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## Magnitude and structure of agricultural price protection in Malaysia

Kiel Working Paper, No. 455

**Provided in Cooperation with:**

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*Suggested Citation:* Rahman, Abdul Aziz Abdul (1990) : Magnitude and structure of agricultural price protection in Malaysia, Kiel Working Paper, No. 455, Kiel Institute of World Economics (IfW), Kiel

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Working Paper No. 455

Magnitude and Structure of Agricultural  
Price Protection in Malaysia\*

by

Abdul Aziz Abdul Rahman\*\*

Institut für Weltwirtschaft an der Universität Kiel  
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ISSN 0342 - 0787

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Magnitude and Structure of Agricultural  
Price Protection in Malaysia\*

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November 1990

Ag 408/91  
Wirtschaft  
Kiel

\* This study is part of the Kiel Institute of World Economics' research project "Discrimination Against Agriculture in Developing Countries? Magnitude, Structure and the Role of Economic Policy". This project is financed under grant number II/64 700 by Volkswagen-Stiftung.

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## PREFACE

There has been a growing concern about the impact of economic policies on agriculture, especially among developing countries. This is primarily because these policies - including pricing, taxation and trade policies - directly and indirectly affect the profitability and level of prosperity in the agriculture sector.

It is with this in mind that the Kiel Institute of World Economics has embarked on a Research Project to evaluate how policies in developing countries affect their agriculture sectors. This is planned to be achieved using two approaches, namely a quantitative cross-section analysis of agricultural protection for a fairly large number of developing countries, and a detailed analysis for three developing countries. Malaysia has been selected to represent one of the three developing countries which is to be analysed in greater detail.

This report presents the findings of the Subproject which aims to empirically analyse the magnitude and structure of agricultural price protection in Malaysia. Among other things, it attempts to reveal how, and to what extent, macroeconomic and sector-specific policies strongly dictate the profitability of farming, the movement of labour and capital into, and out of, agriculture, and the pace at which new technologies are developed and adopted by farmers.

It is hoped that the findings on agricultural protection in Malaysia will contribute towards a greater understanding of the impact of economic policies on the performance of the agriculture sector and provide a useful foundation for the formulation of pragmatic agricultural policies commensurate with the national development plans.

## 1. INTRODUCTION

This report elucidates the findings of a Subproject which aims to empirically analyse the magnitude and structure of agricultural price protection in Malaysia. The Subproject forms part of a larger Research Project which attempts to measure the extent of discrimination of the agricultural sector in developing countries. It was initiated by the Kiel Institute of World Economics in 1989.

The overall Research Project attempts to evaluate how policies in developing countries affect their agricultural sectors. This is planned to be achieved via two approaches, namely:

- (a) a quantitative cross-section analysis of agricultural protection for a fairly large number of developing countries, in order to derive conclusions on the magnitude and structure of a discrimination or subsidisation of the agricultural sector, and,
- (b) a detailed analysis for three developing countries in order to show and evaluate how governments fix the price ratio between agriculture and industry, and between individual agricultural products.

Malaysia has been selected to represent one of the three developing countries which is to be analysed in greater detail in the second part. The findings of this Subproject will contribute towards a greater understanding of the impact of economic policies, for example policies on exchange rates, trade regimes and government spending, on the performance of the agriculture sector. They can also reveal how, and to what extent, macroeconomic and sector-specific policies strongly dictate the profitability of farming, the movement of labour and capital into, and out of, agriculture, and the pace at which new technologies are developed and adopted by farmers.

This report is designed as follows. Chapter 2 discusses briefly the background of the Subproject with a focus on the Jenkins-Lai (1989) study. This study constitutes the starting point for most of the analyses carried out in the Subproject. A description of Malaysian agriculture is given in Chapter 3. The methodology employed to empirically measure the nature and extent of discrimination of the agriculture sector, comprising rubber, oil palm, cocoa and paddy, is presented in Chapter 4. In Chapter 5 the results of the Subproject will be discussed. The concluding remarks are given in Chapter 6.

## 2. BACKGROUND OF SUBPROJECT

### 2.1 Basic Premise

The basic premise of this Subproject is that despite efforts to diversify, Malaysian agriculture is still predominantly export-oriented. Presently, about four-fifths of cultivated area and three-quarters of agricultural output are attributable to the perennial export crops rubber, oil palm and cocoa. Malaysia has kept a leading position in the world natural rubber market and has increased its market shares on other major export markets. Whereas the world market share in rubber has declined from 50 percent in 1970 to 41 percent in 1987, world market shares in palm oil and cocoa have risen significantly in the same period. They have increased from 43 percent to 69 percent in palm oil and from 1 percent to 9 percent in cocoa. Malaysia is the largest world producer of natural rubber and third largest producer of palm oil and cocoa.

Since Malaysia's agricultural sector is largely export oriented, domestic market constraints are relatively unimportant for the overall growth of the sector. Unless export demand for the cash crops is limited, there is no a priori justification for regarding agriculture as a static sector. Indeed, the empirical evidence confirms that the agricultural sector in Malaysia is not static.

Despite these obvious successes in export markets, various empirical studies show that export crops have received less protection than foodcrops, particularly rice, and non-agricultural products (Kelim Sdn. Bhd. 1979, Jenkins and Lai 1989). This is due to the importance of the rice sector for self-sufficiency, income generation and poverty eradication and to the government's thrust on industrialisation.

Rice self-sufficiency became a distinct policy goal in the post-Second World War period. From 1949 till Independence in 1957, the overriding objective of the policy was the achievement of production goals. The post-Independence years saw the continuation of the rice policy. Three primary objectives of the policy were defined : ensuring food security, raising farm incomes and productivity and ensuring food supply to consumers at reasonable costs (Tan 1987).

Malaysia's rice policy as it evolved has seen the progressive entrenchment of public sector interest in rice production and marketing. Production policy has shifted from focusing on output goals or self-sufficiency to an intensification of efforts to enhance paddy incomes. The prevalence of poverty in the rice sector wherein the Malays predominate explains the continued maintenance of rice protection in an economy in which an efficient agriculture system has all along been central to the maximisation of national income.

From a different viewpoint, industrialisation has been the most important driving force of the rapid economic growth of the Malaysian economy (Tan, Akira and Lai 1989). Prior to Independence in 1957, there was only a very small industrial base. In order to expand manufacturing and thereby diversify production, the government introduced the Pioneer Industries Ordinance in 1958 as a major measure for promoting industrialisation. Its main policy instruments were tax incentives and tariff protection. This Ordinance is generally considered as having been successful in promoting domestic investment and industries. The types of industries encouraged by the Ordinance, however, were solely of

the import-substitution type based on imported technology and materials. The scheme was also capital biased and narrowly based.

Malaysia undertook a revision of its industrialisation policies in 1968, and introduced the Investment Incentive Act. This Act accorded greater emphasis on export oriented industries which used domestic raw materials. Concomitantly, special incentives for export were introduced. Over 1968-1988, manufacturing value added grew at 10.9 percent per annum. The manufacturing share of total GDP correspondingly rose to 25.2 percent, an increase of 15.9 percentage points from 1968.

The early 1980s saw a re-intensification of import-substitution efforts, with a focus on heavy industries. Projects including automobile assembly, cement, steel billet and engine production were started. These were considered necessary for upgrading the country's industrial structure and to retain its growth momentum. The annual average growth of manufacturing over 1980-1985 was 5.2 percent. Since then it has expanded further. In 1989 the manufacturing sector recorded a respectable growth of 16.5 percent in the face of a dampened performance by agriculture and mining (Malaysian Institute of Economic Research 1990). It is also now broadly based.

The industrial promotion policy is still closely associated with protection. One study has shown that the average effective rate of protection for manufacturing industries has increased from 25 percent in 1965 to 44 percent in 1970, thereafter declining to 39 percent in 1978. According to the Malaysian Industrial Development Authority (MIDA), tariff protection will continue to be accorded to deserving industries. Import restriction will also be provided.

The year 1987 marked a milestone in the Malaysian economy. In that year manufacturing replaced agriculture as the leading sector in terms of contribution to real GDP. Since then the manufacturing sector has expanded further and by 1989, the share of manufacturing in real GDP rose to 25.2 percent, compared to the

20.6 percent share of agriculture. The manufacturing sector, which has helped to tide the impact of the 1985 recession, is expected to spearhead the economy further into the 1990s.

Industrialisation in Malaysia cannot be considered solely based on export expansion. On the contrary, general levels of manufacturing protection have gone up. The closer picture would be the combination of import substitution and export promotion. The regime inevitably has a distortive effect, though whenever it appears alternative promotion measures have been introduced to compensate for the distortions associated with protection.

## 2.2 Jenkins-Lai Study

Jenkins and Lai (1989) have conducted an empirical evaluation of price policies for the rubber, oil palm and rice sectors in Malaysia. They conclude that the agricultural and trade policies have been remarkably consistent through time. There has been a strong emphasis on protecting food production and on developing the non-agricultural sector. On the other hand, the two very successful export crops, rubber and oil palm, have been systematically discriminated against by both trade and taxation policies.

The consistency of the pricing policies as observed by Jenkins and Lai is largely because their changes have been gradual and small. Only occasional modifications have been made in order to maintain their effectiveness and to support the institutions and politics which have grown up around them. Also, the transfers out of agriculture in the form of taxes have been partially balanced by infusions of capital into it for infrastructural development, input subsidies, planting grants, extension, research and processing facilities.

Jenkins' and Lai's study, while commendable in itself, has several fundamental shortcomings which need to be overcome before a more affirmative set of conclusions about the discrimination of the agricultural sector in Malaysia can be made. These broadly

pertain to the product sample, assumptions about value added coefficients and observation points employed in their analyses.

The discrimination-of-exports hypothesis as derived by Jenkins and Lai is based on the evaluation of price policies for rubber and oil palm. The cocoa sector, which is the most rapidly growing sector in Malaysian agriculture, has not been considered in their empirical analyses. A quantitative investigation is therefore needed to test whether the statement of a discrimination of the agricultural export sector is still true when cocoa is also considered. In other words, there is a need to explain to which extent the hypothesis of Jenkins and Lai has to be modified if cocoa is additionally included in the product sample.

Jenkins' and Lai's study has also derived effective rates of protection for the major agricultural products. They cover the rubber, palm oil and rice sectors and derive the policy-induced change in value added due to direct and indirect effects of pricing policies in 1960-1983. In order to do this they have taken the ratio of value added to total output of each agriculture sector from the 1971 Input-Output Table for Malaysia (Economic Planning Unit 1972). The sectoral value added ratio is then multiplied by the yearly prices to develop a series for the value added which forms the basis to estimate the indirect effects.

Jenkins'-Lai's assumption of fixed value added shares to calculate the effective rates of protection appears stringent. Indications are that the ratios of value added to the output of rubber, palm oil, cocoa and rice have changed significantly over time. In view of this, it is imperative to re-appraise and verify the findings of Jenkins and Lai which have stemmed from their constant value-added share assumption. It would therefore be preferable to calculate an alternative series of effective protection rates on the basis of variable value-added ratios. This new series of effective rates of protection would accordingly be used to elaborate whether the major findings of Jenkins and Lai are crucially dependent on the simplifying assumption of a constant value added share.

### 2.3 Scope and Objectives

It is the general objective of the Research Project to measure and evaluate how policies in developing countries affect their agricultural sectors. In order to reach this objective, several questions shall be answered, namely:

- (a) Do developing countries discriminate against the agricultural sector and to which extent?
- (b) How is the structure of agricultural incentives in developing countries influenced by agricultural policies?
- (c) How do general economic policies in developing countries affect agriculture?

The Subproject on Malaysia broadly aims to elucidate the following:

- (a) The magnitude and structure of agricultural price protection, and
- (b) The influence of the methodology and the product sample.

This Subproject can be regarded as an extension of the study by Jenkins and Lai on agricultural policy in Malaysia. In particular, it attempts to clarify whether the major findings of Jenkins and Lai depend on the methodology and the product sample. The importance of their assumption of constant value added shares in agricultural sectors for estimating the effective rates of protection will also be investigated. Their product sample which comprises rubber, palm oil and rice will be expanded to include also cocoa. The results of the Subproject which incorporates variable value added shares as well as the cocoa sector are expected to be crucial for a comprehensive evaluation of the role of economic policies for agricultural incentives in Malaysia.



The study by Jenkins and Lai covers the period from 1960 to 1983. Given the availability of more recent statistical information, the observation period of this Subproject is extended to 1988. Accordingly, the prices and other measures in this report are provided on a yearly basis from 1960 up to 1988.

### 3. THE AGRICULTURAL SECTOR

This chapter outlines the role of agriculture in the Malaysian economy, its present status and prospects.

#### 3.1 Agriculture in Macro Perspective

Since Independence in 1957 the Malaysian economy has undergone rapid structural changes, most of which have been brought about by the programmes of diversification and industrialisation. Table 3.1 shows the Gross National Product (GNP) performance of the Malaysian economy between 1960 and 1988. The average growth of real GNP is 7 percent per year during the period.

The sustained high growth of real GNP is the result of the country's wealth in natural resources, an outward-oriented growth strategy, prudent economic and financial management and not least, stable social and political institutions.

As in most developing countries, the process of economic development has diminished the relative importance of agriculture in Malaysia. The share of agriculture (including livestock and fisheries) in GNP has declined from 31 percent in 1960 to 16 percent in 1988. This decline has been counterbalanced by the rapid growth of industry and services. The contribution of agriculture to the national economy, however, is expected to remain important to the end of the century.

Employment in the agriculture sector has declined continuously during 1970-1988. Table 3.2 shows that in 1970, the sector provided employment to 54 percent of the total workforce. In 1988, the proportion of the labour force employed in agriculture was 31

percent. Over this period, the country's labour force has increased by 46 percent.

Agricultural exports grew by 12 percent a year in real terms during 1960-1988. A generally increasing productivity in export crops and relatively moderate commodity prices for most parts of the period were the causes of this growth. The share of agricultural exports in total export earnings, however, declined from 52 percent in 1960 to 21 percent in 1988, as shown in Table 3.3.

Agriculture imports fell in real terms by 4 percent per annum from 1960 to 1988. The imports were high during the 1970s as a result of rising food imports, particularly in rice, wheat, temperate fruits and vegetables, meat and dairy products. The gross import bill for food in 1970 was \$736 mn; by 1988 it had increased four-fold to \$2,985 mn. As a share of the total import bill, agricultural imports dropped from 48 percent in 1960 to 9 percent in 1988. This may be discerned from Table 3.4.

The contribution of agricultural taxes to total government revenue has declined in recent years. As shown in Table 3.5, the share of agricultural taxes in total revenue has been around 8-13 percent in each year during the late 1970s; this however declined to less than 1 percent per year during 1985-1988.

Despite the discernably diminishing role of agriculture in the Malaysian economy since 1957, development planning in the country has continually emphasised the progress of the agriculture sector. Agriculture is vital to Malaysia, being the focus of past, present and most probably future development efforts. The commonly accepted reason for a separate strategy for agricultural development is the potential political influence of the rural population. Agricultural development is therefore seen as a political necessity.

Table 3.1

Malaysia: Share of Agriculture in GNP, 1960 - 1988

Year	Consumer Price Index (1980 = 100)	Value of Agric. Output (\$ mn)	Real Value Of Agric Output (\$ mn)	Nominal GNP (\$ mn)	Real GNP (\$ mn)	Share Of Agric. (%)
1960	51.5	1,823	3,540	5,863	11,384	31.09
1961	51.4	1,697	3,302	5,889	11,457	28.82
1962	51.4	1,685	3,278	6,196	12,054	27.19
1963	53.0	1,732	3,266	6,583	12,414	26.31
1964	52.8	1,736	3,288	6,962	13,186	24.94
1965	52.8	1,827	3,460	7,411	14,036	24.65
1966	53.6	1,874	3,496	7,780	14,515	24.09
1967	55.7	1,755	3,151	8,146	14,625	21.54
1968	55.6	1,775	3,192	8,424	15,151	21.07
1969	55.4	2,501	4,514	9,218	16,639	27.13
1970	56.4	2,514	4,457	9,775	17,332	25.72
1971	57.3	2,845	4,965	12,592	21,976	22.59
1972	59.2	3,175	5,363	13,842	23,382	22.94
1973	65.4	3,849	5,885	17,963	27,466	21.43
1974	76.8	4,992	6,500	21,861	28,465	22.84
1975	80.2	5,122	6,387	21,606	26,940	23.71
1976	82.3	5,671	6,891	26,988	32,792	21.01
1977	86.2	6,022	6,986	31,064	36,037	19.39
1978	90.5	6,240	6,895	36,170	39,967	17.25
1979	93.8	7,132	7,607	43,092	45,960	16.55
1980	100.0	8,032	8,032	50,018	50,018	16.06
1981	109.7	9,171	9,360	54,228	49,433	16.91
1982	116.1	10,614	9,142	58,956	50,780	18.00
1983	120.4	10,469	8,695	64,272	53,382	16.29
1984	125.1	10,083	8,060	74,316	59,405	13.57
1985	125.5	10,658	8,493	72,778	57,990	14.64
1986	126.4	11,504	9,101	66,364	52,503	17.33
1987	127.8	12,095	9,464	75,339	58,951	16.05
1988	131.2	12,863	9,804	81,482	62,105	15.79

Source:

1. Department of Statistics. National Accounts. Various issues.
2. Ministry of Finance. Economic Report. Various issues.
3. Values are in Malaysian Ringgit; 1 Ringgit = US\$0.45 (1980)

Table 3.2

Malaysia: Share of Agriculture in Employment,  
1970 - 1988

Year	Total Employment (`000)	Agric. Employment (`000)	Employment Share (%)
1970	3,340	1,787	53.5
1971	3,450	1,815	52.6
1972	3,564	1,844	51.7
1973	3,681	1,874	50.9
1974	3,803	1,904	50.1
1975	3,928	1,937	49.3
1976	4,067	1,968	48.4
1977	4,476	1,941	43.4
1978	4,759	2,026	42.6
1979	4,700	1,999	42.5
1980	4,816	1,910	39.7
1981	5,009	1,930	38.5
1982	5,122	1,935	37.8
1983	5,429	1,710	31.5
1984	5,564	1,724	30.9
1985	5,624	1,759	31.3
1986	5,706	1,807	31.7
1987	5,880	1,876	31.9
1988	6,082	1,899	31.2

Source:

1. Department of Statistics. National Accounts. Various issues.
2. Ministry of Finance. Economic Report. Various issues.

Table 3.3

Malaysia: Share of Agriculture in Exports,  
1960 - 1988

Year	Total Exports (\$ mn)	Agric. Exports (\$ mn)	Agric Exp. Share (%)
1960	3,633	1,893	52.11
1961	4,123	1,591	49.13
1962	3,260	1,589	48.76
1963	3,330	1,603	48.15
1964	3,382	1,540	45.54
1965	3,783	1,665	44.03
1966	3,846	1,694	44.05
1967	3,724	1,504	40.40
1968	4,123	1,628	39.49
1969	5,055	2,297	45.44
1970	5,163	2,367	45.85
1971	5,017	2,101	41.87
1972	4,854	1,600	32.96
1973	7,372	3,397	48.08
1974	10,195	4,458	43.73
1975	9,231	4,321	46.81
1976	13,442	5,076	37.76
1977	14,959	5,827	38.95
1978	17,074	6,128	35.89
1979	24,222	8,289	34.22
1980	28,172	7,879	27.97
1981	27,109	7,805	28.79
1982	28,108	6,837	24.33
1983	32,771	8,612	26.28
1984	38,647	7,243	18.74
1985	38,017	8,570	22.54
1986	35,721	7,874	22.04
1987	45,138	9,732	21.56
1988	55,483	11,529	20.78

Source:

1. FAO Trade Yearbook. Various Issues
2. Ministry of Finance. Economic Report. Various issues.
3. Values are in Malaysian Ringgit;  
1 Ringgit = US\$0.45 (1980)

Table 3.4

Malaysia: Share of Agriculture in Imports,  
1960 - 1988

Year	Total Imports (\$ mn)	Agric. Imports (\$ mn)	Agric. Imports Share (%)
1960	3,663	1,344	48.23
1961	3,254	1,239	44.00
1962	3,427	770	25.18
1963	3,549	831	26.04
1964	3,510	846	26.39
1965	3,661	779	23.20
1966	3,806	840	24.86
1967	3,742	730	21.95
1968	4,029	755	21.25
1969	4,324	751	20.82
1970	4,288	1,028	23.97
1971	4,416	927	21.00
1972	4,543	962	21.16
1973	5,934	1,315	22.16
1974	9,891	1,775	17.94
1975	8,530	1,720	20.16
1976	9,713	1,736	17.87
1977	11,165	1,910	17.11
1978	13,646	2,970	21.76
1979	17,161	3,215	18.73
1980	23,451	3,859	16.45
1981	26,604	3,211	12.07
1982	29,023	4,079	14.05
1983	30,721	4,107	13.37
1984	32,926	4,150	12.60
1985	30,432	4,410	14.48
1986	27,921	4,210	15.08
1987	30,041	3,159	10.52
1988	43,293	3,857	8.91

Source:

1. FAO Trade Yearbook. Various Issues
2. Ministry of Finance. Economic Report. Various issues.
3. Values are in Malaysian Ringgit;  
1 Ringgit = US\$0.45 (1980)

Table 3.5

Malaysia: Share of Agriculture Taxes in  
Government Revenue, 1970-1988

Year	Total Revenue (\$ mn)	Agriculture Tax (\$ mn)	Share (%)
1970	2,400	83	3.46
1971	2,418	61	2.52
1972	2,920	85	2.91
1973	3,398	290	8.53
1974	4,790	624	13.03
1975	5,117	413	8.07
1976	6,157	700	11.37
1977	7,760	874	11.26
1978	8,841	941	10.64
1979	10,505	1,368	13.02
1980	13,926	1,269	9.11
1981	15,806	660	4.18
1982	16,609	185	1.11
1983	18,608	322	1.73
1984	20,805	359	1.73
1985	21,114	115	0.54
1986	19,518	31	0.16
1987	18,143	60	0.33
1988	21,448	198	0.92

Source:

1. Ministry of Finance. Economic Report. Various issues.

The priority accorded to agricultural development may be gauged from the allocation of development expenditures in the five-year plans. Under the First Malaysia Plan, 1965-1970, agriculture and rural development was allocated 27 percent of total development budget, being the largest component. Under the Fifth Malaysia Plan 1986-1990, a much reduced, but still very important 18 percent of the total development allocation has been earmarked for agriculture and rural development. Agriculture continues to represent the largest component in public development expenditures after security.

Essentially, the development strategy in Malaysia is to transform the agriculture sector, in particular the subsistence sector, into a dynamic, modern and commercially oriented venture for the dual purpose of stimulating economic growth and as a means of attacking the problem of rural underdevelopment. This is to be achieved via the implementation of such programmes as land development, crop rehabilitation and replanting. These programmes are further enhanced by the development of supporting agricultural institutions and services. The strategy also emphasises the setting up of agriculture-related industries as catalysts for the development of new growth centres.

### 3.2 Agricultural Situation

Land tenancy is largely restricted to paddy growing areas, although it can be found among other crops where the tenant is considered to be a share cropper on land and is entitled to a proportion of the daily output. Absentee landlords are more frequently found in holdings with tree crops than in paddy farms. Table 3.6 shows that half of the total number of smallholdings (that is, farms which are less than 100 acres) are Wholly owned. The other dominant tenurial status are Wholly ownerlike (11 percent), Wholly rented (9 percent) and Mainly owned (8 percent). In terms of area, the major tenurial status are Wholly owned and Mainly owned. In some paddy areas, land tenancy is prevalent. Often, the tenancy right to operate a paddy holding is unwritten because the contracting parties are related, or are known to



Table 3.6

Peninsular Malaysia: Tenure Status of Smallholdings, 1976

Tenure of Holding	Number	(%)	acres (000's)	(%)
1. Wholly Owned	360,324	53.70	832.0	59.20
2. Wholly Ownerlike	71,023	10.60	93.0	6.60
3. Wholly TOL	17,652	2.60	22.0	1.60
4. Wholly rented	62,660	9.20	57.0	4.00
5. Wholly GSS	26,617	4.00	93.0	6.60
6. Mainly Owned	52,025	7.80	144.0	10.30
7. Mainly Rented	21,272	3.20	32.0	2.30
8. Others	60,043	8.90	132.0	9.40
<b>TOTAL</b>	<b>671,016</b>	<b>100.00</b>	<b>1405.0</b>	<b>100.00</b>

- 1. Wholly Owned - where total area of the holding was only owned by the household.
- 2. Wholly Ownerlike - where the total area of the holding was operated in an ownerlike manner.
- 3. Wholly TOL - where the total area of the holding was operated under Temporary Licence.
- 4. Wholly Rented - where the total area of the holding was rented respective of the arrangements for payment.
- 5. Wholly GSS - where the entire area of the holding was located within the settlement scheme.
- 6&7 Mainly Owned - Holding that do not fall into any of the above single tenure category, mainly owned is where the majority of the area in the holding was owned by the household and mainly rented is where the majority of the area of the holding was rented.
- 8. Others - Holdings not falling in any of the above category.

Source:

- 1. Ministry of Agriculture. 1977. Census of Agriculture: Main Report.

each other. Prior to 1967, most rents for paddy holdings were paid in kind. Since 1967, the rent on paddy farms is paid in cash and can account for 20 to 30 percent of the total cost of production.

As shown in Table 3.7, the main crops grown in Malaysia are rubber, oil palm, cocoa and paddy. Among these, rubber is the most important, not only in terms of cultivated area but also as a source of employment. It occupies 36 percent of all land under crops. Oil palm and cocoa have increasingly become important sources of income to the country, although the dampened prices over the last several years have diminished their performance in the economy. Paddy and coconut are not important as a source of foreign exchange earnings to the country but they provide employment to a sizeable portion of the population.

Among the important miscellaneous crops are fresh fruits and food crops. Their cultivated area have increased substantially since the early 1980s as a result of government policy to promote the domestic production of food. For fruits, the area has doubled, from 60,697 ha in 1980 to 12,1174 ha in 1988. In the case of other food crops the cultivated area has risen from 42,311 ha in 1980 to 66,274 ha by 1988. Pineapples, once an important export earner of Malaysia, is fast becoming a sunset industry. The quest for a high degree of sufficiency in foods has long been an agricultural development objective.

Rubber, oil palm and cocoa are the main crops grown in the estates. Estates may be owned by individuals, in partnership, or by private or public companies. The ownership pattern is thus similar to other industries. The above-mentioned crops are also the main crops grown in the land development schemes. These land schemes are managed by the government or government agencies. The largest and the most successful of the schemes are those of the Federal Land Development Authority (FELDA). This is a federal government agency vested with the responsibility of implementing land development and settlement schemes for the benefit of the poor and the landless.

Table 3.7

Malaysia: Area Under Various Crops, 1960 - 1988 (ha)

Year	Rubber	Oil Palm	Cocoa	Coconut	Tea	Pepper	Paddy	Pineapple	Sago & Tapioca	Coffee	Tobacco	Fresh Fruit	Food Crops	Spices & Oth.Crops	Total Area
1960	1,752,655	54,681	577	246,293	4,322	264	467,769	14,890	14,348	4,403	2,213	39,936	9,637	34,532	2,646,520
1961	1,816,669	57,169	2,115	262,435	3,869	290	483,681	14,452	14,768	5,735	3,402	43,002	7,161	34,366	2,749,114
1962	1,892,233	62,079	2,529	241,632	3,847	296	486,699	15,054	20,958	5,705	4,065	51,299	6,944	32,712	2,826,052
1963	1,938,164	71,030	2,617	248,390	3,281	299	490,720	15,626	24,273	5,636	4,256	43,468	6,260	31,645	2,885,665
1964	2,003,317	83,200	2,812	248,007	3,794	431	509,011	16,186	20,325	5,650	4,485	43,791	5,482	20,599	2,967,090
1965	2,025,322	96,945	2,950	251,703	3,675	441	507,789	17,129	18,430	5,389	3,988	46,832	8,366	19,564	3,008,523
1966	2,050,837	122,703	3,468	249,267	3,792	465	515,453	18,144	16,789	6,140	3,570	49,275	5,515	20,753	3,066,171
1967	2,044,675	150,610	3,658	251,605	3,332	723	595,853	19,510	23,012	6,188	3,691	50,592	24,058	18,293	3,195,800
1968	2,022,364	190,765	4,239	260,451	3,062	874	657,480	19,422	19,568	6,500	3,340	51,888	23,769	17,811	3,281,533
1969	2,022,939	231,176	5,237	267,071	3,419	861	687,185	17,796	20,269	6,535	3,321	53,179	22,799	15,822	3,357,609
1970	2,019,457	290,967	7,386	271,366	3,220	886	703,470	20,539	20,305	6,553	3,624	54,679	27,184	15,617	3,445,253
1971	2,015,990	339,512	16,573	272,247	3,258	901	731,259	20,076	17,603	6,610	7,521	51,856	35,218	15,398	3,534,022
1972	2,001,670	401,038	17,504	273,954	3,163	919	884,257	22,319	15,843	6,457	7,409	52,523	35,218	15,683	3,737,957
1973	1,991,028	471,458	21,974	269,391	3,409	951	746,314	22,596	14,444	7,436	6,839	52,738	35,872	43,595	3,688,045
1974	1,988,949	565,766	22,556	271,216	3,351	1016	754,113	21,825	14,197	8,872	8,211	63,364	32,264	11,784	3,767,484
1975	1,991,775	641,791	29,189	287,446	3,241	983	757,797	19,241	17,979	8,451	11,872	64,642	42,056	10,736	3,887,199
1976	1,980,904	714,600	32,678	316,906	3,123	1066	750,023	20,371	33,753	10,202	8,895	72,613	43,785	10,457	3,999,376
1977	1,981,472	781,814	44,862	296,897	3,105	1101	743,686	19,387	20,604	9,621	8,212	65,116	39,402	9,456	4,024,735
1978	1,999,169	852,979	49,213	295,802	3,192	943	625,354	19,527	20,045	10,701	11,118	67,105	50,780	8,655	4,014,583
1979	2,006,577	938,863	71,818	297,303	3,130	963	740,534	19,000	18,712	11,979	12,146	65,848	41,728	8,671	4,237,272
1980	2,006,577	1,023,306	123,355	300,327	3,035	743	716,530	15,756	14,507	14,916	12,450	60,697	42,311	7,414	4,320,538
1981	2,005,864	1,140,538	125,784	305,604	3,410	262	709,412	10,189	14,092	15,427	12,493	61,205	35,598	4,696	4,454,230
1982	1,991,590	1,200,104	209,399	307,767	2,223	208	676,888	11,806	8,867	16,865	9,571	63,764	29,140	3,914	4,489,386
1983	1,973,686	1,258,009	231,080	291,170	4,764	127	668,588	11,886	7,447	17,545	11,615	65,284	32,428	4,425	4,531,591
1984	1,968,059	1,349,192	265,510	385,141	3,239	136	628,138	14,009	5,684	25,832	9,856	107,477	40,254	4,830	4,791,415
1985	1,953,365	1,468,214	303,899	270,776	3,206	132	662,319	12,430	6,472	23,031	11,125	109,381	51,250	4,716	4,851,093
1986	1,931,495	1,599,311	322,344	387,131	2,716	128	688,207	9,759	6,942	22,500	15,020	114,252	59,620	4,572	5,346,517
1987	1,903,453	1,685,581	341,000	215,525	2,788	140	623,828	7,690	6,636	24,750	12,314	115,070	65,582	4,644	5,009,001
1988	1,890,853	1,745,581	396,600	211,362	2,654	138	647,439	8,700	6,701	23,176	9,600	121,174	66,274	4,719	5,134,971

Source:

1. Department of Statistics. Rubber Statistics Handbook. Various issues.
2. Department of Statistics. Oil Palm, Cocoa, Tea and Coconut Statistics Handbook. Various issues.
3. Ministry of Agriculture. Statistical Digest. Various issues.
4. Department of Statistics. 1988. Agricultural Statistics Time Series Handbook.

Multiple cropping is practiced in paddy, pineapple, tobacco, sago and tapioca and food crops. This is evident from Table 3.8. Double-cropping of paddy commenced in the early 1970s to commensurate with the government objective of achieving to strive for self-sufficiency in rice. Massive investment in irrigation and drainage infrastructure which began during the First Malaysia Plan 1966-1970 facilitated double-cropping in many paddy areas. However, the increasing cost of paddy production, especially in the Small Irrigation Schemes and marginal areas in the 1980s has led the government to concentrate paddy production in selected granary areas. The self-sufficiency level has also been scaled down from a high 90 percent previously to 60-65 percent. The national cropping intensity has increased from around 1.00 in 1960 to 1.02 in 1970, 1.07 in 1980 and 1.11 in 1988. This growth in cropping intensity has been accounted for largely by paddy.

Among the plantation crops, oil palm and cocoa have recorded relatively rapid growth of output as a result of agricultural diversification efforts. The production of copra has remained stagnant around 216,000 t since 1985. The output of tea also has not increased substantially. This is due to stagnating productivity and shortage of suitable areas for cultivating the crop. Pepper production has declined since 1983 as a result of low prices. This is shown in Table 3.9.

With respect to paddy, government policy to restrict its production only within granary areas has resulted in diminishing acreage, and concomitantly output, in recent years. In fisheries, there has been a rapid growth in fish landings as a result of government promotion of deep sea fishing. The production of poultry and pork, and to a lesser extent beef, has increased but that of mutton has remained static over the last two decades.

Table 3.10 shows the trend in the land-man ratio over 1970-1988. It is evident that the land-man ratio has declined steeply, from 51.87 in 1970 to 36.98 in 1988. The reason for this is the slow-down of new land development schemes in recent years as well as the exhaustion of land areas suitable for agriculture.

Table 3.8

Malaysia: Land Utilization Pattern, 1960 - 1988 (ha)

Year	Rubber	Oil Palm	Cocoa	Coconut	Tea	Pepper	Paddy	Pineapple	Sago & Tapioca	Coffee	Tobacco	Fresh Fruit	Food Crops	Spices & Oth.Crops	Total Area
1960	1,752,655	54,681	577	246,293	4,322	264	467,769	14,890	23,370	4,403	4,426	39,936	19,274	34,532	2,667,392
1961	1,816,669	57,169	2,115	262,435	3,869	290	483,681	14,452	23,909	5,735	6,804	43,002	14,322	34,366	2,768,818
1962	1,892,233	62,079	2,529	241,632	3,847	296	486,699	15,054	36,171	5,705	8,130	51,299	13,888	32,712	2,852,274
1963	1,938,164	71,030	2,617	248,390	3,281	299	490,720	15,626	42,935	5,636	8,512	43,468	12,520	31,645	2,914,843
1964	2,003,317	83,200	2,812	248,007	3,794	431	509,011	16,186	34,599	5,650	8,970	43,791	10,964	20,599	2,991,331
1965	2,025,322	96,945	2,950	251,703	3,675	441	507,789	17,129	30,820	5,389	7,976	46,832	16,732	19,564	3,033,267
1966	2,050,837	122,703	3,468	249,267	3,792	465	515,453	18,144	27,494	6,140	7,140	49,275	11,030	20,753	3,085,961
1967	2,044,675	150,610	3,658	251,605	3,332	723	595,853	19,510	34,599	6,188	7,382	50,592	48,116	18,293	3,235,136
1968	2,022,364	190,765	4,239	260,451	3,062	874	657,480	19,422	40,048	6,500	6,680	51,888	47,538	17,811	3,329,122
1969	2,022,939	231,176	5,237	267,071	3,419	861	394,738	17,796	33,842	6,535	6,642	53,179	45,598	15,822	3,104,855
1970	2,019,457	290,967	7,386	271,366	3,220	886	738,721	20,539	34,639	6,553	7,248	54,679	54,368	15,617	3,525,646
1971	2,015,990	339,512	16,573	272,247	3,258	901	790,049	20,076	30,700	6,610	15,042	51,856	70,436	15,398	3,648,648
1972	2,001,670	401,038	17,504	273,954	3,163	919	1,010,714	22,319	33,456	6,457	14,818	52,523	70,436	15,683	3,924,654
1973	1,991,028	471,458	21,974	269,391	3,409	951	1,083,738	22,596	29,436	7,436	13,678	52,738	71,744	43,595	4,083,172
1974	1,988,949	565,766	22,556	271,216	3,351	1,016	1,100,797	21,825	25,759	8,872	16,422	63,364	64,528	11,784	4,166,205
1975	1,991,775	641,791	29,189	287,446	3,241	983	1,097,283	19,241	33,091	8,451	23,744	64,642	84,112	10,736	4,295,725
1976	1,980,904	714,600	32,678	316,906	3,123	1,066	1,121,460	20,371	54,661	10,202	17,790	72,613	87,570	10,457	4,444,401
1977	1,981,472	781,814	44,862	296,897	3,105	1,101	1,029,409	19,387	41,008	9,621	16,424	65,116	78,804	9,456	4,378,476
1978	1,999,169	852,979	49,213	295,802	3,192	943	728,554	19,527	26,681	10,701	22,236	67,105	101,560	8,655	4,186,317
1979	2,006,577	938,863	71,818	297,303	3,130	963	963,814	19,000	35,347	11,979	24,292	65,848	83,456	8,671	4,531,061
1980	2,006,577	1,023,306	123,355	300,327	3,035	743	920,830	15,756	27,019	14,916	24,900	60,697	84,622	7,414	4,613,497
1981	2,005,864	1,140,538	125,784	305,604	3,410	262	908,342	10,189	23,691	15,427	24,986	61,205	71,196	4,696	4,701,194
1982	1,991,590	1,200,104	209,399	307,767	2,223	208	889,078	11,806	16,809	16,865	19,142	63,764	58,280	3,914	4,790,949
1983	1,973,686	1,258,009	231,080	291,170	4,764	127	842,078	11,886	14,596	17,545	23,230	65,284	64,856	4,425	4,802,736
1984	1,968,059	1,349,192	265,510	385,141	3,239	136	840,327	14,009	11,141	25,832	19,712	107,477	80,508	4,830	5,075,113
1985	1,953,365	1,468,214	303,899	270,776	3,206	132	861,249	12,430	12,682	23,031	22,250	109,381	102,500	4,716	5,147,831
1986	1,931,495	1,599,311	322,344	387,131	2,716	128	900,397	9,759	13,606	22,500	30,040	114,252	119,240	4,572	5,457,491
1987	1,903,453	1,685,581	341,000	215,525	2,788	140	990,437	7,690	14,967	24,750	33,044	115,070	131,164	4,644	5,470,252
1988	1,890,853	1,745,581	396,600	211,362	2,654	138	1,089,480	8,700	16,463	23,176	36,348	121,174	144,280	4,719	5,691,529

Source:

1. Department of Statistics. Rubber Statistics Handbook. Various issues.
2. Department of Statistics. Oil Palm, Cocoa, Tea and Coconut Statistics Handbook. Various issues.
3. Ministry of Agriculture. Statistical Digest. Various issues.
4. Department of Statistics. 1988. Agricultural Statistics Time Series Handbook.

Table 3.9

Malaysia: Agricultural Production, 1960 - 1988 (t)

Year	Rubber	Oil Palm	Cocoa	Copra	Tea	Pepper	Paddy	Pineapple	Tobacco	Fisheries	Beef	Mutton	Poultry	Pork
1960	790,470	91,793	-	206,360	11,747	7,966	951,000	195,673	45	141,701	11,570	1,280	21,200	38,450
1961	818,038	94,846	-	197,900	12,124	16,729	1,021,800	195,673	91	153,060	12,460	1,260	28,100	40,170
1962	793,583	108,171	-	173,800	12,872	19,039	1,135,800	213,284	341	172,930	11,520	1,280	34,800	44,240
1963	832,201	125,691	-	183,200	12,421	18,163	1,188,600	230,894	1,409	186,574	11,450	1,160	37,200	45,060
1964	870,751	122,913	-	158,900	14,166	14,339	1,103,400	271,986	2,500	195,233	13,405	1,330	40,800	47,756
1965	916,940	150,411	-	169,100	15,303	18,800	1,256,800	297,423	7,886	201,551	13,971	1,330	41,400	49,536
1966	972,945	189,687	-	176,500	15,889	14,200	1,234,100	297,423	8,409	240,393	14,771	1,270	42,600	52,712
1967	991,142	225,758	-	179,700	14,217	20,500	1,194,700	321,242	13,968	355,427	14,677	1,130	48,400	51,148
1968	1,100,382	282,984	-	189,200	15,741	23,900	1,433,700	283,003	16,282	394,274	13,903	920	54,200	49,887
1969	1,268,190	352,096	-	178,600	16,044	30,100	1,597,200	306,424	19,655	341,198	13,446	970	57,500	56,838
1970	1,263,353	431,069	2,000	195,799	15,519	25,800	1,678,900	313,407	18,941	339,331	14,448	1,030	60,900	59,760
1971	1,318,610	580,389	4,000	193,820	14,439	28,800	1,817,000	306,278	39,291	368,111	16,345	1,200	64,000	59,026
1972	1,304,363	718,580	5,000	198,932	15,031	27,900	1,837,000	292,825	72,114	358,990	18,272	1,410	65,800	59,026
1973	1,542,523	812,614	9,000	216,300	14,689	24,300	1,980,000	266,947	72,909	444,848	13,912	990	72,800	58,758
1974	1,524,803	1,045,975	10,000	209,300	14,062	30,400	2,095,000	257,562	76,332	526,821	16,592	910	78,200	54,007
1975	1,459,331	1,257,573	13,000	234,000	13,926	33,400	2,013,000	215,243	92,026	474,591	14,443	834	92,900	56,552
1976	1,612,481	1,391,965	15,434	232,000	14,758	39,800	1,995,000	200,989	46,797	517,303	15,103	826	97,800	55,650
1977	1,588,053	1,612,747	16,708	218,000	14,995	29,400	1,898,000	200,215	72,900	618,621	14,392	804	99,300	59,773
1978	1,582,453	1,785,525	17,564	207,000	13,513	36,600	1,590,000	195,710	92,118	684,922	14,064	823	103,900	61,798
1979	1,570,127	2,188,439	26,580	213,000	14,397	40,300	2,095,000	200,776	75,505	696,329	13,705	696	107,800	59,215
1980	1,529,997	2,575,865	36,500	210,000	14,873	31,700	2,171,000	185,273	99,414	743,679	15,238	762	114,300	112,627
1981	1,510,222	2,824,464	45,200	208,000	13,649	28,900	2,177,000	158,631	67,924	766,588	15,939	641	115,300	127,276
1982	1,494,182	3,514,169	66,200	206,000	14,449	25,200	1,832,000	153,003	82,655	693,528	16,977	578	115,900	135,918
1983	1,563,717	3,018,333	69,000	219,000	14,557	23,500	1,818,000	148,206	91,948	740,403	15,952	586	124,100	125,766
1984	1,530,583	3,715,739	88,000	214,000	16,262	16,600	1,755,000	144,284	72,036	670,934	15,723	618	181,000	134,350
1985	1,469,453	4,133,398	103,000	216,000	16,445	19,100	1,895,000	152,547	88,009	628,464	15,564	579	220,000	133,469
1986	1,541,878	4,543,084	131,000	215,000	17,236	15,400	1,947,600	144,387	118,975	634,456	17,100	600	268,000	153,022
1987	1,581,000	4,533,000	191,000	214,000	18,960	14,200	1,622,900	150,200	109,000	903,200	18,100	800	284,100	166,300
1988	1,660,000	5,030,000	230,000	216,000	20,856	19,000	1,785,500	152,000	119,900	930,500	19,100	800	289,500	176,400

Source:

1. Department of Statistics. Rubber Statistics Handbook. Various issues.
2. Department of Statistics. Oil Palm, Cocoa, Tea and Coconut Statistics Handbook. Various issues.
3. FAO Production Yearbook. Various issues.
4. Department of Statistics. 1988. Agricultural Statistics Time Series Handbook.

Table 3.10

Land-man Ratio in Agriculture, 1970 - 1988

Year	Total Area	Total Employment	Land-man Ratio
1970	3,445,253	1,787,000	51.87
1971	3,534,022	1,815,000	51.36
1972	3,737,957	1,844,000	49.33
1973	3,688,045	1,874,000	50.81
1974	3,767,484	1,904,000	50.54
1975	3,887,199	1,937,000	49.83
1976	3,999,376	1,968,000	49.21
1977	4,024,735	1,941,000	48.23
1978	4,014,583	2,026,000	50.47
1979	4,237,272	1,999,000	47.18
1980	4,320,538	1,910,000	44.21
1981	4,454,230	1,930,000	43.33
1982	4,489,386	1,935,000	43.10
1983	4,531,591	1,710,000	37.74
1984	4,791,415	1,724,000	35.98
1985	4,851,093	1,759,000	36.26
1986	5,346,517	1,807,000	33.80
1987	5,009,001	1,876,000	37.45
1988	5,134,971	1,899,000	36.98

Source:

1. Ministry of Finance. Economic Report. Various issues.
2. For Total Area, from Table 3.7
3. For Total Employment, from Table 3.2

The share of irrigated paddy in the total paddy area has increased from 48 percent in 1960 to 79 percent in 1978, as shown in Table 3.11. Since then the area of irrigated paddy has fluctuated between 60 percent and 78 percent. The share of irrigated paddy land is expected to decline in the future as a result of government policy to confine paddy production in the granary areas only.

Rubber, palm oil, cocoa and pepper are almost wholly sold overseas. Among the food crops, the degree of own-consumption is highest in paddy with 60 percent. There is a relatively high degree of monetization in food crops (especially vegetables), livestock and fish products. This is due to efforts aimed at commercialisation of the smallholding production.

### 3.3 Growth Dynamics in Agriculture

The use of high-yielding rubber over 1964-1987 is highlighted in Table 3.12. There has been a discernable movement towards the use of high-yielding clonal seedlings, budded stumps and budgrafted seedlings especially between 1964 and 1975. After 1975, the rate of use of high-yielding seeds has steadily declined. This is attributable mainly to the conversion of numerous rubber estates to oil palm, and slackened replanting in the smallholdings sector.

The introduction of a high-yielding oil palm variety, tenera, commenced in the late 1960s. This variety was developed by the research efforts of the estate sector. As shown in Table 3.13, the adoption of high-yielding oil palm has been quite impressive, with the acreage under high-yielding varieties increasing from 201,497 ha in 1968 to 1105,040 ha in 1987. Almost all of the cocoa area is planted with HYVs, including the Sabah hybrid and clones developed by the Malaysian Agricultural Research and Development Institute (MARDI). Likewise, nearly all of the paddy grown in the country are of the high yielding strains.



Table 3.11

Malaysia: Irrigated Paddy Land, 1960 - 1987 (ha)

Year	Irrigated land	Main Season Wet Paddy	Off Season Wet Paddy	Dry Paddy	Total	Share of Irrigated Land (%)
1960	214,000	299,996	127,255	16,893	444,144	48.18
1961	220,000	297,339	117,840	19,039	434,218	50.67
1962	220,000	302,778	126,298	18,002	447,079	49.21
1963	221,000	311,664	110,169	18,614	440,447	50.18
1964	225,000	309,080	128,811	17,492	455,383	49.41
1965	238,000	309,056	125,949	18,282	453,286	52.51
1966	239,000	306,091	119,054	17,861	443,006	53.95
1967	248,000	355,959	132,741	20,858	509,557	48.67
1968	251,000	383,118	165,202	23,158	571,477	43.92
1969	260,000	373,345	162,263	21,700	557,308	46.65
1970	262,000	379,603	131,901	21,683	533,187	49.14
1971	279,000	372,654	159,350	20,036	552,040	50.54
1972	312,000	361,251	197,428	13,614	572,293	54.52
1973	318,000	369,328	212,228	9,923	591,479	53.76
1974	307,000	371,129	257,100	9,110	637,339	48.17
1975	308,000	372,480	213,400	9,710	595,590	51.71
1976	307,000	347,880	222,480	10,010	580,370	52.90
1977	340,000	345,260	212,500	9,480	567,240	59.94
1978	350,000	335,340	103,200	7,310	445,850	78.50
1979	319,000	331,500	223,280	7,440	562,220	56.74
1980	320,000	319,390	204,300	6,430	530,120	60.36
1981	330,000	316,150	198,930	8,030	523,110	63.08
1982	336,000	274,670	212,190	6,230	493,090	68.14
1983	334,000	295,170	173,490	4,680	473,340	70.56
1984	336,000	243,020	190,580	2,970	436,570	76.96
1985	334,000	269,180	195,370	960	465,510	71.75
1986	336,000	247,284	183,852	1,010	432,146	77.75
1987	336,000	255,267	196,222	534	452,023	74.33

Source:

1. FAO Yearbook. Various issues.
2. Ministry of Agriculture. Paddy Statistics. Various issues.

Table 3.12

Malaysia: Net Increase in Area Planted with Unselected and High Yielding Rubber, 1964 - 1987 (ha)

Year	Unselected Seedlings	Clonal Seedlings	Budded Stumps	Budgrafted	Total (Net Increase)
1964	10,640	5,101	10,590	10,740	37,071
1965	10,229	2,620	10,682	11,117	34,647
1966	7,780	2,283	11,498	10,355	31,916
1967	7,830	2,742	8,030	7,770	26,371
1968	3,067	1,873	8,800	8,215	21,955
1969	5,913	8,569	11,621	4,060	30,163
1970	3,795	3,409	8,058	3,081	18,343
1971	3,657	1,268	8,764	4,463	18,152
1972	2,905	2,946	6,416	3,152	13,419
1973	3,127	1,715	8,268	1,072	14,182
1974	2,090	2,012	10,015	3,115	17,232
1975	1,103	1,815	10,876	3,794	17,588
1976	465	985	8,274	2,980	12,704
1977	501	1,094	7,964	752	10,311
1978	308	764	6,753	495	8,320
1979	120	1,395	5,314	138	6,967
1980	421	402	6,709	24	7,556
1981	133	263	8,488	60	8,944
1982	138	929	7,987	25	9,079
1983	5	229	8,126	-	8,360
1984	12	41	6,969	-	7,022
1985	-	-	3,253	-	3,253
1986	-	64	2,993	-	3,057
1987	28	20	3,650	-	3,698

Source:

1. Department of Statistics. Rubber Statistics Handbook. Various issues.

Table 3.13

Malaysia: Area Planted with High-Yielding  
Oil Palm, 1968 - 1987 (ha)

Year	D x D	D x T	D x P	Others	Total
1968	33,323	10,814	150,441	6,919	201,496
1969	33,677	9,757	172,020	4,481	219,934
1970	33,224	10,134	232,336	4,482	280,176
1971	31,200	10,120	252,400	4,800	298,520
1972	30,462	10,110	313,495	5,448	354,611
1973	29,902	9,900	214,598	5,448	259,848
1974	29,021	9,885	271,166	4,758	314,830
1975	29,021	9,855	271,166	4,758	314,800
1976	27,228	9,755	362,063	4,111	403,157
1977	25,767	9,500	451,481	3,928	490,676
1978	24,221	9,361	531,858	3,534	568,974
1979	21,861	9,229	567,810	2,992	601,892
1980	20,086	9,015	669,379	2,228	700,708
1981	16,734	8,529	729,667	2,440	757,370
1982	13,978	8,024	771,697	2,074	795,773
1983	12,694	7,951	885,871	2,586	909,102
1984	11,081	6,418	941,469	2,710	961,678
1985	9,644	5,893	1,000,337	2,902	1,018,776
1986	8,159	5,635	1,056,860	3,069	1,073,723
1987	7,447	6,317	1,088,487	2,789	1,105,040

Source:

1. Department of Statistics. Oil Palm, Cocoa, Tea and Coconut Handbook. Various issues.

The use of various agricultural inputs is shown in Table 3.14. Since 1960, the quantity of fertilizers, agricultural chemicals, imported feed and fuel has risen markedly. Much of the growth in fertilizer and agricultural chemical consumption is by rubber and oil palm estates. Significant utilisation also occurs in the paddy subsector. In 1980, a fertilizer subsidy scheme was introduced with the objective of increasing the income of the paddy farmers. The scheme provided full subsidy for fertilizers required by individual farms not exceeding 2.4 ha. The scheme has hitherto proven to be successful in encouraging fertilizer use among paddy farmers.

The steep increase in the use of imported feed is in line with the rapid growth of the poultry and swine subsectors. The continually high level of imported feed consumption also reflects the dire need for a local animal feed manufacturing industry. In terms of fuel, its use has also risen markedly, from 149 t in 1960 to 570 t in 1986. Much of this stems from the increased fuel consumption by agricultural tractors and powered fishing boats.

#### 4. METHODOLOGY

This section describes the methodology and the data employed to quantitatively analyse the magnitude and structure of agricultural price protection in Malaysia.

##### 4.1 Relative Prices

The magnitude and trend of relative prices between agriculture and industry, and between individual agricultural products, provide a measure of the incentive for the movement of resources among the sectors. The analysis of relative prices needs to be based on one point of the marketing chain. Since the interest of this Subproject is in incentives at the producers' level, it would be preferable to compare the prices at this point of the marketing chain.

Table 3.14

Malaysia: Agricultural Inputs, 1960 - 1986 (t)

Year	Fertilizer	Agric Chemical	Imported Feed	Fuel	Total
1960	48385.00	143.20	35422.94	149.20	84100.34
1961	48143.51	143.85	51029.63	133.59	99450.58
1962	43308.27	120.70	43731.82	137.14	87297.93
1963	50532.68	121.53	43980.95	133.18	94768.34
1964	48024.27	116.74	45049.50	143.46	93333.97
1965	49372.11	158.20	42280.70	154.57	91965.58
1966	61154.83	164.03	38349.51	176.09	99844.46
1967	36679.58	189.66	37472.53	185.96	74527.73
1968	31836.95	180.68	35651.69	429.05	68098.37
1969	34049.97	209.07	43333.33	496.22	78088.59
1970	37677.22	234.96	48000.00	527.55	86439.73
1971	34796.99	244.54	67789.47	466.72	103297.72
1972	44896.70	265.06	73260.87	295.92	118718.55
1973	57181.25	324.11	68653.85	280.86	126440.07
1974	91122.79	319.28	69034.48	270.19	160746.74
1975	63954.22	261.07	92080.63	229.00	156524.92
1976	63402.06	348.71	92812.72	261.04	156824.53
1977	55931.58	440.43	104467.96	268.65	161108.62
1978	79990.35	492.77	46174.42	295.28	126952.82
1979	123782.09	615.67	46467.12	335.30	171200.18
1980	151526.51	636.23	16288.98	333.97	168785.69
1981	132540.63	582.36	45361.98	341.30	178826.27
1982	118205.96	611.60	76327.33	327.91	195472.80
1983	99926.87	715.84	115523.63	354.19	216520.53
1984	130595.57	771.37	77233.84	303.79	208904.57
1985	152651.50	777.40	100800.00	336.10	254565.00
1986	151281.20	926.10	161374.24	569.97	314151.51

Source:

1. Ministry of Agriculture. Statistical Digest. Various issues
2. Department of Statistics. Malaysian External Trade. Various issues.
3. Department of Statistics, 1988. Agricultural Statistics Time Series.

The producer prices for rubber, palm oil and cocoa, which represent the estimated prices at the farm gate or project boundary, are derived by adjusting the f.o.b. (free on board) prices by all the relevant charges between the farm gate or the project boundary and the point where the f.o.b price is quoted. These include local marketing and transport costs and export taxes. For paddy, the producer price at the farm level is the Guaranteed Minimum Price (GMP).

The producer price series for rubber, oil palm, paddy and non-agriculture are essentially those of Jenkins and Lai, appropriately extended to 1988 using similar methods and sources of data.

The f.o.b. prices for rubber are obtained from the Quarterly Economic Bulletins of Bank Negara. The export tax rate is estimated by dividing total export tax, given in the Estimates of the Federal Revenue and Expenditure (Ministry of Finance, 1970-1988), by total volumes of export given in the Quarterly Economic Bulletins. The marketing and transport costs are taken to be \$30.50 per t in 1977, which is in turn adjusted for changes in the Consumer Price Index (CPI).

The yearly producer prices for the cocoa sector are derived as follows. The f.o.b. prices are initially from the Quarterly Economic Bulletins of Bank Negara. The average marketing and transport cost for estate cocoa has been estimated by the Malaysian Cocoa Growers' Council to be \$60 per t in 1988. This figure has been verified subsequently by the Malaysian Cocoa Planters' Association. For the smallholder subsector, the Malaysia Agricultural Research and Development Institute (MARDI) has estimated the marketing cost to be \$40 per t in 1988. In East Malaysia, Muslim Ahmad Shamsuddin (1980) has estimated it to be \$44 per t in 1978. This is translated to \$57 per t in 1988. The average marketing cost in 1988 thus works out as \$48.50 per t. The average transport cost for smallholder subsector cocoa estimated by the Ministry of Agriculture (1989) is \$25 per t in 1988. As in the case of rubber and oil palm, these marketing

and transport costs are adjusted by the CPI and deducted from the f.o.b. prices to generate the respective producer series for 1960-1988.

In comparison, the c.i.f (cost, insurance, freight) prices for imported rice are obtained by dividing the total value of rice imports by the volume reported in the Economic Reports (Ministry of Finance 1970-1989). The wholesale margins and milling overheads and profits for 1960-1988 are derived by taking the wholesale margins of \$45.95 per t and millers' overhead of \$74.56 per t for 1988 as reported in Jenkins and Lai and adjusting these by the CPI. Direct milling and drying costs are assumed to be \$62.53 per t in 1981.

The non-agriculture price index for 1960-1988 is constructed using the components of the CPI derived from the Quarterly Economic Bulletins of Bank Negara. Initially, the component price series are aggregated to construct an index for the tradeable part of non-agriculture, and the traded part of non-agriculture goods and services. In turn, these two aggregate indices are weighted to calculate the overall non-agricultural price index.

#### 4.2 Nominal Rate of Protection

The Nominal Rate of Protection (NRP) provides a measure of the impact of taxation, subsidies and pricing policies on the incentives to invest in various activities. To determine such impact, it is necessary to estimate the prices that would have existed if there had been no price intervention.

The calculation of NRPs has to be based on one point of the marketing chain. As this Subproject is concerned with incentives at the producers' level, it would be preferable to calculate NRPs at this level. In respect of either rubber, palm oil or cocoa, which is an export crop, this implies that the producer price has to be compared with an export parity, or border price, defined as the f.o.b. international border price less the total marketing and processing costs from the producer to f.o.b.

The general equation for computing the NRP is as follows:

$$\text{NRP} = \frac{\text{Producer Price} - \text{Border Price}}{\text{Border Price}}$$

or equivalently,

$$\text{NRP} = \frac{\text{Distorted Price} - \text{Undistorted Price}}{\text{Undistorted Price}}$$

The estimation of border prices for rubber and oil palm has been carried out using the data outlined in subsection 4.1. Each series is calculated from the average f.o.b. prices and marketing and transport costs associated with the movement of the product from the farm gate or project boundary to the port.

With respect to paddy, the border price refers to the price of rice (in its paddy equivalent form at the farm level) that would have existed had there been a duty free import of rice into the country and no support price. The price series for 1960-1988 is generated following the methodology described by Jenkins and Lai. Essentially, the price of imported rice in paddy equivalent is obtained by deducting the estimated miller's overhead costs and profits from the c.i.f. price and converting it to paddy equivalent using the conversion factor of 0.65 for paddy/rice. The cost of milling and drying the paddy and transporting the wet paddy to the drying centre are then deducted.

#### 4.3 Indirect Effects of Pricing Policies

Pricing policies induce direct as well as indirect effects on the prices of commodities. The indirect effects comprise two elements. The first element concerns the change in exchange rate that would be necessary in order to eliminate any current account imbalance and any impact on the exchange rate of trade policies. The second element pertains to the change in the prices of non-agricultural goods and services caused by tariffs on imported goods competitive with the non-agricultural products.



The indirect effects of pricing policies are obtained by first working out the following expression:

$$[(PNA^A/PNA) * (E_o/E^*)] - 1$$

where:  $PNA^A$  is the non-agriculture price index adjusted for the direct and indirect effects of policies,

$PNA$  is the unadjusted non-agriculture price index,

$E_o$  is the nominal exchange rate for Malaysian ringgit and the U.S dollar; and

$E^*$  is the equilibrium exchange rate for Malaysian ringgit and the U.S. dollar.

This expression is then used to adjust the actual prices experienced in Malaysia from 1960 to 1988.

The equilibrium nominal exchange rate of the Malaysian ringgit to the U.S. dollar,  $E^*$ , is in turn estimated as follows:

$$E^* = E_o * \frac{[Q_o + (t_m/[1 + t_m]) * Q_d n_d - (t_x/[1 - t_x]) * Q_s e_s]}{[Q_d n_d - Q_s e_s] + 1}$$

where:  $E^*$  is the equilibrium nominal exchange rate,

$E_o$  is the nominal exchange rate,

$Q_o$  is the deficit (+) or surplus (-) in the current account,

$Q_d$  is the total value of imports expressed in units of foreign exchange,

$Q_s$  is the total value of exports expressed in units of foreign exchange,

$n_d$  is the elasticity of demand for foreign exchange,

$e_s$  is the elasticity of supply of foreign exchange (defined positively),

$t_m$  is the average rate of tariff, and

$t_x$  is the average rate of export tax.

#### 4.4 Total Effects of Pricing Policies

The total effects of pricing policies, made up of direct as well as indirect effects, are calculated as follows. The starting point is provided by the agricultural prices in the absence of direct effects of pricing policies. The price series for rubber, oil palm and cocoa are simply the f.o.b prices less the marketing and transportation costs. The prices for paddy are derived from the c.i.f. price of imported rice adjusted to paddy equivalent at the farm level.

The next step is to adjust these price series for the change in the exchange rate that would occur if trade policies were eliminated along with the imbalance in the current account. For rubber, oil palm and cocoa this involves an adjustment for both the export taxes and the ratio of the equilibrium exchange rate to the nominal exchange rate.

#### 4.5 Effective Rate of Protection

Trade and exchange rate policies do not only affect the relative prices of products but also their value added. One common approach to measure the impact of such policies on value added is to derive the value added ratios for the individual products from the Input-Output tables. These ratios are in turn multiplied by the yearly prices to generate a series for the value added. In order to calculate the indirect effects of pricing policies on relative value added, the series are weighted by the ratio of equilibrium exchange rate to nominal exchange rate.

The Effective Rate of Protection (ERP) measures the incentives created by trade and exchange rate policies on the value added of the various commodities. The analysis of ERP is carried out after adjusting the value added series for the total effects of pricing policies.

In order to measure the ERP of rubber, oil palm and paddy, Jenkins and Lai have taken the value added coefficients of the respective sectors from the 1971 Input-Output table for Malaysia (Economic Planning Unit 1973). These coefficients are kept constant for the entire 1960-1988 period. The set of value added ratios adopted in Jenkins and Lai's study are as shown below:

Sector	Value Added Coefficient
Estate rubber	0.845
Smallholder	0.845
Oil palm	0.843
Paddy	0.902

The adoption of fixed value added shares by Jenkins and Lai appears rather stringent, especially given the availability of a number of Input-Output tables for Malaysia upon which value added coefficients may be derived. Hitherto, seven Input-Output tables have been constructed, namely for 1960 (Department of Statistics 1962), 1965 (Department of Statistics 1966), 1970 (Department of Statistics 1975), 1971 (Economic Planning Unit 1973), 1975 (Institute of Developing Economies 1982), 1978 (Department of Statistics 1982) and 1983 (Department of Statistics 1988). These tables are generally not consistent, except for those of 1971, 1978 and 1983 which refer to Pan-Malaysia and are based on a 60-sector classification.

A cursory review of the three comparable input-output tables reveals that the ratios of value added to the output value of natural rubber, oil palm and rice have changed over time. Accordingly, this implies a change in factor productivity. On this ground, therefore, it would be desirable to re-examine the policy-induced change in value added due to direct and indirect effects of pricing policies. It would be preferable to calculate a new series of ERPs on the basis of variable value added shares as specified below:

Sector

Sub-period	Estate rubber	Smallholder rubber	Oil palm	Estate Cocoa	Smallholder Cocoa	Paddy
1960-1977	0.845	0.855	0.843	0.850	0.841	0.902
1978-1982	0.871	0.869	0.786	0.862	0.844	0.864
1983-1988	0.873	0.863	0.777	0.869	0.863	0.829

The above value added coefficients have been derived from the underlying worksheets made available by the Economic Planning Unit of the Prime Minister's Department and the National Accounts Division of the Department of Statistics. It may be discerned that the value added shares of estate and smallholder rubber tended to increase over the 1960s and 1970s and subsequently stagnated. In the case of oil palm the value added proportion has shown a gradual, albeit small, decline since 1960. This could have had a dampening impact on the growth of the sector. On the other hand, the productivity increase which has occurred in both estate and smallholder cocoa as a result of intensified research and technology development has obviously led to an improved value added share over time. To a large extent this could have been responsible for the strong expansion of the sector over time. In the case of paddy there has been a clear deterioration in its value added ratio since 1960. Indeed, it is widely accepted that the labour and land productivity of paddy has declined steeply, especially in recent years, owing to ageing labour force and deteriorating irrigation facilities, especially those outside the granary areas.

The above set of value added ratios have been applied in this Subproject to estimate the ERP of rubber, oil palm cocoa and paddy between 1960 and 1988. The results of the analysis are presented in Section 5.5.

## 5. DISCUSSION OF RESULTS

Having outlined the methodology and sources of data, it is now time to present the empirical findings pertaining to the impact of pricing policies on agricultural products.

### 5.1 Relative Prices

Table 5.1 presents the producer price series for non-agriculture (Column 1), estate rubber (Column 2), smallholder rubber (Column 3), palm oil (Column 4) and paddy (Column 5). These series are basically those of Jenkins and Lai, with an extension to 1988. The non-agricultural price index is constructed from the Consumer Price Index (CPI) tradeable and traded components of non-agricultural goods and services. The producer price of rubber and palm oil is the f.o.b price less marketing and transport costs and export taxes. The producer price of paddy is the Guaranteed Minimum Price (GMP), namely or the support price.

The producer prices of estate rubber, smallholder rubber and palm oil relative to paddy have all tended to decline gradually between 1960 and 1988. Table 5.1 reveals that their relative prices by mid-1980s are only about half of that prevailing in 1960.

In the case of estate rubber, its producer price in relation to that of paddy declined over 1960-1975, but thereafter picked up slightly. There was no discernable trend in the relative price of estate rubber between 1981 and 1986, oscillating between 2.10 and 2.61. From 1987 the relative price improved markedly to reach 4.24 in 1988. This was brought about largely by a sharp rise in the f.o.b. price of rubber, from \$2,416 per t in 1987 to \$3,263 per t in 1988, in the face of a stable GMP of paddy of \$661 per t.

TABLE 5.1: MALAYSIA - RELATIVE PRICES FOR ESTATE AND SMALLHOLDER RUBBER, PALM OIL, AND UNMILLED RICE, 1960-1988

Year	Non Agri-cultural Price Index [1980=100]	Relative Producer Prices										
		Producer Price of Estate Rubber at Factory Level (FOB Price less Mktg & Transport Costs and Taxes) [M\$/tonne]	Producer Price of S/holder Rubber at Factory Level (FOB Price less Mktg & Transport Costs and Taxes) [M\$/tonne]	Producer Price of Palm Oil at Factory Level (FOB Price less Mktg & Transport Costs and Taxes) [M\$/tonne]	Producer Price of Unmilled Rice at Farm Level [GMP/Support Price for Local Paddy] [M\$/tonne]	Estate Rubber with Respect to Unmilled Rice	Estate Rubber With Respect to Non Agri. Price Index	S/holder Rubber with Respect to Unmilled Rice	S/holder Rubber with Respect to Non Agricultural Price Index	Palm Oil with Respect to Unmilled Rice	Palm Oil with Respect to Non Agricultural Price Index	Unmilled Rice with Respect to Non Agricultural Price Index
	[1]	[2]	[3]	[4]	[5]	[6]=[2]/[5]	[7]=[2]/[1]	[8]=[3]/[5]	[9]=[3]/[1]	[10]=[4]/[5]	[11]=[4]/[1]	[12]=[5]/[1]
1960	56.94	2,050	1,885	556	265	7.74	36.00	7.11	33.11	2.10	9.76	4.65
1961	57.13	1,591	1,426	579	265	6.00	27.85	5.38	24.96	2.18	10.13	4.64
1962	55.33	1,522	1,357	543	265	5.74	27.51	5.12	24.53	2.05	9.81	4.79
1963	55.68	1,443	1,276	528	265	5.45	25.92	4.82	22.92	1.99	9.48	4.76
1964	55.73	1,356	1,189	576	265	5.12	24.33	4.49	21.34	2.17	10.34	4.76
1965	56.64	1,358	1,191	674	265	5.12	23.98	4.49	21.03	2.54	11.90	4.68
1966	57.46	1,316	1,149	582	265	4.97	22.90	4.34	20.00	2.20	10.13	4.61
1967	58.60	1,108	937	548	265	4.18	18.91	3.54	15.99	2.07	9.35	4.52
1968	59.30	1,042	872	383	265	3.93	17.57	3.29	14.70	1.45	6.46	4.47
1969	59.49	1,345	1,175	377	265	5.08	22.61	4.43	19.75	1.42	6.34	4.45
1970	60.30	1,053	882	588	265	3.97	17.46	3.33	14.63	2.22	9.75	4.39
1971	61.29	963	790	593	265	3.63	15.71	2.98	12.89	2.24	9.68	4.32
1972	62.89	826	652	453	265	3.12	13.13	2.46	10.37	1.71	7.20	4.21
1973	66.50	1,311	1,129	498	381	3.44	19.71	2.96	16.98	1.31	7.49	5.73
1974	72.65	1,507	1,309	924	464	3.25	20.74	2.82	18.02	1.99	12.72	6.39
1975	75.94	1,138	1,035	865	464	2.45	14.99	2.23	13.63	1.86	11.39	6.11
1976	79.41	1,466	1,361	755	464	3.16	18.46	2.93	17.14	1.63	9.51	5.84
1977	82.70	1,535	1,425	995	464	3.31	18.56	3.07	17.23	2.14	12.03	5.61
1978	86.48	1,582	1,466	1,066	464	3.41	18.29	3.16	16.95	2.30	12.33	5.37
1979	91.40	1,842	1,722	1,142	530	3.48	20.15	3.25	18.84	2.15	12.49	5.80
1980	100.00	2,104	1,976	1,038	530	3.97	21.04	3.73	19.76	1.96	10.38	5.30
1981	108.55	1,890	1,750	1,027	698	2.71	17.41	2.51	16.12	1.47	9.46	6.43
1982	113.20	1,613	1,464	900	698	2.31	14.25	2.10	12.93	1.29	7.95	6.17
1983	118.20	1,931	1,777	951	698	2.77	16.34	2.55	15.03	1.36	8.05	5.91
1984	123.31	2,045	1,885	1,193	661	3.09	16.58	2.85	15.29	1.80	9.67	5.36
1985	126.03	1,676	1,515	983	661	2.54	13.30	2.29	12.02	1.49	7.80	5.24
1986	127.27	1,854	1,726	607	661	2.80	14.57	2.61	13.56	0.92	4.77	5.19
1987	128.95	2,138	1,975	664	661	3.23	16.58	2.99	15.32	1.00	5.15	5.13
1988	131.40	2,800	2,632	886	661	4.24	21.31	3.98	20.03	1.34	6.74	5.03

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Table 9  
 2. Data for 1984-1988 are estimated

The trend in relative prices of smallholder rubber generally follows that of the estate subsector. It is also evident that the profitability of smallholder rubber when compared with paddy has been steeply diminished over 1960-1988. By 1988, the relative price of smallholder rubber was 3.98, compared with 7.11 in 1960.

The relationship between the producer price of palm oil and GMP of paddy does not follow any regular pattern, especially in the 1960s and 1970s. However, since 1980 the price of palm oil relative to paddy has decreased to about half of that prevailing in the 1960s. This implies that the profitability of palm oil has been eroded significantly between 1960 and 1988 in comparison with that of paddy.

The relative producer prices of both estate and smallholder rubber to the non-agriculture index tend to fall from 1960 to 1988. Their relative prices declined up to the mid-1970s, but thereafter fluctuated within a narrow range up to 1980. From then on the estate and smallholder rubber prices decreased steadily when compared with the non-agriculture price index. It is therefore evident that the rubber sector has not been able to sustain its relative profitability in relation to non-agriculture production since 1960. With respect to palm oil, no discernible trend in its prices vis-a-vis non-agriculture has occurred from 1960 right up to 1980. After that, its relative prices began to diminish steadily. The ratio of the producer price of palm oil to non-agriculture in 1988 was 6.74 compared to approximately 10.00 in early 1960s.

As is evident from Table 5.1, there appears to be a slight upward trend in the producer price of paddy as compared to the price index for non-agricultural goods. During the 1960s, this relative price has been in the range of 4.45 to 4.79. Since 1973, the relative price has increased, and is in the range of 5.03 to 6.43. Overall, the policy to implement a GMP for paddy has been to provide a slight increase in the relative price of paddy over time, as compared to the prices of non-agricultural goods.

The relative prices for estate and smallholder cocoa and paddy are shown in Table 5.2. Unlike rubber and palm oil, whose relative prices have indicated a decline during 1960-1988, both estate and smallholder cocoa have tended to sustain their profitability levels when compared with either the producer prices of paddy or the non-agriculture price index. The relative prices of cocoa increased from 5.5 in 1960 to 9.4 in 1976. There was a further sharp rise in the relative prices, over 1977-1980, in the range of 10.8 and 17.3. Thereafter, the producer price of cocoa in relation to the GMP oscillated between 5.6 and 7.6. The point to note from Table 5.2 is that there has been no substantial erosion in the producer price of cocoa from 1960 up to 1988.

Almost a similar inference may be made in respect of the relative price of estate and smallholder cocoa compared to the non-agricultural price index. The relative price ratio of 28.0 in 1988 is slightly higher than that achieved in 1960 of 25.6. However, in 1973 the relative price ratio reached 41.3 and subsequently climbed further to 96.7 in 1977 before dropping to 73.1 in 1979.

From this analysis of the relative producer prices it is clear that their movement has reduced the attractiveness of rubber production through time. This is due to the government policy of maintaining, and perhaps slightly increasing, the real price of paddy. Such a policy commensurates with the self-sufficiency, income improvement and poverty alleviation objectives. Even though the relative price of rubber has worsened, this sector has enjoyed dramatic yield increases. As such, the incomes of those in rubber production have not been depressed to nearly the degree that the relative price changes would suggest. Compared to rubber, the price of palm oil relative to either paddy or non-agricultural goods has been reduced slightly.

However, there is a clear indication that the movement in producer prices has retained the attractiveness of cocoa production through time. The absence of export taxes on cocoa has



TABLE 5.2: MALAYSIA - RELATIVE PRICES FOR ESTATE AND SMALLHOLDER COCOA AND UNMILLED RICE, 1960-1988

Year	Non Agri Price Index 1980=100	Average Export FOB Price for Cocoa (M\$/tonne)	Total Taxes on Cocoa paid by Estate	Total Taxes on Cocoa paid by S/holder	Producer Price of Est Cocoa at Factory Level (FOB Price less Mktg, Tpt & Taxes) (M\$/tonne)	Producer Price of S/holder Cocoa at Factory Level (FOB Price less Mktg, Tpt & Taxes) (M\$/tonne)	Estate Marketing and Transport Costs	S/holder Marketing and Transport Costs	Producer Price of Unmilled Rice at Farm Level (GMP/Support Price for Local Paddy)	Estate Cocoa With Respect to Unmilled Rice	Estate Cocoa With Respect to Non Agri cultural Price Index	S/holder Cocoa With Respect to Unmilled Rice	S/holder Cocoa With Respect to Non Agri cultural Price Index
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
1960	56.94	1486.27	0.00	0.00	1462.72	1457.42	23.55	28.85	265	5.52	26.10	5.50	25.60
1961	57.13	1542.25	0.00	0.00	1518.74	1513.46	23.51	28.79	265	5.73	27.00	5.71	26.49
1962	55.33	1347.84	0.00	0.00	1324.33	1319.05	23.51	28.79	265	5.00	24.36	4.98	23.84
1963	55.68	1490.04	0.00	0.00	1465.80	1460.35	24.24	29.69	265	5.53	26.76	5.51	26.23
1964	55.73	1513.89	0.00	0.00	1489.74	1484.31	24.15	29.58	265	5.62	27.16	5.60	26.63
1965	56.64	1724.65	0.00	0.00	1700.50	1695.07	24.15	29.58	265	6.42	30.45	6.40	29.93
1966	57.46	1727.27	0.00	0.00	1702.76	1697.24	24.51	30.03	265	6.43	30.06	6.40	29.54
1967	58.60	1758.81	0.00	0.00	1733.34	1727.61	25.47	31.20	265	6.54	30.01	6.52	29.48
1968	59.30	1940.40	0.00	0.00	1914.97	1909.25	25.43	31.15	265	7.23	32.72	7.20	32.20
1969	59.49	1570.88	0.00	0.00	1545.54	1539.84	25.34	31.04	265	5.83	26.41	5.81	25.88
1970	60.30	2288.44	0.00	0.00	2262.65	2256.84	25.79	31.60	265	8.54	37.95	8.52	37.43
1971	61.29	1711.00	0.00	0.00	1684.80	1678.90	26.20	32.10	265	6.36	27.92	6.34	27.39
1972	62.89	1886.58	0.00	0.00	1859.51	1853.42	27.07	33.16	265	7.02	30.00	6.99	29.47
1973	66.50	2780.75	0.00	0.00	2750.84	2744.11	29.91	36.64	381	7.22	41.82	7.20	41.26
1974	72.65	3245.55	0.00	0.00	3210.43	3202.53	35.12	43.02	464	6.92	44.67	6.90	44.08
1975	75.94	3304.84	0.00	0.00	3268.16	3259.91	36.68	44.93	464	7.04	43.52	7.03	42.93
1976	79.41	4386.58	0.00	0.00	4348.94	4340.47	37.64	46.11	464	9.37	55.24	9.35	54.66
1977	82.70	8042.88	0.00	0.00	8003.46	7994.59	39.42	48.29	464	17.25	97.25	17.23	96.67
1978	76.48	7315.10	0.00	0.00	7273.71	7264.40	41.39	50.70	464	15.68	95.65	15.66	94.98
1979	91.40	6732.06	0.00	0.00	6689.16	6679.51	42.90	52.55	530	12.62	73.65	12.60	73.08
1980	100.00	5800.86	0.00	0.00	5755.13	5744.84	45.73	56.02	530	10.86	58.01	10.84	57.45
1981	108.55	4383.68	0.00	0.00	4333.51	4322.22	50.17	61.46	698	6.21	40.38	6.19	39.82
1982	113.20	3746.80	0.00	0.00	3693.71	3681.76	53.09	65.04	698	5.29	33.10	5.27	32.52
1983	118.20	4000.00	0.00	0.00	3944.94	3932.55	55.06	67.45	698	5.65	33.84	5.63	33.27
1984	123.31	5110.00	0.00	0.00	5052.79	5039.92	57.21	70.08	661	7.64	41.44	7.62	40.87
1985	126.03	4660.00	0.00	0.00	4602.61	4589.69	57.39	70.31	661	6.96	36.98	6.94	36.42
1986	127.27	4700.00	0.00	0.00	4642.20	4629.19	57.80	70.81	661	7.02	36.93	7.00	36.37
1987	128.95	4360.00	0.00	0.00	4301.55	4288.40	58.45	71.60	661	6.51	33.81	6.49	33.26
1988	131.40	3750.00	0.00	0.00	3690.00	3676.50	60.00	73.50	661	5.58	28.54	5.56	27.98

Notes: 1. Data for 1960-1983 are from Jenkins and Lai. (1989). Table 10(A.1)  
 2. Data for 1984-1988 and for Cocoa are estimated.

rendered the producer price consistently high compared with either rubber or oil palm. Concomitantly, the price of cocoa relative to paddy and non-agricultural goods has been sustained. Indeed, the advent of very high f.o.b. prices over 1977-1980 has enhanced the attractiveness of cocoa production vis-a-vis rubber or palm oil production. It therefore appears that the government policy of avoiding any imposition of export taxes on cocoa coupled with a strong encouragement of the crop has resulted in its impressive expansion over time.

## 5.2 Nominal Rate of Protection

In order to calculate the nominal rate of protection (NRP) in various agricultural activities, it is necessary to estimate the prices that would have existed if there had been no direct price intervention. These prices constitute the border prices, namely export or import parity prices.

Table 5.3 presents the effect of direct price interventions on estate rubber and paddy based on relative prices during 1960-1988. The adjusted prices of estate rubber are given in Column 1. These are the f.o.b. prices less marketing and transportation costs. Likewise, Column 2 gives the prices of rice (in its paddy equivalent value at the farm level) in the absence of any government intervention. The difference between the relative producer (distorted) and relative border (undistorted) prices divided by the relative border price provides a measure of the NRP of estate rubber production relative to local paddy production (Column 5).

Except for 1968-1970 and 1974-1975, the effect of direct pricing policies has been to provide a negative relative NRP to estate rubber production. In the early 1960s the relative NRP was in the range of -0.17 to -0.31. The protection rate was slightly higher between 1967 and 1975, in the range of 0.02 to -0.24. However, there was a significant turnaround after this, with the relative NRP becoming steeply negative, from -0.54 in 1976 to -0.75 by 1987. In 1988 the relative NRP was estimated at -0.61.

TABLE 5.3: MALAYSIA - EFFECT OF DIRECT PRICE INTERVENTIONS ON ESTATE RUBBER AND PADDY BASED ON RELATIVE PRICES, 1960-1988.

Year	Border Price Estate Rubber (FOB Price L Paddy Equivalent Marketing & Transport Costs (M\$/tonne)	CIF Price of Imported Rice in Paddy Equivalent at Farm Level (M\$/tonne)	Ratio of Border Price of Estate Rubber to CIF of Imported Rice in Paddy Equivalent	Ratio of Producer Price of Estate Rubber to Producer Price of Local Paddy at Farm Level	Nominal Protection of Estate Rubber Prod to Paddy Production (1980=100)	Non Agri- cultural Price Index	Ratio of Border Price of Estate Rubber to Non Agricultural Price Index	Ratio of Produce Price of Estate Rubber to Non Agricultural Price Index	Nominal Protection of Estate Rubber Production	Ratio of CIF Price of Imported Rice To Non Agri Price Index	Ratio of Producer Price of Local Paddy to Non Agri Price Index	Nominal Protection of Paddy Production
	[1]	[2]	[3]= [1]/[2]	[4]	[5]=([4]- [3])/[3]	[6]	[7]= [1]/[6]	[8]	[9]=([8]- [7])/[7]	[10]= [2]/[6]	[11]	[12]=([11]- [10])/[10]
1960	2302	204	11.28	7.73	-0.31	56.94	40.43	36.01	-0.11	3.58	4.66	0.30
1961	1748	217	8.06	6.00	-0.26	57.13	30.60	27.85	-0.09	3.80	4.64	0.22
1962	1653	239	6.92	5.74	-0.17	55.33	29.88	27.51	-0.08	4.32	4.79	0.11
1963	1556	231	6.74	5.44	-0.19	55.68	27.95	25.91	-0.07	4.15	4.76	0.15
1964	1460	214	6.82	5.12	-0.25	55.73	26.20	24.33	-0.07	3.84	4.76	0.24
1965	1469	211	6.96	5.12	-0.26	56.64	25.94	23.97	-0.08	3.73	4.68	0.26
1966	1410	237	5.95	4.96	-0.17	57.46	24.54	22.91	-0.07	4.12	4.61	0.12
1967	1176	292	4.03	4.18	0.04	58.60	20.07	18.90	-0.06	4.98	4.52	-0.09
1968	1109	325	3.41	3.93	0.15	59.30	18.70	17.58	-0.06	5.48	4.47	-0.18
1969	1454	314	4.63	5.07	0.09	59.49	24.44	22.62	-0.07	5.28	4.46	-0.16
1970	1130	257	4.40	3.97	-0.10	60.30	18.74	17.47	-0.07	4.26	4.40	0.03
1971	1021	215	4.75	3.63	-0.24	61.29	16.66	15.71	-0.06	3.51	4.33	0.23
1972	884	221	4.00	3.12	-0.22	62.89	14.06	13.14	-0.07	3.51	4.22	0.20
1973	1475	395	3.73	3.44	-0.08	66.50	22.18	19.72	-0.11	5.94	5.73	-0.04
1974	1774	594	2.99	3.25	0.09	72.65	24.42	20.74	-0.15	8.18	6.39	-0.22
1975	1343	561	2.39	2.45	0.02	75.94	17.69	14.98	-0.15	7.39	6.11	-0.17
1976	1855	270	6.87	3.16	-0.54	79.41	23.36	18.47	-0.21	3.40	5.84	0.72
1977	1997	253	7.89	3.31	-0.58	82.70	24.15	18.56	-0.23	3.06	5.61	0.83
1978	2156	366	5.89	3.41	-0.42	86.48	24.93	18.29	-0.27	4.23	5.37	0.27
1979	2641	410	6.44	3.47	-0.46	91.40	28.89	20.15	-0.30	4.49	5.80	0.29
1980	2944	412	7.15	3.97	-0.44	100.00	29.44	21.04	-0.29	4.12	5.30	0.29
1981	2397	523	4.58	2.71	-0.41	108.55	22.08	17.42	-0.21	4.82	6.43	0.33
1982	1830	384	4.77	2.31	-0.52	113.20	16.17	14.25	-0.12	3.39	6.16	0.82
1983	2244	268	8.37	2.77	-0.67	118.20	18.98	16.34	-0.14	2.27	5.90	1.60
1984	2204	244	9.03	3.09	-0.66	123.31	17.87	16.59	-0.07	1.98	5.36	1.71
1985	1813	223	8.13	2.51	-0.69	126.03	14.39	13.30	-0.08	1.77	5.24	1.96
1986	1995	234	8.53	2.80	-0.67	127.27	15.68	14.56	-0.07	1.84	5.19	1.82
1987	2309	175	13.19	3.24	-0.75	128.95	17.91	16.59	-0.07	1.36	5.13	2.78
1988	3154	291	10.84	4.24	-0.61	131.40	24.00	21.31	-0.11	2.21	5.03	1.27

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Table 10(1)

2. Data for 1984-1988 are estimated

The absolute NRP for estate rubber (Column 9) show that the direct pricing policies have discriminated against estate rubber over the entire period of 1960-1988. However, in this case, the extent of negative protection appears to be slightly less compared to the case of relative prices of estate rubber and paddy. Column 9 of Table 5.3 also indicates that the discrimination was relatively high during the 1973-1983 decade, ranging between -0.12 and -0.30, compared with the period before that, ranging between -0.07 and 0.11.

The NRP for local paddy production is reflected in Column 12 of Table 5.3. It is evident that the direct price interventions have generated a positive NRP for local paddy, except in 1967-1969 and 1973-1975. In the years since 1976, the NRP of paddy has tended to be higher than in the earlier years. Recently, with relatively low c.i.f. prices of rice, the NRP has risen steeply to reach 1.96 in 1985 and 2.78 in 1987. This implies that the domestic producer price of rice in 1987 is 2.78 times what it would have been had there been free trade.

Table 5.4 reflects the impact of direct price interventions on the relative price of smallholder rubber and paddy. These results are fairly similar to those derived earlier in the case of the estate subsector. Except for 1968-1969 the relative NRP has been negative in every year of the observation period. Also, since 1976 the relative NRP has tended to rise sharply in absolute terms. In 1987 the relative NRP for smallholder rubber to paddy reached -0.76, which was double the NRP achieved in 1960. Likewise, the absolute NRP of smallholder rubber is seen to be invariably negative over the 1960-1988 period.

The implication of direct price interventions on palm oil and paddy based on relative prices may be discerned from Table 5.5. The relative NRP of palm oil to local paddy production has been significantly negative for most years of the 1960-1988 period. Also, while the relative NRP during 1960-1974 was comparatively low, ranging from -0.06 to -0.29, that of 1975-1988 was lower

TABLE 5.4: MALAYSIA - EFFECT OF DIRECT PRICE INTERVENTIONS ON SMALLHOLDER RUBBER BASED ON RELATIVE PRICES, 1960-1988

Year	Border Price S/holder Rub (FOB Price L Marketing & Transport Co M\$/tonne)	CIF Price of Imported Rice in Paddy Equivalent at Farm Level M\$/tonne)	Ratio of Border Price of Smallholder Rubber to CIF Price of Imported Rice	Ratio of Producer Price of S/holder Rubber to Producer Price of Local Paddy at Farm Level	Nominal Protection of S/holder Rubber to Local Paddy	Non Agri-cultural Price Index (1980=100)	Ratio of Border Price of Smallholder Rubber to Non Agri Price Index	Ratio of Produce Price of Smallholder Rubber to Non Agri Rice Index	Nominal Protection of Smallholder Rubber
	[1]	[2]	[3]= [1]/[2]	[4]	[5]=([4]-[3])/[3]	[6]	[7]= [1]/[6]	[8]	[9]=([8]-[7])/[7]
1960	2236	204	10.96	7.11	-0.35	56.94	39.27	33.11	-0.16
1961	1682	217	7.75	5.38	-0.31	57.13	29.45	24.97	-0.15
1962	1587	239	6.64	5.12	-0.23	55.33	28.69	24.53	-0.14
1963	1488	231	6.44	4.81	-0.25	55.68	26.72	22.92	-0.14
1964	1392	214	6.51	4.49	-0.31	55.73	24.98	21.34	-0.15
1965	1401	211	6.64	4.49	-0.32	56.64	24.74	21.03	-0.15
1966	1342	237	5.66	4.33	-0.24	57.46	23.35	19.99	-0.14
1967	1104	292	3.78	3.54	-0.06	58.60	18.84	15.99	-0.15
1968	1037	325	3.19	3.29	0.03	59.30	17.49	14.71	-0.16
1969	1383	314	4.40	4.43	0.01	59.49	23.25	19.76	-0.15
1970	1058	257	4.12	3.33	-0.19	60.30	17.54	14.63	-0.17
1971	948	215	4.41	2.98	-0.32	61.29	15.46	12.89	-0.17
1972	808	221	3.66	2.46	-0.33	62.89	12.84	10.36	-0.19
1973	1392	395	3.52	2.96	-0.16	66.50	20.93	16.97	-0.19
1974	1676	594	2.82	2.82	-0.00	72.65	23.06	18.02	-0.22
1975	1240	561	2.21	2.23	0.01	75.94	16.33	13.63	-0.17
1976	1750	270	6.48	2.93	-0.55	79.41	22.04	17.14	-0.22
1977	1887	253	7.46	3.07	-0.59	82.70	22.81	17.23	-0.24
1978	2040	366	5.57	3.16	-0.43	86.48	23.58	16.95	-0.28
1979	2521	410	6.15	3.25	-0.47	91.40	27.58	18.84	-0.32
1980	2816	412	6.83	3.73	-0.45	100.00	28.16	19.76	-0.30
1981	2256	523	4.31	2.51	-0.42	108.55	20.78	16.12	-0.22
1982	1681	384	4.38	2.10	-0.52	113.20	14.85	12.93	-0.13
1983	2089	268	7.80	2.55	-0.67	118.20	17.68	15.04	-0.15
1984	2043	244	8.37	2.85	-0.66	123.31	16.57	15.29	-0.08
1985	1653	223	7.41	2.29	-0.69	126.03	13.11	12.02	-0.08
1986	1832	234	7.83	2.61	-0.67	127.27	14.39	13.56	-0.06
1987	2146	175	12.26	2.99	-0.76	128.95	16.64	15.31	-0.08
1988	2986	291	10.26	3.98	-0.61	131.40	22.72	20.02	-0.12

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Table 10(2)  
 2. Data for 1984-1988 are estimated

TABLE 5.5: MALAYSIA - EFFECTS OF DIRECT PRICE INTERVENTIONS ON PALM OIL BASED ON RELATIVE PRICES, 1960-1988

Year	Border Price Palm Oil (FO Price Less Marketing & Transport Costs (M\$/tonne)	CIF Price of Imported Rice in Paddy Equivalent at Farm Level (M\$/tonne)	Ratio of Border Price of Palm Oil to CIF Price of Imported Rice in Paddy Equivalent	Ratio of Producer Price of Palm Oil to Producer Price Of Local Paddy Production	Nominal Protection of Palm Oil Production to Paddy Prod (1980=100)	Non Agri- cultural Price Index	Ratio of Border Price of Palm Oil to Non Agricultural Price Index	Ratio of Producer Price of Palm Oil to Non Agri- cultural Price Index	Nominal Protection of Palm Oil Production
	[1]	[2]	[3]= [1]/[2]	[4]	[5]=[4]- [3]/[3]	[6]	[7]= [1]/[6]	[8]	[9]=[8]- [7]/[7]
1960	603	204	2.95	2.10	-0.29	56.94	10.59	9.77	-0.08
1961	628	217	2.89	2.18	-0.25	57.13	10.99	10.13	-0.08
1962	589	239	2.47	2.05	-0.17	55.33	10.64	9.81	-0.08
1963	572	231	2.48	1.99	-0.20	55.68	10.28	9.48	-0.08
1964	624	214	2.92	2.17	-0.26	55.73	11.20	10.34	-0.08
1965	730	211	3.46	2.54	-0.27	56.64	12.89	11.90	-0.08
1966	631	237	2.67	2.20	-0.17	57.46	10.98	10.13	-0.08
1967	594	292	2.03	2.07	0.02	58.60	10.14	9.35	-0.08
1968	415	325	1.28	1.44	0.13	59.30	7.00	6.46	-0.08
1969	409	314	1.30	1.42	0.09	59.49	6.88	6.34	-0.08
1970	638	257	2.49	2.22	-0.11	60.30	10.58	9.76	-0.08
1971	644	215	3.00	2.24	-0.25	61.29	10.50	9.68	-0.08
1972	499	221	2.26	1.71	-0.24	62.89	7.94	7.20	-0.09
1973	562	395	1.42	1.31	-0.08	66.50	8.45	7.49	-0.11
1974	1178	594	1.98	1.99	0.00	72.65	16.21	12.71	-0.22
1975	1109	561	1.98	1.86	-0.06	75.94	14.60	11.39	-0.22
1976	886	270	3.29	1.63	-0.50	79.41	11.16	9.50	-0.15
1977	1263	253	4.98	2.14	-0.57	82.70	15.27	12.03	-0.21
1978	1203	366	3.29	2.30	-0.30	86.48	13.91	12.32	-0.11
1979	1267	410	3.09	2.15	-0.30	91.40	13.86	12.49	-0.10
1980	1118	412	2.72	1.96	-0.28	100.00	11.18	10.38	-0.07
1981	1092	523	2.09	1.47	-0.30	108.55	10.06	9.47	-0.06
1982	932	384	2.43	1.29	-0.47	113.20	8.23	7.95	-0.03
1983	973	268	3.63	1.36	-0.62	118.20	8.24	8.04	-0.02
1984	1481	244	6.06	1.80	-0.64	123.31	12.01	9.67	-0.19
1985	1182	223	5.29	1.48	-0.67	126.03	9.38	7.80	-0.17
1986	652	234	2.79	0.92	-0.66	127.27	5.13	4.77	-0.07
1987	758	175	4.34	1.00	-0.74	128.95	5.88	5.15	-0.12
1988	1044	291	3.59	1.34	-0.63	131.40	7.94	6.74	-0.15

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Table 10(3)

2. Data for 1984-1988 are estimated

still, with a range of between -0.28 and -0.74. In the case of palm oil the absolute NRP has consistently been negative, though without a discernable trend.

The estimation of NRPs based on the relative prices of both estate and smallholder cocoa and paddy is given in Tables 5.6 and 5.7. As there has been no export tax on cocoa, the border price is similar to producer price, i.e. absolute NRP are zero over the whole period of investigation. In any case, Column 5 of Table 5.6 indicates that the relative NRP of estate cocoa since 1960 has been negative, except for 1967-1969 and 1973-1975. Generally the negative relative NRP occurred in those years where the GMP exceeded the c.i.f. price of rice in paddy equivalent. The sharp decline in the c.i.f. price for rice since 1982 in the face of a comparatively high support price for paddy at the farm level has further accentuated the relative NRP values of estate cocoa. The relative NRP over 1982-1988 ranged between -0.45 and -0.74. In comparison, the relative NRP of estate cocoa from 1961 to 1981 ranged between 0.28 and -0.23.

In the case of smallholder cocoa, Table 5.7 reveals that the trend in its relative NRP during 1960-1988 is almost identical to that recorded by estate cocoa. Owing to the difference in marketing and transport costs, the border price of smallholder cocoa tends to be slightly lower than the border price of estate cocoa. These differences, however, are very slight and do not change the pattern of relative prices over time.

The above results show clearly that the relative NRP of rubber, oil palm and cocoa has been negative during most parts of the 1960-1988 period. The negative level of protection has also tended to increase sharply in the 1980s. Therefore, the direct price interventions on export crops (export tax) and paddy (price support) have effectively reduced the relative price ratios in favour of paddy. The export crops are accordingly discriminated against as compared to paddy. This discrimination is also evident in the case of both estate and smallholder cocoa despite the absence of any export tax on the crop.

TABLE 5.6: MALAYSIA - EFFECTS OF DIRECT PRICE INTERVENTIONS ON ESTATE COCOA AND PADDY BASED ON RELATIVE PRICES, 1960-1988

Year	Border Pr of Estate Cocoa (FOB Pr less Marketing & Transports Costs)	CIF Pr of Imported Rice in Paddy at Farm level	Ratio of Producer Pr of Est Cocoa to CIF Pr of Imported Rice in Paddy Equivalent	Ratio of Producer Pr of Est Cocoa to Producer Pr of Local Paddy at Farm Level	Nominal Protection of Estate Cocoa Prodn to Paddy Production	Non Agri-cultural Price Index [1980=100]	Ratio of Border Price of Estate Cocoa to Non Agri Pr Index	Ratio of Producer Pr of Estate Cocoa to Non Agri Price Index	Nominal Protection of Estate Cocoa Production	Ratio of CIF pr of Imported Rice to Non Agri Price Index	Ratio of Producer Pr of Local Paddy to Non Agri Price Index	Nominal Protection of Local Paddy Production
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
1960	1462.72	204	7.17	5.52	-0.23	56.94	25.69	25.69	0.00	3.58	4.65	0.30
1961	1518.74	217	7.00	5.73	-0.18	57.13	26.58	26.58	0.00	3.80	4.64	0.22
1962	1324.33	239	5.54	5.00	-0.10	55.33	23.94	23.94	0.00	4.32	4.79	0.11
1963	1465.80	231	6.35	5.53	-0.13	55.68	26.33	26.33	0.00	4.15	4.76	0.15
1964	1489.74	214	6.96	5.62	-0.19	55.73	26.73	26.73	0.00	3.84	4.76	0.24
1965	1700.50	211	8.06	6.42	-0.20	56.64	30.02	30.02	0.00	3.73	4.68	0.26
1966	1702.76	237	7.18	6.43	-0.11	57.46	29.63	29.63	0.00	4.12	4.61	0.12
1967	1733.34	292	5.94	6.54	0.10	58.60	29.58	29.58	0.00	4.98	4.52	-0.09
1968	1914.97	325	5.89	7.23	0.23	59.30	32.29	32.29	0.00	5.48	4.47	-0.18
1969	1545.54	314	4.92	5.83	0.18	59.49	25.98	25.98	0.00	5.28	4.45	-0.16
1970	2262.65	257	8.80	8.54	-0.03	60.30	37.52	37.52	0.00	4.26	4.39	0.03
1971	1684.80	215	7.84	6.36	-0.19	61.29	27.49	27.49	0.00	3.51	4.32	0.23
1972	1859.51	221	8.41	7.02	-0.17	62.89	29.57	29.57	0.00	3.51	4.21	0.20
1973	2750.84	395	6.96	7.22	0.04	66.50	41.37	41.37	0.00	5.94	5.73	-0.04
1974	3210.43	594	5.40	6.92	0.28	72.65	44.19	44.19	0.00	8.18	6.39	-0.22
1975	3268.16	561	5.83	7.04	0.21	75.94	43.04	43.04	0.00	7.39	6.11	-0.17
1976	4348.94	270	16.11	9.37	-0.42	79.41	54.77	54.77	0.00	3.40	5.84	0.72
1977	8003.46	253	31.63	17.25	-0.45	82.70	96.78	96.78	0.00	3.06	5.61	0.83
1978	7273.71	366	19.87	15.68	-0.21	76.48	95.11	95.11	0.00	4.79	6.07	0.27
1979	6689.16	410	16.32	12.62	-0.23	91.40	73.19	73.19	0.00	4.49	5.80	0.29
1980	5755.13	412	13.97	10.86	-0.22	100.00	57.55	57.55	0.00	4.12	5.30	0.29
1981	4333.51	523	8.29	6.21	-0.25	108.55	39.92	39.92	0.00	4.82	6.43	0.33
1982	3693.71	384	9.62	5.29	-0.45	113.20	32.63	32.63	0.00	3.39	6.17	0.82
1983	3944.94	268	14.72	5.65	-0.62	118.20	33.38	33.38	0.00	2.27	5.91	1.60
1984	5052.79	244	20.71	7.64	-0.63	123.31	40.98	40.98	0.00	1.98	5.36	1.71
1985	4602.61	223	20.64	6.96	-0.66	126.03	36.52	36.52	0.00	1.77	5.24	1.96
1986	4642.20	234	19.84	7.02	-0.65	127.27	36.48	36.48	0.00	1.84	5.19	1.82
1987	4301.55	175	24.58	6.51	-0.74	128.95	33.36	33.36	0.00	1.36	5.13	2.78
1988	3690.00	291	12.68	5.58	-0.56	131.40	28.08	28.08	0.00	2.21	5.03	1.27

Note: 1. Data for 1960-1988 are from Jenkins and Lai (1989)

2. Data for 1984-1988 and for Cocoa are estimated.



TABLE 5.7: MALAYSIA - EFFECTS OF DIRECT PRICE INTERVENTIONS ON SMALLHOLDER COCOA AND PADDY BASED ON RELATIVE PRICES, 1960-1988

Year	Border Pr of S/holder Cocoa (FOB Pr less Marketing & Transports Costs)	CIP Pr of Imported Rice in Paddy Equiv at Farm Level	Ratio of Producer Price of S/holder Cocoa to CIP Price of Imported Rice in Paddy Equivalent	Ratio of Producer Price of S/holder Cocoa to Producer Price of Local Paddy at Farm Level	Non Protection of S/holder Cocoa Production to Paddy Production	Non Agri- cultural Price Index [1980=100]	Ratio of Border Price of S/holder Cocoa to Non Agri Price Index	Ratio of Producer Pr of S/holder Cocoa to Non Agri Price Index	Nominal Protection of S/holder Cocoa Production
	[1]	[2]	[3]= [1]/[2]	[4]	[5]=[4]- [3]/[3]	[6]	[7]= [1]/[6]	[8]	[9]=[8]- [7]/[7]
1960	1457.42	204	7.14	5.50	-0.23	56.94	25.60	25.60	0.00
1961	1513.46	217	6.97	5.71	-0.18	57.13	26.49	26.49	0.00
1962	1319.05	239	5.52	4.98	-0.10	55.33	23.84	23.84	0.00
1963	1460.35	231	6.32	5.51	-0.13	55.68	26.23	26.23	0.00
1964	1484.31	214	6.94	5.60	-0.19	55.73	26.63	26.63	0.00
1965	1695.07	211	8.03	6.40	-0.20	56.64	29.93	29.93	0.00
1966	1697.24	237	7.16	6.40	-0.11	57.46	29.54	29.54	0.00
1967	1727.61	292	5.92	6.52	0.10	58.60	29.48	29.48	0.00
1968	1909.25	325	5.87	7.20	0.23	59.30	32.20	32.20	0.00
1969	1539.84	314	4.90	5.81	0.18	59.49	25.88	25.88	0.00
1970	2256.84	257	8.78	8.52	-0.03	60.30	37.43	37.43	0.00
1971	1678.90	215	7.81	6.34	-0.19	61.29	27.39	27.39	0.00
1972	1853.42	221	8.39	6.99	-0.17	62.89	29.47	29.47	0.00
1973	2744.11	395	6.95	7.20	0.04	66.50	41.26	41.26	0.00
1974	3202.53	594	5.39	6.90	0.28	72.65	44.08	44.08	0.00
1975	3259.91	561	5.81	7.03	0.21	75.94	42.93	42.93	0.00
1976	4340.47	270	16.08	9.35	-0.42	79.41	54.66	54.66	0.00
1977	7994.59	253	31.60	17.23	-0.45	82.70	96.67	96.67	0.00
1978	7264.40	366	19.85	15.66	-0.21	76.48	94.98	94.98	0.00
1979	6679.51	410	16.29	12.60	-0.23	91.40	73.08	73.08	0.00
1980	5744.84	412	13.94	10.84	-0.22	100.00	57.45	57.45	0.00
1981	4322.22	523	8.26	6.19	-0.25	108.55	39.82	39.82	0.00
1982	3681.76	384	9.59	5.27	-0.45	113.20	32.52	32.52	0.00
1983	3932.55	268	14.67	5.63	-0.62	118.20	33.27	33.27	0.00
1984	5039.92	244	20.66	7.62	-0.63	123.31	40.87	40.87	0.00
1985	4589.69	223	20.58	6.94	-0.66	126.03	36.42	36.42	0.00
1986	4629.19	234	19.78	7.00	-0.65	127.27	36.37	36.37	0.00
1987	4288.40	175	24.51	6.49	-0.74	128.95	33.26	33.26	0.00
1988	3676.50	291	12.63	5.56	-0.56	131.40	27.98	27.98	0.00

Note: 1. Data for 1960-1988 are from Jenkins and Lai (1989)  
2. Data for 1984-1988 and for Cocoa are estimated.

### 5.3 Indirect Effects of Pricing Policies

The export crop sectors are not only affected by direct policies, but also by indirect effects arising from trade and exchange rate policies. It is therefore necessary to quantify these indirect effects. This is done by calculating the change of relative prices between the individual export crops - rubber, oil palm and cocoa - and non-agriculture as induced by trade and exchange rate policy.

Table 5.8 gives the indirect effects of pricing policies on estate rubber and paddy based on relative prices prevailing during 1960-1988. Evidently, there is no change in the NRP created by these indirect effects. On one hand, they increase the producer price of estate rubber by the equilibrium nominal exchange rate. On the other hand, they would also raise the c.i.f. value, and in turn the import parity price, of rice in paddy equivalent by the same proportionate amount of the exchange rate. On the same token, the indirect effects also do not affect the relative producer price series of smallholder rubber, oil palm, estate cocoa and smallholder cocoa to paddy, as these are internationally traded. This is evident from Tables 5.9, 5.10, 5.11 and 5.12.

This same relationship, however, does not hold when the rubber prices adjusted for the indirect effects are compared to the adjusted non-agriculture price index. The NRP generated by the indirect effects of trade policies on the estate rubber is given in Column 12 of Table 5.8.

In almost every year from 1960 to 1988, the indirect effects of trade policies have been unfavourable to estate rubber. This is attributed to the fact that the prevailing over-valued exchange rate in Malaysia has a greater impact on the sector's product, which is entirely traded, than it has on the non-agriculture sector, which is only partially traded. In addition, the tariffs on non-agricultural products have tended to make investments in the rubber sector less attractive.

TABLE 5.8: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON ESTATE RUBBER AND PADDY BASED ON RELATIVE PRICES, 1960-1988

Year	Non Agri-cultural Pr Index Adj for Total Eff of Pricing Policies	Ratio of Equiv. Nom Exch. Rate or Nominal Exchange Rate {EX2}/[Ro]	Producer Pr of Est Rubber Price Less Marketing & Transport Costs & Taxes	Producer pr of Est Rubber Adj for Indirect Eff of Pricing Policies	Producer Price of Local (GMP or Paddy) Support for Local Paddy	Producer Price of Local Paddy Adj for Indirect Effects of Pricing Policies	Ratio of Producer Pr. of Est Rubber both Adj for Indirect Effect of Pr. Policies	Ratio of Producer Price of Estate Rubber to Producer Price of Loc Paddy	Protection Rate or Indirect eff of Pricing Policies on Est Rubber Prodn to Loc Paddy	Year	Ratio of Producer Pr of Est Rubber Adj for Indirect Effects of Pr. Policies	Ratio of Producer Price of Estate Rubber to Non Agri-cultural Pr. Index	Protection Rate or Indirect Eff of Trade Policies on Est Rubber Production to Non Agri-cultural Price Index	Ratio of Producer Pr of Local Paddy Adj for Indirect Eff of Pr Policies to Non Agri. Pr Index Adj for Tot Effects of Pricing Policies	Ratio of Producer Price of Local Paddy to Non Agri-cultural Price Index	Protection Rate or Indirect Eff of Trade Policies on Local Paddy Prodn to Non Agri Pr. Index
	[1]	[2]	[3]	[4]= [3]x[2]	[5]	[6]= [5]x[2]	[7]=[4]/[6]	[8]	[9]		[10]	[11]	[12]= [11-10]/[10]	[13]	[14]	[15] = [14-13]/[13]
1960	55.9	1.0588	2,050	2,171	265	281	7.74	7.74	0.00	1960	38.83	36.01	-0.07	5.02	4.66	-0.07
1961	56.2	1.0814	1,591	1,721	265	287	6.00	6.00	0.00	1961	30.61	27.85	-0.09	5.10	4.64	-0.09
1962	55.0	1.1059	1,522	1,683	265	293	5.74	5.74	0.00	1962	30.60	27.51	-0.10	5.33	4.79	-0.10
1963	55.5	1.1097	1,443	1,601	265	294	5.45	5.45	0.00	1963	28.85	25.91	-0.10	5.30	4.76	-0.10
1964	55.4	1.0896	1,356	1,477	265	289	5.12	5.12	0.00	1964	26.67	24.33	-0.09	5.21	4.76	-0.09
1965	55.2	1.0644	1,358	1,445	265	282	5.12	5.12	0.00	1965	26.19	23.97	-0.08	5.11	4.68	-0.08
1966	56.5	1.0741	1,316	1,414	265	285	4.97	4.97	0.00	1966	25.02	22.91	-0.08	5.04	4.61	-0.08
1967	57.5	1.1043	1,108	1,224	265	293	4.18	4.18	0.00	1967	21.28	18.9	-0.11	5.09	4.52	-0.11
1968	58.0	1.089	1,042	1,135	265	289	3.93	3.93	0.00	1968	19.56	17.58	-0.10	4.98	4.47	-0.10
1969	56.6	1.0056	1,345	1,353	265	266	5.08	5.08	0.00	1969	23.90	22.62	-0.05	4.71	4.46	-0.05
1970	59.4	1.084	1,053	1,141	265	287	3.97	3.97	0.00	1970	19.22	17.47	-0.09	4.84	4.4	-0.09
1971	61.2	1.1213	963	1,080	265	297	3.63	3.63	0.00	1971	17.64	15.71	-0.11	4.86	4.33	-0.11
1972	63.5	1.1539	826	953	265	306	3.12	3.12	0.00	1972	15.01	13.14	-0.12	4.82	4.22	-0.12
1973	64.9	1.0545	1,311	1,382	381	402	3.44	3.44	0.00	1973	21.30	19.72	-0.07	6.19	5.73	-0.07
1974	73.0	1.1004	1,507	1,658	464	511	3.25	3.25	0.00	1974	22.72	20.74	-0.09	6.99	6.39	-0.09
1975	76.6	1.1097	1,138	1,263	464	515	2.45	2.45	0.00	1975	16.49	14.98	-0.09	6.72	6.11	-0.09
1976	76.2	0.9831	1,466	1,441	464	456	3.16	3.16	0.00	1976	18.91	18.47	-0.02	5.99	5.84	-0.02
1977	79.9	1.0011	1,535	1,537	464	465	3.31	3.31	0.00	1977	19.23	18.56	-0.03	5.81	5.61	-0.04
1978	84.8	1.0355	1,582	1,638	464	480	3.41	3.41	0.00	1978	19.32	18.29	-0.05	5.67	5.37	-0.05
1979	88.1	0.9772	1,842	1,800	698	682	2.64	2.64	0.00	1979	20.43	20.15	-0.01	7.74	5.8	-0.25
1980	98.9	1.0487	2,104	2,206	698	732	3.01	3.01	0.00	1980	22.31	21.04	-0.06	7.40	5.3	-0.28
1981	111.2	1.1433	1,890	2,161	698	798	2.71	2.71	0.00	1981	19.43	17.42	-0.10	7.18	6.43	-0.10
1982	117.4	1.1739	1,613	1,894	661	776	2.44	2.44	0.00	1982	16.13	14.25	-0.12	6.61	6.16	-0.07
1983	121.3	1.1472	1,931	2,215	661	758	2.92	2.92	0.00	1983	18.26	16.34	-0.11	6.25	5.9	-0.06
1984	123.9	1.1035	2,045	2,257	661	729	3.09	3.09	0.00	1984	18.21	16.59	-0.09	5.89	5.36	-0.09
1985	125.5	1.0784	1,676	1,807	661	713	2.54	2.54	0.00	1985	14.40	13.3	-0.08	5.68	5.24	-0.08
1986	126.1	1.0569	1,854	1,959	661	699	2.80	2.80	0.00	1986	15.54	14.56	-0.06	5.54	5.19	-0.06
1987	124.7	0.9694	2,134	2,069	661	641	3.23	3.23	0.00	1987	16.59	16.59	0.00	5.14	5.13	-0.00
1988	128.9	1.0119	2,800	2,833	661	669	4.24	4.24	0.00	1988	21.98	21.31	-0.03	5.19	5.03	-0.03

Notes: 1. Data for 1960-1983 are from Jenkins and Lai, (1989), Table 10(A.1)

2. Data for 1984-1988 are estimated.

TABLE 5.9: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON SMALLHOLDER RUBBER AND PADDY BASED ON RELATIVE PRICES, 1960-1988

Year	Non Agri-cultural Pr Index Adj for Total Eff of Pricing Policies	Ratio of Equiv. Non Exc. Rate to Nominal Exchange Rate [EX2]/[E0]	Producer Pr of S/h Rubber Price Less Marketing & Transport Costs & Taxes	Producer pr of S/h Rubber Adj for Indirect Eff of Pricing Policies	Producer Price of Local Paddy (GMP or Local Support for Paddy)	Producer Price of Local Paddy Adj for Indirect Effects of Pricing Policies	Ratio of Producer S/h Rubber Price of Local Paddy both Adj for Pr. Policies	Ratio of Producer S/holder Price of Rubber to Producer on S/h Rubber Prodn to Loc Paddy	Protection Rate or Indirect eff of Pricing Policies	Year	Ratio of Producer Pr of S/h Rubber Adj for Indirect Effects of Pr. Policies to Non Agricultural Pr. Index	Ratio of Producer or Indirect Eff of Trade Policies on S/h Rubber Production to Non Agri-cultural Price Index	Protection Rate	Ratio of Producer Pr of Local Paddy Adj for Indirect Eff of Pr Policies to Non Agri. Pr Index Adj for Tot Effects of Pricing Policies	Ratio of Producer Price of Local Paddy to Non Agri-cultural Price Index	Protection Rate or Indirect Eff of Trade Policies of Local Paddy Prodn to Non Agri Pr. Index
	[1]	[2]	[3]	[4]= [3]x[2]	[5]	[6]= [5]x[2]	[7]=[4]/[6]	[8]	[9]		[10]	[11]	[12]= [11-10]/[10]	[13]	[14]	[15] = [14-13]/[13]
1960	55.9	1.0588	1,885	1,996	265	281	7.11	7.11	0.00	1960	35.70	33.11	-0.07	5.02	4.66	-0.07
1961	56.2	1.0814	1,426	1,542	265	287	5.38	5.38	0.00	1961	27.44	24.96	-0.09	5.10	4.64	-0.09
1962	55.0	1.1059	1,357	1,501	265	293	5.12	5.12	0.00	1962	27.29	24.53	-0.10	5.33	4.79	-0.10
1963	55.5	1.1097	1,276	1,416	265	294	4.82	4.82	0.00	1963	25.51	22.92	-0.10	5.30	4.76	-0.10
1964	55.4	1.0896	1,189	1,296	265	289	4.49	4.49	0.00	1964	23.39	21.34	-0.09	5.21	4.76	-0.09
1965	55.2	1.0644	1,191	1,268	265	282	4.49	4.49	0.00	1965	22.97	21.03	-0.08	5.11	4.68	-0.08
1966	56.5	1.0741	1,149	1,234	265	285	4.34	4.34	0.00	1966	21.84	20.00	-0.08	5.04	4.61	-0.08
1967	57.5	1.1043	937	1,035	265	293	3.54	3.54	0.00	1967	18.00	15.99	-0.11	5.09	4.52	-0.11
1968	58.0	1.089	872	950	265	289	3.29	3.29	0.00	1968	16.37	14.70	-0.10	4.98	4.47	-0.10
1969	56.6	1.0056	1,175	1,182	265	266	4.43	4.43	0.00	1969	20.88	19.75	-0.05	4.71	4.46	-0.05
1970	59.4	1.084	882	956	265	287	3.33	3.33	0.00	1970	16.10	14.63	-0.09	4.84	4.4	-0.09
1971	61.2	1.1213	790	886	265	297	2.98	2.98	-0.00	1971	14.47	12.89	-0.11	4.86	4.33	-0.11
1972	63.5	1.1539	652	752	265	306	2.46	2.46	0.00	1972	11.85	10.37	-0.12	4.82	4.22	-0.12
1973	64.9	1.0545	1,129	1,191	381	402	2.96	2.96	-0.00	1973	18.34	16.98	-0.07	6.19	5.73	-0.07
1974	73.0	1.1004	1,309	1,440	464	511	2.82	2.82	0.00	1974	19.73	18.02	-0.09	6.99	6.39	-0.09
1975	76.6	1.1097	1,035	1,149	464	515	2.23	2.23	0.00	1975	14.99	13.63	-0.09	6.72	6.11	-0.09
1976	76.2	0.9831	1,361	1,338	464	456	2.93	2.93	-0.00	1976	17.56	17.14	-0.02	5.99	5.84	-0.02
1977	79.9	1.0011	1,425	1,427	464	465	3.07	3.07	0.00	1977	17.85	17.23	-0.03	5.81	5.61	-0.04
1978	84.8	1.0355	1,466	1,518	464	480	3.16	3.16	0.00	1978	17.90	19.17	0.07	5.67	5.37	-0.05
1979	88.1	0.9772	1,722	1,683	698	682	2.47	2.47	0.00	1979	19.10	18.84	-0.01	7.74	5.8	-0.25
1980	98.9	1.0487	1,976	2,072	698	732	2.83	2.83	0.00	1980	20.95	19.76	-0.06	7.40	5.3	-0.28
1981	111.2	1.1433	1,750	2,001	698	798	2.51	2.51	0.00	1981	17.99	16.12	-0.10	7.18	6.43	-0.10
1982	117.4	1.1739	1,464	1,719	661	776	2.21	2.21	0.00	1982	14.64	12.93	-0.12	6.61	6.16	-0.07
1983	121.3	1.1472	1,777	2,039	661	758	2.69	2.69	0.00	1983	16.81	15.03	-0.11	6.25	5.9	-0.06
1984	123.9	1.1035	1,885	2,080	661	729	2.85	2.85	0.00	1984	16.79	15.29	-0.09	5.89	5.36	-0.09
1985	125.5	1.0784	1,515	1,634	661	713	2.29	2.29	0.00	1985	13.02	12.02	-0.08	5.68	5.24	-0.08
1986	126.1	1.0569	1,726	1,824	661	699	2.61	2.61	0.00	1986	14.47	13.56	-0.06	5.54	5.19	-0.06
1987	124.7	0.9694	1,975	1,915	661	641	2.99	2.99	0.00	1987	15.35	15.32	-0.00	5.14	5.13	-0.00
1988	128.9	1.0119	2,632	2,663	661	669	3.98	3.98	0.00	1988	20.66	20.03	-0.03	5.19	5.03	-0.03

Notes: 1. Data for 1960-1983 are from Jenkins and Lai, (1989), Table 10(A.1)

2. Data for 1984-1988 are estimated.

TABLE 5.10: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON PALM OIL AND PADDY BASED ON RELATIVE PRICES, 1960-1988

Year	Non Agri-cultural Equiv. Pr Index Adj for Total Eff of Pricing Policies [EX2]/[E0]	Ratio of Exc. Rate or Nominal Exchange Rate	Producer Price of Palm oil [FOB Price Less Marketing & Transport Costs & Taxes]	Producer Price of Palm Oil [GMP or Indirect Eff of Pricing Policies]	Producer Price of Local Paddy for Indirect Effects of Pricing Policies	Ratio of Producer Price of Palm Oil of Local Paddy both Adj for Indirect Effect of Pr. Policies	Ratio of Producer Price of Palm Oil to Producer Price of Loc Paddy	Protection Rate or Indirect eff of Pricing Policies on Palm Oil Prodn to Loc Paddy Prodn	Year	Ratio of Pr of Palm Oil Adj for Indirect Effects of Pr. Policies to Non Agricultural Index Adj for Tot Eff of Pr. Policies	Ratio of Producer Price of Palm Oil to Non Agri-cultural Pr. Index	Protection Rate or Indirect Eff of Trade Policies on Palm Oil Production to Non Agri-cultural Price Index	Ratio of Producer Price of Local Paddy Adj for Indirect Eff of Pr Policies to Non Agri. Pr Index Adj for Tot Effects of Pricing Policies	Ratio of Producer Price of Local Paddy to Non Agri-cultural Price Index	Protection Rate or Indirect Eff of Trade Policies of Local Paddy Prodn to Non Agri Pr. Index	
	[11]	[2]	[3]	[4]= [3]X[2]	[5]	[6]= [5]X[2]	[7]=[4]/[6]	[8]	[9]	[10]	[11]	[12]= [11-10]/[10]	[13]	[14]	[15] = [14-13]/[13]	
1960	55.9	1.0588	556	589	265	281	2.10	2.10	0.00	1960	10.53	9.76	-0.07	5.02	4.66	-0.07
1961	56.2	1.0814	579	626	265	287	2.18	2.18	0.00	1961	11.14	10.13	-0.09	5.10	4.64	-0.09
1962	55.0	1.1059	543	601	265	293	2.05	2.05	0.00	1962	10.92	9.81	-0.10	5.33	4.79	-0.10
1963	55.5	1.1097	528	586	265	294	1.99	1.99	0.00	1963	10.56	9.48	-0.10	5.30	4.76	-0.10
1964	55.4	1.0896	576	628	265	289	2.17	2.17	0.00	1964	11.33	10.34	-0.09	5.21	4.76	-0.09
1965	55.2	1.0644	674	717	265	282	2.54	2.54	0.00	1965	13.00	11.90	-0.08	5.11	4.68	-0.08
1966	56.5	1.0741	582	625	265	285	2.20	2.20	0.00	1966	11.06	10.13	-0.08	5.04	4.61	-0.08
1967	57.5	1.1043	548	605	265	293	2.07	2.07	0.00	1967	10.52	9.35	-0.11	5.09	4.52	-0.11
1968	58.0	1.089	383	417	265	289	1.45	1.45	0.00	1968	7.19	6.46	-0.10	4.98	4.47	-0.10
1969	56.6	1.0056	377	379	265	266	1.42	1.42	0.00	1969	6.70	6.34	-0.05	4.71	4.46	-0.05
1970	59.4	1.084	588	637	265	287	2.22	2.22	0.00	1970	10.73	9.75	-0.09	4.84	4.4	-0.09
1971	61.2	1.1213	593	665	265	297	2.24	2.24	0.00	1971	10.86	9.68	-0.11	4.86	4.33	-0.11
1972	63.5	1.1539	453	523	265	306	1.71	1.71	0.00	1972	8.23	7.20	-0.12	4.82	4.22	-0.12
1973	64.9	1.0545	498	525	381	402	1.31	1.31	0.00	1973	8.09	7.49	-0.07	6.19	5.73	-0.07
1974	73.0	1.1004	924	1,017	464	511	1.99	1.99	0.00	1974	13.93	12.72	-0.09	6.99	6.39	-0.09
1975	76.6	1.1097	865	960	464	515	1.86	1.86	0.00	1975	12.53	11.39	-0.09	6.72	6.11	-0.09
1976	76.2	0.9831	755	742	464	456	1.63	1.63	0.00	1976	9.74	9.51	-0.02	5.99	5.84	-0.02
1977	79.9	1.0011	995	996	464	465	2.14	2.14	0.00	1977	12.47	12.03	-0.03	5.81	5.61	-0.04
1978	84.8	1.0355	1,066	1,104	464	480	2.30	2.30	0.00	1978	13.02	13.94	0.07	5.67	5.37	-0.05
1979	88.1	0.9772	1,142	1,116	698	682	1.64	1.64	0.00	1979	12.67	12.49	-0.01	7.74	5.8	-0.25
1980	98.9	1.0487	1,038	1,089	698	732	1.49	1.49	0.00	1980	11.01	10.38	-0.06	7.40	5.3	-0.28
1981	111.2	1.1433	1,027	1,174	698	798	1.47	1.47	0.00	1981	10.56	9.46	-0.10	7.18	6.43	-0.10
1982	117.4	1.1739	900	1,057	661	776	1.36	1.36	0.00	1982	9.00	7.95	-0.12	6.61	6.16	-0.07
1983	121.3	1.1472	951	1,091	661	758	1.44	1.44	0.00	1983	8.99	8.05	-0.11	6.25	5.9	-0.06
1984	123.9	1.1035	1,193	1,316	661	729	1.80	1.80	0.00	1984	10.63	9.67	-0.09	5.89	5.36	-0.09
1985	125.5	1.0784	983	1,060	661	713	1.49	1.49	0.00	1985	8.45	7.80	-0.08	5.68	5.24	-0.08
1986	126.1	1.0569	607	642	661	699	0.92	0.92	0.00	1986	5.09	4.77	-0.06	5.54	5.19	-0.06
1987	124.7	0.9694	664	644	661	641	1.00	1.00	0.00	1987	5.16	5.15	-0.00	5.14	5.13	-0.00
1988	128.9	1.0119	886	897	661	669	1.34	1.34	0.00	1988	6.96	6.74	-0.03	5.19	5.03	-0.03

Notes: 1. Data for 1960-1983 are from Jenkins and Lai. (1989). Table 10(A.1)

2. Data for 1984-1988 are estimated.

TABLE 5.11: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON ESTATE COCOA AND PADDY BASED ON RELATIVE PRICES, 1960-1988

Year	Non Agri-cultural Pr Index Adj for Total Eff of Pricing Policies	Ratio of Equiv. Nom Rate to Market Exchange Rate [EX21/[Eo]	Producer Pr of Est Cocoa Price Less Marketing & Transport Costs & Taxes	Producer pr of Est Cocoa Adj for Indirect Eff of Pricing Policies	Producer Price of Local (GMP or Support for Local Paddy)	Producer Price of Local Paddy Adj for Indirect Effects of Pricing Policies	Ratio of Producer Pr. of Est Cocoa Local Paddy	Ratio of Producer Price of Estate Cocoa to Producer Price of Loc Paddy	Protection Rate or Indirect eff of Pricing Policies on Est Cocoa Prodn to Loc Paddy Prodn	Year	Ratio of Producer Pr of Est Cocoa Adj for Indirect Effects of Pr. Policies to Non Agricultural Pr. Index	Ratio of Producer Price of Estate Cocoa to Non Agri-cultural Pr. Index	Protection Rate or Indirect Eff of Trade Policies on Est Cocoa Production to Non Agri-cultural Price Index	Ratio of Producer Pr of Local Paddy Adj for Indirect Eff of Pr Policies to Non Agri. Pr Index Adj for Tot Effects of Pricing Policies	Ratio of Producer Price of Local Paddy to Non Agri-cultural Price Index	Protection Rate or Indirect Eff of Trade Policies of Local Paddy Prodn to Non Agri Pr. Index
	[1]	[2]	[3] [4]= [3]x[2]	[5] [6]= [5]x[2]	[7]=[4]/[6]	[8]	[9]			[10]	[11]	[12]= [11-10]/[10]	[13]	[14]	[15] = [14-13]/[13]	
1960	55.9	1.0588	1,463	1,549	265	281	5.52	5.52	0.00	1960	27.71	25.69	-0.07	5.02	4.66	-0.07
1961	56.2	1.0814	1,519	1,642	265	287	5.73	5.73	0.00	1961	29.22	26.58	-0.09	5.10	4.64	-0.09
1962	55.0	1.1059	1,324	1,465	265	293	5.00	5.00	0.00	1962	26.63	23.94	-0.10	5.33	4.79	-0.10
1963	55.5	1.1097	1,466	1,627	265	294	5.53	5.53	0.00	1963	29.31	26.33	-0.10	5.30	4.76	-0.10
1964	55.4	1.0896	1,490	1,623	265	289	5.62	5.62	0.00	1964	29.30	26.73	-0.09	5.21	4.76	-0.09
1965	55.2	1.0644	1,701	1,810	265	282	6.42	6.42	0.00	1965	32.79	30.02	-0.08	5.11	4.68	-0.08
1966	56.5	1.0741	1,703	1,829	265	285	6.43	6.43	0.00	1966	32.37	29.63	-0.08	5.04	4.61	-0.08
1967	57.5	1.1043	1,733	1,914	265	293	6.54	6.54	0.00	1967	33.29	29.58	-0.11	5.09	4.52	-0.11
1968	58.0	1.089	1,915	2,085	265	289	7.23	7.23	0.00	1968	35.96	32.29	-0.10	4.98	4.47	-0.10
1969	56.6	1.0056	1,546	1,554	265	266	5.83	5.83	0.00	1969	27.46	25.98	-0.05	4.71	4.46	-0.05
1970	59.4	1.084	2,263	2,453	265	287	8.54	8.54	0.00	1970	41.29	37.52	-0.09	4.84	4.4	-0.09
1971	61.2	1.1213	1,685	1,889	265	297	6.36	6.36	0.00	1971	30.87	27.49	-0.11	4.86	4.33	-0.11
1972	63.5	1.1539	1,860	2,146	265	306	7.02	7.02	0.00	1972	33.79	29.57	-0.12	4.82	4.22	-0.12
1973	64.9	1.0545	2,751	2,901	381	402	7.22	7.22	0.00	1973	44.70	41.37	-0.07	6.19	5.73	-0.07
1974	73.0	1.1004	3,210	3,533	464	511	6.92	6.92	-0.00	1974	48.39	44.19	-0.09	6.99	6.39	-0.09
1975	76.6	1.1097	3,268	3,627	464	515	7.04	7.04	0.00	1975	47.35	43.04	-0.09	6.72	6.11	-0.09
1976	76.2	0.9831	4,349	4,275	464	456	9.37	9.37	0.00	1976	56.11	54.77	-0.02	5.99	5.84	-0.02
1977	79.9	1.0011	8,003	8,012	464	465	17.25	17.25	0.00	1977	100.28	96.78	-0.03	5.81	5.61	-0.04
1978	84.8	1.0355	7,274	7,532	464	480	15.68	15.68	0.00	1978	88.82	95.11	0.07	5.67	5.37	-0.05
1979	88.1	0.9772	6,689	6,537	698	682	9.58	9.58	0.00	1979	74.20	73.19	-0.01	7.74	5.8	-0.25
1980	98.9	1.0487	5,755	6,035	698	732	8.25	8.25	0.00	1980	61.03	57.55	-0.06	7.40	5.3	-0.28
1981	111.2	1.1433	4,334	4,955	698	798	6.21	6.21	0.00	1981	44.55	39.92	-0.10	7.18	6.43	-0.10
1982	117.4	1.1739	3,694	4,336	661	776	5.59	5.59	-0.00	1982	36.93	32.63	-0.12	6.61	6.16	-0.07
1983	121.3	1.1472	3,945	4,526	661	758	5.97	5.97	0.00	1983	37.31	33.38	-0.11	6.25	5.9	-0.06
1984	123.9	1.1035	5,053	5,576	661	729	7.64	7.64	0.00	1984	45.00	40.98	-0.09	5.89	5.36	-0.09
1985	125.5	1.0784	4,603	4,963	661	713	6.96	6.96	-0.00	1985	39.55	36.52	-0.08	5.68	5.24	-0.08
1986	126.1	1.0569	4,642	4,906	661	699	7.02	7.02	0.00	1986	38.91	36.48	-0.06	5.54	5.19	-0.06
1987	124.7	0.9694	4,302	4,170	661	641	6.51	6.51	0.00	1987	33.44	33.36	-0.00	5.14	5.13	-0.00
1988	128.9	1.0119	3,690	3,734	661	669	5.58	5.58	0.00	1988	28.97	28.08	-0.03	5.19	5.03	-0.03

Notes: 1. Data for 1960-1983 are from Jenkins and Lai, (1989), Table 10(A.1)

2. Data for 1984-1988 and for Cocoa are estimated.

TABLE 5.12: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON SMALLHOLDER COCOA AND PADDY BASED ON RELATIVE PRICES, 1960-1988

Year	Non Agri-cultural Pr Index Adj for Total of Pricing Policies	Ratio of cultural Equiv. Nom Ex. Rate or Nominal Exchange Rate [EX2]/[E0]	Producer Pr of Cocoa Price Less Marketing & Transport Costs & Taxes	Producer pr of S/h Cocoa Adj for Indirect Eff of Pricing Policies	Producer Price of Local (GMP or Pr for Effects of Pricing Policies)	Producer Price of Local Paddy Adj for Indirect Effects of Pricing Policies	Ratio of Producer of S/h Cocoa both Adj for Pr. Policies	Ratio of Producer Price of S/holder Cocoa to Producer Price of Loc Paddy	Protection Rate or Indirect eff of Pricing Policies on S/h Cocoa Prodn to Loc Paddy Prodn	Year	Ratio of Producer Pr of S/h Cocoa Adj for Indirect Effects of Pr. Policies to Non Agricultural Pr. Index Adj for Tot Eff of Pr. Policies	Ratio of Producer Price of S/holder Cocoa to Non Agri-cultural Pr. Index	Protection Rate or Indirect Eff of Trade Policies on S/h Cocoa Production to Non Agri-cultural Price Index	Ratio of Producer Pr of Local Paddy Adj for Indirect Eff of Pr Policies to Non Agri. Pr Index Adj for Tot Effects of Pricing Policies	Ratio of Producer Price of Local Paddy to Non Agri-cultural Price Index	Protection Rate or Indirect Eff of Trade Policies of Local Paddy Prodn to Non Agri Pr. Index
	[1]	[2]	[3]	[4]= [3]x[2]	[5]	[6]= [5]x[2]	[7]=[4]/[6]	[8]	[9]		[10]	[11]	[12]= [11-10]/[10]	[13]	[14]	[15] = [14-13]/[13]
1960	55.9	1.0588	1,457	1,543	265	281	5.50	5.50	0.00	1960	27.60	25.60	-0.07	5.02	4.66	-0.07
1961	56.2	1.0814	1,513	1,637	265	287	5.71	5.71	-0.00	1961	29.12	26.49	-0.09	5.10	4.64	-0.09
1962	55.0	1.1059	1,319	1,459	265	293	4.98	4.98	0.00	1962	26.52	23.84	-0.10	5.33	4.79	-0.10
1963	55.5	1.1097	1,460	1,621	265	294	5.51	5.51	0.00	1963	29.20	26.23	-0.10	5.30	4.76	-0.10
1964	55.4	1.0896	1,484	1,617	265	289	5.60	5.60	-0.00	1964	29.19	26.63	-0.09	5.21	4.76	-0.09
1965	55.2	1.0644	1,695	1,804	265	282	6.40	6.40	0.00	1965	32.69	29.93	-0.08	5.11	4.68	-0.08
1966	56.5	1.0741	1,697	1,823	265	285	6.40	6.40	0.00	1966	32.27	29.54	-0.08	5.04	4.61	-0.08
1967	57.5	1.1043	1,728	1,908	265	293	6.52	6.52	-0.00	1967	33.18	29.48	-0.11	5.09	4.52	-0.11
1968	58.0	1.089	1,909	2,079	265	289	7.20	7.20	0.00	1968	35.85	32.20	-0.10	4.98	4.47	-0.10
1969	56.6	1.0056	1,540	1,548	265	266	5.81	5.81	0.00	1969	27.36	25.88	-0.05	4.71	4.46	-0.05
1970	59.4	1.084	2,257	2,446	265	287	8.52	8.52	0.00	1970	41.19	37.43	-0.09	4.84	4.4	-0.09
1971	61.2	1.1213	1,679	1,883	265	297	6.34	6.34	0.00	1971	30.76	27.39	-0.11	4.86	4.33	-0.11
1972	63.5	1.1539	1,853	2,139	265	306	6.99	6.99	0.00	1972	33.68	29.47	-0.12	4.82	4.22	-0.12
1973	64.9	1.0545	2,744	2,894	381	402	7.20	7.20	-0.00	1973	44.59	41.26	-0.07	6.19	5.73	-0.07
1974	73.0	1.1004	3,203	3,524	464	511	6.90	6.90	0.00	1974	48.27	44.08	-0.09	6.99	6.39	-0.09
1975	76.6	1.1097	3,260	3,618	464	515	7.03	7.03	0.00	1975	47.23	42.93	-0.09	6.72	6.11	-0.09
1976	76.2	0.9831	4,340	4,267	464	456	9.35	9.35	0.00	1976	56.00	54.66	-0.02	5.99	5.84	-0.02
1977	79.9	1.0011	7,995	8,003	464	465	17.23	17.23	0.00	1977	100.17	96.67	-0.03	5.81	5.61	-0.04
1978	84.8	1.0355	7,264	7,522	464	480	15.66	15.66	0.00	1978	88.71	94.98	0.07	5.67	5.37	-0.05
1979	88.1	0.9772	6,680	6,527	698	682	9.57	9.57	0.00	1979	74.09	73.08	-0.01	7.74	5.8	-0.25
1980	98.9	1.0487	5,745	6,025	698	732	8.23	8.23	0.00	1980	60.92	57.45	-0.06	7.40	5.3	-0.28
1981	111.2	1.1433	4,322	4,942	698	798	6.19	6.19	0.00	1981	44.44	39.82	-0.10	7.18	6.43	-0.10
1982	117.4	1.1739	3,682	4,322	661	776	5.57	5.57	0.00	1982	36.81	32.52	-0.12	6.61	6.16	-0.07
1983	121.3	1.1472	3,933	4,511	661	758	5.95	5.95	0.00	1983	37.19	33.27	-0.11	6.25	5.9	-0.06
1984	123.9	1.1035	5,040	5,562	661	729	7.62	7.62	0.00	1984	44.89	40.87	-0.09	5.89	5.36	-0.09
1985	125.5	1.0784	4,590	4,950	661	713	6.94	6.94	0.00	1985	39.44	36.42	-0.08	5.68	5.24	-0.08
1986	126.1	1.0569	4,629	4,893	661	699	7.00	7.00	0.00	1986	38.80	36.37	-0.06	5.54	5.19	-0.06
1987	124.7	0.9694	4,288	4,157	661	641	6.49	6.49	0.00	1987	33.34	33.26	-0.00	5.14	5.13	-0.00
1988	128.9	1.0119	3,677	3,720	661	669	5.56	5.56	-0.00	1988	28.86	27.98	-0.03	5.19	5.03	-0.03

Notes: 1. Data for 1960-1983 are from Jenkins and Lai. (1989). Table 10(A.1)

2. Data for 1984-1988 and for Cocoa are estimated.

The indirect effects of trade and exchange rate policies have also tended to reduce the NRP provided to paddy production relative to the non-agriculture sector. The trend and extent of the NRP is evidently identical to that of estate rubber. Essentially, these indirect effects would also alter the relative prices of oil palm and cocoa in the same way as they do estate rubber, as they are tradeable commodities. Accordingly, the incremental rates of protection provided by the indirect effects of trade policies are identical in every case.

#### 5.4 Total Effects of Pricing Policies on Relative Prices

In this section the prices of rubber, oil palm, cocoa and paddy, as well as the non-agricultural price index, are adjusted for the total, that is, direct plus indirect, effects of pricing policies. For this purpose the price series for the individual crops in the absence of any pricing policies are initially constructed. For each of the export crops, the price series is given by its border price. For paddy, it represents the c.i.f price of imported rice in paddy equivalent at the farm level. These price series are then adjusted by the ratio of equilibrium exchange rate to nominal exchange rate.

The ratios of adjusted prices to unadjusted prices of rice for 1960-1988 are presented in Column 7 of Table 5.13. For estate rubber the ratios are given in Column 8. The differences between these two series divided by the adjusted price of estate rubber are shown in Column 9.

The series in Column 9 have been negative for all but five years. Between 1960 and 1966 the protection rate given to estate rubber as compared to local paddy ranged from -0.07 to -0.31. Over 1970-1973 it varied between -0.08 and -0.24. Since 1976 the rate of protection of estate rubber relative to paddy moved up steeply, from -0.54 to -0.67 in 1983 and -0.76 in 1987. From this result it can be inferred that estate rubber has been heavily discriminated against as compared to paddy production.



TABLE 5.13: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON ESTATE RUBBER AND PADDY BASED ON RELATIVE PRICES, 1960-1988

Year	Non Agri Pr Index Adj for Total Effects of Pricing Policies	Ratio of Equil Nom Exc Rate [Es=0.5; Nd=1.5]	Border Pr of Estate Rubber (POB Price less Marketing & Costs)	Border Pr of Estate Rubber Adj Effects for Pricing Policies	CIF Price of Imported Rice in Paddy Equiv at Farm Level	CIF Price of Imported Rice in Paddy Equiv Adj for Tot Eff of Pricing Policies	Ratio of Border Pr of Est Rubber to CIF Pr of Imported Rice in Paddy Equiv Adj for Tot Eff of P.P	Ratio of Producer Price of Est Rubber to CIF Price of Imported Rice in Paddy Equiv at Farm Level	Protection Rate or Tot Effects of Pricing Policies on Est Rubber Prodn to Local paddy Prodn	Ratio of Border Price of Estate Rubber Adj for Indir Eff of Pricing Policies to Non Agri P.I Adj for Tot Eff of Pr Policies	Ratio of Producer Proce of Estate Rubber to Non Agri- cultural Pr Index	Protection Rate or Total Eff of Pricing Policies on Estate Rubber Production	Ratio of CIF Price of Imported Rice in Paddy Equivalent Adj. effect of Pricing Policies to Non Agri P.I Adj for Total Eff of P.P	Ratio of Producer Price of Local Paddy to Non Agri- cultural Pr Index	Protection Rate or Total Effects of Pricing Policies on Local Paddy Production
	[1]	[2]	[3]	[4]= [3]x[2]	[5]	[6]= [5]x[2]	[7]= [4]/[6]	[8]	[9]=[8]- [7]/[7]	[10]= [4]/[11]	[11]	[12]=[11]- [10]/[10]	[13]= [6]/[11]	[14]	[15]=[14]- [13]/[13]
1960	55.9	1.0588	2,302	2,437	204	216	11.28	7.74	-0.31	43.6	36.00	-0.17	3.86	4.65	0.20
1961	56.2	1.0813	1,748	1,890	217	235	8.05	6.00	-0.25	33.6	27.85	-0.17	4.18	4.64	0.11
1962	55.0	1.1045	1,653	1,826	239	264	6.93	5.74	-0.17	33.2	27.51	-0.17	4.79	4.79	-0.00
1963	55.5	1.1081	1,556	1,724	231	256	6.73	5.45	-0.19	31.1	25.92	-0.17	4.61	4.76	0.03
1964	55.4	1.0887	1,460	1,590	214	233	6.82	5.12	-0.25	28.7	24.33	-0.15	4.21	4.76	0.13
1965	55.2	1.0650	1,469	1,564	211	225	6.96	5.12	-0.26	28.3	23.98	-0.15	4.07	4.68	0.15
1966	56.5	1.0742	1,410	1,515	237	254	5.96	4.97	-0.17	26.8	22.90	-0.15	4.50	4.61	0.02
1967	57.5	1.1042	1,176	1,298	292	323	4.02	4.18	0.04	22.6	18.91	-0.16	5.61	4.52	-0.19
1968	58.0	1.0896	1,109	1,208	325	354	3.42	3.93	0.15	20.8	17.57	-0.16	6.10	4.47	-0.27
1969	56.6	1.0059	1,454	1,462	314	316	4.63	5.08	0.10	25.8	22.61	-0.12	5.58	4.45	-0.20
1970	59.4	1.0832	1,130	1,224	257	278	4.40	3.97	-0.10	20.6	17.46	-0.15	4.68	4.39	-0.06
1971	61.2	1.1194	1,021	1,143	215	240	4.76	3.63	-0.24	18.7	15.71	-0.16	3.93	4.32	0.10
1972	63.5	1.1490	884	1,015	221	254	4.00	3.12	-0.22	16.0	13.13	-0.18	3.99	4.21	0.06
1973	64.9	1.0550	1,475	1,557	395	416	3.74	3.44	-0.08	24.0	19.71	-0.18	6.41	5.73	-0.11
1974	73.0	1.0975	1,774	1,947	594	652	2.99	3.25	0.09	26.7	20.74	-0.22	8.93	6.39	-0.28
1975	76.6	1.1066	1,343	1,486	561	621	2.39	2.45	0.02	19.4	14.99	-0.23	8.11	6.11	-0.25
1976	76.2	0.9826	1,855	1,823	270	265	6.88	3.16	-0.54	23.9	18.46	-0.23	3.48	5.84	0.68
1977	79.9	1.0011	1,997	1,999	253	254	7.88	3.31	-0.58	25.0	18.56	-0.26	3.17	5.61	0.77
1978	84.8	1.0357	2,156	2,232	366	379	5.89	3.41	-0.42	26.3	18.29	-0.31	4.47	5.37	0.20
1979	88.1	0.9766	2,641	2,579	410	401	6.44	3.48	-0.46	29.3	20.15	-0.31	4.55	5.80	0.28
1980	98.9	1.0486	2,944	3,087	412	432	7.15	3.97	-0.45	31.2	21.04	-0.33	4.36	5.30	0.21
1981	111.2	1.1373	2,397	2,726	523	595	4.58	2.71	-0.41	24.5	17.41	-0.29	5.35	6.43	0.20
1982	117.4	1.1646	1,830	2,132	384	447	4.77	2.31	-0.52	18.2	14.25	-0.22	3.81	6.17	0.62
1983	121.3	1.1411	2,244	2,560	268	306	8.36	2.77	-0.67	21.1	16.34	-0.23	2.53	5.91	1.34
1984	123.9	1.1011	2,204	2,427	244	269	9.02	3.09	-0.66	19.6	16.58	-0.15	2.17	5.36	1.47
1985	125.5	1.0777	1,813	1,954	223	241	8.12	2.54	-0.69	15.6	13.30	-0.15	1.92	5.24	1.73
1986	126.1	1.0568	1,994	2,107	234	247	8.54	2.80	-0.67	16.7	14.57	-0.13	1.96	5.19	1.65
1987	124.7	0.9682	2,309	2,236	175	169	13.21	3.23	-0.76	17.9	16.58	-0.08	1.36	5.13	2.78
1988	128.9	1.0121	3,154	3,192	291	294	10.85	4.24	-0.61	24.8	21.31	-0.14	2.28	5.03	1.20

Notes: 1. Data for 1960-1983 are from Jenkins and Lai. (1989). Table 11(1)

2. Data for 1984-1988 are estimated.

A similar analysis carried out for estate rubber in relation to non-agriculture produces a set of figures as indicated in Column 12 of Table 5.13. Again, the protection rate accorded to estate rubber relative to non-agriculture has been found to be consistently negative over the 1960-1988 period. The protection rate has tended to be relatively low during the 1960s, ranging between -0.12 and -0.17. Later on it became increasingly greater, from -0.22 in 1975 to -0.33 in 1980 before settling at -0.14 in 1988. Thus, the implication of the total effects of pricing policies has been to induce a continuous and increasingly negative rate of protection of estate rubber when compared with non-agriculture over 1960-1988.

Column 15 of Table 5.13 clearly indicates that paddy has been accorded a fairly high positive rate of protection over most parts of 1960-1988. A negative protection rate of paddy has occurred only during 1967-1970 and 1973-1975, the time when the world price of rice has been high. In recent years the extent of protection given the local paddy has reached rates well in excess of the ratio of the c.i.f. price of imported rice to the adjusted non-agriculture price index.

In Table 5.14 the same analysis is made for the relative prices of smallholder rubber. The trend of protection rates created by both direct and indirect effects of exchange rate policies in this case is generally similar to that of estate rubber. Nonetheless, the negative rates of protection appear to be less severe than those for the estate rubber.

The total effects of pricing policies are also adverse to oil palm relative to paddy. As shown in Table 5.15 the negative rates of protection have been more than -20 percent for twenty years of the observation period, and have averaged -52 percent since 1976. Column 12 of the table also shows that oil palm has been continuously disfavoured relative to the non-agriculture sector since 1960, with the protection rate ranging from -0.13 to -0.26. No distinctive trend is evident.

TABLE 5.14: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON SMALLHOLDER RUBBER BASED ON RELATIVE PRICES, 1960-1988

Year	Non Agri. Price Index Adj for Total Effects of Pricing Policies	Ratio of Equilibrium Nominal Exch. Rate to Nominal (Market) Exch. Rate [Es=0.5;Nd=1.5]	Border Price of S/holder Rubber (FOB price less Marketing & Transport Costs (M\$/tonne)	Border Price of S/holder Rubber Adj for Total Effects of Pr. Policies (M\$/tonne)	CIF Price of Imported Rice in Paddy Equiv. at Farm Level (M\$/tonne)	CIF Price of Imported Rice in Paddy Equivalent Adj for Total Effects of Pricing Policies (M\$/tonne)	Ratio of Border Price of S/holder Rubber to CIF Price of Imported Rice in Paddy Equivalent both Adj for Total Effects of P.P	Ratio of Producer Price of S/holder Rubber to Producer Price of Local Paddy	Protection Rate or Tot Effects of Pricing Policies on S/holder Rubber Production to Paddy Prod.	Ratio of Border Price of S/holder Rubber Adj for Exchange Rate to Index Adj for Dire & Indirect Trade Policies	Ratio of Producer Price of S/holder Rubber to Non Agri- cultural P. Index	Protection Rate or Total Effects of Pricing Policies on S/holder Rubber Prod
	[1]	[2]	[3]	[14]= [3]x[2]	[5]	[6]= [5]x[2]	[7]= [4]/[6]	[8]	[9]=([8]- [7])/[7]	[10]= [4]/[11]	[11]	[12]=([11]- [10])/[10]
1960	55.9	1.0588	2,236	2,367	204	216	10.96	7.11	-0.35	42.35	33.11	-0.22
1961	56.2	1.0813	1,682	1,819	217	235	7.75	5.38	-0.31	32.36	24.96	-0.23
1962	55.0	1.1045	1,587	1,753	239	264	6.65	5.12	-0.23	31.87	24.53	-0.23
1963	55.5	1.1081	1,488	1,649	231	256	6.44	4.82	-0.25	29.71	22.92	-0.23
1964	55.4	1.0887	1,392	1,516	214	233	6.50	4.49	-0.31	27.36	21.34	-0.22
1965	55.2	1.0650	1,401	1,492	211	225	6.64	4.49	-0.32	27.03	21.03	-0.22
1966	56.5	1.0742	1,342	1,442	237	254	5.67	4.34	-0.24	25.52	20.00	-0.22
1967	57.5	1.1042	1,104	1,219	292	323	3.78	3.54	-0.06	21.20	15.99	-0.25
1968	58.0	1.0896	1,037	1,130	325	354	3.19	3.29	0.03	19.48	14.70	-0.25
1969	56.6	1.0059	1,383	1,391	314	316	4.40	4.43	0.01	24.58	19.75	-0.20
1970	59.4	1.0832	1,058	1,146	257	278	4.12	3.33	-0.19	19.29	14.63	-0.24
1971	61.2	1.1194	948	1,061	215	240	4.42	2.98	-0.33	17.34	12.89	-0.26
1972	63.5	1.1490	808	928	221	254	3.66	2.46	-0.33	14.62	10.37	-0.29
1973	64.9	1.0550	1,392	1,469	395	416	3.53	2.96	-0.16	22.63	16.98	-0.25
1974	73.0	1.0975	1,676	1,839	594	652	2.82	2.82	-0.00	25.20	18.02	-0.28
1975	76.6	1.1066	1,240	1,372	561	621	2.21	2.23	0.01	17.91	13.63	-0.24
1976	76.2	0.9826	1,750	1,720	270	265	6.49	2.93	-0.55	22.57	17.14	-0.24
1977	79.9	1.0011	1,887	1,889	253	254	7.45	3.07	-0.59	23.64	17.23	-0.27
1978	84.8	1.0357	2,040	2,113	366	379	5.58	3.16	-0.43	24.91	16.95	-0.32
1979	88.1	0.9766	2,521	2,462	410	401	6.15	3.25	-0.47	27.95	18.84	-0.33
1980	98.9	1.0486	2,816	2,953	412	432	6.84	3.73	-0.46	29.86	19.76	-0.34
1981	111.2	1.1373	2,256	2,566	523	595	4.31	2.51	-0.42	23.07	16.12	-0.30
1982	117.4	1.1646	1,681	1,958	384	447	4.38	2.10	-0.52	16.68	12.93	-0.22
1983	121.3	1.1411	2,089	2,384	268	306	7.78	2.55	-0.67	19.65	15.03	-0.23
1984	123.9	1.1011	2,043	2,250	244	269	8.37	2.85	-0.66	18.16	15.29	-0.16
1985	125.5	1.0777	1,653	1,781	223	241	7.40	2.29	-0.69	14.19	12.02	-0.15
1986	126.1	1.0568	1,832	1,936	234	247	7.85	2.61	-0.67	15.35	13.56	-0.12
1987	124.7	0.9682	2,146	2,078	175	169	12.28	2.99	-0.76	16.66	15.32	-0.08
1988	128.9	1.0121	2,986	3,022	291	294	10.28	3.98	-0.61	23.45	20.03	-0.15

Notes: 1. Data for 1960-1983 are from Jenkins and Lai, (1989). Table 11(2)

2. Data for 1984-1988 are estimated.

TABLE 5.15: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON PALM OIL BASED ON RELATIVE PRICES, 1960-1988

Year	Non Agri. Price Index Adj for Total Effects of Pricing Policies	Ratio of Equilibrium Nominal Exch. Rate to Market Rate (Es=0.5;Nd=1.5)	Border Price of Palm Oil (FOB price less Mktg & Transport Costs) (M\$/tonne)	Border Price of Palm Oil Adj for Total Effects of Pricing Policies (M\$/tonne)	CIP Price of Imported Rice in Paddy Equiv. at Farm Level (M\$/tonne)	CIP Price of Imported Rice in Paddy Equivalent Adj for Total Effects of Pricing Policies (M\$/tonne)	Ratio of Border Price of Palm Oil to Price of Imported Rice in Paddy Equivalent both Adj for Total Effects of Pricing Policies	Ratio of Producer Price of Palm Oil to Producer Price of Local Paddy	Protection Rate or Total Effects of Pricing Policies on Palm Oil Production to Local Paddy Production	Ratio of Border Pr of Palm Oil Adj for Pr. Index Tot Eff of P.P	Ratio of Producer Price of Palm Oil to Non Agri Price Index	Protection Rate or Total Effects of Pricing Policies on Palm Oil Production
	[1]	[2]	[3]	[4]= [3]x[2]	[5]	[6]= [5]x[2]	[7]= [4]/[6]	[8]	[9]=([8]-[7])/[7]	[10]= [4]/[1]	[11]	[12]=([11]-[10])/[10]
1960	55.9	1.0588	603	638	204	216	2.96	2.10	-0.29	11.42	9.76	-0.15
1961	56.2	1.0813	627	678	217	235	2.89	2.18	-0.24	12.06	10.13	-0.16
1962	55.0	1.1045	588	649	239	264	2.46	2.05	-0.17	11.81	9.81	-0.17
1963	55.5	1.1081	572	634	231	256	2.48	1.99	-0.20	11.42	9.48	-0.17
1964	55.4	1.0887	625	680	214	233	2.92	2.17	-0.26	12.28	10.34	-0.16
1965	55.2	1.0650	730	777	211	225	3.46	2.54	-0.27	14.08	11.90	-0.16
1966	56.5	1.0742	631	678	237	254	2.66	2.20	-0.18	12.00	10.13	-0.16
1967	57.5	1.1042	594	656	292	323	2.03	2.07	0.02	11.41	9.35	-0.18
1968	58.0	1.0896	416	453	325	354	1.28	1.45	0.13	7.82	6.46	-0.17
1969	56.6	1.0059	409	411	314	316	1.30	1.42	0.09	7.27	6.34	-0.13
1970	59.4	1.0832	638	691	257	278	2.48	2.22	-0.11	11.63	9.75	-0.16
1971	61.2	1.1194	643	720	215	240	3.00	2.24	-0.25	11.76	9.68	-0.18
1972	63.5	1.1490	499	573	221	254	2.26	1.71	-0.24	9.03	7.20	-0.20
1973	64.9	1.0550	562	593	395	416	1.42	1.31	-0.08	9.14	7.49	-0.18
1974	73.0	1.0975	1177	1292	594	652	1.98	1.99	0.00	17.70	12.72	-0.28
1975	76.6	1.1066	1109	1227	561	621	1.98	1.86	-0.06	16.02	11.39	-0.29
1976	76.2	0.9826	885	870	270	265	3.28	1.63	-0.50	11.41	9.51	-0.17
1977	79.9	1.0011	1262	1263	253	254	4.98	2.14	-0.57	15.81	12.03	-0.24
1978	84.8	1.0357	1203	1246	366	379	3.29	2.30	-0.30	14.69	12.33	-0.16
1979	88.1	0.9766	1267	1237	410	401	3.09	2.15	-0.30	14.05	12.49	-0.11
1980	98.9	1.0486	1117	1171	412	432	2.71	1.96	-0.28	11.84	10.38	-0.12
1981	111.2	1.1373	1092	1242	523	595	2.09	1.47	-0.29	11.17	9.46	-0.15
1982	117.4	1.1646	932	1085	384	447	2.43	1.29	-0.47	9.25	7.95	-0.14
1983	121.3	1.1411	973	1110	268	306	3.62	1.36	-0.62	9.15	8.05	-0.12
1984	123.9	1.1011	1480	1630	244	269	6.06	1.80	-0.70	13.15	9.67	-0.26
1985	125.5	1.0777	1182	1274	223	241	5.29	1.48	-0.72	10.15	7.80	-0.23
1986	126.1	1.0568	652	689	234	247	2.79	0.92	-0.67	5.46	4.77	-0.13
1987	124.7	0.9682	758	734	175	169	4.34	1.00	-0.77	5.89	5.15	-0.12
1988	128.9	1.0121	1043	1056	291	294	3.59	1.34	-0.63	8.19	6.74	-0.18

Notes: 1. Data for 1960-1983 are from Jenkins and Lai. (1989). Table 11(3)  
 2. Data for 1984-1988 are estimated

The situation with respect to estate cocoa does not differ significantly from that of rubber and oil palm, as revealed by Table 5.16. The estate cocoa sector has been consistently discriminated against as compared to both paddy and non-agriculture over the entire period of 1960-1988. The rate of protection has tended to worsen over time. In the 1960s the protection rate ranged between -0.03 and -0.23. During the 1970s it ranged between -0.17 and 0.28. However, the 1980s have seen remarkably high negative values of protection rates, which range from -0.22 to -0.74. In relation to non-agriculture, Column 12 of Table 5.16 reveals that despite the generally negative rates of protection, the extent of discrimination against the estate cocoa sector appears to be comparatively low compared to say, estate rubber or oil palm.

The smallholder cocoa sector has also been discriminated against when compared with paddy. This can be observed in Column 9 of Table 5.17. The extent of discrimination in every year of the 1960-1988 period has tended to be identical to that experienced by the estate cocoa sector. The rate of protection accorded to smallholder cocoa has worsened substantially since 1960. In the 1960s it ranged between 0.10 and 0.23. In the 1970s the rate fluctuated between -0.03 and 0.28. From 1981 the protection rate deteriorated, from -0.25 to -0.74 in 1987.

### 5.5 Effective Rate of Protection

The examination of the impact of pricing policies up to this point has been carried out in terms of relative prices of agricultural and non-agricultural products. This section will now examine the implication of trade and exchange rate policies on value added of the various products.

In comparing the adjusted and unadjusted relative value added of estate rubber to that of paddy as given in Table 5.18 the indirect effects cancel out and do not change their ratios. This is due to the fact that both rubber and paddy are traded goods. However there is an indirect effect when the ratio of value added

TABLE 5.16: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON ESTATE COCOA AND PADDY BASED ON RELATIVE PRICE, 1960-1988

Year	Non Agri Price Index	Ratio of Equil Nom Exch Rate to Es=0.5;Nd=1.5	Border Pr of Estate (FOB Marketing & Transports Costs)	Pr of Cocoa less	Border Pr of Estate Adj for Tot Effects of Pricing Policies	CIF Pr of Imported Rice in Paddy Equiv at Farm Level	CIF Price of Imported Rice in Paddy Adj for Total Effects of Pricing Policies	Ratio of Pr of Estate to CIF Pr of Imported Rice both Adj for Effects of Pricing Policies	Ratio of Producer Pr of Estate Cocoa to CIF Rice in Paddy Equiv at Farm Level	Protection Rate or Total Effects of Pricing Policies on Estate Cocoa Prodn to Local Paddy Prodn	Ratio of Border Pr of Estate Cocoa to Non Agri Price Index Adj for Total Effects of P.P	Ratio of Producer Price of Estate Cocoa to Non Agri Pr Index	Protection Rate or Total Effects of Pricing Policies on Estate Cocoa Production	Ratio of CIF Pr of Imported Rice in Paddy Equiv Adj for Indir Eff of Pr Index	Ratio of Producer Price of Local Paddy to Non Agri Price Index	Protection Rate or Total Effects of Pricing Policies on Local Paddy Production
	[1]	[2]	[3]	[4]= [3]X[2]	[5]	[6]= [5]X[2]	[7]= [4]/[6]	[8]	[9]=[8] [7]/[7]	[10]	[11]	[12]=[11]- [10]/[10]	[13]	[14]	[15]=[14]- [13]/[13]	
1960	55.90	1.0588	1462.72	1548.73	204	216	7.17	5.52	-0.23	27.71	25.69	-0.07	3.86	4.65	0.20	
1961	56.20	1.0814	1518.74	1642.37	217	235	7.00	5.73	-0.18	29.22	26.58	-0.09	4.18	4.64	0.11	
1962	55.00	1.1059	1324.33	1464.58	239	264	5.54	5.00	-0.10	26.63	23.94	-0.10	4.81	4.79	-0.00	
1963	55.50	1.1097	1465.80	1626.60	231	256	6.35	5.53	-0.13	29.31	26.33	-0.10	4.62	4.76	0.03	
1964	55.40	1.0896	1489.74	1623.22	214	233	6.96	5.62	-0.19	29.30	26.73	-0.09	4.21	4.76	0.13	
1965	55.20	1.0644	1700.50	1810.02	211	225	8.06	6.42	-0.20	32.79	30.02	-0.08	4.07	4.68	0.15	
1966	56.50	1.0741	1702.76	1828.93	237	255	7.18	6.43	-0.11	32.37	29.63	-0.08	4.51	4.61	0.02	
1967	57.50	1.1043	1733.34	1914.12	292	322	5.94	6.54	0.10	33.29	29.58	-0.11	5.61	4.52	-0.19	
1968	58.00	1.0890	1914.97	2085.41	325	354	5.89	7.23	0.23	35.96	32.29	-0.10	6.10	4.47	-0.27	
1969	56.60	1.0056	1545.54	1554.20	314	316	4.92	5.83	0.18	27.46	25.98	-0.05	5.58	4.45	-0.20	
1970	59.40	1.0840	2262.65	2452.71	257	279	8.80	8.54	-0.03	41.29	37.52	-0.09	4.69	4.39	-0.06	
1971	61.20	1.1213	1684.80	1889.16	215	241	7.84	6.36	-0.19	30.87	27.49	-0.11	3.94	4.32	0.10	
1972	63.50	1.1539	1859.51	2145.68	221	255	8.41	7.02	-0.17	33.79	29.57	-0.12	4.02	4.21	0.05	
1973	64.90	1.0545	2750.84	2900.76	395	417	6.96	7.22	0.04	44.70	41.37	-0.07	6.42	5.73	-0.11	
1974	73.00	1.1004	3210.43	3532.76	594	654	5.40	6.92	0.28	48.39	44.19	-0.09	8.95	6.39	-0.29	
1975	76.60	1.1097	3268.16	3626.68	561	623	5.83	7.04	0.21	47.35	43.04	-0.09	8.13	6.11	-0.25	
1976	76.20	0.9831	4348.94	4275.45	270	265	16.11	9.37	-0.42	56.11	54.77	-0.02	3.48	5.84	0.68	
1977	79.90	1.0011	8003.46	8012.26	253	253	31.63	17.25	-0.45	100.28	96.78	-0.03	3.17	5.61	0.77	
1978	84.80	1.0355	7273.71	7531.93	366	379	19.87	15.68	-0.21	88.82	95.11	0.07	4.47	6.07	0.36	
1979	88.10	0.9772	6689.16	6536.65	410	401	16.32	12.62	-0.23	74.20	73.19	-0.01	4.55	5.80	0.28	
1980	98.90	1.0487	5755.13	6035.40	412	432	13.97	10.86	-0.22	61.03	57.55	-0.06	4.37	5.30	0.21	
1981	111.20	1.1433	4333.51	4954.50	523	598	8.29	6.21	-0.25	44.55	39.92	-0.10	5.38	6.43	0.20	
1982	117.40	1.1739	3693.71	4336.04	384	451	9.62	5.29	-0.45	36.93	32.63	-0.12	3.84	6.17	0.61	
1983	121.30	1.1472	3944.94	4525.63	268	307	14.72	5.65	-0.62	37.31	33.38	-0.11	2.53	5.91	1.33	
1984	123.91	1.1035	5052.79	5575.75	244	269	20.71	7.64	-0.63	45.00	40.98	-0.09	2.17	5.36	1.47	
1985	125.50	1.0784	4602.61	4963.45	223	240	20.64	6.96	-0.66	39.55	36.52	-0.08	1.92	5.24	1.74	
1986	126.10	1.0569	4642.20	4906.34	234	247	19.84	7.02	-0.65	38.91	36.48	-0.06	1.96	5.19	1.65	
1987	124.70	0.9694	4301.55	4169.93	175	170	24.58	6.51	-0.74	33.44	33.36	-0.00	1.36	5.13	2.77	
1988	128.90	1.0079	3690.00	3719.15	291	293	12.68	5.58	-0.56	28.85	28.08	-0.03	2.28	5.03	1.21	

Notes: 1. Data for 1960-1983 are from Jenkins and Lai. (1989). Table 10(A.1)

2. Data for 1984-1988 and for Cocoa are estimated.

TABLE 5.17: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON SMALLHOLDER COCOA BASED ON RELATIVE PRICES, 1960-1988

Year	Non Agri Price Index Adj for Tot Effects of Pricing Policies	Ratio of Equil Nom Exch Rate to Non (Market) Exch Rate Es=0.5; Nd=1.5	Border Pr of S/holder Cocoa (FOB) Pr less Mktg & Transport Costs	Border Pr of S/holder Cocoa Adj for Tot Effects of Pricing Policies	CIP Price of Imported Rice in Paddy Equiv at Farm Level	CIP Price of Imported Rice i Paddy Equiv Adj for Tot Effects of Pricing Policies	Ratio of Border Pr of S/holder Cocoa to CIP Pr of Imported Rice in Paddy Equiv both Adj for Tot Effects of Pricing Policies	Ratio of Producer Pr of S/holder Cocoa to Producer on S/Holder Local Paddy Production	Protection Rate or Total Effects of Pricing Policies on S/Holder Local Paddy Production	Ratio of Border Price of Cocoa Adj for Direct & Indirect Trade Policies	Ratio of Protection Rate or Tot Effects of Pricing Policies on S/holder Cocoa Prodn	
	[1]	[2]	[3]	[4]= [3]x[2]	[5]	[6]= [5]x[2]	[7]= [4]/[6]	[8]	[9]=[8]- [7]/[7]	[10]= [4]/[1]	[11]	[12]=[11]- [10]/[10]
1960	55.90	1.0588	1457.42	1543.12	204	216	7.14	5.50	-0.23	27.60	25.60	-0.07
1961	56.20	1.0814	1513.46	1636.65	217	235	6.97	5.71	-0.18	29.12	26.49	-0.09
1962	55.00	1.1059	1319.05	1458.73	239	264	5.52	4.98	-0.10	26.52	23.84	-0.10
1963	55.50	1.1097	1460.35	1620.55	231	256	6.32	5.51	-0.13	29.20	26.23	-0.10
1964	55.40	1.0896	1484.31	1617.30	214	233	6.94	5.60	-0.19	29.19	26.63	-0.09
1965	55.20	1.0644	1695.07	1804.23	211	225	8.03	6.40	-0.20	32.69	29.93	-0.08
1966	56.50	1.0741	1697.24	1823.01	237	255	7.16	6.40	-0.11	32.27	29.54	-0.08
1967	57.50	1.1043	1727.61	1907.80	292	322	5.92	6.52	0.10	33.18	29.48	-0.11
1968	58.00	1.0890	1909.25	2079.18	325	354	5.87	7.20	0.23	35.85	32.20	-0.10
1969	56.60	1.0056	1539.84	1548.47	314	316	4.90	5.81	0.18	27.36	25.88	-0.05
1970	59.40	1.0840	2256.84	2446.42	257	279	8.78	8.52	-0.03	41.19	37.43	-0.09
1971	61.20	1.1213	1678.90	1882.55	215	241	7.81	6.34	-0.19	30.76	27.39	-0.11
1972	63.50	1.1539	1853.42	2138.66	221	255	8.39	6.99	-0.17	33.68	29.47	-0.12
1973	64.90	1.0545	2744.11	2893.67	395	417	6.95	7.20	0.04	44.59	41.26	-0.07
1974	73.00	1.1004	3202.53	3524.06	594	654	5.39	6.90	0.28	48.27	44.08	-0.09
1975	76.60	1.1097	3259.91	3617.52	561	623	5.81	7.03	0.21	47.23	42.93	-0.09
1976	76.20	0.9831	4340.47	4267.12	270	265	16.08	9.35	-0.42	56.00	54.66	-0.02
1977	79.90	1.0011	7994.59	8003.38	253	253	31.60	17.23	-0.45	100.17	96.67	-0.03
1978	84.80	1.0355	7264.40	7522.29	366	379	19.85	15.66	-0.21	88.71	94.98	0.07
1979	88.10	0.9772	6679.51	6527.22	410	401	16.29	12.60	-0.23	74.09	73.08	-0.01
1980	98.90	1.0487	5744.84	6024.61	412	432	13.94	10.84	-0.22	60.92	57.45	-0.06
1981	111.20	1.1433	4322.22	4941.60	523	598	8.26	6.19	-0.25	44.44	39.82	-0.10
1982	117.40	1.1739	3681.76	4322.02	384	451	9.59	5.27	-0.45	36.81	32.52	-0.12
1983	121.30	1.1472	3932.55	4511.42	268	307	14.67	5.63	-0.62	37.19	33.27	-0.11
1984	123.91	1.1035	5039.92	5561.55	244	269	20.66	7.62	-0.63	44.88	40.87	-0.09
1985	125.50	1.0784	4589.69	4949.53	223	240	20.58	6.94	-0.66	39.44	36.42	-0.08
1986	126.10	1.0569	4629.19	4892.59	234	247	19.78	7.00	-0.65	38.80	36.37	-0.06
1987	124.70	0.9694	4288.40	4157.18	175	170	24.51	6.49	-0.74	33.34	33.26	-0.00
1988	128.90	1.0079	3676.50	3705.54	291	293	12.63	5.56	-0.56	28.75	27.98	-0.03

Notes: 1. Data for 1960-1983 are from Jenkins and Lai. (1989). Table 10(A.1)

2. Data for 1984-1988 and for Cocoa are estimated.

TABLE 5.18: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON ESTATE RUBBER AND PADDY BASED ON RELATIVE VALUE ADDED, 1960-1988

Year	VA of Non Agri Price Index Adj for Total Effects of Pricing Policies	Ratio of Equil Nom Exch Rate to Nom (Market) [Es=0.5; Nd=1.5]	Domestic VA of Estate Rubber VAR = 0.845	VA of Est Rubber Adj for Indir Pricing Policies	Domestic VA of Local Paddy with Input Subsidies VAR=0.902	VA of Local Paddy Adj Indirect Effects of Pricing Policies	Ratio of VA of Est Rubber to Paddy Adj for Indirect eff of Pricing Policies	Ratio of VA of Est Rubber to Paddy	Protection Rate or Indir Eff of Pricing Policies on Est Rubber Prodn to Local Paddy Prodn	Ratio of VA of Estate Rubber Adj for Total Effects of Non Agri Pr Index Adj for Total Effects of Pr Policies	Ratio of VA of Est Rubber to VA Non Agri Pr Index	Protection Rate or Indir Eff of Pricing Policies on Est Rubber to VA Non Agri Pr Index	Ratio of VA of Paddy Adj for Tot Effects of Pricing Policies to VA Non Agri Pr Index for Tot Eff of Pr Policies	Ratio of Domestic VA of Local Paddy to VA Non Agri-cultural Price Index	Protection Rate or Indirect Effects of Pricing Policies on Local Paddy Production
	[1]	[2]	[3]	[4]=[3]x[2]	[5]	[6]=[5]x[2]	[7]=[4]x[6]	[8]	[9]	[10]=[4]/[1]	[11]	[12]	[13]	[14]	[15]
1960	30.08	1.0588	1733	1834	239	253	7.25	7.25	0.00	60.98	57.60	-0.06	8.41	7.98	-0.05
1961	30.17	1.0813	1345	1454	239	258	5.63	5.63	0.00	48.19	44.57	-0.08	8.57	7.95	-0.07
1962	29.05	1.1045	1286	1421	239	264	5.38	5.38	0.00	48.90	44.27	-0.09	9.09	8.21	-0.10
1963	29.12	1.1081	1219	1351	239	265	5.10	5.10	-0.00	46.39	41.87	-0.10	9.10	8.16	-0.10
1964	28.96	1.0887	1146	1248	239	260	4.79	4.79	0.00	43.08	39.57	-0.08	8.99	8.16	-0.09
1965	29.23	1.0650	1147	1222	239	255	4.80	4.80	0.00	41.81	39.26	-0.06	8.71	8.02	-0.08
1966	29.77	1.0742	1112	1195	239	257	4.65	4.65	0.00	40.13	37.36	-0.07	8.63	7.91	-0.08
1967	30.31	1.1042	936	1033	239	264	3.92	3.92	0.00	34.10	30.88	-0.09	8.71	7.76	-0.11
1968	30.45	1.0896	881	960	239	260	3.68	3.68	0.00	31.51	28.92	-0.08	8.55	7.66	-0.10
1969	29.84	1.0059	1137	1144	239	240	4.76	4.76	0.00	38.32	38.10	-0.01	8.06	7.64	-0.05
1970	30.67	1.0832	890	964	239	259	3.72	3.72	0.00	31.44	29.02	-0.08	8.44	7.54	-0.11
1971	31.37	1.1194	813	911	239	268	3.40	3.40	0.00	29.03	25.93	-0.11	8.53	7.41	-0.13
1972	32.29	1.1490	698	802	239	275	2.92	2.92	0.00	24.85	21.63	-0.13	8.51	7.23	-0.15
1973	33.08	1.0550	1108	1169	344	363	3.22	3.22	0.00	35.34	33.50	-0.05	10.96	9.82	-0.10
1974	36.40	1.0975	1273	1397	419	459	3.04	3.04	0.00	38.39	34.98	-0.09	12.62	10.95	-0.13
1975	38.19	1.1066	962	1064	419	463	2.30	2.30	0.00	27.86	25.18	-0.10	12.13	10.48	-0.14
1976	38.84	0.9826	1239	1218	419	411	2.96	2.96	0.00	31.35	31.90	0.02	10.59	10.02	-0.05
1977	40.82	1.0011	1297	1299	419	419	3.10	3.10	-0.00	31.82	31.78	-0.00	10.26	9.62	-0.06
1978	43.16	1.0357	1378	1427	401	415	3.44	3.44	-0.00	33.06	31.92	-0.03	9.62	8.81	-0.08
1979	45.27	0.9766	1604	1567	458	447	3.50	3.50	0.00	34.61	35.44	0.02	9.88	9.52	-0.04
1980	51.06	1.0486	1833	1922	458	480	4.00	4.00	0.00	37.64	35.89	-0.05	9.40	8.71	-0.07
1981	56.94	1.1373	1647	1873	603	686	2.73	2.73	0.00	32.89	28.92	-0.12	12.05	10.56	-0.12
1982	59.89	1.1646	1405	1636	603	702	2.33	2.33	0.00	27.32	23.46	-0.14	11.73	10.13	-0.14
1983	62.32	1.1411	1686	1924	579	660	2.91	2.91	0.00	30.87	27.06	-0.12	10.59	9.31	-0.12
1984	64.44	1.1011	1786	1966	548	603	3.26	3.26	0.00	30.51	27.71	-0.09	9.36	8.45	-0.10
1985	65.53	1.0777	1463	1577	548	591	2.67	2.67	0.00	24.06	22.33	-0.07	9.01	8.27	-0.08
1986	65.93	1.0568	1618	1710	548	579	2.95	2.95	0.00	25.94	24.54	-0.05	8.78	8.19	-0.07
1987	65.29	0.9682	1867	1808	548	531	3.41	3.41	0.00	27.69	28.60	0.03	8.13	8.08	-0.01
1988	66.68	1.0121	2444	2474	548	555	4.46	4.46	0.00	37.10	36.65	-0.01	8.32	7.93	-0.05

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989).  
2. Data for 1984-1988 are estimated.



of estate rubber is compared with that of non-agriculture. This indirect effect is generated via the adjustment in the exchange rate and the traded part of non-agriculture.

The protection rate created by the indirect effect of trade and exchange rate policy on value added of smallholder rubber, oil palm, estate cocoa, smallholder cocoa relative to non-agriculture is basically the same. This is evident from Table 5.19, 5.20, 5.21 and 5.22. The trend in protection rates over 1960-1988 is qualitatively similar to that derived from the ratios of output prices as presented in Subsection 5.4 above. During the period the indirect effects of pricing policies have tended to provide a negative protection rate ranging from -0.04 to -0.15 to the agricultural sector. In recent years this negative protection has tended to be accentuated further.

Table 5.23 to Table 5.27 show the total impact of pricing policies on relative value added of agricultural commodities between 1960 and 1988. While the qualitative results are fairly similar as in the case of comparisons of relative prices, the extent of negative protection provided to the export crops rubber, oil palm and cocoa has tended to worsen, especially vis-a-vis paddy.

When the adjusted ratios of value added of estate rubber to non-agriculture are compared to their unadjusted ratios, negative ERPs emerged in every year of the 1960-1988 period. The magnitude of discrimination against estate rubber has been consistently significant, being -15 percent for 25 of the 29 years of the study. Table 5.23 also reflects that the ERP has averaged -24 percent since 1970.

Table 5.24 shows that the negative ERP accorded to smallholder rubber during 1960-1988 has been much greater than that of estate rubber. This is very much evident from 1960 to early 1970s. For instance, the differential has increased from 5 percent in 1960 to reach a high 12 percent by 1972.

TABLE 5.19: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON SMALLHOLDER RUBBER AND PADDY BASED ON RELATIVE VALUE ADDED, 1960-1988

Year	VA of Non Agri Price Index Adj for Total Effects of Pricing Policies	Ratio of Equil Nom Exch Rate to (Market) [Es=0.5; Nd=1.5]	Domestic VA of S/holder VA of Rubber S/holder	Domestic VA of S/holder Indirect Eff of Pricing Policies	Domestic VA of Local Paddy With Input Subsidies VAR=0.902	VA of Local Paddy Indirect Eff of Pricing Policies	Ratio of VA of S/holder Rubber to VA of Local Paddy Effects of Pricing Policies	Ratio of VA of S/holder Rubber to VA of Local Paddy	Protection Rate or Indir Eff of Pricing Policies on Paddy Prodn	VA of S/holder Rubber Total Eff of Pr Index Adj for Tot Effects of Pricing Policies	Ratio of VA of S/holder Rubber to VA of Unadjust Non Agri-cultural Price Index	Protection Rate or Indir Eff of Pricing Policies on S/holder Rubber to VA Non Agri Price Index
	[1]	[2]	[3]	[4]=[3]x[2]	[5]	[6]=[5]x[2]	[7]=[4]x[6]	[8]	[9]	[10]=[4]/[1]	[11]	[12]
1960	30.08	1.0588	1612	1707	239	253	6.74	6.74	0.00	56.74	53.82	-0.05
1961	30.17	1.0813	1220	1319	239	258	5.10	5.10	0.00	43.71	40.59	-0.07
1962	29.05	1.1045	1160	1282	239	264	4.85	4.85	0.00	44.12	39.88	-0.10
1963	29.12	1.1081	1091	1209	239	265	4.56	4.56	0.00	41.51	37.24	-0.10
1964	28.96	1.0887	1017	1107	239	260	4.25	4.25	0.00	38.23	34.70	-0.09
1965	29.23	1.0650	1019	1085	239	255	4.26	4.26	0.00	37.11	34.19	-0.08
1966	29.77	1.0742	982	1055	239	257	4.11	4.11	0.00	35.44	32.49	-0.08
1967	30.31	1.1042	801	885	239	264	3.35	3.35	0.00	29.19	26.00	-0.11
1968	30.45	1.0896	746	812	239	260	3.12	3.12	0.00	26.68	23.90	-0.10
1969	29.84	1.0059	1005	1011	239	240	4.20	4.20	0.00	33.88	32.12	-0.05
1970	30.67	1.0832	754	817	239	259	3.16	3.16	0.00	26.64	23.78	-0.11
1971	31.37	1.1194	676	756	239	268	2.83	2.83	0.00	24.11	20.96	-0.13
1972	32.29	1.1490	557	640	239	275	2.33	2.33	0.00	19.83	16.84	-0.15
1973	33.08	1.0550	965	1018	344	363	2.81	2.81	0.00	30.77	27.58	-0.10
1974	36.40	1.0975	1120	1229	419	459	2.67	2.67	0.00	33.76	29.30	-0.13
1975	38.19	1.1066	885	979	419	463	2.11	2.11	0.00	25.65	22.15	-0.14
1976	38.84	0.9826	1164	1143	419	411	2.78	2.78	0.00	29.44	27.86	-0.05
1977	40.82	1.0011	1218	1220	419	419	2.91	2.91	0.00	29.88	28.01	-0.06
1978	43.16	1.0357	1274	1319	401	415	3.18	3.18	0.00	30.57	28.00	-0.08
1979	45.27	0.9766	1496	1461	458	447	3.27	3.27	0.00	32.28	31.12	-0.04
1980	51.06	1.0486	1717	1801	458	480	3.75	3.75	0.00	35.27	32.65	-0.07
1981	56.94	1.1373	1521	1729	603	686	2.52	2.52	0.00	30.37	26.63	-0.12
1982	59.89	1.1646	1272	1482	603	702	2.11	2.11	0.00	24.74	21.37	-0.14
1983	62.32	1.1411	1534	1750	579	660	2.65	2.65	0.00	28.08	24.67	-0.12
1984	64.44	1.1011	1627	1791	548	603	2.97	2.97	0.00	27.80	25.08	-0.10
1985	65.53	1.0777	1308	1409	548	591	2.39	2.39	0.00	21.50	19.72	-0.08
1986	65.93	1.0568	1460	1543	548	579	2.66	2.66	0.00	23.40	21.81	-0.07
1987	65.29	0.9682	1705	1650	548	531	3.11	3.11	0.00	25.28	25.13	-0.01
1988	66.68	1.0121	2271	2299	548	555	4.14	4.14	0.00	34.47	32.87	-0.05

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989).  
 2. Data for 1984-1988 are estimated.

TABLE 5.20: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON PALM OIL BASED ON RELATIVE VALUE ADDED, 1960-1988

Year	VA of Non Agri Price Index Adj for Total Effects of Pricing Policies	Ratio of Equil Nom Exch Rate to [Es=0.5; Nd=1.5]	Domestic VA of Palm Oil VAR = 0.843 0.786 0.777	VA of Palm Oil Indirect Eff of Pricing Policies	Domestic VA of Local Paddy With Input Subsidies VAR=0.902 0.864 0.829	VA of Local Paddy Indirect Eff of Pricing Policies Adj for Indir Effects of Pricing Policies	Ratio of VA to VA of Local Paddy	Ratio of VA of Palm Oil to VA of Local Paddy	Protection Rate or Indir Eff of Pricing Policies on Palm Oil Pr Index	VA of Palm Oil Adj for Pr Index Adj for Tot Effects of Pricing Policies	Ratio of VA of Palm Oil to VA of Non Agri-cultural Price Index	Protection Rate or Indir Eff of Pricing Policies on Palm Oil Non Agri Price Index
	[1]	[2]	[3]	[4]=[3]x[2]	[5]	[6]=[5]x[2]	[7]	[8]	[9]	[10]=[4]/[1]	[11]	[12]
1960	30.08	1.0588	469	496	239	253	1.96	1.96	0.00	16.50	15.65	-0.05
1961	30.17	1.0813	488	528	239	258	2.04	2.04	0.00	17.49	16.24	-0.07
1962	29.05	1.1045	458	506	239	264	1.92	1.92	0.00	17.40	15.73	-0.10
1963	29.12	1.1081	445	493	239	265	1.86	1.86	0.00	16.94	15.20	-0.10
1964	28.96	1.0887	486	529	239	260	2.03	2.03	0.00	18.25	16.57	-0.09
1965	29.23	1.0650	568	605	239	255	2.38	2.38	0.00	20.70	19.07	-0.08
1966	29.77	1.0742	491	527	239	257	2.05	2.05	0.00	17.70	16.23	-0.08
1967	30.31	1.1042	462	510	239	264	1.93	1.93	0.00	16.83	14.99	-0.11
1968	30.45	1.0896	323	352	239	260	1.35	1.35	0.00	11.55	10.35	-0.10
1969	29.84	1.0059	318	320	239	240	1.33	1.33	0.00	10.71	10.16	-0.05
1970	30.67	1.0832	497	538	239	259	2.08	2.08	0.00	17.54	15.65	-0.11
1971	31.37	1.1194	501	561	239	268	2.09	2.09	0.00	17.87	15.53	-0.13
1972	32.29	1.1490	381	438	239	275	1.59	1.59	0.00	13.56	11.52	-0.15
1973	33.08	1.0550	420	443	344	363	1.22	1.22	0.00	13.39	12.00	-0.10
1974	36.40	1.0975	779	855	419	459	1.86	1.86	0.00	23.49	20.39	-0.13
1975	38.19	1.1066	729	807	419	463	1.74	1.74	0.00	21.13	18.25	-0.14
1976	38.84	0.9826	636	625	419	411	1.52	1.52	0.00	16.10	15.24	-0.05
1977	40.82	1.0011	839	840	419	419	2.00	2.00	0.00	20.57	19.28	-0.06
1978	43.16	1.0357	837	867	401	415	2.09	2.09	0.00	20.09	18.40	-0.08
1979	45.27	0.9766	898	877	458	447	1.96	1.96	0.00	19.36	18.67	-0.04
1980	51.06	1.0486	816	856	458	480	1.78	1.78	0.00	16.76	15.51	-0.07
1981	56.94	1.1373	807	918	603	686	1.34	1.34	0.00	16.12	14.14	-0.12
1982	59.89	1.1646	707	824	603	702	1.17	1.17	0.00	13.76	11.88	-0.14
1983	62.32	1.1411	739	843	579	660	1.28	1.28	0.00	13.53	11.89	-0.12
1984	64.44	1.1011	927	1021	548	603	1.69	1.69	0.00	15.84	14.29	-0.10
1985	65.53	1.0777	764	823	548	591	1.39	1.39	0.00	12.56	11.52	-0.08
1986	65.93	1.0568	472	498	548	579	0.86	0.86	0.00	7.56	7.05	-0.07
1987	65.29	0.9682	516	500	548	531	0.94	0.94	0.00	7.65	7.61	-0.01
1988	66.68	1.0121	688	697	548	555	1.26	1.26	0.00	10.45	9.96	-0.05

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989).  
 2. Data for 1984-1988 are estimated.

TABLE 5.21: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON ESTATE COCOA AND PADDY BASED ON RELATIVE VALUE ADDED, 1960-1988

Year	VA of Non Agri Price Index Adj for Total Effects of Pricing Policies	Ratio of Equil Nom Exch Rate to Nom (Market) [Es=0.5; Nd=1.5]	Domestic VA of Estate COCOA VAR = 0.850	VA of Est Cocoa Adj for Indir Effects of Pricing Policies	Domestic VA of Local Paddy with Input Subsidies VAR=0.902	VA of Local Paddy Adj Indirect Effects of Pricing Policies	Ratio of VA of Est Cocoa to Paddy Adj Indirect eff of Pricing Policies	Ratio of VA of Est Cocoa to V Added of Local Paddy	Protection Rate or Indir Eff of Pricing Policies on Est Cocoa Prodn to Local Paddy Prodn	Ratio of VA of Estate COCOA Adj for Total Effects of Non Agri Pr Index Adj for Total Effects of Pr Policies	Ratio of VA of Est COCOA to VA Non Agri Pr Index	Protection Rate or Indir Eff of Pricing Policies on Est COCOA to VA Non Agri Pr Index	Ratio of VA of Paddy Adj for Tot Effects of Pricing Policies to VA Non Agri Pr Index for Tot Eff of Pr Policies	Ratio of Domestic VA of Local Paddy to VA of Unadj. Non Agri-cultural Price Index	Protection Rate or Indirect Effects of Pricing Policies on Local Paddy Production
	[1]	[2]	[3]	[4]=[3]x[2]	[5]	[6]=[5]x[2]	[7]=[4]x[6]	[8]	[9]	[10]=[4]/[1]	[11]	[12]	[13]	[14]	[15]
1960	30.08	1.0588	1243.31	1316	239	253	5.20	5.20	0.00	43.76	41.33	-0.06	8.41	7.98	-0.05
1961	30.17	1.0813	1290.93	1396	239	258	5.40	5.40	0.00	46.27	42.79	-0.08	8.57	7.95	-0.07
1962	29.05	1.1045	1125.68	1243	239	264	4.71	4.71	0.00	42.80	38.75	-0.09	9.09	8.21	-0.10
1963	29.12	1.1081	1245.93	1381	239	265	5.21	5.21	-0.00	47.41	42.79	-0.10	9.10	8.16	-0.10
1964	28.96	1.0887	1266.28	1379	239	260	5.30	5.30	-0.00	47.61	43.73	-0.08	8.99	8.16	-0.09
1965	29.23	1.0650	1445.43	1539	239	255	6.05	6.05	0.00	52.66	49.45	-0.06	8.71	8.02	-0.08
1966	29.77	1.0742	1447.35	1555	239	257	6.06	6.06	-0.00	52.23	48.62	-0.07	8.63	7.91	-0.08
1967	30.31	1.1042	1473.34	1627	239	264	6.16	6.16	0.00	53.68	48.61	-0.09	8.71	7.76	-0.11
1968	30.45	1.0896	1627.72	1774	239	260	6.81	6.81	0.00	58.25	53.46	-0.08	8.55	7.66	-0.10
1969	29.84	1.0059	1313.71	1321	239	240	5.50	5.50	-0.00	44.28	44.03	-0.01	8.06	7.64	-0.05
1970	30.67	1.0832	1923.25	2083	239	259	8.05	8.05	0.00	67.93	62.71	-0.08	8.44	7.54	-0.11
1971	31.37	1.1194	1432.08	1603	239	268	5.99	5.99	0.00	51.10	45.65	-0.11	8.53	7.41	-0.13
1972	32.29	1.1490	1580.58	1816	239	275	6.61	6.61	0.00	56.25	48.95	-0.13	8.51	7.23	-0.15
1973	33.08	1.0550	2338.21	2467	344	363	6.80	6.80	0.00	74.57	70.68	-0.05	10.96	9.82	-0.10
1974	36.40	1.0975	2728.87	2995	419	459	6.52	6.52	0.00	82.28	74.97	-0.09	12.62	10.95	-0.13
1975	38.19	1.1066	2777.94	3074	419	463	6.64	6.64	0.00	80.49	72.74	-0.10	12.13	10.48	-0.14
1976	38.84	0.9826	3696.60	3632	419	411	8.83	8.83	0.00	93.52	95.18	0.02	10.59	10.02	-0.05
1977	40.82	1.0011	6802.94	6811	419	419	16.25	16.25	0.00	166.84	166.66	-0.00	10.26	9.62	-0.06
1978	43.16	1.0357	6269.94	6494	401	415	15.64	15.64	0.00	150.45	145.27	-0.03	9.62	8.81	-0.08
1979	45.27	0.9766	5766.06	5631	458	447	12.59	12.59	-0.00	124.39	127.37	0.02	9.88	9.52	-0.04
1980	51.06	1.0486	4960.92	5202	458	480	10.83	10.83	0.00	101.88	97.16	-0.05	9.40	8.71	-0.07
1981	56.94	1.1373	3735.49	4248	603	686	6.19	6.19	0.00	74.61	65.60	-0.12	12.05	10.56	-0.12
1982	59.89	1.1646	3183.98	3708	603	702	5.28	5.28	0.00	61.92	53.16	-0.14	11.73	10.13	-0.14
1983	62.32	1.1411	3428.15	3912	579	660	5.92	5.92	0.00	62.77	55.01	-0.12	10.59	9.31	-0.12
1984	64.44	1.1011	4390.87	4835	548	603	8.01	8.01	0.00	75.03	68.14	-0.09	9.36	8.45	-0.10
1985	65.53	1.0777	3999.67	4310	548	591	7.30	7.30	0.00	65.78	61.04	-0.07	9.01	8.27	-0.08
1986	65.93	1.0568	4034.07	4263	548	579	7.36	7.36	-0.00	64.66	61.19	-0.05	8.78	8.19	-0.07
1987	65.29	0.9682	3738.05	3619	548	531	6.82	6.82	0.00	55.43	57.25	0.03	8.13	8.08	-0.01
1988	66.68	1.0121	3206.61	3245	548	555	5.85	5.85	0.00	48.67	48.09	-0.01	8.32	7.93	-0.05

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989).  
2. Data for 1984-1988 are estimated.

TABLE 5.22: MALAYSIA - INDIRECT EFFECTS OF PRICING POLICIES ON SMALLHOLDER COCOA AND PADDY BASED ON RELATIVE VALUE ADDED, 1960-1988

Year	VA of Non Agri Price Index Adj Effects of Pricing Policies	Ratio of Equil Exch Rate to (Market) Exchange Rate [Es=0.5; Nd=1.5]	Domestic VA of S/holder Cocoa VAR =	VA of S/holder Cocoa Adj for Indirect Eff of Pricing Policies	Domestic VA of Local Paddy With Input Subsidies VAR=0.902	VA of Local Paddy Adj for Indirect Eff of Pricing Policies	Ratio of VA of S/holder Cocoa to VA of Local Paddy Adj for Indirect Eff of Pricing Policies	Ratio of VA of S/holder Cocoa to Local Paddy Prod'n	Protection Rate or Indir Policies on Cocoa	VA of S/holder Cocoa Adj for Pr Policies to Index Adj for Tot Effects of Pricing Policies	Ratio of VA of S/holder Cocoa to VA of Unadjust Non Agri-cultural Price Index
	[1]	[2]	[3]	[4]=[3]x[2]	[5]	[6]=[5]x[2]	[7]=[4]/[6]	[8]	[9]	[10]=[4]/[1]	[11]
1960	30.08	1.0588	1225.69	1298	239	253	5.13	5.13	0.00	43.14	40.92
1961	30.17	1.0813	1272.82	1376	239	258	5.32	5.32	0.00	45.62	42.36
1962	29.05	1.1045	1109.32	1225	239	264	4.64	4.64	0.00	42.18	38.12
1963	29.12	1.1081	1228.15	1361	239	265	5.14	5.14	0.00	46.73	41.93
1964	28.96	1.0887	1248.30	1359	239	260	5.22	5.22	-0.00	46.93	42.59
1965	29.23	1.0650	1425.55	1518	239	255	5.96	5.96	0.00	51.94	47.85
1966	29.77	1.0742	1427.38	1533	239	257	5.97	5.97	0.00	51.51	47.22
1967	30.31	1.1042	1452.92	1604	239	264	6.08	6.08	0.00	52.93	47.14
1968	30.45	1.0896	1605.68	1750	239	260	6.72	6.72	0.00	57.46	51.48
1969	29.84	1.0059	1295.01	1303	239	240	5.42	5.42	0.00	43.65	41.39
1970	30.67	1.0832	1898.00	2056	239	259	7.94	7.94	0.00	67.03	59.84
1971	31.37	1.1194	1411.95	1581	239	268	5.91	5.91	0.00	50.39	43.80
1972	32.29	1.1490	1558.73	1791	239	275	6.52	6.52	0.00	55.47	47.12
1973	33.08	1.0550	2307.80	2435	344	363	6.72	6.72	0.00	73.60	65.97
1974	36.40	1.0975	2693.33	2956	419	459	6.44	6.44	0.00	81.21	70.49
1975	38.19	1.1066	2741.58	3034	419	463	6.55	6.55	0.00	79.44	68.63
1976	38.84	0.9826	3650.34	3587	419	411	8.72	8.72	-0.00	92.35	87.39
1977	40.82	1.0011	6723.45	6731	419	419	16.06	16.06	0.00	164.89	154.56
1978	43.16	1.0357	6131.15	6350	401	415	15.29	15.29	0.00	147.12	134.78
1979	45.27	0.9766	5637.51	5506	458	447	12.31	12.31	0.00	121.62	117.25
1980	51.06	1.0486	4848.64	5084	458	480	10.59	10.59	0.00	99.58	92.18
1981	56.94	1.1373	3647.95	4149	603	686	6.05	6.05	0.00	72.86	63.89
1982	59.89	1.1646	3107.41	3619	603	702	5.15	5.15	0.00	60.43	52.19
1983	62.32	1.1411	3393.79	3873	579	660	5.87	5.87	0.00	62.14	54.59
1984	64.44	1.1011	4349.45	4789	548	603	7.94	7.94	0.00	74.32	67.06
1985	65.53	1.0777	3960.90	4269	548	591	7.23	7.23	0.00	65.14	59.75
1986	65.93	1.0568	3994.99	4222	548	579	7.29	7.29	-0.00	64.04	59.68
1987	65.29	0.9682	3700.89	3583	548	531	6.75	6.75	0.00	54.88	54.56
1988	66.68	1.0121	3172.82	3211	548	555	5.79	5.79	-0.00	48.16	45.92

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989).

2. Data for 1984-1988 are estimated.

TABLE 5.23: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON ESTATE RUBBER AND PADDY BASED ON VALUE ADDED, 1960-1988

Year	VA of Non Agri Price Index Adj for Total Effects of Pricing Policies	Ratio of Equil Nom Exchange Rate (Market) [Es=0.5;Nd=1.5]	VA of Est Rubber Adj for Direct Effect of Pr Policies	VA of Est Rubber Adj for Total Effects of Pricing Policies	VA of Local Paddy at CIF Price Pr Equiv at Farm Level Adj for Pr. Policies	VA of Local Paddy at CIF Price Pr Equiv at Farm Level Adj for Pr. Policies	Ratio of VA of Est Rubber to VA of Local Paddy at CIF Pr Tot Eff of P.P	Ratio of VA of Est Rubber to VA of Local Paddy both Unadj for Tot Eff. of Relative to Loc Paddy Prodn Pr. Policies	Protection Rate or Tot Effects of Pr Policies on Est Rubber Prod Paddy Prodn	Ratio of VA of Est Rubber to VA of Non Agri Pr Index Adj for Tot Effects of Pr Policies	Ratio of VA of Est Rubber to VA of Non Agri Pr Index both Unadj for Tot Eff of P.P	Effective Rate of Protection of Estate Rubber Production	VA of Local Paddy at CIP Pr Equiv at Farm Level to VA of Non Agri both Total Effects of Pr Policies	Ratio of VA of Local Paddy to VA of Non Agri Pr Index both Unadj for Total Effects of Pricing Policies	Effective Rate of Protection of Local Paddy Production
	[1]	[2]	[3]	[4]=[3]X[2]	[5]	[6]=[5]X[2]	[7]=[4]/[6]	[8]	[9]=([8]-[7])/[7]	[10]=[4]/[1]	[11]	[12]=([11]-[10])/[10]	[13]=[6]/[1]	[14]	[15]=([14]-[13])/[13]
1960	30.08	1.0588	1984	2101	178	188	11.15	7.25	-0.35	69.83	57.86	-0.17	6.27	7.98	0.27
1961	30.17	1.0813	1502	1624	191	207	7.86	5.63	-0.28	53.83	44.76	-0.17	6.85	7.95	0.16
1962	29.05	1.1045	1417	1565	213	235	6.65	5.38	-0.19	53.87	44.19	-0.18	8.10	8.21	0.01
1963	29.12	1.1081	1332	1476	205	227	6.50	5.10	-0.22	50.68	41.62	-0.18	7.80	8.16	0.05
1964	28.96	1.0887	1250	1361	188	205	6.65	4.79	-0.28	46.99	39.10	-0.17	7.07	8.15	0.15
1965	29.23	1.0650	1259	1341	185	197	6.81	4.80	-0.29	45.87	38.50	-0.16	6.74	8.02	0.19
1966	29.77	1.0742	1206	1296	211	227	5.72	4.65	-0.19	43.52	36.78	-0.15	7.61	7.91	0.04
1967	30.31	1.1042	1004	1109	266	294	3.77	3.92	0.04	36.58	30.37	-0.17	9.69	7.75	-0.20
1968	30.45	1.0896	947	1032	299	326	3.17	3.69	0.16	33.89	28.25	-0.17	10.70	7.66	-0.28
1969	29.84	1.0059	1245	1252	288	290	4.32	4.76	0.10	41.97	36.34	-0.13	9.71	7.64	-0.21
1970	30.67	1.0832	967	1047	231	250	4.19	3.72	-0.11	34.15	28.06	-0.18	8.16	7.53	-0.08
1971	31.37	1.1194	872	976	189	212	4.61	3.40	-0.26	31.12	25.22	-0.19	6.74	7.41	0.10
1972	32.29	1.1490	756	869	195	224	3.88	2.92	-0.25	26.90	21.10	-0.22	6.94	7.22	0.04
1973	33.08	1.0550	1272	1342	357	377	3.56	3.22	-0.10	40.57	31.68	-0.22	11.39	9.83	-0.14
1974	36.40	1.0975	1540	1690	548	601	2.81	3.04	0.08	46.43	33.32	-0.28	16.52	10.97	-0.34
1975	38.19	1.1066	1167	1291	516	571	2.26	2.30	0.02	33.82	24.08	-0.29	14.95	10.49	-0.30
1976	38.84	0.9826	1628	1600	224	220	7.27	2.96	-0.59	41.19	29.66	-0.28	5.67	10.03	0.77
1977	40.82	1.0011	1759	1761	208	208	8.46	3.10	-0.63	43.14	29.82	-0.31	5.10	9.63	0.89
1978	43.16	1.0357	1952	2022	320	331	6.10	3.29	-0.46	46.84	30.29	-0.35	7.68	9.21	0.20
1979	45.27	0.9766	2403	2347	358	350	6.71	4.00	-0.40	51.84	33.36	-0.36	7.72	8.34	0.08
1980	51.06	1.0486	2672	2802	360	378	7.42	4.00	-0.46	54.87	34.85	-0.36	7.39	8.71	0.18
1981	56.94	1.1373	2030	2309	455	517	4.46	3.60	-0.19	40.55	28.84	-0.29	9.09	8.02	-0.12
1982	59.89	1.1646	1622	1889	315	367	5.15	2.33	-0.55	31.54	23.60	-0.25	6.13	10.13	0.65
1983	62.32	1.1411	1998	2280	200	228	9.99	2.80	-0.72	36.58	27.12	-0.26	3.66	9.70	1.65
1984	64.44	1.1011	1944	2141	179	197	10.86	3.08	-0.72	33.22	27.54	-0.17	3.06	8.93	1.92
1985	65.53	1.0777	1600	1724	158	170	10.13	2.53	-0.75	26.31	22.07	-0.16	2.60	8.73	2.36
1986	65.93	1.0568	1758	1858	169	179	10.40	2.79	-0.73	28.18	24.17	-0.14	2.71	8.65	2.19
1987	65.29	0.9682	2038	1973	110	107	18.53	3.22	-0.83	30.22	27.52	-0.09	1.63	8.54	4.23
1988	66.68	1.0121	2798	2832	226	229	12.38	4.22	-0.66	42.47	35.37	-0.17	3.43	8.38	1.44

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Table 12A(1)

2. Data for 1983-1988 are estimated.

TABLE 5.24: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON SMALLHOLDER RUBBER AND PADDY BASED ON VALUE ADDED, 1960-1988

Year	VA of Non Agri Price Index Adj for Total Effects of Pricing Policies	Ratio of Value Added Equil Nom Exchange Rate to Nominal (Market) Exchange Rate [Es=0.5;Nd=1.5]	Value Added of S/holder of Rubber Adj for Direct Effects of Pricing Policies	Value Added of S/holder of Rubber Total Effects of Pricing Policies	Value Added of Local Paddy at CIP Price Equivalent at Farm Level	VA of Local Paddy at CIP Price Effects of Pricing Policies	Ratio of VA of S/h Rubber to VA of Local Paddy at CIP Price Level Adj for Total Effects of Pricing Policies	Ratio of VA of S/h Rubber to VA of Local Paddy both Unadj for Total Effects of Pricing Policies	Protection Rate or Tot Effects of Pr Policies on S/h Rubber Prodn Relative to Local Paddy Prodn	Ratio of VA of S/h Rubber to VA of Non Agri Pr Index Adj for Tot Effects of Pricing Policies	Ratio of VA of S/h Rubber to VA of Non Agri Pr Index both Unadj for Total Effects of Pr Policies	Effective Rate of Protection of S/holder Rubber Production
	[1]	[2]	[3]	[4]=[3]x[2]	[5]	[6]=[5]x[2]	[7]=[4]/[6]	[8]	[9]=([8]-[7])/[7]	[10]=[4]/[1]	[11]	[12]=([11]-[10])/[10]
1960	30.08	1.0588	1962.72	2078.06	178	189	11.00	6.74	-0.39	69.08	53.82	-0.22
1961	30.17	1.0813	1475.87	1595.84	191	207	7.73	5.10	-0.34	52.89	40.60	-0.23
1962	29.05	1.1045	1390.07	1535.28	213	235	6.53	4.85	-0.26	52.85	39.86	-0.25
1963	29.12	1.1081	1303.01	1443.81	205	228	6.33	4.56	-0.28	49.58	37.25	-0.25
1964	28.96	1.0887	1219.87	1328.13	188	205	6.49	4.26	-0.34	45.86	34.70	-0.24
1965	29.23	1.0650	1229.03	1308.93	185	197	6.64	4.26	-0.36	44.78	34.21	-0.24
1966	29.77	1.0742	1175.06	1262.28	211	227	5.57	4.11	-0.26	42.40	32.48	-0.23
1967	30.31	1.1042	968.01	1068.90	266	294	3.64	3.35	-0.08	35.27	25.99	-0.26
1968	30.45	1.0896	911.38	993.04	299	326	3.05	3.12	0.02	32.61	23.92	-0.27
1969	29.84	1.0059	1212.42	1219.57	288	290	4.21	4.21	-0.00	40.87	32.12	-0.21
1970	30.67	1.0832	929.63	1006.97	231	250	4.02	3.15	-0.22	32.83	23.77	-0.28
1971	31.37	1.1194	833.61	933.17	189	212	4.41	2.83	-0.36	29.75	20.97	-0.30
1972	32.29	1.1490	713.20	819.50	195	224	3.66	2.33	-0.36	25.38	16.84	-0.34
1973	33.08	1.0550	1228.19	1295.75	357	377	3.44	2.81	-0.18	39.17	27.59	-0.30
1974	36.40	1.0975	1486.19	1631.17	548	601	2.71	2.67	-0.01	44.81	29.31	-0.35
1975	38.19	1.1066	1090.23	1206.44	516	571	2.11	2.11	-0.00	31.59	22.15	-0.30
1976	38.84	0.9826	1552.90	1525.85	224	220	6.93	2.78	-0.60	39.29	27.87	-0.29
1977	40.82	1.0011	1679.86	1681.74	208	208	8.08	2.91	-0.64	41.20	28.00	-0.32
1978	43.16	1.0357	1847.75	1913.64	320	331	5.77	3.04	-0.47	44.34	28.01	-0.37
1979	45.27	0.9766	2294.93	2241.28	358	350	6.41	3.27	-0.49	49.51	31.11	-0.37
1980	51.06	1.0486	2556.44	2680.71	360	378	7.10	3.75	-0.47	52.50	32.64	-0.38
1981	56.94	1.1373	2027.08	2305.40	455	517	4.46	2.52	-0.43	40.49	26.64	-0.34
1982	59.89	1.1646	1489.33	1734.53	315	367	4.73	2.11	-0.55	28.96	21.36	-0.26
1983	62.32	1.1411	1850.12	2111.12	200	228	9.25	2.65	-0.71	33.88	24.67	-0.27
1984	64.44	1.1011	1785.40	1965.98	179	197	9.97	2.97	-0.70	30.51	25.08	-0.18
1985	65.53	1.0777	1445.50	1557.79	158	170	9.15	2.39	-0.74	23.77	19.73	-0.17
1986	65.93	1.0568	1600.00	1690.88	169	179	9.45	2.66	-0.72	25.65	21.81	-0.15
1987	65.29	0.9682	1875.50	1815.86	110	107	16.97	3.11	-0.82	27.81	25.14	-0.10
1988	66.68	1.0121	2625.00	2656.76	226	229	11.60	4.14	-0.64	39.84	32.87	-0.18

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989). Table 12A(2)  
 - 2. Data for 1984-1988 are estimated.

TABLE 5.25: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON PALM OIL BASED ON RELATIVE VALUE ADDED, 1960-1988

Year	VA of Non Agri Price Index Adj for Total Effects of Pricing Policies	Ratio of Equil Nom Exch Rate to (Es=0.5; Nd=1.5)	VA of Palm Oil Adj for Direct Eff of P. Policies VAR = 0.843 0.786 0.777	Value Added Oil Adj for Total Effects of Pricing Policies	VA of Paddy at CIF Price Equivalent at Farm Level	VA of Paddy at CIF Price Adjusted for Total Effects of Pricing Policies	Ratio of VA of Palm Oil to VA of Paddy at CIF Price both Adj for P. Policies	Ratio of VA of Palm Oil to VA of Local Paddy For Total Effects of P. Policies	Protection Rate or Total Eff of Pricing Policies on Palm Oil Prodn to Local Paddy Prodn	Ratio of VA of Palm Oil to VA of Non Agricultural Pr Index both Adjusted for Pricing Policies	Ratio of VA of Palm Oil to VA of Non Agricultural Unadjusted	Effective Rate of Protection on Palm Oil
	[1]	[2]	[3]	[4]=[3]x[2]	[5]	[6]=[5]x[2]	[7]	[8]	[9]	[10]=[4]/[1]	[11]	[12]
1960	30.08	1.0588	515.57	546	178	188	2.90	1.96	-0.32	18.15	15.66	-0.14
1961	30.17	1.0813	536.42	580	191	207	2.81	2.04	-0.27	19.23	16.24	-0.16
1962	29.05	1.1045	503.50	556	213	235	2.36	1.92	-0.19	19.14	15.74	-0.18
1963	29.12	1.1081	489.30	542	205	227	2.39	1.86	-0.22	18.62	15.19	-0.18
1964	28.96	1.0887	534.25	582	188	205	2.84	2.03	-0.28	20.09	16.58	-0.17
1965	29.23	1.0650	624.16	665	185	197	3.37	2.38	-0.30	22.74	19.07	-0.16
1966	29.77	1.0742	539.74	580	211	227	2.56	2.05	-0.20	19.48	16.24	-0.17
1967	30.31	1.1042	508.03	561	266	294	1.91	1.93	0.01	18.51	14.99	-0.19
1968	30.45	1.0896	355.65	388	299	326	1.19	1.35	0.14	12.73	10.36	-0.19
1969	29.84	1.0059	350.17	352	288	290	1.22	1.33	0.09	11.80	10.16	-0.14
1970	30.67	1.0832	546.32	592	231	250	2.37	2.08	-0.12	19.29	15.67	-0.19
1971	31.37	1.1194	550.83	617	189	212	2.91	2.10	-0.28	19.66	15.54	-0.21
1972	32.29	1.1490	427.91	492	195	224	2.19	1.59	-0.27	15.23	11.52	-0.24
1973	33.08	1.0550	483.67	510	357	377	1.35	1.22	-0.10	15.43	12.01	-0.22
1974	36.40	1.0975	1032.88	1134	548	601	1.88	1.86	-0.01	31.14	20.39	-0.35
1975	38.19	1.1066	972.98	1077	516	571	1.89	1.74	-0.08	28.19	18.25	-0.35
1976	38.84	0.9826	766.83	753	224	220	3.42	1.52	-0.56	19.40	15.23	-0.22
1977	40.82	1.0011	1106.30	1108	208	208	5.32	2.00	-0.62	27.13	19.29	-0.29
1978	43.16	1.0357	974.68	1009	320	331	3.05	2.00	-0.34	23.39	18.40	-0.21
1979	45.27	0.9766	1023.22	999	358	350	2.86	2.24	-0.22	22.07	18.68	-0.15
1980	51.06	1.0486	895.26	939	360	378	2.49	1.78	-0.28	18.39	15.51	-0.16
1981	56.94	1.1373	871.79	991	455	517	1.92	1.76	-0.08	17.41	14.13	-0.19
1982	59.89	1.1646	739.37	861	315	367	2.35	1.17	-0.50	14.38	11.87	-0.17
1983	62.32	1.1411	761.31	869	200	228	3.81	1.23	-0.68	13.94	11.89	-0.15
1984	64.44	1.1011	1215.13	1338	179	197	6.79	1.60	-0.76	20.76	14.29	-0.31
1985	65.53	1.0777	962.55	1037	158	170	6.09	1.32	-0.78	15.83	11.53	-0.27
1986	65.93	1.0568	517.75	547	169	179	3.06	0.82	-0.73	8.30	7.05	-0.15
1987	65.29	0.9682	671.85	650	110	107	6.11	1.00	-0.84	9.96	8.52	-0.14
1988	66.68	1.0121	845.45	856	226	229	3.74	1.19	-0.68	12.83	9.96	-0.22

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Table 12A(3)  
 2. Data for 1984-1988 are estimated.



TABLE 5.26: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON ESTATE COCOA AND PADDY BASED ON VALUE ADDED

Year	VA of Non Agri Price Index Adj for Total Effects of Pricing Policies	Ratio of Equil Nom Exch Rate to (Market) Exch Rate; [Es=0.5; Nd=1.5]	VA of Estate Cocoa Adj for Direct Pricing Policies	VA of Est Cocoa for Total Effects of Pricing Policies	VA of Local Paddy at Pr Equiv at Farm Level Adj for Total Effects of Pricing Policies	VA of Local Paddy at CIP Pr Equiv at Farm Level Adj for Total Effects of Pricing Policies	VA of Estate Cocoa to VA of Paddy at CIP Pr Equiv at Farm Level Effects of Pricing Policies	VA of Estate Cocoa to VA of both Unadj for Total Effects of Pricing Policies	Protection Rate or Total Effects of Pricing Policies on Est Cocoa Prodn Relativeto to Paddy Prodn	Ratio of VA of Est Cocoa to VA of Non Agricultural Price Index Effects of Pricing Policies	Ratio Of VA of Est Cocoa to VA of Non Agricultural Price Index both Unadj for Total Effects of Pricing Policies	Effective VA of Paddy at CIP Price Equivof Local Paddy to VA of Non Agri Pr Index both Unadj for Total Eff of Pr Policies	Ratio of VA of Local Paddy to VA of Non Agri Pr Index both Unadj for Total Effects of Pricing Policies	Effective Rate of Protection of Local Paddy Prodn	
[1]	[2]	[3]	[4]=[3]x[2]	[5]	[6]=[5]x[2]	[7]=[4]x[6]	[8]	[9]	[10]=[4]/[1]	[11]	[12]	[13]	[14]	[15]	
1960	30.08	1.0588	1243.31	1316	178	189	6.96	5.51	-0.21	43.76	41.51	-0.05	6.28	7.98	0.27
1961	30.17	1.0813	1290.93	1396	191	207	6.76	5.84	-0.14	46.27	42.96	-0.07	6.85	7.95	0.16
1962	29.05	1.1045	1125.68	1243	213	235	5.28	5.20	-0.02	42.80	38.68	-0.10	8.10	8.21	0.01
1963	29.12	1.1081	1245.93	1381	205	228	6.06	5.78	-0.05	47.41	42.54	-0.10	7.83	8.16	0.04
1964	28.96	1.0887	1266.28	1379	188	205	6.74	5.77	-0.14	47.61	43.20	-0.09	7.07	8.15	0.15
1965	29.23	1.0650	1445.43	1539	185	197	7.81	6.44	-0.18	52.66	48.52	-0.08	6.74	8.02	0.19
1966	29.77	1.0742	1447.35	1555	211	227	6.86	6.51	-0.05	52.23	47.88	-0.08	7.61	7.91	0.04
1967	30.31	1.1042	1473.34	1627	266	294	5.54	6.81	0.23	53.68	47.80	-0.11	9.69	7.75	-0.20
1968	30.45	1.0896	1627.72	1774	299	326	5.44	7.42	0.36	58.25	52.19	-0.10	10.70	7.66	-0.28
1969	29.84	1.0059	1313.71	1321	288	290	4.56	5.53	0.21	44.28	41.98	-0.05	9.71	7.64	-0.21
1970	30.67	1.0832	1923.25	2083	231	250	8.33	8.72	0.05	67.93	60.63	-0.11	8.16	7.53	-0.08
1971	31.37	1.1194	1432.08	1603	189	212	7.58	6.71	-0.11	51.10	44.42	-0.13	6.74	7.41	0.10
1972	32.29	1.1490	1580.58	1816	195	224	8.11	7.60	-0.06	56.25	47.78	-0.15	6.94	7.22	0.04
1973	33.08	1.0550	2338.21	2467	357	377	6.55	7.17	0.09	74.57	66.84	-0.10	11.39	9.83	-0.14
1974	36.40	1.0975	2728.87	2995	548	601	4.98	7.15	0.44	82.28	71.42	-0.13	16.52	10.97	-0.34
1975	38.19	1.1066	2777.94	3074	516	571	5.38	7.34	0.36	80.49	69.54	-0.14	14.95	10.49	-0.30
1976	38.84	0.9826	3696.60	3632	224	220	16.50	8.67	-0.47	93.52	88.50	-0.05	5.67	10.03	0.77
1977	40.82	1.0011	6802.94	6811	208	208	32.71	16.25	-0.50	166.84	156.39	-0.06	5.10	9.63	0.89
1978	43.16	1.0357	6269.94	6494	320	331	19.59	15.50	-0.21	150.45	137.83	-0.08	7.68	9.21	0.20
1979	45.27	0.9766	5766.06	5631	358	350	16.11	14.04	-0.13	124.39	119.93	-0.04	7.72	8.34	0.08
1980	51.06	1.0486	4960.92	5202	360	378	13.78	11.36	-0.18	101.88	94.31	-0.07	7.39	8.71	0.18
1981	56.94	1.1373	3735.49	4248	455	517	8.21	9.28	0.13	74.61	65.42	-0.12	9.09	8.02	-0.12
1982	59.89	1.1646	3183.98	3708	315	367	10.11	6.15	-0.39	61.92	53.48	-0.14	6.13	10.13	0.65
1983	62.32	1.1411	3428.15	3912	200	228	17.14	6.49	-0.62	62.77	55.14	-0.12	3.66	9.70	1.65
1984	64.44	1.1011	4390.87	4835	179	197	24.53	8.35	-0.66	75.03	67.70	-0.10	3.06	8.93	1.92
1985	65.53	1.0777	3999.67	4310	158	170	25.31	7.44	-0.71	65.78	60.34	-0.08	2.60	8.73	2.36
1986	65.93	1.0568	4034.07	4263	169	179	23.82	7.36	-0.69	64.66	60.26	-0.07	2.72	8.65	2.19
1987	65.29	0.9682	3738.05	3619	110	107	33.82	6.25	-0.82	55.43	55.11	-0.01	1.64	8.54	4.21
1988	66.68	1.0121	3206.61	3245	226	229	14.17	5.61	-0.60	48.67	46.41	-0.05	3.43	8.38	1.44

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989).  
 2. Data for 1984-1988 and for Cocoa are estimated.

TABLE 5.27: MALAYSIA - TOTAL EFFECTS OF PRICING POLICIES ON SMALLHOLDER COCOA AND PADDY BASED ON VALUE ADDED, 1960-1988

Year	VA of Non Agri Price Index Adj for Total Effects of Pricing Policies	Ratio of Value Added Equil Nom of Exchange Rate to Nominal (Market) Exchange Rate [Es=0.5;Nd=1.5]	Value Added of S\holder of Cocoa Adj for Direct Pricing Policies	Value Added of S\holder of Cocoa Adj for Total Equivalent Pricing Policies	Value Added of Local Paddy at CIF Price at Farm Level	VA of Local Paddy at Pr Equiv at Farm Level	Ratio of VA of S/h Cocoa to VA of Local Paddy at CIF Pr Equiv at Farm Level	Ratio of VA of S/h Cocoa to VA of Local Paddy both Unadj for Total Pricing Policies	Protection Rate or Tot Effects of Pr Policies on S/h Cocoa Prodn Relative to Local Paddy Prodn	Ratio of VA of S/h Cocoa to VA of Non Agri Pr Index	Ratio of VA of S/h Cocoa to VA of Non Agri Pr Index for Total Effects of Pr Policies	Effective Rate of Protection of S/holder Cocoa Production
	[1]	[2]	[3]	[4]=[3]X[2]	[5]	[6]=[5]X[2]	[7]=[4]/[6]	[8]	[9]=[18]-[7]/[7]	[10]=[4]/[1]	[11]	[12]=[11]-[10]/[10]
1960	30.08	1.0588	1225.69	1298	178	189	6.87	6.74	-0.02	43.14	40.92	-0.05
1961	30.17	1.0813	1272.82	1376	191	207	6.66	5.10	-0.23	45.62	42.36	-0.07
1962	29.05	1.1045	1109.32	1225	213	235	5.21	4.85	-0.07	42.18	38.12	-0.10
1963	29.12	1.1081	1228.15	1361	205	228	5.97	4.56	-0.24	46.73	41.93	-0.10
1964	28.96	1.0887	1248.30	1359	188	205	6.64	4.26	-0.36	46.93	42.59	-0.09
1965	29.23	1.0650	1425.55	1518	185	197	7.71	4.26	-0.45	51.94	47.85	-0.08
1966	29.77	1.0742	1427.38	1533	211	227	6.76	4.11	-0.39	51.51	47.22	-0.08
1967	30.31	1.1042	1452.92	1604	266	294	5.46	3.35	-0.39	52.93	47.14	-0.11
1968	30.45	1.0896	1605.68	1750	299	326	5.37	3.12	-0.42	57.46	51.48	-0.10
1969	29.84	1.0059	1295.01	1303	288	290	4.50	4.21	-0.06	43.65	41.39	-0.05
1970	30.67	1.0832	1898.00	2056	231	250	8.22	3.15	-0.62	67.03	59.84	-0.11
1971	31.37	1.1194	1411.95	1581	189	212	7.47	2.83	-0.62	50.39	43.80	-0.13
1972	32.29	1.1490	1558.73	1791	195	224	7.99	2.33	-0.71	55.47	47.12	-0.15
1973	33.08	1.0550	2307.80	2435	357	377	6.46	2.81	-0.57	73.60	65.97	-0.10
1974	36.40	1.0975	2693.33	2956	548	601	4.91	2.67	-0.46	81.21	70.49	-0.13
1975	38.19	1.1066	2741.58	3034	516	571	5.31	2.11	-0.60	79.44	68.63	-0.14
1976	38.84	0.9826	3650.34	3587	224	220	16.30	2.78	-0.83	92.35	87.39	-0.05
1977	40.82	1.0011	6723.45	6731	208	208	32.32	2.91	-0.91	164.89	154.56	-0.06
1978	43.16	1.0357	6131.15	6350	320	331	19.16	3.04	-0.84	147.12	134.78	-0.08
1979	45.27	0.9766	5637.51	5506	358	350	15.75	3.27	-0.79	121.62	117.25	-0.04
1980	51.06	1.0486	4848.64	5084	360	378	13.47	3.75	-0.72	99.58	92.18	-0.07
1981	56.94	1.1373	3647.95	4149	455	517	8.02	2.52	-0.69	72.86	63.89	-0.12
1982	59.89	1.1646	3107.41	3619	315	367	9.86	2.11	-0.79	60.43	52.19	-0.14
1983	62.32	1.1411	3393.79	3873	200	228	16.97	2.65	-0.84	62.14	54.59	-0.12
1984	64.44	1.1011	4349.45	4789	179	197	24.30	2.97	-0.88	74.32	67.06	-0.10
1985	65.53	1.0777	3960.90	4269	158	170	25.07	2.39	-0.90	65.14	59.75	-0.08
1986	65.93	1.0568	3994.99	4222	169	179	23.59	2.66	-0.89	64.04	59.68	-0.07
1987	65.29	0.9682	3700.89	3583	110	107	33.49	3.11	-0.91	54.88	54.56	-0.01
1988	66.68	1.0121	3172.82	3211	226	229	14.02	4.14	-0.70	48.16	45.92	-0.05

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989).  
 2. Data for 1984-1988 and for Cocoa are estimated.

The picture pertaining to the ERP of palm oil does not differ much from either estate or smallholder rubber. As can be seen from Table 5.25, the ERP has been a significant negative value in each of the years within 1960-1988. The effective discrimination level has been comparatively large between 1970 and 1978, ranging from -0.19 to -0.35. Nevertheless, the negative ERP provided to palm oil has tended to decline gradually after that to reach a more tolerable level of -0.14 to -0.27.

Table 5.26 shows that the ERP of estate cocoa relative to paddy production has tended to become deteriorated since 1960, except for 1967-1970 and 1973-1974. In 1982 the effective protection of value added of estate cocoa was -0.39 but this reached -0.69 in 1987 and -0.82 in 1988. The ERP of estate cocoa vis-a-vis non-agriculture, on the other hand, while it has tended to remain negative over 1960-1988, has appeared to be less severe unlike its comparison with paddy.

The total effects of pricing policies have been to provide negative protection of value added for smallholder cocoa when compared with either paddy production or non-agricultural goods. As shown by Table 5.27, the ERP has remained negative throughout the entire 1960-1988 period.

Whereas the rate of protection of value added has been negative for the perennial export crops, it has been consistently positive for paddy since 1960. In fact, the ERP has become positively greater since 1976, as shown in Column 14 of Table 5.23. This stems primarily from the exceedingly high price support given to paddy in the face of low, and generally declining world prices of rice. Only during 1967-1970 and 1973-1975 has the ERP provided to paddy been negative. This occurred during the time when the GMP was less than the c.i.f. price of rice. It may be noticed that the effective protection accorded to paddy production has appeared excessive in 1983, being 197,5 percent.

## 6. CONCLUDING REMARKS

The quest for economic growth constitutes a major policy objective of developing countries. In these countries agriculture and economic growth are inextricably linked. Because agriculture accounts for a large share of many developing countries' economies, success there will play a large role in determining the course of their national economies.

There has been an increasing concern about trade and pricing policies in many developing countries that depend heavily on agriculture. This is because these policies greatly influence the growth performance of the agriculture sector and of rural incomes.

At the same time, many developing countries have followed macro-economic and sectoral policies that discriminate against growth in agriculture and in incomes in rural areas, where poverty, hunger, and malnutrition are most strongly concentrated. These include also policies that accord excessive protection of manufacturing sector which contribute to the discrimination against agriculture.

This report represents a Subproject initiated by the Kiel Institute of World Economics which aims to empirically measure the extent of discrimination of the agricultural sector in Malaysia. The focus of the Subproject is to analyse the magnitude and structure of agricultural price protection and to evaluate how the government fixes the price ratio between agriculture and industry, and between individual agricultural products.

The basic premise of this Subproject is that despite efforts to diversify, Malaysian agriculture is still predominantly export-oriented. Malaysia is presently the largest world producer of natural rubber and third largest producer of palm oil and cocoa. Empirical evidence confirms that the agricultural sector in Malaysia is not static.

Despite these obvious successes in export markets, Kelim Sdn. Bhd. (1979) and Jenkins and Lai (1989) show that export crops in Malaysia have received less protection than food crops, particularly rice, and non-agricultural products. This is due to the importance of the rice sector for self-sufficiency, income generation and poverty eradication and to the government's thrust on industrialisation.

The starting point for this Subproject is provided by the Jenkins-Lai study. Jenkins and Lai have conducted an empirical evaluation of price policies for the rubber, oil palm and rice sectors in Malaysia. They conclude that the agricultural and trade policies have been remarkably consistent over 1960-1983. There has been a strong emphasis on protecting food production and on developing the non-agricultural sector. On the other hand, the two very successful export crops, rubber and oil palm, have been systematically discriminated against by both trade and taxation policies.

This Subproject may be seen as an extension of the Jenkins-Lai study. Three major areas of improvement to their study, however, have been considered; these relate to the methodology, product sample and observation period.

Firstly, in estimating the effective rates of protection Jenkins and Lai have assumed constant value added shares in agricultural sectors which have been derived from the 1971 Input-Output table for Malaysia (Economic Planning Unit 1972). These shares are in turn employed to generate a series of value added which form the basis to estimate the protection rates. However, indications are that the value added ratios in agricultural sectors have changed over time. In view of this, a re-calculation of an alternative series of effective protection rates on the basis of variable value added ratios appears imperative.

Secondly, Jenkins' and Lai's study has included the export crops rubber and oil palm (apart from paddy, and non-agriculture) in their product sample. The cocoa sector, which is the most rapidly growing sector in Malaysian agriculture, has not been considered in their empirical analyses. Because of this it appears desirable to include also cocoa in the product sample in order to arrive at a consistent statement of a discrimination of the agricultural export sector.

Thirdly, the study by Jenkins and Lai covers the period from 1960 to 1983. Given the availability of more recent statistical data, the observation period should appropriately be extended. In this Subproject the prices and other measures are provided on a yearly basis from 1960 to 1988.

Having discussed the background to and the prerequisites of the Subproject it is now time to elucidate its empirical findings. The main focus inevitably has been to verify the discrimination-of-exports hypothesis as derived by Jenkins and Lai. This has been achieved by looking at the trend in relative prices, nominal rates of protection (NRP), indirect and total effects of pricing policies and effective rates of protection (ERP).

The producer prices of estate and smallholder rubber and oil palm, relative to paddy, have all tended to decline gradually between 1960 and 1988 as shown in Table 6.1. In the case of rubber and oil palm their relative prices by mid-1980s have been only about half of that prevailing in 1960. On the contrary, the relative prices for estate and smallholder cocoa have tended to be maintained over 1960-1988. In fact, over 1977-1980, their relative prices have been in the significantly high range of 10.8 - 17.3, compared with 5.5 in 1960 and 9.4 in 1976. Indeed there has been no discernable substantial erosion in the relative price of both estate and smallholder cocoa even in the 1980s.

It is clear that the movement in relative producer prices has reduced the attractiveness of rubber production vis-a-vis paddy through time. The profitability of both estate and smallholder

TABLE 6.1: MALAYSIA - RELATIVE PRICES FOR RUBBER, OIL PALM, COCOA, PADDY AND NON AGRICULTURE, 1960-1988.

Year	COMPARED WITH RICE						COMPARED WITH NON-AGRICULTURE					
	Rubber		Cocoa		Palm Oil		Rubber		Cocoa		Palm Oil	Paddy
	Estate	S/holder	Estate	S/holder			Estate	S/holder	Estate	S/holder		
1960	7.74	7.11	5.52	5.50	2.10	36.00	33.11	26.10	25.60	9.76	4.65	
1961	6.00	5.38	5.73	5.71	2.18	27.85	24.96	27.00	26.49	10.13	4.64	
1962	5.74	5.12	5.00	4.98	2.05	27.51	24.53	24.36	23.84	9.81	4.79	
1963	5.45	4.82	5.53	5.51	1.99	25.92	22.92	26.76	26.23	9.48	4.76	
1964	5.12	4.49	5.62	5.60	2.17	24.33	21.34	27.16	26.63	10.34	4.76	
1965	5.12	4.49	6.42	6.40	2.54	23.98	21.03	30.45	29.93	11.90	4.68	
1966	4.97	4.34	6.43	6.40	2.20	22.90	20.00	30.06	29.54	10.13	4.61	
1967	4.18	3.54	6.54	6.52	2.07	18.91	15.99	30.01	29.48	9.35	4.52	
1968	3.93	3.29	7.23	7.20	1.45	17.57	14.70	32.72	32.20	6.46	4.47	
1969	5.08	4.43	5.83	5.81	1.42	22.61	19.75	26.41	25.88	6.34	4.45	
1970	3.97	3.33	8.54	8.52	2.22	17.46	14.63	37.95	37.43	9.75	4.39	
1971	3.63	2.98	6.36	6.34	2.24	15.71	12.89	27.92	27.39	9.68	4.32	
1972	3.12	2.46	7.02	6.99	1.71	13.13	10.37	30.00	29.47	7.20	4.21	
1973	3.44	2.96	7.22	7.20	1.31	19.71	16.98	41.82	41.46	7.49	5.73	
1974	3.25	2.82	6.92	6.90	1.99	20.74	18.02	44.67	44.08	12.72	6.39	
1975	2.45	2.23	7.04	7.03	1.86	14.99	13.63	43.52	42.93	11.39	6.11	
1976	3.16	2.93	9.37	9.35	1.63	18.46	17.14	55.24	54.66	9.51	5.84	
1977	3.31	3.07	17.25	17.23	2.14	18.56	17.23	97.25	96.67	12.03	5.61	
1978	3.41	3.16	15.68	15.66	2.30	18.29	16.95	95.65	94.98	12.33	5.37	
1979	3.48	3.25	12.62	12.60	2.15	20.15	18.84	73.65	73.08	12.49	5.80	
1980	3.97	3.73	10.86	10.84	1.96	21.04	19.76	58.01	57.45	10.38	5.30	
1981	2.71	2.51	6.21	6.19	1.47	17.41	16.12	40.35	39.82	9.46	6.43	
1982	2.31	2.10	5.29	5.27	1.29	14.25	12.93	33.10	32.52	7.95	6.17	
1983	2.77	2.55	5.65	5.63	1.36	16.34	15.03	33.84	33.27	8.05	5.91	
1984	3.09	2.85	7.64	7.62	1.80	16.58	15.29	41.44	40.87	9.67	5.36	
1985	2.54	2.29	6.96	6.94	1.49	13.30	12.02	36.98	36.42	7.80	5.24	
1986	2.80	2.61	7.02	7.00	0.92	14.57	13.56	36.93	36.37	4.77	5.19	
1987	3.23	2.99	6.51	6.49	1.00	16.58	15.32	33.81	33.26	5.15	5.13	
1988	4.24	3.98	5.58	5.56	1.34	21.31	20.03	28.54	27.98	6.74	5.03	

rubber when compared with paddy has been steeply diminished over 1960-1988, unlike in the case of oil palm. This is due to the government policy of maintaining, and perhaps slightly increasing, the real price of paddy to fulfil the policy target of self-sufficiency, income improvement and policy alleviation. It is also clear that the movement in producer prices has retained the attractiveness of cocoa relative to paddy production through time. The absence of any export tax for cocoa by the government has rendered its price consistently high compared with either rubber or oil palm. The attractiveness of cocoa has been substantially enhanced during its boom period of 1977-1980. Government taxation policy may therefore be taken to be instrumental in encouraging the impressive expansion of the cocoa sector over time.

Almost a similar finding has been obtained when comprising the producer prices of the individual export crops vis-a-vis the non-agriculture price index. The attractiveness of rubber has declined relative to non-agriculture between 1960 and 1988. For oil palm its relative profitability has tended to diminish steadily after 1980. In comparison, there appears to be a slight upward trend in the producer price of paddy, and also cocoa, as compared to the price index for non-agricultural goods. This again supports the finding that both paddy and cocoa have tended to be supported by government pricing policies, although for different reasons, as compared to either rubber or oil palm.

Despite the lack of support accorded to the rubber and oil palm sectors by the pricing policies, these sectors need not necessarily be severely affected. Though their relative prices have worsened, these sectors have enjoyed dramatic yield increases via an adoption of high yielding varieties and improved technology. As such, the incomes of those in rubber and oil palm production have not been depressed to nearly the degree that the relative price changes would suggest.



In terms of effects of pricing policies on export crops as against paddy based on relative prices Table 6.2 shows clearly that the export crops have generally been discriminated. The nominal protection rates have been negative except for the late 1960s and mid-1970s during which time the world (c.i.f) price of rice has been remarkably higher than the Guaranteed Minimum Price, GMP, for paddy.

The (negative) NRPs for rubber, oil palm and cocoa have indicated an increasing trend over time. Their yearly magnitude of the protection rates also have appeared to be similar. The extent of NRPs for both estate and smallholder cocoa, while negative as for the other export crops, are nevertheless of a lesser magnitude. It therefore appears strongly that the pricing policies over 1960-1988 have aimed to render cocoa production relatively more attractive than either rubber or oil palm. The absence of an export tax on cocoa has effectively contributed to consistently stable, and at times high, producer prices for the commodity. The relative attractiveness of cocoa may well be further enhanced by the advent of technological improvement, especially in high yielding varieties, in this sector.

Table 6.3 presents the effects of pricing policies on export crops and paddy vis-a-vis non-agriculture since 1960 based on relative prices. It is evident that the government's pricing and taxation policies have effectively discriminated against the export crops but have strongly protected paddy production. The total effects of the policies have been relatively high for rubber. The smallholder rubber has also tended to be discriminated to a much greater extent than the estate rubber from 1960 up to the mid-1970s. In these two sectors the direct effects of pricing policy have appeared to be more prominent compared to the indirect effects.

In the case of oil palm, no distinctive trend of the extent of negative protection is evident. However, Table 6.3 reveals that the protection accorded to oil palm has generally been less severe than the protection provided to rubber in the 1960s and

TABLE 6.2: MALAYSIA - DIRECT, INDIRECT AND TOTAL EFFECTS OF PRICING POLICIES COMPARED TO PADDY BASED ON RELATIVE PRICES, 1960-1988

Year	Rubber Estate			Rubber S/holder			Palm Oil			Cocoa Estate			Cocoa S/holder		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
1960	-0.31	0.00	-0.31	-0.35	0.00	-0.35	-0.29	0.00	-0.29	-0.23	0.00	-0.23	-0.23	0.00	-0.23
1961	-0.26	0.00	-0.26	-0.31	0.00	-0.31	-0.25	0.00	-0.25	-0.18	0.00	-0.18	-0.18	0.00	-0.18
1962	-0.17	0.00	-0.17	-0.23	0.00	-0.23	-0.17	0.00	-0.17	-0.10	0.00	-0.10	-0.10	0.00	-0.10
1963	-0.19	0.00	-0.19	-0.25	0.00	-0.25	-0.20	0.00	-0.20	-0.13	0.00	-0.13	-0.13	0.00	-0.13
1964	-0.25	0.00	-0.25	-0.31	0.00	-0.31	-0.26	0.00	-0.26	-0.19	0.00	-0.19	-0.19	0.00	-0.19
1965	-0.26	0.00	-0.26	-0.32	0.00	-0.32	-0.27	0.00	-0.27	-0.20	0.00	-0.20	-0.20	0.00	-0.20
1966	-0.17	0.00	-0.17	-0.24	0.00	-0.24	-0.17	0.00	-0.17	-0.11	0.00	-0.11	-0.11	0.00	-0.11
1967	0.04	0.00	0.04	-0.06	0.00	-0.06	0.02	0.00	0.02	0.10	0.00	0.10	0.10	0.00	0.10
1968	0.15	0.00	0.15	0.03	0.00	0.03	0.13	0.00	0.13	0.23	0.00	0.23	0.23	0.00	0.23
1969	0.09	0.00	0.09	0.01	0.00	0.01	0.09	0.00	0.09	0.18	0.00	0.18	0.18	0.00	0.18
1970	-0.10	0.00	-0.10	-0.19	0.00	-0.19	-0.11	0.00	-0.11	-0.03	0.00	-0.03	-0.03	0.00	-0.03
1971	-0.24	0.00	-0.24	-0.32	0.00	-0.32	-0.25	0.00	-0.25	-0.19	0.00	-0.19	-0.19	0.00	-0.19
1972	-0.22	0.00	-0.22	-0.33	0.00	-0.33	-0.24	0.00	-0.24	-0.17	0.00	-0.17	-0.17	0.00	-0.17
1973	-0.08	0.00	-0.08	-0.16	0.00	-0.16	-0.08	0.00	-0.08	0.04	0.00	0.04	0.04	0.00	0.04
1974	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.28	0.28	0.00	0.28
1975	0.02	0.00	0.02	0.01	0.00	0.01	-0.06	0.00	-0.06	0.21	0.00	0.21	0.21	0.00	0.21
1976	-0.54	0.00	-0.54	-0.55	0.00	-0.55	-0.50	0.00	-0.50	-0.42	0.00	-0.42	-0.42	0.00	-0.42
1977	-0.58	0.00	-0.58	-0.59	0.00	-0.59	-0.57	0.00	-0.57	-0.45	0.00	-0.45	-0.45	0.00	-0.45
1978	-0.42	0.00	-0.42	-0.43	0.00	-0.43	-0.30	0.00	-0.30	-0.21	0.00	-0.21	-0.21	0.00	-0.21
1979	-0.46	0.00	-0.46	-0.47	0.00	-0.47	-0.30	0.00	-0.30	-0.23	0.00	-0.23	-0.23	0.00	-0.23
1980	-0.44	0.00	-0.44	-0.45	0.00	-0.45	-0.28	0.00	-0.28	-0.22	0.00	-0.22	-0.22	0.00	-0.22
1981	-0.41	0.00	-0.41	-0.42	0.00	-0.42	-0.30	0.00	-0.30	-0.25	0.00	-0.25	-0.25	0.00	-0.25
1982	-0.52	0.00	-0.52	-0.52	0.00	-0.52	-0.47	0.00	-0.47	-0.45	0.00	-0.45	-0.45	0.00	-0.45
1983	-0.67	0.00	-0.67	-0.67	0.00	-0.67	-0.62	0.00	-0.62	-0.62	0.00	-0.62	-0.62	0.00	-0.62
1984	-0.66	0.00	-0.66	-0.66	0.00	-0.66	-0.64	0.00	-0.64	-0.63	0.00	-0.63	-0.63	0.00	-0.63
1985	-0.69	0.00	-0.69	-0.69	0.00	-0.69	-0.67	0.00	-0.67	-0.66	0.00	-0.66	-0.66	0.00	-0.66
1986	-0.67	0.00	-0.67	-0.67	0.00	-0.67	-0.66	0.00	-0.66	-0.65	0.00	-0.65	-0.65	0.00	-0.65
1987	-0.75	0.00	-0.75	-0.76	0.00	-0.76	-0.74	0.00	-0.74	-0.74	0.00	-0.74	-0.74	0.00	-0.74
1988	-0.61	0.00	-0.61	-0.61	0.00	-0.61	-0.63	0.00	-0.63	-0.56	0.00	-0.56	-0.56	0.00	-0.56

TABLE 6.3: MALAYSIA - DIRECT, INDIRECT AND TOTAL EFFECTS OF PRICING POLICIES COMPARED TO NON-AGRICULTURE BASED ON RELATIVE PRICES, 1960-1988

Year	Rubber Estate			Rubber S/holder			Palm Oil			Cocoa Estate			Cocoa S/holder			Paddy		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
1960	-0.11	-0.07	-0.18	-0.16	-0.07	-0.23	-0.08	-0.07	-0.15	0.00	-0.07	-0.07	0.00	-0.07	-0.07	0.30	-0.07	0.23
1961	-0.09	-0.09	-0.18	-0.15	-0.09	-0.24	-0.08	-0.09	-0.17	0.00	-0.09	-0.09	0.00	-0.09	-0.09	0.22	-0.09	0.13
1962	-0.08	-0.10	-0.18	-0.14	-0.10	-0.24	-0.08	-0.10	-0.18	0.00	-0.10	-0.10	0.00	-0.10	-0.10	0.11	-0.10	0.01
1963	-0.07	-0.10	-0.17	-0.14	-0.10	-0.24	-0.08	-0.10	-0.18	0.00	-0.10	-0.10	0.00	-0.10	-0.10	0.15	-0.10	0.05
1964	-0.07	-0.09	-0.16	-0.15	-0.09	-0.24	-0.08	-0.09	-0.17	0.00	-0.09	-0.09	0.00	-0.09	-0.09	0.24	-0.09	0.15
1965	-0.08	-0.08	-0.16	-0.15	-0.08	-0.23	-0.08	-0.08	-0.16	0.00	-0.08	-0.08	0.00	-0.08	-0.08	0.26	-0.08	0.18
1966	-0.07	-0.08	-0.15	-0.14	-0.08	-0.22	-0.08	-0.08	-0.16	0.00	-0.08	-0.08	0.00	-0.08	-0.08	0.12	-0.08	0.04
1967	-0.06	-0.11	-0.17	-0.15	-0.11	-0.26	-0.08	-0.11	-0.19	0.00	-0.11	-0.11	0.00	-0.11	-0.11	-0.09	-0.11	-0.20
1968	-0.06	-0.10	-0.16	-0.16	-0.10	-0.26	-0.08	-0.10	-0.18	0.00	-0.10	-0.10	0.00	-0.10	-0.10	-0.18	-0.10	-0.28
1969	-0.07	-0.05	-0.12	-0.15	-0.05	-0.20	-0.08	-0.05	-0.13	0.00	-0.05	-0.05	0.00	-0.05	-0.05	-0.16	-0.05	-0.21
1970	-0.07	-0.09	-0.16	-0.17	-0.09	-0.26	-0.08	-0.09	-0.17	0.00	-0.09	-0.09	0.00	-0.09	-0.09	0.03	-0.09	-0.06
1971	-0.06	-0.11	-0.17	-0.17	-0.11	-0.28	-0.08	-0.11	-0.19	0.00	-0.11	-0.11	0.00	-0.11	-0.11	0.23	-0.11	0.12
1972	-0.07	-0.12	-0.19	-0.19	-0.12	-0.31	-0.09	-0.12	-0.21	0.00	-0.12	-0.12	0.00	-0.12	-0.12	0.20	-0.12	0.08
1973	-0.11	-0.07	-0.18	-0.19	-0.07	-0.26	-0.11	-0.07	-0.18	0.00	-0.07	-0.07	0.00	-0.07	-0.07	-0.04	-0.07	-0.11
1974	-0.15	-0.09	-0.24	-0.22	-0.09	-0.31	-0.22	-0.09	-0.31	0.00	-0.09	-0.09	0.00	-0.09	-0.09	-0.22	-0.09	-0.31
1975	-0.15	-0.09	-0.24	-0.17	-0.09	-0.26	-0.22	-0.09	-0.31	0.00	-0.09	-0.09	0.00	-0.09	-0.09	-0.17	-0.09	-0.26
1976	-0.21	-0.02	-0.23	-0.22	-0.02	-0.24	-0.15	-0.02	-0.17	0.00	-0.02	-0.02	0.00	-0.02	-0.02	0.72	-0.02	0.70
1977	-0.23	-0.03	-0.26	-0.24	-0.03	-0.27	-0.21	-0.03	-0.24	0.00	-0.03	-0.03	0.00	-0.03	-0.03	0.83	-0.03	0.80
1978	-0.27	0.07	-0.20	-0.28	0.07	-0.21	-0.11	0.07	-0.04	0.00	0.07	0.07	0.00	0.07	0.07	0.27	-0.07	0.20
1979	-0.30	-0.01	-0.31	-0.32	-0.01	-0.33	-0.10	-0.01	-0.11	0.00	-0.01	-0.01	0.00	-0.01	-0.01	0.29	-0.01	0.28
1980	-0.29	-0.06	-0.35	-0.30	-0.06	-0.36	-0.07	-0.06	-0.13	0.00	-0.06	-0.06	0.00	-0.06	-0.06	0.29	-0.06	0.23
1981	-0.21	-0.10	-0.31	-0.22	-0.10	-0.32	-0.06	-0.10	-0.16	0.00	-0.10	-0.10	0.00	-0.10	-0.10	0.33	-0.10	0.23
1982	-0.12	-0.12	-0.24	-0.13	-0.12	-0.25	-0.03	-0.12	-0.15	0.00	-0.12	-0.12	0.00	-0.12	-0.12	0.82	-0.12	0.70
1983	-0.14	-0.11	-0.25	-0.15	-0.11	-0.26	-0.02	-0.11	-0.13	0.00	-0.11	-0.11	0.00	-0.11	-0.11	1.60	-0.11	1.49
1984	-0.07	-0.09	-0.16	-0.08	-0.09	-0.17	-0.19	-0.09	-0.28	0.00	-0.09	-0.09	0.00	-0.09	-0.09	1.71	-0.09	1.62
1985	-0.08	-0.08	-0.16	-0.08	-0.08	-0.16	-0.17	-0.08	-0.25	0.00	-0.08	-0.08	0.00	-0.08	-0.08	1.96	-0.08	1.88
1986	-0.07	-0.06	-0.13	-0.06	-0.06	-0.12	-0.07	-0.06	-0.13	0.00	-0.06	-0.06	0.00	-0.06	-0.06	1.82	-0.06	1.76
1987	-0.07	0.00	-0.07	-0.08	0.00	-0.08	-0.12	0.00	-0.12	0.00	0.00	0.00	0.00	0.00	0.00	2.78	0.00	2.78
1988	-0.11	-0.03	-0.14	-0.12	-0.03	-0.15	-0.15	-0.03	-0.18	0.00	-0.03	-0.03	0.00	-0.03	-0.03	1.27	-0.03	1.24

1970s. In the 1980s, oil palm has tended to be discriminated to a greater extent than rubber.

Evidently, the pricing policies have not produced any indirect effects on the prices of either estate or smallholder cocoa relative to non-agricultural goods. This is simply because there is no export tax imposed on cocoa. As a result the total effects of pricing policies, though negative, have tended to remain fairly low through time. Again, it may be inferred that the pricing policies since 1960 have not intended to discriminate cocoa to any extent comparable with rubber and oil palm. Nonetheless, these policies have still shown a deliberate support for non-agriculture. Thus, even though cocoa production may not be as attractive when compared against non-agricultural goods, it is relatively more lucrative than either rubber or oil palm. This could have explained the rapid investment in cocoa, and concomitantly the significant disinvestment in rubber, since the early 1960s.

The fact that the pricing policies have consistently aimed to support the paddy sector is brought out again in Table 6.3. The protection rate for paddy has been positive in 22 out of the 29 years of the study. The level of protection provided to paddy as against non-agriculture has been almost doubled since 1983.

An assessment of the role of government's pricing policies in the protection of relative value added may be discerned from Table 6.4. Despite significant improvements in the value added shares in estate and smallholder rubber and cocoa over the 1960-1988 period, these export sectors have generally been discriminated against vis-a-vis paddy production. Table 6.4 shows that the direct impact of policies have been more deleterious on both rubber and oil palm sectors. The effective protection has also become increasingly negative over time. In comparison, there has been a generally lesser discrimination against estate and smallholder cocoa in terms of relative value added, especially between 1960 and 1982. Since 1983, the extent of discrimination has worsened to reach a level almost comparable to that of rubber and oil palm.

TABLE 6.4: MALAYSIA - DIRECT, INDIRECT AND TOTAL EFFECTS OF PRICING POLICIES COMPARED TO PADDY BASED ON RELATIVE VALUE ADDED, 1960-1988

Year	Rubber Estate			Rubber S/holder			Palm Oil			Cocoa Estate			Cocoa S/holder		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
1960	-0.35	0.00	-0.35	-0.39	0.00	-0.39	-0.32	0.00	-0.32	-0.21	0.00	-0.21	-0.02	0.00	-0.02
1961	-0.28	0.00	-0.28	-0.34	0.00	-0.34	-0.27	0.00	-0.27	-0.14	0.00	-0.14	-0.23	0.00	-0.23
1962	-0.19	0.00	-0.19	-0.26	0.00	-0.26	-0.19	0.00	-0.19	-0.02	0.00	-0.02	-0.07	0.00	-0.07
1963	-0.22	0.00	-0.22	-0.28	0.00	-0.28	-0.22	0.00	-0.22	-0.05	0.00	-0.05	-0.24	0.00	-0.24
1964	-0.28	0.00	-0.28	-0.34	0.00	-0.34	-0.28	0.00	-0.28	-0.14	0.00	-0.14	-0.36	0.00	-0.36
1965	-0.29	0.00	-0.29	-0.36	0.00	-0.36	-0.30	0.00	-0.30	-0.18	0.00	-0.18	-0.45	0.00	-0.45
1966	-0.19	0.00	-0.19	-0.26	0.00	-0.26	-0.20	0.00	-0.20	-0.05	0.00	-0.05	-0.39	0.00	-0.39
1967	0.04	0.00	0.04	-0.08	0.00	-0.08	0.01	0.00	0.01	0.23	0.00	0.23	-0.39	0.00	-0.39
1968	0.16	0.00	0.16	0.02	0.00	0.02	0.14	0.00	0.14	0.36	0.00	0.36	-0.42	0.00	-0.42
1969	0.10	0.00	0.10	0.00	0.00	0.00	0.09	0.00	0.09	0.21	0.00	0.21	-0.06	0.00	-0.06
1970	-0.11	0.00	-0.11	-0.22	0.00	-0.22	-0.12	0.00	-0.12	0.05	0.00	0.05	-0.62	0.00	-0.62
1971	-0.26	0.00	-0.26	-0.36	0.00	-0.36	-0.28	0.00	-0.28	-0.11	0.00	-0.11	-0.62	0.00	-0.62
1972	-0.25	0.00	-0.25	-0.36	0.00	-0.36	-0.27	0.00	-0.27	-0.06	0.00	-0.06	-0.71	0.00	-0.71
1973	-0.10	0.00	-0.10	-0.18	0.00	-0.18	-0.10	0.00	-0.10	0.09	0.00	0.09	-0.57	0.00	-0.57
1974	0.08	0.00	0.08	-0.01	0.00	-0.01	-0.01	0.00	-0.01	0.44	0.00	0.44	-0.46	0.00	-0.46
1975	0.02	0.00	0.02	0.00	0.00	0.00	-0.08	0.00	-0.08	0.36	0.00	0.36	-0.60	0.00	-0.60
1976	-0.59	0.00	-0.59	-0.60	0.00	-0.60	-0.56	0.00	-0.56	-0.47	0.00	-0.47	-0.83	0.00	-0.83
1977	-0.63	0.00	-0.63	-0.64	0.00	-0.64	-0.62	0.00	-0.62	-0.50	0.00	-0.50	-0.91	0.00	-0.91
1978	-0.46	0.00	-0.46	-0.47	0.00	-0.47	-0.34	0.00	-0.34	-0.21	0.00	-0.21	-0.84	0.00	-0.84
1979	-0.40	0.00	-0.40	-0.49	0.00	-0.49	-0.22	0.00	-0.22	-0.13	0.00	-0.13	-0.79	0.00	-0.79
1980	-0.46	0.00	-0.46	-0.47	0.00	-0.47	-0.28	0.00	-0.28	-0.18	0.00	-0.18	-0.72	0.00	-0.72
1981	-0.19	0.00	-0.19	-0.43	0.00	-0.43	-0.08	0.00	-0.08	0.13	0.00	0.13	-0.69	0.00	-0.69
1982	-0.55	0.00	-0.55	-0.55	0.00	-0.55	-0.50	0.00	-0.50	-0.39	0.00	-0.39	-0.79	0.00	-0.79
1983	-0.72	0.00	-0.72	-0.71	0.00	-0.71	-0.68	0.00	-0.68	-0.62	0.00	-0.62	-0.84	0.00	-0.84
1984	-0.72	0.00	-0.72	-0.70	0.00	-0.70	-0.76	0.00	-0.76	-0.66	0.00	-0.66	-0.88	0.00	-0.88
1985	-0.75	0.00	-0.75	-0.74	0.00	-0.74	-0.78	0.00	-0.78	-0.71	0.00	-0.71	-0.90	0.00	-0.90
1986	-0.73	0.00	-0.73	-0.72	0.00	-0.72	-0.73	0.00	-0.73	-0.69	0.00	-0.69	-0.89	0.00	-0.89
1987	-0.83	0.00	-0.83	-0.82	0.00	-0.82	-0.84	0.00	-0.84	-0.82	0.00	-0.82	-0.91	0.00	-0.91
1988	-0.66	0.00	-0.66	-0.64	0.00	-0.64	-0.68	0.00	-0.68	-0.60	0.00	-0.60	-0.70	0.00	-0.70

In Table 6.5 the discriminatory effects of pricing policies on the value added of export crops relative to non-agriculture is also clear. The magnitude of the discrimination, however, appears to be much less than that based on the comparison with paddy. Paddy, on the other hand, has consistently been protected when compared with non-agricultural production.

The findings of this Subproject overall have verified and substantiated the discrimination-of-exports hypothesis of Jenkins and Lai. The discrimination applies not only to rubber and oil palm but also to cocoa, though the extent of the discrimination against the latter export crop appears to be slightly lesser. In other words, increasing the product sample of the Jenkins-Lai study to include also cocoa has not altered the general trend. In addition, despite improvement in the value added shares in the export crop sectors, notably in rubber and cocoa, the level of discrimination against these sectors vis-a-vis paddy in terms of relative value added is still significant. It has to be noted that the value added share in paddy itself has indicated a downward trend over time.

It seems clear that the pricing, taxation and trade policies in Malaysia have rendered a relatively greater level of protection to paddy production and non-agricultural goods, and concomitantly making them more attractive for investment, compared to export crops. This is undoubtedly due to the importance of the rice sector for self-sufficiency, income generation and poverty eradication and to the government's thrust on industrialisation.

It appears pertinent at this point to outline a number of recent events which may have implications on the nature and extent of agricultural protection in Malaysia. In August 1990 the government has decided to increase the existing paddy price subsidy by \$5 reach to \$15 per picul (New Straits Times 25 August 1990, Utusan Malaysia 24 August, 1990). This 50 percent increase in the paddy subsidy will be backdated to July so that paddy farmers who had already harvested their crops will also benefit.

TABLE 6.5: MALAYSIA - DIRECT, INDIRECT AND TOTAL EFFECTS OF PRICING POLICIES COMPARED TO NON-AGRICULTURE BASED ON RELATIVE VALUE ADDED, 1960-1988

Year	Rubber Estate			Rubber S/holder			Palm Oil			Cocoa Estate			Cocoa S/holder			Paddy		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
1960	-0.11	-0.06	-0.17	-0.17	-0.05	-0.22	-0.09	-0.05	-0.14	0.01	-0.06	-0.05	0.00	-0.05	-0.05	0.32	-0.05	0.27
1961	-0.25	0.08	-0.17	-0.16	-0.07	-0.23	-0.09	-0.07	-0.16	0.01	-0.08	-0.07	0.00	-0.07	-0.07	0.23	-0.07	0.16
1962	-0.27	0.09	-0.18	-0.15	-0.10	-0.25	-0.08	-0.10	-0.18	-0.01	-0.09	-0.10	0.00	-0.10	-0.10	0.11	-0.10	0.01
1963	-0.08	-0.10	-0.18	-0.15	-0.10	-0.25	-0.08	-0.10	-0.18	0.00	-0.10	-0.10	0.00	-0.10	-0.10	0.15	-0.10	0.05
1964	-0.09	-0.08	-0.17	-0.15	-0.09	-0.24	-0.08	-0.09	-0.17	-0.01	-0.08	-0.09	0.00	-0.09	-0.09	0.24	-0.09	0.15
1965	-0.10	-0.06	-0.16	-0.16	-0.08	-0.24	-0.08	-0.08	-0.16	-0.02	-0.06	-0.08	0.00	-0.08	-0.08	0.27	-0.08	0.19
1966	-0.08	-0.07	-0.15	-0.15	-0.08	-0.23	-0.09	-0.08	-0.17	-0.01	-0.07	-0.08	0.00	-0.08	-0.08	0.12	-0.08	0.04
1967	-0.08	-0.09	-0.17	-0.15	-0.11	-0.26	-0.08	-0.11	-0.19	-0.02	-0.09	-0.11	0.00	-0.11	-0.11	-0.09	-0.11	-0.20
1968	-0.09	-0.08	-0.17	-0.17	-0.10	-0.27	-0.09	-0.10	-0.19	-0.02	-0.08	-0.10	0.00	-0.10	-0.10	-0.18	-0.10	-0.28
1969	-0.12	-0.01	-0.13	-0.16	-0.05	-0.21	-0.09	-0.05	-0.14	-0.04	-0.01	-0.05	0.00	-0.05	-0.05	-0.16	-0.05	-0.21
1970	-0.10	-0.08	-0.18	-0.17	-0.11	-0.28	-0.08	-0.11	-0.19	-0.03	-0.08	-0.11	0.00	-0.11	-0.11	0.03	-0.11	-0.08
1971	-0.08	-0.11	-0.19	-0.17	-0.13	-0.30	-0.08	-0.13	-0.21	-0.02	-0.11	-0.13	0.00	-0.13	-0.13	0.23	-0.13	0.10
1972	-0.09	-0.13	-0.22	-0.19	-0.15	-0.34	-0.09	-0.15	-0.24	-0.02	-0.13	-0.15	0.00	-0.15	-0.15	0.19	-0.15	0.04
1973	-0.17	-0.05	-0.22	-0.20	-0.10	-0.30	-0.12	-0.10	-0.22	-0.05	-0.05	-0.10	0.00	-0.10	-0.10	-0.04	-0.10	-0.14
1974	-0.19	-0.09	-0.28	-0.22	-0.13	-0.35	-0.22	-0.13	-0.35	-0.04	-0.09	-0.13	0.00	-0.13	-0.13	-0.21	-0.13	-0.34
1975	-0.19	-0.10	-0.29	-0.16	-0.14	-0.30	-0.21	-0.14	-0.35	-0.04	-0.10	-0.14	0.00	-0.14	-0.14	-0.16	-0.14	-0.30
1976	-0.30	0.02	-0.28	-0.24	-0.05	-0.29	-0.17	-0.05	-0.22	-0.07	0.02	-0.05	0.00	-0.05	-0.05	0.82	-0.05	0.77
1977	-0.31	0.00	-0.31	-0.26	-0.06	-0.32	-0.23	-0.06	-0.29	-0.06	0.00	-0.06	0.00	-0.06	-0.06	0.95	-0.06	0.89
1978	-0.32	-0.03	-0.35	-0.29	-0.08	-0.37	-0.13	-0.08	-0.21	-0.05	-0.03	-0.08	0.00	-0.08	-0.08	0.28	-0.08	0.20
1979	-0.38	0.02	-0.36	-0.33	-0.04	-0.37	-0.11	-0.04	-0.15	-0.06	0.02	-0.04	0.00	-0.04	-0.04	0.12	-0.04	0.08
1980	-0.31	-0.05	-0.36	-0.31	-0.07	-0.38	-0.09	-0.07	-0.16	-0.02	-0.05	-0.07	0.00	-0.07	-0.07	0.25	-0.07	0.18
1981	-0.17	-0.12	-0.29	-0.22	-0.12	-0.34	-0.07	-0.12	-0.19	0.00	-0.12	-0.12	0.00	-0.12	-0.12	0.00	-0.12	-0.12
1982	-0.11	-0.14	-0.25	-0.12	-0.14	-0.26	-0.03	-0.14	-0.17	0.00	-0.14	-0.14	0.00	-0.14	-0.14	0.79	-0.14	0.65
1983	-0.14	-0.12	-0.26	-0.15	-0.12	-0.27	-0.03	-0.12	-0.15	0.00	-0.12	-0.12	0.00	-0.12	-0.12	1.77	-0.12	1.65
1984	-0.08	-0.09	-0.17	-0.08	-0.10	-0.18	-0.21	-0.10	-0.31	-0.01	-0.09	-0.10	0.00	-0.10	-0.10	2.02	-0.10	1.92
1985	-0.09	-0.07	-0.16	-0.09	-0.08	-0.17	-0.19	-0.08	-0.27	-0.01	-0.07	-0.08	0.00	-0.08	-0.08	2.44	-0.08	2.36
1986	-0.09	-0.05	-0.14	-0.08	-0.07	-0.15	-0.08	-0.07	-0.15	-0.02	-0.05	-0.07	0.00	-0.07	-0.07	2.89	-0.07	2.19
1987	-0.12	0.03	-0.09	-0.09	-0.01	-0.10	-0.13	-0.01	-0.14	-0.04	0.03	-0.01	0.00	-0.01	-0.01	4.24	-0.01	4.23
1988	-0.16	-0.01	-0.17	-0.13	-0.05	-0.18	-0.17	-0.05	-0.22	-0.04	-0.01	-0.05	0.00	-0.05	-0.05	1.49	-0.05	1.44

However, the need to resort to an increase in the paddy subsidy as a way to help the 200,000 paddy farmers, more than half of whom live below the poverty level, gives rise to some concern about the paddy industry. There is no lack of financial support from the government. In fact, the paddy price subsidy is just one of the many government subsidies in the heavily subsidised paddy industry. With the increase in the paddy price subsidy, the government will have to fork out an extra \$123 mn annually.

Despite the heavy financial support, investment in infrastructure and various incentives from the government, paddy land continues to be abandoned and children of paddy farmers continue to desert paddy farming thus creating an acute shortage of labour. The problem is that Malaysia is a high cost producer of rice and rice production is a relatively low return enterprise. On the bright side, although there has been a decline in the acreage of land under paddy cultivation, there has been no decrease in absolute production thanks to the increase in productivity.

From a different viewpoint, at the Asia-Pacific Economic Cooperation (APEC) forum in Vancouver recently Malaysia has agreed to reduce the average tariff rate by several percentage points from the present 9.5 percent (Business Times 20 September, 1990). The concessions will bring Malaysia's total number of reductions in tariffs to 1,050 items. In total the concessions will cover about 25 percent of Malaysia's imports based on the 1988 figures.

The concessions being offered by Malaysian to help break the deadlock in the Uruguay Round of Multilateral Trade Negotiations are worth \$2.5 bn. They cover tariff reductions on 600 products, mainly chemical, mineral and manufacturing items. A number of these products will attract no duties.

The government's intention has received support from the Malaysia Institute of Economic Research (New Straits Times 5 October 1990). It sees this as the major step in a much more major review and reform of Malaysia's excessively complex and harmful tariff



structure. The system now assigns import duty rates to about 9,000 import items, more than 85 percent of which are subject to ad valorem rates and some 10 percent to specific duties. Tariff reform will help the country's export drive and also put pressure on domestic producers to compete successfully against foreign imports.

Another recent change relates to the export tax on palm oil. In the face of a secular decline in export prices of palm oil, the government has decided to increase the threshold level upon which the palm oil export tax is based from \$500 per t to \$ 600 per t. Accordingly the new progressive export tax schedule will only begin at \$600 per t.

These events will undoubtedly have an impact on the structure and magnitude of agricultural protection in Malaysia. An initial impression that can be made is that they will enhance the level of protection accorded to paddy production, or conversely, accentuate the degree of discrimination against export crops, while at the same time increasing slightly the attractiveness of export crops relative to non-agriculture, particularly manufacturing.

#### 6.1 Experience in Agricultural Taxation

The incidence of export taxes is on the exporter from whom the government collects the tax. But the burden of the tax does not normally rest on the exporters, it is either shifted forward to foreign buyers or shifted backward to domestic producers depending on the price elasticities of demand and supply. An inelastic supply and an elastic demand will shift the tax back to the local producers. Malaysia's exports of primary products, in particular rubber, palm oil, cocoa, coconut, pineapple and pepper are usually faced with an elastic demand. This is because of the availability of substitutes and competition from other producing countries. In the short run, supply of these products are generally inelastic because of production constraints, yield variability and the fixed capacity in the short run. It is

usually assumed therefore that shifting of export and other related taxes is usually backward to the local producers.

Only a few studies on tax incidence have been conducted for Peninsular Malaysia. A study by McLure (1972) attempts to estimate the distribution of tax burden among various income groups in the country. His data on income distribution were based on the 1957/58 Household Budget Survey of the Department of Statistics and Annual Report of the Department of Inland Revenues. The household budget survey focused on the income distribution patterns of the lower income groups whereas the report on inland revenues reflects that of the higher income groups. The major conclusion of the study is that the tax incidence in the country is generally U-shaped with regressivity at the lower income levels and progressivity toward the top of the income range. The regressivity of the tax package at the lower end of the income scale is attributed mainly to the export duty on rubber through its effects on smallholders.

Certain taxes, especially those levied at state and local levels, were not considered in the McLure study. The most notable exceptions are the land based taxes. Consideration of these taxes might very well add to the regressivity of the tax incidence in the lower income groups.

In another incidence study, Snodgrass (1975) attempted to analyze and compare the role of government fiscal systems as a redistributor of income in 1958 and in 1968. Therefore, the study is much broader in scope than McLure's in that the incidence of government expenditures were also considered. In addition to income size groups, the study also examined the distributive impact of government fiscal systems among races and regions of the country.

For both of the years examined, the study showed that the tax incidence among income groups is U-shaped. However, regressivity at the lower end of the scale in 1968 apparently was due more to import duties and excise taxes which had increased, than the rubber export duty. The introduction of a sales tax in 1972 may

have the effect of increasing the tax burden among the poor. Like McLure's study, land based and other state and local taxes were ignored in this case.

In addition to the two studies above, Tan (1967) undertook an analysis of rubber export taxes on small producers. In his study, rubber export supply was assumed inelastic and demand fairly elastic. Therefore the incidence of the export tax falls mainly on the producers. Tan (1967, p.96) showed that the derived income tax equivalent rates of export taxes were very regressive. A typical rubber smallholder family was estimated to have paid the equivalent income tax rate of persons with thirty or forty times as much income.

Hussein (1977) undertook a study to estimate the tax burden on rubber, coconut and pineapple smallholders in the state of Johore. The study shows that, in general, the tax burden on rubber smallholders was much higher than either coconut or pineapple smallholders due mainly to export duties and cesses on rubber. Depending on the income measures used, the average rubber smallholder pays about one-fourth to one-third of his income.

Salleh (1977) examined the tax burden distribution in West Malaysia for the period 1968, 1970 and 1973 for the total population subgroups. Among others, the results of his study show that the overall tax structure of West Malaysia in 1973 exhibited a U-shape, that is taxation imposed greater burden in the lower income and the upper income groups than the middle. Regressivity at the lower end of the income scale were contributed primarily by export duties and indirect taxes, while direct taxes drew a greater fraction of income from upper income groups. Taxation in West Malaysia in 1968 had the positive effect of reducing inequality, but for 1970 and 1973 taxation had the effect of excentuating inequality.

Probably the most comprehensive analysis of the impact of agricultural taxes is that by Jenkins and Lai (1989). Their study is concerned with the impact of government intervention in Malaysia

agriculture, in particular the trade and pricing policies over 1960-1983. The findings of this study may be summarised as follows.

In terms of production, the cumulative effects of pricing policies since 1960 on the supply of rubber and palm oil are much larger than the short-run responses. In the case of paddy, because the supply response is more immediate, the short run and long run supply responses are almost the same.

In the case of estate rubber, on average the cumulative direct effects of the pricing policies, including export taxes, have reduced supply by about 9 percent. The corresponding average supply responses for smallholder rubber and palm oil have been a reduction of 16 percent and 7 percent, respectively. This compares with average short run responses of between 2 and 5 percent.

When the cumulative total effects of pricing policies are considered the supply responses have been even larger. For estate, rubber supply has been reduced on average by about 13 percent and for smallholders rubber by about 20 percent. In the case of palm oil the cumulative total effects have reduced supply on average by about 11 percent.

The estimation of income transfers that have been created by agricultural taxes have also been made by Jenkins and Lai. Their basic result shows that, for most years, the rubber and palm oil sectors, which pay out export taxes and export surcharges, lost out.

Over 1960-1983, the direct effects of pricing policies in the agricultural sector have, on average, reduced the producer surplus accruing to farmers by approximately 10 percent of the total Gross Domestic Product of the agricultural sector. If the total effects of these policies are taken into consideration, the average impact is to reduce the surplus received by producers by an amount which is more than 16 percent of agriculture's contribution to the country's GDP.

From a different viewpoint, the real values of the income transfers caused by the direct effects of pricing policies are estimated to be equal to 12 percent of agriculture's contribution to GDP. This is larger than the estimated nominal transfers out of agriculture, which was estimated to be 10 percent of agriculture's contribution to GDP. On the other hand, the real transfers out of agriculture caused by the total effects of pricing policies are estimated to be equal to 15 percent which is less than the estimated nominal transfer of 16 percent of agriculture's contribution to GDP.

The impact of agricultural taxes on income has been found to be as follows. The proportional change in labour income for estate rubber was estimated to be reduced by 44.7 percent in the short run. For smallholder rubber the proportional change in labour income would decrease by 44.5 percent in the short run. The impact of the total effects of pricing policies on labour income, was even more serious, reducing labour income of the rubber smallholder by 61.0 percent. Similar observations were also discerned in the case of oil palm estates and smallholders.

By comparison, the total effects of pricing policies increased paddy farmers' incomes by 7 percent in the short run. It is therefore clear that the agricultural pricing policies in Malaysia, including export taxation, have been directed more towards stabilising the incomes of the farmers and the price of rice to the urban consumers. Accordingly there have been transfers of resources out of the export sectors, including rubber and palm oil.

It may be seen that there is no significant relationship between levels of aggregate taxes and a composite index representing indicators of desired changes in agriculture except for palm oil. Nevertheless in all situations the relationship is inverse, which is not generally the trend to be expected from the theoretical viewpoint.

## 6.2 Some Lessons for Reform

To the Malaysian government, the agricultural sector, and in particular the export crop sector, has been a consistent source of revenue for the development of the country.

The history of agricultural taxation began with the imposition of the export tax on rubber during the colonial era. In its search for revenue to meet increasing expenditure commitments, the British administration, and also the independent government has depended on the extraction of a surplus from rubber industry. Along this time, the tax rates on exports of rubber were amended several times, and always on a rising trend.

Studies have shown that the taxation policies had a deleterious impact on the industry. For example, Jenkins and Lai (1989) showed that the taxes on the estate sector of the rubber industry reduced output of rubber between 2 to 9 percent on average for the period 1960-1983 as a result of the direct effects of export duties. Taking the total effects into consideration, output of rubber in the estates was reduced by between 3 to 13 percent. The impact of the taxes on the rubber smallholders has been even greater. The direct effects reduced output from smallholders in the range of 5 to 16 percent for the same period, while the total effects resulted in an output cutback by 7 to 20 percent.

Jenkins' and Lai's study also showed that export taxation policies also had a dampening impact on the rubber industry in terms of foreign exchange earnings. For the estates sector, the direct effects reduced foreign exchange earnings by \$101 mn - \$171 mn. Likewise, the smallholder sector's foreign exchange earnings were reduced by between \$77 mn and \$105 mn directly, and by \$264 mn-\$359 mn directly and indirectly.

The negative impact of the taxes on the rubber industry had the effect of accelerating the conversion of numerous rubber estates to oil palm in the late 1960s and early 1970s. Such diversification was also due to the relatively higher profitability of oil

palm. Certainly, the shift was induced by the agricultural sector itself and without any use of the export tax system imposed on the rubber industry.

Even after independence in 1957, the government did not change the regressive nature and excessive taxation levied on the smallholders. A number of studies have verified this. McLure's (1972) study revealed the regressivity of tax incidence at the low-income groups and this was caused by the export duty on rubber. Almost the same conclusion was derived in the study by Snodgrass (1975). Tan's (1967) analysis of rubber export taxes on small producers indicated that the incidence of the export tax fell mainly on the producers. The regressivity of the tax burden on smallholders has similarly been shown by Hussein (1977) and Salleh (1978). Much of the negative impact of the export taxes has been due to the inability of the producers to shift the tax burden.

The increasing tax revenue derived from oil in the 1980s has brought about a re-appraisal of the agricultural export tax structure. The tax payable on exports of rubber would now be assessed net of production cost at the smallholders level. Further, the method of assessing the tax would be calculated on the types of rubber normally produced by the smallholder. This effectively means that the gazetted price used for the tax purposes would be reduced. However, the government declined to repeal the replanting cess for smallholders because it wanted the smallholders to contribute towards the cost of rejuvenating the industry in some way.

Taxes on oil palm were relatively low during the early days of its commercial development. Export taxes on this new crop were subsequently amended over time to enable the government to share in the surplus of high prices earned by it. This was reflected in 1974-1978 when the price was high. The analysis by Jenkins and Lai (1989) has shown that contrary to rubber, the distortions in the palm oil export taxation policies have been minimised as part of government policy to encourage diversification out of rubber.

Their study showed that the direct and indirect effects of palm oil export taxes on income, output and foreign exchange earnings have been lesser than those of rubber.

Although in recent years the importance of export taxes from rubber, oil palm and pepper have declined, the government has been careful to encourage their growth and development. The transfers out of agriculture in the form of taxes have been partially balanced by infusions of capital into rural areas for infrastructural development, roads, irrigation and drainage, processing and marketing centres, social amenities and rubber replanting grants, paddy price support, input subsidies for paddy and other crops, research facilities, and extension services. This is also partly true for rubber in that, while it has been heavily taxed, the government has also taken a very active role in maintaining its competitiveness through an effective research and development programme.

The government has also effectively administered the replanting, research and regulatory cesses collected from the rubber and oil palm industries. It plays a key role in ensuring that the research effort is supplied to the respective producers. In a similar fashion, the replanting of new varieties of rubber trees and the diversification programme from rubber to oil palm has been largely financed by the rubber industry but the programme is organised and implemented by the government.

Tax burden on the poor has been widely claimed as one possible cause for the high incidence of poverty in the agricultural sector despite efforts to increase productivity in the sector. Hussein's (1977) study has shown that the most important taxes affecting rubber, oil palm, pepper and coconut smallholders include land taxes, education taxes, drainage charges, export duties, excise duties, and sales taxes. In general, the tax burden on rubber smallholders is comparatively high, with the export taxes on rubber accounting for 90 percent of the total taxes paid by them. The most important of the taxes paid by coconut smallholders are the land-based taxes, which account for



95 percent of all the taxes paid. For pineapple smallholders, the export cesses, which account for 48 percent, is the most important tax paid.

It can generally be said that most of those smallholders whose livelihood is dependent on rubber, coconut, pepper and to a smaller extent, coconut/cocoa, will find that their income is less than the poverty level. For instance the poverty level in 1987 among rubber smallholders and coconut smallholders are 40 percent and 30 percent respectively (Mid-Term Review of the Fifth Malaysia Plan).

Though taxation has reduced their real income substantially, removal of all the taxes would certainly not move them of poverty either. Ariff's assessment is that elimination of all the taxes borne by the smallholders would most move only a small proportion of them out of poverty.

Nonetheless, some changes in the tax system could be effected in such a way as to benefit the poor. For example, smallholders of certain size holdings could be exempted from land taxes, and the state government could be compensated for any revenue loss by imposing higher tax rates on larger holdings, or direct transfer from the federal government.

The export duty and surcharge on smallholders is substantial. A system of rebate could be designed to benefit smallholders who own extremely small farm holdings. The other taxes like education tax and drainage charges are levied for specific purposes, and very little could be done in a way of reducing them without inversely affecting the functioning of the respective agencies, projects or programmes.

Smallholders in their capacity as purchasers of production inputs are already being exempted from paying import, excise and sales taxes on most of the items they consume. For most inputs where such taxes are levied, they are also consumed by other sectors of the economy.

Paddy farmers, who do not contribute significant tax revenue to the government, receive substantial attention in the form of price support, input and production subsidies. This is due to the fact that the paddy sector is characterised by a high incidence of poverty of 50 percent, and due to its strong socio-political influence on the government.

Changes in the agricultural tax system could improve the economic conditions of the poor smallholders and farmers. However, without other programmes, the poor would probably remain poor. These other programmes include those which would increase their productivity and those which would increase the size of their holdings. The attainment of these objectives probably would entail further research on the effects of the taxes on incentives, and sensitivity analyses to determine the effects of variables like farm size, yield, prices and the extent of immature stands on variations in tax burden between classes of farmers, districts and regions.

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APPENDIX

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APPENDIX TABLE 1: MALAYSIA - EXPORT PRICE AND ESTIMATION OF PRODUCER AND BORDER PRICES OF ESTATE AND SMALLHOLDER RUBBER, 1960-1988

Year	Average Export (FOB Price for Rubber (M\$/tonne)	Total Taxes on Rubber paid by Estate (M\$/tonne)	Total Taxes on Rubber paid by Smallholder (M\$/tonne)	Estate Marketing and Transport Costs (M\$/tonne)	Smallholder Marketing and Transport Costs (M\$/tonne)	Producer Price of Rubber (M\$/tonne)	Producer Price of Smallholder Rubber (M\$/tonne)	Border Price of Estate Rubber (FOB Price Less Estate Marketing & Transport Costs (M\$/tonne)	Border Price of S/holder Rubber (FOB Price Less Estate Marketing & Transport Costs (M\$/tonne)	Taxes on Rubber Industry			
										Export Tax (M\$/tonne)	Research Cess (M\$/tonne)	Replanting cess (M\$/tonne)	Total Taxes (M\$/tonne)
	[1]	[2]	[3]	[4]	[5]	[6]=[1]-[2]-[4]	[7]=[1]-[3]-[4]	[8]=[11]-[4]	[9]=[11]-[5]	[10]	[11]	[12]	[13]
1960	2,345	251.72	350.72	42.93	108.91	2,050.35	1,885.37	2,302.07	2,236.09	229.72	22.00	-	251.72
1961	1,791	156.87	255.87	42.85	108.69	1,591.28	1,426.44	1,748.15	1,682.31	134.87	22.00	-	156.87
1962	1,696	131.07	230.07	42.85	108.69	1,522.08	1,357.24	1,653.15	1,587.31	109.07	22.00	-	131.07
1963	1,600	113.01	212.01	44.21	112.14	1,442.78	1,275.85	1,555.79	1,487.86	91.01	22.00	-	113.01
1964	1,504	103.87	202.87	44.02	111.66	1,356.11	1,189.47	1,459.98	1,392.34	81.87	22.00	-	103.87
1965	1,513	111.03	210.03	44.02	111.66	1,357.95	1,191.31	1,468.98	1,401.34	89.03	22.00	-	111.03
1966	1,455	94.06	193.06	44.68	113.35	1,316.26	1,148.59	1,410.32	1,341.65	72.06	22.00	-	94.06
1967	1,222	68.01	167.01	46.43	117.79	1,107.56	937.20	1,175.57	1,104.21	46.01	22.00	-	68.01
1968	1,155	66.38	165.38	46.35	117.58	1,042.27	872.04	1,108.65	1,037.42	44.38	22.00	-	66.38
1969	1,500	108.42	207.42	46.18	117.15	1,345.40	1,175.43	1,453.82	1,382.85	86.42	22.00	-	108.42
1970	1,177	76.63	175.63	47.02	119.27	1,053.35	882.10	1,129.98	1,057.73	54.63	22.00	-	76.63
1971	1,069	58.61	157.61	47.77	121.17	962.62	790.22	1,021.23	947.83	36.61	22.00	-	58.61
1972	933	57.20	156.20	49.35	125.19	826.45	651.61	883.65	807.81	35.20	22.00	-	57.20
1973	1,530	164.19	263.19	54.52	138.30	1,311.29	1,128.51	1,475.48	1,391.70	142.19	22.00	-	164.19
1974	1,838	267.19	366.19	64.02	162.41	1,506.79	1,309.40	1,773.98	1,675.59	245.19	22.00	-	267.19
1975	1,410	205.23	205.23	66.86	169.60	1,137.91	1,035.17	1,343.14	1,240.40	84.23	22.00	99.00	205.23
1976	1,924	388.90	388.90	68.61	174.04	1,466.49	1,361.06	1,855.39	1,749.96	267.90	22.00	99.00	291.29
1977	2,069	461.86	461.86	71.86	182.29	1,535.28	1,424.85	1,997.14	1,886.71	340.86	22.00	99.00	364.25
1978	2,231	573.75	573.75	75.44	191.38	1,581.81	1,465.87	2,155.56	2,039.62	452.75	22.00	99.00	475.99
1979	2,719	798.93	798.93	78.16	198.27	1,841.91	1,721.80	2,640.84	2,520.73	677.93	22.00	99.00	701.03
1980	3,027	839.44	839.44	83.36	211.47	2,104.20	1,976.09	2,943.64	2,815.53	718.44	22.00	99.00	741.70
1981	2,488	506.08	506.08	91.45	231.98	1,890.47	1,749.94	2,396.55	2,256.02	368.58	38.50	99.00	488.60
1982	1,927	217.33	217.33	96.79	245.51	1,612.88	1,464.16	1,830.21	1,681.49	79.83	38.50	99.00	119.93
1983	2,344	312.16	312.16	100.37	254.61	1,931.47	1,777.23	2,243.63	2,089.39	174.66	38.50	99.00	214.67
1984	2,308	158.40	158.40	104.29	264.55	2,045.31	1,885.05	2,203.71	2,043.45	20.90	38.50	99.00	59.40
1985	1,918	137.50	137.50	104.62	265.39	1,675.88	1,515.11	1,813.38	1,652.61	-	38.50	99.00	38.50
1986	2,099	140.00	140.00	105.37	267.30	1,853.63	1,691.70	1,993.63	1,831.70	2.50	38.50	99.00	41.00
1987	2,416	170.50	170.50	106.54	270.26	2,138.96	1,975.24	2,309.46	2,145.74	33.00	38.50	99.00	71.50
1988	3,263	354.00	354.00	109.37	277.45	2,799.63	2,631.55	3,153.63	2,985.55	216.50	38.50	99.00	255.00

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Appendix Table 1  
 2. Data for 1984-1988 are estimated.

APPENDIX TABLE 2: MALAYSIA - EXPORT PRICE, TAXES AND ESTIMATION OF PRODUCER AND BORDER PRICES FOR PALM OIL, 1960-1988

Year	FOB Export price	Taxes on Palm Oil				Marketing & Transport Costs	Producer Price of Palm Oil (FOB Price less Marketing & Transport Costs and Taxes)	Border Price of Palm Oil (FOB Price less Marketing & Transport Costs)
		Export Tax	Research Cess	Other Cess Payment	Total Taxes			
	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)
	[1]	[2]	[3]	[4]	[5]=[2] + [3]+[4]	[6]	[7]= [1]-[5]-[6]	[8]= [1]-[6]
1960	621	46.57			46.57	18.22	556	603
1961	646	48.42			48.42	18.19	579	628
1962	607	45.50			45.50	18.19	543	589
1963	591	44.30			44.30	18.76	528	572
1964	643	48.25			48.25	18.68	576	624
1965	749	56.16			56.16	18.68	674	730
1966	650	48.74			48.74	18.97	582	631
1967	614	46.03			46.03	19.71	548	594
1968	435	32.65			32.65	19.67	383	415
1969	429	32.17			32.17	19.6	377	409
1970	658	49.32			49.32	19.96	589	638
1971	664	48.83	1.00		49.83	20.27	594	644
1972	520	45.91	1.00		46.91	20.95	452	499
1973	585	62.67	1.00		63.67	23.14	498	562
1974	1,205	252.88	1.00		253.88	27.17	924	1178
1975	1,137	242.98	1.00		243.98	28.38	865	1109
1976	915	129.83	1.00		130.83	29.12	755	886
1977	1,293	266.30	1.00		267.30	30.5	995	1263
1978	1,235	136.68	1.00		137.68	32.02	1065	1203
1979	1,300	124.22	1.00		125.22	33.18	1142	1267
1980	1,153	73.51	4.00	1.75	79.26	35.38	1038	1118
1981	1,131	59.04	4.00	1.75	64.79	38.81	1027	1092
1982	973	26.62	4.00	1.75	32.37	41.08	900	932
1983	1,016	16.56	4.00	1.75	22.31	42.6	951	973
1984	1,525	282.38	4.00	1.75	288.13	44.26	1193	1481
1985	1,226	192.80	4.00	1.75	198.55	44.41	983	1182
1986	697	40.00	4.00	1.75	45.75	44.72	607	652
1987	803	87.60	4.00	1.75	93.35	45.22	664	758
1988	1,090	151.70	4.00	1.75	157.45	46.42	886	1044

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Appendix Table 2  
2. Data for 1984-1988 are estimated.

APPENDIX TABLE 3: MALAYSIA - PRODUCER PRICE AND ESTIMATION OF CIF PRICE OF IMPORTED RICE IN PADDY EQUIVALENT AT FARM LEVEL, 1960-1988

Year	CIF Price of Imported Rice	Wholesale Margin	Miller's Overhead Costs & Profit	CIF Price of Imported Rice in Paddy Equivalent at Rice Mill	Direct Milling and Drying Costs	Cost of Transport to Drying Centre	Border Price: CIF Price of Rice in Paddy Equivalent at Farm Level	Producer Price: GMP/Support Price of Paddy at Farm Level	Local Production of Paddy
	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)
	[1]	[2]	[3]	[4]=0.65X ([1]-[3])	[5]	[6]	[7]=[4]- [5]-[6]	[8]	[9]
1960	419.22	21.57	35.00	249.74	29.36	16.36	204.02	265.00	771,000
1961	439.11	21.53	34.94	262.71	29.30	16.33	217.08	265.00	1,021,000
1962	472.25	21.53	34.94	284.25	29.30	16.33	238.62	265.00	1,135,000
1963	463.96	22.21	36.04	278.15	30.23	16.85	231.07	265.00	1,188,000
1964	437.45	22.12	35.89	261.01	30.10	16.77	214.14	265.00	1,103,000
1965	432.48	22.12	35.89	257.78	30.10	16.77	210.91	265.00	1,256,000
1966	473.90	22.45	36.43	284.36	30.55	17.03	236.78	265.00	1,234,000
1967	563.38	23.33	37.86	341.59	31.75	17.70	292.14	265.00	1,194,000
1968	613.09	23.29	37.79	373.95	31.69	17.66	324.60	265.00	1,433,000
1969	596.52	23.21	37.65	363.27	31.58	17.60	314.09	265.00	1,597,000
1970	510.36	23.62	38.33	306.82	32.15	17.92	256.75	265.00	1,678,000
1971	447.39	24.00	38.95	265.49	32.66	18.20	214.63	265.00	1,809,000
1972	460.65	24.80	40.24	273.27	33.74	18.81	220.72	265.00	1,840,000
1973	740.84	27.39	44.45	452.65	37.28	20.78	394.59	381.00	1,967,000
1974	1,070.83	32.17	52.20	662.11	43.78	24.40	593.93	464.00	2,093,000
1975	1,027.47	33.59	54.51	632.42	45.71	25.48	561.23	464.00	1,998,000
1976	583.00	34.47	55.94	342.59	46.91	26.15	269.53	464.00	1,995,000
1977	566.14	36.11	58.59	329.91	49.13	27.38	253.40	464.00	1,922,000
1978	747.87	37.91	61.51	446.13	51.59	28.75	365.79	464.00	1,498,000
1979	822.77	39.27	63.73	493.38	53.44	29.79	410.15	530.00	2,095,000
1980	837.63	41.89	67.97	500.28	57.00	31.77	411.51	530.00	2,171,000
1981	1,029.45	45.95	74.56	620.68	62.53	34.85	523.30	698.00	2,147,000
1982	827.94	48.63	78.91	486.87	66.18	36.88	383.81	698.00	1,832,000
1983	659.22	50.43	81.83	375.30	68.63	38.25	268.42	698.00	1,818,000
1984	631.58	52.40	85.02	355.26	71.31	39.74	244.21	661.00	1,755,000
1985	600.46	52.57	85.30	334.85	71.54	39.87	223.44	661.00	1,895,000
1986	617.80	52.95	85.91	345.73	72.05	40.16	233.52	661.00	1,947,000
1987	530.30	53.53	86.86	288.24	72.85	40.60	174.79	661.00	1,623,000
1988	715.38	54.96	89.17	407.04	74.79	41.68	290.57	661.00	1,786,000

Notes: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Appendix Table 3  
 2. Data for 1984-1988 are estimated.



APPENDIX TABLE 4: MALAYSIA - ESTIMATION OF EQUILIBRIUM NOMINAL EXCHANGE RATES, 1960-1988

Year	Consumer Price Index (1980=100)	Total Tariff Revenue from Imports (M\$mill)	Total Agric. Taxes (M\$mill)	Current Account Imbalance [Imports - Exports] (M\$mill)	Total Exports (M\$mill)	Total Imports of Goods & Services (M\$mill)	t(M) =Ratio of Tot Tariff Revenue From Tot Imports of Goods & Services	t(X) =Ratio of Tot Agric Taxes to Total Exports	Nominal Exchange Rate (RD)	(t(M)/ (1+t(M)) X Qd X Nd	(t(X)/ (1-t(X)) X Qd X Nd	Delta Q1 (M\$mill)	Equil Nom Exch Rate Without Direct Effects of Pr Policies [Es=1; Nd=2] [EX1]	Equil Nom Exch Rate Without Direct Effects of Pr Policies [Es=0.5; Nd=1.5] [EX2]
	[1]	[2]	[3]	[4]	[5]	[6]= [4]+[5]	[7]= [2]/[6]	[8]= [3]/[5]	[9]	[10]	[11]	[12]=[10] -[11]	[13]	[14]
1960	51.50	353	205		3,633	3,633	0.0972	0.0564	3.0610	644	217	427	3.1809	3.2409
1961	51.40	358	127	16	3,238	3,254	0.1100	0.0392	3.0418	645	132	513	3.2069	3.2891
1962	51.40	364	105	167	3,260	3,427	0.1062	0.0322	3.0476	658	109	549	3.2633	3.3660
1963	53.00	351	90	219	3,330	3,549	0.0989	0.0270	3.0593	640	92	548	3.2843	3.3899
1964	52.80	312	76	128	3,382	3,510	0.0889	0.0225	3.0710	573	78	495	3.2549	3.3435
1965	52.80	387	101	-122	3,783	3,661	0.1057	0.0267	3.0593	701	103	598	3.1904	3.2582
1966	53.60	381	86	-40	3,846	3,806	0.1001	0.0224	3.0710	693	88	605	3.2224	3.2989
1967	55.70	466	66	18	3,724	3,742	0.1245	0.0177	3.0563	829	67	762	3.2690	3.3748
1968	55.60	499	72	-94	4,123	4,029	0.1239	0.0175	3.0650	889	73	816	3.2467	3.3396
1969	55.40	527	153	-731	5,055	4,324	0.1219	0.0303	3.0750	939	157	782	3.0864	3.0931
1970	56.40	557	113	-25	5,163	5,138	0.1084	0.0219	3.0750	1,005	116	889	3.2471	3.3335
1971	57.30	582	99	329	5,017	5,346	0.1089	0.0197	2.8865	1,049	101	948	3.1211	3.2312
1972	59.20	588	104	698	4,854	5,552	0.1059	0.0214	2.8170	1,063	106	957	3.1092	3.2369
1973	65.40	746	308	-246	7,372	7,126	0.1047	0.0418	2.4545	1,351	321	1,030	2.5435	2.5895
1974	76.80	892	672	1307	10,195	11,502	0.0776	0.0659	2.3095	1,656	719	937	2.4656	2.5348
1975	80.20	800	431	1187	9,231	10,418	0.0768	0.0467	2.5878	1,486	452	1,034	2.7790	2.8636
1976	82.30	976	709	-1474	13,442	11,968	0.0816	0.0527	2.5352	1,805	748	1,057	2.5069	2.4910
1977	86.20	1,141	941	-1074	14,959	13,885	0.0822	0.0629	2.3640	2,109	1,004	1,105	2.3657	2.3666
1978	90.50	1,325	952	-249	17,074	16,825	0.0788	0.0558	2.2077	2,457	1,008	1,449	2.2599	2.2864
1979	93.80	1,514	1,385	-2384	24,222	21,838	0.0693	0.0572	2.1887	2,832	1,469	1,363	2.1558	2.1375
1980	100.00	2,061	1,285	268	28,172	28,440	0.0725	0.0456	2.2175	3,843	1,346	2,497	2.2896	2.3253
1981	109.70	2,245	680	5433	27,109	32,542	0.0690	0.0251	2.2433	4,200	697	3,503	2.4607	2.5513
1982	116.10	2,315	185	7594	28,108	35,702	0.0648	0.0066	2.3185	4,348	186	4,162	2.5924	2.7002
1983	120.40	2,591	322	6560	32,771	39,331	0.0659	0.0098	2.3383	4,862	325	4,537	2.5712	2.6682
1984	125.10	2,697	359	3917	38,647	42,564	0.0634	0.0093	2.4263	5,075	382	4,693	2.5951	2.6717
1985	125.50	2,518	115	1522	38,017	39,539	0.0637	0.0030	2.4135	4,735	114	4,621	2.5401	2.6010
1986	126.40	2,065	32	207	35,721	35,928	0.0575	0.0089	2.6015	3,907	32	3,875	2.7002	2.7493
1987	127.80	1,934	60	-6105	45,138	39,033	0.0495	0.0013	2.4915	3,682	59	3,623	2.4413	2.4123
1988	131.20	2,406	198	-3127	55,483	52,356	0.0460	0.0036	2.7125	4,595	200	4,395	2.7340	2.7453

Notes: 1. Data for 1960-1983 are from Jenkins and Lai, Appendix Table 5  
 2. Data for 1984-1988 are estimated.

APPENDIX TABLE 5: MALAYSIA - ESTIMATION OF EQUILIBRIUM REAL EXCHANGE RATE, 1960-1988

Year	Total U.S. Trade With Malaysia	Total U.S. Trade With Malaysia	Total U.K. Trade With Malaysia	Total U.K. Trade With Malaysia	Total Japanese Trade With Malaysia	Total Japanese Trade With Malaysia	Total Trade of U.S., U.K. and Japan with Malaysia	Total Trade of U.S., U.K. and Japan with Malaysia	Ratio of US Trade With Total Trade	Ratio of UK Trade With Total Trade	Ratio of Japanese Trade With Total Trade	Equilibrium Exch Rate Direct Effects of Pricing Policies	Nomin Without Exch Rate	Equilibriu Direct Eff of Pricing Policies	Ratio of [EX1] to [Eo]	Ratio of [EX2] to [Eo]
	(US\$ mill)	(M\$ mill)	(US\$ mill)	(M\$ mill)	(US\$ mill)	(M\$ mill)	(US\$ mill)	(M\$ mill)				{Es=1; Nd=2} [EX1]	{Es=0.5; Nd=1.5} [EX2]			
	[1]	[2]= [1]x[16]	[3]	[4]= [3]x[16]	[5]	[6]= [5]x[16]	[7]=[1] +[3]+[5]	[8]=[2] +[4]+[6]	[9]= [2]/[8]	[10]= [4]/[8]	[11]= [6]/[8]	[12]	[13]	[14]= [12]/[16]	[15]= [13]/[16]	
1960	143	438	276	845	177	542	596	1825	0.2400	0.4630	0.2969	3.1809				
1961	165	502	267	812	185	563	617	1877	0.2675	0.4327	0.2998	3.2069	3.2409	1.0392	1.0588	
1962	192	585	256	780	189	576	637	1941	0.3014	0.4019	0.2967	3.2633	3.2891	1.0543	1.0813	
1963	196	600	248	759	212	649	656	2007	0.2989	0.3780	0.3231	3.2843	3.3660	1.0708	1.1045	
1964	248	762	398	1222	446	1370	1092	3354	0.2272	0.3644	0.4084	3.2549	3.3899	1.0736	1.1081	
1965	312	955	414	1267	482	1475	1208	3696	0.2584	0.3427	0.3990	3.1904	3.3435	1.0599	1.0887	
1966	227	697	239	734	375	1152	841	2583	0.2699	0.2842	0.4459	3.2224	3.2582	1.0429	1.0650	
1967	250	764	201	614	398	1216	849	2595	0.2944	0.2368	0.4688	3.2690	3.2989	1.0493	1.0742	
1968	299	916	204	625	424	1300	927	2841	0.3224	0.2201	0.4575	3.2467	3.3748	1.0696	1.1042	
1969	321	987	242	744	491	1510	1054	3241	0.3045	0.2296	0.4659	3.0864	3.3396	1.0593	1.0896	
1970	339	1043	301	926	554	1705	1194	3674	0.2839	0.2521	0.4640	3.2471	3.0931	1.0037	1.0059	
1971	305	880	314	906	582	1680	1201	3466	0.2539	0.2615	0.4846	3.1211	3.3335	1.0551	1.0832	
1972	383	1079	328	924	626	1763	1337	3766	0.2865	0.2453	0.4682	3.1092	3.2312	1.0813	1.1194	
1973	528	1296	481	1181	1081	2653	2090	5130	0.2526	0.2301	0.5172	2.5435	3.2369	1.1037	1.1490	
1974	992	2291	667	1540	1630	3764	3289	7596	0.3016	0.2028	0.4956	2.4656	2.5895	1.0363	1.0550	
1975	989	2559	585	1514	1253	3243	2827	7315	0.3498	0.2069	0.4432	2.7790	2.5348	1.0676	1.0975	
1976	1313	3329	545	1382	1932	4898	3790	3329	1.0000	0.0000	0.0000	2.5069	2.8636	1.0739	1.1066	
1977	1665	3936	656	1551	2310	5461	4631	10948	0.3595	0.1417	0.4988	2.3657	2.4910	1.0605	1.0537	
1978	2203	4864	796	1757	2977	6572	5976	13194	0.3687	0.1332	0.4981	2.2599	2.3666	1.0007	1.0011	
1979	3086	6754	932	2040	4352	9525	8370	18319	0.3687	0.1114	0.5200	2.1558	2.2864	1.0237	1.0357	
1980	3751	8318	944	2093	5429	12039	10124	22450	0.3705	0.0932	0.5362	2.2896	2.1375	0.9850	0.9766	
1981	3226	7237	874	1961	5318	11930	9418	21128	0.3425	0.0928	0.5647	2.4607	2.3253	1.0325	1.0486	
1982	3580	8300	837	1941	5550	12868	9967	23108	0.3592	0.0840	0.5568	2.5924	2.5513	1.0969	1.1373	
1983	3932	9194	833	1948	5772	13497	10537	24638	0.3732	0.0791	0.5478	2.5712	2.7002	1.1181	1.1646	
1984	4368	10598	769	1866	7121	17278	12258	29742	0.3563	0.0627	0.5809	2.5951	2.6682	1.0996	1.1411	
1985	3944	9519	628	1516	6745	16279	11317	27314	0.3485	0.0555	0.5960	2.5401	2.6717	1.0696	1.1011	
1986	4320	11238	779	2027	5295	13775	10394	27040	0.4156	0.0749	0.5094	2.7002	2.6010	1.0525	1.0777	
1987	5407	13472	598	1490	6319	15744	12324	30706	0.4387	0.0485	0.5127	2.4413	2.7493	1.0379	1.0568	
1988	6370	17279	835	2265	7213	19565	14418	39109	0.4418	0.0579	0.5003	2.7340	2.4123	0.9799	0.9682	

Note: 1. Data for 1960-1983 are from Jenkins and Lai (1989), Appendix Table 6  
 2. Data for 1984-1988 are estimated

APPENDIX TABLE 5: ...Continued

Year	Normal (Market) Exchange (Eo)	Normal (Market) Exc. Ringgit to Yen	Normal (Market) Exchange Ringgit to Pound Sterling	Normal (Market) Exchange Yen to US dollar	Normal (Market) Exchange Pound Sterling to US Dollar	US Wholesale Price Index	UK Wholesale Price Index	Japanese Wholesale Price Index	Malaysian Consumer Price Index	Malaysian Consumer Price Index Adjusted for Equilibrium Nominal Exchange Rate Effects [EX1]	Malaysian Consumer Price Index Adjusted for Equilibrium Nominal Exchange Rate Effects [EX2]	Ratio of Trade Weighted WPI to Adjusted CPI d1	Ratio of Trade Weighted WPI to Adjusted CPI d2	Ratio of Trade Weighted WPI to CPI	Trade Weighted Real Exchange Rate	Equilibrium Real Exchange Rate [E=1; Nd=2]	Equilibrium Real Exchange Rate [E=0.5; Nd=1.5]
	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]	[28]	[29]	[30]= [29]x[16]	[31]= [27]x[14]	[32]= [28]x[15]
1960	3.0610	N.A	N.A	358.3	0.3566	35.3	19.3	43.9	51.5	53.1	53.9	0.5734	0.5648	0.5912	1.8096	1.8238	1.8306
1961	3.0418	0.0084	8.5429	361.8	0.356	35.2	19.6	44.3	51.4	53.6	54.7	0.5817	0.5700	0.6066	1.8451	1.8654	1.8747
1962	3.0476	0.0085	8.5429	358.2	0.3567	35.3	20.2	43.4	51.4	54.2	55.6	0.5837	0.5690	0.6155	1.8757	1.9047	1.9151
1963	3.0593	0.0085	8.5524	362.0	0.3575	35.2	20.4	44.3	53.0	55.9	57.4	0.5822	0.5670	0.6141	1.8787	1.9122	1.9221
1964	3.0710	0.0086	8.5714	358.3	0.3583	35.2	21.2	44.3	52.8	55.2	56.4	0.6126	0.5995	0.6404	1.9667	1.9939	2.0046
1965	3.0593	0.0085	8.5714	360.9	0.3567	35.9	22.1	43.4	52.8	54.4	55.3	0.6280	0.6178	0.6470	1.9795	2.0036	2.0128
1966	3.0710	0.0085	8.5714	362.5	0.3584	37.1	22.7	44.5	53.6	55.5	56.5	0.6542	0.6426	0.6774	2.0802	2.1081	2.1199
1967	3.0563	0.0084	7.3551	361.9	0.4155	37.2	23.0	45.3	55.7	59.4	60.6	0.6336	0.6210	0.6757	2.0651	2.0712	2.0959
1968	3.0650	0.0086	7.3063	357.7	0.4194	38.1	23.9	45.7	55.6	59.0	60.0	0.6517	0.6409	0.6916	2.1197	2.1159	2.1402
1969	3.0750	0.0086	7.3838	357.8	0.4166	39.6	24.8	46.7	55.4	56.8	56.9	0.6956	0.6944	0.7132	2.1930	2.1469	2.1478
1970	3.0775	0.0086	7.3663	357.6	0.4177	41.1	26.4	48.4	56.4	59.6	60.6	0.6842	0.6730	0.7231	2.2253	2.2218	2.2433
1971	2.8865	0.0092	7.3688	314.8	0.3918	42.4	28.5	48.0	57.3	61.4	62.8	0.6756	0.6605	0.7239	2.0895	2.1085	2.1342
1972	2.8170	0.0094	6.6121	302.0	0.4259	44.3	30.0	48.4	59.2	64.0	65.9	0.6674	0.6481	0.7215	2.0324	2.0749	2.0979
1973	2.4545	0.0087	5.5908	280.0	0.4304	50.1	32.2	56.9	65.4	67.5	68.3	0.7333	0.7247	0.7568	1.8577	1.8651	1.8766
1974	2.3095	0.0077	5.4267	301.0	0.4258	59.6	39.6	73.6	76.8	80.1	81.7	0.7801	0.7648	0.8136	1.8789	1.9233	1.9385
1975	2.5878	0.0085	5.2370	305.2	0.4942	65.1	48.3	75.8	80.2	84.1	85.9	0.7891	0.7726	0.8275	2.1414	2.1930	2.2124
1976	2.5352	0.0087	4.3150	292.8	0.5874	68.1	56.7	79.7	82.3	82	81.7	0.8822	0.8855	0.8794	2.2294	2.2116	2.2069
1977	2.3640	0.0098	4.5330	240.0	0.5247	72.3	68.0	81.1	86.2	86.6	86.6	0.8785	0.8785	0.8826	2.0865	2.0783	2.0792
1978	2.2077	0.0113	4.4904	194.6	0.4915	77.9	74.1	79.1	90.5	92.1	92.8	0.8468	0.8404	0.8618	1.9026	1.9137	1.9216
1979	2.1887	0.0091	4.8643	239.7	0.4496	87.7	84.8	84.9	93.8	93.1	92.6	0.9229	0.9279	0.9160	2.0049	1.9896	1.9834
1980	2.2175	0.0109	5.2988	203.0	0.4193	100.0	100.0	100.0	100.0	101.5	102.3	0.9852	0.9775	1.0000	2.2175	2.2558	2.2730
1981	2.2433	0.0102	4.2903	219.9	0.5241	109.2	111.9	101.4	109.7	114.9	117.3	0.9142	0.8955	0.9576	2.1481	2.2497	2.2848
1982	2.3185	0.0099	3.7595	235.0	0.6194	111.4	121.5	103.2	116.1	122.9	126.1	0.8762	0.8539	0.9275	2.1504	2.2714	2.3058
1983	2.3383	0.0101	3.4000	232.2	0.6894	112.8	127.1	109.2	120.4	126.7	129.5	0.8836	0.8645	0.9299	2.1744	2.2720	2.3067
1984	2.4263	0.0097	2.8254	250.1	0.8587	115.4		100.6	125.1	130.0	132.0	0.7659	0.7543	0.7959	1.9310	1.9875	2.0152
1985	2.4135	0.012	3.4755	201.1	0.6944	114.8		99.5	125.5	128.8	131.0	0.7710	0.7581	0.7913	1.9099	1.9585	1.9718
1986	2.6015	0.0163	3.8242	159.6	0.6808	111.5		90.4	126.4	129.5	130.7	0.7135	0.7069	0.7310	1.9016	1.9265	1.9435
1987	2.4915	0.0203	4.6679	122.7	0.5338	114.4		87.1	127.8	127.5	126.8	0.7439	0.7480	0.7422	1.8492	1.8162	1.8045
1988	2.7125	0.0215	4.8683	126.2	0.5572	117.7		86.2	131.2	132.5	132.7	0.7179	0.7168	0.7250	1.9667	1.9628	1.9680

APPENDIX TABLE 6: MALAYSIA - ESTIMATION OF TRADEABLES AND NON-TRADEABLES PRICE INDICES IN THE CONSUMER PRICE INDEX, 1960-1988

Year	Total Index	Food		Beverages and Tobacco		Clothing and Footwear		Furniture and Household		Tradeable Index [PT] [1980=100]		Rent, Fuel and Power		Medical Care and Health		Transport and Communications		Recreation, Educ Expenses and Serv		Miscellaneous Goods and Serv		Non-Tradeable Index [PNT] [1980=100]	
		CPI	Price	CPI	Price	CPI	Price	CPI	Price	CPI	Price	CPI	Price	CPI	Price	CPI	Price	CPI	Price	CPI	Price	CPI	Price
		Weight	Index	Weight	Index	Weight	Index	Weight	Index	Weight	Index	Weight	Index	Weight	Index	Weight	Index	Weight	Index	Weight	Index	Weight	Index
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]
1960	51.5	67.1	48.0	7.1	65.6	4.9	55.0	1.9	52.0	81.0	50.1	4.4	59.0	3.3	58.9	3.1	57.5	4.6	73.0	3.6	36.9	19.0	57.9
1961	51.4	67.1	47.7	7.1	65.5	4.9	55.1	1.9	51.6	81.0	49.8	4.4	59.3	3.3	58.8	3.1	57.5	4.6	72.8	3.6	38.4	19.0	58.2
1962	51.4	67.1	48.2	7.1	65.9	4.9	54.9	1.9	51.5	81.0	50.2	4.4	59.3	3.3	59.0	3.1	57.4	4.6	62.4	3.6	38.9	19.0	55.8
1963	53.0	67.1	50.3	7.1	66.4	4.9	54.3	1.9	51.4	81.0	52.0	4.4	59.5	3.3	58.9	3.1	58.0	4.6	64.5	3.6	38.8	19.0	56.5
1964	52.8	67.1	50.0	7.1	66.7	4.9	54.5	1.9	50.7	81.0	51.8	4.4	59.7	3.3	59.0	3.1	58.2	4.6	64.5	3.6	38.9	19.0	56.6
1965	52.8	67.1	49.5	7.1	67.4	4.9	54.8	1.9	50.5	81.0	51.4	4.4	60.4	3.3	59.5	3.1	61.6	4.6	64.7	3.6	40.7	19.0	57.7
1966	53.6	67.1	50.2	7.1	68.5	4.9	55.5	1.9	50.3	81.0	52.1	4.4	60.5	3.3	59.5	3.1	61.7	4.6	68.6	3.6	40.5	19.0	58.7
1967	55.7	46.8	53.1	8.9	69.2	4.8	55.7	2.0	51.5	62.5	55.5	9.4	61.2	6.6	59.9	10.4	61.8	5.6	69.4	5.5	40.7	37.5	59.3
1968	55.6	46.8	52.3	8.9	69.5	4.8	56.0	2.0	51.6	62.5	55.0	9.4	61.4	6.6	60.2	10.4	62.5	5.6	72.1	5.5	41.2	37.5	60.1
1969	55.4	46.8	51.6	8.9	69.7	4.8	56.2	2.0	52.5	62.5	54.6	9.4	61.5	6.6	60.3	10.4	62.2	5.6	72.5	5.5	42.0	37.5	60.3
1970	56.4	46.8	52.6	8.9	71.1	4.8	57.0	2.0	54.3	62.5	55.6	9.4	61.9	6.6	61.0	10.4	63.5	5.6	73.8	5.5	42.1	37.5	61.0
1971	57.3	46.8	53.4	8.9	71.6	4.8	57.4	2.0	55.7	62.5	56.4	9.4	62.4	6.6	61.4	10.4	64.2	5.6	77.1	5.5	43.1	37.5	62.1
1972	59.2	46.8	55.1	8.9	74.2	4.8	58.9	2.0	58.7	62.5	58.2	9.4	62.9	6.6	61.9	10.4	65.8	5.6	80.2	5.5	45.9	37.5	63.6
1973	65.4	46.8	63.9	8.9	75.2	4.8	71.9	2.0	66.2	62.5	66.2	9.4	63.8	6.6	64.6	10.4	67.6	5.6	83.1	5.5	49.8	37.5	65.8
1974	76.8	46.8	80.6	8.9	76.6	4.8	80.3	2.0	77.5	62.5	79.9	9.4	68.2	6.6	69.7	10.4	74.0	5.6	88.1	5.5	57.1	37.5	71.4
1975	80.2	46.8	83.6	8.9	83.9	4.8	79.8	2.0	81.3	62.5	83.3	9.4	72.8	6.6	73.3	10.4	78.6	5.6	89.9	5.5	60.1	37.5	75.2
1976	82.3	46.8	85.2	8.9	85.0	4.8	81.8	2.0	83.3	62.5	84.8	9.4	76.9	6.6	81.0	10.4	82.4	5.6	90.4	5.5	61.5	37.5	78.9
1977	86.2	46.8	90.0	8.9	88.1	4.8	85.0	2.0	86.1	62.5	89.2	9.4	81.6	6.6	84.4	10.4	85.4	5.6	92.1	5.5	64.8	37.5	82.2
1978	90.5	46.8	94.4	8.9	92.6	4.8	88.0	2.0	89.7	62.5	93.5	9.4	85.6	6.6	87.4	10.4	90.4	5.6	94.0	5.5	69.2	37.5	86.1
1979	93.8	46.8	96.5	8.9	93.8	4.8	93.6	2.0	93.2	62.5	95.8	9.4	91.2	6.6	93.0	10.4	93.6	5.6	96.3	5.5	77.9	37.5	91.0
1980	100.0	36.2	100.0	4.9	100.0	4.6	100.0	1.3	100.0	47.0	100.0	18.1	100.0	5.9	100.0	16.6	100.0	6.9	100.0	5.5	100.0	53.0	100.0
1981	109.7	36.2	111.4	4.9	113.9	4.6	109.5	1.3	106.4	47.0	111.3	18.1	109.9	5.9	109.0	16.6	107.9	6.9	105.5	5.5	109.1	53.0	108.5
1982	116.1	36.2	120.6	4.9	121.5	4.6	114.1	1.3	109.6	47.0	119.8	18.1	116.8	5.9	114.4	16.6	111.5	6.9	108.1	5.5	111.7	53.0	113.2
1983	120.4	36.2	121.7	4.9	147.5	4.6	118.6	1.3	112.3	47.0	123.8	18.1	122.2	5.9	130.0	16.6	114.2	6.9	107.5	5.5	118.9	53.0	118.3
1984	125.1	36.2	126.2	4.9	152.7	4.6	121.6	1.3	113.4	47.0	128.2	18.1	133.3	5.9	130.0	16.6	119.9	6.9	104.6	5.5	120.7	53.0	123.7
1985	125.5	36.2	123.1	4.9	154.6	4.6	122.8	1.3	113.6	47.0	126.1	18.1	138.9	5.9	133.2	16.6	122.5	6.9	103.4	5.5	120.7	53.0	126.6
1986	126.4	36.2	123.4	4.9	157.1	4.6	123.2	1.3	114.4	47.0	126.6	18.1	141.1	5.9	132.1	16.6	123.0	6.9	103.5	5.5	122.3	53.0	127.9
1987	127.8	36.2	122.9	4.9	168.3	4.6	123.8	1.3	116.1	47.0	127.5	18.1	141.0	5.9	136.3	16.6	126.9	6.9	106.6	5.5	123.0	53.0	129.7
1988	131.2	36.2	127.7	4.9	170.8	4.6	126.5	1.3	119.8	47.0	131.9	18.1	138.3	5.9	138.3	16.6	135.4	6.9	108.3	5.5	125.3	53.0	132.1

Note: 1. Data for 1960-1983 are from Jenkins and Lai, Appendix Table 9  
 2. Data for 1984-1988 are estimated

APPENDIX TABLE 6 . Continued

Ratio of Equilibrium Exch. Rate to Nominal Exch. Rate {EX1/Eo}	Ratio of Equilibrium Exch. Rate to Nominal Exch. Rate {EX2/Eo}	Adjusted CPI for Exch. Rate Effects {CPI d1}	Adjusted CPI for Exch. Rate Effects {CPI d2}
[24]	[25]	[26]	[27]
1.039	1.059	53.1	53.9
1.054	1.081	53.6	54.7
1.071	1.105	54.2	55.5
1.074	1.108	55.9	57.4
1.060	1.089	55.2	56.4
1.043	1.065	54.4	55.3
1.049	1.074	55.5	56.5
1.070	1.104	59.4	60.6
1.059	1.090	59.0	60.0
1.004	1.006	56.8	56.9
1.055	1.083	59.6	60.5
1.081	1.119	61.4	62.7
1.104	1.149	64.0	65.7
1.036	1.055	67.5	68.3
1.068	1.098	80.1	81.6
1.074	1.107	84.1	85.8
0.989	0.983	82.0	81.7
1.001	1.001	86.6	86.7
1.024	1.036	92.1	92.8
0.985	0.977	93.1	92.6
1.033	1.049	101.5	102.3
1.097	1.137	114.9	117.0
1.118	1.165	122.9	125.5
1.100	1.141	126.7	129.1
1.070	1.101	130.0	131.9
1.053	1.078	129.5	131.0
1.038	1.057	129.6	130.7
0.980	0.968	127.5	126.8
1.008	1.012	132.5	132.7

APPENDIX TABLE 7: MALAYSIA - ESTIMATION OF TRADEABLES AND NON-TRADEABLES PRICE INDICES IN THE NON-AGRICULTURAL PRICE INDEX, 1960-1988

Year	Total Index	Clothing and Footwear		Furniture and Household		Transport and Communications		Tradeable Part [PT] of the Non-Agri Price Index [1980=100]		Tradeable Part of Non Agri Price Index		Rent, Fuel and Power		Medical Care and Health Expenses		Recreation Educational Expenses and Services		Miscellaneous Goods and Services		Non-Tradeable Part [PNT] of the Non Agri Price Index		Non Tradeable Part of Non Agricultural Price Index
		CPI Weight	Price Index	CPI Weight	Price Index	CPI Weight	Price Index	CPI Weight	Price Index	CPI Weight	Price Index	CPI Weight	Price Index	CPI Weight	Price Index	CPI Weight	Price Index	CPI Weight	Price Index	CPI Weight	Price Index	CPI Weight
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	
1960	51.5	4.9	55.0	1.9	52.0	3.1	57.5	9.9	55.2	0.4	4.4	59.0	3.3	58.9	4.6	73.0	3.6	36.9	15.9	58.0	0.62	
1961	51.4	4.9	55.1	1.9	51.6	3.1	57.5	9.9	55.2	0.4	4.4	59.3	3.3	58.8	4.6	72.8	3.6	38.4	15.9	58.3	0.62	
1962	51.4	4.9	54.9	1.9	51.5	3.1	57.4	9.9	55.0	0.4	4.4	59.3	3.3	59.0	4.6	62.4	3.6	38.9	15.9	55.5	0.62	
1963	53.0	4.9	54.3	1.9	51.4	3.1	58.0	9.9	54.9	0.4	4.4	59.5	3.3	58.9	4.6	64.5	3.6	38.8	15.9	56.1	0.62	
1964	52.8	4.9	54.5	1.9	50.7	3.1	58.2	9.9	54.9	0.4	4.4	59.7	3.3	59.0	4.6	64.5	3.6	38.9	15.9	56.2	0.62	
1965	52.8	4.9	54.8	1.9	50.5	3.1	61.6	9.9	56.1	0.4	4.4	60.4	3.3	59.5	4.6	64.7	3.6	40.7	15.9	57.0	0.62	
1966	53.6	4.9	55.5	1.9	50.3	3.1	61.7	9.9	56.4	0.4	4.4	60.5	3.3	59.5	4.6	68.6	3.6	40.5	15.9	58.1	0.62	
1967	55.7	4.8	55.7	2.0	51.5	10.4	61.8	17.2	58.9	0.4	9.4	61.2	6.6	59.9	5.6	69.4	5.5	40.7	27.1	58.4	0.61	
1968	55.6	4.8	56.0	2.0	51.6	10.4	62.5	17.2	59.4	0.4	9.4	61.4	6.6	60.2	5.6	72.1	5.5	41.2	27.1	59.2	0.61	
1969	55.4	4.8	56.2	2.0	52.5	10.4	62.2	17.2	59.4	0.4	9.4	61.5	6.6	60.3	5.6	72.5	5.5	42.0	27.1	59.5	0.61	
1970	56.4	4.8	57.0	2.0	54.3	10.4	63.5	17.2	60.6	0.4	9.4	61.9	6.6	61.0	5.6	73.8	5.5	42.1	27.1	60.1	0.61	
1971	57.3	4.8	57.4	2.0	55.7	10.4	64.2	17.2	61.3	0.4	9.4	62.4	6.6	61.4	5.6	77.1	5.5	43.1	27.1	61.3	0.61	
1972	59.2	4.8	58.9	2.0	58.7	10.4	65.8	17.2	63.0	0.4	9.4	62.9	6.6	61.9	5.6	80.2	5.5	45.9	27.1	62.8	0.61	
1973	65.4	4.8	71.9	2.0	66.2	10.4	67.6	17.2	68.6	0.4	9.4	63.8	6.6	64.6	5.6	83.1	5.5	49.8	27.1	65.1	0.61	
1974	76.8	4.8	80.3	2.0	77.5	10.4	74.0	17.2	76.2	0.4	9.4	68.2	6.6	69.7	5.6	88.1	5.5	57.1	27.1	70.4	0.61	
1975	80.2	4.8	79.8	2.0	81.3	10.4	78.6	17.2	79.2	0.4	9.4	72.8	6.6	73.3	5.6	89.9	5.5	60.1	27.1	73.9	0.61	
1976	82.3	4.8	81.8	2.0	83.3	10.4	82.4	17.2	82.3	0.4	9.4	76.9	6.6	81.0	5.6	90.4	5.5	61.5	27.1	77.5	0.61	
1977	86.2	4.8	85.0	2.0	86.1	10.4	85.4	17.2	85.4	0.4	9.4	81.6	6.6	84.4	5.6	92.1	5.5	64.8	27.1	81.0	0.61	
1978	90.5	4.8	88.0	2.0	89.7	10.4	90.4	17.2	89.6	0.4	9.4	85.6	6.6	87.4	5.6	94.0	5.5	69.2	27.1	84.5	0.61	
1979	93.8	4.8	93.6	2.0	93.2	10.4	93.6	17.2	93.6	0.4	9.4	91.2	6.6	93.0	5.6	96.3	5.5	77.9	27.1	90.0	0.61	
1980	100.0	4.6	100.0	1.3	100.0	16.6	100.0	22.5	100.0	0.4	18.1	100.0	5.9	100.0	6.9	100.0	5.5	100.0	36.4	100.0	0.62	
1981	109.7	4.6	109.5	1.3	106.4	16.6	107.9	22.5	108.1	0.4	18.1	109.9	5.9	109.0	6.9	105.5	5.5	109.1	36.4	108.8	0.62	
1982	116.1	4.6	114.1	1.3	109.6	16.6	111.5	22.5	111.9	0.4	18.1	116.8	5.9	114.4	6.9	108.1	5.5	111.7	36.4	114.0	0.62	
1983	120.4	4.6	118.6	1.3	112.3	16.6	114.2	22.5	115.0	0.4	18.1	122.2	5.9	130.0	6.9	107.5	5.5	118.9	36.4	120.2	0.62	
1984	125.1	4.6	121.6	1.3	113.4	16.6	119.9	22.5	119.9	0.4	18.1	133.3	5.9	130.0	6.9	104.6	5.5	120.7	36.4	125.4	0.62	
1985	125.5	4.6	122.8	1.3	113.6	16.6	122.5	22.5	122.0	0.4	18.1	138.9	5.9	133.2	6.9	103.4	5.5	120.7	36.4	128.5	0.62	
1986	126.4	4.6	123.2	1.3	114.4	16.6	123.0	22.5	122.5	0.4	18.1	141.1	5.9	132.1	6.9	103.5	5.5	122.3	36.4	130.2	0.62	
1987	127.8	4.6	123.8	1.3	116.1	16.6	126.9	22.5	125.6	0.4	18.1	141.0	5.9	136.3	6.9	106.6	5.5	123.0	36.4	131.0	0.62	
1988	131.2	4.6	126.5	1.3	119.8	16.6	135.4	22.5	132.7	0.4	18.1	138.3	5.9	138.3	6.9	108.3	5.5	125.3	36.4	130.6	0.62	

Note: 1. Data for 1960-1983 are from Jenkins and Lai, Appendix Table 9A  
 2. Data for 1984-1988 are estimated

APPENDIX TABLE 8: MALAYSIA - NON AGRICULTURAL PRICE INDEX CORRECTED FOR TOTAL EFFECTS OF PRICING POLICIES, 1960-1988

Year	Tradeable Part of Non Agricultural Price Index	Non Tradeable Part of Non Agricultural Price Index	Normalized Weights of Tradeable Part of Non Agricultural Price Index [Pna]	Normalized Weights of Non Tradeable Part of Non Agricultural Price Index [Pna]	Ratio of Equilibrium Nom. Exch. Rate to Nom. Exch. Rate [Es=1;Nd=2]	Ratio of Equilibrium Exch. Rate to Nominal Exch. Rate [EX1]/[Eo]	Tariff Rate on Non Agricultural Imports	1+t[na]	Non Agricultural Price Index Adjusted for Dir. Effects of Pricing Policies	Non Agri. Price Index Adjusted for Dir. Effects of Pricing Policies [Es=1;Nd=2]	Non Agri. Price Index Adjusted for Dir. Effects of Pricing Policies [Es=0.5;Nd=1.5]	Non Agricultural Price Index
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]=([3]x([1]/([8])))+([4]x[2])	[10]	[11]	[12]=[3]x[1]+[4]x[2]
1960	55.2	58.0	0.38	0.62	1.0392	1.0588	0.1130	1.1130	54.8	55.5	55.9	56.94
1961	55.2	58.3	0.38	0.62	1.0543	1.0813	0.1313	1.1313	54.7	55.7	56.2	57.12
1962	55.0	55.5	0.38	0.62	1.0708	1.1045	0.1248	1.1248	53.0	54.3	54.9	55.31
1963	54.9	56.1	0.38	0.62	1.0736	1.1081	0.1179	1.1179	53.4	54.8	55.5	55.64
1964	54.9	56.2	0.38	0.62	1.0599	1.0887	0.1067	1.1067	53.7	54.8	55.4	55.71
1965	56.1	57.0	0.38	0.62	1.0429	1.0650	0.1427	1.1427	54.0	54.8	55.2	56.66
1966	56.4	58.1	0.38	0.62	1.0493	1.0742	0.1260	1.1260	55.1	56.0	56.5	57.45
1967	58.9	58.4	0.39	0.61	1.0696	1.1042	0.1600	1.1600	55.4	56.8	57.5	58.60
1968	59.4	59.2	0.39	0.61	1.0593	1.0896	0.1562	1.1562	56.1	57.3	57.9	59.28
1969	59.4	59.5	0.39	0.61	1.0037	1.0059	0.1492	1.1492	56.5	56.5	56.6	59.46
1970	60.6	60.1	0.39	0.61	1.0551	1.0832	0.1285	1.1285	57.6	58.8	59.3	60.30
1971	61.3	61.3	0.39	0.61	1.0813	1.1194	0.1272	1.1272	58.6	60.3	61.1	61.30
1972	63.0	62.8	0.39	0.61	1.1037	1.1490	0.1243	1.1243	60.2	62.5	63.5	62.88
1973	68.6	65.1	0.39	0.61	1.0363	1.0550	0.1240	1.1240	63.5	64.4	64.8	66.46
1974	76.2	70.4	0.39	0.61	1.0676	1.0975	0.0886	1.0886	70.2	72.1	72.9	72.66
1975	79.2	73.9	0.39	0.61	1.0739	1.1066	0.0871	1.0871	73.5	75.6	76.5	75.97
1976	82.3	77.5	0.39	0.61	0.9888	0.9826	0.0922	1.0922	76.7	76.3	76.2	79.37
1977	85.4	81.0	0.39	0.61	1.0007	1.0011	0.0928	1.0928	79.9	79.9	79.9	82.72
1978	89.6	84.5	0.39	0.61	1.0237	1.0357	0.0886	1.0886	83.6	84.4	84.8	86.49
1979	93.6	90.0	0.39	0.61	0.9850	0.9766	0.0757	1.0757	88.8	88.3	88.0	91.40
1980	100.0	100.0	0.38	0.62	1.0325	1.0486	0.0787	1.0787	97.2	98.4	98.9	100.00
1981	108.1	108.8	0.38	0.62	1.0969	1.1373	0.0752	1.0752	105.7	109.4	110.9	108.53
1982	111.9	114.0	0.38	0.62	1.1181	1.1646	0.0700	1.0700	110.4	115.1	117.0	113.20
1983	115.0	120.2	0.38	0.62	1.0996	1.1411	0.0705	1.0705	115.3	119.4	121.1	118.22
1984	119.9	125.4	0.38	0.62	1.0696	1.1011	0.0891	1.0891	119.6	122.5	123.8	123.31
1985	122.0	128.5	0.38	0.62	1.0525	1.0777	0.0903	1.0903	122.2	123.9	125.5	126.03
1986	122.5	130.2	0.38	0.62	1.0379	1.0568	0.0843	1.0843	123.7	125.3	126.1	127.27
1987	125.6	131.0	0.38	0.62	0.9799	0.9682	0.0650	1.0650	126.0	125.1	124.6	128.95
1988	132.7	130.6	0.38	0.62	1.0079	1.0121	0.0597	1.0597	128.6	128.9	129.1	131.40

Note: 1. Data for 1960-1983 are from Jenkins and Lai, Appendix Table 10

APPENDIX TABLE 9(1): MALAYSIA - VALUE ADDED IN RUBBER, PALM OIL AND PADDY, 1960-1988

Year	Producer Price of Estate Rubber (POB Price less Marketing & Transport Costs)	Producer Price of Smallholder Rubber (POB Price less Marketing & Transport Costs)	Producer Price of Palm Oil (POB Price less Marketing & Transport Costs)	Producer Price of Local Paddy (GMP Support Price for Paddy)	Domestic Value Added of Estate Rubber Var are	Value of Estate Rubber Inputs	Domestic Value Added of Smallholder Rubber Var are	Value of Smallholder Rubber Inputs	Domestic Value Added of Palm Oil Var are	Value of Palm Oil Inputs	Domestic Value Added of Local Paddy Var are	Domestic Value Added of Paddy Including Input Subsidy From 1981 to 1988	Value of Paddy Inputs after Subsidy
	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)
	[1]	[2]	[3]	[4]	[5]=[1]x [0.845]	[6]=[1] -[5]	[7]=[2]x [vars]	[8]=[2] -[7]	[9]=[3]x [vars]	[10]=[3]x -[9]	[11]=[4]x [vars]	[12]=[4] -[11]	[13]
1960	2,050	1,885	556	265	1,732.54	317.46	1,611.68	292.17	468.71	87.29	239.03	239.03	25.97
1961	1,591	1,426	579	265	1,344.63	246.37	1,219.23	221.03	488.10	90.90	239.03	239.03	25.97
1962	1,522	1,357	543	265	1,286.16	235.84	1,160.24	210.34	457.75	85.25	239.03	239.03	25.97
1963	1,443	1,276	528	265	1,219.15	223.85	1,090.98	197.78	445.10	82.90	239.03	239.03	25.97
1964	1,356	1,189	576	265	1,145.92	210.08	1,016.60	184.30	485.57	90.43	239.03	239.03	25.97
1965	1,358	1,191	674	265	1,147.47	210.53	1,018.31	184.61	568.18	105.82	239.03	239.03	25.97
1966	1,316	1,149	582	265	1,112.24	203.76	982.40	178.10	490.63	91.37	239.03	239.03	25.97
1967	1,108	937	548	265	935.89	172.11	801.14	145.24	461.96	86.04	239.03	239.03	25.97
1968	1,042	872	383	265	880.71	161.29	745.56	135.16	322.87	68.13	239.03	239.03	25.97
1969	1,345	1,175	377	265	1,136.86	208.14	1,004.63	182.13	317.81	59.19	239.03	239.03	25.97
1970	1,053	882	588	265	890.08	162.92	754.11	136.71	495.68	92.32	239.03	239.03	25.97
1971	963	790	593	265	813.42	149.58	675.45	122.45	499.90	93.10	239.03	239.03	25.97
1972	826	652	453	265	698.35	127.65	557.46	101.06	381.88	71.12	239.03	239.03	25.97
1973	1,311	1,129	498	381	1,108.04	202.96	965.30	175.00	419.81	78.19	343.66	343.66	37.34
1974	1,507	1,309	924	464	1,273.23	233.77	1,119.20	202.89	778.93	145.07	418.53	418.53	45.47
1975	1,138	1,035	865	464	961.54	176.46	884.93	160.43	729.19	135.81	418.53	418.53	45.47
1976	1,466	1,361	755	464	1,239.18	226.82	1,163.66	210.95	636.47	118.53	418.53	418.53	45.47
1977	1,535	1,425	995	464	1,297.31	237.69	1,218.38	220.88	838.79	156.22	418.53	418.53	45.47
1978	1,582	1,466	1066	464	1,377.92	245.37	1,273.95	227.23	837.88	228.12	400.90	400.90	63.10
1979	1,842	1,722	1142	530	1,604.38	285.59	1,496.42	266.91	897.61	244.39	457.92	457.92	72.08
1980	2,104	1,976	1038	530	1,832.58	325.96	1,717.14	306.28	815.87	222.13	457.92	457.92	72.08
1981	1,890	1,750	1027	698	1,646.19	292.56	1,520.75	271.25	807.22	219.78	603.07	603.07	94.93
1982	1,613	1,464	900	698	1,404.92	250.11	1,272.22	226.92	707.40	192.60	603.07	603.07	94.93
1983	1,931	1,777	951	698	1,685.76	298.91	1,533.55	275.43	738.93	212.07	578.64	578.64	119.36
1984	2,045	1,885	1193	661	1,785.29	316.98	1,626.75	292.17	926.96	266.04	547.97	547.97	113.03
1985	1,676	1,515	983	661	1,463.15	259.78	1,307.45	234.83	763.79	219.21	547.97	547.97	113.03
1986	1,854	1,726	607	661	1,618.54	287.37	1,489.54	267.53	471.64	135.36	547.97	547.97	113.03
1987	2,138	1,975	664	661	1,866.47	331.39	1,704.43	306.13	515.93	148.07	547.97	547.97	113.03
1988	2,800	2,632	886	661	2,444.40	434.00	2,271.42	407.96	688.42	197.58	547.97	547.97	113.03

Note: All data for 1960-1983 are from Jengkin and Lai, for 1984-1988 used the same methodology as in Jengkin and Lai



APPENDIX TABLE 9(2): MALAYSIA: VALUE ADDED IN RUBBER, PALM OIL AND PADDY AND RELATIVE VALUE ADDED WITH RESPECT TO PADDY BEFORE ADJUSTMENT FOR EFFECTS OF PRICING POLICIES, 1960-1988

Year	Domestic Value Added of Estate Rubber	Domestic Value Added of Smallholder Rubber	Domestic Value Added of Palm Oil	Domestic Value Added of Local Paddy	Non Agricultural Price Index (P-na)	Non Agricultural Value Added	Relative Value Added of Estate Rubber with respect to local Paddy	Relative Value Added of Smallholder Rubber with respect to local Paddy	Relative Value Added of Palm Oil with respect to local Paddy
	Var is 0.845	Var is 0.845	Var is 0.843	Var is 0.902		Var is 0.526			
	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)					
	[1]	[2]	[3]	[4]	[5]	[6]=[5]x [0.526]	[7]=[1] / [4]	[8]=[2] / [4]	[9]=[3] / [4]
1960	1,733	1,593	468.71	239.14	56.94	29.95	7.25	6.66	1.96
1961	1,345	1,205	488.10	239.14	57.13	30.05	5.62	5.04	2.04
1962	1,286	1,147	457.75	239.14	55.33	29.10	5.38	4.80	1.91
1963	1,219	1,078	445.10	239.14	55.68	29.29	5.10	4.51	1.86
1964	1,146	1,005	485.57	239.14	55.73	29.31	4.79	4.20	2.03
1965	1,147	1,007	568.18	239.14	56.64	29.79	4.80	4.21	2.38
1966	1,112	971	490.63	239.14	57.46	30.22	4.65	4.06	2.05
1967	936	792	461.96	239.14	58.6	30.82	3.91	3.31	1.93
1968	881	737	322.87	239.14	59.3	31.19	3.68	3.08	1.35
1969	1,137	993	317.81	239.14	59.49	31.29	4.75	4.15	1.33
1970	890	745	495.68	239.14	60.3	31.72	3.72	3.12	2.07
1971	813	668	499.90	239.14	61.29	32.24	3.40	2.79	2.09
1972	698	551	381.88	239.14	62.89	33.08	2.92	2.30	1.60
1973	1,108	954	419.81	343.76	66.5	34.98	3.22	2.78	1.22
1974	1,273	1,106	778.93	418.49	72.65	38.21	3.04	2.64	1.86
1975	962	875	729.19	418.49	75.94	39.94	2.30	2.09	1.74
1976	1,239	1,150	636.47	418.49	79.41	41.77	2.96	2.75	1.52
1977	1,297	1,204	838.79	418.49	82.7	43.50	3.10	2.88	2.00
1978	1,337	1,239	898.64	418.49	86.48	45.49	3.19	2.96	2.15
1979	1,556	1,455	962.71	478.28	91.4	48.08	3.25	3.04	2.01
1980	1,778	1,670	875.03	478.28	100	52.60	3.72	3.49	1.83
1981	1,597	1,479	865.76	674.81	108.55	57.10	2.37	2.19	1.28
1982	1,363	1,237	758.70	674.81	113.2	59.54	2.02	1.83	1.12
1983	1,632	1,502	801.69	674.81	118.2	62.17	2.42	2.23	1.19
1984	1,728	1,593	1,221.51	612.76	123.31	64.86	2.82	2.60	1.99
1985	1,416	1,280	973.67	612.76	126.03	66.29	2.31	2.09	1.59
1986	1,567	1,458	534.46	612.76	127.27	66.94	2.56	2.38	0.87
1987	1,807	1,669	623.82	612.76	128.95	67.83	2.95	2.72	1.02
1988	2,366	2,224	0.00	612.76	131.4	69.12	3.86	3.63	0.00

Notes: 1. Data for 1960-1983 are from Jenkins and Lai. Appendix Table 11(2) . 1989  
 2. Data for 1984-1988 are estimated.

APPENDIX TABLE 9(3): MALAYSIA: VALUE ADDED IN RUBBER, PALM OIL AND PADDY WITH RESPECT TO  
NON AGRICULTURE VALUE ADDED BEFORE ADJUSTING FOR EFFECTS OF PRICING POLICIES, 1960-1988

Year	Domestic Value Added of Estate Rubber	Domestic Value Added of Smallholder Rubber	Domestic Value Added of Palm Oil	Domestic Value Added of Local Paddy	Non Agricultural Value Added	Ratio of Value Added of Estate Rubber to Non Agriculture Value Added	Ratio of Value Added of Smallholder Rubber to Non Agriculture Value Added	Ratio of Value Added of Palm Oil to Non Agriculture Value Added	Ratio of Value Added of Local Paddy to Non Agriculture Value Added
	Var is 0.845	Var is 0.845	Var is 0.843	Var is 0.902	Var is 0.526				
	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)					
	[1]	[2]	[3]	[4]	[5]	[6]=[1]/[5]	[7]=[2]/[5]	[8]=[3]/[5]	[9]=[4]/[5]
1960	1,733	1,593	468.71	239.14	29.95	57.86	53.19	15.65	7.98
1961	1,345	1,205	488.10	239.14	30.05	44.76	40.10	16.24	7.96
1962	1,286	1,147	457.75	239.14	29.10	44.19	39.41	15.73	8.22
1963	1,219	1,078	445.10	239.14	29.29	41.62	36.81	15.20	8.17
1964	1,146	1,005	485.57	239.14	29.31	39.09	34.28	16.56	8.16
1965	1,147	1,007	568.18	239.14	29.79	38.50	33.80	19.07	8.03
1966	1,112	971	490.63	239.14	30.22	36.79	32.13	16.23	7.91
1967	936	792	461.96	239.14	30.82	30.37	25.69	14.99	7.76
1968	881	737	322.87	239.14	31.19	28.24	23.63	10.35	7.67
1969	1,137	993	317.81	239.14	31.29	36.34	31.73	10.16	7.64
1970	890	745	495.68	239.14	31.72	28.06	23.49	15.63	7.54
1971	813	668	499.90	239.14	32.24	25.22	20.72	15.51	7.42
1972	698	551	381.88	239.14	33.08	21.10	16.66	11.54	7.23
1973	1,108	954	419.81	343.76	34.98	31.68	27.27	12.00	9.83
1974	1,273	1,106	778.93	418.49	38.21	33.31	28.94	20.38	10.95
1975	962	875	729.19	418.49	39.94	24.08	21.91	18.26	10.48
1976	1,239	1,150	636.47	418.49	41.77	29.66	27.53	15.24	10.02
1977	1,297	1,204	838.79	418.49	43.50	29.82	27.68	19.28	9.62
1978	1,337	1,239	898.64	418.49	45.49	29.39	27.24	19.76	9.20
1979	1,556	1,455	962.71	478.28	48.08	32.37	30.26	20.02	9.95
1980	1,778	1,670	875.03	478.28	52.60	33.80	31.75	16.64	9.09
1981	1,597	1,479	865.76	674.81	57.10	27.97	25.90	15.16	11.82
1982	1,363	1,237	758.70	674.81	59.54	22.89	20.77	12.74	11.33
1983	1,632	1,502	801.69	674.81	62.17	26.25	24.16	12.89	10.85
1984	1,728	1,593	1,221.51	612.76	64.86	26.64	24.56	18.83	9.45
1985	1,416	1,280	973.67	612.76	66.29	21.36	19.31	14.69	9.24
1986	1,567	1,458	534.46	612.76	66.94	23.41	21.79	7.98	9.15
1987	1,807	1,669	623.82	612.76	67.83	26.64	24.60	9.20	9.03
1988	2,366	2,224	0.00	612.76	69.12	34.23	32.18	0.00	8.87

Notes: 1. Data for 1960-1983 are from Jenkins and Lai, Appendix Table 11(3), 1989.  
2. Data for 1984-1988 are estimated.

APPENDIX TABLE 9(4): MALAYSIA - VALUE ADDED IN RUBBER, PALM OIL AND PADDY ADJUSTED FOR DIRECT EFFECTS OF PRICING POLICIES, 1960-1988

Year	Domestic Value Added of Estate Rubber	Domestic Value Added Smallholder Rubber	Domestic Value Added of Palm Oil	Value of Local Paddy Inputs	Total Taxes on Rubber Paid by Estate	Total Taxes on Rubber Paid by Smallholder	Total Taxes on Palm Oil	Border Price: CIF Imported Rice in Paddy Equivalent at Farm Level	Value Added in Estate Rubber without Direct Effects of Pricing Policies	Value Added in Smallholder Rubber without Direct Effects of Pricing Policies	Value Added in Palm Oil without Direct Effects of Pricing Policies	Value Added in Local Paddy without Direct Effects of Pricing Policies
	Var is 0.845	Var is 0.845	Var is 0.843									
	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)	(M\$/tonne)
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]=[1]+[5]	[10]=[2]+[6]	[11]=[3]+[7]	[12]=[8]-[4]
1960	1,733	1,593	468.71	25.98	251.72	350.72	46.57	204.03	1984.72	1943.72	515.28	178.05
1961	1,345	1,205	488.10	25.98	156.87	255.87	48.42	217.08	1501.87	1460.87	536.52	191.10
1962	1,286	1,147	457.75	25.98	131.07	230.07	45.5	238.62	1417.07	1377.07	503.25	212.64
1963	1,219	1,078	445.10	25.98	113.01	212.01	44.3	231.07	1332.01	1290.01	489.40	205.09
1964	1,146	1,005	485.57	25.98	103.87	202.87	48.25	214.14	1249.87	1207.87	533.82	188.16
1965	1,147	1,007	568.18	25.98	111.03	210.03	56.16	210.91	1258.03	1217.03	624.34	184.93
1966	1,112	971	490.63	25.98	94.06	193.06	48.74	236.78	1206.06	1164.06	539.37	210.80
1967	936	792	461.96	25.98	68.01	167.01	46.03	292.14	1004.01	959.01	507.99	266.16
1968	881	737	322.87	25.98	66.38	165.38	32.65	324.59	947.38	902.38	355.52	298.61
1969	1,137	993	317.81	25.98	108.42	207.42	32.17	314.08	1245.42	1200.42	349.98	288.10
1970	890	745	495.68	25.98	76.63	175.63	49.32	256.75	966.63	920.63	545.00	230.77
1971	813	668	499.90	25.98	58.61	157.61	49.83	214.62	871.61	825.61	549.73	188.64
1972	698	551	381.88	25.98	57.2	156.2	46.91	220.71	755.20	707.20	428.79	194.73
1973	1,108	954	419.81	37.35	164.19	263.19	63.67	394.60	1272.19	1217.19	483.48	357.25
1974	1,273	1,106	778.93	45.47	267.19	366.19	253.88	593.94	1540.19	1472.19	1032.81	548.47
1975	962	875	729.19	45.47	205.23	205.23	243.98	561.23	1167.23	1080.23	973.18	515.76
1976	1,239	1,150	636.47	45.47	388.9	388.9	130.83	269.53	1627.90	1538.90	767.30	224.06
1977	1,297	1,204	838.79	45.47	461.86	461.86	267.3	253.39	1758.86	1665.86	1106.09	207.92
1978	1,337	1,239	898.64	45.47	573.75	573.75	137.68	365.80	1910.75	1812.75	1036.32	320.33
1979	1,556	1,455	962.71	51.96	798.93	798.93	125.22	410.15	2354.93	2253.93	1087.93	358.19
1980	1,778	1,670	875.03	51.96	839.44	839.44	79.26	411.51	2617.44	2509.44	954.29	359.55
1981	1,597	1,479	865.76	68.38	506.08	506.08	64.79	523.30	2103.08	1985.08	930.55	454.92
1982	1,363	1,237	758.70	68.38	217.33	217.33	32.37	383.81	1580.33	1454.33	791.07	315.43
1983	1,632	1,502	801.69	68.38	312.16	312.16	22.31	268.42	1944.16	1814.16	824.00	200.04
1984	1,728	1,593	1,221.51	64.78	158.4	158.4	31.79	244.00	1886.40	1751.23	1253.30	179.22
1985	1,416	1,280	973.67	64.78	137.5	137.5	26.86	223.00	1553.50	1417.68	1000.53	158.22
1986	1,567	1,458	534.46	64.78	140	140	17.07	234.00	1707.00	1598.47	551.53	169.22
1987	1,807	1,669	623.82	64.78	170.5	170.5	17.99	175.00	1977.50	1839.38	641.81	110.22
1988	2,366	2,224	0.00	64.78	354	354		291.00	2720.00	2578.04	0.00	226.22

Notes: 1. Data for 1960-1983 are from Jenkins and Lai, Appendix Table 11(4). 1989.  
 2. Data for 1984-1988 are estimated.

APPENDIX TABLE 10: MALAYSIA - VALUE ADDED OF TRADEABLE PART OF NON AGRICULTURAL PRICE INDEX ADJUSTED FOR TOTAL EFFECTS OF PRICING POLICIES, 1960-1988

Year	Tradeable Part of Non Agri Price Index (1980=100) Pna(T)	Non Tradeable Part of Non Agri Pr Index (1980=100) Pna(NT)	VA of Tradeable Part of Non Agri Agricultural Price Index (0.425)	VA of Non Tradeable Part of Non Agri Price Index (0.619)	Normalized Weight of Tradeable Part of Non Agri Price Index	Normalized Weight of Non Tradeable Part of Non Agri Price Index	Ratio of Equilibrium to Non Exch Rate [Es=1;Nd=2]	Ratio of Equilibrium to Non Exch Rate [Es=0.5;Nd=1.5]	Effective Rate of Protection for Tradeable Part of Non Agricultural	1+ERP	VA of Tradeable Part of Non Agri Pr Index Adj for Dir Effects of Pr Policies	VA of Tradeable Part of Non Agri Pr Index Adj for Tot Effects of Pricing Policies [Es=1;Nd=2]	VA of Tradeable Part of Non Agri Pr Index Adj for Tot Effects of Pricing Policies [Es=0.5;Nd=1.5]
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]= [11]+[9]	[11]=([5]*[3]+[6]*[4])	[12]=([7]*[5]+[8]*[4])	[13]=([6]*[5]+[8]*[4])
1960	55.2	58.0	23.46	35.92	0.38	0.62	1.0392	1.0588	0.20	1.20	29.63	29.93	30.08
1961	55.2	58.3	23.45	36.12	0.38	0.62	1.0543	1.0814	0.23	1.23	29.57	29.97	30.17
1962	55.0	55.5	23.39	34.36	0.38	0.62	1.0709	1.1059	0.26	1.26	28.30	28.80	29.05
1963	54.9	56.1	23.34	34.76	0.38	0.62	1.0735	1.1097	0.29	1.29	28.36	28.87	29.12
1964	54.9	56.2	23.34	34.80	0.38	0.62	1.0599	1.0876	0.30	1.30	28.34	28.75	28.96
1965	56.1	57.0	23.84	35.28	0.38	0.62	1.0428	1.0644	0.30	1.30	28.78	29.08	29.23
1966	56.5	58.1	24.80	35.96	0.38	0.62	1.0493	1.0741	0.30	1.30	29.24	29.59	29.77
1967	58.9	58.4	25.03	36.15	0.39	0.61	1.0696	1.1043	0.31	1.31	29.53	30.05	30.31
1968	59.4	59.2	25.27	36.65	0.39	0.61	1.0592	1.0890	0.33	1.33	29.79	30.23	30.45
1969	59.4	59.5	25.25	36.85	0.39	0.61	1.0037	1.0056	0.36	1.36	29.80	29.83	29.84
1970	60.6	60.1	25.77	37.20	0.39	0.61	1.0560	1.0840	0.37	1.37	30.06	30.47	30.67
1971	61.3	61.3	24.85	37.94	0.39	0.61	1.0813	1.1213	0.39	1.39	30.49	31.00	31.37
1972	63.1	62.0	26.81	38.85	0.39	0.61	1.1037	1.1539	0.41	1.41	31.15	31.92	32.29
1973	68.6	65.1	29.17	40.33	0.39	0.61	1.0362	1.0545	0.42	1.42	32.65	32.93	33.08
1974	76.1	70.4	32.36	43.59	0.39	0.61	1.0676	1.1004	0.42	1.42	35.52	36.11	36.40
1975	79.2	73.9	33.67	45.72	0.39	0.61	0.0739	1.1097	0.42	1.42	37.10	37.86	38.19
1976	82.3	77.5	34.99	48.00	0.39	0.61	0.9888	0.9831	0.41	1.41	39.06	38.59	38.84
1977	85.4	81.0	26.27	50.15	0.39	0.61	1.0070	1.0011	0.39	1.39	40.81	48.82	40.82
1978	89.7	84.5	38.10	52.28	0.39	0.61	1.0236	1.0355	0.37	1.37	42.78	43.04	43.16
1979	93.6	90.0	39.77	55.72	0.39	0.61	0.9850	0.9772	0.35	1.35	45.53	45.35	45.27
1980	100.0	100.0	42.50	61.90	0.38	0.62	1.0325	1.0487	0.33	1.33	50.46	50.86	51.06
1981	108.1	108.0	45.96	67.35	0.38	0.62	1.0969	1.1433	0.31	1.31	55.02	56.32	56.94
1982	111.9	114.0	47.57	70.56	0.38	0.62	1.1181	1.1739	0.31	1.31	57.48	59.12	59.89
1983	115.0	120.2	48.87	74.39	0.38	0.62	1.0996	1.1472	0.31	1.31	60.22	61.64	62.32
1984	119.9	125.4	50.96	77.62	0.38	0.62	1.0696	1.1035	0.31	1.31	62.90	63.94	64.44
1985	122.0	128.5	51.85	79.54	0.38	0.62	1.0410	1.0784	0.31	1.31	64.36	64.97	65.53
1986	122.5	130.2	52.06	80.59	0.38	0.62	1.0379	1.0569	0.31	1.31	65.07	65.64	65.93
1987	125.6	131.0	53.38	81.09	0.38	0.62	0.9797	0.9694	0.31	1.31	65.76	65.45	65.29
1988	132.7	130.6	56.40	80.84	0.38	0.62	1.0079	1.0119	0.31	1.31	66.48	66.61	66.68

Note: 1. Data for 1960-1983 are from Jenkins and Lai, Appendix Table 12

2. Data for 1984-1988 are estimated