

**PRAGMATISM AND STABILITY:
THE POLITICAL ECONOMY OF
AGRICULTURAL PRICING POLICIES
IN MALAYSIA, 1960-1983**

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ABSTRACT*

This study examines the development and evolution of Malaysian agricultural pricing policies in relation to rubber, oil palm, and paddy for the period 1960 to 1983. Particular emphasis is placed on tracing the political pressures that generated and sustained these policies. The magnitude of these pricing policies is measured in terms of the nominal and effective rates of protection they generate; their impact on output, consumption, and foreign exchange earnings is then estimated; and finally, the implications of these policies for the government budget and the incomes of rural households are assessed. It is shown that the agricultural pricing policies have been remarkably stable over this period. These policies have ensured that the price of paddy relative to non-agricultural prices has increased slightly over time. While the rubber and the palm oil sectors have been taxed, substantial funds have been spent on research, replanting, and rural infrastructure which have promoted rural development and the expansion of these export crops.

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I. INTRODUCTION¹

Overview of Study

Agricultural and trade policies over the past three decades in Malaysia have been the product of a unique blend of the political agreement among the country's racial communities and the economic forces that left Malaysia at the time of independence with a highly efficient and well organized natural rubber producing sector. The need to carefully balance the political and economic forces to maintain stability in the country (along with a large dose of pragmatism from the country's leadership) has resulted in a basic set of trade and agricultural pricing policies that have been modified more in degree than in kind since 1960.

These policies have been made up of essentially five elements:

1. Maintain the producer price of rice at a stable level in terms of the real purchasing power of the politically powerful paddy farming sector to maintain political stability and to achieve food (rice) security.
2. Assist the export oriented rubber and palm oil sectors in improving productivity through research and replanting grants.
3. Set levels of taxation on the rubber and palm oil sectors to both finance the public investments made in the sectors, and provide a surplus to finance other public sector development investments.
4. Maintain an open economy with fairly low and uniform set of tariffs on the imports of consumer goods and with very low or no tariffs on imported inputs used by the exporting sectors.
5. Distribute significant amounts of the increase in oil revenues during the late 1970's to the agricultural sector by directly subsidizing the production of paddy and by reducing the rate of export tax on rubber and palm oil.

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In terms of both economic development and political stability, these policies have been highly successful. From time to time, adjustments have had to be made in order to maintain these policies when world prices of these commodities have fluctuated greatly. It is the analysis of the history of these policies and their impact on Malaysian agriculture that is the focus of this study.

Country Background

Malaysia is located in South-east Asia on the southern end of the Malay Peninsula and on the north-eastern part of the island of Borneo. The total land area of the country is 330,434 square kilometres. The part of the country on the peninsula comprises 11 states and a federal territory, and is known as Peninsular Malaysia. Some 650 km of the South China Sea separates it from the two states of Sabah and Sarawak on the island of Borneo, which account for some 60 percent of the land area of the country.

The population of Malaysia in 1983 was estimated to be 14.802 millions in the 1980 Population Census. (See Table 1.) The growth rate of the population in the 1960's was 3.0 percent per annum, which declined to 2.6 percent a year between 1971-1980.

The labour force totalled 5.380 millions (or 39.1 percent of the population in 1980), of which 2.067 millions were engaged in agriculture. As a proportion of the labour force, the number of workers engaged in agriculture accounted for 38.4 percent in 1980.

About 83 percent of the population lives in Peninsular Malaysia, where the ethnic mix is 54 percent Malay, 35 percent Chinese, 10 percent Indians, and 1 percent other ethnic groups (Eurasians, Europeans, other Asians, etc.). During the decade of the 1970's and early 1980's, this ethnic composition of the population has remained relatively stable, as indicated by the 1980 Census. In Sabah and Sarawak, the principal ethnic groups are the Kadazans, Ibans, Chinese, Muruts, Malays, and Melanaus. Ethnicity, in particular the composition and distribution of the various ethnic groups in the country, is an important issue in the political and economic affairs of Malaysia.

TABLE 1: MALAYSIA - SELECTED POPULATION CHARACTERISTICS

Year	Total Population	Urban Population	As a share of Total Population	Share of Total Population by Race	Share of Rural Population by Race						
			Labour Force in Agriculture	Malays Chinese Indians Others	Malays Chinese Indians Others						
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
	(Millions)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1960	8.113	25.2									
1965	9.422	26.1									
1970	10.864	28.8	46.6	52.7	35.8	10.7	0.8	63.1	26.4	9.8	0.7
1975	12.248	32.0	42.4	53.0	35.6	10.6	0.8	63.9	25.8	9.7	0.6
1980	13.764	35.0	38.4	53.9	34.9	10.5	0.7	65.2	24.7	9.5	0.6
1983	14.802										

Notes: [1] Column 1 data are from the Dept of Statistics and have been revised by it.
 [2] Columns 2 to 11 are from "Fourth Malaysia Plan, 1981-1985".

Source: Fourth Malaysia Plan 1981-1985 (Kuala Lumpur: National Printing Dept, 1981);
 tables 4-2 and 4-5, p72 and 79.
 Tables 1(A), 1(B) and 1(C) of the Working Paper: Malaysia, 1987.

About 65 percent of the population lived in the rural areas in 1980. Malays are the largest ethnic group, accounting for 65.2 percent of the rural population. Indians and other races comprise 10.1 percent of the rural population. The Chinese in the rural areas constitutes the balance of 24.7 percent of the rural population. In contrast, the Chinese is the largest urban group in the urban areas.²

In reaction to this situation, urbanization of the Malays has been implicitly encouraged by the government in its development plans, the objective being to create a more even distribution of the three principal ethnic groups in the country. The success of this policy during the 1970's could be seen in the differences between the urban growth rates of the Malays, Chinese and Indians. Between 1971-1980, the Malay community had an urban growth rate of 6.7 percent a year, as compared to 3.7 percent per annum for the Chinese community, and 4.2 percent per year for the Indians.

The New Economic Policy

A New Economic Policy (NEP), with twin objectives, was incorporated into the Second Malaysia Plan (1971-1975)³. The targeted achievement of these objectives has been set over a period of twenty years to 1990. The first objective is the "eradication of poverty among all races," and the second, the "correction of economic imbalance between the races" by expanding the participation of Malays in commerce and industry to compensate for the

² This a historical development arising from the forced resettlement of rural Chinese during 1952-1954 at the time of the communist Emergency to periurban areas. The rationale was to cut off the supply and support lines to the insurgents, who were principally Chinese while the army and the police fighting them were British and Malay. This identification of the conflict in ethnic terms has continued to colour Malaysian ethnic relations in the long term. (Young, Bussink and Hasan, 1980; p15).

³ The NEP was the consequence of consensus among the leaders of the ethnic groups to prevent the recurrence of the racial riots of May 13, 1969. This incident was a watershed in the political and economic affairs of the country, resulting in far ranging changes. The most pertinent is the shift from a laissez-faire market oriented economy to one which is more interventionist in support of the objectives of the NEP.

perceived inroads of the Chinese in the political sphere. (Anand, 1983; pp8-9). Eventually, the identification of race with economic function would be eliminated. The correction of economic imbalance in income distribution, employment, and ownership and control of wealth between the Malays and non-Malays is to be achieved through a redistribution in the context of a rapid expansion of the economy so that no ethnic group would feel any loss or deprivation. (Malaysia, 1971; p41).

There is no objection to the NEP objective on the eradication of poverty, although in the implementation of the policy, rural Malay poverty issues are emphasized compared to urban Chinese poverty. Even though nearly two-thirds of Malays are below the national poverty household income of M\$180 per month in 1970 prices, the incidence of poverty among the Indians is 39 percent of the community, and among the Chinese, 26 percent are classified as poor on the same basis. (Young, *et al.*, 1980; p61). The NEP has come to be identified as a policy for the transfer of resources from the urban economy to the rural economy. On the other hand, the second objective of correcting economic imbalance has given rise to feelings of unease among the non-Malays, since the restructuring of Malaysian society involves a redistribution of wealth and ownership of corporate assets, with the proportion of foreign ownership substantially reduced in relation to both Malay and non-Malay ownership. Since Malay savings are scarce, the government has supplemented the role of Malay savers and entrepreneurs in restructuring society by establishing state-owned and controlled enterprises and financial institutions to acquire share capital in existing and new companies and industries. These enterprises will hold the share capital in trust for the Malays.

II. OVERVIEW OF THE ECONOMY

The Malaysian economy has changed in the last 24 years (1960-1983) from one in which exports were dominated by agricultural commodities to one which is more diversified in its mix. Rubber, the mainstay of the economy for decades, has also been reduced now to being

only one of several important export commodities from the agricultural sector. Crude oil and petroleum products and manufactures have become large contributors to the economy in the later part of the period.

The principal imports are intermediate and capital goods, in addition to food. Although from time to time there have been quantitative restrictions on the import of manufactured and industrial goods, these have been few and infrequent. In accordance with the NEP, Malays are given preference when import licences are issued.⁴ In agriculture, the main quantitative restrictions on imports have been on rice and cabbages, with very few other impediments to trade. Import tariffs have been the main instrument of intervention for consumer goods. The tariff rates have been comparatively low, varying mainly from a minimum of 5 percent to 15 percent. Food items in general have been exempted from import tariffs, with some notable exceptions, such as temperate and tropical fruits. For both imports and exports, there have been no subsidies. Although import licences have been needed to import goods, their principal use is for statistical purposes.

Since Malaysia did not have any serious foreign exchange problems during the period of the study, there are no requirements for guaranteed deposits with Bank Negara Malaysia (the central bank) before any imports are permitted. An importer with the necessary import licence can readily obtain letters of credit for imports from any commercial bank. There are also no restrictions on the transfer of funds for legitimate business purposes into and out of the country, with the commercial and merchant banks being required only to make periodic reports on the nature of the transfers. Exceptionally large amounts (M\$1.0 million or more) however require prior approval of the central bank.

During the period covered by the study, the Malaysian economy, as measured by real GNP, experienced continuous growth ranging from a low rate of 3.1 percent to a high rate of

⁴ Resale of these licences to non-Malays is possible. There is no information available on such re-selling of licences.

10.5 percent per annum. This growth in the economy was achieved without high rates of inflation. The Consumer Price Index (CPI), rose by an average of 4 percent for the period between 1960 and 1983. During the first 10 years of the study (1960-1969), inflation was almost non-existent, with negative rates of inflation for 5 years, but from 1970 and thereafter the average inflation rate was 7 percent, 4 percent and 6 percent respectively for 1970-1974, 1975-1979, and 1980-1983.

As reported in Table 2, between 1960 and 1983, real GNP in Malaysia increased from M\$11,837 to M\$53,382 million (in 1980 prices) for an average growth rate of 6.8 percent.⁵ Population growth was estimated at 3.0 percent per annum in the 1960's and 2.6 percent a year for 1970-1983. Per capita real GNP rose from an average of M\$1,541 in 1960-1964 to M\$3,560 in 1980-1983, growing at an average rate of 4.0 percent a year.

Real gross investment in Malaysia rose by 5.1 percent a year between 1960 and 1969, and then went up by 16.2 percent annually in the next ten years, followed by a growth of 13.9 percent a year between 1980 and 1983. Expressed as shares in real GNP (Table 2, column 3), real gross investment averaged about 22 percent over the entire period, increasing from 13 percent in 1960-1964 to 34 percent in 1980-1983. This growth in real gross investment was strongly influenced by the huge investments made during the 1970's as the result of policies adopted by the government to reduce poverty and restructure Malaysian society in the context of the New Economic Policy (NEP). In the early 1980's, investment in the petroleum industry was the basis of the continual increase in real gross investment.

Gross savings in the Malaysian national accounts are determined as the sum of gross domestic capital formation and the balance on current account. In the years 1960-1969, real gross savings grew at an annual rate of 9.4 percent, which in the next decade rose to an

⁵ All monetary values are in Malaysian ringgit. The market exchange rate in 1983 was US\$1.00 = M\$2.3383, which in December 1987 had depreciated to M\$2.52 per US dollar.

TABLE 2: MALAYSIA - SELECTED ECONOMIC AND AGRICULTURAL INDICATORS

Year	Real GNP Per Capita [1980=100]	Real Gross Savings	Real Gross Investments	Real Total Imports	Real Total Exports	Real Agricultural Output	Share of Agric. Exports in Real Production	Ratio of Non-Food Production in Value	Apparent Consumption of Rice Per Capita
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
1960-1964	1,541	0.12	0.13	0.43	0.49	0.28	0.49	0.29	135.1
1965-1969	1,767	0.18	0.16	0.36	0.42	0.24	0.49	0.27	122.0
1970-1974	2,130	0.21	0.23	0.37	0.41	0.23	0.50	0.23	133.2
1975-1979	2,818	0.28	0.26	0.38	0.49	0.20	0.85	0.18	116.9
1980-1983	3,560	0.25	0.34	0.48	0.51	0.17	0.91	0.14	112.4
Average									
1960-83	2,313	0.21	0.22	0.40	0.46	0.22	0.64	0.22	124.4

Notes: [1] Data for GNP, real gross savings, and real gross investments are from Bank Negara Malaysia's "Quarterly Economic Bulletin," various issues.

[2] Data for agricultural output and total imports and exports are from the Dept. of Statistics and the Ministry of Agriculture, and the FAO Trade Yearbook.

[3] Real gross savings is defined as gross capital formation +/- balance on current account.

[4] The ratio of food to non-food production (column 8) is obtained by dividing the total value of food production with the total value of non-food production. It should be noted that in Malaysia, palm oil and coconut oil (both edible vegetable oils), are not considered as food items.

[5] The apparent per capita consumption of rice (column 9) is calculated by dividing the total available supply of rice (local production and net imports) by the population.

Source: Tables 2, 2(A), 3, 3(A) and 4 of the Working Paper: Malaysia, 1987.

annual growth rate of 19.7 percent. But during 1980-1983, real gross savings had a negative annual growth rate of 3.0 percent. The share of real gross savings to real GNP (Table 2, column 2) rose from an average of 12 percent in 1960-1964 to 18 percent in 1965-1969, 21 percent in 1970-1974, and 28 percent in 1975-1979 before declining to 25 percent in 1980-1983. This high rate of savings provided Malaysia with a strong domestic resource base. When supplemented with external borrowing from both institutional and financial market sources, this resource base has enabled the country to embark on a development programme without undue dependence on foreign aid.

The ratio of the value of total imports to GNP in real terms declined from a high of 43 percent in 1960-1960 to 36 percent in 1965-1969 before increasing to 48 percent in 1980-1983. The real value of imports grew 2.0 percent a year between 1960-1969, rising to a high of 12 percent a year in 1970-1979 before declining to 4.0 percent in 1980-1983. The sharp rise in imports in the 1970's was partly due to the large investments made in the crude oil industry during the last few years of the decade, and to the emergence of an industrial and manufacturing base in the economy that used imported inputs. The composition of total imports has also changed perceptibly. Investment and intermediate goods have replaced consumer goods as the dominant components in the mix of total imports during the last 24 years. This is a reflection of the changing Malaysian economy as it moves from one based principally on agriculture to one based on a mix of agricultural exports and manufactured goods.

In real terms, total exports grew at an annual rate of 3.1 percent in the decade 1960-1969, and then to a rate of 15.0 percent a year in the decade ending in 1979. From an historical high in 1980, the real value of exports declined by an annual rate of -2.0 percent from then to 1983. The average share of the real value of total exports in real GNP had remained at around 46 percent during the last 24 years, fluctuating from a high of 56 percent during 1980 and a low of 35 percent in 1972.

Importance of the Agricultural Sector

The importance of the agricultural sector in the Malaysian economy has declined during the last 24 years as measured by the share of agriculture's GDP in real GNP.⁶ (See Table 2, column 6.) The share fell from 28 percent in 1960-1964 to 23 percent in 1970-1974 and to only 17 percent in 1980-1983. This declining trend confirms that the economy is becoming more mixed in its output since both the value and volume of agricultural production have not declined during the period of the study. Notwithstanding this declining trend, the contribution of agriculture to the national economy is expected to remain important even to the end of the century.⁷

The choice of the crops for this study is based on their importance in Malaysian agriculture. Paddy is the principal food crop and its selection is unquestionable. Rubber is the main export crop in Malaysia, and its contribution to the gross domestic product, although declining, is still important. In 1974, rubber output accounted for 14.4 percent of the GDP. This proportion fell to 10.0 percent and 5.5 percent in 1980 and 1983 respectively. Palm oil in 1974 accounted for 6.3 percent of the GDP, and although it increased marginally to 6.6 percent in 1980, it declined to 4.4 percent in 1983. The depressed prices for rubber and palm oil since 1981 have been the principal cause of their recent fall as a percentage of GDP.

Agricultural imports in real terms declined by 4.4 percent a year for the period 1960-1969, while agricultural exports grew by 2.2 percent during the same period. In the next ten years, agricultural imports in real terms rose by 22.2 percent a year as a result of rising food imports, especially in rice, wheat, meat, live cattle, and temperate fruits and vegetables. Agricultural exports in 1970-1979, on the other hand, had a growth rate of 25.0 percent a year

⁶ The GDP for the agricultural sector includes fishing, livestock and forestry. This is not to be confused with the value of agricultural output, which refers to crop and livestock production.

⁷ This is evident in the objectives of the National Agricultural Policy, which seeks to increase the share of agriculture in nominal GNP through higher productivity in the sector.

in real terms.

The relative importance of export crops to food crops in Malaysian agriculture is clearly indicated by the dominance of the planted acreage of these export crops.⁸ In the Malaysian context, palm oil is considered as a non-food export crop,⁹ although it is consumed in other countries as a vegetable oil. By 1983, the ratio of non-food crops to food crops in Malaysia is approximately 1:0.13 compared to 1:3 for the Philippines, and 1:16 for Thailand.

The apparent per capita consumption of rice, the national staple food cereal, had declined from 135.1 kg in 1960-1964 to 112.4 kg in 1980-1983, with an average of 124.4 kg for the period of the study. Based on domestic production and net imports of rice, this declining trend together with the rising per capita real GNP is indicative of rice becoming, in the economic sense, an inferior good.

Exchange Rates

The average nominal exchange rate of the Malaysian ringgit to the U.S. dollar between 1960 and 1983 was M\$2.71 per US dollar. (See Table 3, column 3.) Although there were some fluctuations in the nominal exchange rate between the ringgit and the US dollar, there was relative stability during the period. During the 1960's and the 1970's, the ringgit appreciated against the dollar, with the nominal rate dropping to a low of M\$2.18 per U.S. dollar in 1979 before depreciating slightly to M\$2.34 per U.S. dollar in 1983.

⁸ In 1983, the total area under crops was 4,676,000 ha of which 42.2 percent was planted with rubber; 26.8 percent, oil palm; 14.3 percent, paddy; 7.4 percent, coconuts; 4.9 percent, cocoa; and 4.4 percent, other crops. (Ministry of Agriculture, 1985).

⁹ Malaysians began consuming a small quantity of palm oil as cooking oil in the form of RDD (refined, deodorised, decolorised) palm oil only in the last few years. If palm oil were considered as a food commodity in Malaysian trade statistics, then the country will become a net exporter of food.

TABLE 3: MALAYSIA - BUDGET DEFICIT AND EXCHANGE RATES

Year	Share of Budget Deficit in Total Budget	Share of Budget Deficit in Nominal GNP	Nominal Exchange Rate [M\$ per US\$]	Trade Weighted Real Exchange Rate [M\$ per US\$]	Equilibrium Real Exchange Rate [Es=0.5; Nd=1.5] [M\$ per US\$]	Divergence of Actual & Equilibrium Real Exchange Rate [Percent]	Inflation Rate [Percent]
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
1960-1964	-0.11	-0.02	3.0561	1.8749	1.9106	-1.86%	0.47%
1965-1969	-0.23	-0.06	3.0653	2.0875	2.1029	-0.75%	0.98%
1970-1974	-0.25	-0.07	2.7090	2.0168	2.0619	-2.20%	6.92%
1975-1979	-0.26	-0.08	2.3767	2.0731	2.0816	-0.38%	4.08%
1980-1983	-0.37	-0.17	2.2794	2.1726	2.3035	-5.67%	6.46%
Average 1960-83	-0.24	-0.08	2.7147	2.0397	2.0833	-2.02%	3.67%

Notes: [1] The total budget is the sum of the current budget and the development budget (direct development expenditure plus net government lending).

[2] The deficit or surplus for both the total budget is defined as revenue less expenditure.

[3] The real exchange rate or the trade weighted exchange rate (column 4) is the nominal exchange rate multiplied by the ratio of the trade weighted WPI of Japan, the UK and the US to the Malaysian CPI. The WPI weights are the ratio of the total imports and exports from a country (eg. US) divided by the sum of exports and imports from Japan, the UK and the US.

[4] Column 6 is calculated as:

$$(\text{Column 4} - \text{Column 5}) / \text{Column 4}$$

[5] The inflation rate (column 7) is calculated using the Malaysian consumer price index.

Source: Tables 5 and 6 of the Working Paper: Malaysia, 1987.

In Table 3 column 4, the real exchange rate is calculated by adjusting the nominal exchange rate by the ratio of the trade weighted wholesale price indices of Japan, the United Kingdom, and the United States to the Malaysian consumer price index. The result is that the real exchange rate has remained quite stable throughout the 24 year period. Starting from an average of M\$1.87 per U.S. dollar during the 1960-1964 period, it remained very close to M\$2.00 per U.S. dollar until 1979. Only from 1980 onwards did the real exchange rate started to rise again to a level around M\$2.20 per U.S. dollar.

The equilibrium real exchange rate of the ringgit to the U.S. dollar is calculated in order to estimate what the real exchange rate would be if there were no deficits or surpluses in the current account and also all distortions were removed from the demand and supply of foreign exchange. The calculation of this equilibrium real exchange rate is carried out in two stages. First, the equilibrium nominal exchange rate is estimated as follows:

$$E^* = E_0 * [(Q_0 + (t_m / (1 + t_m)) * Q_d \hat{U}_d - (t_x / (1 - t_x)) * Q_s \ddot{E}_s] / [Q_d \hat{U}_d - Q_s \ddot{E}_s] + 1]$$

where E^* is the equilibrium nominal exchange rate;

E_0 is the nominal exchange rate;

Q_0 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;

\ddot{E}_s is the elasticity of supply of foreign exchange;

\hat{U}_d is the elasticity of demand for foreign exchange (defined positively);

t_m is the average rate of tariff; and

t_x is the average rate of export tax.

This equilibrium nominal exchange rate reflects the situation where the nominal exchange rate does not show a current account deficit or surplus. In addition, it is adjusted further adjusted to remove the impact of any tax or tariff distortions affecting the supply of and demand for foreign exchange. The assumption that the equilibrium nominal exchange rate occurs when there is no current account deficit or surplus is a very strong one. As there has been no fundamental disequilibrium in the balance of payments in Malaysia, this assumption is used in the analysis that follows.¹⁰ Second, this equilibrium nominal exchange rate is multiplied by the ratio of the trade weighted WPI for Japan, the United Kingdom, and the United States to the adjusted Malaysian CPI¹¹ to obtain the equilibrium real exchange rate.

The movement in this equilibrium real exchange rate is more variable than the trade weighted real exchange rate. It ranges from a high of M\$2.32 per U.S. dollar in 1982 to a low of M\$1.83 in 1960. Calculated using the equilibrium real exchange rate, the Malaysian ringgit depreciated by 10.1 percent in 1965-1969 compared to 1960-1964. Averaged over five-year periods, it remained quite stable at about M\$2.10 per U.S. dollar until the 1980-1983 period when it depreciated to M\$2.30 per U.S. dollar. For the period of the study, the ringgit depreciated by 19.7 percentage points in real terms between the 1960-1964 and the 1980-1983 periods while the average equilibrium real exchange rate was M\$2.08 per US dollar.

The divergence between the trade weighted real exchange rate and the equilibrium real exchange rate is very small being -1.9 percent, -0.7 percent, -2.2 percent, and -0.4 percent for

¹⁰ In estimating the equilibrium real exchange rate, a supply elasticity for exports of 0.5 and a demand elasticity of -1.5 for imports are employed.

¹¹ An adjustment is made to the Malaysian CPI so that it reflects a situation where there are no trade distortions in the economy. This adjustment to the CPI is derived as follows:

$$CPI^* = \bar{a} (E^* / E^0) * P_t + (1 - \bar{a}) * P_{nt}$$

where \bar{a} is the share of the consumer price index that is made up of tradeable goods; P_t is the price index for the tradeable component of the CPI; and P_{nt} is the price index for the non-tradeable component of the CPI.

1960-1964, 1965-1969, 1970-1974, and 1975-1979. (See Table 3, column 6.) Only in recent years has the divergence been larger. In 1980-1983, the measured difference was -5.7 percent.

III. AGRICULTURAL PRICING POLICIES

There are relatively few trade and pricing policies in the agricultural sector in Malaysia. The basic policy framework for these interventions was put in place by the government during the 1950's and have only been modified from time to time in order to maintain their effectiveness and take into consideration changes in policy objectives. One such modification is the incorporation of the objectives of the New Economic Policy (NEP) which came after 1970.

In the case of the food crop, rice, the overriding objective has been to maintain or raise the standard of living of the Malay paddy farmers. Self sufficiency in rice production has also been a politically stated objective. But the interpretation and implementation of this policy has been frequently adjusted as economic circumstances have changed. For the export crops, rubber and oil palm, the focus of policy has been to assist in stabilizing the price of the products at the farmgate while ensuring that the government shared in the surplus generated by the rubber and oil palm sectors, particularly when world prices are high. The principal details of the pricing policies related to rubber, oil palm and paddy, are presented below.

Rubber Export Tax

The rubber export tax was first imposed in 1907 after rubber became an important crop in Malaysia, the tax being a source of revenue for financing the expenditure of the public sector. Even though the tax has undergone many revisions from a flat rate tax to a variable (ad valorem) levy, and then to a specific rate based on export price, it has remained an important source of revenue for the government.

The basic structure of the current rubber export duty evolved during the 1950's and has remained in place since then.¹² The tax is paid at the point of export by the exporters. The price the rubber exporter pays to his supplier is net of the export tax (and the cess payments on research and replanting) and his own marketing margin. This net price is reflected all the way down the marketing chain to the producer of the rubber, with each link in the chain deducting its own marketing margin from the price it received.

The base for the export tax is been the weekly gazetted price of rubber that in turn is calculated from the FOB price of rubber. Before October 1977, the gazetted price of rubber for tax purposes was a two week moving average of the FOB price for RSS 1 grade rubber quoted up to the previous week. Since the export duty was based on this gazetted price, the duty fluctuated with the world price, but with a time lag. This time lag was used for speculative purposes. The rubber exporter gained if at the time of shipment the FOB price of rubber was higher than the gazetted price, since the tax was based on a lower gazetted price. This would encourage the producers to ship as much as possible as soon as the FOB price rose but before the gazetted price was increased, or to hold back exports for a week or two if the FOB price fell while waiting for the gazetted price to be reduced.

To discourage this speculative activity on the part of the exporters, the government in October 1977 changed the basis of calculating the gazetted price of rubber for tax purposes. Instead of a two week moving average, the gazetted price was based on a four week moving average. This has reduced the week-to-week movements of the gazetted price and the gains

¹² For a more detailed discussions of the development of the rubber export tax, see Working Paper: Malaysia (1987). It is interesting to note at this point as to why marketing boards were not set up for rubber in Malaysia, whereas such institutions for agricultural crops were popular in several British colonies in Africa. There are several reasons for this. The strong British and local investor interests "actively dissuaded the government from considering intervention" (Edwards, 1970; pp55) through marketing boards. Also, the Malaysian government was reluctant to interfere in the functioning of the rubber market which accounts for a very large sector of the economy. Although the rubber price fluctuated widely during the 1950's and 1960's, it was still substantially high and no price support mechanism was felt to be necessary. The graduated and progressive export taxes were able to capture enough of the windfall profits when prices were high or to reduce the tax burden as prices fell.

that could be realized from accelerating or holding back the shipment of rubber. (Lim, 1975; p30).

The incidence of the Malaysian rubber export duty can only be shifted backwards to the producer of the natural rubber exported by Malaysia. This is because Malaysia is only one of several suppliers of natural rubber in the world market, even though the country is the largest producer and exporter of the commodity.¹³ Furthermore, natural rubber is traded in an open, competitive market in which the various synthetic rubbers are important substitutes. In such circumstances, the world demand for Malaysian natural rubber is highly elastic.

The incidence of the export tax is eventually shifted to the relatively immobile factors of production, land and labour. In the case of labour, it is reduced to the extent that the estate workers have alternative employment opportunities. The reduced impact of the incidence on labour is reinforced by the strength of the rubber workers' union, the National Union of Plantation Workers (NUPW). However as a group, the estate workers are relatively immobile.¹⁴ In the past, they have probably borne a large proportion of the tax, but the situation is changing as there is a steady outflow of labour from the rural areas to the urban areas, particularly among the young. This migration of labour out of the rural areas has created a labour shortage in the estate sector, and put pressure on the sector to increase wages and improve working conditions to attract labour to the sector.

For the smallholder,¹⁵ the ability to shift part of the export tax burden to hired labour is limited simply because many smallholders do not employ wage labour outside of the

¹³ In 1960, Malaysia supplied 20 percent of world output of rubber (both natural and synthetic); 14 percent in 1970; and 13 percent in 1983.

¹⁴ Estate workers, who are mainly Indians, are relatively immobile because of their long attachment to the estates, and lack of educational opportunities for alternative employment.

¹⁵ In Malaysian agricultural terminology, a rubber smallholding is a land holding which is less than 100 acres (or 40 hectares) in size. An estate is a holding which is larger than 100 acres in size. Although it need not necessarily be in contiguous parcels, an estate must be under one ownership or management.

household, and if they do, wage payments are usually set by alternative employment outside the rubber sector. Hence, the burden of the tax can be expected to fall entirely on the smallholder in terms of the income he receives for his on-farm labour and as the owner of land.

In the short run, increases in the export tax can result in a backward shifting of the tax on to the owners of land and labour because the nature of the industry does not permit an easy shifting of resources in and out of rubber production. In the longer run, part of the tax would very likely be reflected in the price of land particularly suitable for producing rubber. The increased ease of planting oil palms on rubber land will put a floor on the price of land, and hence the export tax on rubber will stimulate the conversion of rubber estates into oil palm estates.

The impact of the rubber export tax on Malaysian rubber production is not the same for estates and smallholders. Although rubber production in the smallholder sector is not very responsive to short term price movements, it is still more responsive than in the estate sector. This is because the rubber smallholder can vary his tapping frequency of the trees and hence his production of rubber. Due to the tradition of supplementing the family income through off-farm work by members of the family, the smallholder has greater flexibility than the estates in the application of labour to his rubber activity.

This relationship is illustrated in Figure 1. The foreign demand curve for Malaysian natural rubber (expressed in Malaysian ringgit) before the export tax is levied is P_1D . This curve is a horizontal line because the excess demand curve for rubber facing Malaysia is

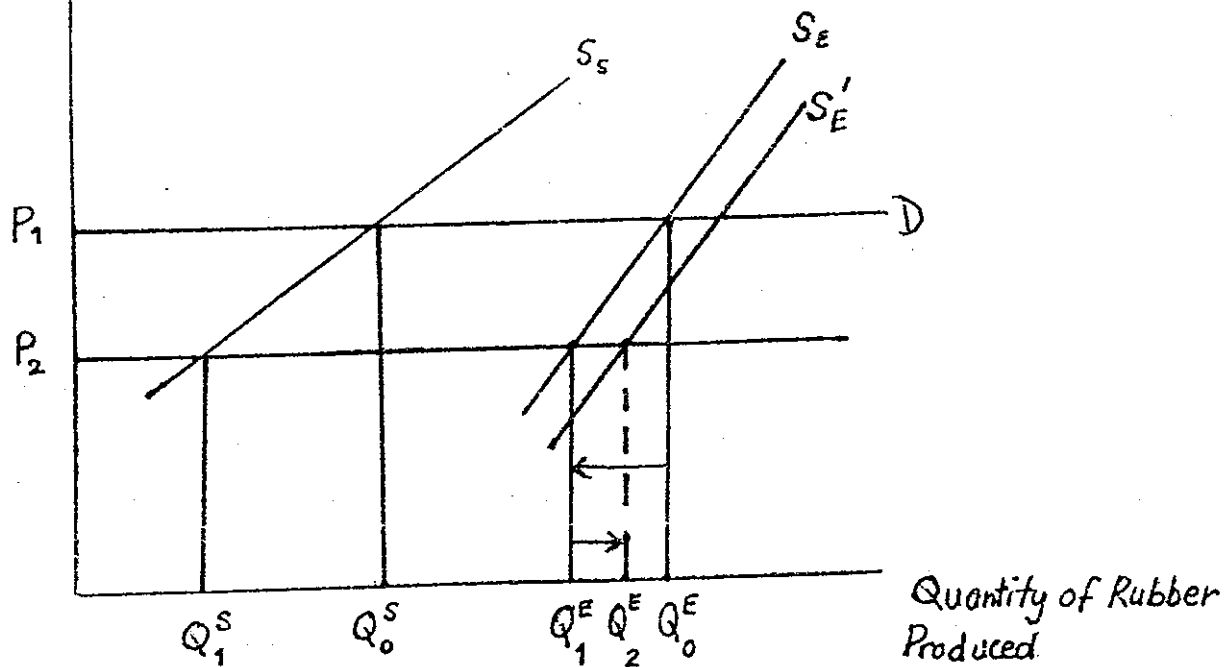


Figure 1: Effect of Rubber Export Tax on Malaysian Rubber Production in Estates and Smallholdings

P_1, P_2 = price of rubber before and after imposition of export tax

S_s = supply curve of smallholdings

S_E = supply curve of estates

S'_E = supply curve of estates after imposition of export tax and shift of tax incidence to factors of production

Q_0 = output of rubber before export tax is imposed

Q_1 = output of rubber after export tax is imposed

Q_2 = output of rubber after fall in price of labour inputs

highly elasticity in the relevant price range. The supply curve for the estate sector is S_E , and that of the smallholder sector is S_S . Since smallholder rubber production is more price responsive than estate production, S_S is more elastic than S_E . In the absence of the export tax, the two sectors produce Q_0^S and Q_0^E of output respectively, and sell it for P_1 per unit. An export tax is imposed as shown by a downward shift in the price received by producers to P_2 . Smallholder production is now Q_1^S and estate production, Q_1^E . In the case of the estate sector, part of the export tax is shifted back to labour as a factor of production. Hence, its supply curve for rubber moves to the right and production will increase to Q_2^E . The relatively inelastic supply curve of the smallholders sector, indicates a difficulty in shifting the incidence of the export tax back to the factors of production. The consequence will be a relatively greater reduction in production of rubber by smallholders. As a result, we would expect that the rubber export tax in Malaysia has had a greater output effect on smallholders than on estates.

Research, Replanting and Government Policy

Soon after rubber became a major crop in Malaysia at the turn of the century, the industry leaders in the estate sector were convinced that a concerted research effort was necessary to sustain the industry.¹⁶ Through the Rubber Growers' Association of Malaysia, the industry proposed to the government that a research institute on rubber be established. After some debate and delay, the Rubber Research Institute of Malaysia (RRIM) was set up in 1925, and by 1928 it had become fully operational. To fund the Institute and other research work on rubber, a research cess was collected on the sale of rubber.

The initial research programme of the Institute was on pests and diseases and plant breeding. But over the decades, this original research programme has been extended to cover

¹⁶ They were impressed by the successes achieved in the research efforts in plant breeding in the Dutch East Indies (Indonesia) which led to higher productivity of the rubber trees. This impression was then strongly reinforced by their fears of a damaging outbreak of indigenous pests and diseases in rubber as occurred in their coffee and coconut crops earlier.

all aspects of the natural rubber industry.

Both rubber research and replanting are activities of potentially very great economic return, but are likely to be carried out sub-optimally if left entirely to the private sector. The public good nature of research creates the obvious difficulty that no single producer is likely to capture a significant proportion of the benefits of the any investment he makes in this activity. Hence, individual producers if acting independently will tend to underinvest in research.

A related set of problems arises with replanting investments if the private smallholder sector is to take them on by itself. First, the return from replanting depends heavily on the type of planting material used on the particular soils. As a result, the research activity in the sector is a major determinant of the yield from any replanting investment.

Second, the time required for oil palms and rubber trees to begin production is approximately 4 and 7 years respectively. Although the plantation sector has access to capital markets that will accommodate this gestation period, most smallholders are not able to borrow on these terms. Even if they were able to borrow they would not likely want to undertake the amount of risk imposed on them from borrowing for their survival for such long periods. By pooling these risks a more socially optimal level of investment in these activities will result.

In Malaysia these issues were addressed in a very pragmatic way. First, both research and replanting were largely prefinanced by special taxes (cesses) on the rubber and later palm oil sales. Second, the government administered both the research and the financing arrangements for replanting, but in both cases the industry played a major role in determining what would be done. In this way, the industry bore the costs of these activities while at the same time ensuring that a reasonable level of efficiency was being maintained in the implementation of these activities.

Rubber Research Cess

The research cess is collected on the basis of the volume of rubber exported. The rate of the cess has been amended many times over the decades from an initial 0.025 sen per lb to the present day rate of 1.75 sen per lb. At this rate and on the basis of an export volume of 1.563 million tonnes in 1983, the cess had generated a fund of M\$60.176 million for research on rubber in Malaysia. The cess has ensured that rubber research in Malaysia is well funded, without having to depend on the public sector for allocations from the budget.

The cess is administered by the Malaysian Rubber Research and Development Board (MRRDB) which coordinates and allocates funds for the work of the RRIM and the research unit in England. The efforts of the RRIM is complemented by the existence of research units operated and funded by the major plantation agency groups in Malaysia. The research findings of these private research units are disseminated at the discretion of the plantation agencies themselves, whereas the work of the RRIM is freely available to the entire industry.

The research undertaken on rubber production has proven to be a very worthwhile investment. Even though the relative price of the commodity has fallen over the last 24 years, the technological advances from these efforts have continued to make the natural rubber industry in Malaysia attractive for further investment.

Rubber Replanting Cess

At the end of the Second World War, the rubber industry in Malaysia recovered rapidly and by 1948 production had exceeded that of 1940 by some 150,000 tonnes. (Barlow, 1978; p76). But this masked the problem of low-yielding and ageing trees found in most estates and nearly all smallholdings. Replanting and new planting during the 1930's had been seriously affected by the Depression with many estates postponing their replanting programmes. There was also no replanting activity during the years of the Japanese Occupation of Malaysia (1941-1945) and in the years immediately after the war. By 1954, the rubber industry in Malaysia was in a

poor condition, with nearly two-thirds of the trees beyond their economic life. In the smallholder sector, the annual replanting rate was a mere 0.2 percent between 1947-1952, and in the estate sector by 1953, only 15 percent had been replanted.

This lack of replanting on the part of both the estates and the smallholders was recognized by the government and in 1951, a replanting cess was imposed on the industry in order to build up funds to finance replanting. The original rate of the replanting cess levied on export volume was on a sliding scale based on a price formula. A year later, the rate was amended to 4.5 sen per pound irrespective of the export price of rubber, a rate which was maintained to date. The cess was effectively collected only from the smallholders, since the portion from the estates was refunded back to them unconditionally until 1973 when the Rubber Industry Smallholders' Development Authority (RISDA) was established.¹⁷ The estates were brought in only for administrative purposes as it would be difficult to collect the cess only from the smallholders through the export mechanism.

The cess from the smallholders was paid into Fund B and used in conjunction with financial assistance from general revenue to finance replanting grants to smallholders. Fund A was for estates. The funds from the government increased the amount of the replanting grant for smallholders, making the grant more attractive to the smallholder. For estates, until 1967 the government also made available financial assistance from general revenue for replanting for a maximum of 21 percent of planted acreage.

The replanting programme as constituted and funded can be evaluated as successful. By 1973, it was estimated that 91 percent of the estate planted area in 1946 had been replanted with high yielding clonal material, and about 67 percent of the smallholder planted area in 1946 had been rejuvenated. Currently, the industry is undergoing a second round of replanting. (Barlow, 1978; p86).

¹⁷ For more details on the developments of the replanting cess, see the Working Paper:Malaysia (1987).

Palm Oil Export Tax

Palm oil has been exported from Malaysia since the 1920's, but commercial interest in the crop was muted for a long time. It was only in 1960 that the potential of oil palm as an alternative crop to rubber in Malaysia was recognized by the private sector. This recognition was prompted by the need to diversify the agricultural sector away from a total dependence on rubber. The government strongly encouraged this diversification move. It planted the new crop extensively in the new land settlement schemes developed from the virgin jungle. Consequently, the area planted with oil palms rose significantly during the 1970's.¹⁸

During the late 1950's and early years of the 1960's, the price trend of rubber was declining, while the current and prospective price of palm oil was high. At the same time, the heavy tax burden on the rubber industry, compared to the negligible tax burden on the new crop, further accelerated the shift of resources from the planting of rubber to the cultivation of oil palms in the private sector.¹⁹ The agricultural aspects of the crop which make it attractive as an alternative to rubber are its early maturation period of four years after field planting compared to the six to seven years for rubber, and its resistance to indigenous pests and diseases.

During the 1960's, there were fears that the agricultural sector will not be able to generate enough revenue to sustain the development programme of the country if the price of rubber continued on its declining trend. With the new crop, these fears were put to rest, as the price prospects of palm oil improved in the decade of the 1970's. The new crop expanded

¹⁸ The area planted with oil palms in 1960 was 54,630 ha; by 1970, it was 301,000 ha and in 1983, 1,253,000 ha. Part of this increase in planted area, in the private sector, was due to conversion of rubber estates to oil palm estates. The government was enthusiastic enough to make the crop its first choice for planting on newly developed jungle land.

¹⁹ Based on a yield of 1,185 kg per ha for rubber and 3 tonnes of palm oil per ha, and a price range of 190 to 250 sen per kg for rubber and M\$700 to M\$1,100 per tonne for palm oil, the burden of the export tax (and all cess payments) on rubber has been calculated to be between 17 to 24 percent of the gross revenue per hectare, as compared to only 4 to 8 percent for palm oil. (Lim, 1979; p22, table 6).

the tax base of the agricultural sector, leading to higher tax revenue from the sector. To take advantage of the prevailing good prices for palm oil, the export tax structure on the commodity was amended.

In the 1950's the export tax on palm oil was levied at a flat rate of 5 percent ad valorem but from 1960 the rate was raised to 7.5 percent. The tax was converted into a graduated tax in 1972 and made progressive at the rate of 2.5 percent for every M\$49.20 per tonne increase in the FOB price of palm oil above the threshold price of M\$344.37 per tonne up to a price of M\$688.75 per tonne, when the tax was 30 percent ad valorem. The progressive nature of the tax was intended to act as a tax on excess profits of the industry.

The tax on exports of palm oil is based on a monthly published price calculated as a moving average of the FOB price during the past four weeks.

The incidence of the export tax on palm oil is also shifted backwards to the producers, since the commodity is traded in a perfectly competitive market. Except in case of land which is particularly suited for growing oil palm, there is unlikely to be much further shifting of the tax burden to the other factors of production, in particular to the workers on the oil palm estates. Palm oil production is less labour intensive than rubber, and most workers have alternative employment opportunities in the urban areas, or in other agricultural sector activities.

Palm Oil Research Cess

Research was the key in the identification of oil palm as an alternative crop to rubber in the agricultural sector in Malaysia. This interest in and support for scientific crop research by the private sector is somewhat unique in a developing country, more so when the industry itself provides the necessary funding for the research activity.

Much of the research efforts in oil palm, prior to 1969, were carried out by the major plantation agencies in their own research stations. The output of these research stations are

proprietary and are only disseminated at the discretion of the plantation agencies themselves.²⁰ Research efforts in the public sector were conducted at the Department of Agriculture, mainly in genetic and varietal trials. When the Malaysian Agricultural Research and Development Institute (MARDI) was established in 1969, the Department of Agriculture handed over to the Institute the responsibility for oil palm research in the public sector. The research activities of MARDI on oil palm are funded by a research cess on the industry. Because oil palm is only one of the many crops investigated by MARDI, the oil palm industry felt that an agency specializing in oil palm research, modelled along the lines of the Rubber Research Institute of Malaysia (RRIM), would serve the needs of the industry better. Since such an agency would be a public sector agency, its results would not be proprietary and would be disseminated to the entire industry.

The industry lobbied hard for such an agency. The government agreed, and in 1979 the Palm Oil Research Institute of Malaysia (PORIM) was set up with the functions of conducting research in oil palm on its own behalf, and coordinating research on the crop in Malaysia through allocations of funds from the research cess. MARDI handed over to PORIM its research programme on oil palm. The various private research stations also undertake projects on behalf of PORIM in addition to working on their own experiments.

The research programme for PORIM is drawn up by a joint committee representing the industry and the government. The programme is designed on an integrated basis, involving production research, processing, storage, delivery systems, marketing, as well as consumption and end-uses in both the food and non-food industries.

There is one area of research which has been neglected in the past. This is the treatment of palm oil mill effluent, which has now become a serious problem, polluting the nation's water resources. The effluent is very difficult to treat prior to discharge and

²⁰ Most of the research results were eventually released in scientific papers in a number of conferences on oil palm held in Malaysia during the 1960's.

improving or finding the appropriate technology to treat them is becoming critical if the environment is to be kept clean.

The oil palm research cess is based on the volume of crude palm oil produced in the country. This cess of M\$1.00 per tonne, (which was increased to M\$4.00 in 1980) regardless of the price of the commodity, has enabled PORIM to have access to a research fund of more than M\$12 million annually. In this way, PORIM is financially independent of the public sector for its research programmes. However, the recurrent and operating costs, including the salaries of the research staff, and the physical research facilities are paid from a budgetary allocation.

Palm Oil Regulatory Policy

The government has established the Palm Oil Registration and Licensing Authority (PORLA) in 1980. With the functions of regulating, coordinating and promoting palm oil production, supply, purchase, sales, storage, milling, refining, transporting, marketing, and shipping. To finance these activities, a cess of M\$1.75 per tonne of palm oil based on production is collected from the industry. Representatives from the oil palm industry sit on the board of directors of PORLA together with representatives from the public sector agencies.

Those involved in the industry are required to obtain the appropriate licence from PORLA before commencing with their business. The licences are intended for statistical purposes principally, since one of the conditions of the licences is that the licence holder has to submit regular statistical reports on the volume of palm oil handled in a given period.

One of the major functions of PORLA is to maintain the quality of palm oil exported from Malaysia. To do this, the Authority has the power to enforce strict measures against any participant in the industry whose practices which do not meet contract specifications or the established standards and grades of the Authority. Another function of PORLA is the

development of new markets and market outlets for palm oil, and the promotion of the commodity in order to maintain Malaysia's share of the world market for vegetable oils.

In cases of contractual disputes between the shipper and the consignee in the consumer country, PORLA will act as the mediator. The exact procedure for resolving contract disputes has yet to be determined.

Paddy Price Support Policy

The raison d'être for the paddy price support policy in Malaysia can be traced to the impact of rice shortages during the Japanese Occupation (1941-1945) and immediately after the war on the political and administrative leaders of the country, both Malaysian and British. These shortages were due to disruption in imports because of the war and to a supply shortfall in Burma in 1947. As a rice deficit country even then, imports of rice into Malaysia were a necessity. The psychological effect of the rice shortages was translated into policy when the British colonial government declared rice to be a strategic good, and made the attainment of rice self-sufficiency a policy goal. The rationale for the policy was food security; to raise the incomes of the Malay paddy farmers; and to ensure stable rice supplies at reasonable prices to consumers.

As an instrument of the policy, a guaranteed minimum price (GMP) was introduced in 1949 to promote increased domestic production of rice. The GMP was linked to the world market price of rice, being fixed one season at a time. This was because the government did not want the difference between the GMP and the domestic market price for paddy to become too distorted with the consequence of having to buy all the paddy produced in the country.²¹

The GMP was set at M\$265 per tonne of paddy in 1949, fluctuating with the prevailing world price of rice.

In 1973, the GMP was increased to M\$381 per tonne because the world price of rice was

²¹ Under the GMP rules, the government guarantees to buy all paddy offered to it at the prevailing GMP. This is because the GMP is the floor price of paddy in Malaysia.

very high as a result of tight supplies. The Price Support Scheme of the Lembaga Padi dan Beras Negara (LPN or the National Padi and Rice Board) became operational that year to complement the GMP and effectively increasing its level.²² There have been several increases in the support price since then, with the most recent being the cash subsidy of M\$168 per tonne of paddy in mid 1980, raising the support price to M\$698 per tonne.²³

The government buys paddy from the farmers at the support price and mills it into rice. It also buys from private rice millers, provided the millers are able to certify that they have paid the support price for the paddy. This rice is stored in the Government Rice Stockpile, which is originally intended to be a strategic supply source so that there are no rice shortages during emergency periods. But over the years, it has functioned more as a buffer stock, acting as a price stabilizer in conjunction with the GMP.

Until 1974 the price support policy for paddy was not financed directly by the government budget. The financing mechanism of the GMP consisted of an import mixing regulation and import licensing in which the rice importer has been required to purchase a certain proportion of rice from the Government Rice Stockpile for every unit of rice imported.²⁴ This requirement has enabled the Stockpile rice to turn over quickly, and to allow the government to recover the cost of maintaining the Stockpile. The price of the domestic rice sold to importers included an element of storage and administrative costs. The

²² Legally, the GMP is still M\$265 per tonne of paddy even now as there have been no administrative moves to gazette any amendments to change it. The LPN support element in the price of paddy could be amended through the regulatory powers of the Board.

²³ Initially, the cash subsidy offered to the paddy farmers was only M\$33 per tonne of paddy sold. Demonstrations by the farmers against the manner of payment of the subsidy, in the form of savings coupons encashable only at post offices and at the national savings bank for the sole purpose of opening savings accounts, led to the withdrawal of the subsidy after only one paddy season in 1980. Re-introduced in the next season, the new cash subsidy scheme offered a generous M\$168 for each tonne of paddy sold.

²⁴ The Government Rice Stockpile was set up to complement the GMP and to provide a supply of rice during an emergency. Rice cannot be stored for more than 6 months without serious quality losses.

cost of the locally grown rice has been usually much higher to the importer than the price of imported rice, even though the quality of the Stockpile rice is lower than that of the imported rice. Nevertheless, the rice importer is able to recoup this price differential on locally grown rice from the profits he makes on the sale to domestic consumers of the high quality imported rice. The imported rice commands a premium price in the market since there is a market preference for imported rice in Malaysia.

The relationship between the world, producer and consumer price of rice in Malaysia²⁵ is shown diagrammatically in Figure 2. The domestic supply of rice is given by S_dS_d , while the total demand for rice is represented by D_tD_t , and the supply curve for rice under free trade is the line P_wR . Under this condition of free trade, the quantity of rice from domestic sources is equal to OA and the amount of rice imports is AB . However, under the licensing condition, the amount the importer has to purchase from the stockpile is equal to OA' and the ratio of local purchase to imports is given by $OA'/A'B'$ where B' is the equilibrium quantity demanded when there are price interventions. This equilibrium quantity is determined by the consumer price for the various grades of rice available in Malaysia, which can be anywhere between P_wO (the world price of rice) and OP (the producer or guaranteed minimum price for rice in Malaysia), say at an average of OC . In effect, a tariff revenue equal to $IJKL$ is collected from the importers to support the GMP at OP , the cost of which is equal to $CLMP$. This import mixing scheme essentially shifts the cost of supporting the GMP to the consumers of rice.

The government through LPN first started to import rice on a government-to-government basis from 1974,²⁶ and the agency was subsequently given the monopoly to do so. Since then, rice dealers are required to buy the imported rice from LPN instead of directly importing it

²⁵ This account is based on Tamin (1986;p6).

²⁶ In 1974, there was a breakdown in the system of rice import mixing because of the very high world price of rice then and private sector importers could not finance their activities since cash deposits were demanded by the rice exporters.

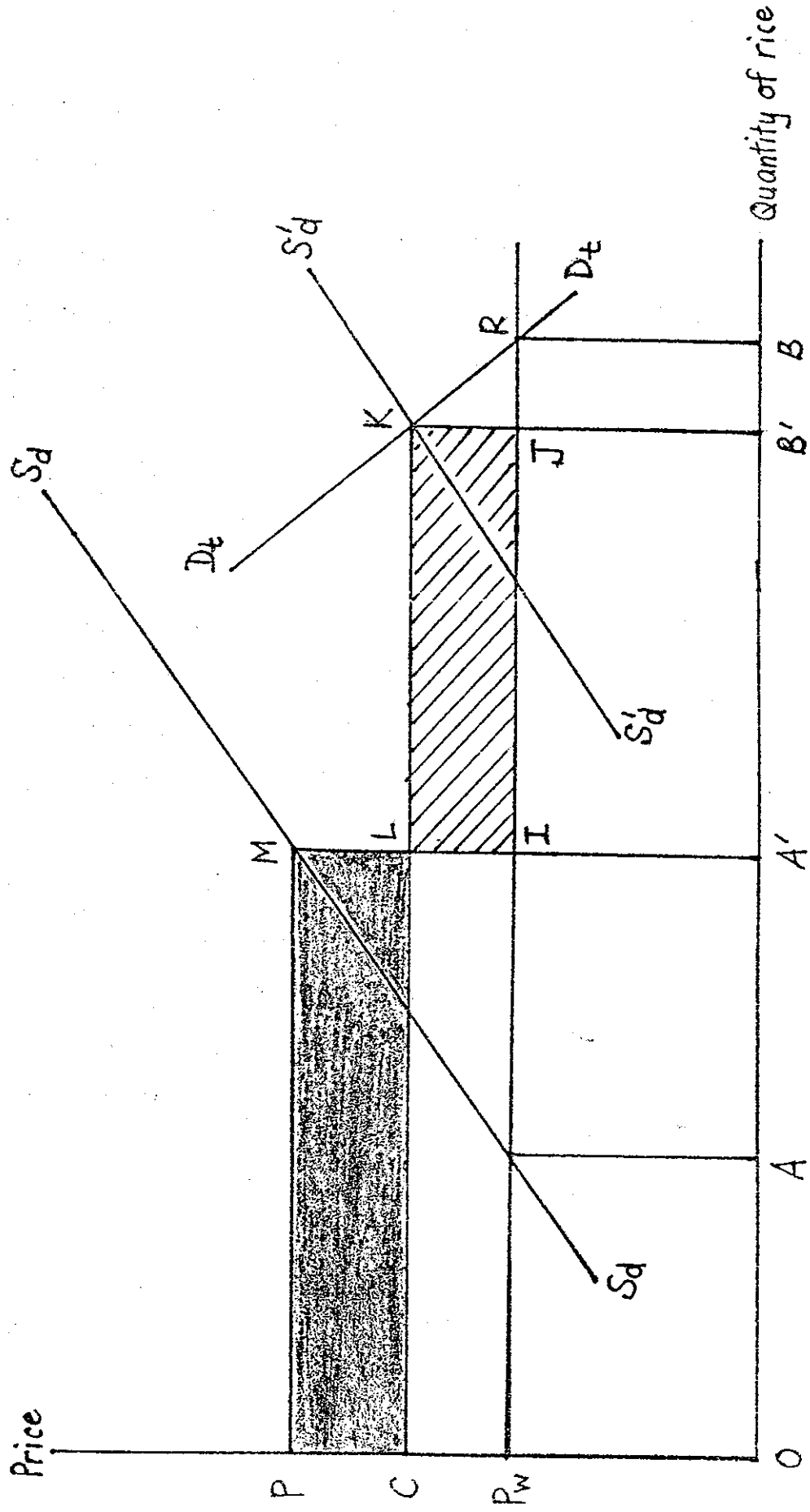


Figure 2: Financing the Rice Price Support Programme in Malaysia

themselves as previously. This move has resulted in a transfer of the financing of the producer price support to the government, with any trading losses made up by budgetary allocations from general revenue. As the major irrigation schemes of Muda and Kemubu in Kedah and Kelantan come onstream after 1975 and 1977, local output of rice increased as the off-season crop expanded in acreage. Imports were reduced, and the cost of maintaining the producer price to the government's budget rose in proportion to the degree of self-sufficiency achieved.

The GMP scheme operates as a single guaranteed price for good, clean, dry paddy delivered to the mill. Deductions are made for moisture content (if it is higher than the regulatory 14 percent), presence of dirt, foreign matter, and immature grains. This single price has encouraged the production of low quality varieties of rice, which are often not what the market in Malaysia wants.²⁷ The policy emphasis behind the GMP has been on quantity rather than on quality. Because the GMP is a floor price, the government ends up with the lowest quality part of the crop, as farmers sell the best quality part to private sector millers for premium prices.

In 1974, LPN introduced a grading system for rice based on grain length to encourage more local production of high quality rice. Long grained rice is paid a premium price of M\$33 per tonne of paddy more than the medium grained rice, and M\$66 more than the short grained varieties. This differential in the price of local rice has been maintained without change since then. Although the market preference is for long grained rice, there is a demand for lower quality rice which is met from domestic production. The high end of the market is then satisfied by imported rice, and the profit from selling this rice at a premium generates a partial financial contribution for the paddy price support policy.

²⁷ There was one attempt to introduce a price differential into the GMP between 1964 and 1974. To persuade farmers to double crop their paddy land and to plant only the recommended varieties, the GMP for the off season crop was increased by 12.5 percent. The attempt was terminated in 1974 when double cropping became a common practice in the irrigated areas.

The paddy price support policy has succeeded in its aim of reducing some of the risks of paddy growing in Malaysia by guaranteeing a minimum price, and hence reducing the variability of incomes. The inclusion of a cash subsidy in July 1980 did raise paddy farmers' incomes, but created two unintended effects. First, the cash subsidy has made paddy farming operations more profitable. This has stimulated a tendency towards farm consolidation as the larger farmers begin buying up the small farms, displacing both owner-operators and tenants and increasing the number of landless labourers. (Tamin, 1986; p22).

Second, as the cash subsidy is paid for paddy sold, an unexpected side effect has been the substantial increase in the marketable surplus of paddy in the country. This unintended side effect became obvious in 1982, about two paddy seasons after the introduction of the cash subsidy. The rational paddy farmer decides to sell all his paddy to gain from the cash subsidy and to buy his rice requirements from the market.²⁸ Normally, he retains up to 60 percent of his output for his own consumption (Rudner, 1971; p86), which he then processed into rice at the small village rice mill as and when rice is required. With farmers selling all their output for the cash subsidy, many of these small rice mills in the rural areas, which are usually Malay owned, have had to close for lack of business. On the other hand, LPN has had to expand its paddy drying and processing facilities to handle the larger volume of paddy marketed by farmers. By 1980, LPN owned and operated 28 integrated rice milling complexes and handling 33 percent of the paddy produced locally, while private rice mills processed the balance of the output.

Paddy Input Subsidy Policy

The policy on paddy input subsidy had its beginning in the early 1950's when the Department of Agriculture conducted fertilizer demonstrations in its experimental stations for

²⁸ LPN had to expand its milling and storage facilities to handle the increased volume of paddy coming into the market.

the benefit of groups of visiting paddy farmers. The objectives were to determine the recommended rates of fertilizer use in paddy, and to demonstrate to paddy farmers the benefits of urea and other chemical fertilizers. From the response of the paddy farmers to the demonstrations, the Department of Agriculture in 1955 implemented a fertilizer subsidy scheme in a few selected states in which the cost of the fertilizers was reimbursed by the federal government. The scheme was then expanded to cover the 10 states of Peninsular Malaysia in 1961.²⁹

The subsidy rate for the fertilizer scheme in 1961 started at 50 percent of the cost in the initial year, and then declining by 10 percentage points annually until it was only 10 percent in 1965. Although the rate of subsidy declined, the quantities of fertilizers bought by the paddy farmers under the scheme increased, as they came to recognize the benefits of using chemical fertilizers. In 1961, the farmers bought 3,882 tonnes under the scheme; by 1965, they were buying 12,682 tonnes.

In 1966, the fertilizer scheme was reviewed and revised to provide a uniform subsidy rate of 30 percent and extended till 1970. A budgetary allocation of M\$10 million was provided for the scheme to benefit an expected 89,033 ha of paddy land. In practice, however, only about a third of the area was provided with subsidized fertilizers in any one year, and each farmer was limited to a maximum of 2 ha in terms of eligibility. The restrictions were necessary because of the great increase in demand that was created for the subsidized fertilizers, estimated to be 25,400 tonnes per year.

The fertilizer subsidy scheme was withdrawn in 1971 because the objectives of the scheme had been achieved. Paddy farmers had become familiar with the use of urea and other chemical fertilizers. In place of the subsidy, a credit programme was substituted for farmers in the irrigated paddy areas. For farmers in non-irrigated areas, the scheme was continued.

²⁹ Kelantan was excluded from the scheme because the state government was under the control of the opposition Malay party, Parti Islam since the general election of 1959.

The most significant indicator of the scheme's success was the willingness of paddy farmers to purchase their own fertilizers after the subsidy was terminated. (Lee, 1978; p250). A market for urea and other chemical fertilizers was established in all the paddy areas, with the dealers and agents of the fertilizer firms supplementing and complementing the work of the extension agents of the Department of Agriculture in the paddy areas.

In response to the world shortage of urea and the sharp increase in its price since 1973,³⁰ the government decided to implement a price support scheme for urea, the principal nitrogenous fertilizer used in paddy growing. The objective of the scheme was to ensure that paddy farmers would be able to continue using urea regardless of its price in the market. If farmers were to stop using urea because its price was too high, domestic paddy output would possibly decline. The result being that the country would need to import more rice while farmers' incomes would be reduced.

Under the conditions of the scheme, the farmer paid a nominal price of M\$10 for a 20 kg bag of urea. Any difference between this threshold price and the market price was the subsidy for the urea.³¹ The scheme was to be terminated when the price of urea fell below the threshold price. This feature of the scheme provided an automatic suspension of the scheme which occurred in 1976.

Although the urea price support scheme was in place, the application of urea for the first (main season) crop in 1975 declined by 8 percent as compared to a year earlier, and the yield of paddy was 5 percent lower. The yield of the second (off season) crop in 1975 was 3 percent less than that of 1974. The yield of the first crop of 1976 was 6 percent less than

³⁰ The price of urea in the world market rose by 50 percent in 1973 and 233 percent in 1974 from the previous year's price in nominal terms. In Malaysia, the price of urea increased by 278 percent between 1972 and 1974. There was pressure on the government to provide assistance of some kind to the paddy farmers, who were mainly Malays and supporters of UMNO, the Malay party dominant in the coalition government.

³¹ The subsidy on the urea sold to paddy farmers under the scheme varied from M\$10.58 to M\$14.58 per bag depending on the price of the fertilizer.

the same crop in 1974 (the reference year for the analysis) with urea use down by 15 percent compared to the rate applied in 1974. (Lai, 1983).

The total quantity of urea purchased under the scheme between 1972 and 1976 was 59,365 tonnes at a cost of M\$61.094 million. At the same time, the estimated crop loss at the farm level was M\$48.534 million. To make up for the crop loss, additional rice imports valued at M\$59.699 million were required. Although the production level of rice without the scheme is not known, it appears that the fertilizer subsidy scheme was rather ineffective in stopping the fall in rice production.

In 1980, a different fertilizer subsidy scheme was introduced with the objective of increasing the income for the paddy farmers. The scheme provides 100 percent subsidy for the fertilizers required by farms whose size did not exceed 2.4 hectares, the average size of a paddy farm in Malaysia. This limit on farm size is to ensure that only small paddy farmers would be the intended beneficiaries. But it is not difficult to fragment the larger paddy farms into units well within the threshold size of 2.4 hectares in order to benefit from the fertilizer subsidy scheme. (Tamin, 1986; p22). Farm records are often incomplete, and it is not unusual for a paddy farm to have multiple owners because of the Islamic law of inheritance. Hence, subdivision of large paddy farms is easily accomplished.

The distribution of the subsidised fertilizers to the paddy farmers is through a network of rural organizations in the paddy areas. Each distributor is paid a commission based on the quantity of fertilizers handled, and most of these organizations (for instance, many of the Farmers' Associations in the Muda Irrigation Scheme in Kedah) have become financially endowed in the process. The system has proved to be successful in moving the fertilizers to the farmers in time for use during the planting time.³²

³² The network of commercial fertilizer agents in the paddy areas disappeared as a consequence of the subsidy scheme, since farmers were no longer buying fertilizers. Their exit from the paddy areas was keenly felt by the extension workers of the Department of Agriculture. Farmers now have to depend solely on these workers for advice.

There are two aspects of the 1980 version of the fertilizer subsidy scheme which warrant examination. First, the objective of enhancing farmers' incomes could have been achieved either through a higher GMP for output or through financial assistance for other cost items in the paddy farm budget, such as a subsidy for land preparation to the poor farmers who do not own any tractors. Using a generalized fertilizer subsidy to transfer income to poor paddy farmers is likely to be an inefficient vehicle to realise this objective.

Second, the Department of Agriculture has been more concerned about the technical aspects of the scheme on the assumption that its recommended fertilizer rates are inviolate for a given area and soil type. In setting recommended rates of fertilizer use it has not examined, in the face of the evidence provided by farmers selling their fertilizers, the economics of fertilizer use for alternative relative prices of fertilizer and paddy.

Farmers are rational, and they will only apply the amount of fertilizers which will optimize their income at the given price level for their output. The Department did not even consider changing the recommended quantum of subsidised fertilizers as the price of paddy was changed. It should have integrated the economic aspects of fertilizer usage into its recommended application rates based on technical criteria.

Infrastructure to support Paddy Production

The introduction of the new high yielding varieties of paddy greatly enhanced the prospects of attaining the self sufficiency goal set by the government. These varieties, however, also need regular water supplies. As a result, the decision was made in the early 1960's to greatly increase expenditures on drainage and irrigation for paddy production.

In the First Malaya Year Plan (1956-1960), investments in drainage and irrigation amounted to about 17 percent of the total public sector funds allocated to agricultural development. (Tan, 1987; p7). This was increased to 26 percent in the Second Malaya Plan (1961-1965), and was held at 21 percent in the following First Malaysia Plan (1966-1970). In

the subsequent three five year development plans for 1971-1975, 1976-1980, and 1981-1985, the proportion of agricultural development expenditures spent on drainage and irrigation was reduced to 16, 12 and 18 percent respectively.

There was again a dramatic adjustment in the allocation of public expenditures for the agricultural sector in the recent Fifth Malaysia Plan (1986-1990). Due to the shortage of suitable land for further irrigation schemes, the decision to concentrate production in the existing major paddy growing areas (Tan, 1987; p33), and to the relaxation of the efforts towards rice self sufficiency, the proportion of agricultural development expenditures allocated to investments in drainage and irrigation fell to about 3 percent of the total.

IV. EFFECTS OF PRICING POLICIES

This section will examine the effects of the pricing policies on relative prices; the direct and indirect impact on production; consumption; foreign exchange; the budget; transfers of resources; and income distribution.

Impact of Pricing Policies on Relative Prices

The relative prices of the export commodities, rubber, palm oil, are the ratio of their producer prices (their FOB price less marketing and transport costs and taxes) to the non-agricultural price index (P_{NA}). For paddy, the producer price used in the relative price calculation is the guaranteed minimum or support price for paddy at the farm level. There was a downward trend in the relative prices³³ of estate and smallholder rubber between 1960 and 1983. These results follow from the downward pressure on natural rubber prices from the competition from synthetic rubber production as well as additional supplies of natural rubber from countries such as Indonesia.

³³ The component price indices in the calculation of P_{NA} are given in Appendix Tables 9 and 10 of the Working Paper:Malaysia (1987).

The relative producer price during 1980-1983 was 60 percent of that during 1960-1964. (See Table 4).

In the case of palm oil, there is no systematic pattern in its relative price over the five-year periods of the study, fluctuating between 8.8 and 11.5, with 9.8 as the average for the period. The relative price of palm oil for the different five-year periods are shown in column 3 of Table 4.

There is a slight upward trend in the relative price of paddy between 1960-1983. The relative price for the 1980-1983 period was approximately 25 percent higher than it was during 1960-1964. This increase occurred after 1969 with the changes of relative price of 10.1 and 14.8 percent during 1970-1974 and 1975-1979 respectively. These increases in the price of paddy relative to non-agricultural goods are the result of the policy for the guaranteed minimum price (GMP) of paddy.

Impact of the Direct Effects of Pricing Policies

The incentives to invest in the agricultural sector are affected by direct effects of the pricing policies. These direct effects are calculated and reported as the nominal protection rates for the three commodities considered in the report. The method of calculation is to compare their border prices relative to the non-agricultural price index to their actual prices also relative to the same non-agricultural price index. For the export crops, rubber and palm oil, the border prices are the FOB prices less the marketing and transport costs. For rice which is imported, the border price is its CIF price less the costs of milling, drying, and transport, with conversion at 65 percent to paddy at the farm level. As shown in Table 5, in the case of the export crops of rubber and oil palm, these rates are negative for each five-year period of the study. These results suggest that the pricing policies have discriminated against these crops.

For estate rubber, the nominal protection rates averaged a negative 13 percent between

TABLE 4: MALAYSIA - RELATIVE PRODUCER PRICES OF ESTATE
AND SMALLHOLDER RUBBER, PALM OIL AND PADDY
TO NON AGRICULTURAL PRICE INDEX

Year	Relative Producer Price of Estate Rubber	Relative Producer Price of Smallholder Rubber	Relative Producer Price of Palm Oil	Relative Producer Price of Paddy
	[1]	[2]	[3]	[4]
1960-1964	28.33	25.37	9.91	4.72
1965-1969	21.19	18.30	8.84	4.55
1970-1974	17.35	14.58	9.37	5.01
1975-1979	18.09	16.76	11.55	5.75
1980-1983	17.26	15.96	8.96	5.95
Average 1960-83	20.58	18.29	9.75	5.16

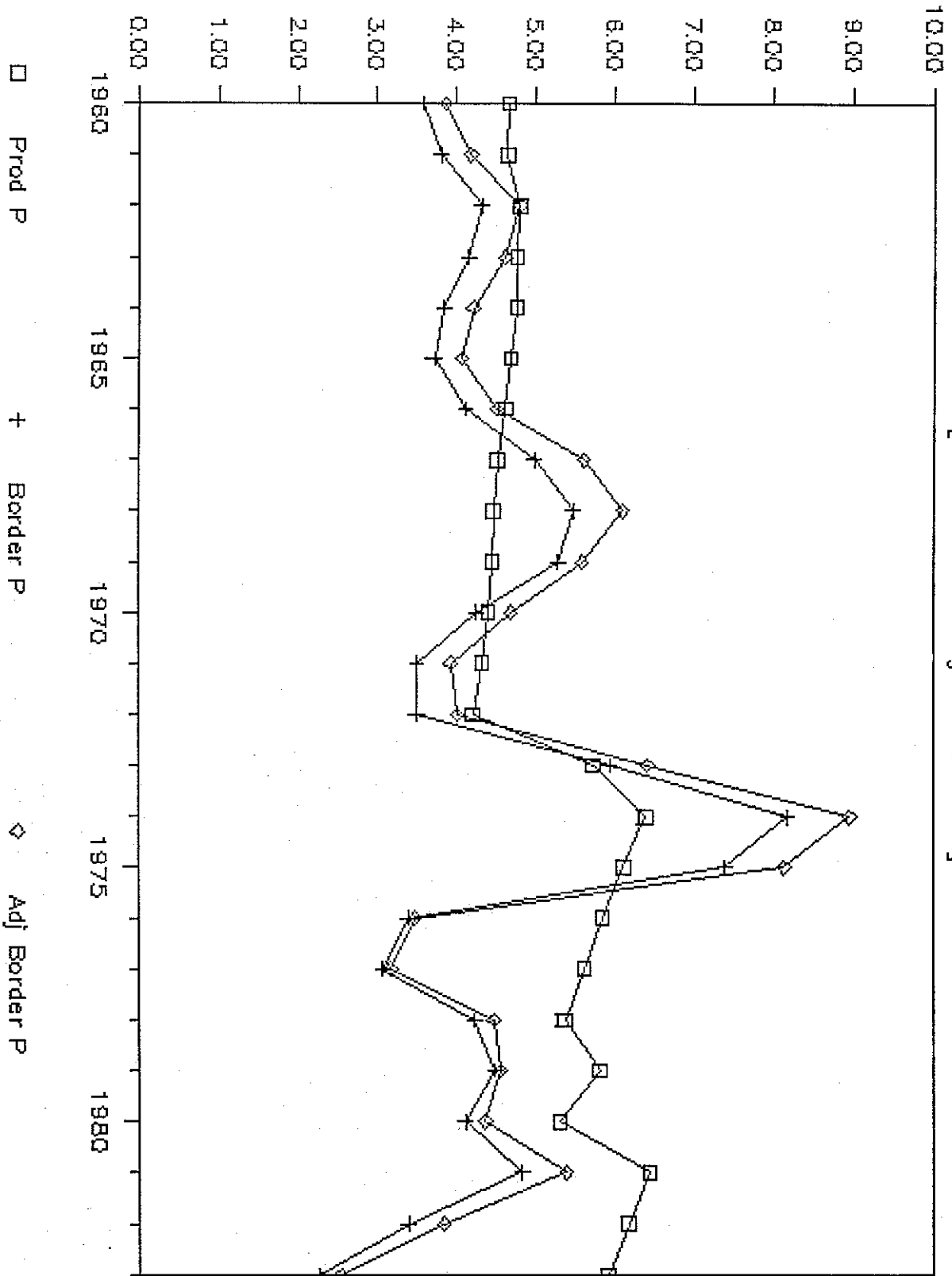
Notes: [1] The relative producer price is the ratio of the producer price (FOB price less marketing and transport costs and taxes) to the non-agricultural price index.

Source: Tables 9 and 9(1) of the Working Paper: Malaysia, 1987.

Ratio Producer P to Non Agric P Index

PRODUCER & BORDER PADDY PRICES, 1960-83

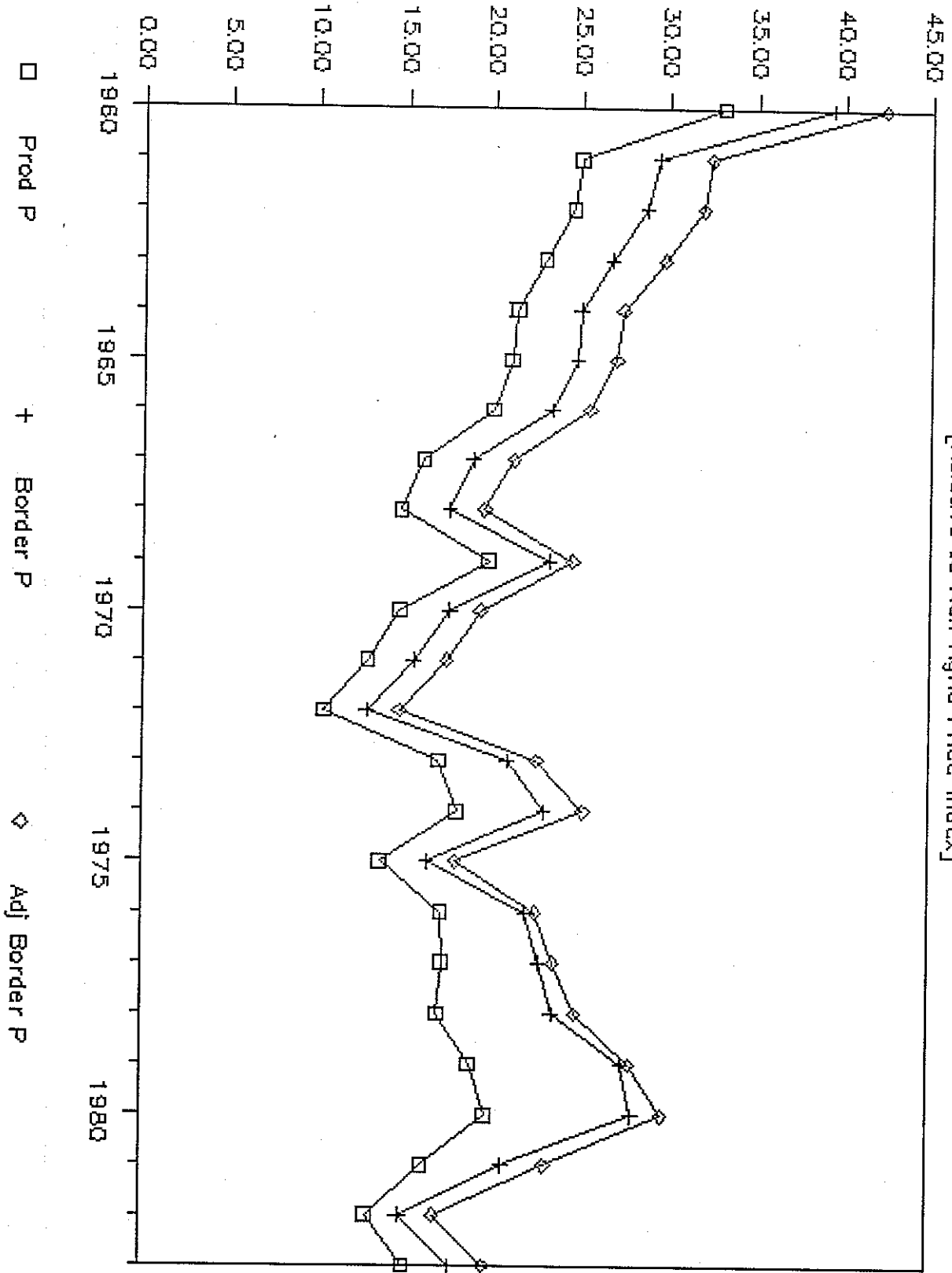
[Relative to Non Agric Price Index]



Ratio Prices to Non Agric Price Index

PRODUCER & BORDER S'HLDER RUBBER PRICES

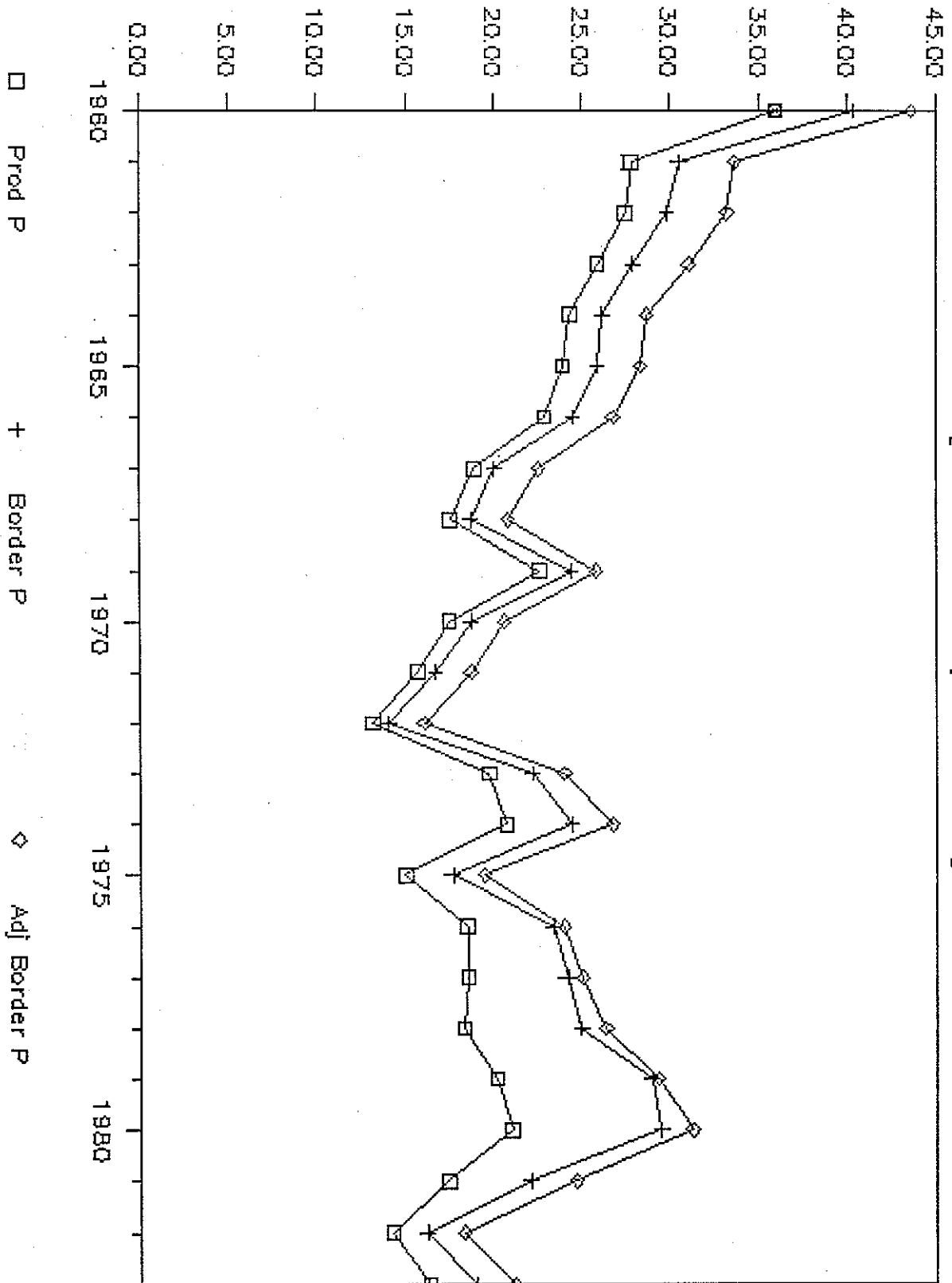
[Relative to Non Agric Price Index]



Ratio prices to Non Agric Price Index

PRODUCER & BORDER ESTATE RUBBER PRICES

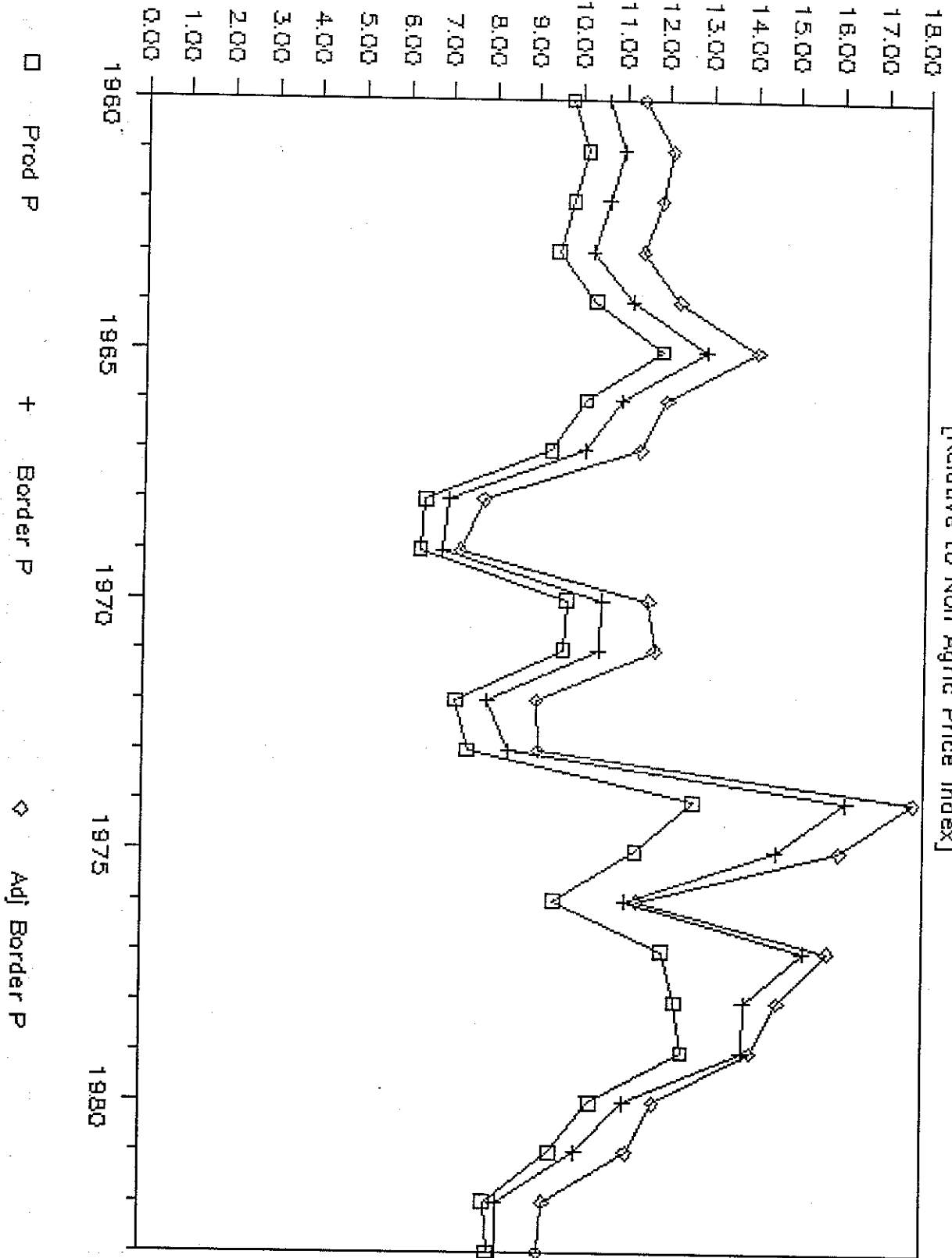
[Relative to Non Agric Price Index]



Ratio: Prices to Non Agric Price Index

PRODUCER & BORDER PALM OIL PRICES

[Relative to Non Agric Price Index]



1960-1983, ranging from a low of -0.07 percent in 1965-1969 to a high of -0.23 in 1974-1979. These rates are larger in the case of smallholder rubber (on average, -19 percent) because the agricultural taxation policy is biased against the smallholder sector.³⁴ The nominal rate of protection for palm oil production is also negative, averaging about -10 percent for the period of the study.

The nominal protection rate for paddy as a result of the direct effects of the pricing policies is positive for most years of the study, the exception being 1967-1969 and 1973-1975 when the world price of rice was high. Recently, the abnormally low rice prices for imported rice has resulted in the nominal protection rate rising to 160 per cent in 1983. This means that the domestic producer price of rice (including the cash subsidy) is 1.60 times what it would have been had there been a free import of rice without tariffs.

Impact of the Indirect Effects of Pricing Policies

In this case, the prices of the commodities at the border and at the producer level, are both compared only after adjusting for the influence of the exchange rate. (See Table 5, column 5.) This adjustment has to be made for both the relative prices and for the non-agricultural price index. To estimate the indirect effects of pricing policies, it is necessary to first eliminate the changes in the exchange rate affecting the current account balance and the impact of the policies on the exchange rate. Then secondly, the change in the prices of non-agricultural goods caused by tariffs on competing imported goods has to be removed.³⁵

³⁴ Smallholders are seldom able to produce RSS 1 quality rubber, but the export tax is based on this grade of rubber until 1981. They have been paying the replanting cess since its institution in 1951, whereas the estates have the same cess rebated to them until 1975 when the refund was stopped.

³⁵ The indirect effects of pricing policies refer to the effect of the various pricing distortions and current account disequilibrium on the exchange rate. It is calculated as follows:

$$(E^0/E^*) * (P'_{NA}/P_{NA}) - 1$$

TABLE 5: MALAYSIA - NOMINAL PROTECTION AND INDIRECT EFFECTS OF
POLICIES ON ESTATE AND SMALLHOLDER RUBBER, PALM OIL AND PADDY

Year	Nominal Protection Rate of Estate Rubber	Nominal Protection Rate of Smallholder Rubber	Nominal Protection Rate of Palm Oil	Nominal Protection Rate of Paddy	Indirect Effects of Policies on Rubber, Palm Oil and Paddy
	[1]	[2]	[3]	[4]	[5]
1960-1964	-0.08	-0.15	-0.08	0.20	-0.09
1965-1969	-0.07	-0.15	-0.08	-0.01	-0.09
1970-1974	-0.09	-0.19	-0.12	0.04	-0.10
1975-1979	-0.23	-0.25	-0.16	0.39	-0.04
1980-1983	-0.19	-0.20	-0.05	0.76	-0.10
Average 1960-83	-0.13	-0.19	-0.10	0.26	-0.08

Notes: [1] The nominal protection rate for a commodity is calculated as $(P-P')/P'$ where P' is the ratio of the border price (FOB price less marketing and transport costs) relative to the non-agricultural price index; and P is the ratio of the producer price (FOB price less marketing and transport costs and taxes) relative to the same non-agricultural price index.

[2] The indirect effects of pricing policies refer to the effect of the various pricing distortions and current account disequilibrium on the exchange rate. It is calculated as $(E_0/E^*)(P'_{na}/P_{na})-1$, where E_0 is the nominal exchange rate; E^* is the equilibrium nominal exchange rate; P_{na} is the non-agricultural price index; and P'_{na} is the non-agricultural price index adjusted for all direct pricing and exchange rate distortions.

Source: Tables 10(1) to 10(3) and 10(A.1) of the Working Paper: Malaysia, 1987.

where E^0 is the nominal exchange rate; E^* is the equilibrium nominal exchange rate; P'_{NA} is the non-agricultural price index adjusted for all pricing and exchange rate distortions; and P_{NA} is the unadjusted non-agricultural price index.

The protection rate given by the indirect effects of pricing policies on rubber, palm oil, and paddy are all negative during the period of the study, indicating that these policies have been detrimental to the agricultural sector. The average rate of protection provided by the indirect effects of policies is 0.08 for the period. This negative rate has risen for two reasons. First, any exchange rate distortion in Malaysia has a greater impact on the agricultural sector which is entirely traded than it has on the non-agricultural sector which is only partially traded. Secondly, the tariffs in the non-agricultural sector have served to make the investments in non-agriculture relatively more attractive than they would otherwise have been.

Impact of the Total Effects of Pricing Policies

The total effects of the pricing policies are estimated by adjusting the ratio of the border price relative to the non-agricultural price index (P_{NA}) for the indirect effects of the exchange rate by using the ratio of the equilibrium real exchange rate to the nominal exchange rate. This ratio is then compared to the ratio of the producer price to P_{NA} without adjustment for the exchange rate. The differences between the two series, expressed as a fraction of the adjusted price ratio, is the rate of protection from the total effects of policies.

For estate rubber, the total protection rate is negative for every year of the study and its trend is increasing as indicated by the data for selected years in Table 6. The same is also true of smallholder rubber, with the negative protection rates slightly higher than for estate rubber. The protection rate average for 1960-1983 is -25 percent for smallholders against an average of -20 percent for estates. But in the case of palm oil, there is no noticeable trend in the negative protection rate where the average for the period is -17 percent.

Paddy production in Malaysia has been favoured by the trade and exchange rate policies. Its protection rate is large compared to non-agriculture for every year of the study, except during the seven years of high rice prices noted earlier. The degree of protection for paddy has also increased over time. In recent years, the amount of protection has reached rates in excess of 100 percent of the CIF price of imported rice. For the 24 years of the study, the average nominal protection rate was around 15 percent.

Effective Rates of Protection

The effective rates of protection provided by the total effects of pricing policies also have been estimated for these commodities. The Input-Output Tables (1971) for Malaysia (prepared by the Economic Planning Unit) was used to estimate the shares and composition of inputs in order to calculate the value added of the three commodities.

In the case of estate rubber, the effective rate of protection is negative for every year of the study, and exceeds -15 percent for 13 of the 24 years. Its average for the period is -23 percent. (See Table 7). The effective rates of protection for smallholder rubber are slightly higher than those for estate rubber, averaging -29 percent for the period. For palm oil, the effective rate of protection is lower but is still negative. Most observations are in the range of -15 to -20 percent, with the average for the period being -20 percent.

The effective protection rate for local paddy production is positive for 16 of the 24 years of the study from 1960 to 1983, with an average of 19 percent for the period. During the years of negative effective rates of protection, the world price for rice was high. Due to the large fluctuations in the world price of rice, the effective protection rates for local paddy production have varied widely. Since 1976, these rates have averaged about 60 percent with rates of 71 and 175 percent for 1982 and 1983, respectively. This is primarily due to the depressed world rice price.

TABLE 6: MALAYSIA - TOTAL EFFECTS OF POLICIES ON
ESTATE AND SMALLHOLDER RUBBER, PALM OIL AND PADDY

Year	Total Effects Protection Rate of Estate Rubber	Total Effects Protection Rate of Smallholder Rubber	Total Effects Protection Rate of Palm Oil	Total Effects Protection Rate of Paddy
	[1]	[2]	[3]	[4]
1960-1964	-0.17	-0.23	-0.16	0.09
1965-1969	-0.15	-0.23	-0.16	-0.10
1970-1974	-0.18	-0.27	-0.20	-0.06
1975-1979	-0.27	-0.28	-0.19	0.33
1980-1983	-0.27	-0.28	-0.14	0.59
Average 1960-83	-0.20	-0.25	-0.17	0.15

Notes: [1] The total effects of pricing policies refer to both the direct effects (due to taxes and subsidies) and the exchange rate effects. They are calculated as $(P-P^*)/P^*$, where P is the producer price of the commodity relative to the non-agricultural price index; P* is the producer price of the commodity adjusted for the direct and exchange rate effects of policies relative to the non-agricultural price index also adjusted for the direct and exchange rate effects of policies.

Source: Tables 11(1) to 11(3) of the Working Paper: Malaysia, 1987.

TABLE 7: MALAYSIA - EFFECTIVE RATES OF PROTECTION ON ESTATE AND SMALLHOLDER RUBBER, PALM OIL AND PADDY

Year	Effective Rate of Protection due to Total Effects of Policies on			
	Estate Rubber	Smallholder Rubber	Palm Oil	Paddy
	[1]	[2]	[3]	[4]
1960-1964	-0.17	-0.24	-0.17	0.13
1965-1969	-0.16	-0.24	-0.17	-0.09
1970-1974	-0.22	-0.31	-0.24	-0.08
1975-1979	-0.32	-0.33	-0.24	0.37
1980-1983	-0.31	-0.32	-0.17	0.72
Average 1960-83	-0.23	-0.29	-0.20	0.19

Notes: [1] The effective rate of protection due to total effects is calculated as follows:

$$[(V_a / V_a^*) - (V_a^* / V_a^{**})] / (V_a^* / V_a^{**})$$

where V_a is the domestic value added per unit of the commodity and V_a^* is the domestic value added per unit of non-agricultural goods both unadjusted for direct and exchange rate effects of policies; V_a^* and V_a^{**} are these same variables both corrected for the direct and exchange rate effects of policies.

Source: Appendix Tables 13(1) to 13(4) of Working Paper: Malaysia, 1987.

Summary

The Malaysian agricultural and trade policies can be observed to have been remarkably consistent through time. There has been a strong emphasis on protecting food production and on developing the non-agricultural sector. At the same time, the two very successful export crops of rubber and oil palm have been systematically discriminated against by both the trade and taxation policies.

Impact of Pricing Policies on Production and Consumption

There is some difference in the impact of the policies on output for the commodities considered. In the case of rubber and palm oil, the lower net prices received by producers have resulted in smaller planted acreage. Since rubber has been more heavily taxed than palm oil in a comparative sense, less rubber has been planted relative to oil palm because they compete for the same land. The price support given to paddy production has resulted in more paddy being produced and less of other crops, and this has led to a slowing down of the abandonment of unirrigated paddy by retaining labour in the rural areas.

To model the supply response of rubber to changes in prices and pricing policies, it is necessary to consider how a change in prices alters tapping frequencies and fertilizer practices to produce a short run response in output, and how it will also alter price expectations which affect replanting and newplanting decisions. Given that rubber and oil palm are alternative crops for the same land and are often grown by the same producers to diversify income sources, a higher price for palm oil will result in less replanting and newplanting of rubber and conversely. Hence, the long run supply of rubber or palm oil will be affected by both its own output price as well as the output price of the other crop.

The change in the quantity supplied due to a change in prices of rubber and palm oil, relative to the non-agricultural price index (P_{NA}), can be expressed as a function of the short and the long run elasticities of supply. The short run elasticities of supply describe the

production response over time through more intensive tapping of the rubber trees or shorter intervals between harvesting rounds for oil palm, and the frequency of fertilizer applications. In the case of the long run elasticities of supply, these reflect the lagged response of output due to the effect that higher prices have on the decisions related to replanting and the expansion of acreage. The cross-price elasticity effect of the price of palm oil on the production of rubber or the effect of the price of rubber on the production of palm oil will also influence the long run production response through their impact on the same decisions regarding replanting and acreage expansion. The particular formulation used for Malaysia to describe the change in the supply of rubber arising from a series of price changes in both rubber and palm oil is shown as follows:

$$(1) dQ_t^R = (\hat{E}_{i=0}^t Q_t^R * E_{si}^{RR} * dP_i^R/P_i^R) + (\hat{E}_{i=0}^{t-k} Q_t^R * E_{Li}^{RR} * dP_i^R/P_i^R) + (\hat{E}_{i=0}^{t-k} Q_t^R * E_{Li}^{Ro} * dP_i^o/P_i^o)$$

where dQ_t^R is the change in the supply of rubber in period t caused by cumulative changes in the price of rubber and palm oil from period 1 to t ;

Q_t^R is the quantity of rubber produced in year t in the absence of the price changes;

E_{si}^{RR} is the elasticity of the supply of rubber³⁶ with respect to the change in the price of rubber that occurred in period i ;

dP_i^R/P_i^R is the proportional change in the price of rubber (relative to non agricultural goods) that has occurred in period i ;

E_{Li}^{RR} is the long run elasticity of supply of rubber³⁷ with respect to the change in the price of rubber that occurred in period i ;

E_{Li}^{Ro} is the long run elasticity of supply of rubber with respect to a change in the price of palm oil;

dP_i^o/P_i^o is the proportional change in the price of palm oil (relative to non agricultural goods) that has occurred in period i ; and

³⁶ Here the elasticity of supply refers to the response in the supply that occurs because of increased use of inputs, improved husbandry or tapping, but excludes the impact of expanded acreage or replanting.

³⁷ The long-run elasticities of supply refer to the response of production to changes in price that occur because of expanded acreage or replanting.

k is the time lag in years between a price change and the initial year when the long term elasticity takes effect.

The equation describing the production response of palm oil to changes in the prices of palm oil and rubber can be written in a similar fashion as in equation (1):

$$(2) \quad dQ_t^o = (\hat{E}_{i=0}^t Q_t^o * E_{si}^{oo} * dP_i^o/P_i^o) + (\hat{E}_{i=0}^{t-k} Q_t^o * E_{Li}^{oo} * dP_i^o/P_i^o) + (\hat{E}_{i=0}^{t-k} Q_t^o * E_{Li}^{oR} * dP_i^R/P_i^R)$$

If one wants to determine the immediate impact of a change in pricing policy, only the short run elasticities are relevant and then only for the periods over which one wants to measure the response.

In the case of paddy production, it is likely that the supply response to changes in paddy prices will be quicker than in the case of rubber and palm oil. Paddy can be planted and harvested within a period of 6 months, and two crops can be grown in one year if sufficient water is available. In addition, paddy cultivation does not compete for the same land as rubber or oil palm. The relationship between changes in paddy production, dQ_t^f and the prices of paddy and other crops can be expressed as follows:

$$(3) \quad dQ_t^f = \hat{E}_{i=0}^t ((Q_t^f * E_i^{ff} * dP_i^f/P_i^f) + (\hat{E}_{m=0}^q Q_t^m * E_i^{fm} * dP_i^m/P_i^m))$$

where E_i^{ff} is the elasticity of supply of paddy with respect to the change in the price of paddy (relative the price of non-agricultural goods) in period i;

Q_t^f is the quantity of paddy produced in period t in the absence of any change in price policy;

dP_i^f/P_i^f is the proportional change in the price of paddy in year i;

E_i^{fm} is the elasticity of supply of paddy with respect to the change in the price of other crops that could be grown on paddy land; and

dP_i^m/P_i^m is the proportional change in price of these other crops in period i.

Changes in pricing policies will also have an impact on the demand for rice for

consumption purposes. The response of the quantity of rice demanded can be expressed as a function of the own-price elasticity of demand for rice N_t^{ff} , the change in the price of rice from period 0 to t, dP_i^f/P_i^f , the cross-price elasticities of demand for rice with respect to the changes in price of other goods N_t^{fj} , and the change in the price of the other j goods from time period 0 to t, dP_j^j/P_j^j . This relationship can be expressed as:

$$(4) \quad dQ_t^{fd} = \hat{E}_{i=0}^t Q_t^{fd} * ((N_t^{ff} * dP_i^f/P_i^f) + (\hat{E}_{j=0}^m N_t^{fj} * dP_j^j/P_j^j))$$

To construct estimates of the output response to changes in trade policies, two main types of information are required. First, the quantitative measurement of the changes of the policies in terms of the impact they have on prices and the values of the elasticity parameters need to be calculated. These changes in producer prices are obtained by multiplying the values of the effective rates of protection for the total and the direct effects of trade policies with the ratio of the producer prices of the commodity to the value added of the commodity adjusted for the total effects.

Second, the elasticities of supply of commodities with respect to their non-agricultural prices and the prices of other goods have to be estimated. For rubber, studies have indicated that the short run elasticity of supply is quite low, with the estimated elasticity for smallholders larger than that for estates. This is because it is easier for smallholders to allocate their time between tapping rubber and other activities than estates with their established work crews. For this study, an estimate of 0.3 is assumed as the short run supply elasticity for rubber.³⁸ As it takes the rubber tree 6 years to mature and become productive, there is a lag of six years between the change in pricing policies and the increased production from the replanting and newplanting response. Hence, the long run supply elasticity for rubber is estimated to be 0.8 based on the assumptions for the short run elasticity. This low

³⁸ The elasticity of supply for estates is assumed to be 0.1 for Year 1, rising linearly to 0.3 in Year 6 and 1.1 in Year 10. The elasticity of supply for smallholders is taken to be 0.2 in Year 1, rising to 0.3 by Year 6, and to 1.1 in Year 10.

estimate for the long run supply elasticity of rubber in Malaysia has been indicated by a number of studies.³⁹

The cross-price elasticity of supply of rubber with respect to the price of palm oil will be negative as an increase in the price of palm oil will provide an incentive to replant rubber plantations with oil palm. On the other hand, a fall in the price of palm oil will cause relatively more of new land to be planted in rubber instead of oil palm.⁴⁰

The same own and cross price elasticities of supply are used for oil palm as for rubber, since there are no empirical studies on these elasticities.

For paddy, the elasticity of supply is assumed to be 0.2 in the year of price change, 0.3 in the following year, and full adjustment to 0.4 by the third year. This figure is based on the studies by various authors. Aromdee (1969) reported a short-run supply elasticity of 0.22 while Barnum and Squire (1976) had an output elasticity of 0.66 for the Muda Irrigation Project in Kedah. Sahathavan in his 1974 study reported a supply elasticity between 0.2 and 0.5. In the single-cropped paddy areas, Houghton (1983) found a supply response of 0.25. What all these studies imply is that, despite the price and input incentives provided, the supply response for paddy has been relatively insignificant.

On the consumption side, the own price elasticity of demand for rice is also low. A value of -0.4 is assumed and is used in estimating the response of rice consumption to changes in pricing policies. Studies by several authors indicate that the range in the own price elasticity of demand for rice is between -0.26 and -0.5 with Aromdee (1969) reporting a range of -0.35 to -0.46; Goldman (1968), -0.4; and Sahathavan (1974), between -0.2 and -0.4.

The short run in the response of output changes for rubber, palm oil and paddy is

³⁹ See Pee (1977); Chan (1962); Stern (1965); Cheong (1972); Chow (1975); Behrman (1975); Hartley, Nerlove and Peters (1984); and Smit (1982).

⁴⁰ The cross price elasticity of supply of rubber with respect to the price of palm oil is assumed to be half of the long run elasticity of supply of rubber, that is, -0.1 in Year 7 and rising to -0.4 in Year 10.

TABLE 8: MALAYSIA - SHORT RUN DIRECT AND TOTAL EFFECTS OF POLICIES ON OUTPUT
OF ESTATE AND SMALLHOLDER RUBBER, PALM OIL AND PADDY

Year	Proportional Change in Output Due to the Short Run Direct Effects of Policies on Output of				Proportional Change in Output Due to the Short Run Total Effects of Policies on Output of			
	Estate Rubber	Smallholder Rubber	Palm Oil	Paddy	Estate Rubber	Smallholder Rubber	Palm Oil	Paddy
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1960-1964	-0.01	-0.03	-0.01	0.04	-0.02	-0.04	-0.02	0.02
1965-1969	-0.01	-0.04	-0.01	-0.01	-0.02	-0.05	-0.02	-0.03
1970-1974	-0.01	-0.05	-0.02	0.01	-0.03	-0.07	-0.03	-0.03
1975-1979	-0.04	-0.07	-0.03	0.07	-0.05	-0.08	-0.03	0.05
1980-1983	-0.03	-0.06	-0.01	0.14	-0.05	-0.08	-0.02	0.09
Average 1960-83	-0.02	-0.05	-0.02	0.04	-0.03	-0.07	-0.03	0.02

- Notes: [1] For estate rubber, a short run own price supply elasticity of 0.1 in Year 0, rising linearly to 0.3 in Year 6, with a long run elasticity of 0.8 in Year 10 and subsequent years are assumed. The relevant figures for smallholder rubber are a short run own price supply elasticity of 0.1 in Year 0, rising linearly to 0.3 in Year 6 with a long run elasticity of 1.1 in Year 10 and subsequent years. It is also assumed that producers in estates and smallholdings are fully adjusted to interventions prior to 1960.
- [2] The cross price supply elasticity of palm oil on rubber output in both estates and smallholdings is assumed to be -0.1 in Year 7 and a long run supply elasticity of -0.4 in Year 10 and subsequent years. Producers are assumed to be fully adjusted to all previous interventions prior to 1960.
- [3] The same supply own and cross price elasticities for rubber are used for palm oil as there are no empirical studies on the elasticity of supply on palm oil.
- [4] The supply elasticity for paddy is assumed to be 0.2 in the year of the policy change, 0.3 in the following year, and full adjustment to 0.4 by the third year.
- [5] The short run direct and total effects of pricing policies refer to the impact of taxes and subsidies on output in the year following the change in policy.

Source: Tables 13(A.1) 13(A.2) of Working Paper: Malaysia, 1987.

defined as the response occurring in the year following that in which the policy change occurred. Hence, the change in output reported in a given year is the result of a change in policies which occurred one year earlier.

Table 8 shows the short run direct and total effects of pricing policies on output of rubber, palm oil and paddy. During the 15 years between 1960 and 1974, the short run impact on estate rubber output was reduction in output of about 1 percent. When the export tax on rubber was raised in 1974, the impact increased to 4 percent in 1975-1979. The effect was slightly smaller (declining to 3 percent) when the tax rates were reduced in 1981. For the period of the study between 1960-1983, the short run direct effects of pricing policies reduced estate rubber production by an average of 2 percent.

Because of the larger short run elasticity of supply for smallholder rubber production, it is estimated that the direct effects of pricing policies reduced output from this sector by an average of 5 percent for the period of the study. During the years of high taxation (1975-1979), smallholder rubber production was reduced by amounts of up to 7 percent per annum. This trend moderated to only 6 percent a year for 1980-1983 after the tax policy was changed in 1981.

The short run impact of the direct effects of pricing policies on the output of palm oil was minimal at 1 percent a year between 1960-1983, with the average for the period being 2 percent. The export tax on this commodity was also raised in 1974 with the result that the short run impact on output rose to 3 percent during 1974-1979. When the tax policy was amended in 1981, the short run impact was reduced to only 1 percent, or 2 percentage points less than it was in the previous five-year period.

In the case of paddy production, the removal of the direct effects of pricing policies would have a greater short run impact which is more varied over time. Between 1960-1964, the short run impact was to increase output by 4 percent a year. During 1965-1969, the policy impact reduced production by 1 percent, while in 1970-1974 output increased by the

same amount. Since 1975, the pricing policies for paddy have a short run impact of increasing output from 7 percent in 1975-1979 to 14 percent in 1980-1983. For the 24 years of the study, the short run direct policy impact was to increase paddy output by 4 percent a year.

The short run total effects of pricing policies on the output of rubber, palm oil and paddy have reduced the average production of both estate rubber and palm oil by 3 percent and smallholder rubber by 7 percent. In general, the short run impact of the policies was greater during years when the prices of the commodities were high and hence the export tax was large.

Because the direct and indirect effects of the trade policies on paddy production are of opposite sign, the short run impact of the total effects on the commodity is less than the short run impact of the direct effects by an average of 3 to 4 percentage points per year. Much of the support given to the paddy sector appears to serve the purpose of offsetting the indirect effects of pricing policies which occur through the exchange rate.

In Table 9, the cumulative direct and total effects of the pricing policies on the three crops are shown. For estate rubber, the cumulative direct impact led to a reduction of 9 percent over the period of the study between 1960-1983, which was less than the 16 percent reduction experienced by rubber smallholders. The cumulative total effects of the pricing policies reduced output more substantially by 13 percent for the estates and by 20 percent for the smallholders. On the basis of these findings, it is clear that the rubber export tax in Malaysia and biased against the smallholder sector.

During the same period, the cumulative direct and total effects of the pricing policies resulted in palm oil production declining by 7 and 11 percent respectively on average.

The same offsetting indirect effects of the exchange rate on the direct effects of the pricing policies are also reflected in the cumulative direct and total impact of these policies on the output of paddy. Production of paddy increased by 6 percent on average for the period of the study as a consequence of the cumulative direct effects, but only by 2 percent

TABLE 9: MALAYSIA - CUMULATIVE DIRECT AND TOTAL EFFECTS OF POLICIES ON OUTPUT
OF ESTATE AND SMALLHOLDER RUBBER, PALM OIL AND PADDY

Year	Proportional Change in Output Due to the Cumulative Direct Effects of Policies on Output of				Proportional Change in Output Due to the Cumulative Total Effects of Policies on Output of			
	Estate Rubber	Smallholder Rubber	Palm Oil	Paddy	Estate Rubber	Smallholder Rubber	Palm Oil	Paddy
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1960-1964	-0.09	-0.15	-0.04	0.08	-0.12	-0.18	-0.08	0.05
1965-1969	-0.08	-0.15	-0.05	0.01	-0.12	-0.18	-0.08	-0.02
1970-1974	-0.06	-0.16	-0.07	0.01	-0.11	-0.20	-0.12	-0.04
1975-1979	-0.08	-0.18	-0.09	0.07	-0.13	-0.22	-0.14	0.04
1980-1983	-0.12	-0.18	-0.11	0.16	-0.17	-0.23	-0.17	0.10
Average								
1960-83	-0.09	-0.16	-0.07	0.06	-0.13	-0.20	-0.11	0.02

Notes: [1] The cumulative direct effects of pricing policies on output refer to the impact of taxes and subsidies assuming that the policy changes were made in 1960.

[2] The cumulative total effects of pricing policies on output refer to the impact of taxes, subsidies and the exchange rate adjustment, assuming that the policy changes were made in 1960.

Source: Tables 13(B.1) 13(B.2) of Working Paper: Malaysia, 1987.

when the cumulative total effects were considered.

Since domestic consumption of rubber and palm oil is negligible compared to their production, the impact of trade policies on the consumption of these two commodities will not be examined. Attention will be focussed on the consumption of rice, the staple food crop of the country. In Table 10, the direct effects of pricing policies have served to reduce the demand for rice in Malaysia by an average of 4 percent for the period of the study, compared to only 2 percent for the total effects case.⁴¹

The most significant impact of the pricing policies is the smoothening of the pattern of consumption from what it would have been because of the high volatility of the world price of rice. These pricing policies had another impact on rice consumption. The consumer price of rice increased by an average of 10 and 4 percent for the period of the study due to the direct and the total effects respectively.

Impact of Pricing Policies on Foreign Exchange Earnings

A result of the pricing policies is that both the supply and demand of foreign exchange are altered. The export taxes and the adjustment in the exchange rate as a result of tariff policies have served to discourage the export of rubber and palm oil. In the case of rice, the direct effects of the policies affecting paddy production have generally reduced the need to import rice. This has in turn been partially offset by the indirect effects of an overvalued exchange rate.

For rubber and oil palm, these policies have reduced the amount of foreign exchange earned by an average of 3 and 4 percent of the total agricultural exports during 1961-1983 as a result of the short run direct and the total effects respectively. The cumulative direct and

⁴¹ The direct effects of the policies reduced rice consumption during 1960-1966 by between 2 to 4 percent and during 1976-1983 from 1 to 22 percent. For the intervening decade, consumption increased in some years and declined in others. The impact of the total effects also led to reduced rice consumption, although the reduction was slightly less than for the direct effects.

TABLE 10: MALAYSIA - DIRECT AND TOTAL EFFECTS
OF POLICIES ON QUANTITY OF RICE
DEMANDED AND CONSUMER PRICE OF RICE

Year	Proportional Change in Quantity of Rice Demanded due to		Proportional Change in Consumer Price of Rice due to	
	Direct Effects of Policies	Total Effects of Policies	Direct Effects of Policies	Total Effects of Policies
	[1]	[2]	[3]	[4]
1960-1964	-0.03	-0.02	0.07	0.04
1965-1969	0.01	0.02	-0.01	-0.05
1970-1974	-0.01	0.02	0.01	-0.06
1975-1979	-0.05	-0.03	0.12	0.08
1980-1983	-0.14	-0.10	0.34	0.24
Average 1960-83	-0.04	-0.02	0.10	0.04

Notes: [1] The price elasticity of demand for rice of -0.4 is assumed.

[2] The change in the consumer price of rice due to the direct and the total effects has taken into consideration that the increase in producer price has been financed for a number of years by increasing both imported and locally produced rice.

Source: Tables 13(C.1) 13(C.2) of Working Paper: Malaysia, 1987.

total effects of the distortions have reduced the foreign exchange earnings of the export crops by an average of 11 and 18 percent of total agricultural exports.⁴² This reduction in export earnings is due to the small country effect on Malaysia in which the prices of rubber and palm oil are exogenously determined.⁴³

In the case of rice, the short run and cumulative direct effects had resulted in foreign exchange savings of about 1 percent of the total agricultural exports for 1960-1983. There were no impact on foreign exchange earnings for paddy due to the short run and cumulative total effects of the policies.

The average short run direct effects of pricing policies have reduced the amount of foreign exchange available to Malaysia by slightly more than 1 percent of the total value of agricultural exports, while the reduction due to the total effects was about 4 percent of the total agricultural exports. The cumulative impact is more substantial. The reduction in foreign exchange available to the country due to the cumulative direct effects of pricing policies was about 9 percent of total agricultural exports for 1961-1983, and 15 percent in the case of the cumulative total effects.

In summary, it is clear that the taxes on export crops and the tariffs on imported substitute goods have reduced the amount of foreign exchange available to Malaysia. This reduction is larger than the savings in foreign exchange arising from the programmes designed to stimulate paddy production through high domestic prices.

⁴² Foreign exchange was lost because production of export crops was reduced, resulting in less imports of inputs being required, and hence that amount of foreign exchange was saved. In the case of paddy, the savings came from reduced rice imports, and the losses from more imports of inputs.

⁴³ In the world market for rubber, Malaysian natural rubber is in competition with synthetic rubber made from petroleum. Similarly, palm oil have many substitutes among the vegetable oils, in particular soya bean oil.

TABLE 11: MALAYSIA - SHORT RUN AND CUMULATIVE DIRECT AND TOTAL EFFECTS OF POLICIES ON FOREIGN EXCHANGE EARNINGS OF RUBBER, PALM OIL AND PADDY

Year	Ratio of Change in Foreign Exchange Earnings due to Short Run Direct Effects of Policies to Value of Total Agricultural Exports	Ratio of Change in Foreign Exchange Earnings due to Short Run Total Effects of Policies to Value of Total Agricultural Exports	Ratio of Change in Foreign Exchange Earnings due to Cumulative Direct Effects of Policies to Value of Total Agricultural Exports	Ratio of Change in Foreign Exchange Earnings due to Cumulative Total Effects of Policies to Value of Total Agricultural Exports								
	Change in Output of Exports of Rice due to Crops	Change in Output of Exports of Rice due to Crops	Change in Output of Exports of Rice due to Crops	Change in Output of Exports of Rice due to Crops								
	Change in Output, Rice and Inputs	Change in Output, Rice and Inputs	Change in Output, Rice and Inputs	Change in Output, Rice and Inputs								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
1960-1964	-0.02	0.02	0.00	-0.03	0.01	-0.02	-0.12	0.03	-0.08	-0.17	0.01	-0.13
1965-1969	-0.02	-0.01	-0.03	-0.03	-0.02	-0.05	-0.11	0.00	-0.10	-0.16	-0.02	-0.15
1970-1974	-0.03	0.00	-0.02	-0.05	-0.02	-0.06	-0.10	0.00	-0.08	-0.17	-0.02	-0.16
1975-1979	-0.04	0.02	-0.02	-0.05	0.00	-0.04	-0.12	0.01	-0.09	-0.18	0.00	-0.15
1980-1983	-0.03	0.05	0.01	-0.05	0.03	-0.02	-0.14	0.05	-0.08	-0.23	0.03	-0.17
Average	-0.03	0.01	-0.01	-0.04	0.00	-0.04	-0.11	0.01	-0.08	-0.18	0.00	-0.15

Source: Tables 14(A.1) to 14(B.2) of Working Paper: Malaysia, 1987.

Impact of Policies on the The Government Budget

The principal source of revenue from the agricultural sector is the tax on the exports of rubber and palm oil and other minor agricultural crops. On the expenditure side, very little from the budget has been spent directly to subsidize the production of paddy. Most of the budgetary allocations have been on the infrastructural development of irrigation systems, dams, roads, and processing facilities. From 1981, the policy was changed to provide direct subsidization of local paddy production in the form of a cash grant per unit of paddy sold. This is in addition to a direct input subsidy equal to M\$45.45 per tonne of paddy produced.

The overall impact of the taxation and pricing policies on the budget has been positive. Net tax revenues on agricultural crops as a proportion of total government revenues have fluctuated considerably from a high of 12 percent in 1960-1964 to a low of 2 percent in 1980-1983, with an average for the period of the study of 7 percent. After 1980 and with the introduction of the expensive cash subsidy for paddy, the relative importance of the agricultural sector as a source of government revenue has declined. (See Table 12).

For the period of 1960-1983, the government investment bias⁴⁴ has a value of 0.79 on average. This bias was higher during 1965-1969 and 1970-1974 when huge investments were being made in irrigation infrastructures for paddy production and land development schemes for settlement. Though still substantial, government investment in agriculture declined from 1975, and after 1980, relatively fewer investments had been made in the sector, leading to a fall in the indicator. Emphasis has been shifted from agriculture to industrial development and the petroleum industry.

⁴⁴ This is estimated by dividing the ratio of government investment in agriculture to total government investment with the ratio of gross domestic product from agriculture (without interventions) to GDP.

TABLE 12: MALAYSIA - EFFECTS OF POLICIES ON GOVERNMENT BUDGET, INVESTMENTS AND EXPENDITURES

Year	Net Tax Revenues as a Proportion of Total Budget	Net Tax Revenues as a Proportion of Budget Deficit	Ratio of Value Added in Agriculture w/o Price Interventions to Gross Domestic Product	Ratio of Government Investment in Agriculture to Total Government Investment	Government Investment Bias in Agriculture to Total Government Expenditure	Ratio of Current Government Expenditure in Agriculture to Total Government Expenditure	Government Expenditure Bias
	[1]	[2]	[3]	[4]	[5]=[3]/[4]	[6]	[7]=[6]/[3]
1960-1964	0.12	-0.72	0.31	0.13	0.44	0.02	0.07
1965-1969	0.05	-0.23	0.25	0.26	1.07	0.02	0.09
1970-1974	0.06	-0.27	0.28	0.25	0.91	0.02	0.08
1975-1979	0.09	-0.34	0.25	0.21	0.85	0.02	0.10
1980-1983	0.02	-0.06	0.21	0.13	0.64	0.04	0.18
Average							
1960-83	0.07	-0.33	0.26	0.20	0.79	0.03	0.10

Notes: [1] Net tax revenues refer to the total tax on export crops and tariffs on imported inputs less subsidies

[2] Total government investment refer to the total government development expenditure.

[3] Current expenditure in agriculture refer to the current expenditure for agricultural and rural development.

Source: Tables 15 and 16(A) of Working Paper: Malaysia, 1987.

The index of government expenditure bias⁴⁵ has an average value of 0.10 for the period of the study. Only after 1970-1974 did this indicator show a rising trend when its value increased to 0.10 and 0.18 for 1975-1979 and 1980-1983 respectively. This is because the government has shifted the nature of its expenditure from investment to providing subsidies or to being service oriented. This is consistent with the current way the paddy price support scheme is being financed from the budget allocations instead of by income earned from rice imports.

The pricing policies on the transfer of resources in the agricultural sector has resulted in paddy farmers gaining while the rubber and oil palm industries have lost out. (See Table 13.) During 1960-1983, the direct effects of the policies have on average reduced the producer surplus accruing to farmers by about 10 percent of the total Gross Domestic Product of the agricultural sector, while the total effects reduced it by 16 percent. Taking into consideration the non-price transfers and only the direct effects of pricing policies, there has been a net positive transfer to the agricultural sector of an average of 1 percent of the total value of GDP generated by agriculture. If the combined effects of all price and non price policies are considered, the net transfer for the period is a negative 6 percent of the GDP of the agricultural sector on average. This change in the sign is due to the exchange rate effect.

⁴⁵ This bias is the ratio of the government current and development expenditure to total expenditure and the ratio of the GDP in agriculture (no interventions) to GDP.

TABLE 13: MALAYSIA - REAL TRANSFERS INTO (+) AND OUT (-) OF AGRICULTURE
DUE TO DIRECT AND TOTAL EFFECTS OF POLICIES

Year	Transfers as a Share of Value of Agricultural Output due to (CPI unadjusted)		Transfers as a Share of Value of Agricultural Output due to (CPI adjusted)		Transfers from Price and Non-Price Policies as a Share of Value of Agricultural Output due to (CPI unadjusted)	
	Direct Effects of Policies	Total Effects of Policies	Direct Effects of Policies	Total Effects of Policies	Direct Effects of Policies	Total Effects Policies
	[Real]	[Real]	[Real]	[Real]	[Real]	[Real]
	[1]	[2]	[3]	[4]	[5]	[6]
1960-1964	-0.08	-0.16	-0.10	-0.13	-0.02	-0.10
1965-1969	-0.09	-0.15	-0.11	-0.14	-0.01	-0.07
1970-1974	-0.09	-0.17	-0.11	-0.14	-0.01	-0.09
1975-1979	-0.15	-0.18	-0.18	-0.19	-0.03	-0.05
1980-1983	-0.05	-0.14	-0.09	-0.13	0.13	0.04
Average 1960-83	-0.10	-0.16	-0.12	-0.15	0.01	-0.06

Notes: [1] Transfers refer to the difference between the border and the producer prices and the actual output ((Q₀) and the output if there had been no direct or total effects of pricing policies (Q₁). That is, transfers are calculated as follows:

$$(P - P')(Q_0) + 0.5(P - P')(Q_1 - Q_0).$$

- [2] CPI adjusted refers to the CPI after it has been adjusted for the direct or total effects of pricing policies.
- [3] Non-price transfers refer to government investment expenditures in the agricultural sector.

Source: Tables 17(B), 17(BR) and 17(C) of Working Paper: Malaysia, 1987.

Impact of Pricing Policies on Income

The impact of the pricing policies on income distribution can be evaluated both before and after the changes in production and consumption have had an opportunity to adjust. In the following analysis, the situation before output has had a chance to adjust to the new prices is considered.⁴⁶

If the direct effects of pricing policies for paddy are considered alone, they have increased paddy farmers' incomes by 16 percent on average for the period 1960-1983. However, the impact was variable over time. In the years of high consumer rice prices the income changes have been negative as had happened during 1965-1969 when paddy farmers experienced a decline of 4 percent in their incomes. Only after the introduction of the cash subsidy for paddy in 1982 did the incomes of paddy farmers increased significantly. (See Table 14).

The total effects of pricing policies on the incomes of paddy farmers are less than the direct effects because the adjustment in the exchange rate has reduced the direct impact. On average, the pricing policies have increased incomes by only 9 percent over the period of the study.

After adjusting for home consumption and for income earned from paddy,⁴⁷ the direct effects of the pricing policies on the instantaneous change in income was an average of 7 percent for 1960-1983. This was a reduction of 9 percent from the impact of the direct effects on the unadjusted income. The same result is also observed in the case of the total

⁴⁶ Only the instantaneous case will be discussed here. The instantaneous change income due to the effects of policies are measured by the difference of the domestic value added at the producer level and the value added for the commodity adjusted for either the direct or the total effects with the result multiplied by the actual output of the commodity. For the results of the short run and the cumulative cases, see the Working Paper: Malaysia (1987).

⁴⁷ Farmers were assumed to retain 60 percent of their paddy output for their home consumption during 1960-1974. From 1975, this proportion of paddy output was estimated to decline by 10 percent each year until a minimum of 30 percent was retained for home consumption. This was because of the increased output of paddy as the major irrigation schemes came onstream in 1975 and 1977. Income from paddy was estimated to be 65 percent of the total farm income.

TABLE 14: MALAYSIA - INSTANTANEOUS INCOME CHANGES IN RUBBER, PALM OIL AND PADDY DUE TO DIRECT AND TOTAL EFFECTS OF POLICIES

Year	Estate Rubber		Smallholder Rubber		Palm Oil		Paddy	
	Direct	Total	Direct	Total	Direct	Total	Direct	Total
	Effects of Policies on	Effects of Policies on	Effects of Policies on	Effects of Policies on	Effects of Policies on	Effects of Policies on	Effects of Policies on	Effects of Policies on
	Instantaneous	Instantaneous	Instantaneous	Instantaneous	Instantaneous	Instantaneous	Instantaneous	Instantaneous
	Change of Income	Change of Income	Change of Income	Change of Income	Change of Income	Change of Income	Change of Paddy Income	Change of Paddy Income
1960-1964	-0.11	-0.21	-0.21	-0.31	-0.10	-0.20	0.18	0.11
1965-1969	-0.08	-0.16	-0.21	-0.29	-0.10	-0.17	-0.04	-0.11
1970-1974	-0.12	-0.23	-0.27	-0.40	-0.16	-0.28	0.02	-0.08
1975-1979	-0.37	-0.39	-0.39	-0.42	-0.23	-0.26	0.24	0.22
1980-1983	-0.28	-0.44	-0.31	-0.47	-0.06	-0.19	0.45	0.39
Average								
1960-83	-0.19	-0.28	-0.28	-0.38	-0.13	-0.22	0.16	0.09

Notes: [1] Instantaneous change in income refer to the situation in which quantity has had

no opportunity to adjust to the new prices.

[2] Home consumption is defined as the quantity of rice output retained by the paddy farmer. This amount varies from 60 percent of output in the 1960's and early 1970's, declining by an assumed 10 percent a year after 1975 until a minimum of 30 percent is reached.

Source: Table 19 of Working Paper: Malaysia, 1987; for columns 1 to 8.

effects of the pricing policies on the unadjusted and the unadjusted income. The total effects of the policies had caused the instantaneous change in income to decline from 9 percent to 5 percent during 1960-1983.

In the case of estate rubber, the direct effects of pricing policies have served to reduce incomes during every year of the study between 1960-1983, with the average being 19 percent in the instantaneous case. The impact of the total effects on the incomes of estate rubber is higher since the output is exported, with the average at 28 percent for the period.

The incomes of rubber smallholders during 1960-1983 were substantially reduced by the direct and the total effects of pricing policies in the instantaneous case. The average for the impact of the direct effects was -28 percent, while it was -38 percent for all effects combined.

Palm oil producers, saw their incomes reduced by an average of 13 percent during 1960-1983 due to the direct effects of pricing policies and by an average of 22 percent due to the direct and indirect effects combined. The largest declines in incomes were in the years of good prices for the commodity, indicating the effectiveness of the pricing policies in siphoning off the incomes of the producers during the boom years.

V. POLITICAL ECONOMY AND CONCLUSIONS

The pricing policies for the agricultural sector in Malaysia originates from the government's need for revenue to meet its expanding expenditure for the development of the country, the need to maintain a high degree of rice self sufficiency ⁴⁸, and the political

⁴⁸ Rice self sufficiency has been an elusive goal of the government since 1949 and is yet to be achieved. For this goal, a self sufficiency level of 100 percent (in which total requirements are satisfied by domestic production of rice) was the target until 1986, except for a brief three years (1971-1973) when the target was reduced to 90 percent because of the anticipated large output increases from the huge irrigation schemes then coming onstream and the estimated consumption level approaching self sufficiency. After the world food crisis of 1974-1975, the target of 100 percent was reinstated. Politically, the objective of rice self sufficiency has served the government (ie. UMNO) well since it can be used to justify the allocation and expenditure of vast sums of public funds (an aggregate nominal amount of

support of the paddy farmers. The policies have been modified very little over time. Most adjustments have been gradual and are made to meet the changing circumstances in the economy, or to meet the political pressures of groups with interests in the agricultural sector. These pressure groups have been varied and have not been known to have worked together because the pricing policies which affect the rubber planters did not coincide with those policies affecting the paddy farmers.⁴⁹ Because the changes in the agricultural pricing policies have been gradual, rather than radical, it has not been relevant to analyse them in terms of pre- and post-introduction of the New Economic Policy (NEP) in 1971. The need to maintain the revenue base of the agricultural sector also served to encourage the government to retain the existing pricing and investment policies. Furthermore, the emphasis of the NEP is in the corporate sector which the government wants to restructure to enable more Malay involvement and participation. This is because the corporate sector is dominated by non-Malay and foreign interests.

As an introduction to the political economy of Malaysia, it is important to recognize that the government is a coalition of disparate ethnic based parties which strive to protect and promote the interests and aspirations of their communities.⁵⁰ The government uses the consensus approach to arrive at decisions which minimizes conflict among the parties.

M\$2,959.9 million up to 1985 for drainage and irrigation) for the benefit of the party's supporters among the Malay paddy farmers. The urban and the plantation sectors who are paying for the cost of attempting to achieve the rice self sufficiency target have not complained aggressively about the high price of local rice. It also is interesting to note that rice has become an inferior good in Malaysia. Estimates of the income elasticity of demand place it at -0.12 according to Cheam (1980) and reported in Gibbons (1984).

⁴⁹ It should be noted at this point that the army or the police in Malaysia have not played any significant political role in the country's affairs. They were fighting a communist insurgency between 1948 to 1960 and meeting the challenge of the Indonesian Confrontation of 1963-1966.

⁵⁰ The coalition of the three main parties has been returned to power at the federal level in all the general elections since 1955. At the state level it had lost control of the north-eastern state of Kelantan to the other Islamic based Malay party (Parti Islam) during 1959-1974.

However, in the aftermath of the racial riots of May 13, 1969 and the adoption of the New Economic Policy (NEP), this consensus approach seemed to be breaking down as the Malay party in the coalition, the United Malay National Organization (UMNO), grew in electoral strength while the main Chinese party, the Malaysian Chinese Association (MCA) lost out to the multiracial opposition party, the Democratic Action Party (DAP). The Indian community is represented in the coalition by the Malaysian Indian Congress (MIC), while the other ethnic groups in Sabah and Sarawak are represented by a number of small parties. Since electoral strength is weighted in favour of the rural areas, and Malays form the majority in the rural population, and as well as among the paddy farmers and rubber smallholders, it is often UMNO which is under political pressure to meet the aspirations of its constituents in the rural areas.⁵¹

The adoption of the NEP in 1971 was a watershed mark in the economic and political affairs of Malaysia.⁵² The policy has become the basis of public policies affecting not only the agricultural sector, but also the nation as a whole. Of the twin objectives of the NEP, it is the objective relating to poverty eradication which is of primary importance in the analysis of the pricing policies of the agricultural sector. This is because poverty⁵³ is prevalent in the rural areas, with 67 percent of the Malays in 1970 categorized as poor (with an annual

⁵¹ UMNO is also facing a strong electoral challenge from Parti Islam for the votes of the rural Malays. This opposition Malay party is portraying itself as an alternative to UMNO in the approach to governance, basing its premises on Islamic ideology. This challenge makes it necessary for UMNO has to contend on two fronts simultaneously, namely, on the nationalistic and economic front to improve the living standards of the rural Malays, and on the religious front to upgrade its image in the eyes of a conservative electorate. UMNO also has to sustain its credibility among the non-Malays, who form 46 percent of the total population.

⁵² Prior to the adoption of the NEP, the government had a non-interventionist approach to the economy (with the exception of a rural development policy aimed at providing infrastructural changes to support output increases), and to provide basic services. After 1971, the government adopted an interventionist approach to the economy to achieve the twin objectives of the NEP.

⁵³ Poverty in Malaysia is relative poverty, as there is no malnutrition or hunger. The poverty line is defined as the income required for food, housing, clothing, utilities, transport, health care, education, and recreation.

household income of M\$2,160 in 1970 prices), 26 percent of the Chinese, and 39 percent of the Indians. (Young, Bussink and Hasan, 1980; p61).

The policy on paddy price support, after 1974, outgrew its original rationale of providing a minimum income level for Malay paddy farmers as envisaged by the British colonial government in 1949. With both direct and indirect pressure from leaders of the Malay paddy farmers, the government agreed to increase the guaranteed minimum price (GMP) for paddy, starting in 1973 and again in 1974, 1979, and 1980. These increases were directed towards raising and maintaining the income of paddy farmers above the national poverty line. In 1980, paddy farmers were also given a cash subsidy for every tonne of paddy sold. This direct subsidization of the paddy farmers grew out of a desire of the government (that is, UMNO) to distribute some of the oil wealth of Malaysia among the Malay paddy farmers.⁵⁴

Besides price support, paddy farmers also receive a subsidy on inputs. This paddy input subsidy policy, particularly the scheme introduced in 1980 where the subsidy rate was 100 percent, was also aimed at maintaining the income of the paddy farmers. Farmers' incomes are directly increased by the subsidy which replaced the amount they would have spent on buying fertilizers, and hence reduced their production costs. The availability of the free fertilizers to the paddy farmers is intended to increase output and indirectly farm incomes. Consequently, the government was indignant when it discovered that paddy farmers were selling their free fertilizers for cash. Moral persuasion has been used to dissuade the practice, but there has been no progress report on the result.

Registering to receive the subsidised paddy fertilizers is partly a political process since the application is first examined by a village leader who is often a member of UMNO. Paddy farmers who belong to the opposition Parti Islam (PAS) often have their applications delayed,

⁵⁴ The national oil corporation, PETRONAS, which is registered and operated as a private company, remitted dividends amounting to M\$3,000 million to the government between 1981-1983, and also bought M\$8,939 million of government debt during the same period, according to Bank Negara Malaysia. The dividends are in addition to the taxes and royalties paid by PETRONAS.

mislaid or investigated more thoroughly. There have been several complaints in Kelantan, where political affiliations and convictions are very firmly held among paddy farmers. Entire villages have been excluded from the subsidy scheme until top political leaders at the state and the federal levels intervened to approve the applications.

The approach to maintaining the income level of paddy farmers is also implicit in the decision to implement a urea price support scheme for paddy farmers during the urea crisis of 1972-1976. The government⁵⁵ was under pressure to find a solution to the rising price of urea, the principal nitrogenous fertilizer used in paddy growing.⁵⁶ As noted earlier, although the scheme was not efficient in realising its stated objective of preventing a decline of rice output during the urea shortage, the need for the government to demonstrate that it was working to help the Malay paddy farmers during the crisis was a political necessity.

It is not surprising that it took the government a long time to react to the pressure of rubber smallholders seeking relief from the pricing policies affecting them. Although the government recognises the high incidence and regressiveness of the export tax on the smallholders, the government is reluctant to abolish the export tax because of the substantial loss in revenue which is not easily made up from other sources⁵⁷. Furthermore, rubber smallholders are more dispersed geographically than paddy farmers and hence the political

⁵⁵ References to the government in the analysis of the political economy of agricultural pricing policies could be read synonymously to mean UMNO. This is because UMNO is the Malay party dominating the coalition government, and its primary political constituency is the rural Malays.

⁵⁶ There are technical reasons as to why other nitrogenous fertilizers (which are not in short supply) could not be substituted for urea since paddy is grown in flooded fields. Farmers also refused to use other fertilizers for lack of familiarity with them.

⁵⁷ There are several reasons why property or land taxes could not be substituted for the export tax on commodities in Malaysia. Firstly, land taxes under the provisions of the Federal Constitution are revenue sources of the various State Governments whereas export taxes accrue to the Federal Government. Secondly, land taxes are not easy to adjust when the price of the export crops fluctuate. Hence, such land taxes could be a politically unbearable burden when prices are low. Thirdly, land taxes require the evaluation of land to be constantly adjusted for changes in land prices over time. This is usually administratively impossible even in developed countries.

influence of the smallholders is not as great as that of the paddy farmers.⁵⁸

In 1981, the government amended the method of estimating the gazetted price of rubber for export tax purposes. The tax then became based on the FOB prices of the lower grades of rubber (RSS 3 and SMR 20)⁵⁹, whereas previously the gazetted price is based solely on the FOB price of RSS 1, the highest grade of rubber exported from Malaysia. This effectively reduced the export tax rate for rubber. Another move to assist the smallholders was instituted in 1982 when the cost-plus principle of calculating the rate at which the export tax became payable was implemented.⁶⁰ These two changes were possible because of the increased government revenues from exports of crude petroleum, and the desire of the government to share the wealth with the rubber smallholders.⁶¹ Indirectly, the estates also enjoyed the benefit given to the smallholders.

The government has yet to act on the request by the rubber industry and by the smallholders to remove or reduce the replanting cess for rubber. Although the cess, together with a government grant from general tax revenue, is returned to the rubber smallholder to

⁵⁸ It took a hunger march of Malay rubber smallholders on December 1, 1974 and a huge demonstration by students (sons and daughters of Malay peasants) on December 3-4 to convince the government that rubber smallholders needed relief from the high taxes. Rubber prices had fallen by 65 percent between January and November 1974. (Stubbs, 1983; p90). Efforts to control supply eventually led to modest price increases in the rubber price. The smallholders were given higher replanting grants and owners of the smallest holdings were actively encouraged to replant.

⁵⁹ Rubber quality in sheet form is graded on colour and presence of visible dirt, with RSS 1 (ribbed smoked sheet) rated the best grade. Standard Malaysian Rubber (SMR) is a technically specified crumb rubber based on dirt content only, and the number attached to the grade indicates the amount of extraneous matter.

⁶⁰ Under this principle, smallholders and estates are allowed to deduct an average cost of production from the gazetted price before arriving at the export tax rate under which they are liable.

⁶¹ In addition to the cash subsidy for paddy, and the paddy input subsidy, the government implemented a number of other subsidy programmes for fishermen, pepper growers, and livestock farmers at about the same time. For rubber smallholders, the benefit of the increased national wealth from crude petroleum exports was in the form of a reduced export tax rate.

help him replant the holding, not all smallholders qualify to receive the replanting grant.⁶²

There were also implicit discrimination in restricting owners of holdings 10 hectares or larger to receive replanting grants for only a third of their holdings⁶³, a ruling which was removed only in 1981.

Until the 1980's, the private sector part of the oil palm plantation industry in Malaysia was principally owned by non-Malaysians. The government then intervened heavily to purchase the equity of these plantation companies growing oil palms in order to increase the Malays' share of the equity capital of the country.⁶⁴ This was carried out in the context of the New Economic Policy. The industry is considered as a source of revenue by the government, and the direct effects of the pricing policies did not lead to any stabilizing of palm oil prices. Since there are no smallholders, there is less concern about the oil palm industry than about the rubber industry on the part of the government.

In summary, the pricing policies analysed in this study can be described as being outstandingly consistent over time. This is because the changes in the policies have been gradual, and only occasional modifications were made in order to maintain their effectiveness and to support the institutions and politics which have grown up around them. The incorporation of the objectives of the New Economic Policy as the underlying basis of all public sector policies has been the most recent modification of the pricing policies in the agricultural sector. In accordance with these NEP objectives, the government has attempted to use the increasing income from crude petroleum exports to raise the incomes of the small

⁶² The government insists that the rubber smallholder must have title to their holdings before they can qualify for the replanting grant. Not all smallholders could comply. This regulation has since been relaxed for those with very small holdings, who are mainly Malays.

⁶³ Most of the larger rubber smallholdings are owned by Chinese, while Malays predominate in owning the smaller holdings.

⁶⁴ The income from oil provided the funds for such equity purchases through open market operations. The nationalization or compulsory transfers of these agricultural companies to Malay ownership is thus avoided.

farmers either directly through subsidies or indirectly through reductions in the export tax. To this end, the policies are reflective of the cultural, political, and economic conditions existing in the country.

To the government, the agricultural sector and in particular the export crops, has been a consistent source of revenue for the development of the country. Although in recent years, the importance of export taxes from these crops 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 the rural areas for infrastructural development (roads, irrigation systems, health clinics, schools, community halls, mosques, etc.), rubber replanting grants, paddy price support, input subsidies for paddy and other crops, research facilities, extension services, and processing facilities.

It has been the tension between the political strength of the rural paddy farmers and the economic strength of the plantation and emerging industrial sectors that has resulted in this particular blend of policies. During this period the natural rubber sector was fairly heavily taxed, but the government also took a very active role in maintaining its competitiveness through the organization of a very effective research organization. Although this research effort was financed by the industry through the research cess, the government played a key role in seeing to it that this public good was supplied to the rubber producers. In a similar fashion, the replanting of new varieties of rubber trees and the diversification programme from rubber to oil palm was largely financed by the rubber industry but the programmes were organized and implemented by the government.

The stable (and high) rice price that has been the corner stone of government agricultural policy for this long period has also been a major factor in maintaining a high degree of political stability in the country. Although the rate of urbanization has been rapid, it has been a process of the educated youth from the rural areas moving to the cities to find better employment opportunities rather than rural poverty forcing landless labour to migrate

to the cities for survival.

It has also assisted in maintaining the more moderate and highly pragmatic Malay political party in power. This policy for rice, however, has had a direct economic cost to the country in terms of additional investment in infrastructure and by retaining some additional labour in rice production in the marginal paddy growing areas. At the same time, its yield has been large in terms of the political strength and stability gained by the government, which in turn has enabled it to implement the policy changes required to achieve rapid economic development in a multiracial country.

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