an dan 1970an. Indonesia merupakan pesaing utama dalam industri kelapa sawit. Syer eksport kelapa sawit Malaysia telah menurun daripada 69.9 peratus pada tahun 1990 kepada 50.3 peratus pada tahun 2005. Demikian juga bagi getah asli dan koko. Pada tahun 1990, syer eksport getah asli Malaysia dalam dunia adalah 29.6 peratus. Namun pada tahun 2005, ia telah jatuh kepada 10.6 peratus. Bagi industri koko pula, pada 1990/91, syer Malaysia dalam eksport dunia adalah 8.8 peratus berbanding dengan 0.9 peratus pada 2004/05.

Kajian ini meneliti tiga industri tanaman utama iaitu kelapa sawit, getah dan koko dari segi daya saing. Kaedah utama yang digunakan dalam kajian ini

adalah analisis syer beralih yang dinilai dari segi peralihan bersih dalam satu-satu sektor. Daripada analisis yang dilakukan, kelapa sawit menunjukkan peningkatan dalam jangka panjang, manakala getah asli dan koko adalah dalam jangka pendek.

Seperti yang kita ketahui, Malaysia telah berjaya dalam penyelidikan dan pembangunan industri kelapa sawit dan telah menjadi pengeluar utama dunia dengan menguasai 50.3 peratus pasaran dunia pada tahun 2005. Kajian menunjukkan bahawa industri koko mempunyai potensi untuk berkembang pada masa hadapan. Oleh yang demikian, pemberian pelbagai insentif dan sokongan dapat membantu kemajuan industri ini.

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Last but not least, my profound gratitude is extended to my family for continuous and steadfast support encouragement to continue up to end of my work.

I certify that an Examination Committee has met on 5 November 2007 to conduct the final examination of Ahmad Zalili bin Ishak on his Master of Science entitled "A Shift-Share Analysis of the Competitiveness of Three Major Crop Industries in Malaysia" in accordance with Universiti Putra Malaysia (Higher Degree) Act 1980 and Universiti Putra Malaysia (Higher Degree) Regulations1981. The Committee recommends that the student be awarded the Master of Science.

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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or any other institution.

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Ahmad Zalili Bin Ishak

Date:

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LIST OF ABBREVIATIONS

AFTA	-	Asean Free Trade Area
BOT	-	Balance of Trade
CMS	-	Constant Market Share
CPO	-	Crude Palm Oil
DOS	-	Department of Statistics
FELDA	-	Federal Land Development Authority
FFB	-	Fresh Fruit Bunches
GDP	-	Gross Domestic Product
ICCO	-	International Cocoa Organization
IE	-	Interaction Effect
IME	-	Industry Mix Effect
IMP	-	Industrial Master Plan
IRSG	-	International Rubber Study Group
MCB	-	Malaysian Cocoa Board
MPOB	-	Malaysian Palm Oil Board
MRB	-	Malaysian Rubber Board
NAP1	-	First National Agricultural Policy
NAP2	-	Second National Agricultural Policy
NAP3	-	Third National Agricultural Policy
NR	-	Natural Rubber
OER	-	Oil Extraction Rate
OIL WORLD	-	Oil World Annual
PORIM	-	Palm Oil Research Institute of Malaysia
RCA	-	Revealed Comparative Advantage
RE	-	Regional Effect
WTO	-	World Trade Organization

CHAPTER 1

INTRODUCTION

1.1 Introduction

The Malaysian agricultural sector has played a prime role in the Malaysian economic growth during the post independent period when the Malaysian economic activities were largely based on agriculture. In 1957, this sector contributed significantly to the Malaysian economic development with 45 percent share in gross domestic product (Fatimah Mohd Arshad, 2007).

In 1990, the contribution of agriculture, livestock, forestry and fishing to GDP was only 18.7 percent (RM14,821 million). However, their percentage contribution decreased in 2005 to 8.5 percent as illustrated in Table 1.1. The mining and quarrying sector contribution to GDP also declined from 9.8 percent share in 1990 to 6.8 percent in 2005. Similarly, the contribution of the construction and government services sectors to GDP dropped from 3.6 percent and 10.8 percent respectively, in 1990 to 2.7 percent and 7.2 percent respectively, in 2005. However, manufacturing sector's contribution to GDP increased from 26.9 percent in 1990 to 31.5 percent in 2005. The shares of the finance, insurance, real estate and business services sector and wholesale, retail trade, hotel and restaurant sector increased from 9.7 percent and 11.1 percent respectively in 1990 to 15.1 percent and 14.6 percent in

2005. Other services sector and electricity, gas and water also increased from 2.1 percent and 1.9 percent to 7.8 percent and 4.2 percent in 2005.

Table 1.1: Malaysia: GDP by Industry of Origin in 1987 Constant Prices (RM Million)

Sector	1990	%	1995	%	2000	%	2005	%
Agriculture, livestock, forestry and fishing	14,821	18.72	17,115	10.27	18,062	8.60	22,142	8.47
Mining and quarrying	7,749	9.79	13,643	8.19	15,385	7.33	17,632	6.75
Manufacturing	21,323	26.94	45,174	27.11	67,250	32.03	82,302	31.49
Construction	2,844	3.59	7,411	4.45	6,964	3.32	7,168	2.74
Electricity, gas and water	1,513	1.91	5,876	3.53	8,278	3.94	10,937	4.18
Transport, storage and communication	5,447	6.88	12,298	7.38	16,858	8.03	23,395	8.95
Wholesale, retail trade, hotel and restaurant	8,754	11.06	25,304	15.19	31,116	14.82	38,064	14.56
Finance, insurance, real estate and business services	7,655	9.67	17,287	10.37	26,755	12.74	39,523	15.12
Government services	8,522	10.77	11,803	7.08	14,331	6.84	18,856	7.21
Other services	1,656	2.09	12,780	7.67	16,070	7.65	20,368	7.79
Less: Imputed Bank Service Charges	4,076	5.15	8,888	5.33	15,832	7.54	24,121	9.23
Add: Import Duties	2,947	3.72	6,822	4.09	4,721	2.25	5,128	1.96
GDP at market price	79,155	100.00	166,625	100.00	209,959	100.00	261,395	100.00

Source: Ministry of Plantation Industries & Commodities (2006), Statistics on Commodities 2006.

The Malaysian primary commodities are natural rubber, palm oil, cocoa beans, pepper, sawlogs, sawntimber, veneer sheet and plywood. This study concentrates on three agricultural commodities, namely, palm oil, natural rubber and cocoa. The Malaysian exports of crude palm oil reached 18,621.7 thousand tonnes in 2005 compared to 12,367.9 thousand tonnes in 2000.

Natural rubber's exports increased from 977.9 thousand tonnes in 2000 to 1,080.0 thousand tonnes in 2005, with an annual rate of growth of 10.4 percent. Likewise, cocoa beans exports expanded to 222.9 thousand tonnes compared to 111.7 thousand tonnes in 2000 i.e increased by 99.6 percent as shown in Table 1.2.

Table 1.2: Malaysia: Export Volume of Primary Commodities ('000 tonnes)

Primary Commodities	1990	1995		2000		2005	
		Volume	% of Change	Volume	% of Change	Volume	% of Change
Natural Rubber	1,321.7	1,016.1	(23.1)	977.9	(3.8)	1,080.0	10.4
Crude Palm Oil	7,536.9	8,436.3	11.9	12,367.9	46.6	18,621.7	50.6
Cocoa Beans	216.0	133.9	(38.0)	111.7	(16.6)	222.9	99.6
Pepper	27.7	14.1	(49.1)	22.9	62.4	18.2	(20.5)
Sawlogs*	20,354.0	7,864.0	(61.4)	6,804.0	(13.5)	5,759.0	(15.4)
Sawntimber*	5,283.0	4,796.0	(9.2)	2,518.3	(47.5)	3,126.0	24.1
Veneer Sheet*	332.2	593.0	78.5	902.0	52.1	414.0	(54.1)
Plywood*	1,017.0	3,462.0	240.4	3,355.0	(3.1)	5,574.8	66.2

Source : Ministry of Plantation Industries & Commodities (2006), Statistics on Commodities 2006.
Note : * '000m^3.
Numbers in brackets represent the negative number.

Malaysia is the largest exporter of palm oil with a share of 50.3 percent of the global exports (13,445 thousand tonnes) followed by Indonesia, with a share of 39 percent (10,436 thousand tonnes) in 2005. In 1990, Malaysia contributed 69.9 percent of the world exports of palm oil (5,727 thousand tonnes) however

while the Indonesian share was 14.2 percent (1,163 thousand tonnes). This suggest that the Indonesian exports have been growing at a higher rate than Malaysian export of palm oil (see Table 1.3).

Table 1.3: World: Exports of Palm Oil ('000 tonnes)

Country	1990	%	1995	%	2000	%	2005	%
Colombia	3	0.03	21	0.21	97	0.64	224	0.84
Cote d'Ivoire	156	1.90	120	1.18	72	0.48	78	0.29
EU-15	23	0.28	41	0.42	68	0.45	141	0.53
Hong Kong	50	0.61	275	2.70	156	1.03	43	0.16
Indonesia	1,163	14.19	1,856	18.21	4,140	27.46	10,436	39.02
Malaysia	5,727	69.88	6,513	63.89	9,081	60.24	13,445	50.27
Papua New Guinea	143	1.74	220	2.16	336	2.23	295	1.10
Singapore	679	8.28	399	3.91	240	1.59	205	0.77
Others	251	3.06	749	7.35	885	5.87	1,878	7.02
Total	8,195	100	10,194	100	15,075	100	26,745	100

Source : Ministry of Plantation Industries & Commodities (2006), Statistics on Commodities, 2006.

Table 1.4: World: Net Export of Natural Rubber by Major Producing Countries ('000 tonnes) 1990 – 2005

Country	1990	%	1995	%	2000	%	2005	%
Cambodia	28.0	0.7	30.0	0.7	39.0	0.8	41.0	0.6
Indonesia	1,077.3	26.9	1,323.8	30.7	1,379.6	27.8	2,023.9	32.3
Malaysia	1,185.6	29.6	777.5	18.0	429.7	8.7	666.0	10.6
Nigeria	121.0	3.0	99.2	2.3	36.0	0.7	23.0	0.4
Sri Lanka	86.7	2.2	68.2	1.6	32.6	0.7	31.6	0.5
Thailand	1,150.8	28.7	1,635.5	37.9	2,166.2	43.7	2,632.7	42.0
Vietnam	75.9	1.9	138.1	3.2	254.0	5.1	445.0	7.1
Others	284.7	7.1	239.1	5.5	622.9	12.6	407.8	6.5
Total	4,010.0	100.0	4,311.4	100	4,960.0	100	6,271.0	100

Source : Ministry of Plantation Industries & Commodities (2006), Statistics on Commodities, 2006.

Table 1.4 shows the growth in the net exports of natural rubber by major producing countries during the period 1990 – 2005. In 1990, Malaysia was the largest exporter of natural rubber with a share of 1,185.6 thousand tonnes (29.6 percent of the world exports of the commodity), followed by Thailand with 1,150.8 thousand tonnes (28.7 percent) and Indonesia, 1,077.3 thousand tonnes (26.9 percent).

Malaysia is the third largest exporter of natural rubber with 666 thousand tonnes exports (10.6 percent share in the world's exports) in 2005. The largest exporter was Thailand with a share of 42 percent which amounted to 2,632.7 thousand tonnes, followed by Indonesia with 2,023.9 thousand tonnes (32.3 percent).

Table 1.5 shows the Malaysian export of natural rubber during the period 1990 – 2005. The export volume of natural rubber of Malaysia declined from 1,321.9 thousand tonnes in 1990 to 1,016.1 thousand in 1995 and 978 thousand tonnes in 2000. In 2005, the export volume was increased to 1,127.9 thousand tonnes. Although the export volume decreased in 1995, the export value increased to RM4,045.3 thousand from RM3,028.2 thousand in 1990. This is due to the increase of the price in that year as shown in Table 1.6.

Table 1.5: Malaysia: Export of Natural Rubber (1990 – 2005)

Year	Export	
	Volume (Tonnes)	Value (RM '000)
1990	1,321,872	3,028.2
1995	1,016,110	4,045.3
2000	977,975	2,575.1
2005	1,127,948	5,786.5

Source : Ministry of Plantation Industries & Commodities (2006), Statistics on Commodities 2006.

Table 1.6: Malaysia: Annual Average F.O.B. Price of Natural Rubber (sen/ kg) (1990 – 2005)

Year	1990	1995	2000	2005
RSS 1	233.37	393.61	261.93	n.a.
RSS 3	220.62	388.49	252.16	n.a.
SMR 20	204.64	382.60	242.52	523.07

Source : Ministry of Plantation Industries & Commodities (2006), Statistics on Commodities 2006.
Note : Price Quotation for RSS 3 has been stopped from January 2003.

Malaysia was the fourth largest producer of cocoa beans in 1990/1991 with an output of 221 thousand tonnes or 8.8 percent of the world production. The largest producer is Cote d'Ivoire with 804 thousand tonnes, followed by Brazil (379 thousand tonnes) and Ghana (293 thousand tonnes). In 2004/2005, Malaysian production of cocoa beans was reduced to 29 thousand tonnes or 0.9 percent of the world production. Cote d'Ivoire is the largest producer with 1,276 thousand tonnes, followed by Ghana (599 thousand tonnes), Indonesia (460 thousand tonnes), Nigeria (200 thousand tonnes), Cameroon (186

thousand tonnes), Brazil (171 thousand tonnes) and Papua New Guinea (48 thousand tonnes) as illustrated in Table 1.7.

Table 1.7: World: Production of Cocoa Beans by Major Producing Countries ('000 tonnes) (1990/91 – 2004/05)

Country	1990/ 1991	%	1995/ 1996	%	2000/ 2001	%	2004/ 2005	%
Brazil	379	15.1	231	8.2	124	4.0	171	5.1
Cameroon	115	4.6	135	4.8	115	3.7	186	5.5
Cote d'Ivoire	804	32.1	1,200	42.7	1,404	45.6	1,276	37.9
Ghana	293	11.7	404	14.4	437	14.2	599	17.8
Indonesia	150	6.0	285	10.1	422	13.7	460	13.7
Malaysia	221	8.8	115	4.1	45	1.5	29	0.9
Nigeria	160	6.4	158	5.6	165	5.4	200	5.9
Papua New Guinea	33	1.3	36	1.3	47	1.5	48	1.4
Others	351	14.0	249	8.9	318	10.3	400	11.9
Total	2,506	100	2,813	100	3,077	100	3,369	100

Source : Ministry of Plantation Industries & Commodities (2006), Statistics on Commodities 2006.

Table 1.8: Malaysia: Export Values of Cocoa Beans and Cocoa Products (RM '000) (1990 – 2005)

Cocoa Product	1990	%	1995	%	2000	%	2005	%
Cocoa beans	448,452	59.3	171,981	27.5	32,838	5.5	50,259	2.6
Cocoa butter	241,307	32.0	330,511	52.8	318,640	53.5	1,169,194	60.9
Cocoa powder*	24,406	3.2	42,173	6.7	97,589	16.4	352,909	18.4
Cocoa paste	16,338	2.2	24,228	3.9	66,367	11.2	151,460	7.9
Chocolate**	25,331	3.4	56,678	9.1	79,710	13.4	197,469	10.3
Total	755,834	100	625,571	100	595,144	100	1,921,291	100

Source : Ministry of Plantation Industries & Commodities (2006), Statistics on Commodities 2006.

Note : * Including cocoa powder containing and not containing added sugar or other sweetening matter.

** Including chocolate and other chocolate preparation in blocks, slabs and bars.