

3 *Malaysia*

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Since 1960 Malaysia has become a highly efficient producer of natural rubber, thanks to its agricultural and trade policies. The primary purpose of these policies has been to maintain political and economic balance. Consequently, Malaysia's leaders have concentrated on modifying agricultural pricing policies in degree (for example, by adjusting to fluctuating world prices) rather than in kind, and their policy goals have remained fairly constant. In particular, they have endeavored to keep the producer price of rice stable and thus maintain the real purchasing power of the country's politically powerful paddy farmers; help rubber and palm oil farmers improve productivity; set taxes on rubber and palm oil at levels that provide funds for public investment; maintain an economy with fairly low and uniform tariffs on imported consumer goods and with very low or no tariffs on imported inputs; and distribute significant amounts of the revenues obtained from exports of oil to the agricultural sector. The policies used to achieve these goals from 1960 to 1983, and their impact on Malaysian agriculture, are the subjects of this chapter.

Overview of the Economy

Malaysia consists of two land masses in Southeast Asia that together cover an area of 330,434 square kilometers. One of these lies on the southern end of the Malay Peninsula, and the other lies some 650 kilometers across the South China Sea on the northeastern part of the island of Borneo. Peninsular Malaysia comprises 11 states and a federal territory; the island region, which constitutes about 60 percent of Malaysia's total land area, comprises only two states, Sabah and Sarawak.

The population of Malaysia in 1983 was about 14.8 million (see Table 3-1). During the 1960s the population grew at a rate of about 3.0 percent per annum, but the rate fell to 2.6 percent during the 1970s. In 1980 the labor force totaled 5.3 million (or 39 percent of the pop-

Table 3-1. Selected Demographic Characteristics for Selected Years, 1960-83

Year	Total population (millions)	Urban population (percentage of total population)	Total labor force in agriculture (percentage)
1960	8.113	25.2	n.a.
1965	9.422	26.1	n.a.
1970	10.864	28.8	46.6
1975	12.248	32.0	42.4
1980	13.764	35.0	38.4
1983	14.802	n.a.	n.a.

n.a. Not available.

Source: Fourth Malaysia Plan 1981-85; Malaysia Department of Statistics.

ulation); about 2.0 million (or 38 percent of all labor) were employed in agriculture.

Almost 83 percent of the population lives in Peninsular Malaysia. The ethnic mix there—54 percent Malay, 35 percent Chinese, 10 percent Indian, and 1 percent other (Eurasians, Europeans, other Asians)—has remained relatively stable since 1970. The principal ethnic groups in Sabah and Sarawak are Kadazans, Ibans, Chinese, Muruts, Malays, and Melanus. Malaysia's ethnic composition and the distribution of the various ethnic groups have been prominent political issues, particularly since the racial riots in 1969.

In 1980 about 65 percent of the population lived in rural areas. Malays make up two-thirds of the rural population, Chinese about a quarter, and Indians and other races the rest. The Chinese have become the largest racial group in urban areas as a result of the forced resettlement of rural Chinese in 1952-54, during the communist insurgency (see Young, Bussink, and Hassan 1980, p. 15).

To even out the distribution of the three principal ethnic groups, the government has promoted the urbanization of Malays. Thus between 1970 and 1980 the urban Malay community increased 6.7 percent a year, in comparison with 3.7 percent for the Chinese community and 4.2 percent for the Indian community.

One of the most significant changes in the Malaysian economy since 1960 has been the move toward greater diversification of exports, which in the past were dominated by agricultural commodities, particularly rubber. Although rubber is still important, crude oil and petroleum products, along with manufactures, have become large contributors to exports since the late 1970s.

The principal imports are intermediate and capital goods, in addition to food. From time to time there have been a few quantitative

restrictions on imports of manufactured and industrial goods. Rice and cabbages are the only agricultural products under import restrictions. There have been no subsidies for imports or exports. Although import licenses are mandatory, they are used primarily for statistical purposes.

Another important change during the study period was a shift away from a laissez-faire, market-oriented economy toward greater intervention, as a result of the New Economic Policy (NEP) incorporated into the Second Malaysia Plan (1971-75). Fundamentally, the NEP was designed to prevent the recurrence of race riots, and therefore one of its principal objectives was to correct the economic imbalance between Malays and non-Malays. Accordingly, it encouraged more Malays to participate in commerce and industry to compensate for the perceived inroads the Chinese had made in the political sphere (Anand 1983, pp. 8-9). The second major objective of the plan was to "eradicate poverty among all races." These two objectives were to be achieved by 1990, and it was hoped that the association between race and economic function would eventually disappear. The imbalance in income distribution, employment, ownership, and control of wealth was to be corrected through a rapid expansion of the economy (Rüdner 1971, p. 41).

In implementing the new policy, however, the authorities have given more attention to rural Malay poverty than to urban Chinese poverty. Although nearly two-thirds of Malays were below the poverty-level household income of M\$180 per month in 1980 (in 1970 prices), 39 percent of the Indian community and 26 percent of the Chinese were also classified as poor (see Young, Bussink, and Hasan 1980, p. 61).¹ Consequently, the NEP has come to be considered a policy for the transfer of resources from the urban to the rural economy. In addition, non-Malays have begun to feel uneasy about the proposed restructuring, which they fear will greatly reduce their wealth and their ownership of corporate assets. Since Malay savings have been scarce, the government has established state-owned and state-controlled enterprises and financial institutions to acquire share capital in existing and new companies and industries, which will be held in trust for the Malays.

Also in accordance with the NEP, Malays are given preference when import licenses are issued. Importers with the necessary license can readily obtain letters of credit for their transactions from any commercial bank. Furthermore, there are no restrictions on the transfer of funds in and out of the country for legitimate business purposes, except that amounts of M\$1 million or more need prior approval of the central bank.

Between 1960 and 1983, real GNP climbed from a low of 3.1 percent per year to a high of 10.5 percent, for an average of 6.8 percent. In

monetary terms, real GNP increased from M\$11,837 million to M\$53,382 million (in 1980 prices), while per capita real GNP rose from M\$1,541 in 1960–64 to M\$3,560 in 1980–83, for an average growth rate of 4.0 percent a year (see Table 3-2). This growth was achieved without high rates of inflation, as indicated by the consumer price index (CPI), which rose only about 4 percent a year over the entire study period.

Real gross investment also grew at a fast pace, starting at 5.1 percent a year in 1960–70 and then jumping to 16.2 percent in the next decade, followed by a rate of 13.9 percent in 1980–83. Real gross investment as a share of real GNP increased from 13 percent in 1960–64 to 34 percent in 1980–83, for an average of about 22 percent over the entire period (Table 3-2). This growth was directly related to huge investments made during the 1970s to reduce poverty and restructure Malaysian society. Some of the growth in the early 1980s was also related to investment in the petroleum industry.

Gross savings in Malaysian national accounts, calculated as the sum of gross domestic capital formation and the balance on the current account, grew at an average rate of 9.4 percent a year in the 1960s, rose to 19.7 percent in the 1970s, and then dropped to –3.0 percent in 1980–83. As a share of real GNP, savings rose from an average of 12 percent in 1960–64 to 18 percent in 1965–69, 21 percent in 1970–74, and 28 percent in 1975–79, closing the period of study at 25 percent (Table 3-2).

The value of total imports, as a share of real GNP, declined from 43 percent in 1960–64 to 36 percent in 1965–69 but then climbed up to 48 percent by 1983. Total real imports followed a slightly different pattern, rising from 2 percent a year during the 1960s to 12 percent during the 1970s, but then dropping to 4 percent in 1980–83. The sharp rise in imports during the 1970s was due in part to capital needs in the crude oil industry and to the emergence of other industries dependent on imported inputs. The mix of imports also changed, with investment and intermediate goods replacing consumer goods as the dominant components.

The behavior of exports has also been somewhat uneven. Real exports grew at an annual rate of 3.1 percent in the 1960s and then shot up to 15 percent in the 1970s. By 1983, however, the rate had declined to –2 percent. The share of exports in real GNP fluctuated between 35 and 56 percent, averaging about 46 percent for the entire period.

The Importance of Agriculture

Although the value and volume of agricultural production have not declined since the beginning of the 1960s, the position of agriculture has changed. Thus far the change has been moderate, with agricul-

Table 3-2. Economic and Agricultural Indicators, 1960–83

Period	Per capita GNP (Malaysian ringgit)	Percentage of GNP				Agricultural output	Agricultural exports as percentage of agricultural output
		Gross savings	Gross investments	Total imports	Total exports		
1960–64	1,541	12	13	43	49	28	49
1965–69	1,767	18	16	36	42	24	49
1970–74	2,130	21	23	37	41	23	50
1975–79	2,818	28	26	38	49	20	85
1980–83	3,560	25	34	48	51	17	91
Average	2,313	21	22	40	46	22	64

Source: Jenkins and Lai (1989).

tural GDP as a proportion of GNP falling from 28 percent in the early 1960s to 17 percent in the early 1980s (see Table 3-2). Even though real agricultural imports rose by 22.2 percent a year in the 1970s—as a result of rising food imports, especially rice, wheat, meat, live cattle, and temperate fruits and vegetables—exports in the same period climbed to 25 percent a year. Agriculture is expected to contribute substantially to the national economy up to the end of the century.

The three crops chosen for this study—paddy rice, rubber, and palm oil—play a large role in Malaysian agriculture. Paddy is still the principal food crop, although per capita consumption declined from 135.1 kilograms in the early 1960s to 112.4 kilograms in the early 1980s. Rubber and palm oil are the main export crops. Palm oil is considered a nonfood export crop, although it is consumed as a vegetable oil in other countries. In recent years, however, Malaysians have begun to consume small quantities in cooking. If palm oil were considered a food commodity in Malaysian trade statistics, the country would be a net exporter of food. In 1981 the prices of rubber and palm fell and their share in GDP declined—rubber dropped to 5.5 percent after hitting 14.4 percent in 1974, while palm oil fell from 6.3 percent to 4.4 percent. The relative importance of export crops over food crops can be seen in the acreage devoted to the former. In 1983 the total cultivated area equaled 4,676,000 hectares; rubber was planted on 42.4 percent, oil palm on 26.8 percent, paddy on 14.3 percent, coconuts on 7.4 percent, cocoa on 4.9 percent, and other crops on 4.4 percent (Ministry of Agriculture 1985). The ratio of nonfood crops to food crops in Malaysia is approximately 1:0.13, compared with 1:3 for the Philippines and 1:16 for Thailand.

Exchange Rates

The average nominal exchange rate between 1960 and 1983 was M\$2.71 to the U.S. dollar (see Table 3-3). This rate remained fairly constant over the entire study period except for a slight fluctuation when the rate went down to M\$2.18 per U.S. dollar in 1979 and then up to M\$2.34 in 1983. The real exchange rate—which is calculated by adjusting the nominal exchange rate by the ratio of the trade-weighted wholesale price indices (WPIs) of Japan, the United Kingdom, and the United States to the Malaysian consumer price index—also remained quite stable. It started out at an average of M\$1.87 to the U.S. dollar in the early 1960s and then moved close to M\$2.00, where it remained until 1979. By 1983 it had moved to about M\$2.20 per U.S. dollar.

To estimate the real exchange rate in the absence of deficits or surpluses in the current account and in the absence of trade distortions, the equilibrium nominal exchange rate E^* is first estimated (see

Table 3-3. Budget Deficit and Exchange Rates, 1960–83

Period	Budget deficit		Nominal exchange rate (ringgit per U.S. dollar)	Trade-weighted real exchange rate (ringgit per U.S. dollar)	Equilibrium real exchange rate (ringgit per U.S. dollar)	Divergence of actual and equilibrium real exchange rates (percent)	Inflation rate (percent)
	As percentage of total budget	As percentage of GNP					
1960–64	11	2	3.05	1.87	1.91	-1.9	0.5
1965–69	23	6	3.06	2.09	2.10	-0.8	1.0
1970–74	25	7	2.70	2.01	2.06	-2.2	6.9
1975–79	26	8	2.37	2.07	2.08	-0.4	4.1
1980–83	37	17	2.27	2.17	2.30	-5.7	6.5
Average	24	8	2.71	2.04	2.08	-2.0	3.7

Source: Jenkins and Lai (1989).

the appendix to this volume for the E^* formula; see Jenkins and Lai 1989 for parameter values).

This equilibrium real exchange rate is obtained as follows. The equilibrium nominal exchange rate E^* is multiplied by the ratio of the trade-weighted WPI for Japan, the United Kingdom, and the United States to the Malaysian CPI, which has been adjusted to remove the effect of trade distortions by the following formula:

$$CPI^* = \alpha(E^*/E_0) P_t + (1 - \alpha) P_{nt}$$

where α is the share of the CPI made up of tradable goods, E_0 is the nominal exchange rate, P_t is the price index for the tradable component of the CPI, and P_{nt} is the price index for the nontradable component of the CPI.

The equilibrium real exchange rate varied somewhat more than the trade-weighted rate, going from M\$1.83 per U.S. dollar in 1960 to M\$2.32 in 1982 and averaging M\$2.09 over this period. The equilibrium real value of the ringgit (e^*) depreciated by 10 percent between the early 1960s and the late 1960s and then remained stable at about M\$2.10 per U.S. dollar until the early 1980s, when it depreciated to M\$2.30 per U.S. dollar. Thus, e^* depreciated by 19.7 percentage points over the entire study period.

Until 1979 the trade-weighted and the equilibrium real exchange rate differed by no more than -1.9 percent (see Table 3-3). By 1983, however, the divergence was -5.7 percent. The absence of any significant degree of exchange rate disequilibrium was a result of stable macroeconomic policies and the low degree of trade intervention.

Agricultural Pricing Policies

Since the 1950s, intervention in agricultural prices has remained at a fairly low level in Malaysia, although this basic policy has been modified from time to time. Two of Malaysia's economic objectives have been to raise the standard of living of Malay paddy farmers and to achieve self-sufficiency in rice production. In the case of rubber and oil palm, the emphasis has been on stabilizing the price of the products at the farmgate while making sure that the government has a share in any surplus, particularly when world prices are high.

Rubber

One reason for the lack of intervention in rubber—for example, through a market board, which was a popular instrument in several British colonies in Africa—was the strong opposition of British and

local investors (see Edwards 1970, p. 55). For its part, the Malaysian government was reluctant to interfere because the rubber industry was contributing a great deal to the economy. Although the world price of rubber fluctuated considerably during the 1950s and 1960s, it remained high, and no price support mechanism was deemed necessary. 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.

RUBBER EXPORT TAX. A rubber export tax was introduced in 1907, just after rubber became an important crop, in order to generate revenues for public expenditures. Although the tax has undergone many transformations—from a flat rate tax to a variable (ad valorem) levy and then a specific rate based on the export price—it has remained an important source of revenue for the government.

The current export tax on rubber evolved during the 1950s and has remained in place since then (for details, see Jenkins and Lai 1989). The tax is paid at the point of export by the exporters. The price that the exporter pays to the supplier is net of the export tax (and a tax on research and replanting) and of his own marketing margin. This net price is reflected all the way down the marketing chain to the producer, with each link in the chain deducting its own marketing margin from the price received.

The base for the export tax is the weekly posted price of rubber, which is calculated from the f.o.b. price. Before October 1977 the posted price was a two-week moving average of the f.o.b. price for top-grade rubber quoted up to the previous week. The export tax fluctuated with the world price, but there was a time lag, which exporters took advantage of for speculative purposes. To discourage such activity, the government began basing the posted price on a four-week moving average. This reduced the week-to-week movements of the posted price and the gains that could be realized from accelerating or holding back shipments of rubber (Lim 1975, p. 30).

Although Malaysia is the world's largest producer and exporter of natural rubber (in 1983 it supplied 13 percent of world output of natural and synthetic rubber), world demand is highly elastic because of the competition of synthetic substitutes. Since Malaysia is only one of several suppliers, the export duty can only be shifted backward to the relatively immobile factors of production, land, and labor. The burden on labor is reduced somewhat by the alternative opportunities available to rubber plantation workers, who also have a strong voice in labor matters through the National Union of Plantation Workers (NUPW). As a group, however, these workers have had a long attachment to the plantations, and they lack opportunities for training in

other types of work. The situation is now changing, owing to a steady flow of labor (particularly young workers) from the rural to urban areas. This migration has created a shortage of workers and has put pressure on the rubber plantations to increase wages and improve working conditions.

Malaysian rubber plantations can be divided into smallholdings, which cover less than 100 acres (40 hectares), and estates, which cover 100 acres or more. Although it need not be in contiguous parcels, an estate must be under one owner or manager. Smallholders find it difficult to shift part of the export tax burden to hired labor simply because they do not employ wage labor outside the household, and if they do, wage payments are usually set by employment in other fields. In the short run, increases in the export tax merely increase the burden on the owners of land, and on labor, because it is not easy to shift resources in and out of rubber production. In the longer run, there would be some impact on the price of land, although the fact that oil palms can be planted on land used for rubber will eventually put a floor on the price of land. Hence, the export tax on rubber will stimulate the conversion of rubber estates into oil palm estates.

The rubber export tax does not have the same impact on estates and smallholdings. Although smallholders are not very responsive to short-term price movements, they can vary tree-tapping frequency more easily than the estates can. Furthermore, smallholders have traditionally supplemented family income through off-farm work and thus have greater flexibility than the estates in applying labor to rubber production.

RESEARCH, REPLANTING, AND GOVERNMENT POLICY. Soon after rubber became an important crop in Malaysia, the estate owners pushed for more research. They were particularly impressed by the success achieved in plant breeding in the Dutch East Indies (Indonesia), which had led to higher productivity. They also feared that their rubber crops might be seriously damaged by pests and disease, as their coffee and coconut crops had been earlier. On the advice of the Rubber Growers' Association of Malaysia, the government in 1925 established the Rubber Research Institute of Malaysia (RRIM) and placed a special tax on the sale of rubber to fund the institute. The government recognized that the private sector would have difficulty sustaining both rubber research and replanting activities. Thus, in addition to creating the special tax on rubber, and subsequently on palm oil, the government administered the research and financial arrangements for replanting, although in both cases the industry played a leading role in determining what was to be done. The research tax is levied according to the volume of rubber exported, which in 1983 amounted to 1.563 million tonnes. The rate, which has been amended many

times since the 1920s, began at 0.025 sen per pound and is now 1.75 sen per pound. In 1983 the tax generated M\$60.176 million for research on rubber.

The research tax is administered by the Malaysian Rubber Research and Development Board (MRRDB), which coordinates and allocates funds for the work of the RRIM and a research unit in England. This work is complemented by that of research units operated and funded by the major plantation agencies in Malaysia. The findings of these private research units are disseminated at the discretion of the agencies, whereas the results of RRIM projects are freely available to the entire industry. Owing to the technological advances resulting from these efforts, the natural rubber industry continues to attract investment, even though the relative price of rubber has fallen since the early 1960s.

RUBBER REPLANTING TAX. The rubber industry in Malaysia recovered rapidly from the ravages of World War II, and by 1948 production was some 150,000 tonnes above that of 1940 (Barlow 1978, p. 76). Output was bound to drop, however, because most estates and smallholdings had low-yielding and aging trees. Thus, by 1954 nearly two-thirds of Malaysia's rubber trees had exceeded their economic life. The annual replanting rate among smallholders between 1947 and 1952 was a mere 0.2 percent; it was only 15 percent among the estates.

In 1951 the government introduced a tax to build up funds for replanting. The tax was levied on export volume 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 (this rate is still used). In actuality the tax was collected only from smallholders, since the tax collected from the estates was refunded unconditionally until 1973 (for more details, see Jenkins and Lai 1989).

The proceeds from the tax were paid into a so-called Fund B and were used in conjunction with allocations of general revenues to finance replanting grants. Fund A was created for the estates, which until 1967 also received financial assistance from general revenues for replanting up to a maximum of 21 percent of planted acreage. Thus, by 1973 about 91 percent of the estates planted in 1946 had been replanted with high-yielding clonal material and about 67 percent of the smallholdings had been rejuvenated. The industry is now undergoing another round of replanting (see Barlow 1978, p. 86).

Palm Oil

The area planted with oil palms in 1983 totaled 1,253,000 hectares, up from 54,630 hectares in 1960 and 201,000 hectares in 1970. Part of

this increase was due to the conversion of rubber estates to oil palm and to plantings on newly cleared jungle land.

PALM OIL EXPORT TAX. Palm oil has been exported from Malaysia since the 1920s, but for many years commercial interest in the crop was only moderate. Then in 1960 the private sector began to recognize the need to diversify the agricultural sector and saw oil palm as a promising alternative to rubber. The government encouraged this move by planting the new crop extensively in new settlements developed from jungle land. During the late 1950s and early 1960s the shift to oil palm also received impetus from the declining price of rubber. In contrast, the current and prospective price of palm oil was high. Moreover, the tax burden was negligible compared with that on the rubber industry. The tax on oil palm was calculated to be 4 to 8 percent of gross revenue per hectare, compared with 17 to 24 percent for rubber (Lim 1979, p. 22, table 6). Another attractive feature of oil palm was that the trees take only four years to mature after field planting (whereas rubber trees take six to seven years), and they are quite resistant to indigenous pests and diseases.

To take advantage of the prevailing prices for palm oil, the government upped its export tax from the flat rate of 5 percent *ad valorem*. In 1960 the tax on exports of palm oil was raised to 7.5 percent. In 1972 the tax was converted into a graduated tax designed to tap into the excess profits of the industry. It progressed at the rate of 2.5 percent for every M\$49.20 per tonne increase in the f.o.b. price of palm oil above a threshold price of M\$344.37 per tonne up to a price of M\$688.75 per tonne. At that level, the tax was 30 percent *ad valorem*.

The tax on exports of palm oil is based on a monthly published price calculated as a moving average of the f.o.b. price during the preceding four weeks. The impact is shifted backward to the producers, as is also the case for rubber, since the commodity is traded in a perfectly competitive market. Although some of the effect may be shifted to land that is particularly suited to oil palm, other factors of production are unlikely to be affected, least of all the workers on oil palm estates. Palm oil production is less labor-intensive than rubber production, and most workers have alternative employment opportunities.

PALM OIL RESEARCH TAX. Research has been instrumental in identifying the economic potential of oil palm. The level of support that Malaysia's private sector—notably the industry itself—provides for research is unusual in a developing country. Much of the research in palm oil prior to 1969 was carried out by the leading plantation agencies at their own research stations. Although the results of such efforts

were proprietary, much of the information was released in scientific papers at a number of conferences held in Malaysia during the 1960s. Government-supported research was conducted by the Department of Agriculture and was mainly concerned with the development and testing of new varieties. In 1969, however, responsibility for the government's oil palm research was handed over to the Malaysian Agricultural Research and Development Institute (MARDI), which is funded by a research tax.

Because oil palm was only one of many crops investigated by MARDI, producers argued that an agency specializing in oil palm research, modeled along the lines of the Rubber Research Institute, was needed. In response, the government in 1979 set up the Palm Oil Research Institute of Malaysia (PORIM), which was not only to conduct research of its own but also to coordinate oil palm research throughout Malaysia. Private research stations also do some work for PORIM. Its research program is drawn up by a joint committee of industrial and government representatives and covers all aspects of production research—including processing, storage, delivery systems, marketing, consumption, and end-uses in both the food and nonfood industries. One area of research that has been neglected is the treatment of the effluent from Malaysia's palm oil mills, which has now become a serious pollutant. The effluent is difficult to treat prior to discharge.

In 1980 the research tax on oil palm was raised from M\$1.00 to M\$4.00 per tonne, irrespective of price. The fund gives PORIM access to more than M\$12 million annually for its research. Recurrent costs, including the salaries of the research staff and operation of the research facilities, are covered by a budgetary allocation.

PALM OIL REGULATORY POLICY. In 1980 the government established the Palm Oil Registration and Licensing Authority (PORLA) and put it in charge of regulating, coordinating, and promoting all aspects of palm oil production. These activities are financed by a tax of M\$1.75 per tonne of palm oil. Representatives of the industry and the government sit on PORLA's board of directors. Those involved in the industry are required to obtain a license from PORLA before beginning their business. The licenses are used mainly for statistical purposes.

One of PORLA's principal functions is to oversee the quality of palm oil exported from Malaysia. The authority has the power to enforce strict measures against anyone whose practices do not meet contract specifications or established standards. Another of its functions is to develop new markets for palm oil and to promote the commodity in order to maintain Malaysia's share of the world market for vegetable oils. PORLA also acts as the mediator in contractual disputes between shippers and consignees.

Paddy Rice

As already mentioned, rice is the main food crop in Malaysia. Cultivation systems range from traditional methods to modern forms of plantation agriculture. Price intervention dates back to World War II.

PADDY PRICE SUPPORT POLICY. The paddy price support policy in Malaysia came about because of rice shortages during the Japanese occupation (1941–45) and immediately after the war. At that time, Malaysia was wholly dependent on rice imports, so that the disruption in supply caused by the war and then by a shortfall in Burma was devastating. The British colonial government therefore declared rice to be a strategic good and made the attainment of self-sufficiency in rice a policy goal. To promote domestic rice production, the government in 1949 introduced a guaranteed minimum price (GMP). The GMP was linked to the world market price and was fixed one season at a time, so that the difference between the GMP and the domestic market price would not become too distorted and force the government to buy all the paddy produced in the country. The government pledged to buy all paddy at the prevailing minimum price.

The GMP was set at M\$265 per tonne of paddy in 1949 and was increased to M\$381 per tonne in 1973 because the world price had risen steeply. To complement the GMP (and in effect increase its level), the government also introduced a price support scheme sponsored by the Lembaga Padi dan Beras Negara (LPN, or National Paddy and Rice Board). There have been several increases in the support price since 1973, the most recent being a cash subsidy of M\$168 per tonne announced in 1980, which raised the support price to M\$598 per tonne. Initially, the cash subsidy amounted to only M\$33 per tonne of paddy sold. However, Malaysia's rice farmers organized demonstrations to protest the manner in which the subsidy was paid—namely, through coupons cashable only at post offices and at the national savings bank for the sole purpose of opening savings accounts—and the subsidy was withdrawn in 1980. The subsidy scheme introduced the next season offered a generous M\$168 for each tonne of paddy sold.

The government buys paddy at the support price and mills it into rice. It also buys from private rice millers, provided they are able to certify that they paid the support price. The rice is stored in the government stockpile. Originally intended to be a strategic source to safeguard against shortages, it now functions more as a buffer stock that helps to stabilize prices. (Note, however, that rice cannot be stored for more than six months without a serious loss in quality.)

Until 1974 the minimum price mechanism consisted of an import-mixing regulation and import licensing that required the importer to

purchase a certain proportion of rice from the government stockpile for every unit of rice imported. This made it possible to turn over the stockpile quickly and allowed the government to recover the cost of maintaining it. Part of the revenue from domestic rice sold to importers is used to cover storage and administrative costs. By and large, importers have found the price of domestic rice to be much higher than that of imported rice, even though the quality of stockpile rice is lower. Nevertheless, rice importers are able to recoup this price differential on locally grown rice from the profits made on the sale to domestic consumers of the high-quality imported rice, which commands a premium price in the Malaysian market.

The government began to import rice on a government-to-government basis through the LPN in 1974, when the high world price eliminated from the market those importers who could not make the cash deposits demanded by exporters. Thereafter, the agency was given a monopoly, and rice dealers were required to buy the imported rice from the LPN instead of importing it themselves. The producer price is now supported entirely by the government, which makes up losses through general revenue allocations. In 1975 and 1977 major irrigation programs became operational in Kedah and Kelantan and helped to increase the domestic output of rice. Imports were reduced, and the cost of maintaining the producer price rose in proportion to the degree of self-sufficiency achieved.

Under the GMP scheme, farmers are guaranteed a single price for good, clean, dry paddy delivered to the mill. Deductions are made for high moisture content (in excess of 14 percent), the presence of dirt and foreign matter, and immature grains. Because the policy emphasizes quantity, farmers are encouraged to produce low-quality varieties, which most consumers do not want, and to sell the best-quality paddy to private millers for premium prices. A price differential was introduced into the GMP in 1964 to persuade farmers to double-crop their paddy land and to plant recommended varieties, but it was withdrawn in 1974 because double-cropping was being adopted in irrigated areas as well.

Also in 1974, the LPN decided to try a grading system based on grain length, which turned out to be somewhat more successful. Producers of long-grain rice are paid a premium of M\$33 per tonne of paddy more than producers of medium-grain rice and M\$66 more than producers of short-grain varieties. Although the market favors long-grain rice, there is a demand for lower-quality rice. The high end of the market is then satisfied by imported rice, and the profit from selling this rice at a premium is used to support the paddy price policy.

This policy has reduced some of the risks of paddy growing in Malaysia as it guarantees a minimum price and hence stabilizes incomes. A cash subsidy introduced in July 1980 also raised paddy

farmers' incomes, but it had two unintended side effects. First, it made paddy farming operations more profitable, with the result that large farmers began buying up small farms, displacing both owner operators and tenants and increasing the number of landless laborers (Tamin 1986, p. 22). Second, because the amount of the cash subsidy is based on the amount of paddy sold, the marketable surplus has increased since 1982. The rational paddy farmer sells all his paddy to obtain the cash subsidy and then buys his rice from the market. Before 1980, rice farmers kept up to 60 percent of their output for their own consumption (Rudner 1971, p. 86).

With farmers selling all their output to the government for the cash subsidy, many small rice mills in rural areas have closed for lack of business. Meanwhile, the LPN has had to expand its facilities to handle the larger volume of paddy being marketed by farmers. By 1980 the LPN was operating 28 integrated rice-milling complexes and was handling 33 percent of the paddy produced locally. Private rice mills processed the rest.

PADDY INPUT SUBSIDY POLICY. The subsidy for paddy inputs evolved from Department of Agriculture fertilizer demonstrations in the early 1950s. The purpose of these demonstrations was to inform farmers of the recommended rates of fertilizer use and the benefits of urea and other chemical fertilizers. The favorable response of the paddy farmers led the Department of Agriculture to launch a fertilizer subsidy scheme in 1955 in a few selected states in which the cost of the fertilizers was reimbursed by the federal government. In 1961 the scheme was expanded to all 10 states of Peninsular Malaysia.

In the first year, the subsidy amounted to 50 percent of the cost. It then declined by 10 percentage points annually until 1965, when it reached 10 percent. However, the quantities of fertilizer bought by paddy farmers increased—from 3,882 tonnes in 1961 to 12,682 tonnes in 1965—as the farmers came to recognize the benefits of using such inputs. In 1966 a uniform subsidy of 30 percent was announced and was extended to 1970. A budgetary allocation of M\$10 million was approved to provide fertilizer for about 89,000 hectares of paddy land. In practice, however, only about a third of the area received subsidized fertilizer in any one year, and the farmers received only enough fertilizer for 2 hectares. These shortfalls occurred because of a great increase in demand for subsidized fertilizer to an estimated 25,400 tonnes per year.

In 1971 the fertilizer subsidy was replaced by a credit program in irrigated areas, since paddy farmers had by then become familiar with the use of urea, the principal nitrogenous fertilizer used in paddy growing, and other chemical fertilizers. The fertilizer subsidy was continued in nonirrigated areas. The success of the subsidy is evident

from the willingness of paddy farmers to purchase their own fertilizer after the subsidy was terminated (Lee 1978, p. 250). Consequently, a market for urea and other chemical fertilizers was established in all paddy areas, and the dealers and agents of the fertilizer firms found themselves supplementing the work of the government's extension agents.

In 1973 the price of urea in the world market rose by 50 percent, and in 1974 it rose by 233 percent. In Malaysia the price increased by 278 percent between 1972 and 1974. To help paddy farmers cope with this increase, the government introduced a price support scheme in 1974. It was believed that if farmers were forced to stop using urea because the price was too high, domestic output would decline, farmers' incomes would be reduced, and the country would need to import more rice.

Under the scheme, farmers paid a nominal price of M\$10 for a 20-kilogram bag of urea, and any difference between this nominal price and the market price was subsidized (the difference ranged from M\$10.58 to M\$14.58 per bag). The scheme was to be terminated automatically if the price of urea fell below the threshold price, as it did in 1976. Despite this support, the use of urea declined in 1975 and 1976. Between 1972 and 1976, Malaysia's farmers purchased 59,365 tonnes of subsidized urea at a cost of about M\$61 million. But the estimated crop loss at the farm level during this period was M\$48.5 million, and rice valued at M\$59.6 million had to be imported to make up the loss. Thus it appears that the subsidy failed to stop rice production from declining.

In 1980 a different fertilizer subsidy scheme was introduced. This scheme provides a 100 percent subsidy for the fertilizer required by the average paddy farm in Malaysia (2.4 hectares or less). This size limit was imposed to ensure that only small paddy farmers would benefit, but many larger farms were then subdivided into units well within the threshold size in order to benefit from the scheme (Tamin 1986, p. 22). Farm records are often incomplete, but it is not unusual for a paddy farm to have multiple owners under the Islamic law of inheritance.

Subsidized fertilizer is distributed to paddy farmers through rural organizations. Each organization is paid a commission based on the quantity of fertilizer handled, and most of the organizations (for instance, the farmers' associations participating in the Muda irrigation scheme in Kedah) have benefited financially under the system. However, the network of commercial fertilizer agents disappeared after the subsidy was put into effect, and Malaysian farmers now have to depend solely on government extension workers.

Two criticisms have been leveled against the current subsidy program. First, it is argued that farmers' incomes could have been en-

hanced by a higher minimum price or through financial assistance for other costs, such as land preparation for poor farmers who do not own tractors. The generalized fertilizer subsidy, it is held, is an inefficient means of transferring income to poor paddy farmers. A second criticism is that the Department of Agriculture has too easily assumed that its recommended fertilizer rates are appropriate for given areas and soil types. Despite evidence to the contrary provided by farmers, the department has not examined the economics of fertilizer use for alternative relative prices of fertilizer and paddy. Farmers generally apply only the amount of fertilizer that will optimize their income. Furthermore, the Department of Agriculture has not considered changing the recommended level of subsidized fertilizer, even when the price of paddy has changed.

INFRASTRUCTURE TO SUPPORT PADDY PRODUCTION. The new high-yielding varieties of paddy have greatly improved the prospects for self-sufficiency. Because these varieties need regular water supplies, it was decided in the early 1960s to increase expenditures on drainage and irrigation for paddy production to 26 percent of all infrastructure investment, a sharp rise from the 17 percent of the 1956–60 period (Tan 1987, p. 7). The amount allocated for these purposes fell to 21 percent in the First Malaysia Plan (1965–70), and in the subsequent plans for 1971–75, 1976–80, and 1981–85 the proportion going to drainage and irrigation was reduced to 16, 17, and 18 percent, respectively. Because suitable land for further irrigation schemes is in short supply, production under the Fifth Malaysia Plan (1986–90) will be concentrated in the existing paddy-growing areas (Tan 1987, p. 33), and efforts to achieve rice self-sufficiency will be relaxed. The proportion of expenditures allocated to drainage and irrigation has fallen to about 3 percent.

Effects of Pricing Policies

Malaysian agricultural and trade policies have been remarkably consistent since 1960. They have protected food production and helped to develop the nonagricultural sector. But these policies, along with certain taxes, have discriminated against the country's best export crops—rubber and oil palm. This conclusion is supported by data on the impact of intervention or relative prices, production, consumption, foreign exchange, the budget, transfers of resources, and income distribution.

Relative Prices

The relative prices of rubber and palm oil are the ratio of their producer prices (their f.o.b. price less marketing and transport costs and

taxes) to the nonagricultural price index (P_{NA}). Between 1960 and 1983 there was a downward trend in the relative prices of estate and smallholder rubber owing to the competition from synthetic rubber as well as natural rubber from other countries, notably Indonesia. (For the indices used to calculate P_{NA} , see Jenkins and Lai 1989.) The relative producer price during 1980–83 was 60 percent of that during 1960–64. In contrast, the relative price of palm oil showed no systematic pattern, fluctuating between 8.8 and 11.5 and averaging 9.8 over the study period.

The producer price that was used to calculate the relative price of paddy was the guaranteed minimum, or support, price at the farm level. Since 1960 there has been an upward trend of about 25 percent in the relative price of paddy. The increases were most pronounced in 1970–74, when the price moved up 10.1 percent, and in 1975–79, when the price rose 14.8 percent.

Nominal Protection for Crops

Pricing policies in Malaysia have had a direct effect on incentives to invest in the agricultural sector, as can be seen in the nominal protection rates for rubber, palm oil, and paddy. These rates were calculated by comparing border prices relative to the nonagricultural price index with actual prices relative to the same nonagricultural price index. For rubber and palm oil, border prices are the f.o.b. prices less marketing and transport costs. For imported rice, the border price is its c.i.f. price less the costs of milling, drying, and transport, with conversion to paddy at the farm level calculated at 65 percent. As shown in Table 3-4, these rates were negative for rubber and oil palm in each five-year period of the study and therefore suggest that Malaysia's pricing policies discriminated against these crops.

Table 3-4. Nominal Protection Rates, 1960–83

Period	NPR				NPR ₁
	Estate rubber	Smallholder rubber	Palm oil	Paddy	
1960–64	–8	–15	–8	20	–9
1965–69	–7	–15	–8	–1	–9
1970–74	–9	–19	–12	4	–10
1975–79	–23	–25	–16	39	–4
1980–83	–19	–20	–15	76	–10
Average	–13	–19	–10	26	–8

Source: Jenkins and Lai (1989).

The direct nominal protection rate for estate rubber averaged -1.1 percent between 1960 and 1983, ranging from -0.07 percent in the early 1960s to -0.23 percent in the early 1970s. The rate was higher for rubber produced by smallholders (on average, -19 percent) because agricultural policy was biased against this group. Until 1983 the export tax was based on the top grade of rubber, which smallholders were seldom able to produce. In addition, as already mentioned, they had to pay the replanting tax instituted in 1951, whereas the estates had the tax rebated until 1975. The direct nominal rate of protection for palm oil production was also negative, averaging about -10 percent between 1960 and 1980.

In contrast, the direct nominal rate of protection for paddy was positive—except in 1967–69 and 1973–75, when the world price of rice was high—and averaged 26 percent over the 1960–83 period. Abnormally low rice prices for imported rice pushed the nominal protection rate to 160 percent in 1983.

The impact on agricultural incentives of indirect intervention (industrial protection and exchange rate policies) is measured by NPR_i , the indirect nominal protection rate (defined in the appendix), and is shown in Table 3-4.

Indirect intervention, which affects all tradable agricultural products equally, had a negative impact, as can be seen from the negative protection rate (-0.08) for the study period. Two factors account for this negative rate. First, the (low) degree of overvaluation of the currency in Malaysia has a greater impact on the agricultural sector, which is almost entirely tradable, than on the nonagricultural sector, which is only partly tradable. Second, the tariffs on imported goods in the nonagricultural sector made nonagricultural investments relatively more attractive than they would otherwise have been.

Total intervention, which includes the impact of both direct and indirect policies, is shown in Table 3-5. Total nominal protection rates averaged -20 percent for rubber estates and -25 percent for rubber

smallholders from 1960 to 1983. In both cases the negative rate of protection increased somewhat over time, as indicated by the rates for selected years in Table 3-5. In the case of palm oil, however, there was no noticeable trend in the negative protection rate, which averaged -17 percent for the period.

In contrast, paddy production was highly protected by total intervention (because NPR_D dominated NPR_i), except during the seven years of high rice prices, as noted earlier. Total nominal protection averaged about 15 percent between 1960 and 1983, but in recent years has risen to levels in excess of 100 percent of the c.i.f. price of imported rice. The effective protection rates were found to be similar to the nominal protection rates both in sign and magnitude.

Production and Consumption

In response to lower net prices, rubber and palm oil producers have been planting smaller acreages, particularly in the case of rubber, which has been more heavily taxed than palm oil and competes with it for land. Meanwhile, the price support given to paddy has encouraged farmers to grow more paddy and less of other crops. Consequently, fewer workers are leaving rural areas, and the abandonment of unirrigated paddy has slowed down.

To determine how the supply of rubber responds to changes in pricing policies, it is necessary to consider how price changes affect tapping frequencies and fertilizer practices (which in turn affect the short-run response in output) and price expectations (which affect decisions concerning replanting and new planting). Given that rubber and oil palm are alternative crops for the same land and are often grown by the same producers, a higher price for palm oil will result in less replanting and new planting of rubber, and vice versa. Hence, long-run supplies of rubber and palm oil will be affected by the output price of both crops.

The change in the quantity supplied due to changes in the prices of rubber and palm oil, relative to the nonagricultural 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. The long-run elasticities of supply reflect the lagged response of output due to the effect that higher prices have on decisions related to replanting and expansion of acreage. Cross-price elasticities will also influence the long-run production response through their impact on decisions regarding replanting and acreage expansion. The following formula was used

Table 3-5. Total Nominal Protection, 1960–83

Period	Estate rubber	Smallholder rubber	Palm oil	Paddy
1960–64	-17	-23	-16	9
1965–69	-15	-23	-16	-10
1970–74	-18	-27	-20	-5
1975–79	-27	-28	-19	33
1980–83	-27	-28	-14	59
Average	-20	-25	-17	15

Source: Jenkins and Lai (1989).

to describe the change in the supply of rubber arising from a series of price changes in both rubber and palm oil:

$$(3-1) \quad dQ_t^R = \left(\sum_{i=0}^t Q_t^R \cdot E_{Si}^{RR} \cdot dP_i^R / P_i^R \right) + \left(\sum_{i=0}^{t-k} Q_t^R \cdot E_{Li}^{RR} \cdot dP_i^R / P_i^R \right) + \left(\sum_{i=0}^{t-k} Q_t^R \cdot E_{Li}^{RO} \cdot dP_i^O / P_i^O \right)$$

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 price changes; E_{Si}^{RR} is the elasticity of the supply of rubber 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 nonagricultural goods) that has occurred in period i ; E_{Li}^{RR} is the long-run elasticity of supply of rubber 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 nonagricultural goods) that has occurred in period i ; and 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 as

$$(3-2) \quad dQ_t^O = \left(\sum_{i=0}^t Q_t^O \cdot E_{Si}^{OO} \cdot dP_i^O / P_i^O \right) + \left(\sum_{i=0}^{t-k} Q_t^O \cdot E_{Li}^{OO} \cdot dP_i^O / P_i^O \right) + \left(\sum_{i=0}^{t-k} Q_t^O \cdot E_{Li}^{OR} \cdot dP_i^R / P_i^R \right)$$

If one wants to determine the immediate impact of a change in pricing policy, only the short-run elasticities are relevant, and only for the periods in which response is to be measured.

It is likely that the supply of paddy will respond more quickly to a price change than the supply of rubber or palm oil. Paddy can be planted and harvested within six months, and two crops can be grown in one year if sufficient water is available. In addition, paddy does not compete for the same land as rubber or oil palm. The relationship between changes in paddy production, dQ_t^P , and the prices of paddy and other crops can be expressed as follows:

$$(3-3) \quad dQ_t^P = \sum_{i=0}^t \left[\left(Q_t^P \cdot E_{Pi}^{PP} \cdot dP_i^P / P_i^P \right) + \left(\sum_m Q_t^P \cdot E_{Pi}^{Pm} \cdot dP_i^m / P_i^m \right) \right]$$

where E_{Pi}^{PP} is the elasticity of supply of paddy with respect to the price

of paddy (relative to the price of nonagricultural goods) in period i ; Q_t^P is the quantity of paddy produced in period t in the absence of any change in price policy; dP_i^P / P_i^P is the proportional change in the price of paddy in year i ; E_{Pi}^{Pm} is the elasticity of supply of paddy with respect to 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 .

The elasticity of supply for paddy was assumed to be 0.2 in the year of the price change, 0.3 in the following year, and fully adjusted at 0.4 by the third year. This figure is based on studies by Arromdee (1969), Squire and Barnum (1976), Sahathavan (1974), and Haughton (1983), all of which imply that despite the price and input incentives provided, the supply response of paddy is relatively insignificant.

Other studies have indicated that the short-run elasticity of supply of rubber is quite low. However, the estimated elasticity for smallholders is larger than that for estates because it is easier for the former to allocate their time between tapping rubber and other activities than for the latter, which have permanent work crews. In this study, 0.3 is assumed to be the short-run elasticity for rubber. Because it takes rubber trees six years to become productive, there is a lag between a change in pricing policies and increased production. Hence, the long-run supply elasticity for rubber was estimated to be 0.8, based on assumptions for short-run elasticity. A number of other studies have also reported a low estimate (see Chan 1962; Cheong 1962; Chow 1965; Behrman 1975; Pee 1977).

The cross-price elasticity of the supply of rubber with respect to the price of palm oil is negative because an increase in the price of palm oil will provide an incentive to replace rubber with oil palm. If the price of palm oil falls, however, relatively more new land will be planted in rubber. The same own- and cross-price elasticities of supply were used for oil palm, since there are no empirical studies on these elasticities.

Output response to changes in trade policies is measured in two ways. First, the impact on prices and the values of elasticity parameters are calculated. The 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 nonagricultural prices and the prices of other goods are estimated.

Table 3-6 shows the short-run direct and total effects of pricing policies on output of rubber, palm oil, and paddy. The response is defined as the response occurring in the year following that in which the policy change occurred. Between 1960 and 1974 the short-run

Table 3-6. Short-run Effect of Direct and Total Intervention on Output of Estate and Smallholder Rubber, Palm Oil, and Paddy

Period	Direct effect			Total effect		
	Estate rubber	Smallholder rubber	Palm oil	Estate rubber	Smallholder rubber	Palm oil
1960-64	-1	-3	-1	-2	-4	-2
1965-69	-1	-4	-1	-2	-5	-2
1970-74	-1	-5	-2	-3	-7	-3
1975-79	-4	-7	-3	-5	-8	-3
1980-83	-3	-6	-1	-5	-8	-2
Average	-2	-5	-2	-3	-7	-3

Source: Jenkins and Lai (1989).

impact on estate rubber was a 1 percent reduction in output. When the export tax on rubber was raised in 1974, the impact increased to a 4 percent reduction, which then declined to 3 percent when the tax rates were reduced in 1981. Between 1960 and 1983 short-run direct intervention reduced estate rubber production by an average 2 percent annually.

Because short-run elasticity of supply is larger for smallholders, it is estimated that the direct effects of pricing policies reduced the output of this group by an average 5 percent annually over the study period. During the years of high taxation (1975-79), smallholder rubber production declined by up to 7 percent a year. This trend moderated to 6 percent a year after tax policy was changed in 1981. The short-run direct impact on output of palm oil was only a 1 percent reduction in annual output between 1960 and 1982. When the export tax on this commodity was raised in 1974, the short-run impact rose to 3 percent. When tax policy was amended in 1981, the short-run impact dropped to 1 percent again. In the case of paddy production, removal of the direct effects of pricing policies would have had a greater short-run impact. The short-run impact amounted to 4 percent in 1960-64, -1 percent in 1968-69, and 7-14 percent in 1975-83. In general, the short-run direct impact of the policies was somewhat greater (in absolute value) when the world prices of rubber and palm oil were high (and hence the export tax was large), while for paddy the impact was greater when world prices were low.

The short-run total effect of pricing policies was a 3 percent annual decline in average production of both estate rubber and palm oil, and a 7 percent decline in production of smallholder rubber. Because the direct and indirect effects on paddy production are of the opposite sign, the short-run total effects are 3-4 percentage points per year less than the short-run direct effects.

Table 3-7 shows the cumulative direct and total effects of intervention on all three crops. The cumulative direct impact between 1960 and 1983 amounted to a 9 percent reduction for estate rubber and a 16 percent reduction for rubber smallholders. In the case of cumulative total effects, output declined by 13 percent on the estates and by 20 percent on the smallholdings. These findings strongly suggest that the rubber export tax in Malaysia has been biased against smallholders. During the same period, palm oil production declined by an average 7 and 11 percent, respectively, as a result of cumulative direct and total effects of intervention. In the case of paddy, the indirect effects of changes in the exchange rate largely offset the effects of direct intervention. Thus, the output of paddy increased by an annual average of 6 percent over the study period as a consequence of direct intervention, but increased by only 2 percent when the cumulative effects of total intervention were considered.

Table 3-7. Cumulative Effect of Direct and Total Intervention on Output of Estate and Smallholder Rubber, Palm Oil, and Paddy

Period	Direct effect				Total effect		
	Estate rubber	Smallholder rubber	Palm oil	Paddy	Estate rubber	Smallholder rubber	Paddy
1960-64	-9	-15	-4	8	-12	-18	-8
1965-69	-8	-15	-5	1	-12	-18	-8
1970-74	-6	-16	-7	1	-11	-20	-12
1975-79	-8	-18	-9	7	-13	-22	-14
1980-83	-12	-18	-11	16	-17	-23	-17
Average	-9	-16	-7	6	-13	-20	-11

Source: Jenkins and Lai (1989).

Table 3-8. Effect of Direct and Total Intervention on Quantity of Rice Demanded and Consumer Price of Rice

Period	Proportional change in quantity of rice demanded due to intervention		Proportional change in consumer price of rice due to intervention	
	Direct	Total	Direct	Total
1960-64	-3	-2	7	4
1965-69	1	2	-1	-5
1970-74	-1	2	1	-6
1975-79	-5	-3	12	8
1980-83	-14	-10	34	24
Average	-4	-2	10	4

Source: Jenkins and Lai (1989).

Changes in pricing policies also affect demand. Since the domestic consumption of rubber and palm oil is negligible, we focus attention on the consumption of rice, the basic food crop of the country. The own-price elasticity of demand for rice in Malaysia is low (Arromdee 1969; Goldman 1975; Sahathavan 1974). A value of -0.4 is assumed in this study.

Table 3-8 shows that the direct effect of pricing policies in Malaysia between 1960 and 1983 was a 4 percent decline in the demand for rice, whereas the total effect was only a 2 percent decline. The most significant impact of the pricing policies was that they smoothed out the pattern of consumption in years when the world price of rice was highly volatile. In the late 1960s, the direct effects of the policies reduced rice consumption by 2 to 4 percent, and by 1 to 22 percent in the late 1970s. In the intervening decade, consumption increased in some years and declined in others. Total intervention also reduced rice consumption, although somewhat less. In addition, the consumer price of rice increased by an average of 10 and 4 percent, respectively, owing to direct and total intervention.

Foreign Exchange Earnings

Export taxes and exchange rate adjustments have served to discourage exports of Malaysian rubber and palm oil. In the case of rice, the direct effects of intervention on production have by and large reduced the need to import rice. However, these effects have been partly offset by the indirect effect of an overvalued exchange rate.

For rubber and oil palm, pricing policies reduced the amount of foreign exchange earned by an average of 2 and 4 percent of the total

agricultural exports during 1961–83 as a result of the short-run direct and total effects, respectively. The cumulative direct and total effects were reductions in the foreign exchange earnings of these crops by annual averages of 11 and 18 percent. Foreign exchange was lost because the production of export crops declined, even though fewer imports of inputs were required. In the case of paddy, there were savings from reductions in rice imports. Another important factor here is that the prices of rubber and palm oil are exogenously determined. In the world market, Malaysian natural rubber has to compete with synthetic rubber made from petroleum. Similarly, palm oil has many substitutes among the vegetable oils, particularly soya bean oil. In the case of rice, the short-run and cumulative direct effects were foreign exchange savings of about 1 percent of total agricultural imports for 1960–83. There was no impact on foreign exchange earnings for paddy.

The average short-run direct effect of pricing policies was to reduce 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. The reduction in foreign exchange owing to the cumulative direct effects of pricing policies was about 9 percent of total agricultural exports for 1961–83, and 15 percent in the case of the cumulative total effects (see Table 3-9).

The Government Budget

The principal source of government revenue from the agricultural sector is the tax on exports of rubber, palm oil, and less important agricultural crops. Little from the budget has been spent directly to subsidize the production of paddy. Most of the budgetary allocations have gone into the infrastructural development of irrigation systems, dams, roads, and processing facilities. Since 1980 Malaysia's policy has been to subsidize local paddy production directly, 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 on the budget of this taxation and the pricing policies has been positive. Net revenues from the tax on agricultural crops as a proportion of total government revenues have fluctuated considerably, from 12 percent in the early 1960s to 2 percent in the early 1980s, with an average of 7 percent for the period. Since the introduction of the cash subsidy for paddy in 1980, the relative importance of the agricultural sector as a source of government revenue has declined (see Table 3-10). The government investment bias—which was estimated by dividing the ratio of government investment in agriculture to total government investment by the ratio of value

Table 3-9. Short-run and Cumulative Effects of Direct and Total Intervention on Foreign Exchange Earnings of Rubber, Palm Oil, and Paddy

	Short-run direct intervention				Short-run total intervention				Cumulative direct intervention				Cumulative total intervention			
	Change in output of export crops (1)	Reduced imports of rice (2)	Change due to (1) + (2)	Change in output of export crops (3)	Reduced imports of rice (4)	Change due to (3) + (4)	Change in output of export crops (5)	Reduced imports of rice (6)	Change due to (5) + (6)	Change in output of export crops (7)	Reduced imports of rice (8)	Change due to (7) + (8)	Change in output of export crops (9)	Reduced imports of rice (10)	Change due to (9) + (10)	Change in output of export crops (11)
Period																
1960–64	-2	2	0	-3	1	-2	-12	3	-8	-17	1	-13	-17	1	-13	-13
1965–69	-2	-1	-3	-3	-2	-5	-11	0	-10	-16	-2	-15	-16	-2	-15	-15
1970–74	-3	0	-2	-5	-2	-6	-10	0	-8	-17	-2	-16	-17	-2	-16	-16
1975–79	-4	2	-2	-5	0	-4	-12	1	-9	-18	0	-15	-18	0	-15	-15
1980–83	-3	5	1	-5	3	-2	-14	5	-8	-23	3	-17	-23	3	-17	-17
Average	-3	1	-1	-4	0	-4	-11	1	-8	-18	0	-15	-18	0	-15	-15

Source: Jenkins and Lai (1989).

Table 3-10. Effect of Intervention on Government Budget, Investments, and Expenditures

Period	Net tax revenues as a proportion of total budget	Net tax revenues as a proportion of budget deficit	Ratio of value added in agriculture without price interventions to GDP (1)	Ratio of government investment in agriculture to total government investment (2)	Government investment bias (2) ÷ (1)	Ratio of current expenditure in agriculture to total government expenditure	Government expenditure bias
1960-64	12	-72	31	13	44	2	7
1965-69	5	-23	25	26	107	2	9
1970-74	6	-27	28	25	91	2	6
1975-79	9	-34	25	21	85	2	10
1980-83	2	-6	21	13	64	4	13
Average	7	-33	26	20	79	3	10

Source: Jenkins and Lai (1989).

added in agriculture (without intervention) to GDP—averaged 0.79 for the period 1960-83. This bias was higher during the late 1960s and early 1970s, when huge investments were made in irrigation infrastructure and land development schemes. Although still substantial, government investment in agriculture declined in the late 1970s and continued to decline after 1980 as the nation shifted its emphasis to industrial development and the petroleum industry.

The government expenditure bias—which is the ratio of current development expenditure to total expenditure and the ratio of the GDP in agriculture (in the absence of intervention) to GDP—averaged 0.10 for the period of study. In the early 1970s this indicator began to rise, moving to 0.10 in the late 1970s and 0.18 in the early 1980s. This reflected a shift in government expenditures toward subsidies and service-oriented activities. Accordingly, the paddy price support scheme is currently being financed from budget allocations instead of income earned from rice exports.

Changes in the transfer of resources due to pricing policies have been beneficial to paddy farmers and detrimental to the rubber and oil palm industries (see Table 3-11). On average, the direct effects of these policies reduced the producer surplus accruing to farmers by about 10 percent of total agricultural GDP between 1960 and 1983, while the total effects reduced it by 16 percent. If the nonprice transfers and only the direct effects of pricing policies are considered, the net transfer to the agricultural sector has averaged 1 percent of total agricultural GDP. When the combined effects of all price and nonprice policies are taken into account, the net transfer for the period averages -6 percent of agricultural GDP. This move to a negative value is due to the exchange rate effect.

Table 3-11. Real Transfers into (+) and out of (-) Agriculture Due to Direct and Total Intervention

Period	Share of value of agricultural output (CPI unadjusted)		Share of value of agricultural output (CPI adjusted)		Transfers from price and nonprice policies as a share of value of agricultural output	
	Direct	Total	Direct	Total	Direct	Total
1960-64	-3	-16	-10	-13	-2	-10
1965-69	-9	-15	-11	-14	-1	-7
1970-74	-9	-17	-11	-14	-1	-9
1975-79	-15	-18	-18	-19	-3	-5
1980-83	-5	-14	-9	-13	13	4
Average	-10	-16	-12	-15	1	-6

Source: Jenkins and Lai (1989).

Palm oil producers saw their incomes reduced by an average 13

Table 3-12. 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			Paddy		
	Direct intervention	Total intervention		Direct intervention	Total intervention		Direct intervention	Total intervention		Direct intervention	Total intervention		Direct intervention ^a	Total intervention ^a	
1960-64	-11	-21		-21	-31		-10	-20		18	11		5	3	
1965-69	-8	-16		-21	-29		-10	-17		-4	-11		-1	-3	
1970-74	-12	-23		-27	-40		-16	-28		2	-8		0	-2	
1975-79	-37	-39		-39	-42		-23	-26		24	22		11	10	
1980-83	-28	-44		-31	-47		-6	-19		45	39		21	18	
Average	-19	-28		-28	-38		-13	-22		16	9		7	5	

a. Adjusted for home consumption and other income earned.

Source: Jenkins and Lai (1989).

percent during 1960-83 owing to the direct impact of pricing policies and by an average 22 percent owing to total intervention. The largest declines occurred in years of good prices for palm oil, indicating that pricing policies effectively siphoned off producer income during boom years.

The Political Economy of Agricultural Pricing Policies

Agricultural pricing policies in Malaysia between 1960 and 1983 were designed to promote rice self-sufficiency, obtain the political support of paddy farmers, and provide revenues for economic development. Only a few adjustments were made to meet changing economic circumstances or the political pressures exerted by various groups with agricultural interests. These groups have not joined forces because the pricing policies that affect rubber planters, for example, are not the same as those that affect paddy farmers. Consequently, opposition to existing pricing and investment policies has not been strong, and change has been gradual, even in the wake of the New Economic Policy introduced in 1971. The emphasis in the NEP is on the corporate sector, which is dominated by non-Malay and foreign interests. The government wants to restructure the sector to allow more Malays to be involved.

This goal points to one of Malaysia's problems—its ethnic diversity. The government is a coalition of ethnic-based parties that strive to promote the interests of their communities. A coalition of the country's three main parties has been returned to power at the federal level in all general elections since 1955. The government uses a consensus approach to arrive at decisions and minimize conflict among the parties. However, in the aftermath of the racial riots on May 13, 1969, and the adoption of the New Economic Policy, this approach seemed to break down as the Malay party in the coalition, the United Malay National Organization (UMNO), grew in electoral strength. Meanwhile, 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 other ethnic groups in Sabah and Sarawak are represented by a number of small parties. Since electoral strength is weighted in favor of the rural areas, and Malays form a majority of the rural population, UMNO is often under political pressure to meet the demands of rural areas.

Before the adoption of the NEP in 1971, the government practiced a noninterventionist approach to the economy. Since then, the NEP has become the basis of public policies affecting the entire nation. Of the NEP's objectives, the desire to eradicate poverty has had the greatest effect on Malaysia's agricultural pricing policies. Note, however,

that poverty in Malaysia is relative, as there is no malnutrition or hunger. The poverty line is defined as the minimum income needed to obtain food, housing, clothing, utilities, transport, health care, education, and recreation.

By 1975 the paddy price supports introduced by the British colonial government in 1949 had outgrown their usefulness. Under pressure from the Malay paddy farmers, the government agreed to increase the guaranteed minimum price for paddy, starting in 1973. Further increases were made in 1974, 1979, and 1980, all of which were meant to raise and maintain the income of paddy farmers above the poverty line. In 1980 paddy farmers were also given a cash subsidy for every tonne of paddy sold. This direct subsidization grew out of the government's desire to distribute some of the oil wealth of Malaysia to the farmers.

Besides price supports, paddy farmers receive a subsidy on inputs, which in 1980 equaled 100 percent of costs. Farmers' incomes are directly increased by the subsidy because it reduces the amount they would have spent on fertilizers and other production costs. Free fertilizers are intended to increase output directly and farm incomes indirectly. Consequently, the government was indignant when it discovered that paddy farmers were selling the fertilizer they had obtained free of charge. Moral persuasion has been used to discourage the practice, but there has been no report on the result.

Before farmers can receive subsidized fertilizer, their applications must be examined by a village leader, who is usually a member of UMNO. Paddy farmers who belong to the opposition Parti Islam (PAS), particularly in Kelantan, often have their applications delayed, mislaid, or investigated more thoroughly than do others. Entire villages have been excluded from the subsidy scheme until political leaders intervened.

The decision to implement a urea price support scheme for paddy farmers in 1972-76 was also an effort to maintain the income level of paddy farmers. Although the scheme failed to prevent a decline of rice output, the government considered this tactic politically necessary to demonstrate that it was trying to help the paddy farmers.

It is not surprising that the government took a long time to react to the pressure of rubber smallholders seeking relief from pricing policies. Although the government was aware of the impact of the export tax on this group, it was reluctant to abolish the tax because such action would have led to a substantial loss of revenue. Furthermore, rubber smallholders are more dispersed geographically than paddy farmers; hence, their political influence is not as great.

In 1980 the government amended the old method of estimating the price of rubber for export tax purposes and began basing it on the f.o.b. prices of lower grades of rubber. This in effect reduced the

export tax on rubber. Another move to assist the smallholders was the cost-plus principle instituted in 1982 to calculate the rate at which the export tax became payable. These two changes were possible because the government wished to share its growing revenues from exports of crude petroleum with the rubber smallholders in the form of a reduced export tax rate. Indirectly, the estates also benefited from this move.

The government has yet to act on the rubber industry's request that the replanting tax be removed or reduced. Although the tax, together with a government grant from general tax revenues, is returned to the smallholder to help him replant, not all smallholders qualify to receive the replanting grant (they must have title to their holdings, although this regulation has since been relaxed for those with very small holdings, who are mainly Malays). In addition, owners with holdings of 10 hectares or more were only allowed to receive replanting grants for a third of their holdings, but this ruling was removed in 1981.

Until the 1980s, private oil palm plantations in Malaysia were owned mainly by non-Malaysians. The government then intervened to purchase the equity of plantation companies in order to increase the Malays' share of equity capital. The income from oil exports provided the funds for these purchases. Nationalization of these companies was thereby avoided. The government considers the oil palm industry a source of revenue and thus the direct effects of its pricing policies did little to stabilize palm oil prices. Since there are no smallholders, the government is less concerned about the oil palm industry in any case.

To reiterate, the pricing policies analyzed in this study have been highly consistent since 1960. In accordance with these objectives, the government has attempted to use the increasing income from crude petroleum exports to raise the incomes of the small farmers, either directly, through subsidies, or indirectly, through reductions in the export tax. To this end, the policies reflect cultural, political, and economic conditions in the country.

The agricultural sector, particularly its export crops, has been a consistent source of revenue for economic development. Although the importance of these taxes has declined in recent years, the government has been careful to encourage the growth and development of export crops. Transfers out of agriculture in the form of taxes have been offset in part by infusions of capital into the infrastructure of rural areas, rubber replanting grants, paddy price support, input subsidies for paddy and other crops, research facilities, extension services, and processing facilities.

Malaysia's particular blend of policies is the product of tension between the politically strong paddy farmers and the economically

strong plantations and emerging industrial sector. Between 1960 and 1983 rubber production was taxed fairly heavily, although the government made every effort to maintain its competitiveness by establishing a research organization. Although this research effort was financed by the industry, the government made certain that the proceeds went into rubber research and thus benefited the producers. Similarly, the replanting of new varieties of rubber trees and the diversification program from rubber to oil palm were largely financed by the rubber industry, but the programs were implemented by the government.

The stable (and high) rice price that has been the cornerstone of Malaysia's agricultural policy since the mid-1940s has also contributed to the country's general stability. Although urbanization has been rapid, it has been educated youths rather than landless laborers who have been moving from the rural areas to the cities. The country's pricing policy has also helped the more moderate and highly pragmatic Malay political party to stay in power. In the case of rice, however, the policy has incurred a direct economic cost in the form of additional investment in infrastructure and the additional labor retained in rice production in marginal paddy-growing areas. Overall, the policy has enabled a multiracial country to achieve rapid economic development without serious ethnic conflicts.

Notes

1. All monetary values reported in this chapter are in Malaysian ringgit (M\$). The market exchange rate in 1983 was US\$1.00 = M\$2.3382, which in December 1987 had depreciated to M\$2.52 per U.S. dollar.

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