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Distortions to Agricultural Incentives in Malaysia

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Distortions to Agricultural Incentives in Malaysia

Prema-chandra Athukorala and Loke Wai-Heng

Malaysia is notable among developing countries for its long-standing commitment to maintaining a relatively open trade policy regime. It never relied heavily on quantitative restrictions (QRs) and other forms of non-tariff protection; and its tariffs on both domestic manufacturing and agriculture were low relative to other developing countries. In the first half of the 1980s — as part of a state-led heavy industrialization strategy — and in the immediate aftermath of the 1997-98 economic crisis, tariffs on some manufactured goods were substantially increased and some were brought under QRs to support some domestic industries in face of a massive domestic economic contraction. However, these measures were reversed and further tariff cuts were undertaken in the ensuing years.

Unlike its counterpart in other countries, the Malaysian government persistently eschewed direct procurement of agricultural output through government marketing boards or direct influence of export prices. Export duties on the two major primary commodities, rubber and palmoil, were a major source of government revenue until the mid-1980s. However, export taxes were periodically adjusted in line with world price trends in order to keep the producer prices by and large stable over time. The government also ploughed back a significant share of this revenue into well-designed and efficiently implemented replanting schemes and productivity enhancing research in these industries. Over the past two decades export duties on rubber and palmoil have decreased drastically, but these traditional export industries have been under persistent domestic cost pressure arising from rapid structural transformation of the economy through successful global integration.

Production of paddy rice—the staple food of the country and the principal domestic food crop—stands out as the single most assisted economic activity in the country. In the immediate post-war years, assistance to this crop was introduced by

the colonial government on grounds of food-security. After independence, and particularly since embarking on the New Economic Policy (a sweeping affirmative action policy package) in 1970, rice has become an increasingly sensitive ‘political crop’. While achieving food self sufficiency has continued to be a ‘moving target’ in the successive development plans, protecting rice farmers (who are predominantly concentrated in relatively economically backward states) remains by far the dominant reason behind continuing protection. Producers of subsidiary crops, horticultural products, livestock and fishing have been operating under a virtually free trade regime throughout with the exception of quantitative restrictions on the importation of round cabbages. High-value (processed) food products have emerged as an important dynamic export product over the past two decades.

The main purposes of this chapter are to provide an analytical narrative of the nature and evolution of trade in Malaysia and the related accompanying policies impacting on domestic agriculture, with a focus on the underlying political economy, and to examine the degree and changing patterns of policy distortions to incentives in domestic agriculture encompassing both direct (sector-specific) incentives and indirect incentives emanating from economy-wide policies. We also aim to inform contemporary Malaysian debate on the future direction of national development policy as it relates to domestic agriculture. The analysis is undertaken against the backdrop of the on-going process of rapid structural transformation of the Malaysian economy over the past three decades. As an integral part of the analysis, an attempt is made to delineate the implications, over and above that of the policy-induced incentives, of the process of structural transformation for the long-term viability of traditional plantation crops and new opportunities for agricultural output expansion in the subsidiary food crop sector.

The study covers the period from 1960 (the earliest year of reliable data after independence in 1957) to 2004 with emphasis on four major products: rubber, palmoil, cocoa, and rice. The first three are exportable products while the fourth, the main staple product of the country, is an import-competing product. The four products together accounted for between three-fifths and four-fifths of the value of total agricultural GDP over the period examined. Paucity of data does not permit further commodity coverage, but virtually all other agricultural products have been facing free trade conditions throughout the period under study.

The structure of the chapter is as follows: the next section provides an overview of growth and structural change in the Malaysian economy during the post-independence era (since 1957), with emphasis on the relative importance of the agricultural sector in the economy and trends and compositional shifts in agricultural output and trade. This is followed by a survey of the evolution of agricultural trade policy during the post-independence era (since 1957) against the backdrop of the overall national development strategy and macroeconomic policy. Particular attention is given to political-economy considerations underpinning policy directions. The next section provides estimates on the extent and patterns of direct and indirect distortions to incentives faced by domestic agriculture using the indicators specifically constructed for this study. The final section contains a summary of the key findings and policy inferences.

Agriculture in the Malaysian economy

To understand the policy environment it is instructive to first explain the country's economic growth trends and then its patterns of structural change both inter-sectorally and within the agricultural sector.

Economic growth trends

At the time of independence in 1957, Malaysia was a classic example of an *export economy* (Levin 1960): an economy in which the modern sector — concentrated in primary production for export — dominated the entire organization of production. Natural rubber directly accounted for 25 percent of GDP while the second largest export, tin, accounted for 5 percent (Meernam 1979). In addition, a host of activities in the services sector — embracing trade, transport and finance — were dependent on the export sector. Production patterns exhibited only limited changes until about the mid-1970s. Structural changes since then have been dramatic, however. In particular, beginning in the late 1980s there has been an expansion of export-oriented manufacturing and related modern sector activities. The share of agriculture in GDP

declined to 19 percent by the late 1980s and then plummeted to 8.5 percent in 2005 (Table 1 and Appendix Figure A1).

In the early 1970s agriculture directly absorbed over half of the total labor employed in the country. This share declined to 13.7 percent by 2005. The contraction in the relative importance of agriculture in total labor absorption was particularly marked over the past two decades (Table 1 and Appendix Figure A1). Despite this dramatic structural transition, promoting employment opportunities in the rural economy (roughly equivalent to the agricultural sector) has continued to be an important focus of the successive 10-year development plans of the country. This is particularly due to the related delicate ethnic dimension: over 90 percent of the agricultural labor force belongs to the Malay community. The incidence of poverty in the rural economy is still high (11 percent in 2003) compared to 2.2 percent in the urban sector and a national average of 6 percent. (Government of Malaysia 2006a).

Over the past three decades or so, the agricultural sector has been under consistent pressure from the ‘resource pull’ effects of rapid structural change in the economy (Athukorala and Manning 1999, Barlow and Jayasuriya 1987). Widening urban-rural wage differentials and an aversion of younger people to engage in agricultural pursuits increased rural-to-urban labor migration. This caused widespread labor shortages in the rural economy and put increased pressure on agricultural wages. The area under traditional plantation crops shrunk in semi-urban areas because of the dispersion of industrial centres across the peninsula and the resultant increased demand for land for residential and industrial expansion. In the face of severe shortages of local labor, agricultural producers — firstly plantation companies, and more recently small-holder producers of cash crop and paddy — began to rely increasingly on foreign workers. The estimated foreign labor force in Malaysia increased from around half a million in the mid-1980s to 1.8 million (23 percent of the total labor force) by 2003, and around half of these workers were in the agricultural sector (Athukorala 2006a). The dependence on foreign labor is particularly high in the rubber industry, given the relatively high labor intensity of both cultivation and harvesting. However, the relatively more capital intensive palmoil industry also began to depend increasingly on foreign workers because fresh fruit bunch harvesting is conducted manually. According to a recent survey — the Malayan Agricultural Producers Association survey — 37 percent of the total labor

force in private sector plantations in Peninsular Malaysia are foreign workers and the percentage is as high as 80 percent in East Malaysia (Khoo and Chandramohan 2002).

Structural changes: plantation (cash) crops

Rubber was the preferred crop of the foreign-owned estate sector throughout the colonial period from the 1890s (Barlow 1978). Palmoil was first commercially planted in 1917, but remained a relatively minor crop until the mid-1950s. During the ensuing three decades palmoil proved to be profitable in comparison to rubber and expanded in the plantation sector at the expense of rubber. Government policy relating to the plantation sector dramatically shifted in emphasis from rubber to palmoil, and support for the expansion of palmoil increased by allowing the use of rubber replanting grants: grants to replant rubber land with palmoil. The government itself played a vigorous role in the expansion of palmoil by embarking on a large resettlement effort (especially through the Federal Land Development Authority, FELDA) under which palmoil was the ‘crop of choice’ (Plectcher 1991).¹ Malaysia’s success in promoting palmoil exports was further aided by inappropriate agricultural and economy-wide policies of traditional palmoil exporting countries in Africa (MacBean 1989, Athukorala 1991). Cocoa gained importance as an alternative crop in the plantation sector from about the early 1970s. However, from about the mid-1980s, the area of cocoa cultivation contracted sharply because of protracted low world prices of cocoa beans.

As already noted, from around the late 1980s the plantation sector was under severe strain arising from the resource-pull effect of rapid structural changes in the economy. The resource-pull effect was felt more acutely by the rubber and cocoa industries whose cultivation and harvesting processes were more labor intensive compared to palmoil. To make matters worse, world prices for these two products were unfavourable compared to palmoil. At the end of the crop cycle many plantation companies and small-holders partly replanted rubber land with less labor intensive crops — in particular palmoil — and used the land for housing and industry.

¹ By 1984, FELDA accounted for 28 percent of the 1.3 million ha under palmoil. The annual rate of growth of FELDA’s palmoil hectares was 35 percent during 1961-84 and 76 percent during 1961-70, a rate six times that of the estate sector over the same period.

Many Malaysian rubber estate companies were facing hard times. They first employed foreign workers to overcome labor shortages, and then they used their technology and managerial know-how to invest in neighbouring countries (in particular, Indonesia and the Philippines) where wages and the cost of land were lower. Smallholders too went on tapping rubber with hired migrant labor, although their higher price elasticity of supply resulted in declining output when output prices were low in the early 1990s (Barlow 1997, p. 599). Despite the natural cushion provided by the relative capital intensity of production and also the relatively favourable price trend, in recent years the palmoil sector has also felt the pinch of the resource-pull effect. Many large plantation companies have shifted investment to neighbouring land- and labor-abundant countries.

Of the three main plantation crops, the area under cultivation of rubber increased from 1.7 million hectares in the early 1960s to 2.0 million in the late 1970s/early 1980s, however it has declined persistently since then reaching 1.3 million in 2000-04. In the case of palmoil, the area under cultivation increased continuously from less than 0.1 million hectares during 1960-64 to 3.8 million during 2000-04. In both industries, the expansion of output was faster than that of area under cultivation, reflecting the widespread use of new high-yielding varieties and improved cultivation practices. From the late 1990s, the rubber and palmoil industries benefited from increased world demand, particularly from China, and the resultant favourable price trends. The palmoil industry benefited further in recent years from the tight world supply of edible oils and fats and the expanded demand for biodiesel, which has pushed up palmoil prices. In the case of rubber, the supply response to favourable prices took the form of increased cropping intensity in the context of a persistent decline in area under cultivation. By contrast, the area under cultivation of palmoil showed some mild positive response to favourable prices. For cocoa, both production and the area under cultivation have declined persistently since the early 1990s. Yield per hectare in palmoil increased persistently throughout. In rubber the yield increased notably in the 1960s and 1970s, followed by a virtual stagnation. In fact, the stability of rubber yield in face of persistent decline in the total output during the latter period came largely from a contraction in the area under cultivation, implying the abandonment of marginal plantations with poor yield (Appendix Table A1).

The small-holder share of total rubber land has always been high and it increased from 50 percent in 1960 to 93 percent in 2004, whereas the relatively capital

intensive palmoil industry was initially dominated by large plantations although the smallholder share rose from 16 percent in 1970 to around 40 percent since 1990 (Appendix Table A2).² The estate dominance is an unusual feature of the palmoil industry in Malaysia (and in Indonesia), because smallholder production of palmoil is much more important in other parts of the world (Pletcher 1991).

Structural changes: food crops

Rice farming, nearly all of it wet paddy, is the major source of income for rural households in the states of the north and east on peninsula Malaysia and in some parts of East Malaysia. At the time of independence, about three quarters of native peasant producers (predominantly rice growers and fishermen) were Malays, about 90 percent of rice growers were Malays, and about one-third of the economically active Malay male population were in the peasant sector (Meerman 1979). This ethnic dimension of rice farming persisted during the ensuing years, making rice a highly sensitive political crop.

Nearly half of all peasant cultivators grow some rice. The area under cultivation of paddy increased from 490 thousand hectares in 1960-64 to 750 thousand hectares in 1970-74 and has remained near that level since then. Paddy production increased persistently from the early 1960s to the mid-1990s though, because of increases in yield per hectare from the 1970s. Paddy producers were significantly aided by government policies — such as sponsored irrigation schemes which permitted double cropping, the introduction of high-yielding varieties, the consolidation of paddy smallholdings through group farming in the eight granary areas, and direct assistance to farmers in the form of price supports and credit and fertilizer subsidies (see below). By the end of the 8th Malaysia Plan period in 2005, almost all farming operations in major paddy growing areas were fully mechanized. As a result, the labor input per hectare declined from 47 worker days in 1995 to 15 worker day in 2000 (Government of Malaysia 2001, p. 214). At the time of independence in 1957 about 45 percent of all rice consumed in Malaysia was

² Note, however, that the bulk of land area classified as small-holding in this data involves farmers who participate in large government-run plantation schemes. Smallholders who did not participate in these schemes account for only 8 percent of the planted hectare area.

imported, but from the mid-1970s around 90 percent of the rice consumed has been produced domestically.

Beginning in the mid-1990s, rice production stagnated and this was followed by a mild but persistent decline in recent years despite the yield per hectare continuously increasing (Appendix Table A1). As in the case of plantation crops, paddy farming has been under pressure because of labor shortages due to rural-to-urban labor migration and the aging of the farming community (Ahmad and Tawang 1999). It seems that continuing massive government support has been of little avail in supporting paddy farming in a context of massive pressure emanating from ongoing structural adjustment in the economy at large.

A noteworthy development over the past one-and-a-half decades in non-plantation agriculture is the rapid growth of output of subsidiary food products — fruits, vegetables, fish and livestock — at a faster rate than paddy (Government of Malaysia 2006a, p. 51). While there has been some increase in export of these ‘high value’ food products, the production expansion so far has been predominantly domestic demand derived. This is due to rapid income growth in the modern sector of the economy and a high income elasticity of demand for high-value food products compared to rice. The relative importance of the subsidiary food sector is bound to increase rapidly in years to come.

Figure 2 provides data on the composition of agricultural production (value added) in the Malaysian economy. The dominance of the plantation crop sector in Malaysian agriculture has declined steadily from 73 percent in the early 1970s to 53 percent during 2000-05. Within this sector there has been a noticeable shift in output composition away from rubber and towards palmoil. Cocoa accounted for around 10 percent of total agricultural GDP from the mid-1970s to the early 1990, but its share declined, reaching negligible levels by the end of the 20th Century. The combined share of food crops, which remained around 28 percent in the 1960s and 1970s, increased sharply during the ensuing years reaching 47 percent in 2000-05. Within this sector, the relative importance of paddy has declined sharply over the past two decades, reflecting the compositional shift towards livestock, fisheries and other subsidiary food crops (mainly fruits and vegetables).

Agricultural trade

Dramatic shifts in the domestic production structure were closely mirrored in export patterns. The combined share of agricultural products in total merchandise exports declined from 58 percent (39 percent when timber/wood exports are excluded) in 1970-74 to 10 percent (8 percent) by 2000-04 (Table 2). Among agricultural products (excluding timber/wood), the share of rubber declined from 62 percent in 1970-74 to just under 10 percent in 2000-04. This was offset by an increase in the share of palmoil from 24 percent to 42 percent.

Malaysia's share in total world exports of natural rubber declined from 42 percent in the late 1970s to around 20 percent by 2004, by which time it was the third largest exporter in the world after Thailand and Indonesia (Appendix Figure A2). In world crude palmoil exports, Malaysia has remained the largest exporter, accounting for a share in total world exports of between 65 and 80 percent from the mid-1970s to late 1990s. During the present decade Indonesia has been the world's largest exporter of crude palmoil (accounting for over 50 percent of total world exports). This is due to massive investment in relocation by Malaysian plantation companies in the face of mounting domestic cost pressure.

A noteworthy development in the export structure of Malaysia over the past two decades has been the emergence of processed food as a dynamic export line. The average annual growth rate of processed food exports from Malaysia increased from 5 percent in 1985-99 to 19 percent in 2000-04. The share of processed food in total agricultural exports from Malaysia increased from 9 percent in 1970-74 to 16 percent in 1985-89 and then to 32 percent in 2000-04 (Table 2). Rapid expansion of processed food compared with the traditional food products (coffee, tea, sugar, cocoa and so on) has been a universal phenomenon in world trade over the past two decades (Athukorala and Jayasuriya 2003).³ Malaysia's recent relative performance in this lucrative growth area, while impressive by its own past performance, has lagged behind that of many other counties (in particular Thailand) with similar agricultural

³ Powerful forces on both demand and supply sides underpinned this structural shift. On the demand side, 'internationalisation of food habits' — the increased importance of imported processed items in consumption patterns in developed countries as well as among large sections of the populace in many developing countries — appeared to play a key role. Factors such as international migration, the communications revolution and international tourism have contributed to this phenomenon. This significant demand-side impetus seems to have been supported by important supply-side developments such as improvements in food technology, refrigeration facilities and transportation that made various processed food products, which are generally highly perishable, internationally tradable. Indonesia is well placed to benefit from this structural shift in world food trade given its rich agricultural resource base and the ample availability of labor (because food processing/packaging for exports is a highly labor intensive).

resource endowments (Athukorala 2006b). An interesting issue, which deserves further analysis, is whether Malaysia's highly interventionist paddy-sector support policy constrained movements of agricultural resources to these new dynamic product lines.

Policy context

The prognoses of development prospects for Malaysia (then the Federation of Malaya)⁴ at the time of transition to independence in 1957 were at best mixed. On the positive side, Malaysia's per capita income was on a par with Hong Kong and Taiwan and higher than other countries in East Asia save Japan. Although the rate of population increase was already rapid, the highly favourable ratio of land and other natural resources to total population offered great potential to raise income per capita. The colonial inheritance included well-developed infrastructure, an efficient administrative mechanism and a thriving primary export sector with considerable potential for expansion.

The mobilisation of this development potential for building the new independent Malaysian economy had to be done under conflicting challenges posed by a plural society inherited from the colonial past. At the time, the native Malays, who accounted for 52 percent of the population, dominated politics, but were relatively poor, and were involved mostly in low-productivity agricultural activities. The ethnic Chinese (37 percent of the population) enjoyed greater economic power and dominated most of the modern-sector activities, but they did not match the ethnic solidarity or political power of the Malay.⁵ While ethnic divisions weakened the national fabric, the machinery of government was fragile and the democratic political leadership remained untested. In this context, there was little room for optimism regarding the development policies that might be expected from the newly elected

⁴ The Federation of Malaya, comprising 11 states in the Malay Peninsula secured independence from Britain on 31 August 1957. Sabah, Sarawak and Singapore joined Malaya to form Malaysia on 16 September 1963. Singapore left the federation in August 1965.

⁵ The emergence of these three identifiable and mutually exclusive ethnic groups as distinct, self conscious groups stemmed in substantial part from the exigencies and priorities of the British colonial policies (Gnguli 1997, p. 235).

government (World Bank 1955). All in all, challenges of development for Malaysia were generally considered more problematic compared to a number of other countries newly emerged from the colonial era — in particular India, Pakistan, Ghana, Kenya, and Burma.⁶

In the early years of independence up to the mid-1960s, Malaysian national development policy was much in line with the traditional liberal notions of the limited state. Public command of economic resources in these early years was low, and the prevailing economic policies conservative. The policy thrust was basically to continue with the colonial open-door policy stance relating to trade and industry, while attempting to redress ethnic and regional economic imbalances through rural development schemes and the provision of social and physical infrastructure (Snodgrass 1980).

As in many other developing countries, industrialization through import substitution was a key part of the Malaysian development strategy during this period. However, Malaysian policy makers, unlike their counterparts in other countries, eschewed ‘forced’ industrialization through direct import restrictions and the establishment of state-owned industrial enterprises (Lim 1992).⁷ Moderate tariff protection was by and large the key instrument used in encouraging new investment in manufacturing. The average tariff rate in 1965 was estimated at a mere 13 per cent and very few industries enjoyed nominal tariffs of more than 30 per cent. Non-tariff barriers were almost non-existent (Powel 1971, Lin 1984).

The racial riots in Kuala Lumpur in 1969 brought about a dramatic shift in development policy along ethnic lines. The leadership of the ruling National Front concluded that the striking discrepancies in wealth must be rapidly eliminated, in part through public activity, if Malaysia were to evolve into an integrated community. Its two basic goals were the eradication of poverty by raising income levels and increasing opportunities for all Malaysians irrespective of race, and rapid reordering of society to correct economic imbalances so as to reduce, and eventually eliminate, the identification of race with economic function (Government of Malaysia 1971, p. 1). However, it was also said, in the language of NEP, that an increasing share of

⁶ In the famous Rosentein-Rodan (1961) growth trajectory up to 1976 for sixty-six of today's developing countries, Malaysia was classified (together with South Korea, Taiwan, Singapore, Thailand and Indonesia) in the ‘low-growth’ category.

⁷ In a recent comprehensive study of the patterns and chronology of trade policy reforms during the postwar era, Sachs and Warner (1995, Table 1) identify Malaysia as one of eight developing countries whose trade regimes remained open throughout the post-Second World War period.

GNP to Malays was not to be at the cost of citizens belonging to other ethnic groups. Given the delicate ethnic composition of the ruling coalition, economic equality was to be fostered primarily through increasing employment and devising a mechanism to ensure that a greater share of newly created assets would accrue to the Malay. Redistribution of existing assets was anathema. Neither expropriation, foreign or local, nor nationalization, nor land reform was considered in the NEP (Ness 1967, Snodgrass 1980, Ganguli 2003).

Given the crucial role played by foreign-owned companies in the production and marketing of plantation crops, the Malaysian government took care to pursue a favourable and unambiguous policy stance toward direct foreign investment. Transferring a progressively large share of these companies to the nationals was a declared policy objective, but the government always made it clear that the transfer of ownership would be through formal share trading rather than through arbitrary expropriation (Mynt 1984, Fletcher 1991).

There was a heavy emphasis on the promotion of heavy industries through direct government involvement in the first half of 1980s, as part of the 'look East' policy of Dr. Mahathir who became Prime Minister in 1981. The symbol of the selective industrial policy was the Proton (the Malaysian national car) project: a joint venture of HICOM and the Mitsubishi Corporation in Japan. By 1987, there were 867 corporate public enterprises in Malaysia, more than one-third of which were in manufacturing. Tariffs on a wide range of manufactured goods were substantially increased in the first half of 1980s as part of the heavy-industrialisation move. However, there was no significant reliance on quantitative import restrictions (Athukorala and Menon 1999).

The economic crisis during 1985-87 — which was caused by a combination of adverse price trends in Malaysia's major export products, and budget deficits due to the move towards heavy industrialisation — put an end to the state-led heavy industrialisation push. The crisis management policy package placed greater emphasis on the role of the private sector and strengthened the conditions for export-oriented industrialization through greater participation of FDI. The structural adjustment reform package subsequently introduced involved the gradual privatization and restructuring of state-owned enterprises. By the early 1990s, state-ownership in manufacturing was limited only to some politically sensitive ventures in automobile

manufacturing (the Proton project), petrochemical, iron and steel, and cement industries. Reforms in the late 1980s also involved significant tariff reductions and the removal of quantitative import restrictions. Some of the tariff increases introduced in the first half of the 1980s were reversed, and further tariff cuts were introduced as part of market-oriented reforms in the late 1980s.

Malaysia's policy response to the recent (1997-98) financial crisis involved some departure from persistent trade liberalisation over the previous decade (Athukorala 2003). The 1998 Budget speech announced increased import duties on automobiles, vans and motorcycles: from 30-200 per cent to 40-300 per cent for CBU (completely built-up) motor cars; from 4-42 per cent to 30-80 per cent for CKD (completely knocked down) motor cars; and from 0-35 per cent to 5-50 per cent for construction equipment. In addition, a number of other products — heavy and construction equipment, hot and cold rolled flat products of iron or non-alloy steel, ephedrine and its salts, chemical products, and certain electrical household goods — were brought under non-automatic import licensing. The declared purpose of these measures was to bring down the current account deficit; but cushioning local producers (including the national car producer, Proton) against domestic demand contraction was obviously a key motivating factor. There was, however, no notable retreat from the country's general long-standing commitment to a highly open trade regime.

Despite recent tariff increases, the average applied import duty rate (total duty collection as a percentage of total merchandise exports) has declined persistently (Appendix Figure A3). The underlying tariff structure is far from uniform, however. The domestic automobile market is heavily protected through both tariff and non-tariff measures. At the 2-digit level of the Harmonized System (HS) of products, the average nominal tariff on automobiles is 30 per cent while all the other tariff rates are around or below 20 per cent.⁸ The overall tariff structure in Malaysia is heavily 'cascading' in nature: tariffs are generally higher on final goods than on production inputs (intermediate and capital goods) (Athukorala 2005).

⁸ Tariff rates reported in this paper unless otherwise stated are from Malaysia's latest (2003) tariff schedule available in the Asia Pacific Economic Co-operation (APEC) Secretariat online database.

As part of WTO commitments, Malaysia has bound 65 percent of its tariff lines. The bound rates are much higher than the applied MFN rates (WTO 2002)⁹. Both of these features of the tariff structure gave the government scope to raise applied tariffs (as was done in 1998), imparting a degree of uncertainty to applied tariffs. There are no import quotas in Malaysia, and existing import prohibitions are limited only to those implemented for national security reasons. By the mid-1990s, only 4.5 per cent of all tariff lines had non-ad-valorem tariffs, and this declined further to 0.7 per cent by 2002 because of the further rationalization of the tariff structure following signing of the WTO Agreement in 1995. There are no tariff quotas or variable import levies (Athukorala 2002). By 2000 the coverage ratio of non-tariff barriers in import trade (unweighted percentage)¹⁰ amounted to 2.3 percent, down from 3.7 percent in the mid-1990s. Despite recent tariff increases, Malaysia's average tariff rate is relatively low (both in terms of the simple average and import-weighted average) by regional standards. However, the degree of dispersion of tariff rates in Malaysia (measured by the coefficient of variation) is relatively high because of high tariffs for a few product lines, especially motor vehicles (Athukorala 2005).

Agricultural trade policy: plantation crops

Duties on the two major primary export commodities — rubber and palmoil — were a major source of government revenue until the mid-1980s. Subsequently, duty rates were adjusted in line with world price trends in order to keep producer prices stable over time. Export duties were reduced sharply from the mid-1980s, in a context where the viability of certain industries was under persistent, severe strain because of labor shortages and rising wages propelled by dramatic structural changes in the economy under export-led industrialisation (Ariff and Semudram 1990, Chunanuntathum et al. 1990). The reduction of export duties was aided by tax buoyancy in a rapidly growing economy and by increasing government revenue from petroleum exports.

The import duty rates on rubber and palmoil, which increased persistently in the 1960s and 1970s, have declined over the past two decades. During 2000-04 the

⁹ In 2002, the simple averages bound, unbound, and applied tariff rates were 19 percent, 35 percent and 9.2 percent respectively. All agricultural tariff lines were bound, but on average at much higher levels compared to manufacturing tariffs.

¹⁰ Calculated as percentage of import value of HS6 tariff lines affected by NTBs in total imports

average annual duty rate was 4.7 percent on rubber and 1.1 percent on palmoil. The higher duty rate on rubber as compared to palmoil was because of the additional duty (cess) still levied in order to finance the rubber replanting scheme. Duties (in the range of 5 percent to 10 percent) are levied on specific grades of crude palmoil with a view to promoting further domestic processing. By the dawn of the New Millennium, only a few other primary products (such as some forest products and crude oil) were subject to export duties. Total export duties contributed a mere 2 percent to total government revenue (Government of Malaysia 2006b).

As structural changes in the economy begun to severely impede the long-term viability of plantation crops, conventional trade policy and direct government support in the form of funding research and replanting schemes by and large lost their relevance. Consequently, in recent years policy attention has shifted towards new issues such as: forging linkages between the agricultural sector and rapidly growing manufacturing sectors; improving the productivity and efficiency of certain agricultural sectors; and assisting plantation companies to relocate to other countries where factor market conditions enable profitable production. Relaxing restrictions on labor importation, both formally and informally (that is, by turning blind eye on illicit immigration) has also become an important short-term measure to reduce labor market pressures (Athukorala 2006a).

Agricultural trade policy: food crops

Paddy/rice remained the single most assisted crop in Malaysia since the guaranteed price scheme was introduced by the colonial government in 1949 (Meerman 1979, Ness 1967, Rudnr 1994, Fletcher 1989, Zubaidi 1992). The emphasis on assisting farmers gained added impetus following independence, and in particular as part of the NEP.

The government has assisted rice producers with an all-encompassing guaranteed minimum price scheme (GMP), a price subsidy scheme, and a fertilizer subsidy. In 1998 (the latest year for which data are available) total government expenditure on the three schemes amounted to RM 547 million (US\$ 150 million) or about 3 percent of total value added of this crop. The GMP scheme was first introduced in 1949 and the minimum price was subsequently adjusted in 1973, 1994, 1979, 1980, 1984 and 1997. Under this scheme BERNAS (a state-trading company)

undertakes to buy paddy from farmers at no less than the guaranteed minimum price (since 2000 RM 5.49 per kg). BERNAS procures paddy from farmers and mill rice as a business operation. It competes with other private millers in the procurement of paddy and marketing of its milled rice. BERNAS purchases about 45 percent of the marketable surplus paddy available. Only BERNAS is permitted to import rice (at zero duty) into the country. It undertakes to import rice and implement the rice price subsidy program under a long-term contract with the government. The volume of import is determined by BERNAS as equivalent to the shortfall of production over consumption. Rice millers are required to produce 30 percent of their output at standard and premium quality. As they are free to determine prices for superior quality rice, profits realized on this quality rice are used to cross-subsidize the minimum production required for standard and medium quality.

A cash subsidy for every tonne of paddy sold was introduced in 1980 and was further increased in 1984 and 1990. Under this scheme the government makes a fixed payment (currently RM 2.48 per kg) to farmers for paddy sold by them to any commercial rice mill. The subsidy is in addition to the GMP received by farmers. The fertilizer subsidy scheme has been operation since 1985. There was also a subsidies credit scheme for paddy farmers. This was terminated in 1996. In 2004, total government outlay on the price subsidy and fertilizer subsidy amounted to RM 477 million (about 2 percent of paddy sector value added). In addition to these direct subsidies, the government assists paddy farmer by providing drainage and irrigation facilities, and management and extension services. Total outlay on these support measures accounted for around 1.5 percent of total paddy sector value added in 2004 (WTO 2007).

Accompanying policies

Despite some instances of policy slippage, by and large Malaysia's macroeconomic policy was sound over the period under analysis: supporting growth and structural transition in real sectors. Budget deficits were generally kept within prudent limits while minimising the use of borrowed funds. The government continued to strictly adhere to the colonial policy of eschewing borrowing from the central bank for budgetary purposes. When overall deficits arose occasionally, they were financed from non-inflationary domestic sources, in particular private savings accumulated in

the Employee's Provident Fund (EPF). Moreover, broadening of the tax base in a booming economy, coupled with greater efficiency in tax collection, brought about a rapid increase in government revenue. For the first time in Malaysian history, the Federal Government achieved a balanced overall budget in 1993 and this was maintained in subsequent years. Compared to the 1986-89 period, the public sector was a net saver during 1990-96. The fiscal balance as a percentage of GDP turned around from a annual average deficit of 2.5 percent to a surplus of 1.5 percent between these two periods. Deficits financing, however, re-emerged as part of the policy response to the 1997-98 financial crisis. The budget deficit as a percentage of GDP increased from 1.8 percent in 1998 to 5.2 percent in 2002. However, it has come down since then, reaching 3.5 percent in 2006.

The Central Bank of Malaysia (Bank Negara Malaysia or BNM) has maintained an impressive track record, by developing country standards, in maintaining domestic price stability and averting real exchange rate misalignment (Corden 1996, Athukorala 2001). As part of the macroeconomic adjustment package introduced in 1986, greater flexibility was introduced to the basket peg. BNM's policy was to allow the exchange rate to reflect underlying trends of the economy, while intervening in the foreign exchange market to smooth excessive fluctuation in the exchange rate movements caused by fluctuations in short-term capital inflows. As can be seen in Appendix Figure A4, this policy was successful in achieving a significant depreciation of the overall real exchange rate (denoted RER-TP) from 1987 to about 1993. There was a mild appreciation of the real exchange rate in the three years leading up to the financial crisis in 1997, reflecting macroeconomic imbalances in the booming economy. The crisis was instrumental in reversing that appreciation. Despite the fixing of the exchange rate of the ringgit against the US dollar (at Ringgit 3.8 per dollar) in September 1998¹¹ and deficit financing as part of the crisis management package, by 2000 the real exchange rate had depreciated by almost 20 percent against the pre-crisis levels and it has remained virtually unchanged in subsequent years.

Note from Appendix Figure A4 that, over the past three decades, the RER for the export crop sector (RER-AG) has been behaving quite differently from the overall RER (denoted RER-TP). Notwithstanding some periodic depreciation triggered by

¹¹ The ringgit peg to the US\$ was abandoned in favor of a managed float system with effect from 21 July 2005.

increases in world commodity prices, RER-AG has appreciated steadily over the past two-and-a-half decades. This contrast reflects the ongoing structural transformation of the economy that has resulted in a persistent deterioration of the relative profitability of the traditional plantation crops sector.

Trends and patterns of agricultural incentives

This section provides an analysis of the changing extent and patterns of direct and indirect distortions to incentives faced by domestic agriculture in Malaysia using the methodology developed by Anderson et al. (2008). The main focus of the present study's methodology is on government-imposed distortions that create a gap between domestic prices and what they would be under free markets. Since it is not possible to understand the characteristics of agricultural development with a sectoral view alone, the project's methodology not only estimates the effects of direct agricultural policy measures but it also includes estimates of distortions in non-agricultural tradable sectors for comparative evaluation. Specifically, Nominal Rates of Assistance (NRAs) for the four covered products are compared with NRAs for nonagricultural tradables by calculating indices of Relative Rate of Assistance (RRA). In these calculations, non-covered agricultural products are assumed to have an average NRA of zero, and it is assumed the shares of non-covered farm production made up of exportables, importables and nontradables are one-third each.

Before turning to the estimates, it is important to bear in mind two important limitations of the estimates which we were not able to avoid because of data unavailability. First, in the case of the three plantation crops, we ignore potential differences between border (reference) prices and domestic prices arising from quality differences. This possibly infuses an underestimation bias into our calculations. Second, in all cases we have assumed complete pass-through of changes in producer (wholesale) prices to farm-gate prices. This potentially introduces an upward bias in our estimates. These limitations are, however, only important in comparing the effect on incentives among products or across countries at a given point in time. They are unlikely to distort inferences based on inter-temporal comparison (changes in

incentives over time) because the magnitude of the bias is unlikely to be time-variant. It is also important to note that the RRA estimates, due to the estimation method, do not fully capture distortions to agricultural incentives arising from changes in tariffs on tradable inputs. Given the cascading nature of Malaysia's tariff structure, this is a potentially important source of downward bias in the RRA estimates (Athukorala 2006c).

The estimates of direct distortions to incentives are reported as five-year averages in Table 3 and shown annually in summary form in Figure 2. The average NRA for all covered products was negative from 1960 to 1984, but its magnitude declined over the period, with the 5-year average fluctuating between 0 and 3 percent from the mid-1980s. However, this aggregate picture conceals very high assistance provided to paddy farmers.

NRA estimates for individual commodities point to broadly similar patterns in changes in incentives faced by the two major plantation products, rubber and palmoil (Table 3). In both cases, the NRA was negative throughout but the absolute magnitude declined sharply over the past two decades, reflecting cuts in export duties. However, with the exception of some early years, the degree of negative incentive to the palmoil industry was much lower in magnitude compared to that for rubber. For the entire period of 1960-2004, the annual average NRA for palmoil was -7.5 compared to -11.5 for rubber. Given the fact that fortunes of both products have been predominantly determined by domestic resource-pull effects, arising from rapid structural adjustment in the wider economy, the mainly relatively high negative assistance to rubber compared to palmoil remains a puzzling feature of the structure of incentives in Malaysia. Cocoa was never taxed heavily, as it was always considered a minor export crop. The NRA for this product varied between 0 percent and -3 percent over the period.

Among the four products under study, paddy rice is notable for its persistently high rate of assistance. The NRA for paddy/rice in the 1960s and early 1970s had an average level of 8.5 percent, although there was a high degree of annual fluctuation. It averaged almost 40 percent in 1975-79 following an upward adjustment in the guaranteed minimum price (GMP). It then reached a peak average of 158 percent in the 5-year period 1985-89 following the introduction of a price subsidy (over and above the GMP). Over the past two-and-a-half decades, the NRA for paddy has more than halved but in 2000-04 was still above 70 percent. The disaggregated data show

that the farm-gate price of paddy continued to be high with only periodic upward shifts resulting from increases in the GMP and the price subsidy (Appendix Figure A5d). In this context, the year-to-year variations in the NRA predominantly come from changes in the reference (border) price. For instance, the dramatic decline in NRA from 127 percent in 1990-94 to 57 percent in 1995-99 was brought about by sharp decline in world rice prices between these two periods. The NRA then increased to 71 reflecting some recovery in world prices.

Finally, a comparison of the weighted-average NRA for the three exportables (rubber, palmoil and cocoa) with that for the importable (which in this case is solely represented by paddy) points to a persistent bias in agricultural incentives in favor of import-competing, as against export-oriented, production (row 6 of Table 4). Based on similar estimates for the period 1960-1982, Jenkins and Lai (1991) inferred that excessive protection accorded to paddy farmers had a negative effect on the expansion of export agriculture. This inference does not seem valid for the period from about the late 1980s: continuous deterioration in the profitability of export-oriented agriculture as well as paddy production are predominantly rooted in the ongoing process of structural transformation of the wider economy. However, as already noted, heavy assistance to paddy producers is presumably a major source of distortion within the food-crop sector, which constrains resource reallocation from the structurally-weak paddy sector to high-value food production, for both the domestic and export markets.

The NRA to non-agricultural tradables sectors, which recorded a mild decline in the 1960s and 1970s, plummeted from then on reaching almost zero by the turn of the century. Both direct tariff cuts and rapid expansion of export-oriented manufacturing, which enjoys duty free status for all imported inputs in the production process, contributed to this decline. Disaggregated data (not reported here for brevity) show that the latter continued to act as a much more powerful force compared to the former.

As a consequence of these changes in both agricultural and non-agricultural assistance, the relative rate of assistance has gradually moved from being quite negative in the earlier decades to now being almost zero on average (Table 4). It needs to be noted, however, that this does not mean there are no further economic gains to be had from further policy reform. On the contrary, as shown at the bottom of Table 3, the dispersion of NRAs within the farm sector has not declined very much

over time, so there is still scope for improved resource reallocation were the assistance to paddy production to be phased out.

Concluding remarks

Malaysia stands out among developing countries for its long-standing commitment to maintaining a relatively open trade and investment policy regime. Malaysia has persistently eschewed a heavy reliance on quantitative restrictions and other forms of non-tariff protection. Tariffs on both domestic manufacturing and agriculture continue to be low relative to other developing countries. Export taxes, which were important sources of government revenue until about the mid-1980s, reduced over the years as the plantation sector experienced severe cost pressure emanating from rapid growth and structural change under export-led industrialization. The average level of import tariffs also decreased significantly over time, notwithstanding periodic upward adjustment of some tariffs and the special case of continuing heavy protection of the automotive industry. Malaysia's record of a commitment to openness is particularly remarkable in that it reflects unilateral and voluntary policy choices, rather than pressure from major trading partners or from conditionally imposed donor agency multilateral negotiations under the auspices of the GATT/WTO.

Nonetheless, there are notable anomalies in the incentive structure in Malaysia that encourage the channelling of resources into inefficient activities. In particular, the tariff structure is characterized by a dualistic pattern in which export-oriented production takes place under a virtual free trade regime side-by-side predominantly domestic market oriented production, both in manufacturing and agriculture, assisted by tariff protection. The tariff structure is also characterized by a high degree of dispersion of tariff rates because of high tariff peaks relating to a few product lines, and by increased reliance on non-automatic import licensing to regulate imports of a significant number of products that directly compete with domestic production of public sector enterprises. This significant departure from neutrality implies ample room for policy discretion, as opposed to pure economic policy, in influencing resource allocation in the economy.

Excessive assistance given to paddy farmers remains a major distortion in agricultural incentives in Malaysia. In addition to the obvious welfare implications, this anomaly presumably hinders the diversification of domestic agriculture towards new dynamic product lines. Given the ongoing process of dramatic structural transformation of the economy — which has ushered in an era of massive urban-to-rural labor migration and places cost pressures on traditional agriculture — the case for protecting paddy farmers on self-sufficiency grounds has lost relevance. Outright dismantling of assistance remains virtually a non-option because of political-economy considerations. Nonetheless, there is a strong case for replacing the existing complicated and costly incentives with direct income support to farmers. The fiscal burden of this is unlikely to be high because the agricultural labor force has been rapidly depleting and the incidence of rural poverty, though relatively high by national standards, has been declining. This is an issue which deserves further systematic analysis.

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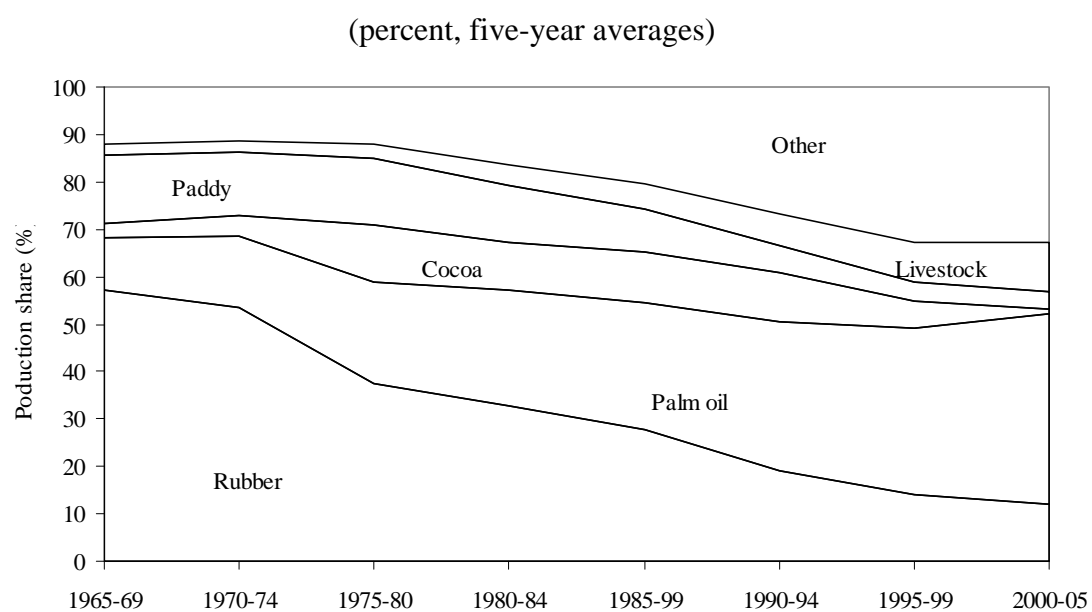
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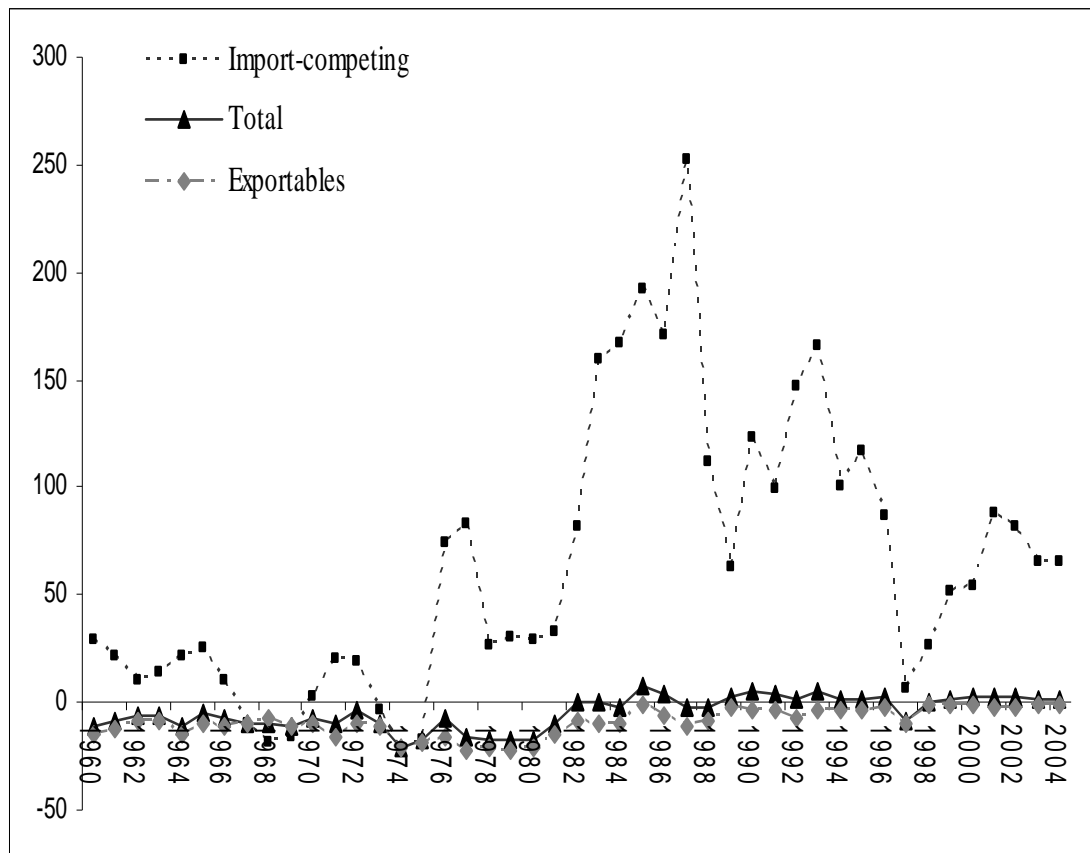
Figure 1: Commodity composition of agricultural GDP,^a Malaysia, 1965 to 2004



^a Excluding forestry and forestry products.

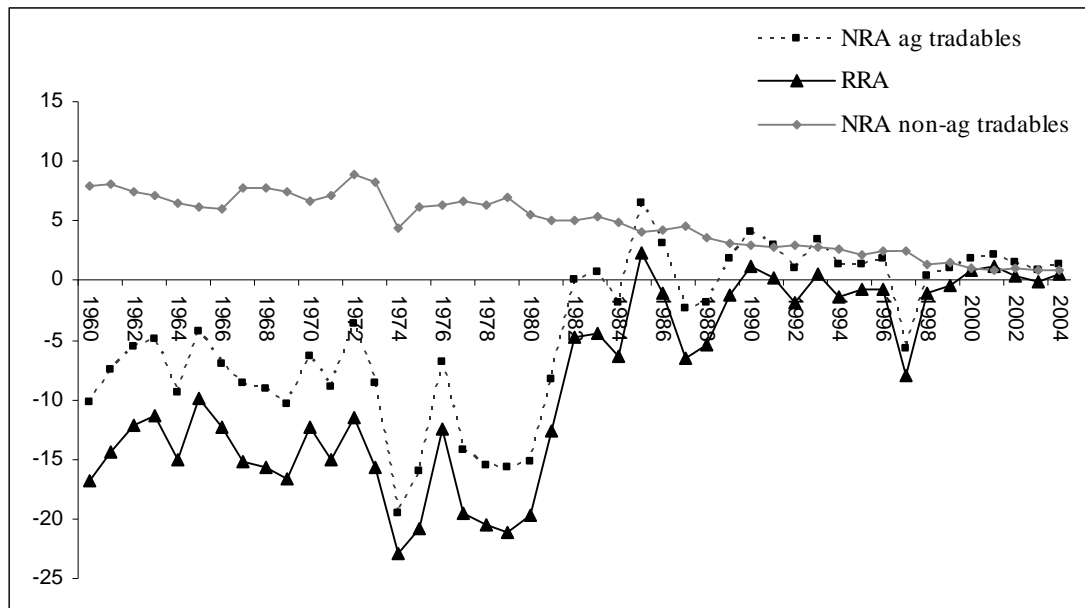
Source: Compiled from Economic Planning Agency data (see Appendix Table A3).

Figure 2: Nominal rates of assistance to exportable, import-competing and all covered agricultural products, Malaysia, 1960 to 2004 (percent)



Source: Authors' spreadsheet

Figure 3: Nominal rates of assistance to all agricultural and nonagricultural tradable industries, Malaysia, 1960 to 2004
(percent)



Source: Authors' spreadsheet

Table 1: Agriculture in the Malaysian economy, 1970 to 2005

(percent)

	GDP growth	Agri. Growth	Agri. Share in GDP	Agri. Share in employment
1970-74	2.3	3.4	25.5	50.9
1975-79	7.3	5.2	23.3	46.4
1980-84	6.6	3.4	20.4	39.5
1985-89	4.8	4.3	19.1	32.4
1990-94	9.3	0.2	15.3	26.9
1995-99	5.2	0.1	10.1	17.9
2000-04	5.2	3.8	8.7	15.0
2005	5.3	2.1	8.5	13.7

Source: Ministry of Finance (various issues).

Table 2: Share of agricultural exports in total merchandise exports, composition of agricultural exports, and world market share, Malaysia, 1970 to 2004

(percent)

	1970-74	1975-79	1985-89	1995-99	2000-04
Agri. share in exports	58	54	36	13	10
(excluding timber/ wood)	39	38	24	11	8
Composition of agricultural exports: ^a	100.0	100.0	100.0	100.0	100.0
Rubber	62.4	52.9	33.7	12.9	9.7
Palmoil	23.9	27.5	31.9	44.1	41.6
Cocoa	2.1	2.3	6.4	2.5	2.6
Spices	2.2	2.1	1.5	1.1	0.8
Processed food	8.7	8.5	15.6	26.2	31.6
Malaysia's world market shares:					
Rubber	62.1	56.8	36.7	19.9	19.3
Palmoil	70.3	77	74.5	64.3	54.5
Cocoa	3.1	3.3	11.4	4.0	4.3

^a Excluding timber/ wood.

Sources: Ministry of Finance (various issues) and Bank Negara Malaysia (various issues).

Table 3: Nominal rates of assistance to covered products, Malaysia, 1960 to 2004

(percent)

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Exportables ^a	-12.1	-9.6	-13.4	-20.0	-12.8	-5.6	-4.7	-3.6	-1.6
Palmoil	-11.4	-10.6	-15.2	-15.0	-5.8	-3.2	-3.1	-3.0	-1.1
Cocoa	0.0	-1.2	-2.8	-1.7	-1.5	-1.4	-2.3	-2.1	0.0
Rubber	-12.1	-9.5	-12.8	-22.5	-18.2	-8.7	-8.1	-6.8	-4.7
Import-competing products ^a	19.1	-1.9	3.1	39.2	93.8	158.0	127.2	57.4	71.0
Rice	19.1	-1.9	3.1	39.2	93.8	158.0	127.2	57.4	71.0
Total of covered products ^a	-8.4	-8.7	-10.5	-15.3	-5.7	1.8	3.4	-0.3	2.4
Dispersion of covered products ^b	30.6	18.5	21.1	43.8	53.4	65.8	57.3	36.7	43.2
% coverage (at undistorted prices)	86	86	86	85	80	75	67	59	57

^a Weighted averages, with weights based on the unassisted value of production.

^b Dispersion is a simple 5-year average of the annual standard deviation around the weighted mean of NRAs of covered products.

Source: Authors' spreadsheet

Table 4: Nominal rates of assistance to agricultural relative to non-agricultural industries, Malaysia, 1960 to 2004

	(percent)								
	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Covered products ^a	-8.4	-8.7	-10.5	-15.3	-5.7	1.8	3.4	-0.3	2.4
Non-covered products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All agricultural products ^a	-7.2	-7.5	-9.0	-13.0	-4.6	1.3	2.3	-0.2	1.3
Non-product specific (NPS) assistance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total agricultural NRA (incl. NPS) ^b	-7.2	-7.5	-9.0	-13.0	-4.6	1.3	2.3	-0.2	1.3
Trade bias index ^c	-0.22	-0.06	-0.14	-0.31	-0.35	-0.33	-0.28	-0.12	-0.12
<i>Assistance to just tradables:</i>									
All agricultural tradables	-7.6	-7.9	-9.4	-13.7	-4.9	1.4	2.6	-0.2	1.5
All non-agricultural tradables	7.4	7.0	7.1	6.5	5.2	3.9	2.8	2.0	0.9
Relative rate of assistance, RRA ^d	-14.0	-13.9	-15.5	-18.9	-9.6	-2.4	-0.3	-2.2	0.6

^a NRAs including product-specific input subsidies.

^b NRAs including product-specific input subsidies and non-product-specific (NPS) assistance. Total of assistance to primary factors and intermediate inputs divided to total value of primary agriculture production at undistorted prices (%).

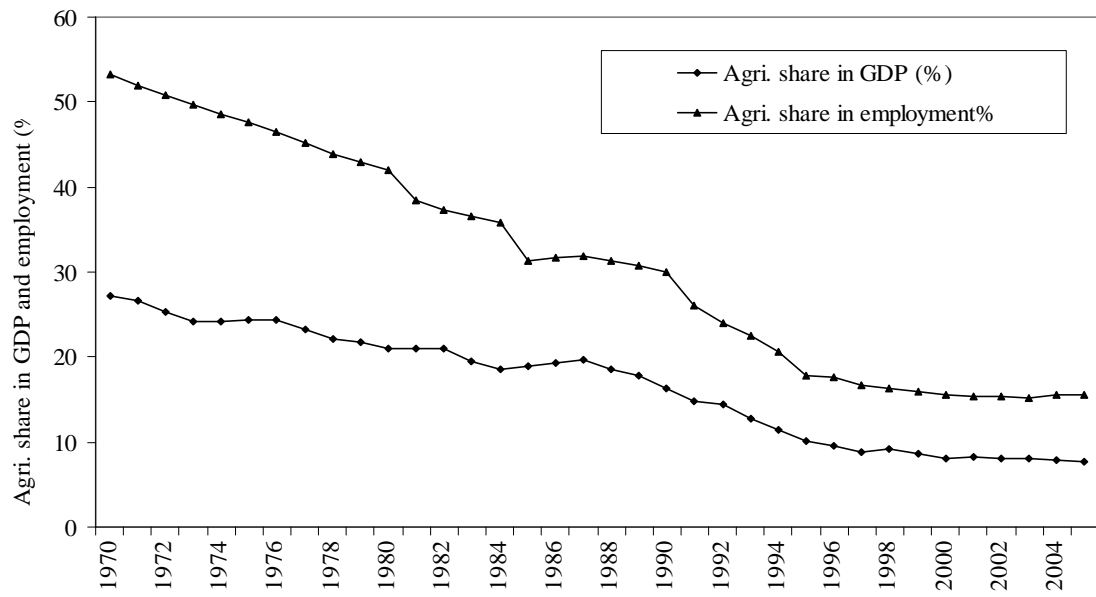
^c Trade bias index is $TBI = (1 + NRA_{ag_x}/100)/(1 + NRA_{ag_m}/100) - 1$, where NRA_{ag_m} and NRA_{ag_x} are the average percentage NRAs for the import-competing and exportable parts of the agricultural sector.

^d The RRA is defined as $100 * [(100 + NRA_{ag^t}) / (100 + NRA_{nonag^t}) - 1]$, where NRA_{ag^t} and NRA_{nonag^t} are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

^e These memo items show what the average NRA_{ag}, Trade bias index and RRA would be if the distortions in the market for foreign currency, as captured by the methodology outlined in Appendix 1 of this book, are ignored.

Source: Authors' spreadsheet

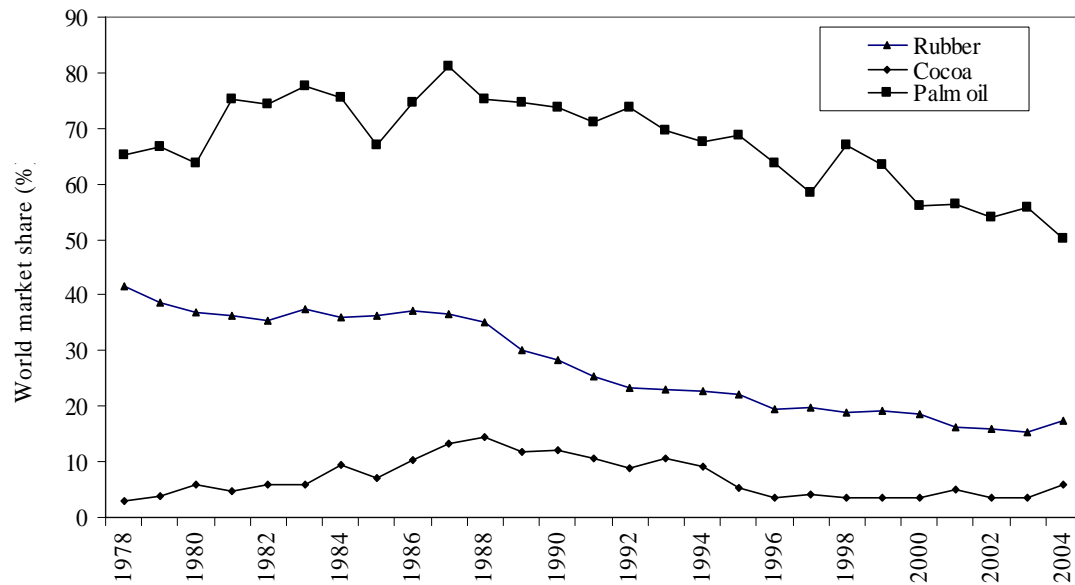
Appendix Figure A1: Contribution of agriculture¹ to GDP and employment,
Malaysia, 1970 to 2005
(percent)



1 Agriculture, forestry and fishing.

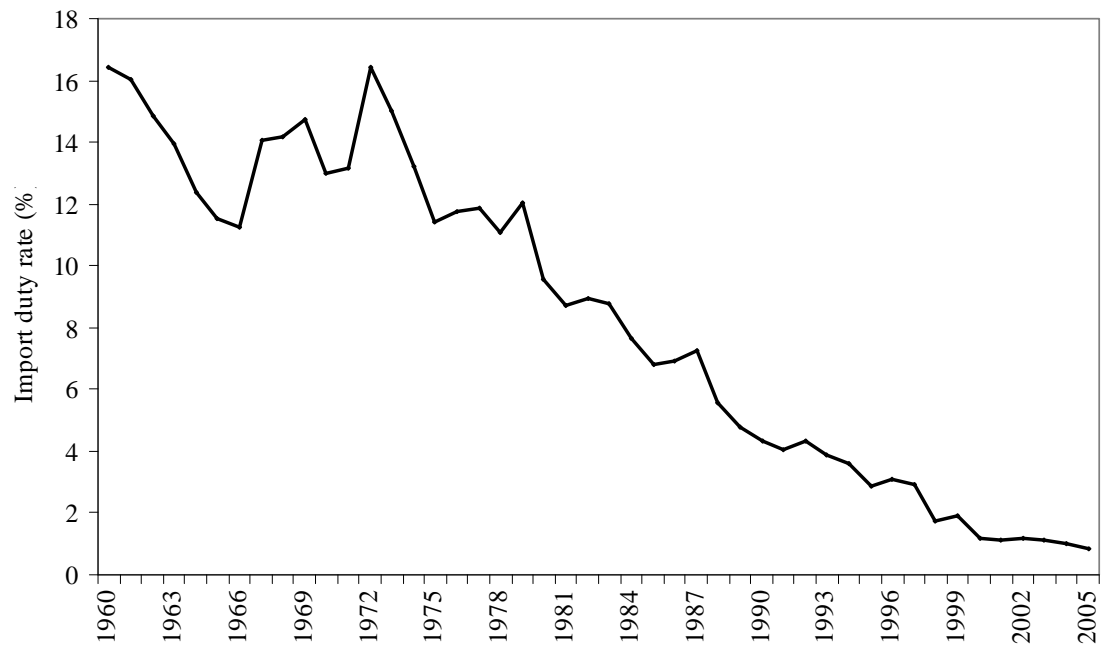
Source: Based on data compiled from Ministry of Finance (various issues)

Appendix Figure A2: Malaysia's share of world exports of natural rubber, cocoa and crude palmoil, 1978 to 2004
(percent)



Source: Based on data compiled from Department of Statistics (2002) and Bank Negara Malaysia (various issues).

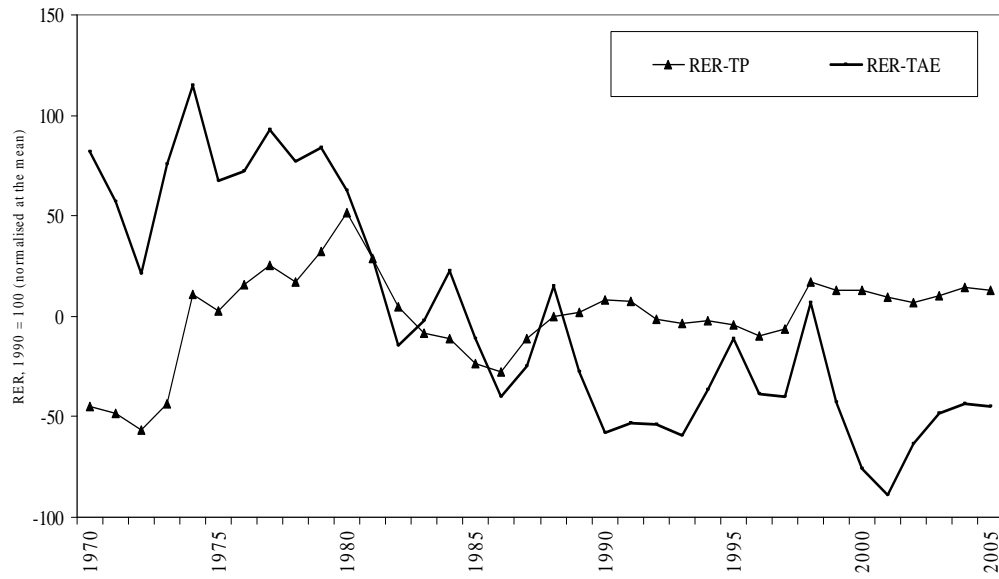
Appendix Figure A3: Average rate of import duty,^a Malaysia, 1960 to 2005
(percent)



^a Total duty collection as a percentage of total merchandise imports (excluding re-exports)

Source: Bank Negara Malaysia, Monthly Statistical Bulletin, Kuala Lumpur (various issues)

Appendix Figure A4: Real exchange rate, Malaysia, 1980 to 2005
(1990 = 100)



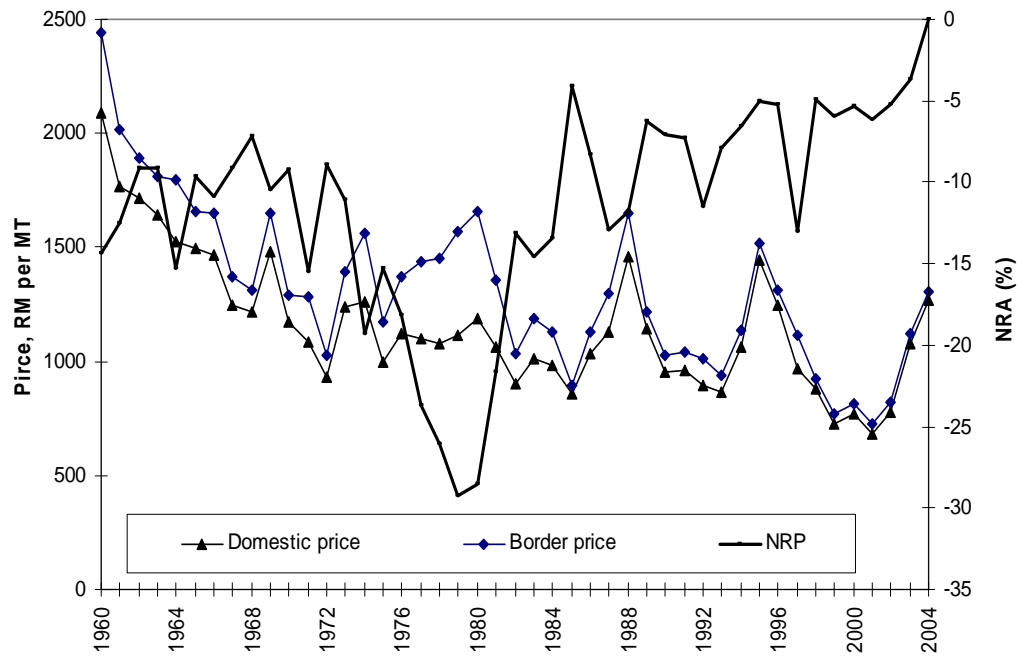
Note: 1. Normalized at the mean.

Legend: RER-TP Real exchange rate for tradable; RER-TAE Real exchange rate for traditional agricultural exports (rubber, palmoil and cocoa)

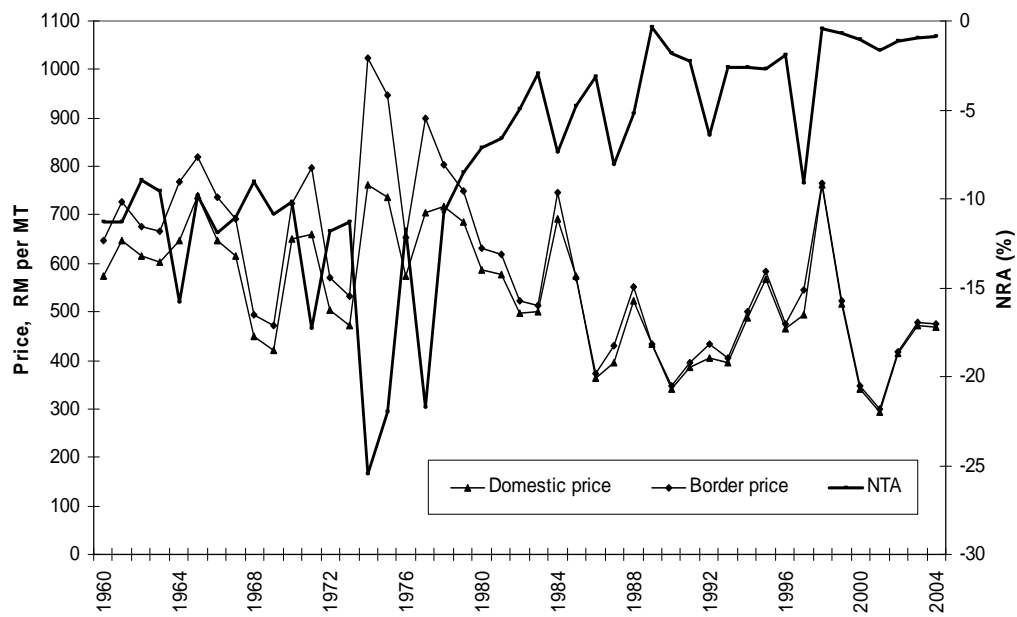
Source: Appendix Table A6

Appendix Figure A5: Prices for primary products, Malaysia, 1960 to 2005¹

(a) Rubber

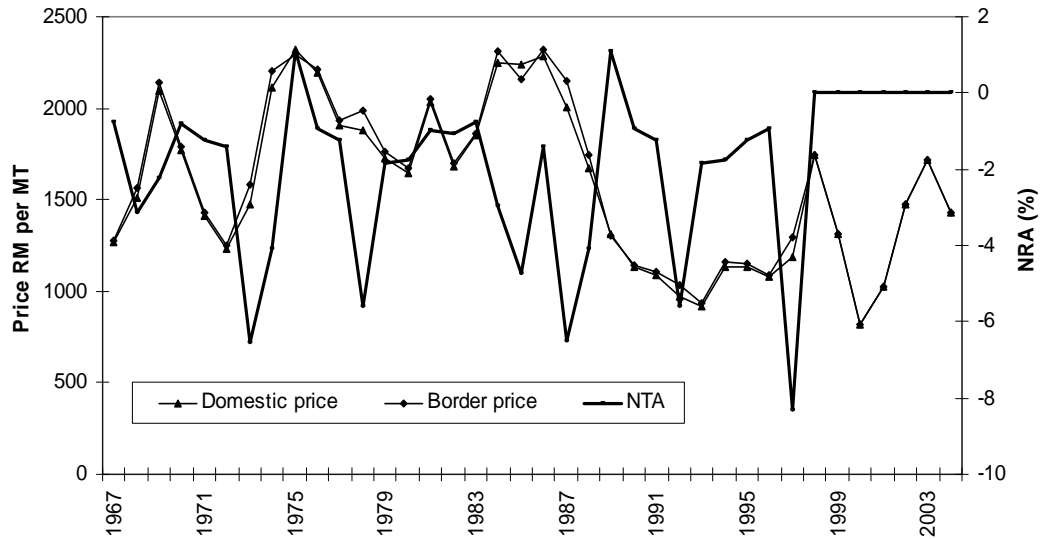


(b) Palmoil

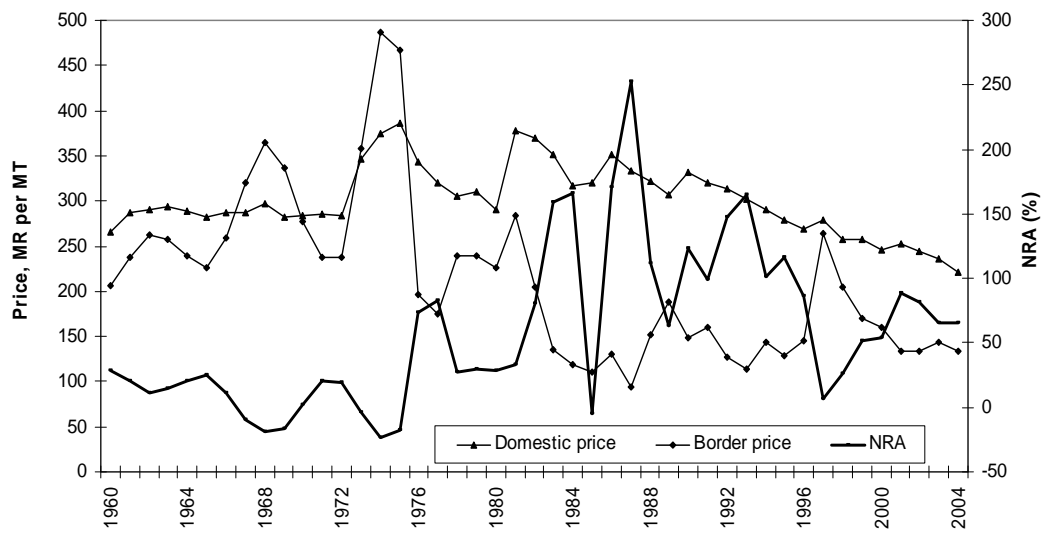


Appendix Figure A5 (continued): Prices for primary products, Malaysia, 1960 to 2005

(c) Cocoa



(d) Paddy/rice



Source: Appendix Table A5

Appendix Table A1: Area under cultivation, production and yield of major agricultural crops, Malaysia, 1960 to 2004

(five-year averages)

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
<i>Rubber</i>									
Crop are, 000 Ha	1664	1797	1999	1995	1994	1867	1759	1576	1319
Production, '000 tons	821	1120	1430	1577	1522	1497	1138	865	1010
Yield (tons per Ha)	494	601	695	784	754	661	657	591	675
<i>Palmoil</i>									
Crop are, 000 Ha	66	205	484	863	1186	1812	2310	3056	3759
Production, '000 tons	109	296	885	1910	1871	5255	6990	9434	13201
Yield (tons per Ha)	1649	1475	1706	2077	1600	2290	3008	3059	3390
<i>Cocoa</i>									
Crop are, 000 Ha	---	---	---	---	234	383	308	121	45
Production, '000 tons	---	---	---	---	75	210	192	94	41
Yield (tons per Ha)	---	---	---	---	305	490	621	751	905
<i>Paddy/rice</i>									
Crop are, 000 Ha	493	644	749	699	668	665	684	688	674
Production, '000 tons	1057	1428	1945	1906	1791	1734	2062	2094	1747
Yield (tons per Ha)	2188	2163	2544	2684	2716	2584	2934	3062	3211

Source: Department of Statistics (2002, 2005).

Appendix Table A2: Small holder share in total cultivated area of rubber and palmoil,
Malaysia, 1960 to 2004

(percent)

	Rubber	Palmoil
1960	50	17
1970	67	16
1980	75	35
1990	82	40
2004	93	40

Source: Department of Statistics (2002, 2005).

Appendix Table A3: Composition of agricultural GDP, Malaysia, 1965 to 2005

(percent)

	1965-69	1970-74	1975-80	1980-84	1985-99	1990-94	1995-99	2000-5
Plantation crops	71.3	72.9	71.2	68.7	64.8	60.8	54.8	53.2
Rubber	57.2	53.5	37.3	32.8	27.8	19.1	14.2	12.1
Palmoil	10.9	15.2	21.4	24.5	26.8	31.4	35.1	40.1
Cocoa	3.2	4.2	12.3	10.1	10.5	10.3	5.5	1.0
Food crops	28.7	27.1	28.8	31.3	35.2	39.2	45.2	46.8
Paddy	14.4	13.3	14.1	12.0	9.2	5.7	3.9	3.6
Livestock	2.3	2.5	3.0	4.4	5.3	6.9	8.5	10.5
Fisheries	5.5	5.7	5.9	8.3	11.6	14.5	15.6	14.5
Other	6.5	5.6	5.8	8.6	12.5	15.3	17.1	18.3

Source: Compiled from various published planning documents (Government of Malaysia 1971, 1997, 2001, 2006).

Appendix Table A4: Export duty rates on rubber and palmoil exports, Malaysia, 1960 to 2004

(percent, five-year averages)

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Rubber	8.4	6.7	9.0	23.2	17.3	7.3	6.1	4.7	4.7
Palmoil	7.7	7.8	11.6	15.9	4.7	1.7	1.1	0.8	1.1

Source: Ministry of Finance (various issues) and Bank Negara Malaysia (various issues).

Appendix Table A5: Prices for primary products, Malaysia, 1960 to 2005
(current RM local currency)

	Rubber		Crude Palmoil		Cocoa		Paddy/rice	
	DP	BP	DP	BP	DP	BP	DP	BP
1960	2,089	2440	573	646	---	---	265	206
1961	1,630	1863	596	672	---	---	265	219
1962	1,562	1718	560	615	---	---	265	239
1963	1,484	1632	545	603	---	---	265	232
1964	1,397	1649	593	705	---	---	265	219
1965	1,399	1548	691	766	---	---	265	212
1966	1,358	1524	600	681	---	---	265	239
1967	1,151	1267	566	637	1270	1280	265	295
1968	1,086	1170	401	441	1464	1511	265	326
1969	1,388	1551	395	443	2134	2183	265	317
1970	1,097	1209	607	676	1799	1813	265	258
1971	1,008	1193	613	741	1429	1447	265	221
1972	873	958	471	534	1252	1270	265	222
1973	1,360	1530	519	585	1764	1888	381	395
1974	1,561	1935	945	1269	2840	2961	464	603
1975	1,195	1410	887	1137	3020	2988	464	561
1976	1,521	1858	780	884	3220	3250	464	267
1977	1,591	2084	1,019	1302	3000	3037	464	254
1978	1,637	2214	1,094	1226	3100	3284	464	365
1979	1,896	2680	1,172	1281	3200	3260	530	408
1980	2,164	3027	1,071	1153	3250	3308	530	412
1981	1,963	2507	1,064	1139	4061	4101	698	524
1982	1,698	1955	938	987	3439	3476	698	385
1983	2,018	2361	993	1023	3992	4023	698	269
1984	2,054	2373	1,451	1567	5112	5267	663	249
1985	1,769	1846	1,189	1180	5026	4844	663	227
1986	1,952	2128	684	706	4676	4743	663	245
1987	2,253	2587	789	859	4342	4645	663	188
1988	3,006	3406	1,078	1138	3740	3899	663	313
1989	2,467	2632	933	936	3073	3040	663	407
1990	2,141	2305	767	782	2758	2784	744	334
1991	2,230	2406	897	918	2744	2778	744	373
1992	2,131	2409	964	1030	2507	2655	744	301
1993	2,128	2311	976	1001	2468	2514	744	280
1994	2,732	2923	1,253	1287	3167	3224	744	370
1995	3,838	4040	1,513	1555	3274	3315	744	343
1996	3,434	3625	1,287	1312	3236	3266	744	399
1997	2,771	3185	1,414	1556	3686	4020	798	751
1998	2,720	2860	2,355	2367	5846	5846	798	633
1999	2,242	2382	1,603	1615	4394	4394	798	526
2000	2,488	2629	1,111	1122	2879	2879	798	517
2001	2,154	2294	929	944	3494	3494	798	423
2002	2,545	2685	1,352	1367	5222	5222	798	438
2003	3,647	3788	1,602	1617	6313	6313	798	484
2004	4,563	4704	1,691	1706	5575	5575	798	483
2005	---	---	---	---	5434	5434	798	476

DP	Domestic price (RM per MT)	BP	Border price (RM per MT)
---	No data available		

Source: Authors' spreadsheet using methodology from Anderson et al. (2008)

Appendix Table A6: Foreign exchange rates, Malaysia, 1960 to 2005
(RM/US\$)

	Official rate	Black market rate	Real exchange rate (RER)	
			RER-TP ¹	RER-AG ¹
1960	3.06	3.12	---	---
1961	3.05	3.11	---	---
1962	3.06	3.08	---	---
1963	3.06	3.09	---	---
1964	3.07	3.21	---	---
1965	3.06	3.09	---	---
1966	3.08	3.15	---	---
1967	3.07	3.13	---	---
1968	3.08	3.10	---	---
1969	3.09	3.14	---	---
1970	3.08	3.12	46.63	240.2
1971	3.02	3.19	43.32	215.1
1972	2.81	2.85	35.55	179.5
1973	2.45	2.45	48.19	233.8
1974	2.41	2.48	102.75	273.1
1975	2.40	2.40	94.77	225.8
1976	2.54	2.49	107.72	230.5
1977	2.46	2.47	117.10	251.1
1978	2.32	2.31	108.99	235.0
1979	2.19	2.17	123.87	242.0
1980	2.18	2.18	143.06	220.5
1981	2.30	2.31	120.91	187.2
1982	2.34	2.36	96.38	143.5
1983	2.32	2.33	83.10	156.4
1984	2.34	2.38	80.66	180.5
1985	2.48	2.43	67.95	147.4
1986	2.58	2.60	64.40	118.3
1987	2.52	2.62	80.96	133.2
1988	2.62	2.68	91.70	173.1
1989	2.71	2.69	93.89	130.9
1990	2.70	2.71	100	100.0
1991	2.75	2.77	99.6	105.0
1992	2.47	2.55	90.4	104.5
1993	2.57	2.60	88.5	99.2
1994	2.62	2.65	89.9	121.7
1995	2.51	2.53	87.3	147.2
1996	2.52	2.53	82.2	119.5
1997	3.89	4.03	85.8	118.2
1998	3.80	3.80	108.7	165.0

1999	3.80	3.80	104.8	115.1
2000	3.80	3.80	104.7	82.7
2001	3.80	3.80	101.1	69.6
2002	3.80	3.80	98.7	94.7
2003	3.80	3.80	102.1	110.1
2004	3.80	3.80	105.9	115.0
2005	3.78	3.78	104.6	113.5

Note

1. RER-TP Real exchange rate for tradable

$$= [\text{NER} \times \text{WPI}] / \text{DPI}$$

Where, NER and WPI are respectively trade-weighted nominal exchange rate (domestic-currency price of foreign currency) and trade-weighted wholesale price indices for the ten major trading partner countries, and DPI is the Malaysian GDP deflator. Trade weight used in compiling NER and WPI relate to the year 2000. By construct, an increase in RER reflects real depreciation.

2. RER-TAE Real exchange rate for traditional agricultural exports (rubber, palm oil and cocoa)

$$= [\text{NER} \times \text{EP}] / \text{DPI}$$

Where, EP is export price index for rubber, palmoil and cocoa estimates as weighted-average of FOD price of each product (export value shares are used as variable weights) and the other variables are as defined in Note 1.

--- Data not available.

Source:

Official rate: International Monetary Fund, *International Financial Statistics (IFS) database*.

Black-market rate: *International Currency Yearbook* (various issues)

RER: estimated using data extracted from IFS database and Bank Negara Malaysia (various issues) for export data for traditional agricultural exports.

Appendix Table A7: Nominal rates of assistance to covered agricultural products, Malaysia, 1960 to 2004

	(percent)				
	Cocoa	Palmoil	Rice	Rubber	All covered
1960	0	-11	29	-14	-11
1961	0	-11	21	-13	-8
1962	0	-9	11	-9	-6
1963	0	-10	14	-9	-6
1964	0	-16	21	-15	-11
1965	0	-10	25	-10	-5
1966	0	-12	11	-11	-8
1967	-1	-11	-10	-9	-10
1968	-3	-9	-19	-7	-10
1969	-2	-11	-16	-11	-12
1970	-1	-10	3	-9	-7
1971	-1	-17	20	-16	-10
1972	-1	-12	19	-9	-4
1973	-7	-11	-3	-11	-10
1974	-4	-26	-23	-19	-22
1975	1	-22	-17	-15	-18
1976	-1	-12	74	-18	-8
1977	-1	-22	83	-24	-16
1978	-6	-11	27	-26	-17
1979	-2	-9	30	-29	-18
1980	-2	-7	29	-29	-17
1981	-1	-7	33	-22	-10
1982	-1	-5	81	-13	0
1983	-1	-3	160	-15	1
1984	-3	-7	167	-13	-2
1985	4	1	192	-4	8
1986	-1	-3	171	-8	4
1987	-7	-8	253	-13	-3
1988	-4	-5	112	-12	-2
1989	1	0	63	-6	2
1990	-1	-2	123	-7	5
1991	-1	-2	100	-7	4
1992	-6	-6	147	-12	1
1993	-2	-3	165	-8	5
1994	-2	-3	101	-7	2
1995	-1	-3	117	-5	2
1996	-1	-2	86	-5	3
1997	-8	-9	6	-13	-8
1998	0	-1	26	-5	1
1999	0	-1	52	-6	2
2000	0	-1	54	-5	3
2001	0	-2	89	-6	3
2002	0	-1	82	-5	2
2003	0	-1	65	-4	1
2004	0	-1	65	-3	2

Source: Authors' spreadsheet.

Appendix TableA8: Nominal and relative rates of assistance to all^a agricultural products, to exportable^b and import-competing^b agricultural industries, and relative^c to non-agricultural industries, Malaysia, 1960 to 2004 (percent)

	Total ag NRA				Ag tradables NRA		
	Covered products		Non-covered products	All products (incl NPS)		Non-ag tradables NRA	RRA
	Inputs	Outputs					
1960	0	-11	0	-10	-10	8	-17
1961	0	-8	0	-7	-8	8	-14
1962	0	-6	0	-5	-6	8	-12
1963	0	-6	0	-5	-5	7	-11
1964	0	-11	0	-9	-9	7	-15
1965	0	-5	0	-4	-9	6	-10
1966	0	-8	0	-7	-10	6	-12
1967	0	-10	0	-8	-6	8	-15
1968	0	-10	0	-9	-9	8	-16
1969	0	-12	0	-10	-4	8	-17
1970	0	-7	0	-6	-9	7	-12
1971	0	-10	0	-9	-9	7	-15
1972	0	-4	0	-3	-19	9	-12
1973	0	-10	0	-8	-16	8	-16
1974	0	-22	0	-19	-7	4	-23
1975	0	-18	0	-15	-14	6	-21
1976	0	-8	0	-7	-15	6	-12
1977	0	-16	0	-13	-16	7	-20
1978	0	-17	0	-15	-15	6	-21
1979	0	-18	0	-15	-15	7	-21
1980	0	-17	0	-14	-8	6	-20
1981	0	-10	0	-8	0	5	-13
1982	0	0	0	0	1	5	-5
1983	0	1	0	1	-2	5	-4
1984	0	-2	0	-2	6	5	-6
1985	0	8	0	6	3	4	2
1986	0	4	0	3	-2	4	-1
1987	0	-3	0	-2	-2	5	-7
1988	0	-2	0	-2	-2	4	-5
1989	0	2	0	2	2	3	-1
1990	0	5	0	4	4	3	1
1991	0	4	0	3	3	3	0
1992	0	1	0	1	1	3	-2
1993	0	5	0	3	3	3	1
1994	0	2	0	1	1	3	-1
1995	0	2	0	1	1	2	-1
1996	0	3	0	2	1	3	-1
1997	0	-8	0	-5	2	2	-8
1998	0	1	0	0	-6	1	-1
1999	0	2	0	1	0	2	0
2000	0	3	0	2	1	1	1
2001	0	3	0	2	2	1	1
2002	0	2	0	1	2	1	0
2003	0	1	0	1	1	1	0
2004	0	2	0	1	1	1	0

^a NRAs including assistance to nontradables and non-product specific assistance.

^b NRAs including products specific input subsidies.

^c The Relative Rate of Assistance (RRA) is defined as $100 * [(100 + \text{NRA}_{\text{ag}}^t) / (100 + \text{NRA}_{\text{nonag}}^t) - 1]$, where NRA_{ag}^t and $\text{NRA}_{\text{nonag}}^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: Authors' spreadsheet.

Appendix Table A9: Value shares of primary production of covered^a and non-covered products, Malaysia, 1960 to 2004 (percent)

	Cocoa	Palmoil	Rice	Rubber	Non-covered
1960	na	3	7	91	14
1961	na	3	12	84	14
1962	na	4	15	81	14
1963	na	4	16	80	14
1964	na	5	13	82	14
1965	na	6	14	79	14
1966	na	7	15	78	14
1967	0	8	20	72	14
1968	0	7	24	69	14
1969	0	6	18	75	14
1970	0	13	19	68	14
1971	0	19	16	65	14
1972	0	20	20	60	14
1973	0	13	20	66	14
1974	0	26	20	53	14
1975	1	34	21	44	15
1976	1	25	10	65	15
1977	0	36	7	57	15
1978	1	32	7	61	15
1979	1	31	9	60	15
1980	1	30	8	61	17
1981	1	36	12	51	19
1982	1	46	10	42	21
1983	2	39	6	53	23
1984	2	61	4	33	25
1985	3	57	5	36	25
1986	4	41	5	49	25
1987	4	38	3	55	25
1988	3	50	5	42	27
1989	3	57	7	33	29
1990	3	54	7	36	31
1991	3	59	8	31	33
1992	2	64	6	28	35
1993	2	65	5	28	37
1994	1	63	5	30	39
1995	1	72	4	23	41
1996	1	72	6	21	41
1997	1	75	9	16	41
1998	1	85	5	9	42
1999	1	84	5	10	42
2000	0	82	8	10	43
2001	0	77	6	17	43
2002	0	78	5	16	43
2003	0	79	4	17	43
2004	0	96	4	na	43

^a At farmgate undistorted prices

Source: Authors' spreadsheet.