LAND USE FOR RUBBER AND RICE IN MALAYA 1947-1960

by

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B.A.(HONOURS), UNIVERSITY OF MALAYA, SINGAPORE, 1960

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

IN THE DEPARTMENT

OF

ECONOMICS

WE ACCEPT THIS THESIS AS CONFORMING TO THE

REQUIRED STANDARD

THE UNIVERSITY OF BRITISH COLUMBIA

AUGUST, 1962

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Date August 30, 1962

ABSTRACT

This is an exploratory study. Its purpose is to delineate and identify the important factors influencing land use in Malaya during the period 1947 to 1960.

Since the subject of land use is very wide our aim is to deal only with agricultural land use. Other uses are discussed only incidentally or as they are involved in the shifting uses of land.

The scope and nature of land use patterns in Malaya as in other countries, is a reflection of economic, geographical and political factors. Land use usually reflects the operation of the principle of comparative advantage. Theoretically different types of land would normally be put to their best uses and any instability which exists would be cleared up by the market mechanism. Institutional barriers often impede this development as we show in the Malayan case.

Two conflicts are apparent in the land use policies in Malaya. The first is between rubber and rice; that is, whether to specialise in the production of rubber, over which Malaya has a comparative advantage, or to produce rice for subsistence over which Malaya does not have a comparative advantage. Of course the rational course from an economic point of view is to produce more rubber. But more than economics are involved in such issues.

The other conflict is whether to produce rubber on

estates, which are the large scale enterprises, or on smallholdings, which are the peasant, small scale enterprises. Again more than economics, are involved.

In this study attention is focussed primarily on the rubber-rice land use pattern. Even then rubber gets most of the attention. Technical questions especially those relating to rubber are of considerable interest but these are discussed only insofar as they have general economic relevance.

The study as a whole can be divided into three parts. Chapters I and II comprise the first section. The opening chapter contains the economic and historical background to the land use patterns in Malaya and points out the rubber-rice land use pattern.

In Chapter II we discuss the theoretical, suggested effects of the dual pattern of land utilisation. An attempt is also made to apply the dualistic theories of economic growth to Malaya in order to ascertain whether the conclusions of these theorists are verified in Malaya.

The second section comprises of Chapter III. Here we discuss the obstacles to good land utilisation in the post war period.

The third major section takes up the remaining chapters, all of which deal largely with rubber, which is one of the mainstays of the Malayan economy.

In Chapter IV we discuss the relative efficiency of

estates and smallholdings as producers of rubber. This chapter may be said to contain the heart of the matter since it helps us to evaluate two recent developments, which are discussed in Chapters V and VI.

Chapter V, the "break-up" of rubber estates, discusses the various aspects of estates which have been diminishing in size. The most important effect of this is the creation of smallholdings and a loss in government revenue.

The second recent development, the land development schemes initiated by the government, is discussed in Chapter VI. Here again the chief effect is the creation of rubber smallholdings.

The concluding chapter has the twofold aim of summarising the main findings to this study and of setting out briefly the possible future trends of land use in Malaya.

ACKNOWLEDGEMENTS

I am greatly indebted to my supervisor, Professor Anthony D. Scott for the liberal allotment of his time, a very scarce factor of production indeed, and for his stimulating suggestions and comments and constant efforts to set me on the right track. I would also like to thank the Social Science Division of the University Library for their co-operation in obtaining literature pertaining to Malaya. Finally I would like to acknowledge my obligation to the Canadian Commonwealth Scholarship Committee for making my Master's programme possible.

CONTENTS

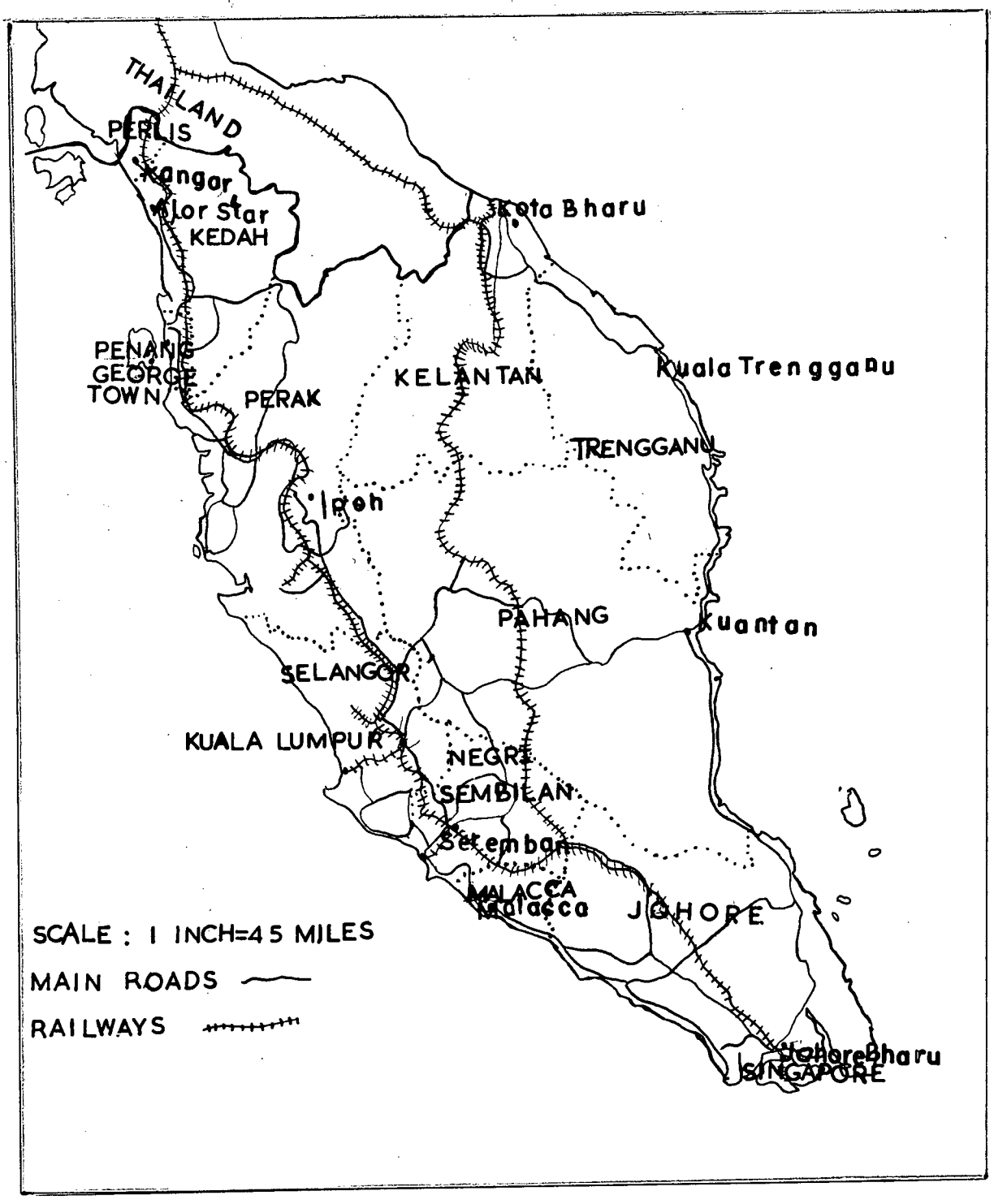
TABLE OF CONTENTS

LIST OF TABLES

LIST OF MAPS

MALAYA

MAP I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TRENGGANU
Ipoh
PAHANG
Kuantan
SELANGOR
KUALA LUMPUR
NEGRI SEMBILAN
Seremban
MALACCA
Malacca
JOHORE
Johore Bharu
SINGAPORE
SCALE : 1 INCH=45 MILES
MAIN ROADS
RAILWAYS

CHAPTER I

THE LAND USE PATTERN BY 1947

The purpose of this chapter is to serve as a background to the post war pattern of land use. In this introductory chapter we will briefly sketch the land use pattern and then go on to give an account of the rubber-rice land use pattern of development.

In this and subsequent chapters we are concerned only with the utilisation of land for agricultural purposes; other uses are discussed only incidentally or as they are involved in the shifting uses of land.

The scope and nature of the land use patterns in Malaya,[1] as in other countries, is a reflection of economic, geographical and political factors. From the economic standpoint, land utilisation is concerned primarily with the characteristics and conditions, conflicts, shift and adjustments in land use that arise from the use of land as a resource. Also involved is the physical response of land to varying applications of capital and labour, the individual and social costs and benefits of land use, and the operational effect of land policies on the use of land.

Land use usually reflects the operation of the prin-

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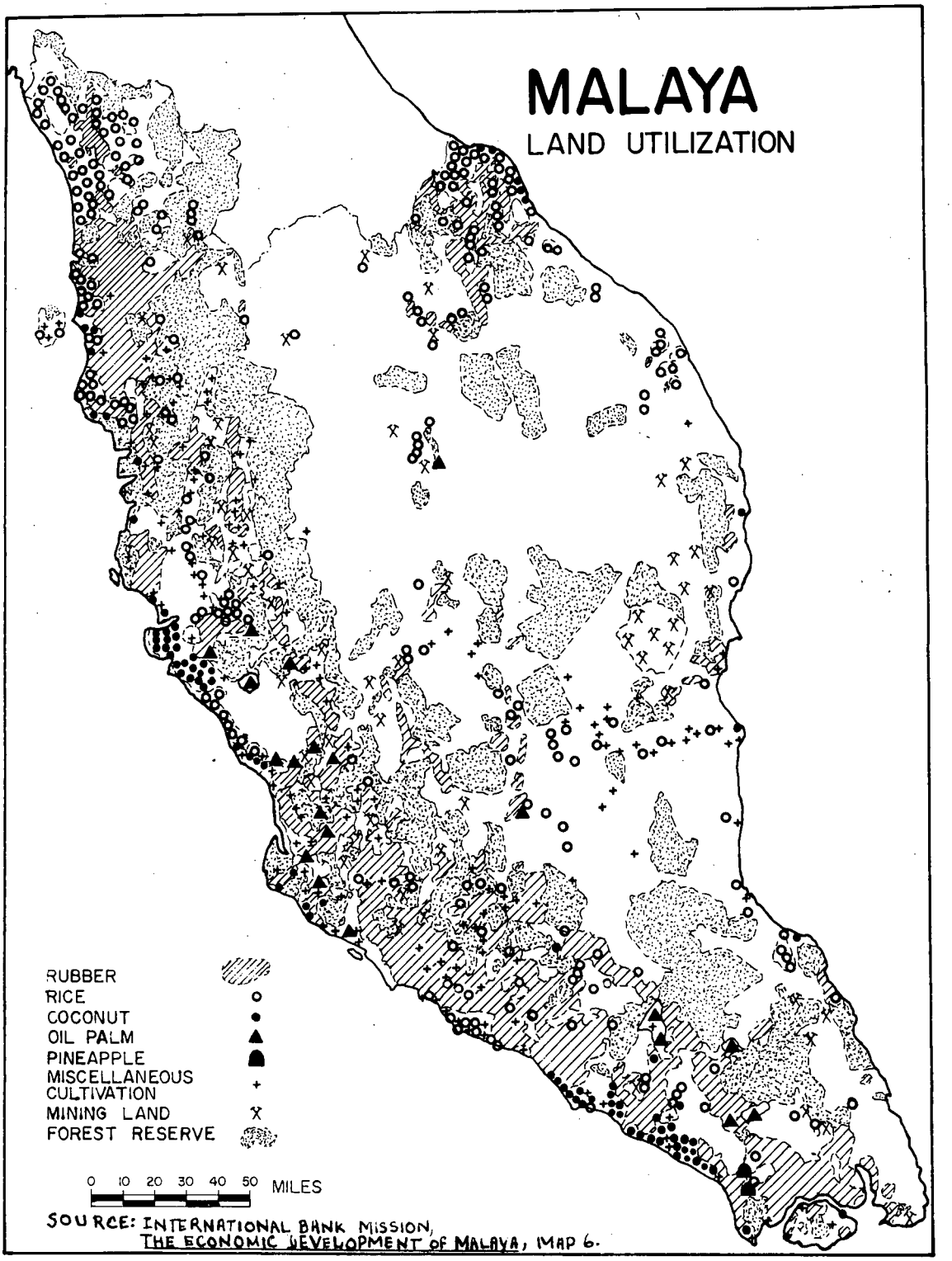
[1]Unless otherwise stated, Malaya means only the Federation of Malaya and does not include Singapore. Also unless otherwise stated, all values are in Malayan dollars. $M1 = U-S$.33 cents.

MAP II


MALAYA
LAND UTILIZATION
RUBBER
RICE
COCONUT
OIL PALM
PINEAPPLE
MISCELLANEOUS CULTIVATION
MINING LAND
FOREST RESERVE
0 10 20 30 40 50 MILES
SOURCE: INTERNATIONAL BANK MISSION, THE ECONOMIC DEVELOPMENT OF MALAYA, MAP 6.

ciple of comparative advantage,factors of physical productivity, economic location, efficiency and the costs of the various factors used in the process. Theoretically, different types of land would normally be put to their best uses and any instability which exists would be cleared up through the market mechanism. Institutional barriers often impede this development, as we shall see in the Malayan case.

Land Utilisation in 1947

We will now give a brief description of the land use pattern, which is graphically depicted in Map II. Approximately eighty per cent of the country lies under jungle, mountain or swamp. The only fully cleared parts of the country are along the west coast, an area in the north and a number of stretches up the principal rivers. In the area cleared of jungle are the rubber plantations and smallholdings, tin mines, rice fields, coconut and oil palm estates, from all of which the country's wealth is derived. Hence the population and economic life of Malaya are largely concentrated on the coastal areas and hinterlands of the west coast.

It is evident from Table I and Map II that rubber occupies well over half of the total cultivated area. It is a principal crop not only on estates[2] but also on peasant holdings.

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[2]Generally estates are defined as units of operation over 100 acres. Smallholdings are defined as units of operation under 100 acres. For a more detailed definition see Chapter IV, p. 93.

Next in importance after rubber is rice, which is cultivated on about sixteen per cent of the land. It is entirely a smallholders crop. Rice yields are the highest for South-east Asia but Malaya depends on imports for about half her requirements.

TABLE I

AREA UNDER AGRICULTURAL CROPS, 1947

Crop	Acres	per cent
Rubber	3,481,000	68.7
Rice	831,538	16.2
Coconuts	512,000	10.1
Oil Palms	78,405	1.6
Pineapples	11,920	.2
Tea	9,016	.2
Market gardens	15,019	.3
Other food crops	146,329	2.9
Total cultivated area	5,067,226	100

Source: Great Britain, Colonial Office, Colonial Annual Reports, The Malayan Union, 1947, London, Her Majesty's Stationery Office, 1949, pp. 35-39.

Other crops of commercial importance are coconuts, grown on about 512,000 acres by both estates and smallholders, and oil palms which occupy about 78,400 acres and which are exclusively an estate crop.

Miscellaneous fruits, vegetables, other food crops and spices are cultivated on about 182,300 acres for subsistence purposes, often as a supplement to the major crops, for example, rubber, rice, or coconuts. However specialised commercial cultivation is also important, especially of fresh vegetables and fruits, including pineapples for the canning industry and tea, mainly for domestic consumption.

In spite of the importance of agriculture in the Malayan economy, the region is not self-sufficient in foodstuffs due to the relative advantages of, and degree of specialisation in rubber and to the climatic limitations for many food crops. However the idea of self-sufficiency is pervasive in official policies regarding land use. It is particularly important in the rubber-rice alienation policies which we turn to next.

The investigation into the rubber-rice land use patterns and policies can be divided into two, that relating to rubber and that relating to rice, each of which is discussed in turn.

The justification for concentrating on rubber and rice is that rubber is the chief export crop and rice the staple food crop. The alternatives so far as land use is concerned, are between production for export and production for subsistence. The interdependence between the two can be seen by the following illustration: the value of land suitable for rubber

cultivation depends not only on the price of rubber but also on the wages being paid in alternative occupations (particularly rice farming in the case of smallholders) open to labour, which is required to develop and maintain the holdings, as well as on the cost of moving from one district to another. The value of land is therefore contingent on the price of rubber as well as on the cost of internal migration.

It cannot be overemphasised that the Malayan economy revolves around rubber and to lesser extent around tin. The emphasis on rubber is substantiated by the following figures[3] from which we notice that rubber is of overwhelming importance by any criterion. About sixty per cent of the foreign exchange earnings and thirty-three per cent of government revenue have rubber as their source; about 25.9 per cent of all gainfully occupied persons were employed in the rubber industry in 1947; and in 1953 rubber contributed thirteen per cent to the national income.

3(i) Foreign exchange earnings -- Federation of Malaya, Second Five Year Plan 1961-1965, Kuala Lumpur, Government Printer, 1961, p. 15.

(ii) Employment in the rubber industry--International Bank for Reconstruction and Development, The Economic Development of Malaya, Singapore, Government Printer, 1955, Table II, p. 8. Hereafter referred to as The Bank Mission Report.

(iii) National Income--Ibid., Table IV, p. 9.

The Emergence of the Rubber Industry in Malaya

The economic foundations of modern Malaya may be dated to the extension of British rule over the Peninsula.[4] British rule not only brought peace and security but also with it came British and, to a lesser extent, other European capital. The opening up and development of Malaya at least in the initial stages was achieved by non-indigenous persons. With the British came rubber so that the land use pattern as it exists today can be directly related to the introduction of rubber into the economy.

Rubber did not come effectively into the Malayan picture or for that matter, the world picture until the beginning of the present century. Up to that time the relatively small amount of rubber that was required for existing needs came from the Amazon. The rubber industry as it is today was called into being by the appearance of the automobile and the invention of the pneumatic tyre. Before long it had replaced all other agriculture in Malaya.

Several factors were responsible for the investment in rubber, the cultivation of which was especially attracted to the west coast. A skeleton network of roads and railways were already laid out to serve the mining industry of the

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[4]Between 1874 and 1909, the nine Malay States which had fallen into a condition of semi-anarchy and chronic misrule were brought under British rule. See L.A. Mills, British Rule in East Asia, London, Oxford University Press, 1942, p. 3.

western foothills. Well drained sites and proximity to ports were contributory factors. Besides much of the earlier rubber was planted on land which had been under sugar and coffee plantations. As we have noted above, capital for investment in rubber came with the extension of British rule. The availability of cheap supplies of labour from India and China also gave impetus to investment in estate rubber. Moreover as the demand for rubber increased, difficulties in the collection of wild rubber from South America also increased as producers were driven to the extensive margin of the jungle.

In 1900 only 5,000 acres of rubber had been planted. During the next decade however, she was producing one-half of world rubber production.[5] Malaya's success in rubber, in relation to other tropical areas, was not due to particularly fertile soil, rather it was due to labour supplies, communications, health services and the relatively large amounts of unused land in a suitable climate.

A large number of companies of varying sizes were floated. The European owned estates generally tend to be larger--ninety-two per cent of their estates are more than 1,000 acres.[6] Asian owned estates are generally smaller; of

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[5]T.H. Silcock, The Economy of Malaya, Singapore, Donald Moore, 1960, p. 17.

[6]J.J. Puthucheary, Ownership and Control in the Malayan Economy, Singapore, Eastern Universities Press, 1960, p. 26.

these only sixteen per cent of the Chinese and thirteen per cent of the Indian estates are more than 1,000 acres.[7]

At first rubber was an estate crop only. The history of peasant participation in rubber cultivation closely follows that of estates. The effects of contact with agricultural practices of the more "advanced" countries have been very different from those assumed by the "International Demonstration Effect".[8] In this case it has promoted economic growth by encouraging production for the market.

It appears that Chinese merchants probably used some pressure through goods supplied on credit, encouraging Malay and other peasants to plant rubber. The Malay peasants, attracted by the large profits being made, cut down their fruit trees and rice plants to plant rubber.[9] The reason for this might have been that they could not obtain land to cultivate rubber or that they did not have the capital to purchase land.

Rubber introduced the only significant change in the Malay rural landscape. The reasons why the peasants took to rubber are quite different from those of estate investment in

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[7] Loc cit.

[8] Cf. R. Nurske, Problems of Capital Formation in Underdeveloped Countries, Oxford, Basil Blackwell, 1955, pp. 61-66, 70.

[9] R.O. Winstedt, The Malays, a Cultural History, London, Rutledge and Kegan, 1950, p. 127.

rubber. The cultivation of rubber made few demands on the smallholder's time and it fitted easily into the Malay village setting with its emphasis on tree crops. The smallholder also discovered that an acre of rubber could give him an income over and above that which he could derive from an acre of rice. However, this abandoning of rice fields did not occur in Eastern Malaya where the customary occupation, rice, is inextricably bound up with the peasant's whole way of life.

The response of the peasants can also be said to have come from the need to pay taxes, rents and to satisfy new social wants. Subsistence production which depends on a closed system of exchange within the community, gradually gave way to production for the market. Thus we see that even during the first decades of this century the indigenous peasants were fairly quick in their response to changing opportunities.

The Effects of Rubber Restriction Schemes on Land Use

Up to now we have discussed the growth of the rubber industry. In the next section we turn to the rubber restriction schemes which were an important factor influencing the acreage under rubber.

By 1920, Malaya was producing fifty-three per cent of the world's rubber.[10] Up to 1920, too, the history of rubber

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[10] L.A. Mills, Malaya, A Political and Economic Appraisal, Minneapolis, University of Minnesota Press, 1958, p. 22.

had been one of expanding markets. There was a direct relationship between rubber plantings and the long run trend of rubber prices as Table II shows.

TABLE II

NEW RUBBER PLANTINGS AND NEW YORK CRUDE RUBBER PRICES, AVERAGES, 1900-1933

Period	Additional Area Planted (000 acres)		Av. Annual Price (cents per pound)
	Estates	Smallholdings	
1900-1909	439	78	109.8
1910-1914	219	117	123.4
1915-1919	174	169	63.8
1920-1924	88	95	25.4
1925-1928	215	375	63.0
1929-1933	130	78	9.2

Source: K.E. Knorr World Rubber and its Regulation, Stanford, Stanford University Press, 1945, p. 67.

The industry grew rapidly up to 1914 and was scarcely able to keep up with the increasing demand. After 1914 however, the new plantings reached maturity and supply exceeded demand. Because of the inelastic nature of rubber production, supplies could not be substantially reduced.[11] Surplus stocks were still further increased by the depression of 1920-1922.

[11] The inelastic nature of rubber production is discussed in Chapter IV, pp. 103-108.

Consequently the planters appealed to the government for a scheme to restrict production. According to Rowe,[12]

> The strongest argument in favour of the advisability of restriction, if not its necessity, was that the credit structure of the Chinese community could not have stood the strain much longer. The Chinese had a good deal of immature rubber on their hands, planted between 1916 and 1922. The same could be said of the numerous British estates, especially the "dollar" [13] companies.

From 1922-1939, the rubber industry was intermittently under restriction schemes. We are not concerned essentially with the nature and workings of these schemes, but with their effects on land use.[14]

The first restriction scheme, the Stevenson Scheme, 1922-1928, "... brought a short period of hectic prosperity to Malaya, but its long run consequences have been utterly disastrous".[15] No restriction was placed on new planting (that

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[12] J.F.W. Rowe, "Studies in the Artificial Control of Raw Material Supplies, No. 2, Rubber," Royal Economic Society, London, Special memo, No. 29, April 1931, p. 18.

[13] "Dollar" companies are those rubber companies incorporated in Malaya or Singapore. In contrast the "sterling" companies are incorporated in the United Kingdom.

[14] For the economics of restriction schemes see, J.F.W. Rowe, Special Memo No. 29, cited above, and Rowe, Markets and Men, Cambridge, At the University Press 1936, Chp. 6; E. Staley, Raw Materials in Peace & War, New York, Council on Foreign Relations, 1937; O. Lawrence, "The International Control of Rubber," Commodity Control in the Pacific Area, ed. W.L.Holland, Institute of Pacific Relations, Stanford, Stanford University Press, 1935, Chp. 12. A. Macfadyean, ed. The History of the Rubber Regulation 1934-1943, London, George Allen & Unwin, 1944.

[15] Silcock, op. cit., p. 19.

is on investment) or replanting but the official ban which was placed on the alienation of land for rubber had a powerful influence on the development of the industry and, except for the modification in 1939-1940, it remained in force until after the second world war.[16] Lawful new planting occurred only on land already alienated but not yet planted with rubber. Smallholders, unlike the estates, rarely possess unplanted reserve land and much of the planting they had undertaken had been on land previously planted, especially with coconuts or fruit.

Malaya lost the goodwill of her chief customers, the Americans, who were encouraged to seek alternative sources of supplies.[17] Thus estates were established in Brazil and Liberia. Efforts to economise in the use of rubber led to the rapid growth of the rubber reclaiming industry. In the long run it gave impetus to the production of synthetic rubber. This last point has discouraged investment, as we show in a subsequent chapter, in natural rubber during the post war period.

During the tenancy of the International Rubber Regulation Scheme, 1934-1938, new planting was again possible

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[16] G.C. Allen and A.G. Donnithorne, Western Enterprise in Indonesia and Malaya, New York, Macmillan, 1957, p. 123.

[17] For an interesting account of the American reaction see, Rowe, Special Memo, No. 29, pp. 52-56.

only on land already alienated but not yet planted with rubber. Thus once again the smallholders were in a disadvantageous position. This clause remained in force until 1940 when producers were allowed to plant up to five per cent of their 1938 acreage. This, incidentally, was of little benefit to the smallholders.[18] The five per cent of 1938 acreage was declared to be the equivalent of eight trees for smallholders.[19] It was hardly worthwhile replanting eight trees since as we point out in Chapter IV, replanting less than twenty-five acres is unfeasible, both economically and technically.[20] Hence the advanced age of smallholders' rubber trees and their lack of new planting may be attributed to the planting provisions of the restriction schemes.

As a result of these policies, a change occurred in the competitive position of the Malayan rubber industry. Not only was the area under rubber prevented from expanding, but the age composition of the rubber trees became unfavourable.

Between 1925 and 1940, while the Malayan rubber acreage increased from about 2.45 million acres to 3.48 million

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[18]The rate of five per cent was chosen because this was thought to be the approximate equivalent of the rate of depreciation of the planted acreage. See P.T. Bauer, The Rubber Industry, a Study in Competition and Monopoly, London, Longmans Green, 1948, p. 97.

[19]Bauer, Report on a Visit to Rubber Growing Smallholdings in Malaya, July-September 1946, London, Her Majesty's Stationery Office, 1948, p. 36.

[20]This is discussed in Chapter IV, pp. 125-126.

acres that in other countries increased from 2.43 million acres to 6.78 million acres.[21]

The financial loss estimated by Bauer due to the two restriction schemes was about $340 to $383 million.[22] He reminds us that in order to get these figures into perspective we should note that the total allocation to Malaya under the Colonial Development and Welfare Act was only about $43 million.[23]

Thus between 1925 and 1940, the area under rubber was affected by the planting provisions of the restriction schemes. Also during the depression when the schemes were no longer in force, the estates had little capital for replanting. The Japanese occupation entailed a heavy rehabilitation cost and made it impossible to plant or replant before 1947. All in all, replanting was delayed by about fifteen to twenty years.[24]

Hence the utilisation of land for rubber in Malaya has passed through two stages before the second world war. The first stage was one of initial development, with booming rubber markets. This stage may be said to have lasted until

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[21] Bauer, Report on a visit, p. 15.

[22] Ibid. p. 42.

[23] Loc. cit.

[24] In addition replanting was delayed by the "Emergency" during the post war period.

1914.

The second stage encompasses the post World War I depressions and is characterised by restriction schemes. Several effects of the restriction schemes have been noted. The restriction of replanting resulted in an unfavourable age composition of the rubber trees. The restriction of new planting prevented the acreage under rubber from expanding. Malaya lost the goodwill of her American consumers. This in turn gave impetus to the rubber reclaiming industry and in the long run to synthetic rubber. Hence the effect has been one of increasing substitution of synthetic for natural rubber. All of the above mentioned effects have had important consequences in the post war period and are considered in Chapter III.

Rice Land Polities

We shall next consider the rice land policies. In the utilisation of land for rubber, economic forces have been important. However, with respect to rice the policies pursued have been more of a political nature as we shall indicate.

The cry for self-sufficiency in rice is not a post war development. In fact it owes its origin to the introduction of rubber into the economy. In this connection we shall see how the rice land policy was influenced by official policies and attitudes, although the authorities in Malaya, unlike those in the Netherlands East Indies, were never directly in-

volved in production.

In the early years of the twentieth century two factors were responsible for a rice shortage. To a certain extent the Malays substituted rubber for rice, since the former was the more profitable crop. At the same time demand for rice increased when immigrant labour was brought into the country to work on the mines and plantations.

The Malay rice farmer did not, at least until the Pacific war, grow rice for purposes of exchange. He merely produced rice for his own needs. Rice was a way of life for him. Government attempts to make the country more self-sufficient in rice were largely attempts to perpetuate poverty by resisting the current flow towards higher paying occupations.[25] Such attempts included irrigation works, restrictions on the alienation of land suitable for rice for other purposes, and low land taxes for rice farmers. At the State level, there was marked reluctance in allowing land to be cleared for rubber. Attempts were made to discourage the drift to rubber and to the towns[26] by means of special rural education.[27] It should be noted that, in spite of the measures taken, there was a

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[25] Silcock, op. cit., p. 3.

[26] It is interesting to note that today the attempts to discourage movement to the towns are taking the form of resettlement schemes, See Chapter VI pp. 165-166.

[27] Silcock, op. cit., p. 5.

steady drift towards rubber production.

An acute rice shortage developed after 1918 when rice crops failed in India and the Indian government prohibited the export of Burmese rice.[28] (Burma was the chief supplier of rice to Malaya.) Consequently prices doubled and government control of rice became necessary. All employers of labour were compelled to grow foodstuffs. To alleviate the rice shortage, rice was imported from Indo-China and resold at a loss of $42 million.[29] A tax of $2.50 per ton was imposed on all imported rice from October 1933 to May 1935. As a result of the tax and the measures mentioned above, the acreage under rice increased somewhat. For example, in 1930 rice was cultivated on about 707,740 acres; by 1937 the acreage had increased to 740,040 acres.[30] It is quite significant that these measures were designed as much to increase rice production as to discourage smallholders' rubber production.

Increasing the output of rice has always been handicapped by the higher income potential of rubber. Greater production of rice could have been achieved if the price of rubber had fallen substantially or if the income from rice had increased substantially. The smallholder hesitated to shift to

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[28]Mills, British rule in East Asia, p. 253.

[29]Loc. cit.

[30]Ibid., p. 260.

the production of rice not only because there was little land suitable for the purpose, but also because the price of rice like that of rubber fell during a general business depression. With the exception of 1932, the smallholder could throughout the entire period of the Depression, secure more rice by producing rubber than by producing rice. The following figures computed by Bauer[31] clearly show this relation (See following page). The behaviour of smallholders, reflected by the above figures appears to be rational. In fact official policies designed to keep smallholders in their traditional occupation appear to be irrational in that they were inhibiting instead of promoting economic growth.

The failure of agricultural experts to increase native production is often explained on the grounds that it is difficult to persuade the conservative and easy-going native peasantry to improve their methods.[32] The above is not a conclusive argument, for while the Malay was reluctant to grow more rice he was readily taking to the production of rubber.[33]

From the foregoing we may conclude that official policies were designed chiefly to encourage the production of

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[31]Bauer, "Some Aspects of Malayan Rubber Slump, 1929-1933," Economica, volume 11, No. 44 (November 1944), p. 196.

[32]Mills, British Rule in East Asia, p. 251.

[33]In Java similar developments occurred with sugar.

TABLE III

A COMPARISON OF THE EARNING CAPACITIES OF RUBBER AND RICE

DURING THE GREAT DEPRESSION

	Av. yield of Rubber Mature acre	Singapore price R.S.S.1 cents/lb.	Assumed av. price received. cents/lb.	estimated possible proceeds. $	Assumed expenditure per acre $	Estimated proceeds per acre $ (7)= (2) (6)	Av. retail price of rice, cents/gantangs**	Rice obtainable with rubber proceeds (8)**(9)	Av. yield of clean rice gantangs per acre	Deduct rice equivalent of expenses gantangs.	Net yield of rice (12) (11) (16)	Balance in favour of rubber (13) (9) (12)
(1)	(2)	(3)*	(4)	(5)	(6)				(10)	(11)		
1929	485	34.5	30.5	150	6	144	52	277	83	30	53	224
1930	460	19.3	16.8	77	6	71	46	154	73	30	43	111
1931	445	10.0	8.0	36	3	33	28	118	101	30	71	47
1932	385	7.0	6.0	23	3	20	22	91	110	30	20	11
1933	465	10.2	8.7	40	3	37	23	160	106	30	70	84

*R.S.S.1. = Ribbed smoked sheet, number one, - first grade rubber.
** gantang = a Malayan measure. 1 gantang = Imperial gallon. (1 gantang of rice weighs about 5.5 pounds)

Source: P.T. Bauer, "Some Aspects of the Malayan Rubber Slump", Economica, N.S. volume 11, No. 44 (November 1944) p. 196.

rice. In some respects the implementation of such policies helped to perpetuate the dualistic features of the economy. This particular aspect is discussed in the next chapter.

The Effects of the Second World War on Land Use

Before concluding this chapter we may mention the effects of the second world war on land utilisation. About eight per cent of the estate acreage and about five per cent of the smallholding acreage was destroyed by the war and the occupation. Greater problems however were those of rehabilitation and shortages of labour.[34]

A certain amount of rice acreage had gone out of cultivation through neglect, lack of irrigation facilities, and the deterioration in the quality of seed, so that there was a heavy fall in production.[35] During the war, the farmer was also discouraged from growing anything in excess of his needs because of the non-availability of other consumer goods. Other crops too, were similarly affected.

Summary and Conclusion

In this chapter we have been concerned with the development of the pattern of land use in Malaya up to 1947. First

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[34]E. Holt, Report on the Malayan and British Borneo Rubber Industry, United States Department of Commerce, December, 21, 1946, pp. 7-8.

[35]Great Britain, Colonial Office, British Dependencies in the Far East, 1945-49, London, Her Majesty's Stationery Office, 1950, CMD7709, p. 25.

we examined this pattern itself, from which we noted that rubber was the chief export crop, while rice was the most important subsistence crop. Then we went on to consider the rubber rice land use pattern.

Rubber was introduced into Malaya by the British. The extension of British rule over Malaya provided the concomitants of investment, capital and security for investment. After a period of rapid growth, the rubber industry between 1932-1939 was intermittently under restriction schemes. These schemes have acted as an obstacle to the expansion of rubber in Malaya, particularly smallholders' rubber. Replanting also had to be postponed until the post war period.

In connection with rice it was noted that the aim of official policy was to achieve self-sufficiency. Attempts were made to dissuade the smallholders from moving into rubber. However such attempts were not very successful.

The development of the rubber-rice land use pattern in Malaya reveals a dualistic characteristic of economic growth, giving the country a predominant export sector and a subsistence sector of somewhat lesser importance. This is the subject of the next chapter. The pre-war development of land use also sets the stage for post war developments as we shall see in subsequent chapters.

CHAPTER II

SUGGESTED EFFECTS OF THE LAND USE PATTERN ON ECONOMIC DEVELOPMENT

In the last chapter we traced the development of the land use pattern with its emphasis on two crops, rubber and rice. This pattern of production gives the country two distinct sectors, one of exports and one of subsistence production. The interpretation of this "dual" feature of some underdeveloped countries has led to a large number of theories, which may be classified in the following manner: sociological dualism; technological dualism, and colonialism and the "backwash" effects of International Trade.[1] Our first step will be to review these theories of underdevelopment; our second to see how far the conclusions of these theories fit the economic process in Malaya.

Sociological Dualism

The leading exponent of the above theory is J.H. Boeke,[2] whose theory is based largely on his Indonesian experience. Boeke gives the following definition of a dual society:

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[1]This classification is derived from B. Higgins, Economic Development, Principles, Problems and Policies, W.W. Norton 1959, See especially Part 4.

[2]J.H. Boeke, Economics and Economic Policy of Dual Societies, New York, Institute of Pacific Relations, 1953, Cited as Economics; The Evolution of the Netherlands Indies Economy, New York, Institute of Pacific Relations, 1946. Cited as Evolution; The Structure of the Netherlands Indian Economy, New York, Institute of Pacific Relations, 1942, Cited as Structure.

> Social dualism is the clashing of an imported social system with an indigenous system of another style.[3]

This dualism is manifest chiefly by way of the two sectors, one producing exports and one subsistence products. Boeke also regards this dualism as a "form of disintegration."[4]

The subsistence sector of a dualistic economy has two main characteristics--limited needs and the desire for speculative profits.

Limited needs essentially mean backward-sloping supply curves of labour and risk taking. Such needs are often social rather than economic in the sense that commodities are valued in terms of prestige rather than in terms of their value-in-use.

A possible reason for backward-sloping supply curves is the importance of group as opposed to individual preferences. Where the group is important, incentives to save and invest become rather diluted, since the individual has always to share the proceeds from his investment or labour.[5]

In a Western society (that is an advanced economy) on the other hand, needs are not limited. Therefore with the scarce resources at the disposal of the individual the problem of choice must arise. Choice is essential to the theory

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[3]Boeke, Economics, p. 4

[4]See Boeke's The Interests of the Voiceless Far East, Leiden, Universitaire Pers Leiden, 1948, pp. 1-3. Here he states that duality means heterogeneity.

[5]Cf. W.A. Lewis, The Theory of Economic Growth, London, George Allen and Unwin, 1955, pp. 57-60, 113-120.

of value. Boeke concludes that because of their limited needs, the theory of value is not applicable to underdeveloped economies.[6]

The second subsistence characteristic of the dualistic economy is the almost complete absence of profit seeking.[7] Speculative profits "attract the oriental, but these profits lack the element of regularity and continuity which characterises the idea of income".[8] Personal satisfaction appears to be more important than profit maximisation. Boeke also mentions that the subsistence sector is characterised by an aversion to capital, lack of business qualities, inelastic supplies, lack of organisation, discipline or any kind of book-keeping.[9]

Because of these differences between eastern and western societies, Boeke warns us "not to transplant the tender, delicate hot house plants of western theory to tropical soil where an early death awaits them".[10]

Boeke's general conclusion regarding economic policy in underdeveloped economies is for the advanced countries to leave them well alone, for any economic or technical aid

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[7] Ibid., p. 30.

[8] Loc. cit.

[9] See Higgins, op. cit., pp. 277-278.

[10] Boeke, Economics, p. 143.

efforts to develop them along western lines will merely accentuate their dualistic features and hasten the process of disintegration. Higgins[11] points out that Boeke has little to suggest by way of a positive policy solution for the technical and capital aid approach which he deplores apart from a back to the village approach.

While there is no denying that the phenomena of dualism exists in underdeveloped economies, Boeke's explanation is unsatisfactory because it is purely sociological.[12] As we shall see below, dualism is more readily explained in economic and technological terms. Also the two characteristics attributed by Boeke to the subsistence sector of an underdeveloped economy may be disputed.

In connection with limited wants, Higgins[13] shows that both the marginal propensity to consume and the marginal propensity to import are high in Indonesia. Bauer and Yamey,[14] too, deny the validity of the proposition of limited wants. They

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[11]B. Higgins, "The Dualistic Theory of Underdeveloped Areas," Economic Development and Cultural Change, volume 4, No. 2. (January 1956), p. 103.

[12]Higgins, Economic Development, p. 281.

[13]Ibid., p. 282.

[14]P.T. Bauer, and B.S. Yamey, The Economics of Underdeveloped Countries, Cambridge, At the University Press, 1959, pp. 86-93.

quote numerous examples from many underdeveloped countries which suggest that most producers are aware of the opportunities open to them. Moreover if arguments for limited wants were true then arguments in favour of economic development would be weakened considerably.

It is again hard to share Boeke's pessimism regarding the possibility of technological progress in eastern societies when we look at the growing number of enterprises efficiently organised and operated by the residents of the underdeveloped countries. The post war expansion of native export production is a case in point.

The second characteristic, the backward-sloping supply curve of effort, is taken to be proved by the fact that in underdeveloped economies labour can be made to work more by lowering wages, since a minimum sum of money is needed to pay taxes, settle debts or for subsistence. This is true insofar as it is necessary to earn a certain minimum sum, as well as where the natives are on the fringe of the money economy. But considering the rapid development of new wants in underdeveloped economies it seems difficult to believe that supply curves of labour would be backward-sloping over the long run.

Hence the value of Boeke's analysis is merely that he recognises the dualistic features of an underdeveloped economy. Higgins[15] discards Boeke's theory of sociological dual-

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[15]Higgins, Economic Development, p. 209.

ism on the grounds that the theory of technological dualism which we consider next, provides a more acceptable explanation of the causes of dualism in underdeveloped economies.

Technological Dualism

The basic causes of technological dualism appear to be the "population explosion" and the nature of the investment in underdeveloped economies. Basically technological dualism means that production techniques in the export and subsistence sectors are quite different. We begin with a discussion of population growth.

The initially favourable impact of the contact of underdeveloped countries with the West was nullified by population growth.[16] Rising per capita incomes were not sustained long enough to bring about a fall in fertility rates.[17] Also the "industrialisation" which launched the "population explosion" did not provide employment opportunities for the

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[16]For Malaya a distinction is necessary. The population growth which occurred was due to immigration and not to natural increase.

[17]Higgins, Economic Development, p. 314. A population explosion occurred for several reasons. Mortality rates were reduced due largely to improved health services and the improvement of transportation reduced the incidence of famine. Higgins also mentions that the establishment of law and order hampered the freedom of the natives to kill each other.

whole increase in population. Per capita incomes therefore fell.

Foreign investment was attracted into primary production for export and resulted in a greater degree of "industrialisation" than urbanisation. Hence checks on family size which result from urbanisation did not occur.[18]

We will now turn to the problem of technological dualism itself.[19] This problem of population growth and "industrialisation" is reflected in the different factor proportions in the two sectors of the economies of underdeveloped countries. The usual analysis of the production functions is in terms of two sectors, two factors of production and two goods.[20] The two sectors are an export sector comprising the plantations, mines, oil fields and refineries. The subsistence sector is engaged in the production of food crops and handicrafts. The export sector is capital intensive and is charac-

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[18] The "industrialisation" which occurred stopped at the primary stage in most countries. The development of secondary and tertiary industries was very limited since the processing was done in the investing countries.

[19] The version being discussed is that of Higgins. See his Economic Development, pp. 325-333.

[20] See for example, R. Eckaus, "The Factor Proportions Problem in Underdeveloped Areas," American Economic Review, volume 45, No. 4 (September 1955), pp. 539-569; and D.W. Jorgenson, "The Development of a Dual Economy," Economic Journal, volume 71 (June 1961), pp. 309-334.

terised by relatively fixed technical coefficients. The subsistence sector has relatively variable technical coefficients and is much more labour intensive. The two factors of production are capital and improved land, and labour. The products are industrial raw materials for export and goods for domestic consumption.[21]

Since industrialisation resulted in an increase in population and did not at the same time provide increased employment opportunities, the surplus labour was forced to seek employment in the subsistence sector where techniques consequently became steadily more labour intensive. Thus irrigated rice, a more labour intensive technique, took the place of shifting rice cultivation.[22] Disguised unemployment also began to appear.

Therefore investment in primary production and the extractive industries for export brought little or no structural change to the underdeveloped economies. It resulted in rising rates of population growth but did not at the same time provide increasing opportunities for employment. The concentration on production for export resulted in technological dualism.

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[21] In some underdeveloped countries, for example Burma, Indo-China and Thailand, the export products are also subsistence goods.

[22] Higgins, Economic Development, p. 329

We may now examine another version of this model, the Myint model[23] of the dualistic theory of underdevelopment. The following are the features of his model. Initially the underdeveloped economy started with a sparse population in relation to potential natural resources. With the advent of colonial rule its resources are developed in the direction of a few specialised lines of primary products for export. The natives of the country "enjoy a perfect equality of formal legal rights in their economic relations with other people" (that is with the foreigners).[24]

Thus the basic features of the Myint model are the same as those of Higgins' model of technological dualism. But Myint attempts to explain why there was no movement of factors between the two sectors as well as points out the plural feature of underdeveloped economies.

In spite of foreign investment, Myint suggests that "there was little specialisation beyond a natural adaptabil-

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[23] H. Myint, "An Interpretation of Economic Backwardness," Oxford Economic Papers, volume 6, No. 2 (June 1954), pp. 132-163, and "The Gains from International Trade and the Backward Countries," Review of Economic Studies, volume 22, No. 2, 1954-1955, pp. 129-146.

[24] Myint, "The Gains from International Trade and the Backward Countries," p. 145.

ity to the tropical climate among the backward peoples in their role as unskilled labour or peasant producers",[25] since specialisation occurred in traditional crops. This is true of Burma (an example which Myint probably had in mind) but in other underdeveloped countries new crops were introduced, for example, rubber and oil palms in Malaya.

Myint also makes a distinction between the dual and plural aspects of an underdeveloped economy.[26] By the latter is meant that even the middlemen between the big European concerns and the indigenous population are foreigners.[27] Examples of this are the Chinese and Indians in South-east Asia, the Lebanese and Chinese in the West Indies, and the Syrians in West Africa. Myint considers these foreign middlemen as undesirable since they deprive the indigenous population of the "educating and stimulating effect of direct contact". However these middlemen have accumulated capital, provided skills and aptitudes not present or developed among the local people. By permeating the exchange economy more extensively than the large scale European enterprises, their influence has generally been more widespread and has affected large num-

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[25]Myint, "An Interpretation of Economic Backwardness," p. 153.

[26]Ibid., p. 157.

[27]For example, where the natives produced rubber or rice for export, the middlemen between the native producers and world markets were generally Indians or Chinese.

bers of local people directly.[28]

Myint also points out that there were barriers to specialisation. (Higgins mentions that techniques in the subsistence sector remained the same but does not give any reason for it.) Without specialisation no improvement in skills occurred. In the export sector the high turn-over of labour meant that little effective training was accomplished.[29]

The implied assumption of the theory of technological dualism is that there is a lack of factor mobility in underdeveloped economies. According to traditional economic theory, the marginal productivity of capital ought to be higher in the subsistence sector, where the ratio of labour to capital is higher than in the export sector. There is some evidence that the returns to capital (for example, interest on moneylending) are higher in the subsistence sector than in the export sector. Interest rates on loans range from sixteen to one hundred per cent.[30] The rural capitalist is also able to earn profits on speculative investment in stocks of food crops. Because of the higher returns on capital in the subsistence sector the rural capitalist is naturally not attracted into industrial investment. On the other hand foreign capital

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[28]See Bauer and Yamey, op. cit., pp. 106-112.

[29]Myint, "An interpretation of Economic Backwardness," p. 154.

[30]Higgins, Economic Development, p. 341.

does not flow into the subsistence sector even though returns on capital are higher there because knowledge of that sector is a scarce factor. The high rates of interest earned by moneylenders are based on personal knowledge of and contact with the villagers which foreign capitalists do not have.

Labour does not flow into the export sector because technical coefficients in that sector are relatively fixed.

Hence the conclusion of both Higgins and Myint seems to be that there exists a "vicious circle" in underdeveloped economies.[31] Both offer more or less the same solution to break this "vicious circle". They point out that the only way to reduce the redundancy of labour in the subsistence sector is to increase the supplies of capital and land.[32] The supply of land in overpopulated areas can only be increased by inducing the peasants to move out of agriculture. This means heavy investment in both the export and subsistence sectors and that neither agricultural investment nor industrialisation can by itself break this "vicious circle". Since foreign aid by itself is unlikely to relieve underdeveloped countries of the necessity of earning most of the foreign exchange, the

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[31] Loc. cit.

[32] Myint, "The Gains from International Trade and the Backward Countries," p. 146.

only way to earn more foreign exchange in the short run is by expanding exports.[33]

While Boeke merely stressed the differences between an eastern and a western society, Higgins and Myint take us a step further and explain why and how the phenomena of dualism emerged. Their approach is more useful than that of Boeke since it is economic as opposed to sociological.

Colonialism and the "Backwash" Effects of International Trade

Some economists argue that International Trade has not encouraged economic growth in underdeveloped economies, but has retarded it by accentuating the dualistic characteristics of such economies. Among these writers we will consider Hla Myint and Gunnar Myrdal. The two features of their theories are that in underdeveloped countries conditions are such that the "backwash" (unfavourable) effects outweigh the "spread" (stimulating) effects. They also maintain that international trade brought little in the way of educative effects.

While the theories of technological dualism attempt to explain how the phenomena of dualism emerged, the theories being considered in this section stress the "backwash" effects of international trade. Here there is also a greater attempt to explain the non-diffusion of skills.

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[33] Loc. cit.

We will consider Myint's[34] theory first. Myint attempts to explain why the growth of foreign trade failed to bring overall economic growth to many underdeveloped countries. If we consider two countries, for instance, Indonesia and Malaya, we note that between 1880 and 1920 Indonesian exports increased by about ten times. Between 1906 and 1950 Malayan exports grew by nearly fourteen times.[35] The question being asked in this connection is why the increase in the value of exports had no "multiplier effects on per capita incomes".

Myint lists several factors which prevented this development; the high rate of labour turn-over, the willingness of labour to accept low wages, the conviction among employers that the supply curve of labour was backward-sloping and the general lack of industrial skills which made the employers feel that it was difficult to recruit labour.[36] These factors also provided an incentive to shift to capital intensive methods.

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[34]H. Myint, "The Gains from International Trade and the Backward Countries," op. cit.,and "The Classical Theory of International Trade and the Underdeveloped Areas," Economic Journal, Volume 68 (June 1958), pp. 317-337.

[35]G.C. Allen and A.G. Donnithorne, Western Enterprise in Indonesia and Malaya, New York, Macmillan, 1957, pp. 291, 293.

[36]Myint, "The Gains from International Trade and the Backward Countries," p. 140.

Generally the techniques adopted left labour productivity very low and afforded few opportunities for training. Three types of labour were needed by foreign enterprises. Managerial and skilled labour were generally brought into the country, the unskilled labour was recruited locally, but the tasks they were asked to perform were not very much different from those they performed in the subsistence sector. The local people were not taught skills nor put into positions where they could learn western attitudes and techniques. This intermediate kind of a technique requiring a fairly large number of skilled workers was shunned by the foreign entrepreneurs in underdeveloped economies. Under the British system, this type of training tended to be too limited both in range and volume, largely because of the hostility of the local European population to any widespread expansion.[37]

Myint also argues that the subsistence sector is confronted with monopolies and monopsonies without the capacity for developing effective countervailing power of the sort that there is in advanced economies.[38]

Essentially his argument seems to be that international trade had little educative effects on the people ex-

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[37] T.H.Silcock, The Commonwealth Economy of South-east Asia, London, Cambridge University Press, 1959, p. 87.

[38] Myint, "The Gains from International Trade and the Backward Countries," p. 141.

cept in the development of new wants. Myint also suggests that investment in education merely leads to "disguised intellectual unemployment".[39] By this he probably means that university trained persons are performing tasks which are not appropriate to their training.[40] He admits that transport was greatly improved and that new minerals were discovered, but he maintains that while investment of this nature adds to total resources, it does not make existing resources more productive.[41] In his view the present contribution of western enterprise to the domestic (peasant) export sector was merely to act as middlemen between the peasants and the world markets, and to stimulate new wants (the demand for imports) on the part of the peasants. (Here at least Myint goes beyond Boeke.) It is true the "demonstration effect" is quite strong in underdeveloped economies, but Myint fails to point out that incomes have first to be earned before the new wants

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[39] Ibid., 143.

[40] This situation has transpired in some of the larger cities in India and probably in Burma too. For instance, we may find law graduates merely doing clerical jobs in a legal firm.

[41] Myint, "The Classical Theory of International Trade and the Underdeveloped Areas," p. 325.
This may be disputed. For example in Malaya, tin was mined by the Chinese before the arrival of the British. With the British came capital intensive mining methods; geological surveys too were carried out, so that the mineral resources did become more productive.

can be satisfied. Thus the peasant was probably forced to increase his output before he could satisfy his new wants.

Myints points out further that the expansion of the export sector did not result in a decline in domestic production because labour was in surplus or was easily available.[42] The result of the ease with which labour was available led to the use of labour intensive methods. (This is essentially the same conclusion as that reached by Higgins in his theory of technological dualism.) "Indeed," says Myint, "we may say that these countries remain underdeveloped precisely because they have not succeeded in building up a labour intensive export trade to cope with their growing populations".[43]

Thus Myint's thesis is that there were no dynamic gains from specialisation for underdeveloped countries. International trade merely led to the perpetuation of the primitive techniques of the subsistence sector. There were no multiplier effects because of the "colonial" nature of the investment. Myint, as we show in the next section of this chapter, neglects the indirect effects of export production which make a substantial contribution to economic growth.

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[42] Indonesia and Malaya respectively are examples of this.

[43] Myint, "The Classical Theory of International Trade and the Underdeveloped Areas," p. 331.

The arguments of Myrdal,[44] whose theory we consider next, are similar to those of Myint to the extent that both argue that there were no dynamic gains from international specialisation for the underdeveloped countries. However Myrdal contends that trade for the underdeveloped countries, far from resulting in international equality of marginal products and incomes, results in cumulative disequilibrium.

Myrdal writes that not only are there inequalities between countries, but that such inequalities exist also within countries. Demographic factors and international trade perpetuate these inequalities. Demographic factors are likely to add to it because population growth is likely to be higher in the poorer regions.[45] (Here again we may note a similarity between Myrdal's theory and that of Higgins' technological dualism. The latter points out the occurrence of the population explosion.)

Trade also aggravates this process, for the more forward regions are likely to experience increasing returns while industry in the backward regions is likely to be thwarted.[46]

Expansion in one region is likely to have both "spread"

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[44]G. Myrdal, Economic Theory and Underdeveloped Areas, London, Duckworth, 1957.

[45]Ibid., p. 29.

[46]Ibid., p. 34.

and "backwash" effects. However there is no reason for equilibrium between these two effects, as

> ...there is no tendency towards automatic self stabilisation in the social system. The system is not by itself moving towards any sort of balance between forces, but is constantly on the move away from such a situation. In the normal case a change does not call for counter-vailing changes but, instead, supporting changes, which move in the same direction as the first change but much further.[47]

According to Myrdal, regional disparities are greater in poorer than in richer regions. The present pattern of production reflects colonial policy rather than true comparative advantage.[48] In advanced countries production of primary products generally stimulated the expansion of secondary and tertiary industries. This has not occurred in underdeveloped economies. (Again Myrdal is saying the same thing as Higgins in his theory of technological dualism.) Indeed Myrdal even goes so far as to suggest that it may be advantageous for underdeveloped countries to concentrate their resources on improving subsistence production and manufacturing.[49] He recommends labour intensive techniques for two reasons. First capital is not likely to flow into underdeveloped countries, in fact capital would flow out in the

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[47] Ibid., p. 13.

[48] Ibid., p. 60.

[49] Ibid., p. 52.

absence of exchange control. Secondly the surplus labour can no longer be reduced by international migration.[50] Myrdal's policy recommendation is in some respects similar to the back to the village approach of Boeke, which we noted earlier. The implication of Myrdal's solution is that underdeveloped countries should abandon the production of primary products over which they have a comparative advantage. Insofar as Malaya is concerned, the available evidence suggests that the abandonment of rubber production in favour of rice would probably mean economic disaster.

In a recent review article, P.T. Bauer presents a biting criticism of Myrdal's theory.[51] Bauer says that enclaves are merely catch phrases and that there is no prescriptive law that all communities must develop simultaneously and equally.[52] The fact that foreign personnel, enterprise and capital played a large part in the development of the export sectors does not mean that the process has not benefited the local population.[53] These sectors are not cut off

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[50] Ibid., p. 51.

[51] P.T. Bauer, "International Economic Development," Economic Journal, volume 69 (March 1959).

[52] Ibid., p. 110.

[53] This is precisely what we show when we apply the Dualistic theories to Malaya.

from the rest of the economy but are the focal points of the first impact of development. The time necessary for the diffusion of this development depends among other things on the quality of the population and the institutions of the particular community.[54]

Conclusion

All the three sets of theories discussed above point to the dualistic characteristic of some underdeveloped countries. However it is only in the theory of technological dualism that we observe how this dualism emerged. Both the theories of technological dualism and colonialism and the "backwash" effects of international trade argue that there were no dynamic gains from trade on underdeveloped countries. Myrdal goes further when he maintains that there is a tendency towards cumulative disequilibrium, such that both international and inter-regional inequalities are increasing.

While Boeke offers an extreme policy solution to the problems of underdeveloped economies--a back to the village approach--Myrdal argues that underdeveloped countries should concentrate their resources on subsistence production and domestic manufacturing.

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[54]Bauer, op. cit., p. 40.

The general conclusion of all these theories is that there exists a "vicious circle" in underdeveloped economies and that the general outlook regarding future economic development is quite pessimistic.

However in the next section of this chapter we attempt to show that this is not the case, at least for Malaya.

The Dualistic Theories and Malaya

In the previous section of this chapter we discussed several theories of underdevelopment. The main thesis of these theories is that contact with the West only generated a limited amount of economic development. The general conclusion of these theories is that developed countries are caught in a "vicious circle" of poverty and that the development prospects for such countries are very bleak. In this section our task will be to see how far these propositions can be fitted to the economic process in Malaya.

What sort of an economic environment has Malaya's contact with the West generated? It has generated both "spread" and "backwash" effects. The former will be discussed first.

The economic life of the country has revolved largely around export production and to a lesser extent around subsistence production.

Production for export has not only resulted in an extension of the cultivated area, but it has also been accomplished by the establishment and improvement of agricultural

holdings, which in fact constitutes fixed capital formation. The agricultural export sector can be interpreted to include rubber and to a lesser extent oil palms, coconuts, pineapples and tea. Production of estate rubber has not been confined to the Europeans as the following figures indicate.

TABLE IV

OWNERSHIP OF ESTATE ACREAGE UNDER RUBBER, 1953, ANALYSED BY RACE

Race	Million acres	per cent
European	1.6	83
Chinese	.26	14
Indian	.05	3
Total	1.91	100

Source: J.J. Puthucheary, Ownership and Control in the Malayan Economy, Singapore, Eastern Universities Press, 1960, p. 27.

Moreover when we look at the racial distribution of rubber smallholdings, it is clear that the Malays, the indigenous race, are important in this group.

Thus in fact a large part of the export sector is owned and operated by the local population. Since the war, the Chinese and Indian smallholders cannot be regarded as "foreigners" because they are now citizens of the country.

It is also argued by the dualistic theorists that the

export sector is not likely to lead to general economic growth because such sectors do not become a part of the indigenous economy. This does not seem to be the case in Malaya. Rubber though initially introduced by Europeans, is being produced by the local population, who emulated the techniques of, and are able to benefit from, the research of the estate owners.

TABLE V

OWNERSHIP OF RUBBER SMALLHOLDINGS, 1953, ANALYSED BY RACE

Race	Million acres	per cent
Malays	.65	43.3
Chinese	.4	26.9
Indians	.45	30.1
Total	1.50	100.0

Source: J.J. Puthucheary, op. cit., p. 4.

Besides about half of the smallholdings are operated by Malays. Most of them also own or operate rice farms. They may not have entered the exchange economy in producing rice, but they definitely do so when they produce rubber. Thus in Malaya there is only a small section of the population which is not in contact with the export sector. This section is at least much smaller than in countries where the

subsistence sectors are much larger. The export sector is being integrated into the rest of the economy. Smallholding agriculture plays an important part in this transition.

Economic activity does not stop with primary production of rubber. Many of Malaya's secondary industries are associated with the processing of rubber. These industries afford opportunities for the expansion of employment, markets and incomes. Although separate figures for numbers employed in rubber processing industries are not available, we may broadly indicate their extent by pointing out such activities.[55] These include rubber milling and packing, and the manufacture of rubber goods. (For example, bicycle tyres and tubes, and rubber foot wear.) The industries indirectly connected with rubber have been engineering, repair work, electrical installation, motor vehicle workshops and dock-yards. A tyre factory is in the process of being established by Dunlop, and is expected to employ about 600 people when working to full capacity.[56]

One reason for the lack of manufacturing in the past has been the smallness of the Malayan market. With the post

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[55]For a list of secondary industries in Malaya, see Federation of Malaya, Annual Report, 1956, Kuala Lumpur, Government Printer, 1957, p. 128.

[56]"Dunlop Production early in 1963," Straits Budget, 30 May, 1962, p. 6.

war growth of population and the prospect of a wider federation, the size of the market is likely to be increased. This may lead to further processing of primary products and hence to further integration of the export sector with the rest of the economy.

Sometimes the establishment of the secondary industries may lead to a certain amount of import substitution, where the commodities produced by these industries compete with the commodities being produced formerly by the subsistence sector. This situation has not transpired in Malaya, since there was no indigenous manufacturing comparable to that which existed, for example, in India. Perhaps the substitution was of a different nature. The Malays substituted rubber for rice to a certain extent but they remained self-sufficient. The immigrant Indians and Chinese were directed to specific occupations, so that the increased demand for rice came largely from this group. Thus we cannot say definitely whether there was any import substitution.

Both primary production and secondary industries lead to the training of labour, although the former may lead to less training than the latter. Before the war immigrant labour was used both for primary production and processing. The Malays were not employed in the processing industries. Today these immigrant labourers are citizens of the country, so that if we are willing to forget racial distinctions we may say that the citizens of the country have acquired a cer-

tain amount of skill, this being part of an industrial discipline.

Some examples may be quoted. In both primary production and secondary production, work involved the operation, repair and maintenance of machinery. This machinery was no doubt very rudimentary, and the level of skill acquired very low. Whatever training occurred, however, should be compared with the situation when there was no training at all.

So far we have discussed the direct effects of contact with the West. The indirect effects are the fiscal influences.

Public investment made possible by increased government revenue is one of the most obvious examples of development. Approximately twenty-nine per cent[57] of federal revenue is derived from export duties on rubber. This has been used to provide education, transportation and social services and has benefited both the export and subsistence sectors. Such expenditure has helped to increase productivity directly or indirectly. Thus, even though the revenue originated from the export sector, it has resulted in wide "spread" effects.

A country's export sector may be important in serving

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[57]This figure is derived from pages 97 and 100 of the Annual Report, 1956, op. cit.

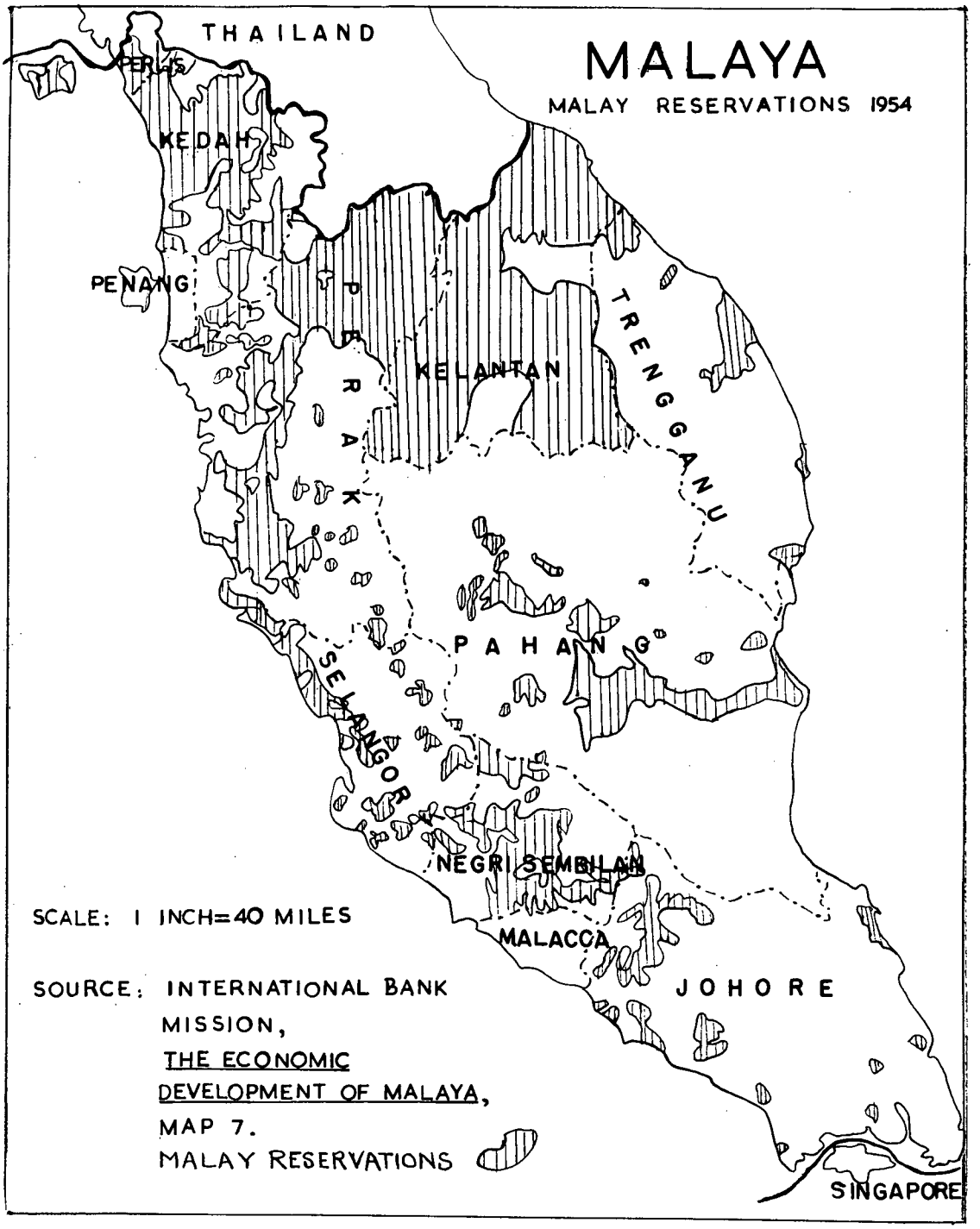
as a propulsive force. The export base has played a vital role in determining the level of absolute and per capita income in Malaya. The "spread" effects in this connection have been the extension of the cultivated area and the consequent extension of the exchange economy, the establishment of secondary industries processing primary products, some training of labour and the accrual of government revenue which has promoted economic development indirectly.

Thus far we have discussed the "spread" effects of the international trade contacts with the West. What follows are the "backwash" effects, which Myint alleges perpetuate the low productivity and hence low incomes of the subsistence sector.

In the rice subsistence sector there have been no perceptible changes in methods of production. Productivity is low and hence incomes are low. Underemployment is also prevalent. This conforms with the pattern indicated by Myint.

Certain factors are responsible for this. Unequal development has created two distinct wage levels, one for the subsistence sector and one for the export sector. Wages are higher in the export sector and are maintained at a higher level by trade union activity. Real wages are also higher since in this sector government legislation is both enforced and enforceable. In the subsistence "establishment" all labour works and shares in the produce more or less equally.

MAP III


MALAYA
MALAY RESERVATIONS 1954
THAILAND
PERLIS
KEDAH
PENANG
PERAK
KELANTAN
TRENGGANU
PAHANG
SELANGOR
NEGRI SEMBILAN
MALACCA
JOHORE
SINGAPORE
SCALE: 1 INCH=40 MILES
SOURCE: INTERNATIONAL BANK MISSION, THE ECONOMIC DEVELOPMENT OF MALAYA, MAP 7.
MALAY RESERVATIONS

When wages in the export sector fall, labour tends to move into the subsistence sector and can obtain employment there since technical coefficients are relatively variable. Hence this movement of labour into the subsistence sector lowers the real wage.

Connected with the above is the problem of the diffusion of skills. We noted earlier that there had been a certain amount of training. Further training was prevented by linguistic barriers, ignorance and conservatism. Technological dualism, a characteristic of underdeveloped countries was also responsible. There was also a natural indifference on the part of the foreign entrepreneurs to undertaking the direct training of labour. The administration, too, did its part in helping to perpetuate the existing ways of living and consequently discouraged movement out of the subsistence sector as we noted in Chapter I.[58] Thus very little specialised training occurred.

Perhaps a direct consequence of the pattern of economic development was the creation of the Malay Reservations,[59]

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[58] See Chapter I, pp. 16-17.

[59] International Bank for Reconstruction and Development, The Economic Development of Malaya, Singapore, Government Printer, 1955, p. 227, Hereafter referred to as the Bank Mission Report. See also, J.B. Ooi, "Rural Developments in Tropical Areas," Journal of Tropical Geography, volume 12 (March 1959), pp. 196-198.

on which either the ownership or operation of land by non-Malays is prohibited. (The accompanying map, Map III, shows their extent.) The law applies to rice land and prohibits its transfer, charge or lease to non-Malays. This law can be regarded as an outcome of the "dual" and "plural" pattern of growth. The present Malayan nation is a product of immigration. As a result the Malays became a minority in their own country. The main reason for the emergence of the Malay Reservations Enactment(1913) was to preserve the Malay ownership of land as well as to set aside sufficient land for the Malays in view of their relatively weak position vis-à-vis the non-Malays.

Our concern is not with the efficacy of this law.[60] Rather we are concerned with its effect on land use. The Malay Reservations impede development in several ways. They create local shortages of land for non-Malays. As we point out in Chapter V this is a factor responsible in some measure for the "break-up" of rubber estates.[61]

On the other hand, the Malays are themselves reluctant to move to the margins of the Reservations. Since the margins of such lands are under jungle with no social amenities, there

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[60] In this connection see, J.B. Ooi, op. cit., p. 197.

[61] See Chapter V, p. 151.

is little incentive to move to them. Even as early as 1920 the Government had to admit that the Malays preferred to settle on land outside the Reservations because of its saleability.[62] Since these lands may not be pledged, the ability of the Malays to raise loans is restricted.

This non-use of lands represents a waste of resources from the point of view of society especially when there is a demand for land. If the rate of population growth can be taken as an indicator of the future demand for land, then the demand for land by non-Malays is likely to be greater than the demand from Malays. For the rural Malaysian (indigenous Malays and immigrant Indonesians) has a relatively low fertility and high mortality, while the Indian and Chinese have a high fertility and medium mortality, and high fertility and low mortality respectively.[63] Since the opportunities for employment in industry are relatively limited, there is likely to be a greater demand for land for agricultural purposes from these two races.

Thus the Malay Reservations while trying to protect the economic position of the Malays, have created certain factors

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[62] J.B. Ooi, op. cit., p. 197.

[63] T.E. Smith, Population Growth in Malaya, London, Royal Institute of International Affairs, 1952, p. 1.

which make for the inefficient allocation and use of land. These reservations have in fact become an obstacle to land development.

Hence the "backwash" effects of the contact with the West have been, not only the perpetuation of the backwardness of the subsistence sector and the limited degree of training, but also the creation of the Malay Reservations with their special effects on land use.

Conclusion

Let us now summarise the effects of international trade on Malaya. The cultivation of rubber[64] for export has made the Malayan economy fairly advanced by Asian stands, and has given her a per capita level of national income which, in 1953, was the highest in the Far East.[65] This has been the direct outcome of specialisation for the International market. In this foreign capital, enterprise and labour have played an important part.

There have been "backwash" effects too. Production and incomes are low in the subsistence sector, when compared with those in the export sector.

However the subsistence sector is not cut off from the

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[64]Tin mining has also been a contributory factor.

[65]The Bank Mission Report, p. 9.

rest of the economy. It is being integrated into the rest of the economy by developmental measures. This is being done by giving the peasants rubber smallholdings under the Land Settlements Schemes.[66] This should result in further contact with the exchange economy, as well as raise the level of incomes. It seems to be merely a question of time before this is achieved, so that it does not seem as if there is a tendency towards cumulative disequilibrium. Malaya could have hardly attained her present living standards if there had been such a tendency.

Dualism is present, but it does not appear to be leading in the direction to be expected from the dualistic theories of underdevelopment.

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[66] See Chapter VI, pp. 165-166.

CHAPTER III

OBSTACLES TO LAND UTILISATION IN THE POST WAR PERIOD

The contents of this chapter can be divided into three parts--in the first we will consider the institutional obstacles to good land utilisation; in the second we will enquire why there has been no new investment in rubber estates; in the third we will examine the rice land use policy. Before proceeding with the above we will briefly compare the land use of 1947 with that of 1958.

TABLE VI

A COMPARISON OF LAND USE, 1947 AND 1958

Crop	1947 (acres)	per cent	1958 (acres)	per cent
Rubber	3,481,000	68.7	3,520,000	63.7
Rice	813,538	16.2	908,590	16.4
Coconuts	512,000	10.1	517,000	9.4
Oil Palms	78,405	1.6	122,000	2.2
Pineapples	11,920	.2	44,360	.8
Tea	9,015	.2	10,590	.2
Market Gardens	15,019	.3	26,640	.5
Other Food Crops	146,329	2.9	379,110	6.9
Total	5,067,226	100.0	5,528,290	100.0

Source: 1947--Table I, Chapter I, p.3.
1958--Federation of Malaya, Annual Report of the Department of Agriculture, 1958, Kuala Lumpur, Government Printer, 1959, pp. 95-98.

It is evident from the table that there have been no significant changes in land use since 1947. Only the area

under food crops (rice, market gardens, and other food crops) shows some change. This appears to be in conformity with the government policy of "attaining self-sufficiency in the essential foodstuffs".[1] The reasons for the lack of any significant change in the area under rubber as well as other obstacles to land development are considered in the following sections.

Institutional obstacles

In this section our remarks will be quite general and we will touch on the following aspects: official policies regarding land alienation and the "Emergency".

A prior question has to be asked before we consider the actual obstacles. Why should we expect an extension of the cultivated area in the post war period? The reasons for such an expectation lies in the fact that Malaya is predominantly an agricultural country, with a rapidly growing population[2] and with limited opportunities for employment outside of agriculture.

We observed from Table VI that there has been no significant increase in the cultivated area. Population pressure

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[1]Federation of Malaya, Annual Report of the Department of Agriculture, 1958, Kuala Lumpur, Government Printer, 1959, p. 1.

[2]The rate of growth of the population is 3½ per cent. per annum.

has become apparent in some areas. There is a great deal of land in relation to the present population,[3] but much of it is under highland, jungle and swamp. Population pressure as it exists is on the cultivated land.

In Chapter II we pointed out that a "backwash" effect of the contact with the West was the creation of the Malay Reservations. About 19.3 per cent of the total land area is under such reservations.[4] Most of the land suitable for rice farming is in this area and this can only be owned and operated by Malays. Non-Malays are effectively barred from this area. As we point out in Chapter V the Malay Reservations are a contributory factor in the "break-up" of rubber estates.

About 24.6 per cent of the total land area is forest reserves.[5] The Forestry Department appears to be opposed to the clearing of land for cultivation of rubber on its ex-

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[3] The density of population in Malaya is only 115 per square mile. The comparable figures for Japan, the United States and The Soviet Union are 617, 50 and 23 respectively.

[4] J.B. Ooi, "Rural Development in Tropical Areas," Journal of Tropical Geography, volume 12 (March 1959), p. 197. See also Chapter II, pp. 50-53.

[5] Federation of Malaya, Annual Report, 1956, Kuala Lumpur, Government Printer, 1957, p. 184.

tensive reserves. The State governments are also unwilling to allow rubber to be cultivated on land suitable for food crops. Bauer is of the opinion that the reluctance to alienate land is responsible for the growing interest of Malayan Rubber Companies in rubber production in Africa.[6]

Thus the existence of large reserves of land and the reluctance to alienate land may be responsible for non extension of the agricultural area.

Land work is delayed by two factors, the shortage of experienced land officers and the shortage of funds. The first factor is closely related to the educational and constitutional pattern of Malaya, which drains away a high proportion of Malays into the administrative service.[7] Arrears in land work have also been accentuated by the "Emergency" and resettlement schemes.[8]

The shortage of State funds is an administrative difficulty. The nature of the revenue allocation between the

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[6]P.T. Bauer, "Malayan Rubber Policies," Political Science Quarterly, volume 12, No. 1 (March 1957), p. 92. In this connection see also Chapter V, p.33.

[7]T.H. Silcock, The Economy of Malaya, Singapore, Donald Moore, 1960, p. 32.

[8]The "Emergency" 1948-1960, refers to the revolt of the Malayan Communist Party. For resettlement schemes see, International Bank for Reconstruction and Development, The Economic Development of Malaya, Singapore, Government Printer, 1955, p. 224. Hereafter referred to as the Bank Mission Report.

federal and state governments makes it difficult for the latter to find sufficient revenue for expansion at the local level.[9]

The high "quit-rents" charged by the government may also impede cultivation and development. These are often greater than the net yield obtainable from the land and also bear little relation to the location or fertility of the land but only vary according to the type of crop cultivated.[10]

The "Emergency" 1948-1960[11] has been an important obstacle to land development both from the point of view of the government and private enterprise. Insofar as the government is concerned, land work has had to be shelved and given a lower priority. In addition the "Emergency" has resulted in a heavy financial drain, which is reflected in the non-implementation of development projects.

Large areas were not only unsafe but movement was also restricted. Since the security of life and property were

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[9] R.H.H. King, The New Malayan Nation, New York, Institute of Pacific Relations, 1957, p. 27. For a discussion of the system of revenue allocation, see, T.H. Huan, "The New System of Revenue Allocation to the States Settlements in the Federation of Malaya", Malayan Economic Review, volume 2, No. 1 (April 1957), pp. 79-83.

[10] Cf. P.T. Bauer, Economic Analysis and Policy in Underdeveloped Areas, London, Cambridge University Press, 1957, pp. 55-56.

[11] See Bank Mission Report, pp. 11-12.

threatened, private land development was consequently discouraged.

The "Emergency" also entailed a certain amount of resettlement, so that between 1948 and 1951 there was a marked reducation in the area under market gardens with a consequent increase in the imports of fresh vegetables.[12]

Hence the official policies toward land alienation and the "Emergency" have impeded land development in the post war period. The existence of large Malay Reservations and Forest Reserves together with the delay in implementing projects has impeded land development directly. The "Emergency" has created political and economic uncertainty and hence discouraged private enterprise indirectly.

Investment in Rubber

The following discussion will relate only to the lack of investment, particularly foreign investment, in estate rubber. Smallholding rubber investment is discussed in a different context in Chapter VI. It should be pointed out that while smallholding rubber is being promoted actively by the government, no attempt is being made to attract new capital

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[12]For example, the area under food crops fell from 95,727 acres at the end of 1948 to 67,465 acres at the end of 1951. Imports of fresh vegetables rose from 7,326 tons in 1948 to 12,680 tons in 1951. See Great Britain, Colonial Office, An Economic Survey of the Colonial Territories, volume 5, The Far Eastern Territories, London, Her Majesty's Stationery Office, 1955, p. 18,

into estate rubber.

What are the principal factors which attract the foreign investor? These include a favourable market and promise of profits, the level of taxation, freedom from restrictive legislation and the attitude of the government. Of the four factors mentioned, we will give special attention to the first and the second. There is no restrictive legislation regarding foreign investment and remittance of dividends in Malaya and the attitude of the government is very favourable towards foreign investment, so that these two factors may be said to be satisfied.

In relation to the market for rubber we will consider the competition from synthetic[13] rubber and the expansion of the synthetic rubber industry in the post war period.

Competition between the two rubbers provides an interesting study of the close interplay between the technical and economic aspects of factor substitution in production. Such substitution can take various forms and degrees. Capital may replace labour, or it may involve a restricted category of substitution, for example, oil, gas or water replacing coal in the production of power.

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[13] The term synthetic is used to cover the whole range of polymeric elastomers.

The elasticity of substitution is a technical question relating to the particular productive process and its technology. There are three possible situations of competition between natural and synthetic rubber.[14]

Zone A: Where synthetic rubber enjoys technical superiority[15] and there is no competition from natural rubber,

Zone B: Where natural rubber enjoys technical superiority and there is no competition from synthetic rubber,

Zone C: Where there is some degree of competition between the two.

Generalising from the experience of the United States over several years, a rough division of the "technical" demand for natural and synthetic rubbers was evolved in the trade and widely accepted. On the basis of technical considerations manufacturers prefer synthetic rubber for thirty-eight per cent of their products[16] (Zone A), such as passenger

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[14] The zone terminology used below is taken from T.R. McHale, "The Competition between Synthetic and Natural Rubber," Malayan Economic Review, volume 6, No. 1 (April 1961), p. 24.

[15] For a discussion of the technical superiority of synthetic rubber, see McHale, op. cit., pp. 24-25.

[16] These figures are based on an analysis made by Dr. J.N. Street of the Firestone Rubber Company in 1954. See L.A. Mills, Malaya, A Political and Economic Appraisal, Minneapolis, University of Minnesota Press, 1958, p. 162. See also P.C. Ratchaga, "The Future of Malaya's Natural Rubber, "Malayan Economic Review, volume 1, No. 1 (June 1956), p. 43.

tyre treads and wire insulation. On the other hand natural rubber is preferred for twenty-seven per cent of their products (Zone B), such as aeroplane and the larger size of truck tyres.[17] For the remaining thirty-five per cent (Zone C), the choice between natural and synthetic rubber has centered around price considerations. Thus if the price of natural rubber is lower than that of synthetic rubber, then natural rubber is selected.

Recent developments in the synthetic rubber field threaten to virtually eliminate Zone B where natural rubber enjoys a technical superiority and to increase Zone C where there is competition between the two.[18] The development of stereo-regular synthetic rubbers means that the substitution of these for natural rubber now becomes technically feasible.

It is in this connection that the question of research becomes important. The American as well as a large per centage of the free world synthetic rubber industry is operated by financially strong oil refining and rubber manufacturing companies.[19] Historically these two industries have been noted for their high rate of technological innovation.

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[17]Mills, op. cit., p. 162.

[18]McHale, op. cit., p. 24.

[19]C.F. Phillips, "The Competitive Potential of Synthetic Rubber," Land Economics, volume 36, No. 4. (November 1960), p. 326.

Innovation in the synthetic rubber industry has been no exception. In the United States alone, during 1951-1956, the amount spent on research was $27,389,000.[20] In contrast, in Malaya the annual amount spent on research since 1949 is about $1,450,000.[21] In Indonesia, Indo-China and Ceylon smaller sums have been spent.[22] The total amount spent on research in South-east Asia is far less than that spent in the United States. Thus natural rubber producers are confronted by a financially strong and technologically progressive synthetic rubber industry. On the basis of recent technological developments in the synthetic rubber industry there is a strong likelihood that Zone A will probably be increased in the future.

We will turn next to the "competitive" Zone C, where the choice between natural and synthetic rubber has centered around price considerations.

The following table shows that except for 1949 and 1954 the price of natural rubber has been substantially higher than that of synthetic rubber.

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[20] Mills, op. cit., p. 164.

[21] Ibid., p. 166.

[22] Loc. cit.

Not only the relative cheapness of the synthetic product but also its relatively stable price are in its favour.[23] Since 1952 the price of synthetic rubber has been

TABLE VII

RUBBER PRICES, 1947-1960

Year	New York Prices (U.S. cents per pound)	
	Natural Rubber	Synthetic Rubber
1947	21.0	18.5
1948	22.0	18.5
1949	17.6	18.5
1950	41.1	19.0
1951	59.1	25.0
1952	38.6	23.5
1953	24.2	23.0
1954	23.6	23.0
1955	39.1	23.0
1956	34.2	23.8
1957	31.2	23.9
1958	28.1	23.9
1959	36.6	23.9
1960	38.2	23.9

Source: United Nations, Food and Agricultural Organisation, Yearbook of Agricultural Statistics, 1960, Rome 1961, Table 112, p. 235.

stable at about twenty-three cents a pound, while the price of natural rubber has fluctuated violently.[24] Much of the

[23] A further factor in favour of synthetic rubber is the uniformity of the product compared with the variability of natural rubber. Manufacturers naturally prefer a product which is designed to meet their exact specifications.

[24] No way has been found of keeping the price of natural rubber stable. The prewar restriction schemes enjoyed a very limited measure of success. After the war the yearly discussions under the aegis of the International Rubber Study Group have not resulted in any international agreement.

relative stability of the prices of synthetic rubber may be attributed to the oligopolistic nature of the synthetic rubber industry,[25] which consists of only about half-a-dozen leading synthetic rubber manufacturers who among them control most of the production.[26] These firms are vertically integrated and although the total number of consumers is large, the big consumers are few and many of them are also producers. Both production and consumption are substantially controlled by a few big companies and hence price stability is not too difficult to achieve.[27]

The organisation of the natural rubber industry is markedly different. Natural rubber is grown in almost every country in South-east Asia and to a lesser extent in Africa. Competition is more or less perfect so that neither producers nor consumers have any control over the price.

However, free market price movements for natural rubber if tied to synthetic rubber substitutes may become more stable.

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[25] Only the American synthetic rubber industry is being considered.

[26] For a description of the structure of the synthetic rubber industry, See R. Solo, "The New Threat of Synthetic to Natural Rubber," Southern Economic Journal, volume 22, No. 1, (July 1955), pp. 55-64, and P.W. Bidwell, Raw Materials, A Study of American Policy, New York, Harper and Brothers, 1958, p. 252.

[27] J.S. Bain, Barriers to New Competition, Cambridge, Harvard University Press, 1956, mentions that prices may be maintained at a certain level in order to prevent entry. See p. 151.

At the same time the price which the consumers in Zone B would be willing to pay will be determined by demand schedules interacting with a combined natural-synthetic rubber supply schedule, rather than with the supply curve of natural rubber alone. This combined supply curve will probably keep prices at a lower level than would be the case if the supply were available from natural rubber alone.[28]

Even if long run prices of natural rubber are likely to be stable and compare favourably with those of synthetic rubber the increasing consumption of synthetic rubber and the possibility that the market for natural rubber may disappear in the long run may discourage investment in natural rubber. We will now briefly survey world supply and demand of both natural and synthetic rubber.

Prior to World War Two, production of natural rubber was greater than consumption. As we noted in Chapter I the industry was under restriction schemes. In contrast, the post was period has been one of increasing demand because of the expansion of the automobile industry and the development of new uses for rubber.

The following table summarises the world supply and

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[28] T.R. McHale, op. cit., p. 27.

demand position of natural and synthetic rubber in 1960.

TABLE VIII

ESTIMATE OF WORLD RUBBER PRODUCTION AND CONSUMPTION, 1960

(000 tons)			
Production			
Country	Natural	Synthetic*	Total
United States		1440	1440
Malaya	715		715
Indonesia	650		650
Rest of World	660	460	1120
	2025	1900	3925
Stockpile Deliveries			
United States	90		90
United Kingdom	60		60
	2175	1900	4075
Consumption			
United States	485	1080	1565
United Kingdom	170	105	275
Rest of World	1375	565	1940
	2030	1750	3780

*excluding Communist countries.

Source: "Asian Rubber", Far Eastern Economic Review, Volume 22, No. 3 (16 July 1959), p. 85.

It is evident from Table VIII that supply and demand of natural rubber are equated by stockpile releases. The Ad

Hoc Rubber Committee of the United States Office of Defence Mobilisation (1956) estimated that the natural rubber industry would not be able to meet world requirements.[29] Insofar as rubber manufacturers were concerned there was a decided but slow switch in favour of synthetic rubber in view

TABLE IX

FREE WORLD RUBBER CONSUMPTION 1950 AND PROJECTED 1975 CONSUMPTION

	United States		Other Free Countries		Total Free World	
	1950	1975	1950	1975	1950	1975
Natural	738	(a)	785	(a)	1523	2300
Synthetic	582	(a)	40	(a)	624	2700
Total New Rubber	1320	2500	825	2500	2147	5000
Reclaimed Rubber	300	800	125	200	421	1200
Total consumption	1620	3300	950	2900	2568	6200

(a) Not separately projected.

SOURCE: President's Materials Policy Commission, Resources for Freedom (Paley Report), volume II, Washington, D.C., Government Printing Office, 1952, p. 102.

of the fact that their future demands of natural rubber might not be met, in spite of replanting, because of rising costs of production and political uncertainties.[30] A similar fear

[29] L.A. Mills, op. cit., p. 160.

[30] J. Davis, The Canadian Chemical Industry, Ottawa, Royal Commission on Canada's Economic Prospects, March 1957, p. 53.

was expressed by the Paley Commission,[31] whose projections for rubber comsumption are given on the previous page.

It is noted from the above table that the consumption of synthetic rubber is expected to increase over four times while that of natural rubber only one and a half times. Yet a rate of growth of one and a half times in fifteen years should attract investment. The increasing consumption of synthetic by its largest consumer the United States, and the establishment of synthetic rubber plants in the rest of the world probably portend a less favourable market for natural rubber. Hence natural rubber may not be as attractive to the foreign investor as it was in the past.

The following brief survey of the consumption of natural and synthetic rubber shows the increasing consumption of synthetic rubber and indicates that a larger synthetic rubber capacity is planned in most of the industrial countries.

Since 1951, the percentage of consumption of natural rubber in the United States has dropped from forty-eight per

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[31]The President's Materials Policy Commission, (Paley Commission), Resources for Freedom, volume 2, Washington, D.C., United States Printing Office, 1952, pp. 99-102.

cent to thirty-six per cent.[32] In other countries the ratio has been much higher and varied between ninety-six and eighty-eight per cent. The main reason for the higher ratio was the absence of synthetic rubber factories in these countries and the "dollar" shortage which prevented imports from the United States and Canada. The picture has changed considerably since then and more synthetic rubber plants are being established in Western Europe, Japan, India, and Russia. American exports of synthetic rubber have also risen considerably and permission has been granted to import it into the United Kingdom.[33]

The figures on the following page compiled by the Economist show the capacity of synthetic rubber plants in the free world.

The following table does not contain data from the Communist countries. However it is estimated that in 1957 the capacity of synthetic rubber plants in the Soviet Union was about 300,000 tons.[34]

The production of synthetic rubber is being increased considerably in all the industrial countries. In comparison

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[32]The Rubber Act of 1948 requires that Manufacturers must use at least 510,000 long tons of synthetic every year.

[33]L.A. Mills, op. cit., pp. 160-162.

[34]Ibid., p. 161.

with natural rubber the synthetic rubber industry has a critical time advantage in placing its product on the market. The rubber tree comes into full production only after ten to fourteen years. A synthetic rubber plant can be constructed in a relatively short period of time. For example, a Canadian plant was designed and constructed in a period of two years.[35] Another example is the British plant which was completed in eighteen months and is designed to run continuously throughout the year.[36] Moreover synthetic rubber plants can be strategically located in proximity to major sources of raw materials or markets, thus decreasing costs of transport substantially.

TABLE X

EXISTING AND PLANNED SYNTHETIC RUBBER CAPACITY IN THE FREE WORLD, 1960 (000 LONG TONS)

All Types	World	United States	Canada	United Kingdom	Germany	France	Italy	Holland	Europe	Japan
Existing	2175	1747	165	91	59	20	50	5	225	38
Planned	3110	2015	165	172	156	120	80	85	617	106

Source: "Expansion Ahead," Economist, volume 195, (28 May 1960), p. 898.

[35] J. Davis, op. cit., p. 53.

[36] "Gr-S from Britain," Economist, volume 189 (11 October, 1958), p. 177.

In this discussion on synthetic rubber we have noted that even in the one zone in which the two rubbers compete on the basis of price alone, the prices of synthetic rubber are relatively lower and more stable than that of natural rubber. Furthermore in the post war period the demand for natural rubber has exceeded supply and the deficiency has been made up by stockpile releases. The fear that natural rubber production will be unable to meet increasing world requirements has been a contributory factor in the expansion of the synthetic rubber industry in the industrial countries. With further technological developments not only is the price of synthetic rubber likely to fall but also substitution between natural and synthetic rubber may become infinitely elastic. Thus Zone B may be virtually eliminated and even Zone C may be reduced considerably. The above factors then may reduce investment in natural rubber to a rate considerably lower than that when the industry was in its infancy, that is in the period before the 1930s.

The increasing competition from synthetic rubber has been the most important factor affecting investment in natural rubber. A subsidiary factor has been the level of taxation in the rubber industry in Malaya.

The principal Malayan taxes levied on rubber are income tax and export duty. The current rate of income tax on

on company profits is forty per cent. The export duty[37] is ad valorem, starting at four per cent when the export price of rubber does not exceed sixty cents, and becoming progressively steeper as the price of rubber increases. It falls largely on the producers and cannot be shifted easily to the consumer since the demand for rubber is very elastic.

While income tax is levied only on profits earned, export duty has to be paid on every pound of rubber exported irrespective of whether the company is making a profit or not.

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[37] The export duty consists of the following four parts:

(i) Accrues to general government revenue and amounts to four per cent ad valorem when the price of rubber does not exceed sixty cents. When the price is higher the duty is calculated thus: $\frac{4.55P - 63}{10}$ where P is the weekly notified price of rubber;

(ii) levied when the price of rubber is more than $1 and calculated thus: $\frac{2.5P - 250}{10}$ where P is the weekly notified price of rubber

This is refundable when the price of rubber remains for eight successive weeks below $1;

(iii) Research cess--three quarter cents per pound--goes to a research fund.

(iv) a replanting cess of $4\frac{1}{2}$ cents. The part collected on smallholding rubber is paid into the smallholder replanting fund, while that collected on estate rubber is repaid to the extent of replanting expenditure incurred since 1946.

See Appendix I, Replanting Schemes in the Rubber Industry. See also C.Y. Lim "Export Taxes on Rubber in Malaya, a Survey of Post war Development," Malayan Economic Review, volume 5, No. 2 (October 1960), pp. 46-558, and "The Malayan Rubber Replanting Taxes," Malayan Economic Review, volume 6, No. 2 (October 1961), pp. 43-52.

It is also regarded as being discriminatory since the rate is much heavier than that levied on exports of oil palms and coconuts.

The Mission of Enquiry into the Rubber Industry, 1954, (the Mudie Mission) estimated that with the rubber price at sixty cents a pound a low yielding estate could not both pay export duty and set aside an adequate amount for replanting.[38] It also felt that Malayan income tax drained off a large proportion of profits as they were made.[39]

A large number of the Malayan rubber estates are registered in the United Kingdom (the "sterling" companies), and up to 1957 were subject to double taxation.[40] The Mudie Report again described United Kingdom taxation of rubber companies as "both excessive, improvident and unfair, since rubber companies were taxed at the same rates as those in the United Kingdom, where conditions were settled."[41] Also allowable United Kingdom deductions did not include depreciation of rubber trees. Although the cost of replanting was deductible in the year in which it was incurred, the making of roads and drains for the purpose of replanting was not.

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[38] R.F. Mudie, (Chairman) Report of the Mission of Enquiry into the Rubber Industry of Malaya, 1954, Kuala Lumpur, Government Printer, 1954, p. 35. Hereafter referred to as the Mudie Report.

[39] Loc. cit.

[40] For changes since 1957 see Chapter V, p. 138.

[41] Mudie Report, p. 36.

This was regarded as new capital formation. Moreover the replanting grant[42] of $400 was regarded as income and hence subject to taxation.[43]

In contrast the "dollar" (that is those registered in Malaya) companies' cost of replanting was treated as an expense of operation according to Malayan tax laws and could be written off over a period of ten years.[44] Hence the "sterling" rubber companies were in a relatively disadvantageous position vis-a-vis the "dollar" rubber companies. Also as we point out in Chapter V[45] the level of taxation was partly responsible for the sale of "sterling" rubber companies.

Hence new foreigh investment in Malayan rubber estates appears to be limited. Before the war there was no income tax in Malaya; political uncertainties which did not exist in the prewar period also discourage the investor today. Developments in neighbouring rubber producing countries also

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[42] For Replanting schemes in the Rubber Industry see Appendix I.

[43] L.A. Mills, op. cit., p. 198.

[44] Loc. cit.

[45] See Chapter V, p. 137.

make the investor cautious. Indonesia[46] and Ceylon may be cited as examples. Fear of similar developments in Malaya may deter foreign investment in rubber.

However in spite of the increasing competition from synthetic rubber and the higher level of post war taxation, the natural rubber industry of Malaya has been selling all that it can produce. Besides earning good profits it has been replanting at a rate of about three per cent a year.[47] When we consider the dividends paid, complaints of over taxation and rising costs of production seem to suggest the laments of the poor rich man.

The figures on the following page compiled by the Economist for certain "sterling" rubber estates show that relatively high dividends are still being paid.

Yields range from eight to thirteen per cent and are described by the Economist as reflecting "a favourable outlook for the natural rubber industry."

In this connection then we may ask again why there is no investment in rubber. The general conclusion appears to

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[46]In Indonesia income tax takes between forty to fifty two per cent of the rubber estate's profits, after which forty per cent of the balance has to be paid into the account of the Bank of Indonesia. The remainder is then subject to an exchange surcharge of forty per cent, after which it can be transferred abroad. Foreign estates also face the threat of nationalisation. See L.A. Mills, op. cit., p. 177.

[47]P.C. Ratchaga,"The Future of Malaya's Natural Rubber," Malayan Economic Review, volume 1, No. 1 (June 1956), p. 43.

be that the natural rubber industry is plagued by uncertainty. First there is political uncertainty. Foreign investors are no longer certain about the security of their investments in newly independent countries.

TABLE XI

EARNINGS OF SOME "STERLING" RUBBER ESTATES, NOVEMBER 1959

Estate	Issued Value of Share (shillings)	Total Planted Acreage	Price of shares on November 11.	Dividend per cent
Highlands and Lowlands.	2	43,800	8/6	8.2
Kuala Lumpur	20	22,317	40	10.2
Labu Cheviot	2	14,869	8/6	9.1
London Asiatic	2	35,725	8/1½	7.4
Malacca	20	20,707	56/6	8.0
Petaling	2	27,301	9/10½	7.1
Seafield	2	33,033	61¾	8.2
United Sera Betong	20	37,461	98	13.6

Source: "Prosperity in Rubber," Economist, volume 193 (14 November, 1959), p. 658.

Secondly there is economic uncertainty. With extensive research in synthetic rubber, there is every possibility that in the long run not only will the price of synthetic fall, and with it the price of natural rubber, but that the elasticity of substitution between the two may shortly become almost infinite. In fact with the development of stereo-

regular synthetic rubber, technical substitution possibilities of synthetic for natural rubber now seem to be virtually complete. Thus the future of the natural rubber industry is probably less promising now than at any other time in its history.

This will in turn have effects on land use since the relative unattractiveness of the natural rubber industry as a field of investment is tantamount to the non-extension of the acreage under rubber, at least by the estates. Perhaps this is one reason why the government is taking the initiative in establishing rubber smallholdings.

Land Use Policy for Rice

As we pointed out earlier in this chapter, the declared policy of the government is to attain self-sufficiency in essential foodstuffs, namely rice. Two factors are responsible for this attitude: the experiences of the Japanese occupation and the political insecurity of the main rice producing areas. In this section we will examine the measures taken to achieve this goal as well as attempt to appraise this policy.

There are two sides to this policy, the first is the extension of rice acreage and the second is the improvement of rice yields. To a certain extent we will find that common factors affect both these aspects.

The obstacles which lie in the way of the goal of self-

sufficiency are both physical and economic; each of these will be examined in turn.

The mountainous and rugged nature of the country limits its agricultural expansion in general and the expansion of rice in particular, since wet rice cannot be cultivated on land over fifty feet in Malaya.[48]

Climatic conditions are on the whole not very favourable to rice cultivation. The higher temperatures result in rapid vegetative growth but yields are lower than in the temperate rice growing regions.

Most Malayan soils are poor when compared with those of the temperate regions, since they are liable to rapid deterioration. Thus double cropping of rice is rarer than in other rice producing areas both in temperate and tropical regions because of poor soils.

The most important factor determining rice yields is the supply of water. Both the quantity and quality are important. In Malaya a good deal of rice land has been known to be abandoned because the water contained mining effluent.[49]

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[48] E.H.G. Dobby, South East Asia, London, University of London Press, 1958 (sixth edition), p. 107.

[49] J.B. Ooi, "Rural Development in Tropical Areas, with special reference to Malaya," Journal of Tropical Geography, volume 12 (March 1959), p. 111.

The Rice Production Committee 1953,[50] reported that there was a lack of regulated water supplies in all the eleven states of the Federation and "in very few areas have the irrigation works more than a supplementary effect by conserving and distributing water from rainfall." The immediate difficulty in this connection is the shortage of skilled personnel and equipment.

The most important economic factor affecting rice cultivation is the higher opportunity incomes available from the cultivation of rubber. As we pointed out in Chapter I,[51] even during the Depression, it was only in 1932 that the terms of trade were against rubber. A numerical example in terms of present prices will help to bring out this relationship.

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[50] Federation of Malaya, Report of the Rice Production Committee, volume 1, Kuala Lumpur, Government Printer, 1953, pp. 75-77.

[51] See Chapter I, pp. 17-18 and especially Table III.

From one acre of rubber,[52] net income = $520

From one acre of rice,[53] net income = $ 97

Thus we see that the net income obtainable from rubber is more than five times greater than that obtainable from rice.

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[52]This figure is arrived at thus:

927 pounds (yield from one acre of rubber) x $1.08 (price of rubber per pound)
= $1003.

$1003--$483 (cost of production at 52 cents a a pound)
= $520--net proceeds from one acre of rubber.

Source: (i) yield per acre and price of rubber, Rubber Statistics Handbook, 1960, Kuala Lumpur, Department of Statistics, 1961, p. 32, 53.

(ii) Cost of production--R. Ma, "Company Profits and Prices in the Rubber Industry in Malaya, 1947-1958," Malayan Economic Review, volume 4, No. 2 (October 1959), p. 30.

[53]This figure is arrived at thus:

2102 pounds (yield from one acre of rice) x $0.11.3 cents (price of rice per pound)
= $237.

$237--$140 (cost of production per acre)
= $97

Source: (i) Yield per acre--Production Yearbook, 1960, Rome, Food and Agricultural Organisation 1961, Table 18, pp. 51-52.

(ii) The price per pound is based on the government minimum price of $15 a picul (1 picul = 133 pounds).

(iii) Cost of production--derived from J.J. Puthucheary, Ownership and Control in the Malayan Economy, Singapore, Eastern Universities Press, 1960, Table 4, p. 15.

As we point out in Chapter VI it is considerably cheaper for Malaya to import rice than to produce it herself.[54]

It seems from the Rice Production Committee's Report that this factor of the higher opportunity incomes from rubber is under-emphasised. The Committee seems to be more concerned with what it calls "culture change".

> The altering of the price structure has been a responsible factor. Changes in the level of living has changed the outlook of the rural population. The demonstration effect has been at work. The tedious nature of padi planting, the higher earnings available from alternative occupations and the attractiveness of town life have important effects, particularly in marginal rice lands where poorer soils and less favourable climatic conditions afford relatively lower returns for the same or greater expenditure of labour.[55]

It seems from the above that the Committee laments the movement out of rice production, which might, in the long run, be a good thing if incomes are to be increased.

It even goes so far as to suggest that a higher subsidy may alter the situation and encourage more planting of rice.[56] However a higher subsidy may be warranted if it can be expected to raise social productivity which would

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[54] See Chapter VI, p. 168.
The export price of Thailand rice is $9 per picul, while the guaranteed minimum price in Malaya for domestically produced rice is $15 per picul.

[55] Rice Production Committee Report, p. 4.

[56] Loc. cit.

outweigh the loss in welfare to the consumers through higher prices of rice.

However certain government measures have been taken both to increase yields and to keep the peasant in rice farming. These include the experimentation with double cropping, the extension of drainage and irrigation and minimum prices for domestically produced rice. Before examining these factors we will consider how Malayan yields compare with those of other rice producing areas.

TABLE XII

RICE YIELDS OF THE MAJOR RICE PRODUCING COUNTRIES, 1959/1960

Country	Pounds per acre
Burma	1500
Ceylon	1364
India	1168
Indonesia	1514
Japan	4180
Malaya	2102
Taiwan	2614
Thailand	1224
Italy	4610
Spain	5074
Australia	5194

Source: Production Yearbook, 1960, volume 14, Rome Food and Agricultural Organisation, 1961, Table 18, pp. 50-51.

It is evident from the above table that Malayan yields are the highest in South-east Asia. But when compared with those of the temperate regions they are very low. As we pointed out earlier the climate of Malaya is not particularly suited to rice production. And as Grist points out, rice is in fact better suited to the sub-tropical and warm temperate zones than to the tropics.[57]

The first policy of increasing rice production by means of double cropping has to be viewed against the water problem. In order that this policy be effective there has to be complete water control throughout the year.[58] But three-fifths of the rice areas are without drainage and irrigation facilities even for the main crop.[59] In spite of heavy rainfall and the large number of streams and rivers, the topography of Malaya does not favour the construction of reservoirs, so that there remain extensive areas of rice land where adequate irrigation facilities do not exist.[60]

Again to plant two crops a year a shorter maturing seed would have to replace the longer maturing variety. According to Grist there is no evidence that the yields from

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[57]D.H. Grist, Rice, London, Longmans Green, 1953, pp. 268-269.

[58]Rice Production Committee Report, p. 60.

[59]J.B. Ooi, op. cit., p. 116.

[60]Loc. cit.

the two short crops would be greater than that from one crop.[61]

The second policy measure, the extension of irrigation works, has been responsible for the expansion in rice acreage and for increased yields per acre. An indication of this is the fact that of the total planted rice acreage of 864,000 acres in 1950-51 about 225,000 acres, or over twenty-five per cent, were within areas where irrigation works have been established or improved largely during the last twenty years.[62]

The third policy measure which we will discuss is that of fixing minimum prices for rice, designed to assist the cultivator who, in the absence of a minimum price, would be unable to sell his crop. The aim then is to shield the cultivator from the full impact of competition from imported rice. This is believed to be necessary because

> ... economic standards in Malaya are in general substantially higher than in the major rice exporting countries of Asia. And this is also true specifically in the case of the Malayan padi cultivator as compared with his counterpart in the neighbouring rice surplus areas....[63]

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[61] Grist, op. cit., p. 29.

[62] The Bank Mission Report, p. 187.

[63] Ibid., p. 49.

However it may be argued that the impairment of the rice cultivator's position is a natural economic development and perhaps should be allowed to take place. Traditional occupational immobility among rice farmers, and the lack of alternative employment opportunities are not conclusive reasons for continuing rice production as an outlet for a rapidly growing labour force. For it is the amount of rice produced that is important and not the number of rice farmers.

All the three measures, that is double cropping, the extension of drainage and irrigation, and minimum prices for domestically produced rice, represent measures which are taken to both extend the area under rice as well as to improve yields. They also represent a pre-occupation with rice self-sufficiency.

As the Bank Mission Report observes,

> It is not a serious exaggeration to say that agricultural development has been conceived largely in terms of measures which offer the greatest technical short run possibilities for additional rice output... Insufficient attention has been given to the relative advantages of expenditures and use of land for other crops. In view of Malaya's high ratio of population to rice lands compared to other Southeast Asian countries and its very high rate of population growth anything approaching rice self sufficiency does not appear... practicable... With world rice prices now declining... greater attention should be given to other relative economic advantages of other crops.[64]

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[64] Ibid., pp. 41-42.

To support this view it should be noted that it is rubber replanting as against new planting which has received a large proportion of official funds. In spite of the fact that rice self-sufficiency is not feasible for economic, physical and technical reasons, the government is still careful to avoid undue alienation of land suitable for rice cultivation to other crops.

Thus any considerable increase in the area under rice would involve the clearing of some land under rubber. Substantial capital expenditure would be required for the purpose and even then returns would be low. The following quotation summarises our conclusion on the food self-sufficiency policy:

> There would be no prospect of recovering the capital expenditure from the proceeds of the rice. On the contrary the rice growers would need assistance probably by quantitative restriction on the imports of rice, raising the price of rice to the whole population ...[65]

Summary

This chapter asserted that there have been no significant changes in the cultivated area in the period 1947-1960. Institutional obstacles were in part responsible for this. These were mainly the official policies on land alienation and the "Emergency".

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[65] F. Benham, The Colombo Plan and Other Essays, London and New York, Royal Institute of International Affairs, 1956, p. 46.

In the second section of this chapter we queried the lack of new, foreign investment in rubber estates. Our general conclusion was that the rubber industry is plagued by uncertainty and that this is responsible for the relative unattractiveness of the natural rubber industry as a field of investment. The uncertainty is of two kinds, political and economic. The economic aspect concerns largely the growth in the post war period of the synthetic rubber industry, as well as the possibility that with the development of stereo-regular synthetic rubber, technical substitution possibilities of synthetic for natural rubber now seem to be virtually complete. Thus the future of the natural rubber industry is probably less promising now than at any other time in its history. Insofar as land use is concerned, the relative unattractiveness of the natural rubber industry as a field of investment is tantamount to the non-extension of the acreage under rubber.

In the third section of this chapter we discussed the policy of self-sufficiency in foodstuffs, namely rice. We concluded that both economically and physically this is not feasible. Hence the measures taken by the government to achieve self-sufficiency in rice reflect the fact that the opportunity costs of producing alternative crops are being neglected. The pre-occupation with this objective limits the possibility of land development in other fields.

Thus all the three topics discussed in this chapter have in one way or another prevented the extension of the cultivated area in the period 1947-1960. The official policies on land alienation in general, and the rice land policy in particular are policies inherited from the colonial period. Perhaps it is here that the dualistic theories and their implications, which we discussed in Chapter II, become relevant. The policies being pursued are dualistic in the sense that the allocation of resources to subsistence activities, that is rice, will probably help to accentuate the dualistic features of the economy.

CHAPTER IV

A COMPARISON OF ESTATES AND SMALLHOLDINGS AS PRODUCERS OF RUBBER

The purpose of this chapter is to compare the relative efficiency of estates and smallholders as producers of rubber. The comparison is necessary because both the "break-up" of estates and the land development schemes[1] are creating a trend towards more smallholdings. This comparison should help us to determine whether the above-mentioned developments are harmful or beneficial to the economy. The main points of comparison will cover organisation, production and replanting.

Organisation

The planted area under rubber at the end of 1959 was 3.8 million acres of which the estate acreage was about fifty one per cent and the smallholding acreage was about forty-nine per cent. It is estimated that while the smallholding acreage was only 1.8 million acres in 1959, new planting, replanting and "fragmentation"[2] will give a total smallholding acreage of 2.5 million acres by 1970.[3]

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[1]The "break-up" of estates is discussed in Chapter V. Land development schemes are discussed in Chapter VI.

[2]"fragmentation" is discussed in Chapter V.

[3]"Malayan Rubber Production, 1960-170." Natural Rubber News, (April 1961), p. 8.

A comparison for the purpose of evaluating the relative efficiency of the two types of producers may not show definite results owing largely to the paucity of data, especially that relating to smallholdings.

There are two reasons for the lack of data. There is first the difficulty of collecting data from the smallholdings. Also, they are not required to submit any returns, while the estates have to submit regular returns to the government. Particularly after 1934, when the rubber restriction scheme was introduced, the figures for estate production, planted and tapped areas may be taken to be reasonably accurate.[4] Moreover most of the estates are public corporations; information on which is published in several sources.[5]

For example, in the Rubber Statistics Handbook, the best source of information on the industry, the figure of 1.5 million acres for smallholdings is stated to be an estimate only. It follows that figures for yields per acre are also only estimates. Their acreage figures are based solely

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[4]Cf. Report of the Mission of Enquiry into the Rubber Industry of Malaya, 1954, R.F. Mudie, chairman, Kuala Lumpur, Government Printer, 1954, p. 4. (Hereafter cited as the Mudie Report).

[5]For example, (a) Zorn and Leighhunt, Manual of Rubber Planting Companies.
(b) Facts and Figures, Singapore, Fraser and Co.
(c) The Straits Times Directory, Singapore.

on area recorded as "alienated for rubber", and there have been no regular checks to ascertain whether rubber has acually been planted.

Smallholders' production may be taken to be reasonably accurate.[6] These figures are obtained by deducting estates' production from the total net exports after making allowances for local manufacturing and stocks of estates and dealers.

What is an "estate"? As estate is defined as lands contiguous or non-contiguous aggregating not less than 100 acres in area, planted with rubber or on which the planting of rubber is permitted, and under a single legal ownership.[7]

Estates are larger units operated with substantial capital and employing a large labour force in receipt of a daily wage. The wide ranges in the size of estates is indicated by Table XIII which also shows the distribution by race.

In 1956, (four years earlier) there were estimated to be about 393,000 smallholdings. A detailed analysis as in

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[6] Mudie Report, p. 5.

[7] See Federation of Malaya, Rubber Statistical Handbook, 1960, Kuala Lumpur, Department of Statistics, 1961, p.3. By the same token, a smallholding is an area contiguous or non-contiguous aggregating less than 100 acres planted with rubber or on which the planting of rubber is permitted and under a single legal ownership.

TABLE XIII

ESTATE ACREAGE UNDER RUBBER, 1960, ANALYSED BY SIZE GROUP AND RACE

Size Group	No. of Estates	Acreage	No. of Estates	Acreage	No. of Estates	Acreage
	European		Asian		Total	
0-499	41	11,030	1418	273,788	1459	284,818
500-999	69	52,327	211	151,682	280	204,009
1000-1999	172	251,014	105	142,761	277	393,775
2000-2999	79	197,835	23	54,297	102	254,132
3000-4999	86	337,451	14	52,115	100	388,566
5000 & over	45	219,174	11	16,698	56	415,872
Total	492	1,170,831	1782	77,341	2274	1,942,172

Source: Rubber Statistics Handbook, 1960, Kuala Lumpur, Department of Statistics, 1961, Table 3, p. 10.

the case of the estates is not available. However the following rough figures[8] may be helpful. In the size group 0-25 acres there were some 386,321 holdings and in the size group 25-100 acres there were 6,754 holdings.

The majority of the smallholding acreage is cultivated by family labour, each operating two to five acres. They are sometimes assisted by sharecroppers, especially when rubber prices are high. The non-Malay (that is, Chinese and Indian) holdings vary between ten to one hundred acres. They are usually tapped with the help of outside labour, paid on the basis of shares or piece rates.[9] The greater part of these are owned by absentee, non-resident businessmen, artisans or tradesmen or Indian moneylenders.[10] This is a significant factor for it disproves the usual idea that the smallholdings are owner-operated. A recent survey of rubber production on a Malay Reservation shows that absentee ownership

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[8] L.A. Mills, Malaya, A Political and Economic Appraisal, Minneapolis, University of Minnesota Press, 1958, p. 186.

[9] T.H. Silcock, The Commonwealth Economy of South-east Asia, London, Cambridge University Press, 1959, p. 10.

[10] P.T. Bauer, The Rubber Industry, A Study in Competition and Monopoly, London, Longmans Green, 1948, p. 4.

and tenancy are quite common here too.[11] Of the 73.6 per cent of the lots in production, only a very small number were being operated by the owners, as shown by Table XIV.

TABLE XIV

OPERATION OF THE PRODUCING FARMS

Operated by	% of all producing areas
Registered owner	5.7
Owner's relative	14.4
Tenant or sharecropper	79.9

Source: E.K. Fisk, "Productivity and Income from an Established Malay Reservation," Malayan Economic Review, volume 6, No. 1 (April 1961), p. 17.

The overall degree of tenancy on smallholdings is not known with accuracy, but as the above table suggests it must be a substantial proportion. Puthucheary[12] mentions that seventy-five per cent of the Indian owned holdings are operated by tenants or share-croppers. Thus it appears that three-quarters of all smallholdings are tenant operated.

There are several reasons for tenancy and share-cropping on smallholdings. Those smallholdings which have been

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[11] E.K. Fisk, "Productivity from Rubber on an Established Malay Reservation," Malayan Economic Review, volume 6, No. 1 (April 1961), p. 16.

[12] J.J. Puthucheary, Ownership and Control in the Malayan Economy, Singapore, Eastern Universities Press, 1960, p. 19.

planted by shopkeepers and urban dwellers are often too small to justify wage labour and the supervision that this entails. The tenants here may be owners of neighbouring holdings who want to augment their income. Or they may be estate tappers who are attracted by the prospect of higher earnings. Such tenants are mainly Indian or Chinese.[13]

The estates, especially the European owned estates, also differ from the smallholdings in respect of organisation and administration. Here "agency houses" or secretarial firms predominate.[14] At the beginning of the twentieth century capital accumulation was small and of recent origin. A large part of the profits was remitted to Britain and to China, and the rest was invested in mortgages and real estate.[15] Investment on a large scale was possible only through the agency houses, which were the agents of investment not only in the plantation industries but also in the tin mines.

The agency houses have substantial financial interests in the rubber companies which they control. Such interests can take a number of forms. Perhaps the most important is

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[13] Ibid., p. 20.

14 For a historical development of agency houses or secretarial firms see G.C. Allen and A.G. Donnithorne, Western Enterprise in Indonesia and Malaya, New York, Macmillan, 1957, pp. 52-58

[15] Ong-Siang Song, One Hundred Years of the History of Singapore, London, John Murray, 1923, p. 116.

the holding of shares in the companies. Such holdings are supposed to be substantial "as has been shown by the success of the agency houses in defeating the take-over efforts that were made during the Korean boom".[16] Another form of financial interest is the shares held by rubber companies, controlled by agency houses in other rubber companies. The interests and controlling powers of such firms are reflected in the following statement:

> The interests of the secretarial firms were also reflected to a certain extent in the investment policy of rubber companies. An examination of company reports and accounts frequently reveals under the heading 'other investments' large holdings of other plantation companies. These are invariably in enterprises managed by the same secretarial or agency firm. The liquid funds of one company are used to facilitate the formation of another company, to ensure that the latter will be managed and its produce sold by the same ... firm.[17]

This aspect of co-operation and control which is obviously not found among the smallholders amounts to an integration of almost the whole rubber plantation industry, and enables collective action to take place. This is best seen in wage negotiations, when the Malayan Plantation Industries Employers' Association (MPIEA) acts in the interests of

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[16] Puthucheary, op. cit., p. 33.

[17] Bauer, The Rubber Industry, pp. 11-12.

estate producers.[18]

Racially however, the estate sector of the industry is not a homogenous one. Of the I.942 million acres under estate rubber, I.2 million are European owned, and the rest owned by Asians. The fundamental difference in organisation between them is in the size of estates[19] and the degree of concentration and control. Asian estate rubber is for the most part owned by families, partnerships or private limited companies. Only twenty-five per cent of the European estates are privately owned; the rest are public companies.[20] In the former there is concentration of ownership, while in the latter it is one of control.[21]

Production

The differences in organisation between estates and

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[18]Other instruments for collective action are the various Planters' Associations, which enable them to take joint action against not only labour and political problems, but also to meet the challenge of an almost united body of American consumers. The Planters also support the Natural Rubber Development Board (Washington D.C.) which does a great deal of market research.

[19]See Table XIII, p.94.

[20]Rubber Statistics Handbook, 1953, Kuala Lumpur, Department of Statistics, 1954, p. 38.

[21]European estates are further subdivided into "sterling" and "dollar" companies. The distinction rests on the place of incorporation. The former are incorporated in the United Kingdom and the latter in Malaya or Singapore.

smallholdings are reflected in the techniques of production which are discussed next.

The rational course of production is not the same for estates and smallholdings, because the former have substantial amounts of capital and employ large numbers of labour. The smallholder has little capital apart from that represented by the holding itself. Thus the smallholder appears to maximise the gross yield per acre while the estate maximises the return on all capital employed.

In addition, if we regard the estate as a corporation and the smallholding as an individual enterprise, we can distinguish between different goals. In the case of the corporation, career goals of managers and the managers' aim of capturing a certain share of the market may override considerations of profit maximisation.[22] In the case of the smallholder maximum satisfaction may be more important than maximum profits.[23] Merely because goals other than profit maximisation are present, it does not necessarily follow that behaviour patterns are non-rational.

Estate production is both capital and labour intens-

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[22]See W.J. Baumol, Economic Theory and Operations Analysis, Englewood Cliffs, Prentice Hall, 1961, Chapter 10. And Business Behaviour, Value and Growth, New York, Macmillan, 1959, Chapters 6-8.

[23]See T. de Scitovsky, "Notes on profit maximisation and its implications", Review of Economic Studies, volume 11, No. 1 (1943), pp. 57-60.

ive and overhead costs on estates are also heavy. The estates maintain an elaborate hierarchy of officials. These include the foreman, conductor, assistant manager, manager, visiting agents, engineers, accountants, the agency house-secretarial firm and the board of directors.[24] On the small-holding there is only the owner or operator, his family, sharetappers and a headman.[25] The estate also relies on a large labour force for tapping, weeding, and manufacturing of rubber. It is obliged by law to provide housing, medical care and other amenities for the labour force.[26] The small-holder too relies on outside labour but his dependence is of a different nature and, in current production, it very rarely extends beyond tapping operations.[27]

An examination of some cost of production figures for estates reveals certain features of the cost structure. P.T. Bauer has computed such costs for the Great Depression and for 1940.[28] In a recent article R. Ma has computed

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[24]P.T. Bauer, Report on a Visit to Rubber Growing Smallholdings in Malaya, July-September, 1956, London, Her Majesty's Stationery Office, 1948, p. 22.

[25]Loc. cit.

[26]These are discussed in Chapter V on the consequences of subdivision. See below p.157.

[27]Bauer, Report on a visit, p. 80.

[28]Bauer, "Some Aspects of the Malayan Rubber Slump, 1929-1933," Economica, N.S. volume 11, No. 41 (November 1944), pp. 190-198, and Rubber Industry, p. 271. See also Mudie Report, Chapter 3, pp. 8-10.

similar figures for 1958.[29] There is a marked degree of similarity between his (1958) and Bauer's (1940) proportions, even though the f.o.b. cost in 1940 was only 14.7 cents per pound.

TABLE XV

COSTS OF PRODUCTION OF ONE POUND OF ESTATE RUBBER, 1940 AND 1958

Bauer (1940)		Ma (1958)		
	per cent		cents/lb.	per cent
Collection etc...	41	Collection, Processing, despatch	21	41
Upkeep, cultivation	17	Upkeep, cultivation	6	11
Export duty	9	Duty	9	17
General changes (including depreciation)	33	General expenditure	14	27
		Depreciation	2	4
Total	100	Total	52	100

Source: Bauer, The Rubber Industry, London, Longmans Green, 1948, p. 271.
Ma, "Company Profits and Prices in the Rubber Industry in Malaya, 1947-1958," Malayan Economic Review, volume 4, No. 2 (October 1959), p. 30.

[29] R. Ma, "Company Profits and Prices in the Rubber Industry in Malaya, 1947-1958," Malayan Economic Review, volume 4, No. 2 (October 1959), p. 30.

From Table XV we notice that the first two items in Ma's figures are mainly direct labour costs and constitute fifty-two per cent of total costs. Estate labour costs though high, have not led to any invention comparable to the tin dredge. Labour efficiency over the period 1947-1958 has remained almost stable but wages have doubled.[30] The output per worker can only increase with increasing yields, since there is very little scope for mechanisation.[31] Replanting with high yielding material is an important way of reducing costs.[32]

The similar nature of the proportions of the two sets of figures cited above, shows that the cost structure of estates is quite rigid. The very high proportion of labour costs and the almost negligible scope for mechanisation are likely to keep the cost structure fairly rigid. The high proportion of labour costs is one factor determining the response of estate production to changing rubber prices.

The Supply of Rubber

To maximise profits, it might appear that the strict-

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[30] Loc. cit.

[31] Except in weeding, where mechanical methods are gradually replacing arsenite spraying.

[32] Replanting is discussed in the latter part of this Chapter.

ly rational course, for both estates and smallholdings would be to vary the amount of tapping and hence the number of workers with the price of rubber. But, for the estate it is not so easy to vary the amount of tappers, to such frequent and rapid changes, as those which occur in the price of rubber. Besides almost all the rubber not tapped is irretrievably lost. Rubber trees do produce more latex after a period of rest but this practice if extended beyond a few months results in a net loss of product. Often, estates have to fulfil forward contracts, since some are subsidiaries of rubber manufacturers. This procedure, too, would prevent estates from varying output with prices. Hence the estates in particular operate both their processing plants and plantations to capacity.

The high fixed costs of estates are reflected in the response of rubber production to marked and protracted price changes, When prices are falling estates show reluctance to curtail production, since as we have seen, a high proportion of their total costs consists of fixed charges, and a reduction of output would raise unit costs.

Although estate production is highly unresponsive to falling prices, costs are more flexible. For example, economies may be achieved in maintenance work, staff bonuses and managers' salaries. To spread out the high overheads there is some scope foramalgamation with contiguous estates. How-

ever, the proportion of the wage bill remains the same because wages are geared to the price of rubber. The estate also cannot economise on the services required by law.[33]

Thus in spite of high fixed costs certain economies can be effected even in estate costs of production. In fact, the ability of the estates to withstand the severe slump in rubber prices during the great depression shows that there is considerable flexibility in operation.[34]

In the response of smallholder rubber production to changing prices, it is important to distinguish between two sub-categories of smallholders. Those smallholders who are solely dependent on rubber as a source of income, react differently from those who have other sources of income. The former strive to maintain a minimum cash income. Hence they may expand output with falling prices. It is not known with accuracy how large a proportion of smallholders fall into this group, but it is generally believed to be less than half.[35] As for the second sub-category of smallholders, when

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[33]J. Wilson, The Singapore Rubber Market, Singapore, Eastern Universities Press, 1958, p. 19.

[34]Bauer, "Some Aspects of the Malayan Rubber Slump, 1929-1933," Economica, N.S., volume 11, No. 41 (November 1944), pp. 190-198.

[35]T.H. Silcock, The Economy of Malaya, Singapore, Donald Moore, 1960, p. 22.

prices are low, they gradually contract output and concentrate on other crops.[36]

The smallholders' response to price changes can be analysed in terms of an income and a substitution effect. The alternatives in this case would be more income or more leisure. As in the ordinary theory of the consumer, the substitution effect of a rise in the price of leisure will make him want to purchase less leisure. Thus the substitution effect will tend to increase his supply of labour. He will also transfer his labour from other uses to rubber.

But the income effect will work in the opposite direction of the substitution effect. An increase in the price of rubber will increase the real income of the smallholder. Feeling substantially richer he may now feel that he can afford more leisure, though by the substitution effect this has become more expensive. Thus the income effect of an increase in the price of rubber is likely to be an increased demand for leisure.

More practically, the amount of work the smallholder is willing to do depends on the wages being paid by neighbouring estates. Thus he will hire himself out if wages

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[36]United Nations, Impact of Selected Synthetics on the Demand for Natural Products in International Trade, New York, Department of Economic Affairs, 1953, p. 61.

are very high. On the other hand, even in times of low prices he may decide to hire himself out if his marginal costs of production are greater than the wages being paid by the estates. Bauer,[37] makes the point that smallholders' costs are nil or almost negligible. Silcock[38] points out that costs should be considered in terms of opportunity costs, otherwise we get the impression that the smallholder is unaffected by either the level of wages or the prices of alternative crops or of consumer goods.

Thus the response of smallholders to price changes depends on whether they have alternative sources of income. It also depends on the wages being paid by the estates, and the value placed on leisure. Hence it may be more difficult to derive the supply curve of smallholders' rubber.

The observed response of smallholders is generally quicker than that of estates. Estate and other labour is attracted to and from estates in times of higher prices by offers of share-tapping. It seems therefore that smallholder production plans are largely of a short run nature. It is not clear whether the smallholder takes user cost into consideration. Unlike the smallholders, the estates are reluc-

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[37] Bauer, Report on a Visit, p. 22.

[38] T.H. Silcock, "A Note on the Working of the Rubber Regulation," Economic Journal, volume 58 (June 1948), pp. 229-230.

tant to resort to "slaughter tapping". The differences in estate and smallholder response to price changes are reflected in the following table.

TABLE XVI

ANNUAL PERCENTAGE CHANGES ON PREVIOUS YEARS' FIGURES IN THE PRICE AND IN MALAYAN OUTPUT OF RUBBER, 1948-1958

Year	Average Annual Rubber Price R.S.S.L.	Output Malayan Estates	Output Smallholdings
1948	13.1	11.9	3.0
1949	- 9.5	- 0.7	-8.1
1950	183.2	- 6.0	17.2
1951	56.7	-12.7	-12.9
1952	- 43.3	4.0	-12.3
1953	- 29.9	0.0	- 4.1
1954	0.0	1.2	3.6
1955	69.7	2.0	18.7
1956	- 15.2	- 0.3	- 4.2
1957	- 8.3	4.8	- 2.0
1958	- 9.7	6.0	- 1.4

Source: R. Ma, "Company Profits and Prices in the Rubber Industry in Malaya, 1947-1958," Malayan Economic Review. Volume 4, No. 2(October 1959), Table 5, p. 39.

The figures show that smallholders' production is slightly more elastic.

Having looked at the supply of rubber from estates and smallholdings, we will now turn to certain other aspects of production, namely planting density, bark consumption, weeding, the choice of planting material, processing, market-

ing, the availability of credit, and research.

Planting Density

Generally planting density decreases with the size of the holding. The smallholder has less capital for production. His aim is to maximise output per surface area by planting densely.[39] Closer planting also facilitates collection and minimises the cost of transportation. The estate which employs hired labour tries to maximise the profit per acre, and the higher profit per tree, resulting from a higher yield per tapper, is supposed to offset the reduction in gross receipts due to the lower stand. Thus the different planting densities are merely a reflection of different factor proportions available to the two producers of rubber.

Today the smallholder is losing the partial advantage which he derived from close planting of seedling trees, because the optimum density of high yielding trees is about 120.[40]

Bark Consumption

Another aspect of production is that of bark consumption and bark reserves.[41] In the case of rubber a decision

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[39]Bauer, Report on a visit, p. 86.

[40]J.B. Ooi, "The Rubber Industry in the Federation of Malaya," Journal of Tropical Geography, volume 15, (June 1961), p. 53.

[41]For details of Bauer's investigations see his Rubber Industry, especially pp. 56-59.

on the desirability of consuming bark reserves involves the concept of the user cost. The user cost, of a unit of output in the short period, may be defined as the reduction in the discounted value of expected future quasi-rents of a piece of equipment, through using it for the production of that unit of output, rather than leaving it unused. It provides a link between the present and future and introduces the element of time into the cost curve.[42]

According to Bauer,[43] the concept is significant for the rubber industry for two reasons. First, the amount of bark removed reveals clearly the nature of the user cost as an opportunity cost in terms of future output. For example, if a tree is left untapped, bark reserves will be greater, with the possibility of higher yields in the future.

Secondly, decisions regarding the scale of output are made by persons "more interested in the continued existence of the companies than in the maximisation of profits!"[44] Thus the user cost may provide a suitable link between the motives of profit maximisation and the continued existence of

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[42]For a discussion of user cost, see A.D. Scott, "Notes on User Cost," Economic Journal, volume 63 (June 1953), pp. 368-384.

[43]Bauer, "Rubber Production Costs during the Great Depression," Economic Journal, volume 53(December 1943), pp. 33-34.

[44]Bauer, The Rubber Industry, p. 364.

the companies.

The amount of bark consumption depends on the skill of the tapper and the type of tapping system adopted. Production methods of smallholders are often criticised on the question of bark consumption, since smallholders remove a higher percentage of the bark. Bauer[45] doubts whether as much as five per cent of the total smallholdings were over tapped, except in the earliest days of the industry. Moreover he asserts that peasants of any race or nationality are not likely to ruin their holdings willfully, at least one which is difficult to replace.[46] However he fails to consider ignorance, which is perhaps the most important explanation of the maluse of resources. Thus it appears that the smallholder does not take into consideration the user cost, since his bark consumption is higher than that of the estates. Consequently his rubber trees will have to be replanted earlier than that of estates. This earlier rate of replacement may be regarded as an additional cost of production.

Weeding

Neglect of weeding is said to make the smallholders

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[45]Bauer, Report on a Visit, p. 77.

[46]Ibid., p. 75.

the more efficient producers. Up to the early post war years, estates pursued a "clean-weeding" policy, such that the incidence of root disease was found to be greater on estates than on smallholdings.[47] There is a belief now that cover crops are necessary not only to protect the soil from excessive exposure and erosion, but also to aerate and draw the soil, preserve its structure and enrich it with minerals. Today estates do plant cover crops. However no cover crops are planted on the Chinese and Malay smallholdings. Instead spaces between the trees are planted with cash crops, for example gambier, tapioca, pineapples and bananas. Thus, once again different production practices of the two units of production are noticed.

Planting Material

But none of these light factors is as important as planting material. The differences in yields either between estates or between estates and smallholdings have been said to be due mainly to differences in planting material used. Statistical investigation[48] carried out by the Rubber Research Institute of Malaya in 1957 revealed that over an area

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[47] Ibid., p. 22.

[48] "Replanting in Malaya," Natural Rubber News, (January 1957), pp. 6-8.

of 1,021,000 acres of unselected material, the average yield per acre was 355 pounds per annum. Over 446,000 acres of high-yielding material,[49] the average yield per acre was 806 pounds per annum. At the Institute's experimental station, selected clones[50] gave an annual yield of 1,500 to 2,000 pounds per acre. And, over a period of ten years of continuous tapping, when planted on well managed estates, the yield was from 1,200 to 1,600 pounds per acre.

It is theoretically possible to obtain yields as high as 2,000 pounds per acre from selected material, but the average yields are lowered by the fact that the replacement of old rubber is only gradual and the high proportion of production from unselected material reduces the average yield.[51]

In spite of the advantages of planting selected material, some smallholders continue to plant unselected seedlings. For example, as much as forty-nine per cent of the 92,000 acres of rubber planted in 1957 were of unselected seedlings.[52]

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[49]Includes all clonal seedlings and clones of budgrafts approved by the Rubber Research Institute.

[50]A clone is a group of plants all the individuals of which are obtained by vegetative propagation from a single parent tree whether directly or by multiplication.

[51]The unselected seedlings are being replaced by replanting which is discussed in the latter part of this chapter.

[52]J.B. Ooi, op. cit., p. 55.

The greatest single factor contributing to this is ignorance, and not that clonal seedlings are not available.

The establishment of superior planting material is perhaps the most important single branch of research in natural rubber production. For at best, cover crops and fertilizers can raise yields only up to the capacity of the trees. The development of high yielding material affects the genetical constitution of the trees.

For each individual producer of rubber, whether he is large or small, the choice of planting material is the most important single decision, since it is irrevocable. Planting with low yielding material entails a loss of valuable land which is unnecessarily tied up for at least thirty-five years. The same piece of land could be made to yield either a higher quantity of rubber or could have been used for other crops.

The following table shows the percentage of high yielding rubber to total planted acreage. There seems to be some correlation between the size of estates and the amount of high yielding material. This may suggest that the larger producers are the more efficient and also better able to take advantage of research in rubber. It also suggests a higher degree of replanting with high yielding rubber by the larger units. The difference between the two race groups perhaps strengthens the view that European estates are more

efficient.

TABLE XVII

PERCENTAGE OF HIGHER YIELDING RUBBER TO TOTAL PLANTED ACREAGE, 1960, BY SIZE GROUP AND RACE

Size Group	European	Asian	All Estates
0-499	51.0	36.8	37.3
500-000	73.8	44.3	51.8
1000-1999	65.9	48.3	59.5
2000-2999	67.1	51.0	63.7
3000-3999	64.0	53.0	62.5
5000 & over	72.2	52.5	67.6
Total all Estates	67.5	44.5	58.3

Source: Rubber Statistics Handbook, 1960, Table 9b, pp. 16.

Note: A detailed breakdown is found in Ibid., Table 6, p. 13.

Table XVIII shows the corresponding yields per acre from selected and unselected material on European and Asian estates.

Unfortunately a similar breakdown for smallholdings is not available. Figures for 1955 indicate that some sixty per cent were obsolete, twenty-four per cent were ready for planting and ten per cent were of moderate age.[53] On the

[53] L.A. Mills, op. cit., p. 186.

basis of these figures we may say that comparable yields from smallholdings would be much lower, even though the holdings are more densely planted.

In connection with the use of high yielding planting material, the estates appear to be more efficient, since the proportion of high yielding trees is much higher on estates. With larger capital resources, the estates are not only able to initiate but also to take advantage of research. As we have seen, the smallholder continues to plant low yielding material either because of ignorance or inertia. This factor can inhibit the efficient development of the rubber industry.

TABLE XVIII

YIELDS PER ACRE FROM SELECTED AND UNSELECTED MATERIAL, 1960, BY SIZE GROUP AND RACE

Size Group	Selected Material		Unselected Material	
	European	Asian	European	Asian
0-499	962	849	374	352
500-999	953	930	612	355
1000-1999	987	890	578	378
2000-2999	943	859	559	366
3000-4999	970	853	553	399
5000 & over	945	616	452	305
Total	960	830	537	356

Source: Rubber Statistics Handbook, 1960, adapted from Table 26, p. 33.

Processing of Rubber

We will now turn to the processing of rubber, where differences between estates and smallholdings are reflected in the grades of rubber produced.[54] Rubber produced by estates is mainly R.S.S. numbers 1 and 2, while smallholders generally produce R.S.S. numbers 3 to 5.[55] The higher grades carry a premium over the lower grades. The estate with its superior processing facilities is able to produce a more valuable product, but indications are that if centralised processing facilities are established for smallholdings, a "cleaner" product can be produced. For example, about 1,000 tons of "clean" rubber, that is R.S.S. numbers 1 and 2[56] are now being produced with communal processing facilities at fifty-four centres.[57]

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[54]For the purpose of this study, the older practice of using Ribbed Smoked Sheet (R.S.S.) numbers 1 to 5 will be used. The criterion is the degree of impurity in the sheet. Since 1961 rubber has been internationally classified into twelve grades. For details see, "Malayan Rubber Conferences," The Times Review of Industry, February 1961, p. 69.

[55]Great Britain, Colonial Office, An Economic Survey of the Colonial Territories, volume 5, The Far Eastern Territories, London, Her Majesty's Stationery Office, 1955, p. 21.

[56]The difference between R.S.S. 2 and 3 was then 10 cents a pound.

[57]"Good, Clean Rubber the Main Aim," Natural Rubber News, February 1961, p. 15, and "Improving Smallholders' Rubber," Rubber Developments, volume 13, No. 3 (Autumn 1960), p. 78.

There is no denying that smallholders can produce higher grades of rubber if they are provided with the facilities. If this is done, it may give the smallholdings an advantage over the estates, but economic trends appear to indicate that the estates may be able to secure further advantages. The trend towards technically classified rubber and the export of latex favours estates.[58]

The following table indicates that there is a definite trend towards the export of latex as opposed to that of smoked sheet.

TABLE XXIX

MALAYA, EXPORTS OF RIBBED SMOKED SHEET AND LATEX, 1950-1960

Year	Ribbed Smoked Sheets	Latex
1950	548.0	74.6
1951	483.0	61.0
1952	439.8	47.2
1953	398.4	73.8
1954	382.6	93.3
1955	402.2	111.3
1956	406.8	90.1
1957	376.7	107.4
1958	406.8	114.9
1959	462.7	129.9
1960	443.5	113.9

Source: Rubber Statistics Handbook, 1960, adapted from Table 33, p. 40.

[58]Silcock, The Commonwealth Economy of South-east Asia, pp. 9-10.

In the processing of rubber there appear to be definite economies of scale. This gives the estates, the larger units of production, an advantage not only in terms of lower costs of production but also in terms of a higher grade of rubber. A few successful centralised facilities for smallholders have been established recently. Until such time that all smallholding rubber is produced thus, the estates will continue to be more efficient in the processing of rubber.

Marketing of Rubber

The marketing of rubber is the next point for consideration. The marketing of estate rubber is carried on by agency houses. Here no intermediary is needed. Rubber, (and also oil palms and coconuts) are usually transported direct from estates to ships on the instructions of the managing agents. One reason for this type of integration is that the use of intermediaries and hence of the price mechanism involves a cost.[59]

Generally only a limited degree of further vertical integration exists in the estate sector of the industry. There are two important exceptions. Dunlop, probably the

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[59]See R.H. Coase, "The Nature of the Firm," Economica, N.S. volume 4, No. 16 (November 1937), pp. 390-391.

world's most important consumer of rubber, owns and operates some 75,000 acres of rubber. In addition they own a purchasing subsidiary, which buys, packs and ships rubber. The other example is the United States Rubber Company, which owns 27,000 acres.[60]

Intermediaries are however, necessary for the sale of smallholders' rubber. The collection of produce starts at the village shops which sell to the dealers in towns. These in turn sell to the exporters' agents, who ship the produce. The counterpart of this marketing chain is the credit chain.[61]

Since the use of intermediaries involves a cost, the larger the number of intermediaries the higher is the cost of marketing. Thus the smallholder probably receives a lower price for a comparable grade of rubber than the estate. Hence in terms of the price received for rubber, the estate is the more efficient.

The Availability of credit

Next we shall discuss the question of credit, where

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[60]Puthucheary, op. cit., p. 60.

[61]For a description of this see, T.H. Silcock, "From piracy to Credit," T.B. Lim, ed. Problems of the Malayan Economy, Singapore, Donald Moore, 1956, pp. 29-30.

the estates are again in a somewhat advantageous position. Where the estates are public companies, their assets can be exchanged in the form of shares and they have ready access to the loan market. But assets like smallholdings can only be bought and sold as a whole. The buying, selling, and leasing of physical assets in small scale agriculture are highly individualistic transactions. Loans are again highly individualistic transactions. Both the amount and the price are closely related to the borrower's assets. Security to borrow is for the most part personal security. Besides limiting the amount of the loan, the value of his assets influence the rate of interest, because these rates generally increase with the ratio of the loan to the asset.[62]

However, even the estate has some limitations on its powers to raise funds for expansion. In attempting to obtain capital by the issue of shares, it has to meet competitive pricing conditions. It has to maintain a balance between dividends and re-investment of funds in such a way as to keep its shareholders satisfied. In determining the level of retained earnings, its long term objectives are involved. This will be determined in such a way as to achieve

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[62]In Malaya the village shopkeeper provides the loans to the cultivator to deliver a specific quantity of the produce to him.

a balance between its current financing needs and the effect of its dividend history on the availability of cash in the future. Theoretically, it will choose a production plan which maximises the capitalised present value of the stream of expected sales.[63]

On the whole however, estates have easier access to credit than do smallholders. This factor enables the estates to expand production, undertake replanting, adopt new techniques rather more easily than the smallholders who have to depend largely on their own resources which are limited as it is.

Research

With respect to research and its application, the agency houses serve a useful purpose.

> It is virtually impossible for individual estate managers to keep abreast of technical progress by constant reading of the publications of research stations. In practice these are read and sifted by the planting advisers (visiting agents) of the agency houses and material of value to estates in the group is embodied in letters circularised to all managers, who are also by the same method told of the progress within the group.[64]

This feature is absent in the smallholding sector of the

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[63]See W.J. Baumol, Business Behaviour, Value and Growth, Chapter 6.

[64]Bauer, The Rubber Industry, pp. 274-275.

industry, although it is true that the Rubber Research Institute through its Smallholders' Advisory Service attempts to provide a certain amount of information[65] to the smallholders on planting material, weed and pest control. The attempts to apply research are hindered by problems of literacy. From the point of view of numbers, it is probably easier to apply and circulate information on new developments to 2,274 estates than to 393,166 smallholdings. The estates have larger capital resources both to initiate and apply research. And, as Silcock[66] points out, the time taken in persuading and teaching the smallholders to use new methods gives the estates a lead.

Replanting

We now turn to replanting. Replanting is analogous to the replacement of capital on a factory, and the ability to replant when the trees become obsolete, is one measure of efficiency in the long run. Besides as we have seen replanting with high yielding material gives a decided advantage.

We have already shown that the proportion of high

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[65]For the efficacy of this service, see Bauer, The Rubber Industry, pp. 276-285, and Bauer, Report on a Visit, pp. 40-47.

[66]Silcock, The Economy of Malaya, p. 26.

yielding material is greater on estates than on smallholdings. Table XX corroborates this and shows also the acreage of rubber new planted and replanted during the last decade.

TABLE XX

AREA REPLANTED AND NEW PLANTED BY ESTATES AND SMALLHOLDINGS, 1951-1960

Year	Estates	Smallholdings	Total
1951	72.6	9.3	81.9
1952	58.6	11.0	69.6
1953	34.2	35.8	70.0
1954	45.9	25.9	71.8
1955	67.3	33.4	100.7
1956	93.0	59.6	152.6
1957	91.8	61.1	152.9
1958	78.6	70.0	149.1
1959	82.4	97.6	180.0
1960	97.5	76.0	173.5

Source: "Rubber Producers' Council 1960 Report," Natural Rubber News, May 1961, p. 1.

For both estates and smallholdings the figures show a marked increase since 1955. This is significant for the government and related replanting schemes really became effective at that date. However, at the end of 1960, about fifty-two per cent of the 3.5 million acres under rubber still remained under old seedling trees; forty per cent of the estate acreage and sixty-seven per cent of the smallholding acreage made up this fifty-two per cent.[67] Thus the re-

[67]"Rubber Producers' Council, 1960 Report," Natural Rubber News, May 1961, p. 2.

planting performance of the smallholdings is far behind that of the estates.[68]

There are both economic and technical difficulties in replanting the very small smallholdings.[69] It is said to be difficult for smallholdings of less than twenty-five acres to replant because they lack the resources to pay for not only the heavy expenditure involved, but also to forego the loss of income resulting from the felling of old trees. Replanting would involve a loss of income for at least six years and a reduced income from the next six, until the trees reach maturity. The grants given under the Replanting schemes cover the cost of replanting but do not compensate the smallholder for the loss of income.

The second reason for smallholders' inability to replant is the technical impossibility of replanting successfully part of a holding of only a few acres. The areas

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[68]It is quite interesting to note here, the progress of replanting in Indonesia. Here government owned estates (there are none in Malaya) are extensively replanted, but they are only a small part of the total. Privately owned estates have done little replanting, the chief reason being the unstable political conditions. In many cases, leases granted by the Dutch are about to expire and it is doubtful whether they will be renewed. Foreign owned estates also face the threat of nationalisation. See L.A. Mills, op.cit., p. 176.

[69]Cf. Mudie Report, Chapter 6, pp. 24-34.

replanted would be closely surrounded by mature trees which intercept the sunlight and the roots of which compete for food with the undeveloped rootlets.[70] Root competition may be reduced or possibly eliminated by cutting isolation drains. But this entails an additional cost.[71] Smallholders practice a rough and ready system of rotation, tapping and resting individual trees and not an area, as the estates do. They are therefore unable to replant part of an area and to tap the rest. Smallholdings unlike estates have little or no reserve land. If they do have any, it is unlikely to be vacant and would be planted with fruit trees or other crops.

Of the small amount of replanting on smallholdings, a large proportion has been that of Chinese and Indian smallholders. Unlike the Malays, they not only own a number of holdings but also own larger smallholdings, and hence can forego some income from those holdings which are being replanted.

The percentage of estate replanting is higher than that of smallholdings. What is the system followed by the estates? Some estates have developed the practice of charg-

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[70]Bauer, The Rubber Industry, p. 174.

[71]Bauer, Report on a Visit, p. 25.

ing against revenue each year, a sum equal to the current cost of replanting three to three and a half per cent.[72] The rubber tree is unproductive for the first six or seven years of its life. The cost of clearing, planting and bringing it to maturity are written off over the life of the tree (thirty-five years), so that a fund can be provided for its replacement. If a three per cent rate of replanting is used then the whole stand is renewed every thirty-three years. At any time, twenty-one per cent of the planted area would be immature.[73]

Replacement of rubber is analogous to the replacement of capital.[74] However, there is a significant difference. The construction of fixed capital equipment at certain dates or during certain short periods of time gives rise to receiving outbursts of investment. In the case of rubber, the "renewal of capital" is reflected in the fall in production and exports.

The three per cent rate of replanting generally advocated seems to make no allowance for variations in prices, costs and other conditions, economic or non-economic. It

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[72] Mudie Report, p. 9. A fund for replanting is provided from the "Reserves" and "other investments" of the estate.

[73] For details of the replanting practices of estates, see Mudie Report, Chapter 5, pp. 14-23.

[74] Cf. C. von Haberler, Prosperity and Depression, Cambridge, Harvard University Press, 1958, pp. 89-92.

may represent a suitable solution for the economy as a whole, but not for the individual producer.

Whatever the system of replanting adopted, the fact remains that it is easier for estates to replant, since they possess both the land and the capital for the purpose. The replanting of obsolete, seedling trees with high yielding rubber increases output about twofold, and hence lowers costs of production. The higher percentage of high yielding rubber on estates results in lower costs of production for estate rubber. Thus this is another factor contributing to the fact that the estates on the whole appear to be the more efficient producers of rubber.

Summary

In this chapter we have been concerned with the production of rubber by two types of producers, the estates and the smallholdings. The main points of investigation have been organisation, production, and replanting. In the case of each, we have come to the recurring conclusion that the estates appear to be the more efficient producers of rubber.

With respect to organisation, it was noticed that in the estate sector, agency houses predominate. Agency house fees add to the high fixed costs of estates, but the agency houses have been the agents of much investment, not only in plantation crops but also in tin mining.

Under the broad heading of production, the following

aspects were examined: the supply of rubber, planting density, bark consumption, weeding, choice of planting material, processing, marketing, availability of credit and research. It was noticed that one of the important differences between estates and smallholdings was that estates have higher fixed costs of production. Although the smallholdings have the advantage of flexibility and lower capital costs, they lack the knowledge and the techniques of production of the estates. On estates the scientific management of land, the development of improved varieties and processing techniques, together with recruiting, housing and supervising labour are handled in a manner comparable with the methods employed by large scale industrial enterprises. Like these enterprises, estates are able to specialise. Specialisation results in higher productivity.

In relation to replanting, it was observed that replanting is economically and technically unfeasible for smallholdings. Estates are therefore in an advantageous position in this connection once again.

Estates and smallholdings have coexisted ever since the inception of the rubber industry in Malaya, the estates leading, with the smallholders emulating. Politically, however the tide has turned against the estates. In the next two chapters, we discuss recent developments, the "break-up" of estates and the creation of the Land Development Authority, both of which are creating a trend towards more smallholdings.

CHAPTER V

THE "BREAK-UP" OF RUBBER ESTATES

In this chapter we propose to study a recent development in land use, the "break-up" of rubber estates.[1] (The period under consideration is January 1956 to March 1959). This development is important for its effects on the economy of Malaya.

We are concerned with the various aspects of rubber estates which have been diminishing in size. This chapter can be divided into three broad sections; the selling of estates which represents the supply of land; the buyers and subdividers who represent the demand for land; and the effects of subdivision.

Definition of Terms Used

(1) Break-up of a rubber estate occurs when (a) an estate is sold as a whole and this area is subdivided by the new owner(s), (b) parts of an estate are sold to different buyers.

(2) Subdivision can occur in two ways. In the terminology of the Land Office, subdivision takes place when a particular title is surrendered to the government for the issue of new titles in its place. This can only take place

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[1] For the method of data collection and its scope see Appendix II.

place after a resurvey of the land. Subdivision takes place when (a) the original owner of an estate subdivides his estate for a specific purpose, for example, replanting, (b) when the estate of a deceased person is divided among his beneficiaries.

The terms of subdivision and fragmentation are generally used interchangeably, particularly in government and other publications. For our purposes, the term subdivision only will be used. For there is a distinction between the two.[2] The process of dividing up a piece of land is called subdivision. Fragmentation occurs when pieces of land on particular farms are scattered. Hence fragmentation as a concept relates to operation, while subdivision refers to ownership. The distinction is significant, because the data that is available (although it is of a limited nature) is on subdivision. Fragmentation is probably widespread, but its extent is not known with any degree of accuracy.[3]

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[2]See U.A. Aziz, "Land Disintegration and Land Policy in Malaya," Malayan Economic Review, volume 3, No. 1 (April 1958), p. 23. See also B.O. Binns, The Consolidation of Fragmented Agricultural Holdings, Washington, D.C., Food and Agricultural Organisation, 1950, p. 5.

[3]For examples of fragmentation in other countries, see United Nations, Land Reform, New York, Department of Economic Affairs, 1951, pp. 11-12.

The Sale of Rubber Estates

The selling of rubber estates was at its peak in 1957 and 1958, that is the immediate pre- and post-independence periods. Two types of sale can be distinguished: when a whole rubber estate is sold and when portions of an estate are sold. The distinction is significant, for the reasons for their sale are different. The former will be dealt with first, the reasons for which may be termed political and economic.

TABLE XXI

NUMBER OF ESTATES SOLD, 1956-1958

Year	Estates Sold		Total
	"Sterling"	"Dollar"	
1956	10	2	12
1957	23	2	25
1958	20	3	23
Total	53	7	60

Source: (1) Zorn and Leigh-Hunt, Manual of Rubber Planting Companies, London, 1956-1959.

(2) Fraser and Co., Facts and Figures, Singapore, 1956-1958.

It is evident from Table XXI that a relatively large number of "sterling"[4] estates were sold during the first year

[4]The distinction between "sterling" and "dollar" companies rests on the place of incorporation. The former are incorporated in the United Kingdom and the latter in Malaya or Singapore.

and a half of Malaya's independence.[5] British investors were naturally anxious about the security of their investments. This selling-off has also occurred in other countries on the achievement of independence, for example Ceylon. Fear of political dispossession by nationalization, or of having profits practically extinguished by heavier taxation was another factor responsible for sales. The aim of such sales was to move capital to a more secure place, for example to Africa, where suitable land and labour are available.[6] This concern over political changes led to investment in Nigeria.[7] Fifteen rubber companies[8] with estates in Malaya have invested more than $2 million in Nigeria.[9] These

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[5]Malaya became independent on August 31, 1957.

[6]Singapore Standard, 4 June 1958, p. 7. (Note: it is generally not possible to give article titles, because a great deal of the rubber news is reported under Company news, on the Financial page.)

[7]"$2 million Investment in Nigeria," Straits Times, 21 June, 1957, p. 7.

[8]A rubber company may own several estates.

[9]The Illushin estates at Oban, Nigeria, are a joint venture between British firms and the Eastern Region Development Corporation of Nigeria. The companies are negotiating with the Western Region Development Board and the Colonial Development Corporation for the establishment of a rubber estate of some 8,500 acres in the Illushin province. See (1) International Bank for Reconstruction and Development, The Economic Development of Nigeria, Baltimore, John Hopkins, 1955, p. 24; (a) E.J. Oliver, Economic and Commercial Conditions in Nigeria, Overseas Economic Surveys, London, H.M. Stationery Office, 1957, p. 20.

TABLE XXII

ANALYSIS OF THE ACREAGES OF SOME ESTATES SOLD

Name of Estates	Total Acreage	Acreage Under Old Rubber	per cent	Under Mature budgraft-Rubber	per cent	Under Imm-ature rubber	per cent	-Re-serves etc.	per cent
1.New Columbia Estate	2,782.5	1,224.5	44.1	1,018.75	36.7	427	16.2	112.25	4.0
2.Sg.Purun Estate	1,414	838	59.3	389	28.1	114	8.1	63	4.5
3.Burseh Estate	1,271	923	75.0	205	13.7	143	11.3	-	-
4.Sempah Estate	2,125	1,158	59.2	773	31.7	194	9.1	-	-
5.Tepah Estate*	2,430	1,505	62.0	457	18.8	256	10.5	212	8.7
6.Jimoh Estate*	1,030	637	61.8	221	21.5	119	11.6	53	5.1
7.Changkat Serdang Estate	1,028	429	41.7	212	20.6	238	23.2	149	14.5
8.Hamilton Estate*	960	339	35.4	312	42.5	275	28.6	34	3.5
9.F.M.S. Rubber Planters Estate	3,793	3,027	79.8	610	16.1	156	4.1	-	-
Average per Estate	1,868	1,131	60.6	466	24.9	214	11.5	69	3.0

*Incorporated locally. Source:(1) Zorn and Leigh-Hunt, Manual of Rubber Planting Companies, 1956-1959.
(2) Fraser and Co., Facts and Figures,1956-1959.

rubber companies have not sold their Malayan estates but the fact that they have taken out sizable interests elsewhere is an indication of a diversification of their financial resources.

For the economic causes of estate sales it would be useful for us to consider various costs of production such as replanting, labour costs, taxation and the effects of the war and "Emergency".

Owners of estates with rubber nearing the end of its economic life are faced with the choice between finding capital to replant, and selling-off. As Table XXII indicates some of the estates sold were under very old rubber.

Of the nine examples cited only Changkat Serdang, New Columbia and Hamilton estates had less than half of their acreages under old rubber. With the exceptions of F.M.S. Rubber and Sempah, the acreages under reserves and immature rubber comprise more than ten per cent; this area being totally unproductive. The areas under reserves, old and immature rubber comprise more than sixty per cent for all; production from this area is negligible. Thus estates with over sixty per cent of their areas unproductive would have high costs of production.

Cost of replanting is estimated to be about $800 per acre spread over a seven-year period with six to seven years to reach the production stage, and another six to seven years to reach maturity. The government provides financial assist-

ance for replanting at the rate of $400 per acre.[10] The subsidy is said to be insufficient with present tax rates, and fluctuating rubber prices.[11]

Labour costs[12] comprise sixty per cent of the production and are geared to selling prices which fluctuate substantially. During periods of low rubber prices, costs other than labour, do not fall automatically, but show a tendency to lag.

High and rising labour costs are accompanied by taxation in the form of export duties and cesses.[13] These taxes are regarded by the financial press as being too high and as a result "capital may be diverted to Nigeria where the prospects for rubber are good and taxation low."[14]

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[10] As a means to this end a tax is levied. The schedule IV cess is levied at a flat rate of four and half cents per pound of rubber exported. For details of its use see Appendix I, Replanting Schemes in the Rubber Industry.

[11] Straits Times, 26 November, 1954, p. 8. See also International Bank for Reconstruction and Development, The Economic Development of Malaya, Singapore, Government Printer, 1955, p. 38. Hereafter referred to as the Bank Mission Report.

[12] Wages in the rubber industry are geared to the average price of rubber prevailing in the preceding three months. The cost structure of estates is discussed in Chapter IV. See pp. 100-103.

[13] See Chapter III, pp. 73-76.

[14] Straits Times, 9 January 1956, p. 6. See also "Asian Rubber," Far Eastern Economic Review, volume 22, No. 3 (16 July 1959), p. 85.

The war and the "Emergency"[15] have adversely affected many rubber estates. One of the reasons why the old established European estates in Province Wellesley were sold was the damage done to them during the Japanese occupation. In that area at least 10,000 acres of rubber belonging to seven estates were cut down.[16] Cost of repairing the damage of war was heavy even though a good part of it was covered by war damage compensation.[17]

Lawlessness during the "Emergency", did not only undermine confidence and hamper production, but also raised costs of production. Because of the imposition of a dusk to dawn curfew, less rubber could be produced. Labour shortages were experienced as a result of resettlement. For example, on the Changkat Serdang estate[18] managers were also unable to exercise enough supervision because of security

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[15] See Bank Mission Report, pp. 11-12.
Federation of Malaya, Annual Report, 1952, Kuala Lumpur, Government Printer, 1953, pp. 105-106.
Federation of Malaya, Annual Report, 1953, Kuala Lumpur, Government Printer, 1954, pp. 115-116.

[16] Singapore Standard, 4 January 1958, p. 6.

[17] L.A. Mills, Malaya, A Political and Economic Appraisal, Minneapolis, University of Minnesota Press, 1958, p. 155.

[18] Information from the Company files of Fraser and Co., Singapore (stock and share brokers), unpublished.

reasons. Considerable amounts had to be spent on "regrouping coolie lines" on several estates. Crops were severely affected by bandits and production was temporarily suspended during 1951 because of military operations on some estates.[19]

Estates were sold because capital in Malaya showed a lower yield than investment in Britain. This is suggested by the following statement:

> The situation was also affected by the increase in the bank rate last year, and a further tightening of the credit squeeze made it appear that for some considerable time investments in Britain could be made to yield more ...[20]

In the post independence period there may be fewer estates sales as the political transition has been carried on smoothly. On the economic side, material tax concessions have been granted to overseas trade corporations in the British Finance Act of 1957[21] and this may prevent the rubber companies from winding up their affairs in Malaya.

We will now turn to the sale of portions of an estate, the reasons for which are somewhat different from those outlined above. Such sales reflect more normal market con-

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[19]Zorn and Leigh-Hunt, Manual of Rubber Planting Companies (Firm Brokers, London), mention numerous examples. See especially the Manuals from 1950 to 1956.

[20]Straits Times, 18 July 1958, p. 8(quoting a company director).

[21]As from April 1957, profits tax will normally arise only on investment income and British income tax will only be paid on investment income and on dividends distributed. In addition a once and for all saving accrues in the first year through freeing part of the future tax provisions set aside in previous accounts. See Zorn and Leigh-Hunt,Manual 1958, pp. 4-5.

siderations. Table XXIII shows the sizes of the portions of estates sold.

TABLE XXIII

NUMBER OF SALES CLASSIFIED BY SIZES OF PIECES SOLD

Year	Number of Sales				Total
	0-499	500-999	1000-1499	1500 & above	
1956	6	6	4	4	20
1957	14	14	5	3	36
1958	1	1	2	3	7
Total	21	21	11	10	63

Source: (1) Zorn and Leigh-Hunt, Manual of Rubber Planting Companies, 1956-1959.

(2) The Straits Times Directory of Singapore and Malaya, 1955-1956.

The sales of the sixty-three pieces can be classified under reasons for sale. Table XXIV shows that by far the largest number sold were old rubber. This was probably done to reduce costs of production. On the other hand the companies concerned might have been unable to replant these areas.

Tin bearing lands may have been sold because of high tin prices and the resultant demand for tin bearing lands, or because the companies owning the land were unable to mine these lands themselves.

Sometimes marginally profitable areas may be sold so as to make the estates more compact and efficient. Thus from

The above we may conclude that sales of portions of estates are motivated largely by efficiency considerations.

TABLE XXIV

NUMBER OF SALES CLASSIFIED BY REASONS FOR SALE

Old Rubber	Tin bearing land	Reserves	Building	Investment	*Others	Total
14	5	3	1	2	38	63

Source: Zorn and Leigh-Hunt, Manual of Rubber Planting Companies, 1956-1959. * For which reasons are not given.

Subdivision of Estates

One aspect of the diminishing size of rubber estates is the "break-up" of estates discussed in the preceding pages. The other is "subdivision". Two types of subdivision can occur, (a) by an intermediary who buys up estates for the purpose of subdivision; (b) by the owner of an estate who applies for subdivision to the Land Office which issues new titles in place of the original. These titles may be held in the names of his family or relatives so that while in theory he is no longer the owner, in practice he is. Technically each becomes a separate holding.

In the case of method (a), the intermediary sells the land piecemeal to smallholders. In many cases the latter have purchased land before the necessary subdivisional proceedings have taken place, and have therefore paid for and

occupied land without holding a legal title to it.[22]

The legal and technical process of subdivision may take anything from one to five years depending on the condition and size of the estate, the State in which this is occurring and on the amount of work the survey office has.[23]

Costs of Subdivision

Before we can decide whether subdivision is profitable we have to consider the costs of subdivision. These comprise the prices paid for estates or parts of estates, the actual costs of subdivision, brokerage charges and areas surrendered as reserves.

Prices paid for estates depend largely on the age of the rubber. Generally vacant land has been sold from $50 to $200 per acre; old rubber land from $200 to $400 per acre; and mature budgrafted rubber from $1,400 to $2,000 per acre.[24]

Land prices also depend on the type of title under which the land is held. For example, of two plots of land, one is held on a ninety-nine year lease and the other on a grant in perpetuity, the latter would bring a higher price;

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[22]This seemed to be the case especially in the Province Wellesley area.

[23]An average subdivision takes six months to complete if given priority, otherwise three years. The period to complete subdivision means date of receipt of the Requisition for Survey and the date of forwarding the settlement tracing to the Land Office. This was learnt from the Chief Surveyor, Perak.

[24]Straits Times, 23 January 1958, p. 7

the price paid for the former would depend on how much longer the lease had to run.

Other factors which affect the prices of rubber land are accessibility, location, the condition of the estate, the yields obtainable, the price of rubber and the type of management.[25]

Where estates have been subdivided for building purposes, prices of subdivided lots are greater by four or five times. Because of population pressure, estates in or near the environs of towns are being subdivided for urban housing lots.[26]

Prices also vary with the State in which the estate is located, as Table XXV indicates. Land values are higher in Penang and Perak when compared with those in Johore and Malacca. In Penang especially the density of population is the highest in Malaya[27] and also all the available land is already alienated so that land values are higher in this State. In contrast, in Johore, there are relatively large areas

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[25] See F.C. Peck, The Valuation of Rubber Estates, London, Effingham Wilson, 1914, and Straits Times, 27 July 1957, p. 7.

[26] For example Heintze estate, Penang, and also estates in the Ipoh and Seremban districts. See Straits Times, 20 March 1956, p. 8.

[27] Penang has a density of population of 1,430 per square mile. In contrast the densities for Perak, Johore and Malacca are 155, 127 and 460 respectively. See K.S. Sandhu, "The Population of Malaya, Some Changes in the Pattern of Distribution between 1947 and 1957," Journal of Tropical Geography, volume 15 (June 1961), p. 84.

TABLE XXV

PRICE PER ACRE OF SOME ESTATES SOLD, 1956-1959

State	Name of Estate	Acreage Sold	Sold for ($)	Price per acre ($)
Penang[a]	1 Penang Rubber Estate Group	12,420	4,500,000	362.3
	2 Val D'or Rubber Estate	2,482	1,491,961	601.1
	3 Choong Lye Hook Estate	236	46,500	154.7
	4 Golden Grove Estate	2,136	560,000	262.2
	5 Central Perak Rubber Company.	1,236	461,000	372.2
	6 Sempah Rubber	1,687	1,329,690	788.2
	7 Heintze Estate	790	2,050,000	2,582.3
	8 Lunas Rubber Estate	476	336,800	707.6
	9 Prye Rubber Syndicate	290	14,000	48.3
Perak[b]	1 Raefirth Estate	556	347,580	625.2
	2 Selene Estate	403	262,275	650.8
	3 United Winifred	213	202,468	950.6
Malacca[c]	1 Merlimau Pegoh	440	146,400	332.7
	2 Bukit Lintang	1,098	517,500	471.3
Johore[d]	1 Bukit Kejang	2,031	73,505	36.2
	2 Mengkibol Estate	248	86,800	350.0
Pahang[e]	1 Overseas Kwangsi Industry	114	30,000	263.2
	2 Amalgamated Rubber Estate	301	180,079	598.2

Sources: (a) Registry of Deeds, Penang.
(b) Answers sent by Commissioner of Lands and Mines.
(c) Registry of Deeds, Malacca.
(d) Registry of Titles, Johore Bahru.
(e) Answers sent by Commissioner of Lands and Mines.

Note: The figures for Perak and Pahang are for two and one districts respectively.

of land which are still undeveloped. Consequently population pressure is not felt and land values are lower than those in Penang. Thus land values are related to the amount of State land available for alienation, the degree of population pressure and the relative development of the particular State.

The second item constituting cost is the expense involved in the form of survey fees, boundary marks and registration of new titles. Survey fees are calculated according to scheduled rates and vary between different states.

On subdivision a certain amount of land has to be surrendered to the government for access reserves.[28] For example in the Penang Rubber estates group (total acreage 12,420 acres) 770 acres were involved.[29] The terrain of the land and the existing access facilities generally determine the acreage involved.

If an estate is sold direct to a buyer no brokerage would be involved. Otherwise the rate payable is two per cent.[30] This is paid either to the lawyer, broker or agency

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[28]See Instructions to Land Officers Johore 1936, Singapore, C.H. Kiat, 1938, part 9, section 3, and also section 246, Federated Malay States Land Code (1930), paragraphs 32-36.

[29]Report of a Conference to discuss the sale and subdivision of Penang Rubber estates, held at District Office, Nibong Tebal, on 30 May 1956 (unpublished).

[30]Legal charges in respect of sales are laid down in the Advocates and Solicitor's Ordinance, No. 4 of 1947.

house, whoever happens to be the intermediary. In Penang and Malacca, where deeds are registered, all land transactions have to go through a lawyer.

Thus the costs of subdivision include the prices paid for estates, subdivisional charges paid to the Land Office, land surrendered as reserves and brokerage charges.

Subdivision for Replanting

The explanation of the demand for estates and portions of estates lies in part in the opportunities for subdividing the land. One such opportunity is provided by the different replanting grants available for different sizes of land.

It is advantageous for owners of estates to subdivide their land for then they can obtain larger replanting grants. Here a significant factor is that most of these areas are under very old rubber. An estate is eligible for a grant of $400 per acre over a seven year period for twenty-one per cent of its total acreage.[31] However, the assistance for smallholdings[32] is at the rate of $600 per acre over a seven year period and for thirty-three per cent of the total acreage. Not only are the grants larger but the acreage potential is higher.

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[31]See Appendix I, Replanting Schemes in the Rubber Industry.

[32]A smallholding is defined as a holding of less than 100 acres. See Chapter IV p. 93 , footnote 7 for a detailed definition.

The profitability of such subdivision can be illustrated by a numerical example. If a man owns 1,000 acres of rubber he is eligible for a replanting grant of 210 x $400 = $84,000. If he subdivides his land into ten lots of eighty acres each and four lots of fifty acres each he will obtain

1/3 of 800 x 600	=	$160,000
1/3 of 200 x 600	=	$ 40,000
Total		$200,000

Thus by subdivision his replanting grant is raised by $116,000. Moreover, he is obliged to replant with high yielding strains, so that his earnings will be fourfold in seven years time.

Just as the individual who buys an estate for subdivision has to incur costs of subdivision, surrender reserves and wait for some time before he can obtain new titles, so does the person who subdivides his own estate.[33] The time aspect is important in two ways: as the owner of a 1,000 acre estate, the Schedule II cess is refunded to him on the basis of replanting.[34] When he subdivides his estate he has

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[33] As we pointed out on page 140, this type of subdivision is merely a legal formality. The subdivisions are often registered in the names of family members and relatives, so that the person who subdivides his estate remains the owner.

[34] See Appendix I.

to forego the cess. On the other hand he cannot obtain assistance from the smallholders' fund unless he has legal titles to the land. As subdivision has a lower priority than development projects, considerable time elapses before titles are issued. This factor can be regarded as a cost, one of waiting.

On subdivision quit rents are known to have been raised.[35] The conditions attached to the land may also be changed in that the new owners may not be allowed to plant certain cash or cover crops or they may be obliged to allocate a certain acreage to foodstuffs. All these are costs to the new owners or operators and may affect the delivery of produce and production incentives.

An important advantage of subdivision is that if a holding falls below twenty-five acres, the owner is no longer required to provide amenities for his workers.[36] Consequently costs ofproduction are greatly reduced. In Malacca when any holding falls below 100 acres, the owner no longer pays the agricultural medical cess.[37]

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[35] This was found to be particularly widespread in Province Wellesley.

[36] Under the Federation of Malaya, Employment Ordinance of 1955 (38 of 1955) any holding twenty-five acres and above must provide housing, education, a crèche (if more than fifty female workers have children) and medical care for their workers.

[37] The Malacca Agricultural Medical Board levies this cess and uses it to provide medical services for the estate workers.

Two types of subdivision have been discussed: subdivision after the sale of land, and subdivision without any sale. The extent of these two processes is shown in Table XXVI. It is evident from the table that the acreage involved in subdivision after sale is slightly greater than that in subdivision without sale. However the number of estates involved is larger in the second type of subdivision. As we point out subsequently, neither of the subdivisions amount to a significant proportion of the total rubber acreage.

There are no restrictions in the title under which land is held, so that subdivision is permitted under the Land Code. The two main reasons for subdivision have been the availability of replanting grants and the possibility of making speculative profits.

Demand for Land

The demand for subdivision is in fact the demand for land. This is related to population pressure and varies with the different States.

Comparing the density per square mile and the total area subdivided, we note that where the density is higher, a larger area is involved. In this respect the case of Penang is worth noting. Province Wellesley[38] has a popu-

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[38]Province Wellesley is a part of Penang State, and it is here that the subdivision has occurred. The total population of Penang State is 572,132 and the total area is 400 square miles.

TABLE XXVI

EXTENT OF SUBDIVISION

State	Subdivision after Sale			Subdivision without Sale		
	Acreage Subdivided Acres	No. of Estates	No.of Sub-Divisions	Acreage Subdivided Acres	No. of Estates	No.of Sub-Divisions
Penang	16,794	7	966	-	-	-
Perak	1,368	4	253	-	-	-
Malacca	1,335	8	190	6,692	32	713
Johore	4,582	5	368	9,430	44	880
Pahang	414	2	52	-	-	-
Negri Sembilan	-	-	-	3,643	16	221
Total	24,495	26	1,829	19,716	92	1,814

Source: The respective Registry of Deeds or Titles in the various states. For Perak and Pahang the answers were received from the Commissioners of Lands and Mines.

lation of 233,168, whereas the area of the region is 295.7 square miles. Of this 3.7 square miles and 3.1 square miles are forest reserve and crown land respectively. Fairly severe population pressure is present, since the economy of the area is predominantly agricultural. No new land is available for alienation; subdivision therefore fills a need.

The investigations of the Working Party[39] on the development of new areas for land settlement indicate that there is a shortage of land in some parts of the country.

TABLE XXVII

TOTAL AREA SUBDIVIDED AND DENSITY PER SQUARE MILE

State	Total Area Subdivided	*Density per Sq. Mile
Penang	16,794	1,430
Johore	13,485	127
Malacca	7,977	460
Negri Sembilan	3,643	143
Perak	1,368	155
Pahang	414	23

Source: Density per square mile - K.S. Sandhu, "The Population of Malaya,"Some Changes in the Pattern of Distribution between 1947 and 1957," Journal of Tropical Geography, volume 15 (June 1961), p. 84.

Note: The figures for Perak and Pahang are for 2 districts and 1 district respectively.

* As on 20 June 1957 (Latest census).

[39]Federation of Malaya, Report of the Working Party Set Up to Consider the Development of New Areas for Land Settlement, Kuala Lumpur, Government Printer, 1956, paragraph 13.

However, it is observed that in the States of Kelantan, Trengganu and Pahang particularly, and in Kedah and Johore ample land is available. Here the obstacle to land development appears to be inadequate staff. That there is a demand for land is indicated by 13,000 applications for land in Trengganu,[40] over 15,000 applications for rubber land in Kedah,[41] and the applications for over 30,000 acres of land in Pahang.[42]

The War, Japanese occupation and "Emergency" have caused land work to be postponed. Work arising out of the "Emergency" has been given first priority.[43] A somewhat artificial shortage of land has been caused by the delay in dealing with land applications.[44] The existence of extensive Malay Reservations causes shortages of land for non-Malays.[45]

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[40] Ibid., paragraph 15.

[41] Ibid., paragraph 17.

[42] Ibid., paragraph 16.

[43] Land work has been put aside, for example, since the beginning of the "Emergency" in 1948, the District Officer's time has to be allocated to the establishment of new villages, and to co-ordinating the operations of the police and the army.

[44] Federation of Malaya, Report of the Land Administrations Commission, Kuala Lumpur, Government Printer, 1958, paragraph 84 mentions that 116,000 applications for land are awaiting decision; more than 37,000 are awaiting registration and about 50,000 registered titles have as yet not been issued.

[45] Federation of Malaya, Report on Subdivision and Fragmentation of Estates, CLFM. 65/57. Mimeographed, paragraph 9. Malay Reservations are discussed in Chapter II pp. 50-53, and Chapter III, p. 57.

Given the social and cultural framework of an underdeveloped economy, investment in land is preferred for reasons of prestige and security. The generally low level of managerial and technical experience precludes investment in industry. Comparative returns from land, especially rubber land are higher, at least at present prices.

TABLE XXVIII

BUYERS AND SUBDIVIDERS BY RACE

State	Malay	Indian	Chinese	Others	Total
Johore	8	8	799	4	819
Malacca	-	2	150	-	152
Negri Sembilan	1	14	80	-	95
Perak	-	2	60	-	62
Penang	1	3	68	1	73
Pahang	-	-	55	-	55
Total	10	29	1,212	5	1,256

Source: The Registry of Titles and Deeds in the respective States.

The data collected (Table XXVIII) shows that buyers of subdivided estates and the subdividers themselves are mainly Chinese. Taking the west coast only (leaving out Pahang) this is a normal tendency since the Chinese population is concentrated on the west coast.[46] Only in Negri Sembilan

[46] Report of the Land Administration Commission, Paragraph 41, Cf. V. Purcell, The Chinese in Malaya, London, Oxford University Press, 1948.

do the Indians form a sizeable proportion. However, in contrast to the land-owning tendencies of Malays and Chinese, the Indian is more often the worker than the farmer in this country.

The buyers and the subdividers come from diverse occupational groups, but generally they are farmers, "Squatters", clerks and estate labour. For the latter several instances have been cited.[47] It has been suggested that of the 3,000 new smallholders in Penang some 300 are former employees of the Penang Rubber Estates group. In Perak the subdivision of Jong Landor and Tapah estates created a departure when it gave impetus to the formation of Malaya's first labour-owned company.[48] Often two or three families pool their resources or borrow money to purchase land.[49]

Size of the Subdivisions

More significant is the size of the subdivisions. By far the most important influence on the sizes of subdivisions is the availability of different replanting grants for

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[47] See Federation of Malaya, Monthly Report of Labour and Machinery Department, September 1956, p. 28; July 1957, p. 24; February 1957, p. 28; Straits Times, 23 January, 1958, p. 8.

[48] Straits Times, 3 June, 1958, p. 6.

[49] W. Fish, "Fragmentation," The Malayan Monthly, (November 1958), pp. 7-8.

different acreages of rubber. This is applicable both to buyers and to owners who subdivide their own estates. Those owning five acres or less can replant the whole of their holdings and for the purpose obtain a grant of $600 per acre. Such smallholders can, in addition, apply to "new-plant" five acres of rubber provided they can obtain jungle or vacant land.

Under the government Replanting-New Planting Schemes for rubber smallholders (1955-1961), as opposed to the smallholders own replanting scheme mentioned above, a smallholder owning thirty acres or less can replant or new plant an additional five acres at the rate of $600 per acre. Thus if a subdivided piece of land is five acres, its owner can replant or new plant an extra ten acres under the two schemes, in which case, his total holding would be increased to fifteen acres.

Whereas owners of one to ten acres receive a 100 per cent grant, owners of ten to fifteen acres qualify for replanting assistance for ten acres. If the subdivided areas were over thirty acres the owner would obtain a subsidy for one-third of his holding, whereas if it were ten to fifteen acres he is able to get one-half to two-thirds of his holding replanted. For example, if an estate of 100 acres is subdivided into three lots of thirty-three acres each, the replanting grant would amount to 3(1/3 x 33)600 = $19,800. If it were subdivided instead into ten lots of ten acres each, the replanting grant at the rate of 100 per cent would be

$60,000.[50]

In order to avoid being classed as estate owners, there is every incentive for persons to subdivide their holdings into less than twenty-five acres. Once outside this grouping, they are no longer required to provide estate services.[51]

TABLE XXIX

AREA SUBDIVIDED AND SIZES OF SUBDIVISIONS

State	Acreage Subdivided	No. of Subdivisions	No. of Owners	Average Size Subdivisions
	Acres			Acres
Johore	13,485	1,248	819	10
Malacca	7,977	906	152	8
Negri Sembilan	3,643	221	95	16
Perak	1,368	253	62	5
Penang	16,794	890	73	18
Pahang	414	52	55	7

Source: The respective Registries of Deeds and Titles. Answers for Perak and Pahang were received from the Commissioners of Lands and Mines.

Sometimes sizes of subdivisions are determined by the configuration of the land, the existence of roads and drains, and whether further access reserves are required by the authorities.

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[50] This has been described by some writers as an abuse of the Replanting Scheme for Smallholders (Fund B). See C.Y. Lim, "Rubber Replanting Taxes," Malayan Economic Review, volume 6, No. 2 (October 1961), p. 50.

[51] This is discussed in the latter part of this Chapter, see p.157.

Table XXIX shows the average sizes of the subdivided pieces for the various states. We notice that the average size of subdivisions varies from five to eighteen acres. Sizes are largely influenced by demand factors rather than supply factors.

TABLE XXX

ESTATE ACREAGE UNDER RUBBER 1959, AND AREA SUBDIVIDED

State	Estate acreage Under Rubber	Area Subdivided	per cent (2) as of (1)
Johore	540,663	13,485	2.5
Malacca	116,829	7,977	6.7
Negri Sembilan	269,212	3,643	1.4
Selangor	330,989	n.a.	-
Perak	270,059	1,368	.5
Penang	28,514	16,794	58.9
Kedah	213,163	n.a.	-
Perlis			
Kelantan	40,985	*	-
Trengganu	17,438	*	-
Pahang	114,052	414	.4

Source: Estate Acreage under rubber, Rubber Statistics Handbook, 1960, Table 4, p. 11.

Notes: n.a. - not available.

* - the problem does not exist.

Figures for Perak and Pahang are available only for 2 and 1 districts respectively.

On the basis of the information available we can compute its extent in relation to estate acreage under rubber. It is noted from Table XXX that only in Penang, has subdivision reached a significant proportion. Elsewhere it is under ten per cent. Before we go on to discuss the conse-

quences of subdivision we may perhaps say that the real effects of subdivision will become evident in Penang state with the passage of time. For the present we may merely surmise the probable effects.

Effects of Subdivision on the Malayan Economy

The break up of rubber estates naturally has some effects on the economy. Labour, estate services and productivity are directly affected by subdivision. Other effects are indirect.

Where labour is concerned, the problem is not one of unemployment (though there is some initial unemployment), but rather a fall in real wages. Once a holding falls below twenty-five acres the owner is no longer compelled to provide certain amenities. Thus these workers forego medical attention, housing and education for their children. For these services they will have to go to government medical centres and schools. These will in turn mean increased governmental expenditure on the social services.

On former estates, drains and access roads were maintained by the owner. On subdivision the hitherto unified drainage system is destroyed and flooding may result. This could lead to the abandonment of much land due to waterlogging and soil erosion. This problem is more acute in Province Wellesley where one or two very large estates had maintained

all the bunds and drains.[52]

Poor drainage measures will mean an increase in the incidence of malaria. Poor sanitation and water supply will contribute to the deterioration of health standards.

Estates maintain an extensive system of roads to facilitate movement. However if these are no longer maintained smallholders will find it difficult both to take their produce to market and to bring in supplies.

Schools formerly maintained by estates have been taken over by the local authorities.[53] Often existing facilities cannot be used when the new owners are multi-racial. All the children cannot be taught in one room because of language problems.

From the point of view of outlays, the new owners will be able to operate the ex-estate rubber more cheaply because they will tend to ignore expenditures on roads, drains and soil conservation, and will no longer be obliged to provide amenities for their workers. If they employ village contract labour[54] they need not abide by any of the agreements

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[52] Report on Subdivision and Fragmentation of Estates, paragraph 13.

[53] Minutes of the Conference held at District Office, Nibong Tebal, 30 May 1956. (Unpublished).

[54] Such workers are loosely organised by a contractor who is paid on the quantity of rubber produced. He pays the workers on a piece rate based on their daily output.

between the rubber workers unions and the employers' union. Another advantage of employing village labour is

> ... that they can avoid responsibilities under the workmen's compensation ordinance and other labour protection laws because this category of worker is quite unfamiliar with the existence and functions of the Labour Department.[55]

While the new owners may be able to operate the ex-estate rubber more cheaply, actually there are "hidden" costs involved. These may not be a charge to the new owners but they will definitely be a charge to the government. Also there may be a fall in output due to the neglect of expenditures on the upkeep of drains and soil conservation.

Equipped with large scale and superior processing facilities, the estates are able to produce a better quality of rubber.[56] The production of greater quantities of lower grade rubber could impair Malaya's competitive position vis-à-vis both other natural rubber producers and synthetic rubber producers. There is the possibility though that smallholders could process the latex at centralized processing centres.

The present rubber export duty is an advalorem tax.[57]

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[55]U.A. Aziz, op. cit., p. 26.

[56]We have already shown this in Chapter IV. See pp.117-119.

[57]Export duties and other taxes on rubber are discussed in Chapter III, pp.73-76.

Higher grades of rubber carry a premium over the lower grades. Hence if the production of the latter increases, this means a reduction in the government revenue accruing from this source.

Estates as corporations pay corporation taxes, and make a substantial contribution to government revenue. There is some evidence that the majority of smallholders normally earn less than $100 a month or $1,200 a year.[58] They would therefore be exempt from income tax which is levied on incomes of $2,000 or more. Thus in this connection too, there is likely to be a fall in government revenue.

Where the subdivision occurred on former "sterling" estates, it will mean that the proceeds from the production of rubber will remain in the country. For such companies remitted a substantial proportion of their earnings abroad, in the form of dividends. However, the proceeds now being retained in the country need not necessarily be used for further development. They could be used to increase consumption. If this consists of expenditure on locally produced goods, this will augment the incomes of such producers. If it is incurred on imports, the effect is probably the same as that resulting from the remittance of dividends.

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[58] C.Y. Lim, "The Malayan Rubber Replanting Taxes," Malayan Economic Review, volume 6, No. 2 (October 1961), p. 52.

The delay in the issue of new titles poses yet another problem, for replanting grants can only be obtained with a legal title to the land. If new titles are not issued during the currency of the replanting schemes, it is possible that land will be used for crops other than rubber. The degree of the fall in rubber production will depend on the extent to which other crops are planted. This fall in rubber production will result in a decline in government revenue once again.

The Committee[59] reporting on the problem of subdivision suggested that the creation of smallholdings would add to the political and social stability of the country. This suggestion is not disputed but the true content of this smallholding class has to be examined. Insofar as the subdivided land is now owned by formerly "landless people", the social, political and economic significance will be different than if it were owned by absentee landlords.[60] If the former are the owners, then insofar as entrepreneurship, sound agricultural practices, knowledge, and saving are promoted, such a development may be growth promoting. If the latter become the owners, then the concentration of ownership may in-

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[59] Report on Subdivision and Fragmentation of Estates, paragraph 12.

[60] C.Y. Lim, op. cit., p. 52.

crease income inequalities. However this can be corrected by tax measures. What is important is that the owners, whoever they are, promote economic growth.

In some countries, whenever large estates are broken up into smaller units, limits as to the size, are set on the creation of such holdings.[61] Otherwise with repeated subdivision the holdings may become uneconomic. In Malaya, there is no legislation regarding the size of the subdivisions.

To break up a large estate may or may not be agriculturally sound, depending on the financial and technical status of the new farmers.

> There is no agricultural advantage in breaking up a well formed estate to form a large number of less efficient peasant holdings and even the expected social or political advantages tend to be illusory ... unless the farmers are in a position to make a good livelihood from their new holding and to set aside capital for improvement.[62]

Sometimes it is argued that the division of an estate into smallholdings increases the total output of the area of land involved. This is not a criterion for assessing the nature of such a process; it is not the physical volume of output that is important to the economy of the country, but the value of the marginal net product.

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[61] In Ceylon, the limit is 100 acres. See M. Digby, Cooperatives and Land Use, Rome, Food and Agricultural Organization, 1957, pp. 53-58.

[62] B.O. Binns, Land Settlement for Agriculture, Rome Food and Agricultural Organization, 1951, p. 25.

Generally, both the direct and indirect effects of subdivision are likely to involve additional expenditure by the government on social or overhead capital. Certain services which were a charge to private enterprise will now become a charge to state governments. Also government revenues may be expected to be reduced somewhat through lower receipts in the form of export duties and income taxation. We have already shown in Chapter IV that smallholders are less efficient than estates as producers of rubber. The "break-up" of estates is tantamount to the creation of smallholdings. Because of this development and the creation of smallholdings by the Land development Authority (discussed in the next chapter), the whole structure of the rubber industry in Malaya is likely to change, not only with respect to units of production, but also with respect to efficiency.

Summary

This chapter has been concerned with the "break-up" of rubber estates. It related to the various aspects of estates which have been diminishing in size.

The first part was concerned with the sale of estates and parts of estates. The reasons for the former were economic and political. For the most part, economic reasons were more important for the latter. It was noted that the selling-off of rubber estates has abated somewhat since Malaya

became independent.

In the second part we investigated the opportunities available for subdivision. The chief reason here was the availability of different replanting grants for different sizes of holdings. However neither "break-up" nor subdivision has affected a significant proportion of estate rubber acreage, except in the state of Penang.

The consequences of "break-up" were examined in the third part. These were divided into direct and indirect effects. Labour, estate services and productivity are directly affected by subdivision. The result of the indirect effects is a loss in government revenue. In a nutshell, the most important effect is the creation of smallholdings, which, as we have shown, are less efficient as producers of rubber than estates. Hence the break-up of rubber estates will involve changes in both the structure and efficiency of the rubber industry, which will in turn have effects on the economy as a whole, for Malaya is greatly dependent on rubber as a source of income.

CHAPTER VI

THE LAND DEVELOPMENT AUTHORITY--AN ECONOMIC NECESSITY?

In this chapter we will appraise a policy measure--the establishment of the Land Development Authority. This will be done in two parts. In the first part we will give a brief description of the scope and nature of the Authority's work and evaluate the reasons given for its establishment. In the second part we will examine the proposition--is the Land Development Authority necessary for land development.

The Land Development Authority

A Land Development Authority was incorporated by ordinance in 1956 to promote and assist the investigation, formulation and implementation of projects for the development and settlement of land.[1] By 1965 the Authority proposes to clear, cultivate and settle an area of about 250,000 acres at a cost of $270 million.[2] This area is expected to accommodate 24,000 families. After the initial clearing of the jungle by government contractors, carefully selected settlers become

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[1] Federation of Malaya, Annual Report, 1956, Kuala Lumpur, Government Printer, 1957, p. 141.

[2] Federation of Malaya, Second Five Year Plan, 1961-1965, Kuala Lumpur, Government Printer, 1961, p. 27. Hereafter referred to as Second Five Year Plan, 1961-1965.

residents.[3] The settlers provide all the labour required to develop the area, build their own homes and plant rubber on seven of the ten acres allocated to each settler. Credit and materials are made available for two years, after which it is expected that the settler can make a living by producing rice and vegetables and by raising livestock. The Authority expects to recover loans from settlers starting with the seventh year when the rubber is ready for tapping. It is estimated that the settlers should be able to earn at least $300 per month when the scheme is in full operation.[4] All aspects of cultivation are to be under skilled direction.[5]

Thus the salient feature of the land development scheme is that each settler will be given a ten acre farm on which he is required to plant seven acres of rubber and three acres of rice and other food crops.

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[3] Applicants are considered on a point system which includes age, physical fitness, number of children, agricultural background, skill in useful trades and the amount of land owned. See "Land for the landless," Straits Budget, 23 November, 1960, p. 10.

[4] Second Five Year Plan, 1961-1965, p. 9.

[5] See "Malaya mobilises its land," New Commonwealth, volume 38 (January 1960), p. 52.

Reasons for the Establishment of the Land Development Authority

We shall now turn to the reasons underlying the establishment of the Authority. These are the concern for the movement of the rural people to the towns and the resultant increase in urban unemployment, and a desire for diversification of agricultural produce.

It is often pointed out that land hunger is concealed by the drift to the towns, and that the problems of a fast growing population have been minimised by a relatively small increase in the number who are of working age.[6] Since 1950, the rural population has increased by ten per cent, whereas the urban population has increased by eighty[7] per cent. This constitutes the basis for rural development.

However this policy seems to be inconsistent with the Government's industrial policy. The aim of the land development schemes is "to make village life more attractive",[8] and thus to prevent people from moving out of the rural areas. Industrialisation, which is being encouraged by tax holidays, needs cheap labour.

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[6]Cf. "More land for Malaya's peasants," New Commonwealth, volume 38 (December 1960), p. 812.

[7]Loc. cit.

[8]See "Benefits for Malaya's villagers," New Commonwealth, volume 37 (December 1959), p. 814.

The price of labour is prevented from falling since attempts are being made to discourage the movement of the rural population to the urban areas. As it is, Malayan labour, unlike that of Hong-Kong, is neither cheap nor very productive. Thus the government seems to be pursuing conflicting policies.

The aim of diversification is reflected in the division of the ten acre farm into seven acres of rubber and three acres of food crops. As we have seen in Chapter III[9] self-sufficiency in rice is not economically feasible. With the support price of $15 a picul,[10] Malayan rice is not cheap. Thailand can supply the same for $9 a picul.[11]

About 75,000 acres of rice will have been planted by 1965.[12] If the decision to plant these 75,000 acres had been left with private enterprise, the area would probably have been planted with export crops, which would yield a larger return, both to private enterprise and to the government.

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[9] See Chapter III, pp. 79-88.

[10] One Picul = 133 pounds.

[11] "Self-sufficiency," Straits Budget, 4 April 1962, p. 3.

[12] 3/10 x 250,000 = 75,000

In the enthusiasm for rural development, alternative uses of land appear to be neglected. Up to this point in this study, we have made no mention of tin mining. It is true that our concern is mainly with agricultural land use. But the justification for introducing tin mining is that this activity competes with agriculture for the use of land.

For over twenty-five years, prospecting for tin has been severely limited by controls associated with restriction schemes, the war, the occupation and the "Emergency".[13] In addition it has been delayed by the comparative weakness of the State administrations, which control land policy, and by some hostility among the Malays towards expending the area for tin mining.[14]

Currently, tin yields (on the basis of an output of 25,070 pounds) a gross value of $91,600 an acre from which the government derives $10,800 in export revenue. By comparison rubber (with production at about 1,000 pounds per acre) yields $1,000 an acre and $123 in export revenue. An acre of rice merely yields a gross value of $340.[15] It is

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[13]International Bank for Reconstruction and Development, The Economic Development of Malaya, Singapore, Government Printer, 1955, pp. 98-99. Hereafter cited as the Bank Mission Report.

[14]T.H. Silcock, The Commonwealth Economy of South-east Asia, London, Cambridge University Press, 1959, p. 13.

[15]"Tin Prospects," Straits Budget, 9 November 1960, p.3.

quite clear from the figures cited that it would be irrational to let the tin mining industry decline for want of land. Those not in favour of alienating land for the prospecting of tin would argue that tin is a wasting asset and hence resources should not be allocated to it. It should be pointed out that the revenue derived from tin can be invested in those projects which result in almost permanent assets, for example, education, social services, transport and communications.[16]

From the reasons examined above, it appears that these are motivated by non-economic considerations, which for our purposes are irrelevant. Diversification is not an economic proposition. The whole scheme represents a deliberate attempt to create rubber smallholdings which, as we have shown in Chapter IV, are less efficient than rubber estates.

Is an Authority necessary for Land Development?

We will now investigate the second aspect of this chapter, is an authority necessary for land development. The question arises because it represents a policy departure in two respects. Up to now economic development has been left to private enterprise, and the government has confined itself to the creation of a favourable investment climate. The

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[16] In fact the branch lines of the present railway line were the first by-products of tin revenue.

land development schemes amount to planned internal migration. This implies that private initiative is lacking. We will investigate this implication by considering the following factors--risk, ignorance, and institutional rigidities--in order to ascertain whether an authority is needed for land development.

Before proceeding with the investigation it should be emphasised that very little new land (especially rubber land) has been alienated since 1934, the year of the first International Rubber Regulation Scheme. For the purposes of this analysis, we will assume that land has been available, and then examine whether the above mentioned factors traditionally making for immobility are such as to necessitate a land development authority.

Risk

Private investment, whether foreign or domestic is a question of incentives. With respect to export crops private investment may take one of three forms--foreign operated estates, locally operated estates and smallholdings. First we will consider why foreign investment is no longer attracted to rubber. For this purpose we will briefly recapitulate the conclusions arrived at in this connection in Chapter III.[17] The risks involved are economic and political. The economic reason for this is that the long term prospects for natural rubber are not very attractive when considered in re-

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[17]See Chapter III, pp. 60-79.

lation to synthetic rubber. The question of the political security of investments is also an important factor.

The political factor is not applicable to local estate investment. The competition from synthetic rubber is the more important for this group.

If expected profits from agriculture are such as to discourage private investment, it does not necessarily follow that government intervention is necessary, unless the factors were such as to cause mass starvation and poverty.

What of the smallholders? In the past neither persuasion nor coercion was needed to make the peasants plant export crops. There are a number of factors which might prevent and discourage peasant investment. These are ignorance and institutional rigidities, each of which will be discussed in turn.

Ignorance

Under the heading of ignorance we will consider underemployment, inertia and conservatism, and imperfect knowledge of resources.

Ignorance is a ubiquitous factor and it can result in immobility of the factors of production. This is related to the problem of underemployment. Underemployment in the rural areas may be due to ignorance of alternative opportunities or it may be due to inertia. Whatever the cause, underemployment results in a lower standard of living.

In other parts of the world, when population pressure has become acute, individuals have moved out on their own accord either to undeveloped parts within their own countries or to other countries. No government action was needed. We cannot justify such action in Malaya on the grounds of ignorance, since some of the intra- and international migrations occurred in periods of time when neither the level of education nor of technology were advanced. The southward movement of the Shan peoples of South China into the plains of the Mekong and the Menam may be cited as an example.

A related aspect of ignorance is inertia and conservatism. It is true that the agricultural labour force is characterised by a lack of mobility due mainly to the reluctance to sever families ties, conservatism and the inability to adjust to new surroundings. But it seems that this characteristic is not as predominant as it is made out to be. The numerous applications for land mentioned in the previous chapter[18] indicate that people must be willing to move out to new lands, even though it may not be across State boundaries.

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[18] See Chapter V, pp. 150-151.

Imperfect knowledge of resources is another cause of immobility. Up to the beginning of this year, a serious handicap was the inadequacy of data on the unrealised potentialities of agriculture. If the findings of the Soil Research Commission[19] are widely publicised, it is probable that smallholders will now be encouraged to branch out into new lines in agriculture.[20]

Thus the presence of ignorance and its related aspects does not seem to indicate the need for government intervention in land development. Rather, the role of the government appears to lie in the educational field. It is often argued that since the peasants are ignorant and lacking in initiative, it is necessary that the government make good this deficiency. It is however not clear why the government should be able to "muster the talents which by hypothesis are lacking in the population".[21]

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[19] See "Soil Research Findings," Far Eastern Economic Review, volume 35, No. 6 (8 February 1962), p. 321.

[20] The findings reveal many interesting possibilities, for example, at present prices the cultivation of either Manilla hemp, oil palm or tea have certain advantages over rubber with respect to demand, synthetic substitutes and ease of cultivation.

[21] P.T. Bauer and B.S. Yamey, The Economics of Underdeveloped Countries, Cambridge, At the University Press, 1957, p. 161.

Institutional Rigidities

We will now turn to the second factor which may contribute to immobility--institutional rigidities. These include tenancy arrangements, Malay Reservations, and inadequate transport facilities.

How may tenancy arrangements reduce mobility? A sufficiently long tenure of land is necessary so that the farmer can be assured a return for his investments in the land. In the event where land is becoming available from a private source, the existing conditions of tenancy may deter a potential farmer. For, in Malaya tenancies are generally granted for one year and are not registered. Since the War, landlords have renewed tenancy only upon an increase in the tenant's obligations.[22] In the absence of any legislation establishing minimum security for tenants, incentives to land development can be quite weak. Or, farmers may be willing to cultivate lands under insecure tenure, but they will probably adopt a production plan which will deplete the soil resources. From the viewpoint of society this type of depletion is wasteful.

Thus inadequate tenancy arrangements may indicate a need for legislation, but not for a resettlement scheme.

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[22] The Bank Mission Report, p. 318.

Just as the existence of unemployment insurance may reduce the mobility of labour somewhat, so the presence of Malay Reservations[23] reduces the mobility of the Malays. Also, the extensive nature of such reservations limits the opportunities of movement for non-Malays.

The final institutional obstacle is the absence of a co-ordinated plan for the development of feeder roads. This is an obstacle to development, both by estates and smallholdings. Malaya is fairly well endowed with transport facilities, for example the state-owned railway runs along the whole length of the country on both sides of the main range. There is a good network of roads on the west coast and a rudimentary one even on the east coast. Land on either side of the main lines of communication has already been developed. Movement to undeveloped land awaits the construction of feeder roads. Hence the lack of complementary resources inhibits development.

From the institutional rigidities examined above, it is quite clear that these obstacles need to be removed. The development of new land under an Authority is not going to remove these difficulties. In fact the same problems may recur on the new settlement schemes.

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[23]Malay Reservations are discussed in Chapter II, pp. 50-53.

Some Objections to Government Participation

Before concluding this chapter we may dwell briefly on some objections to government participation in land development.

If we take individual preferences to be ultimate then government intervention can be justified only when the individual is incapable of acting in his own interest, where the nature of the problem calls for the satisfaction of group wants, or where there occurs a divergence between private and social costs.[24] Such diseconomies do not appear to arise in the case of the soil resources of the land. Hence it may be concluded that government intervention is uncalled for.

Government projects carry with them the traditional defects of bureaucracy.[25] This is not to say that private agencies are intrinsically more efficient than public agencies, but at least they can be destroyed by their competitors. Competition tends to cure the defects of the market mechanism.

It may be argued that the market mechanism is defective in underdeveloped countries because economic horizons are limited by inexperience. But late nineteenth and early

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[24]Cf. A.D. Scott, Natural Resources: The Economics of Conservation, Toronto, University of Toronto Press, 1955, p. 61, and H.C. Bunce, The Economics of Soil Conservation, Ames, Iowa, Iowa State College Press, 1942, p. 77.

[25]For an interesting discussion of the political allocation process see, J.W. Hirsleifer, and J.C. DeHaven, and J.W. Milliman, Water Supply, Economics, Technology and Policy, Chicago, University of Chicago Press, 1960, pp. 74-85.

twentieth century experience in Malaya indicates that both individuals and firms are well able to take advantage of favourable market situations. The rubber smallholders may be cited as an example of an illiterate people who are able to respond to changing market situations and opportunities.

There is a difference between ordering peasants to plant seven acres of rubber and three acres of rice and instructing them with a demonstration. As Bauer and Yamey[26] point out, the former method is likely to involve a compulsory overriding of time preferences of the farmers. The latter method on the other hand, widens the range of alternatives open to them and enables them to choose their activities within the framework of resources, preferences and opportunities.

Summary

This chapter started with a brief description of the Land Development Authority, the work of which will not only increase the total cultivated area, but will also create some 25,000 new smallholdings (largely seven acre rubber smallholdings). This policy measure was appraised on two points, from the standpoint of the creation of new smallhold-

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[26] Bauer and Yamey, op. cit., p. 158.

ings and the diversification of agricultural produce, both as we have shown represent a waste of resources in one way or another.

The second part of this chapter questioned the establishment of an Authority to open up new land. On the assumption that new land was available, several factors which could hinder land development by private enterprise were examined. These factors included risk, ignorance, and institutional rigidities. In the case of each, we came to the conclusion that these factors were not such as to necessitate a land development authority. Rather the role of the government seems to lie in the direction of education and the removal of the institutional bottlenecks, so as to create a more favourable investment climate in land.

By way of a generalisation we may conclude that the land development Authority is motivated by political and not economic factors. It appears that small farmers are being preferred as a matter of national policy, As we pointed out earlier, such political factors are, for our purposes, irrelevant. On the basis factors examined, there appears to be no necessity for a land development Authority.

As we pointed out in Chapter III the rubber industry is attracting very little foreign investment. The chief reason for this is the political and economic uncertainty besetting that industry. The government too has not alienated

any significant amount of rubber land since 1934. Perhaps it is trying to make good both the above deficiencies in one step by way of the land development schemes.

CHAPTER VII

SUMMARY AND CONCLUSIONS

Two final tasks remain to be performed: to gather together the main points of our study so that their importance stands out in clear relief against the multitude of detail and to indicate possible future changes in land use emanating from past and present developments.

We shall first give a synopsis of the foregoing chapters. It was shown in Chapter I that land utilisation in Malaya is characterised by the production of two main crops, rubber for export and rice for subsistence.

In the early history of the rubber industry, two stages were noticed. The first was characterised by booming markets and the second by restriction schemes and the depression of the 1930s. Whereas the effect of the first stage was a large expansion of the area under rubber, not only in Malaya but also elsewhere in South-east Asia, the effect of the second was to restrict production and hence the area under rubber. Although these schemes were no longer in effect during the post war period the official attitude towards land alienation for rubber appears to have inherited the planting provisions of the restriction schemes.

In connection with rice it was noted that the aim of official policy then as now is to achieve self-sufficiency in

essential foodstuffs, namely rice.

The development of this rubber-rice land use pattern reveals in Malaya a dualistic characteristic of economic growth, giving the country a predominant export sector and a subsistence sector of somewhat lesser importance.

The interpretation of this "dual" feature of some underdeveloped countries has led to a large number of theories. We reviewed the theories of sociological dualism, technological dualism and colonialism and the "backwash" effects of International Trade. The general conclusion of these theories is that underdeveloped countries are caught in a "vicious circle" of poverty. Since there are alleged to be no dynamic gains from international trade, the dualistic theorists argue that it might be in the interests of the underdeveloped countries to concentrate their resources on subsistence production and domestic manufacturing.

However our inquiry on the effects of international trade on Malaya reveals a different conclusion. Specialisation for the international market has given Malaya the highest standard of living in the Far East. The stimulating effects of this contact with the West have been both direct and indirect. The direct effects have been the extension of the cultivated area and the consequent increase in exports. The indirect effects have been the establishment of secondary and tertiary industries to serve the needs of the rubber in-

dustry. Also one of the most obvious forms of economic development is the public investment made possible by the revenue from rubber.

There have been unfavourable effects too, but these have not been such as to make for stagnation. Dualism is present but it does not appear to be leading in the direction to be expected from the dualistic theories.

As we pointed out in Chapter III, there have been no significant changes in the cultivated area in the post war period. There have been three broad sets of obstacles to new land development. First there are the official policies on land alienation and the "Emergency" which have discouraged land development.

Second, the uncertainties besetting the rubber industry have been responsible for the non-extension of land under rubber. These uncertainties are both political and economic. The economic aspect concerns largely the growth of the synthetic rubber industry and the possibility that the substitution of synthetic for natural rubber will shortly become infinitely elastic.

Thus the prospects of new foreign investment in estate rubber are quite unattractive. Consequently there has been no significant extension of the acreage under rubber. In fact estate acreage has declined by the amount of "break-up".

The third obstacle, the policy of self-sufficiency in

rice, has prevented the extension of the cultivated area under other crops. Such a policy measure reflects the fact that the opportunity costs of producing alternative crops are being neglected.

Thus the official policies towards land alienation and the "Emergency", the lack of new investment in estate rubber and the policy of self-sufficiency in rice have in one way or another prevented the extension of the agricultural area in the post war period.

Next we undertook a comparison of the two units of production in the rubber industry, the estates and the smallholdings. This was considered necessary at this point since our purpose was to evaluate two recent developments, the "break-up" of rubber estates and the land development schemes, both of which result in the creation of smallholdings.

The main points of investigation were organisation, production and replanting. In the case of each we came to the recurring conclusion that the estates appear to be the more efficient producers of rubber. On estates the economic management of land, the development of improved varieties and processing techniques, together with the recruiting, housing and supervising of labour are handled in a manner comparable with the methods employed by large scale industrial enterprises. Like these enterprises estates are able to specialise and specialisation results in higher productivity.

Since the growth of the synthetic rubber industry the question of research has become very important, because research is necessary to reduce costs of production and hence make natural rubber competitive with its synthetic substitute. Since the estates are better able to initiate and take advantage of research, they may be able to compete better with synthetic rubber.

In Chapter V we investigated the problem of the "break-up" of rubber estates. This related to the various aspects of estates which have been diminishing in size. The inquiry was divided into three parts: the sale of rubber estates and portions of estates, the subdivision of these estates and the effects of such subdivision on the Malayan economy.

A large number of rubber estates were sold in the immediate pre- and post-Malayan independence periods. The reasons for this were economic and political. Economic reasons were more important in the sale of portions of estates. However we noted that this selling-off of estates has abated somewhat since Malaya became independent.

Subdivision was prompted by the opportunity of making speculative profits and the availability of different replanting grants for different sizes of holdings. Here again we noted that neither "break-up" nor subdivision has affected a significant proportion of the estate acreage except

in the State of Penang.

The consequences of "break-up" and subdivision are both direct and indirect. Labour, estate services and productivity are affected directly. The result of the indirect effects is a loss in government revenue as well as the need for increased expenditure on the part of the government in order to make up for the services formerly provided by the estates. The most important effect is the creation of smallholdings which as we pointed out are less efficient as producers of rubber than the estates. Hence the "break-up" of rubber estates will involve changes in both the structure and efficiency of the rubber industry.

The most recent development in land use is the land development schemes which will not only involve an extension of the cultivated area by some 250,000 acres but also create 25,000 new rubber smallholdings.

The reasons for the establishment of the Land Development Authority appear to be the concern for rural depopulation and a desire for self-sufficiency and diversification of agricultural produce, all of which upon examination appear to be motivated by non-economic considerations. Diversification is not an economic proposition and the whole scheme represents a deliberate attempt to create rubber smallholdings which according to our conclusions appear to be less efficient than the estates as producers of rubber.

The land development schemes amount to planned internal migration. This implies that private initiative is lacking. On the assumption that land was freely available we considered three factors--risk, ignorance and institutional rigidities--in order to ascertain whether these factors were such as to require planned land development. Our conclusion was that the role of government seems to be in the direction of education and the removal of the institutional rigidities rather than in planned internal migration.

In fact no new land has been alienated for rubber for the past thirty years. Hence the lack of private investment cannot be blamed on risk or inertia. If new land had been available and private investment had not been forthcoming, then there may have been some justification for government intervention.

Thus in the course of this study we have seen that land use in Malaya is characterised by the production of two crops, rubber and rice. This pattern of land use may be said to be the direct result of the contact with the West. Alternately it may be interpreted as a dual pattern of economic growth.

We have also seen that there are two conflicts in land use. The one is whether to produce rubber for export or rice for subsistence. The other is between estates and

smallholdings. The latter as we have pointed out are being preferred as a matter of national policy.

The official policies relating to rubber and rice are inherited from the days of colonial rule, which was in some respects responsible for the emergence of dualism. Perhaps the official policies of today are an attempt to eliminate the phenomena of dualism by pursuing policies of self-sufficiency and diversification of agricultural produce. Although this dualism has not led to stagnation as it is alleged by its theorists, yet attempts to erase it by means of the policies mentioned above seem to imply that efficiency considerations are being pushed into the background.

Having summarised the more important points brought out in this study, it now remains for us to briefly indicate the future trends in land use.

Malaya still has a great deal of land in relation to its population. It is true that much of it is under highland, swamp and jungle. But as the Bank Mission Report indicates,[1] the area of unused, but potentially productive, land is almost at fifty per cent of the present cultivated land.

However the acceleration of such development presents

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[1]International Bank for Reconstruction and Development, The Economic Development of Malaya, Singapore, Government Printer, 1955, p. 33. Hereafter referred to as the Bank Mission Report.

"difficult problems". The Bank Mission Report lists several factors which present difficult problems. These include the inadequacy of knowledge and evaluation of unutilised agricultural potentialities, barriers to the improvement of cultivation practices imposed by tradition, habit and inertia, and the adverse effects on incentives created by unsatisfactory credit and marketing arrangements and the unfavourable developments in land tenure relationships.[2]

A major obstacle to both private land development and the ability of the government to deal with applications for land has been the "Emergency". However with the termination of the "Emergency" in 1960 we would expect that the arrears in land work will be cleared up and that new policies on land alienation may be formulated now that the security risks are removed. Furthermore private development too may be forthcoming for the same reason.

What of the main crops, rubber and rice? Will the dualism which characterises the Malayan economy be further accentuated or erased in the future? Present policies and future trends indicate that this dual feature of the Malayan economy is not likely to be changed very much, at least not in the short run. For, under the development schemes, the

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[2] Ibid., p. 21.

areas under rubber and rice are being increased, although the proportion of the land allocated to rubber is about seven-tenths of the total. It is true that official policies are veering in the direction of self-sufficiency and diversification. However, significant changes in the land use pattern do not seem likely, so that for some time to come rubber will remain the mainstay of the Malayan economy although attempts at self-sufficiency may prove to be successful.

We will now consider the two main crops individually. In the case of rubber, the next five years will see an increase in smallholding acreage resulting from the land development schemes. There will also be a change in the structure of the rubber industry.

With rubber we may note a paradoxical development. No new foreign investment is forthcoming in estate rubber largely because of the uncertain prospects of the natural rubber industry. On the other hand the government is developing rubber smallholdings. This is probably due to the realisation that in the absence of complete knowledge about Malaya's agricultural potentialities, rubber offers the highest economic returns in the short run. Furthermore no attempts are being made to attract the foreign investors into rubber as they are being made to attract them into industry. This is probably due to the fact that the government fears what is sometimes known as the "colonial" type of investment. At the

present time large scale capitalised agriculture has to satisfy the politicians that the system contributes to the general welfare of the country. If improved forms of peasant production can be evolved with the financial and technical assistance of government, it seems that this will be favoured.

But for reasons other than efficiency, better quality of product, and earning value to the economy, peasant production is preferred as a matter of national policy. More than economics are involved: political and social considerations loom large and are sometimes more important than anything else.

What about rice? According to the latest information[3] the target date for self-sufficiency is set for 1965. Thus we may expect a fairly substantial expansion of the area under rice in the near future. The concentration of scarce resources on rice is not, as we have pointed out frequently, in accordance with the principle of comparative advantage.

The professed aim of official policy to diversify the Malayan economy and to reduce its dependence on rubber underlies the system of priorities of the Second Five Year Plan,

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[3] Cf. "Self-sufficiency Target," News Bulletin No. 88, July 2, 1962, Embassy of the Federation of Malaya, Washington, D.C., p. 6, and "Muda river project," editorial, Straits Budget, June 27, 1962, p. 3.

and is also likely to underlie future policies on land development.

What is the relative "cost" of the self-sufficiency policy? On the basis of available information the "cost" is approximately 3.6 per cent of the Gross National Product.[4] Thus Malaya is giving up 3.6 per cent of her standard of living for this self-sufficiency policy. Perhaps the social and political objectives are worth the "cost" involved.

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[4] The basis of this estimate is as follows:

Net proceeds from one acre of rubber	$520
Net proceeds from one acre of rice	$97
Difference in favour of rubber	$423

(For the derivation of the net proceeds see Chapter III, p. 82.

Thus $423 is the "cost" of producing 2102 pounds of rice from one acre of land, where this land is suitable for the production of rubber.

At present Malaya imports 462,000 tons of rice (35 per cent of her requirements). In order to achieve self-sufficiency by 1965, she has to allocate about 492,000 acres of land to rice. The "cost" of this in terms of $423 per acre, the difference in favour of rubber, amounts to about $208 million. This is the equivalent of about 3.6 per cent of the Gross National Product of $5,780 million (the 1953 estimate made by the International Bank Mission to Malaya. See The Bank Mission Report, p. 14.) The range of this estimate is about three to six per cent when both high and low prices of rubber and rice are considered.

In addition it may be assumed that of the 908,570 acres of land currently under rice, about one-half of this area is suitable for rubber production. Hence the "cost" in terms of the Gross National Product is again about 3.3 per cent. Thus these two estimates together comprise about 6.9 per cent.

The validity of these estimates is limited by the fact that not all the figures used relate to one date. This is especially true for the rice figures.

APPENDIX I

REPLANTING SCHEMES IN THE RUBBER INDUSTRY

The replanting ordinance (Number 8 of 1952) provides for the collection of a cess on all rubber exported to provide funds for replanting.[1] The cess collected is divided into two funds; fund A for estates and fund B for smallholdings.

The cess (schedule IV tax) levied at the flat rate of 4½ cents per pound is credited individually to the participants of Fund A to the extent of replanting expenditure incurred since 1946. In addition, there is the government replanting scheme for estates (1955-1961), with funds amounting to $168 million. Replanting grants for estates are given at a rate of $400 per acre up to twenty-one per cent of their total registered acreage on 31 December 1954. This amount is paid in the following way:

1st year	$150
2nd year	100
3rd year	50
4th year	50
5th year	50
Total	$400

Smallholders' share of the cess is calculated on the

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[1] For a background of this, see Federal Legislative Council Minutes and Council Papers, (3rd Session) February 1950 to January 1951.

basis of smallholder-estate production ratio each month and is then paid into Fund B. Each smallholder is allowed to replant one-third of his planted acreage or five acres, whichever is the greater, during the currency of the scheme (1952-1959 inclusive). Those owning less than five acres are allowed to replant their total planted acreage. Originally the total grant was $400 per acre replanted. This was later raised to $500. When the government replanting scheme came into force in 1955, a further grant of $100 per acre was made payable. These grants are paid in cash and kind. The Fund B administrators supply high yielding material and other services. The value of each installment is as follows:[1]

	Fund B.	Government Aid	Total
1st Installment	200	0	200
2nd "	100	0	100
3rd "	60	50	110
4th "	55	50	105
5th "	85	0	85
	$500	$100	$600

Each grant is paid only on receipt of satisfactory reports on

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[1]The figure $600 per acre is based on the replanting costs calculated by the Mudie Mission. These are reproduced below.

Average replanting cost per acre

Destruction of old trees by felling	$200
Planting material	$ 28
Manure	$ 72
Labour at 100 man days	$300
	$600

conditions in the replanted holdings made by field officers. The first grant is paid when the smallholder has prepared his area for planting with clonal seed, budgrafts, or transfer of budded stumps. The second is normally paid six months after this. The remaining installments are paid at twelve monthly intervals.

Additional assistance is given to those owning five acres or less of planted rubber, because it is recognized that these smallholders depend in the main, on rubber for their income. Consequently a real hardship lasting six or seven years would ensue if they had to cut out their entire acreage in order to get the maximum replanting benefits. To overcome this, smallholders can apply to "new plant" rubber, provided they have or can obtain vacant jungle land. They can apply to "new plant" only if their existing rubber areas have a stand of at least sixty trees per acre. They must also give an undertaking to the administrators of Fund B that they will cut out their old trees and replant them with high yielding rubber within seven years of the commencement of their new planting. For this, the smallholder is entitled to $600 per acre.

To supplement the above is the Government Replanting--New Planting Scheme for other rubber smallholders. $112 million has been allocated for this purpose. Participation is open to smallholders owning thirty acres or less of planted

rubber. To qualify, they must also be participants of Fund B.

A smallholder can replant--new plant an additional acreage (up to a limit of five acres) equal to the acreage he is replanting--new planting under Fund B. An outright government grant of $600 per acre is paid. The payments are as follows:

1st installment	$200 in cash and kind
2nd "	100 " " " "
3rd "	110 " " " "
4th "	105 " " " "
5th "	85 " " " "
Total	$600 " " " "

If a smallholder owning five acres or less wishes to replant that additional acreage that he is entitled to under the government scheme, he can do so if he can get vacant or jungle land. In this case, he need not cut out the equivalent old rubber area. Some income can still be obtained from his old rubber area while his new plantings are maturing.

However, if the smallholder wishes to replant his rubber area with other approved crops, he has to cut out the rubber area.

Smallholders who new plant with rubber are encouraged to carry on "block" new planting, that is, they are encouraged to combine together and plant in blocks of 250 acres or more.

A $5 million revolving fund has also been set up to

establish nurseries which will supply high yielding rubber planting material to the participants of Fund B and the government scheme. New planters who do not belong to any scheme can also obtain their planting material from this source. Revenues from these sales are credited to the fund.

Thus, in one way or another, attempts are being made by way of a subsidy, to overcome the economic and technical difficulties of replanting smallholdings.

APPENDIX II

SCOPE AND METHOD OF DATA COLLECTED ON THE "BREAK-UP" OF RUBBER ESTATES

The data covers mainly the states of Penang, Johore, Malacca, and Negri Sembilan. The information was obtained by personal investigation in the above mentioned states and by post for the remainder. Information from the latter was obtained by means of two questionnaires which were sent to the respective Commissioners of Lands and Mines. Some of the response from this source was fairly satisfactory but there was no way of checking the information thus received.

Most of the material collected was obtained primarily from Land and District Offices, and from the Registries of Deeds or Titles. However, the data collected was not of a uniform nature, as methods of land administration vary in the different states due to historical reasons.[1] Most of the material thus obtained was checked against grants and certificates of title.[2] In some of the Land and District Offices, "subdivisional" files were not available and therefore

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[1]See International Bank for Reconstruction and Development, The Economic Development of Malaya, Singapore, Government Printer, 1955, pp. 223-224.

[2]Grants are issued in respect of first alienations of land. All subsequent transfers are recorded in the form of certificates of Title. This applies to the whole of Malaya with the exception of Malacca.

material had to be collected from the Registry of Titles (in the former Federated and Unfederated States) or the Registry of Deeds (in the former settlements of Penang[2] and Malacca) and in the form of "Transfers of British registered Companies to Asians". Such returns are submitted quarterly to the Federal government.

Some data was also obtained from the Departments of Labour. This was slightly different from that collected in the Land Offices. As a result of these differences data on subdivision without sale[3] was available only for Penang, Johore, Malacca and Negri Sembilan.

Heads of Land and Labour Offices, Officers of the Rubber Industry Replanting Board and several land and share brokers were also interviewed.

Some limitations of the data are the lack of uniformity in the Land Administration and the inadequate response from certain quarters. Besides, there are no published statistics on the subject. Hence there was no way of cross checking the data or of making a comparison on the method of collection.

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[3]Unless otherwise stated, Penang means Penang Island and Province Wellesley.

[4]For a definition of this See Chapter V, pp. 130-131.

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