Historical GDP Statistics of Malaya, 1900-1939:

Progress and Perspectives

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1.   Introduction

This paper reports on the status of work currently being undertaken at the Asia-Europe Institute, University of Malaya to come up with estimates of the Gross Domestic Product (GDP) of Malaya for the period 1900 to 1939. The paper uses the expenditure approach to make estimates of GDP in current and constant 1914 prices. It is important to emphasize at the outset that work on this project is still ongoing. Consequently, the estimates presented below should be viewed as preliminary at this stage, and some of the figures may be revised in light of continuing research. The paper proceeds as follows: Section 2 provides a brief overview of the early development of national income accounting in Malaysia. Section 3 outlines the methodology employed, describes the nature of the source materials and discusses some of the major difficulties. Sections 4

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through 7 explain in greater detail the estimation procedures used to generate the series on private consumption, government consumption, gross capital formation and external trade respectively. Section 8 summarizes the procedures used to deflate the expenditure components of GDP into constant prices and makes a preliminary assessment of economic growth in Malaya in the early twentieth century.

2.   National Income Accounting in Malaysia

The first attempt at compiling national income statistics in Malaysia was undertaken by the Retrenchment Commission in 1932. This Commission had been appointed by the Federated Malay States (FMS) government to look into the territory's sources of taxation. As a rough measure of what the tax base is likely to be in the 1930s, the Commission made a calculation of national income for the FMS in 1931 and provided national income estimates for the years 1932 to 1937. The Commission started by noting that it "is impracticable…in the conditions of the Federated Malay States to obtain any approach to accurate information of individual incomes" (p. 2). In the absence of such information, the Commission accepted "as a sufficiently close approximation" to national income the "sum of two quantities more readily capable of measurement, viz., the figures of primary production and the gross profits of foreign trade" (p. 2), with the caveat that the "figures are intended to represent tendencies rather than precise numerical forecasts" (p. 5). The Commission's figures are reproduced in Table 2.1. These clearly do not amount to national income in the modern sense. Neither the theoretical insight nor the methodology was sufficiently developed at the time to meet modern requirements for the proper measurement of GDP. Nor, it should be added, was the primary objective to

estimate national accounts as we understand it today, but rather to estimate government revenue in response to the economic crisis of the 1930s.

Table 2.1
National Income 1931-37
Federated Malay States

Straits $ million

	1931	1932	1933	1934	1935	1936	1937
Rubber	54	38	37	45	53	60	63
Tin	51	32	35	47	56	60	69
Other Produce	49	52	55	58	61	64	67
Profits of Trade	26	18	18	23	27	30	33
National Income	180	140	145	173	197	214	232

Source: *Report of the Federated Malay States Retrenchment Commission appointed by His Excellency the High Commissioner on the 9th March, 1932*, Kuala Lumpur, The Federated Malay States Government Printing Office, 1932, p. 5.

Benham's *The National Income of Malaya, 1947-49*, published in 1951, contains the earliest estimates using modern concepts of national income accounting.[2] Benham used the output method to compile GDP at market prices, and he also made estimates for the components of GNP and national income. Although he was not able to prepare national income estimates based on the income and expenditure methods, Benham provided estimates on some of the components of aggregate income and expenditure. In 1955, the World Bank produced a report, *The Economic Development of Malaya*, which included a detailed statistical appendix containing GDP estimates for the years 1949-53. Both the Benham estimates for 1947-49 and the World Bank estimates for 1949-53 were on a Pan-Malayan basis, which comprised the then Federation of Malaya (present-day Malaya or Peninsular Malaysia) and the then Crown Colony of Singapore. No attempt

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[2] Dr. F. C. Benham was then economic adviser to the Commissioner-General for the United Kingdom in Southeast Asia.

was made in either study to separate the data into Malayan and Singapore components. Subsequent attempts to compute Peninsular Malaysia GDP shares from the Pan-Malayan estimates of Benham and the World Bank were made by Lim Chong Yah (1967) and Lee Soo Ann (1968). Dorothy Walters prepared the first set of national accounts for Peninsular Malaysia proper for the period 1955-59. Abraham and Gill (1969a, 1969b) made significant contributions by estimating the sectoral GDP series for the years 1946-66, and the GDP expenditure components for the years 1960-66. The first *official* national accounts of Malaya covering the years 1955-60 were prepared by the Department of Statistics (DOS) based on the 1953 SNA. Since then national accounts have been updated on a continuing basis by DOS up to the present time. Drawing on all these contributions, Rao (1976) assembled the national accounts of Peninsular Malaysia for the 25-year period from 1947 to 1971 at current and constant 1959 prices. Noteworthy was Rao's attempt to revise the national accounts data of the late 1940s and 1950s in order to achieve consistency with the 1960-71 official estimates.

3. Method, Coverage and Data

The GDP estimates presented here were computed using the expenditure method. The period covered is 1900 to 1939. The unit of analysis is Malaya, which is to be distinguished from *British* Malaya. The former refers to present-day Peninsular Malaysia, whereas the latter refers to Peninsular Malaysia plus Singapore, Labuan and Christmas Island. A strong case can be made for including Singapore in our analysis because it was an integral part of the Malayan economy during this period and played a pivotal role in its economic development. However, since a primary objective of the project is to eventually

link our GDP series with modern-day national accounts, it was decided to exclude Singapore so as to maintain consistency in geographical coverage.

I have tried to make use of primary source materials wherever possible. Fortunately, there is a large amount of archival material on the economy dating from the British colonial period that we can draw upon to 'piece together' a reasonable time series on each of the aggregate demand components. These consist mainly of official documents in the form of annual reports of the various state governments, government financial statements, annual returns on exports and imports, official correspondences, departmental statistics on government revenues and expenditures, and censuses on population.
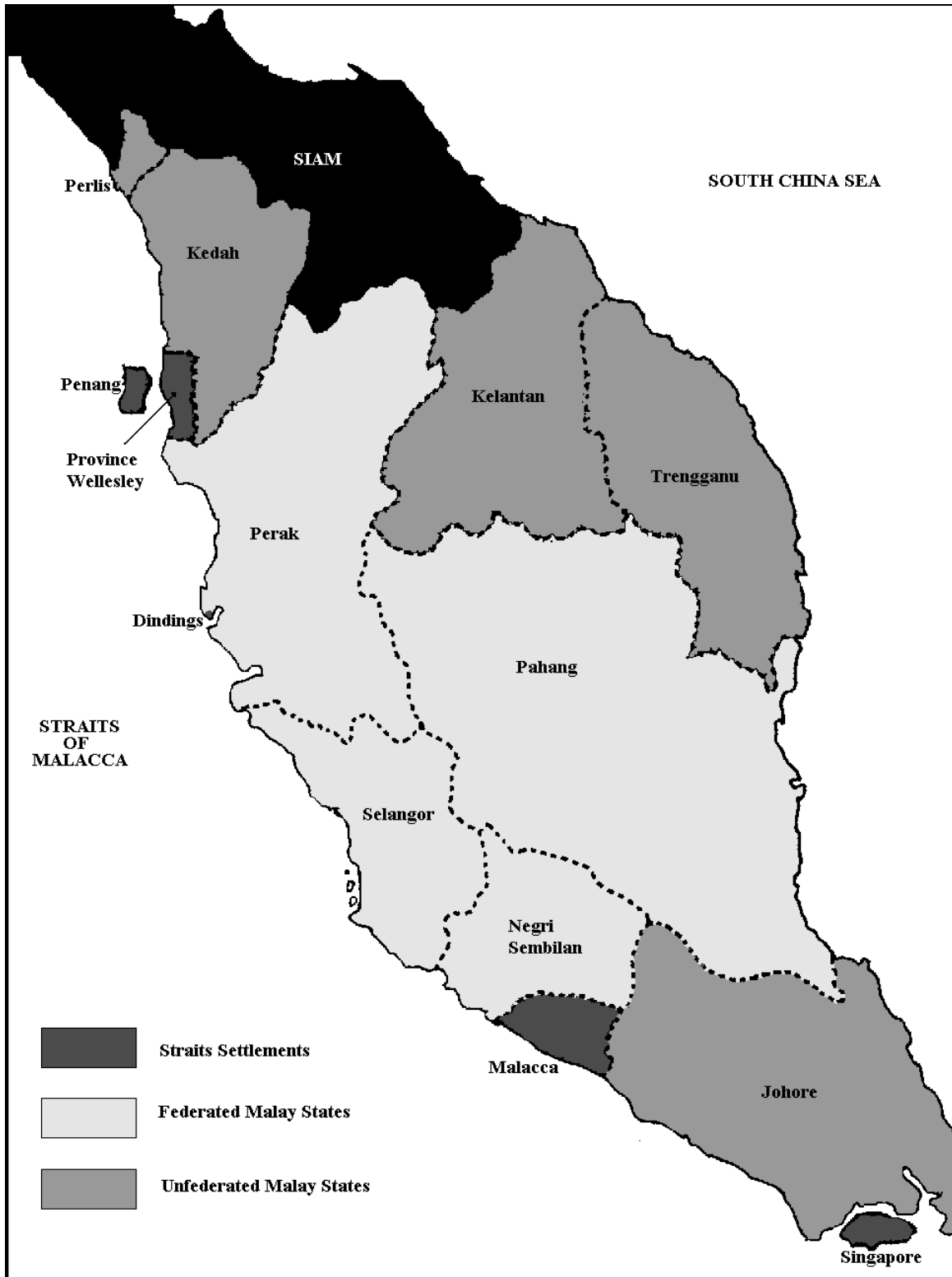
The first step was to identify and locate as many of the relevant historical source materials as possible. Many were found in the National Archives in Kuala Lumpur and the Public Records Office in London. The next step was to transform all of the quantitative information into a format appropriate for the purpose of computing GDP. Since different historical source materials were used, data contained in these sources were in many instances not compatible, and it was necessary to make various adjustments so as to make them internally consistent. There were also many gaps in the data which had to be bridged by making numerous assumptions.

The difficulties in preparing the estimates were compounded by the fact that the Malay Peninsula in the early part of the century was made up of eleven separate administrative units (Mills, 1958: 7). These were the Colony of the Straits Settlements (SS) comprising the territories of Penang, Malacca and Singapore; the Federated Malay States (FMS) of Perak, Selangor, Negri Sembilan and Pahang, with a federal government

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in addition to the four state governments; and, the five Unfederated Malay States (UMS) of Perlis, Kedah, Kelantan, Trengganu and Johore (Figure 3.1). Each administrative unit published its own independent set of annual reports, the coverage and quality of which varied considerably not only between different administrative units but also over time. There is more statistical information on the SS, less on the FMS, and even less on the UMS.

The foregoing discussion suggests that the GDP estimates presented here should be regarded as rough approximations only. These estimates will certainly be revised as more data become available and as better methods of estimation are employed. The value of the series presented here is more for the insight they provide us about long-term trends of the whole economy rather than in the precise magnitude of individual components of GDP or their annual variation.

Figure 3.1
The Malay Peninsula, c. 1925

SIAM

SOUTH CHINA SEA

Perlis

Kedah

Penang

Province
Wellesley

Perak

Kelantan

Trengganu

Dindings

Pahang

STRAITS
OF
MALACCA

Selangor

Negri
Sembilan

Straits Settlements

Malacca

Johore

Federated Malay States

Unfederated Malay States

Singapore

4.   Private Consumption

Private consumption expenditure should ideally be constructed based on information in sample household expenditure surveys. Data from these surveys can then be extrapolated to cover all households in the economy. Unfortunately, this method is not possible here. The first household budget survey covering the whole country was conducted only in 1957-58. Prior to this, there was one other budget survey that was conducted in 1947-48 but this survey was concerned primarily with Singapore. By the same token, paucity of data does not permit use of the commodity flow, retail valuation or retail sales method. Another method is to estimate, for each commodity and service purchased by households, the terms of the identity $pq \equiv v$. Again there is not enough data for us to attempt this method properly. While there are statistics on p for a broad range of commodities, there is complete absence of statistical information on q and v.

This paper uses an alternative method. The remainder of this section describes the data and method used to put together the series in current prices for the years 1900 to 1939. Due to a break in the data set, estimates for 1900-13 and 1914-39 were prepared separately. In what follows, I use Figure 4.1 to explain the procedure by which the 1914-39 expenditure estimates were prepared. I then explain the procedure used to prepare the 1900-13 series.

Figure 4.1 shows the two approaches that were combined to prepare the consumer expenditure series. Consumer expenditure on opium, education, medical services, utilities and rail transport were compiled using the direct approach. Expenditure on food and groceries, beverages and tobacco, clothing, rent, domestic servants, clubs, transport (other than rail) and other miscellaneous household expenditures were compiled using an

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indirect approach. Summing up expenditures from these two approaches gives us total private consumption expenditure.

Under the direct approach, opium consumption was computed by combining prices with quantities supplied from local production and imports. Total school fees collected by the government was taken to represent private consumer expenditure on education. Total medical fees collected by government hospitals and government outdoor dispensaries was taken as consumer expenditure on medical services. Revenue collected from households by the electricity, gas and water boards was taken as final expenditure on utilities. Expenditure on 'Rail Transport' refers to private sector expenditure on passenger traffic via rail, ferry and rail cars and was approximated by adding up revenue collected by the Railway Department.

The indirect approach involves a number of steps labeled (1) through (6) in Figure 4.1. It is generally accepted that significant differences exist in consumption levels and expenditure patterns between ethnic groups, between rural and urban areas and between households in different income/occupational brackets. In constructing our expenditure series, an attempt was made to take these differences in population characteristics into account. To this end, expenditure patterns were classified into six consumption standards, viz., Malay labor, Chinese labor, Indian labor, Asiatic clerical, Eurasian clerical and European [Step (1) of Figure 4.1]. This classification scheme was then used alongside information provided in censuses of population to establish the number of persons in each standard. Figures for inter-censal years were obtained by interpolation. Inclusion in a particular standard was determined primarily by ethnicity, and also by occupation. For example, it was assumed that Eurasian manual workers

Figure 4.1
Construction of Total Private Final Consumption Expenditure in Current Prices,
1914-39
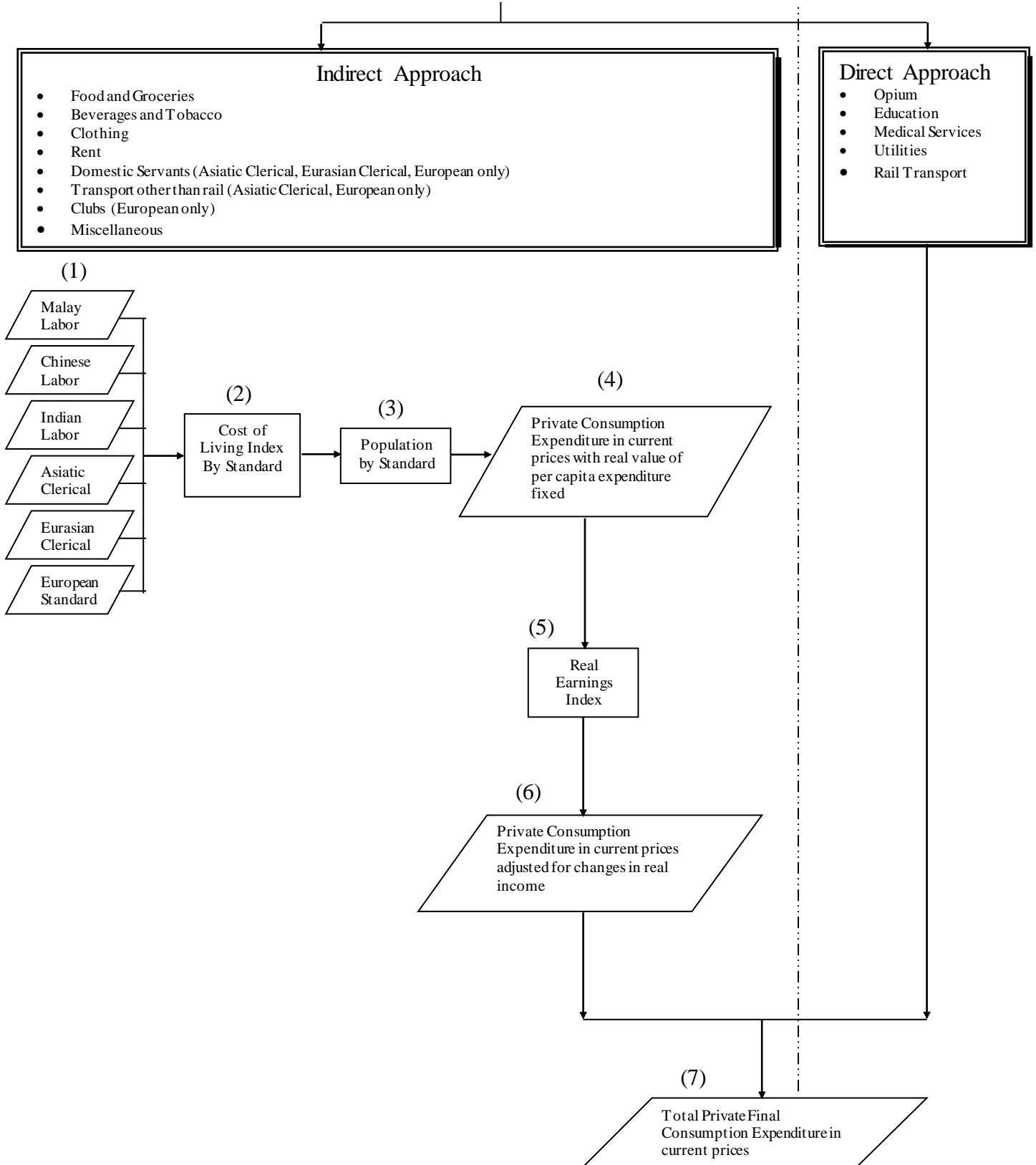
shared the same lifestyle as their Indian counterparts and were consequently placed in the Indian labor standard. Non-Europeans holding professional/management positions were classified under the European standard.

From historical records, it has been possible to put together the annual consumption expenditure of a "representative" individual in each of these standards for a particular year. These are tabulated in Table 4.1. For example, it is estimated that a Malay laborer spent $51.80 per year on food and groceries in 1936. He spent $3.65 on beverages and tobacco, $10.02 on clothing and $3.21 on rent in 1939. Estimates for the other standards are shown in the table.

The next step [(2) in Figure 4.1] was to combine the data in Table 4.1 with cost-of-living indices to construct series of per capita consumer expenditure in current prices on each major object of consumption for each standard, assuming first that real expenditure per capita remained constant over time. Three sets of indices, obtained from source materials, were used for this purpose: Asiatic Standard (Table 4.2), Eurasian Standard (Table 4.3) and European Standard (Table 4.4). These indices refer to Singapore and it was assumed that they apply to Malaya as well. The Asiatic cost-of-living index was used to construct the series for Malay labor, Chinese labor, Indian labor and Asiatic clerical standards, the Eurasian index for Eurasian clerical standard, and the European index for European standard.

To illustrate, using Table 4.2 it is possible to establish that a Malay laborer's expenditure on food and groceries totaling $51.80 in 1936 would cost him $56.93 in 1914. His expenditure on clothing, $10.02 in 1939, would cost him $9.80 in 1914. Table 4.2 thus enables us to construct, for Malay labor standard, a complete expenditure series

Table 4.1
Annual Per Capita Private Consumption Expenditure by Standard,
Selected Years

Standard / Major Objects	European Standard (1930)	Eurasian Standard (1930)	Asiatic Clerical Standard (1930)	Malay Labor Standard	Chinese Labor Standard	Indian Labor Standard (1933)
Food and Groceries	$601.20[1]	$167.28[1]	$157.44[1]	$51.80[2] (1936)	$52.52[2] (1936)	$51.02[6]
Beverages and Tobacco	$171.48[1]	$7.80[1]	$7.80[1]	$3.65[3] (1939)	$3.85[3] (1939)	$2.77[7]
Clothing	$288.00[1]	$28.08[1]	$28.08[1]	$10.02[4] (1939)	$7.39[4] (1939)	$7.57[8]
Rent	$288.00[1]	$64.80[1]	$64.80[1]	$3.21[5] (1939)	$3.74[5] (1939)	$2.79
Domestic Servants	$655.20[1]	$43.20[1]	$43.20[1]	Not Applicable	Not Applicable	Not Applicable
Transport (Other than Railway)	$192.48[1]	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Clubs	$219.60[1]	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Note

1. Assumed that households in Malaya consume 90% of amount consumed by respective Singapore households. Per capita consumption was derived based on household size of each standard household.
2. Consumption per capita is assumed to be 20% more than the full meat diet scale of adults in government hospitals. Male and female adults consume the same amount whereas children consume 2/3 of adult amount.
3. Applied the ratio of beverages and tobacco to food in 1949 and deflated to 1939.
4. Applied the ratio of clothing to food in 1949 and deflated to 1939.
5. Computed as a percentage of expenditure on food, clothing, beverages and tobacco:
   Malay Labor 5%, Chinese & Indian Labor 6%.
6. Consumption per capita is assumed to be 20% more than that of Labourer's Specimen, Johore, 1933. Male and female adults consume the same amount whereas children consume 2/3 of adult amount.
7. Based on Labourer's Specimen, Johore, 1933.
8. Based on Labourer's Specimen, Johore, 1933. Male and female adults consume the same amount whereas children consume 2/3 of adult amount.

Sources

(1) Report of The Commission on The Temporary Allowances, Family Budget 1930, Singapore, p. 14-16 and p. 20-23.
(2) Laborer's Specimen Monthly Budget 1933, Annual Report, Johore, 1933, p.27.
(3) Diet Scales of Government Hospitals 1936, Proclamations, Order, Notices, Regulations, Declarations, Appointments, Forms and By-laws in force on 31st day of December 1935 – Cap 154, p.1705.
(4) Annual Report Labour Department, Federation of Malaya, 1949, p. 89-90, Appendix. V$_B$.

Table 4.2: Cost of Living, Singapore: Annual Index Numbers, 1914-38, Asiatic Standard

Items	Weights 1914	1914	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
1. Food and Groceries	46	100	140.4	191.2	253.2	167.7	145.5	145.3	146.1	151.5	160.2	154.8
2. Tobacco	2	100	174.3	200.0	257.1	242.9	242.9	200.0	185.7	185.7	194.2	185.7
3. Servant	11	100	116.8	116.8	155.5	155.5	155.5	155.5	155.5	155.5	155.5	155.5
4. Light and Water	4	100	146.4	148.0	148.0	155.0	156.4	155.0	129.2	131.0	123.4	134.0
5. Transport	11	100	112.5	122.9	126.8	122.8	112.0	94.8	99.4	105.3	103.5	94.2
6. Education	9	100	112.0	125.9	145.5	124.4	118.2	118.2	118.4	120.7	123.6	126.9
7. Clothing	8	100	189.8	229.6	291.6	237.2	182.8	163.6	157.1	158.1	157.5	155.4
8. Rent	9	100	120.0	130.0	150.0	154.0	181.0	217.0	230.0	242.0	257.0	284.0
Average Weighted Index Nos	100	100	135.1	165.1	207.6	162.6	148.9	147.7	147.9	152.4	158.0	156.9

Items	Weights 1914	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
1. Food and Groceries	46	151.2	149.7	140.2	103.0	86.5	78.8	83.4	93.9	91.0	101.5	93.7
2. Tobacco	2	185.7	185.7	171.4	171.4	165.7	142.9	142.9	128.6	128.6	128.6	128.6
3. Servant	11	155.5	155.5	152.9	138.0	124.7	115.8	123.7	127..4	125.7	130.0	128.2
4. Light and Water	4	134.0	134.0	131.0	131.0	131.0	101.0	125.8	125.8	122.0	122.0	119.2
5. Transport	11	93.1	89.7	85.5	96.2	89.0	85.4	84.5	82.4	80.0	81.4	81.5
6. Education	9	125.9	125.5	122.8	112.6	108.1	106.0	112.0	114.9	114.1	117.0	110.1
7. Clothing	8	151.9	141.0	139.8	133.2	110.0	106.9	99.5	99.7	98.3	105.8	108.1
8. Rent	9	312.0	314.5	289.7	247.4	200.4	175.6	175.6	175.6	175.6	177.7	188.9
Average Weighted Index Nos	100	157.3	155.6	147.5	125.0	108.6	99.3	103.2	108.1	106.0	112.5	109.2

Sources: **Malaya, Average Prices, Declared Trade Values, Exchange, Currency and Cost of Living 1936**, Singapore, Government Printers, 1937, p.63,
 Ibid., 1937, Singapore, Government Printers, 1938, p.321, **Ibid., 1938**, Singapore, Government Printers, 1939, p.64.

Table 4.3: Cost of Living, Singapore: Annual Index Numbers, 1914-38, Eurasian Standard

Items	Weights 1914	1914	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
1. Food and Groceries	48	100	136.5	160.3	214.3	168.8	140.0	141.0	139.8	143.4	153.0	155.0
2. Tobacco	2	100	174.3	200.0	257.1	242.9	242.9	200.0	185.7	185.7	194.2	185.7
3. Servant	10	100	116.8	116.8	155.5	155.5	155.5	155.5	155.5	155.5	155.5	155.5
4. Light and Water	4	100	146.4	148.0	148.0	155.0	156.4	155.0	129.2	131.0	123.4	134.0
5. Transport	11	100	112.5	122.9	126.8	122.8	112.0	94.8	99.4	105.3	103.5	94.2
6. Education	9	100	111.2	118.3	136.1	125.5	117.1	117.3	116.9	118.8	122.2	127.6
7. Clothing	8	100	189.8	229.6	291.6	237.2	182.8	163.6	157.1	158.1	157.5	155.4
8. Rent	8	100	120.0	130.0	150.0	154.0	181.0	217.0	230.0	242.0	257.0	284.0
Average Weighted Index Nos	100	100	133.4	150.9	190.4	163.4	145.9	145.4	144.6	148.3	154.1	156.9

Items	Weights 1914	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
1. Food and Groceries	48	149.4	141.4	132.0	109.7	97.8	93.8	96.1	97.2	96.1	102.6	96.2
2. Tobacco	2	185.7	185.7	171.4	171.4	165.7	142.9	142.9	128.6	128.6	128.6	128.6
3. Servant	10	155.5	155.5	152.9	138.0	124.7	115.8	123.7	127.4	125.7	130.0	128.2
4. Light and Water	4	134.0	134.0	131.0	131.0	131.0	101.0	125.8	125.8	122.0	122.0	119.2
5. Transport	11	93.1	89.7	85.5	96.2	89.0	85.4	84.5	82.4	80.0	81.4	81.5
6. Education	9	125.9	123.6	120.7	114.4	111.0	109.9	115.2	115.6	115.2	117.1	110.5
7. Clothing	8	151.9	141.0	139.8	133.2	110.0	106.9	99.5	99.7	98.3	105.8	108.1
8. Rent	8	312.0	314.5	289.7	247.4	200.4	175.6	175.6	175.6	175.6	177.7	188.9
Average Weighted Index Nos	100	156.1	151.0	143.0	127.1	113.1	105.7	108.5	109.0	107.8	112.4	109.6

Sources: **Malaya, Average Prices, Declared Trade Values, Exchange, Currency and Cost of Living 1936**, Singapore, Government Printers, 1937, p.65,
Ibid., 1937, Singapore, Government Printers, 1938, p.323, **Ibid., 1938**, Singapore, Government Printers, 1939, p.66.

Table 4.4: Cost of Living, Singapore: Annual Index Numbers, 1914-38, European Standard

	Items	Weights 1914	1914	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
1.	Food and Groceries	19	100	136.5	160.3	214.3	168.8	140.0	141.0	139.8	143.4	153.0	155.0
2.	Tobacco	4	100	174.8	204.1	214.7	231.2	223.7	203.2	192.1	186.7	181.3	176.3
3.	Servant	17	100	116.8	116.8	155.5	155.5	155.5	155.5	155.5	155.5	155.5	155.5
4.	Light and Water	2	100	119.8	128.3	238.4	252.9	252.9	252.9	252.9	252.9	252.9	252.9
5.	Transport	9	100	112.5	122.9	126.8	122.8	112.0	94.8	99.4	105.3	103.5	94.2
6.	Education	21	100	132.0	139.6	146.9	142.9	132.0	129.7	137.5	138.1	137.1	135.8
7.	Clothing	9	100	189.8	229.6	291.6	237.2	182.8	163.6	157.1	158.1	157.5	155.4
8.	Rent	6	100	134.0	147.4	163.5	176.7	177.4	169.2	164.1	164.2	161.7	159.5
9.	Club	13	100	110.0	121.0	169.0	179.0	191.0	204.0	208.0	213.0	220.0	230.0
	Average Weighted Index Nos	100	100	132.1	146.1	180.0	168.7	156.7	153.5	154.6	156.4	158.3	158.3

	Items	Weights 1914	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
1.	Food and Groceries	19	149.4	141.4	132.0	109.7	97.8	93.8	96.1	97.2	96.1	102.6	96.2
2.	Tobacco	4	176.3	167.0	168.7	178.4	172.0	168.0	170.5	166.5	165.9	165.9	164.2
3.	Servant	17	155.5	155.5	152.9	138.0	124.7	115.8	123.7	127.4	125.7	130.0	128.2
4.	Light and Water	2	234.8	216.8	216.8	195.1	195.1	195.1	195.1	187.9	180.6	180.6	170.5
5.	Transport	9	93.1	89.7	85.5	96.2	89.0	85.4	84.5	82.4	80.0	81.4	81.5
6.	Education	21	135.5	135.0	133.5	130.7	130.9	129.3	129.7	130.8	131.8	134.5	133.5
7.	Clothing	9	151.9	141.0	139.8	139.8	132.3	124.1	121.6	119.5	119.5	119.5	119.5
8.	Rent	6	159.5	155.3	156.1	160.5	160.1	158.4	159.5	157.7	157.4	157.7	159.4
9.	Club	13	248.0	249.0	229.5	201.6	166.5	146.4	146.4	146.4	146.4	149.6	154.8
	Average Weighted Index Nos	100	158.8	155.1	149.7	139.9	129.2	122.6	124.4	124.7	124.0	127.1	125.9

Sources: **Malaya, Average Prices, Declared Trade Values, Exchange, Currency and Cost of Living 1936**, Singapore, Government Printers, 1937, p.67, **Ibid., 1937**, Singapore, Government Printers, 1938, p.325, **Ibid., 1938**, Singapore, Government Printers, 1939, p.68

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on food and groceries, tobacco, clothing and rent from 1914 to 1939. Multiplying per capita consumer expenditure in each year with Malay labor population [step (3) in Figure 4.1] gives us Malay labor private consumer expenditure in current prices, year by year, from 1914 to 1939. Similar exercises were undertaken for the other standards. Aggregating across standards in each year yields total expenditure of these items in current prices [step (4) in Figure 4.1].

What we have done thus far is to start with expenditures incurred in the 1930s and adjusted them for changes in price levels in order to obtain estimates for other years. The implicit assumption up to step (4) is that real expenditure per capita has remained constant over time. We now want to relax this assumption by using a real earnings index, step (5), in order to obtain a consumption series that takes into account changes in real income over time, step (6). Ideally such an index should be constructed using the weighted average of wages in all sectors of the economy. Unfortunately, we do not have the data to construct such an index. In fact the only consistent series available for the purpose at hand is the minimum wage rates of estate Indian rubber workers, for which an unbroken series (albeit from different sources) is available for the period 1913-17 and 1924-39. The nominal wage rate for the missing years, 1918-20, was assumed to be the same as that for 1917,[3] and it was further assumed that this trend continued to include the years 1921-23. This wage series was first transformed into an index and then deflated using a consumer price index to obtain an earnings index expressed in real terms (Figure 4.2).

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[3] Based on a comment, "the Indian labourer's wages have remained practically stationary" from 1912 to 1920, *Report of the Executive of the General Labor Committee, British Malaya, 1920*, p. 3.

Figure 4.2
Real Earnings Index, 1913-39 (1936=100)

Sources: The Labour Code, 1912, *Federated Malay States, Government Gazette*, Vol. IV, 1912, Kuala Lumpur, Government Printing Office, p. 607-75; *Report on the Indian Labor Emigration to Ceylon and Malaya*, Majoribanks, 1917, Madras, Government Press, p. 34; *Report of the Executive of the General Labour Committee, British Malaya*, 1920, Kuala Lumpur, Government Printing Office, p. 3; *Memorandum Presented to The V.S. Srivasa Sastri, P.C., C.H., on Deputation to Malaya*, On Behalf of The Government of India by The Selangor Indian Association, Kuala Lumpur, The Young Men's Indian Association, Sentul, The Coastal Indian Association, Klang, 1937, Kuala Lumpur, Malayan Printers, p. 3; Reprint of Report on the Condition of Indian Labour in Malaya, by Srivasa Sastri, *FMS Legislative Council Proceedings*, Kuala Lumpur, 1937, Kuala Lumpur, Government Printers, C. 79; *Annual Report Selangor*, 1937, p. 68, 1938, p. 60, 1939, p. 31; *Annual Report Perak*, 1939, p. 33.

The following income elasticities of demand were used to adjust our expenditure series for changes in real income over time: 1.0 for beverages, tobacco, clothing, domestic servants, and transport (other than railway), and 0.8 for rent. In the case of food and groceries, it was assumed that 50% of consumption was invariant with respect to income and the other 50% varied with income with an elasticity of 0.6. To give an example. If the base year (t) per capita expenditure on rent is R_t and if the real earnings index increases from 1 in year t to 1.3 in year t+1, per capita expenditure on rent in year t+1 (PCR_{t+1}) is calculated as follows:

$$PCR_{t+1} = \$R_t + \left[\$R_t \times {}^{(1.3-1)}\!\!/_1\right] \times 0.8 = \$B$$

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If the real earnings index increases to 1.5 in year t+2, per capita rental expenditure in year t+2 is calculated as:

$$PCR_{t+2} = \$B + \left[\$B \times {}^{(1.5-1.3)}\!/_{1.3}\right] \times 0.8$$

In the final step, estimates obtained from the direct and indirect methods were combined to give us private final consumption expenditure in current prices [step (7) in Figure 4.1].

The procedure for obtaining the 1900-13 series is similar to that described above, the major difference being there is now much less data to work with. Consequently, there is in all likelihood a larger margin of error in the estimates for this period. As in the case for 1914-39, series on education, medical services, utilities and railway transport were obtained using the direct method, whereas for food, tobacco, clothing, rent, domestic servants and clubs the indirect method was used. Consumption patterns were classified into five standards instead of six. Table 4.5 lists the annual per capita expenditure by standard for selected years and these served as our starting points.

There are differences in the way expenditure series on major objects of consumption were constructed for each standard. In the case of Malay labor standard, expenditure on food was computed based on the information that a Malay laborer was paid 11 cents worth of rations per day from 1899 to 1913. The corresponding rate was 15 cents and 2 annas respectively for Chinese labor and Indian labor standards. Expenditures on other items were computed by assuming that they constituted a percentage of expenditure on food (Table 4.5). Estimates for European and Asiatic clerical standards were prepared using 1914 figures and then deflating them by a cost of living index. Cost of living indices for food, beverages, tobacco and clothing were constructed based on the import unit value of these commodities, the index for domestic servants on trends in public sector wage rates, and the index for transport

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Table 4.5
Annual Per-capita Private Consumption Expenditure by Standard
(1899-1913) -Selected Years

| Standard Major Objects	European Standard [1] (1914)	Asiatic Clerical Standard [1] (1914)	Malay Labor Standard	Chinese Labor Standard	Indian Labor Standard
Food and Groceries	$455.45	$112.30	$ 35.04 (1899)	$52.20 (1899)	$20.39 (1899)
Beverages and Tobacco	$101.65	$4.55	4% of food consumed each year	4% of food consumed each year	4% of food consumed each year
Clothing	$206.01	$20.09	10% of food consumed each year	10% of food consumed each year	10% of food consumed each year
Rent	$125.49	$22.37	4% of food, beverages and tobacco and clothing consumed each year	4% of food, beverages and tobacco and clothing consumed each year	4% of food, beverages and tobacco and clothing consumed each year
Domestic Servants	$428.52	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Transport (Other than Railways)	$225.12	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Clubs	$140.68	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Note:

1. Based on Singapore figures. It was assumed that households in Malaya consumed 90% of the amount consumed by the respective households in Singapore. Per capita consumption was derived based on the household size of each standard household. 1914 per capita for each major object for each standard was derived by deflating the per capita consumption of each major object in 1930 of each standard by the respective cost-of-living index of 1930 (1914=100) of each standard.

Sources:

1. Report of the Commission on the Temporary Allowance, Family Budget 1930, Singapore.

2. Report of the Commission appointed to enquire into the conditions of indentured labour in the Federated Malay States, No.11 of 1910.

Figure 4.3
Real Earnings Index, 1899-1913 (1899=100)
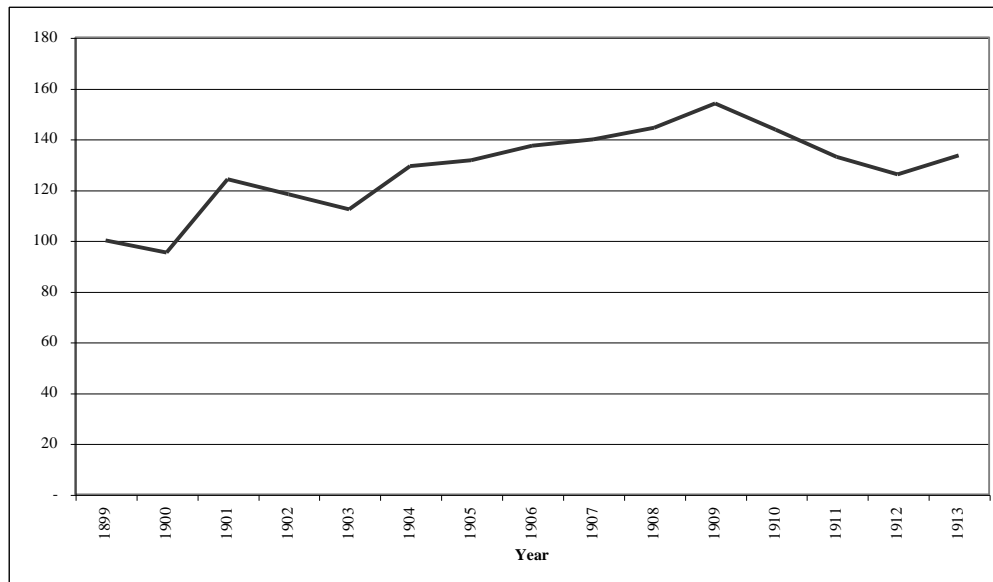
services on transport allowances provided to government employees. The index for rent was constructed based on Singapore rental rates, while for clubs the average of the indices on food and beverages was used.

A real earnings index (Figure 4.3) based on public sector wage rates (excluding labor) was then applied to the consumer expenditure series for European and Asiatic clerical standards to adjust for changes in real income. The income elasticities of demand used are the same as in 1914-39. Finally, combining estimates from the direct and indirect methods yields private final consumer expenditure in current prices.

5. Government Consumption

Government consumption figures were put together from information contained in financial records of government departments. A particular methodological problem concerns the presentation of statistics in these records, which was not standardized across administrative units. On account of these differences, estimates of Malaya were

assembled from three separate exercises, corresponding to estimates for (a) the SS territories of Penang and Malacca, (b) FMS, and (c) UMS.

The basic procedure was to distinguish between public expenditures incurred by general departments (producers of government services) from those incurred by trading departments (industries). The latter do not by definition form part of government final consumption expenditure and were therefore not included in our estimates.[4] Consumption figures were obtained by computing output *less* sales of goods and services by producers of government services. Government output was computed by summing up compensation of public employees (emoluments) and intermediate consumption of goods and services by general departments. Fixed capital formation on defense (except housing) was treated as intermediate consumption and thus included as part of government output. Depreciation allowances were not included in our estimates because of lack of data as were expenditures incurred by municipalities, town and rural boards. Their contribution to total government consumption expenditure would not have been significant.

The general presentation of public finances in the records was in the form of expenditures of different heads of department. In the development of each department's administrative history, the list of heads changed, reflecting new needs. There were departments that were deemed irrelevant and were thus closed down. There were others that were integrated and there were those that were newly created. In addition, the financial obligations of these heads too changed over time, reflecting their evolving relative importance.

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[4] Trading departments refer to Post & Telecommunications, Government Printing, Public Works, Drainage & Irrigation, Central Electricity Board, Government Monopoly (opium), Railways and Water Boards.

Another problem concerns the varying quality and quantity of the source materials. The SS records are relatively complete and detailed for the 1900-09 period. Mainly consolidated accounts are available for the 1910-39 period with no breakdown of public spending by type of expenditure. The 1900-09 average ratios of emoluments and intermediate consumption to government output were used to extrapolate forward to 1939. FMS expenditures for the 1930-39 period are reported in great detail in the records, while coverage for the earlier years is of a more general nature. The main problem lies in the patchiness of the sources with regard to the UMS. Financial records of these states are practically non-existent in the early period. It was only after they were brought under British control that these states began keeping records on government finances, and even then only in a cursory manner. In instances where only aggregate figures are available, FMS ratios of emoluments and intermediate consumption to government output were used as guidelines to obtain the corresponding UMS figures. Similarly for the period prior to British administration, the average of the ratios for the period 1912-14 was extrapolated backwards to 1900.

6.   Gross Capital Formation

Gross capital formation was built up by adding together investment in three sectors: planting of perennial crops, machinery and equipment (M&E), and construction. Changes in stock are not concluded due to lack of data.

Perennial Crops

The perennial crops examined are rubber, oil palm, coconut, arecanut, gambier, coffee and tea. No estimates were made for other fruit-bearing trees such as durians, rambutans, chikus, langsat, mangosteens and mangoes because of data unavailability.

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In preparing the estimates I follow the standard practice in Malaysia of classifying all expenses sunk into perennial crops prior to their reaching bearing age as an investment expense. Once the trees begin to yield an income, expenditures on fertilizers and other maintenance are treated as a production expense. The following information was compiled for each crop:

(1) Newly planted acreage each year from 1900 to 1939.
(2) Number of years it takes for the crop to reach bearing age.
(3) Cost per acre of bringing the crop into production.

Yearly estimates of real investment in a specific crop at varying stages of maturity were calculated by multiplying total acreage with base year cost estimates. An index based on the earnings of rubber tappers was then used to adjust these estimates to arrive at investment figures expressed in current prices.

Series on newly planted acreage for each crop was obtained by taking the year-to-year changes in total planted acreage. This method should give a fairly accurate picture of new plantings so long as there was not much replanting activity being undertaken. Consider the following example. If old coconut trees were completely removed and the land replanted with coconut seedlings, the records will show no change in total planted acreage of coconuts, and our estimates will understate the actual investment in coconut planting. If, instead, the land was converted to rubber, then the records will show an increase in total rubber acreage, and this new investment in rubber will be included in our estimates. The historical records indicate that there was no significant replanting that was undertaken for all crops considered here, except in the important case of rubber.

There were some years in which data on planted acreage were not available and it was necessary to make some broad assumptions. The method of estimation employed was to assume constant annual increases in newly planted acreage for the missing years.

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If the records show a reduction in total acreage planted between any two years, our estimates show no new plantings and hence no investment in those years.

In the case of rubber and coconut, a distinction was made between smallholding and estate cultivation.[5] This is because the cost structure of the latter was considerably higher than that of the former, necessitating use of different cost-per-acre estimates when calculating investments. In some years, the breakdown of total acreage into smallholding and estate cultivation could be obtained directly from source materials. In other years, this information was not directly available, and the breakdown was derived in two stages. First, estate acreage was established based on the assumption that its share of total acreage was the same as that of the nearest year for which data on both total acreage and estate acreage were available. Second, smallholding acreage was obtained by taking the difference between total and estate acreage.

The cost per acre estimates used were governed by data availability. The calculations took into account the cost of land preparation (including felling, clearing, stumping and burning, soil conservation and draining), lining, holing and planting, protection from weather and disease (including use of insecticides, pesticides and fertilizer), pruning, weeding, and upkeep until the trees reach maturity. Contemporary estimates were used wherever possible. Since our period spans 40 years, an attempt was made to use varying cost estimates for different sub-periods in order to take into account more accurately changes in costs over time. This was possible for some, but not all, crops. For estate rubber, three sets of cost estimates were used for the entire period. For arecanut, only one set of estimates could be found from the records. Even for the same crop at the same point in time and employing the same type of cultivation,

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[5] This did not apply to the other crops. The cultivation of tea, coffee and oil palm was primarily an estate undertaking, while gambier and arecanut were mainly smallholder crops.

the costs of opening up an acre of land could vary considerably depending on location, type of land and other local circumstances. It is, of course, not possible to cover all cases, and resort to some generalizations was necessary.

Machinery and Equipment (M&E)

It was assumed that there was no M&E produced locally during the years 1900 to 1939. This means that total M&E expenditure equals net imports valued at market prices. This assumption is not unrealistic. The development of a domestic manufacturing sector was of minor interest to the colonial authorities, who were satisfied that Malaya should remain a supplier of raw materials to the industries of the western world. The result of this policy can be seen in Table 6.2. In the immediate post-war years, the share of GDP devoted to manufacturing (other than rubber processing) stood at less than 3%, although some allowance must be made for wartime destruction. In 1959 manufacturing's share remained low, at 3.6%. It seems unlikely that manufacturing's pre-war share was higher than 3 per cent, and most probably it was less. Moreover, whatever little manufacturing activity there was consisted primarily of industries directly related to the processing of raw materials,[6] although there were a few that specialized in the manufacture of M&E.[7] For the purpose at hand, the assumption that all M&E supplies came from abroad seems warranted.

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[6] These included rice, rubber and coconut oil mills. Other industries commonly mentioned are aerated water, match, tobacco, tapioca and pineapple packaging factories, sawmills, brick and tin-smelting works (*Malayan Year Book, 1937*: 104-111).

[7] For example, there were several foundries in the Kinta district of Perak which supplied a large part of the machinery for the tin mining industry. "These foundries have developed from a few blacksmiths' shops into an industry which in Ipoh and Kampar alone represents a capital of $1,027,396 and employs 565 fitters and unskilled workmen" (*Malayan Year Book, 1937*: 105).

Table 6.2
Manufacturing: Percentage Share of GDP at 1959 Factor Cost
Malaya

Year	1947	1948	1949	1950	1951	1952	1953
Manufacturing: Rubber Processing	3.9	4.0	3.6	3.6	3.4	3.1	3.0
Manufacturing: Other than Rubber Processing	1.8	2.4	2.6	3.1	2.9	3.0	3.0

Year	1954	1955	1956	1957	1958	1959
Manufacturing: Rubber Processing	2.9	3.3	3.0	3.0	3.0	3.1
Manufacturing: Other than Rubber Processing	3.2	3.5	3.3	3.3	3.4	3.6

Source: Rao (1976), Table E, p. 105.

M&E net imports at cif values were compiled from trade statistics. Separate calculations were made for Penang and Malacca, FMS and UMS. The most detailed set of records exists for FMS for the period 1900-37 followed by Kelantan (1905-38 with missing years in 1912 and 1917) and Trengganu (1911-38 with 7 missing years). Data for the missing years were filled in by interpolation and extrapolation. There is no statistical information on Kedah and Perlis. Net import figures were calculated based on import trends in Kelantan, the closest to these two states in terms of economic structure. SS records are available from 1900 to 1939, and figures for Penang and Malacca were obtained by subtracting Singapore's net imports.

No commodity taxes were levied on M&E imports during this period so that cif and producers' values are identical. Trade and transport margins of 15% and 2% respectively were added to producers' values to arrive at market prices. The final step was to determine what proportion of net imports to capitalize. Some of these imports would have been used as inputs into construction activity, some as part of final consumption expenditure, some as intermediate consumption (repairs and maintenance) and some as current consumption in the case of military expenditure. It was not possible to determine these values from the historical records. Twenty percent of net imports was arbitrarily assigned for these purposes and the remaining 80% capitalized.

<u>Construction</u>

In theory construction output that is to be capitalized is computed by taking the output of the characteristic products[8] of the construction industry valued at purchasers' prices, *plus* construction on own account and for sale by other kinds of activity, *less* construction for military purposes (except housing), *less* construction activity related to maintenance and repairs. This method is not possible here. Colonial statistics on construction are extremely sparse.[9] No survey on construction output was carried out during this period.[10] Statistical records on housing were kept by municipalities, town and sanitary boards. The obvious shortcoming of these records is that they rarely took into account construction that did not have building permits and/or approval from the authorities. The result is that large numbers of dwellings belonging to the poorer classes were not included. There were at least a couple of housing commissions established in the 1920s to report on the issue of housing shortages in the SS and FMS, and these contain scattered references to the number and type of houses built in urban areas. Attempts to put together a series on construction expenditure using these figures did not produce plausible results.

One method is to inflate the value of a few basic materials used in construction such as cement, sawn timber, plywood, mild steel bars and rods, floor tiles and bricks using coefficients from input-output studies. Unfortunately, information on these items is scarce and no continuous series exist except for cement, and even then only for FMS. In the absence of reliable statistics it was finally decided to use data on cement imports

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[8] Defined as principal class of goods produced or services rendered by the construction industry.

[9] This condition is reflected in the comments of the superintendent of the 1947 census: "No Malaya census of population has, so far, produced any really significant housing statistics and this census provides no exception to that melancholy rule" (Del Tufo, 1949: 125).

to put together the series on construction. Cement imports into Penang, Malacca and UMS were derived based on some adjusted ratio of total merchandise imports into these territories to total imports of Malaya.[11] Construction surveys during 1967-73 show that the input value of cement to total output averaged 7%. In our estimates, the relationship was fixed at 4% and 6% for the periods 1900-22 and 1923-39 respectively, the rationale being that less cement was used in construction in the early years. Total construction expenditure that went into fixed capital formation was derived by deducting from total output of construction, expenditures on repairs and maintenance and on military construction (except housing).

7. Imports and Exports

Any attempt to put together a consistent historical series on imports and exports of Malaya is faced with the daunting problem of isolating the trade figures of Singapore, Labuan and Christmas Island from those of Malaya. Trade statistics as presented in the Colony of the Straits Settlements *Blue Book* series treat Singapore, Penang, Malacca, Labuan and Christmas Island as a single statistical entity. In 1921, SS trade statistics were integrated with those of FMS and UMS to form the British Malaya trade series.

The procedure adopted was to disaggregate the data so that trade statistics of Penang, Malacca, FMS and UMS could be calculated separately. Given the way the records are organized, it was also necessary to calculate separately, for each administrative unit, trade with Singapore and with countries other than Singapore. Totaling all these individual figures gives us the figures for Malaya. Care was taken to

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[10] The first construction survey was undertaken in 1963. Thereafter surveys have been carried out annually or biannually.

[11] The actual ratio is 2.2. However, it was felt that the ratio is too high for cement imports, and was adjusted downward to 1.8.

ensure that double counting was eliminated, so that the estimates do not include inter-state trade between the FMS, UMS, Penang and Malacca.

Another complication concerns the treatment of coin and bullion, which should not be included in the estimates of merchandise imports and merchandise exports. For some years, it was possible to identify and remove coin and bullion from the trade data; for other years, this was not possible. For most years where we have data, imports of coin and bullion accounted for less than 1% of total imports. The exceptions were in 1920 (when imports from Singapore were unusually high), 1925-27 (when imports of coin and bullion from countries other than Singapore were between 2% and 5% of total imports) and 1929 (when they were just over 1% of total imports). The same is true for exports. With the exception of 1933 and 1934, exports of coin and bullion accounted for less than 1% of total exports. Given these low percentages, it was decided not to adjust the data for those years where it was not possible to separate coin and bullion from the trade data.

There are no published statistics on invisible trade from 1900 through 1939. The earliest records on exports and imports of non-factor services are available from 1960. The figures for 1960-68 are given in Table 7.1. The table shows that between 1960 and 1968, merchandise exports and merchandise imports constitute about 92% and 90% respectively of total exports. It was assumed that these ratios prevailed from 1900 to 1939, and the figures on merchandise imports and merchandise exports were adjusted accordingly to obtain estimates on imports of goods and non-factor services and exports of goods and non-factor services.

Table 7.1
Merchandise Trade and Total Trade
1960-68

Peninsular Malaysia

Straits $ million

Year	Merchandise Exports	Total Exports	A as % of B	Merchandise Imports	Total Imports	D as % of E
	A	B	C	D	E	F
1960	2,915	3,113	93.6	2,118	2,303	92.0
1961	2,613	2,821	92.9	2,218	2,421	91.6
1962	2,612	2,821	92.6	2,424	2,643	91.7
1963	2,686	2,912	92.2	2,507	2,736	91.6
1964	2,765	3,025	91.4	2,550	2,842	89.7
1965	3,079	3,364	90.3	2,631	2,940	89.5
1966	3,095	3,377	91.6	2,668	3,014	88.5
1967	2,890	3,166	91.3	2,634	2,948	89.3
1968	3,189	3,491	91.3	2,857	3,230	88.5

Source: *National Accounts of Peninsular Malaysia, 1960-71*, Table 18, p. 76.

8. Economic growth in the early twentieth century: A preliminary assessment

GDP estimates allow a quantitative assessment of economic growth in Malaya during the first four decades of the twentieth century. It would of course be desirable to do this in both current and constant prices. Real GDP figures were arrived at by converting each expenditure component into constant 1914 prices. Table 8.1 summarizes the deflation procedures used. The results are plotted in Figures 8.1 through 8.10 and tabulated in Tables 8.3 through 8.5.

Table 8.1
Summary of Deflation Procedures

Expenditure Category	Method of Deflation
1. Private Final Consumption	Overall Consumer Price Index
2. Government Final Consumption	
2.1 Output (Weighted)	
2.1.1 Wages and Salaries	Earnings Index of Govt. Clerical Workers
2.1.2 Intermediate Consumption	Overall Consumer Price Index
2.2 Sales	Overall Consumer Price Index
3. Gross Capital Formation	
3.1 Construction	Import Unit Value Index of Cement
3.2 Machinery and Equipment	United Kingdom M&E Price Index
3.3 Perennial Crops	Rubber Tappers Earnings Index
3.4 Change in Stocks (no data)	
4. Exports of Goods and Services	Export Unit Value Index of Merchandise Exports
5. Imports of Goods and Services	Import Unit Value Index of Merchandise Imports

At the beginning of the twentieth century, Malaya's real GDP per capita stood at roughly Straits $65. By 1939 it had increased to Straits $222. Calculated for the entire

period (1900-39), this works out to an average annual rate of growth of real per capita GDP of 3.2% (Table 8.2). During this period real GDP averaged 6% annually against a population growth rate of 2.8% a year. The economy registered a trend rate of growth of 4.2% over the same period,[12] brought about by a trend rate of growth of real GDP of 6.6% vis-à-vis that of population of 2.4%.[13] Growth was higher during 1900-19 compared to 1920-39. The trend growth rate of real GDP per capita was 5.3% during 1900-19 and slowed down considerably to 2.1% during 1920-39.

Table 8.2
Trend and Average Annual Growth Rates (%), 1900-39

Period	Real GDP	Population	Real GDP Per Capita
1900-39	6.6 (6.0)	2.4 (2.8)	4.2 (3.2)
1900-19	8.7 (8.3)	3.4 (3.1)	5.3 (5.2)
1920-39	4.3 (3.8)	2.2 (2.6)	2.1 (1.2)

Note: Figures in parentheses refer to the average annual growth rates.

There was a greater degree of volatility in annual rates of growth during the interwar years. Being a small open economy that was dependent on only two export commodities (rubber and tin) for most of its export earnings, Malaya was particularly vulnerable to external shocks caused in the main by sudden changes in world demand for these commodities.[14] Nominal GDP fell by 32.9% in 1921, 15.8% in 1927, 32.1% in 1930, 41.8% in 1931, 15.9% in 1932 and 28.8% in 1938. The 1921 economic downturn

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[12] This figure compares with van der Eng's (1994: 101) estimate of 4.1% for the period 1900-29.

[13] Trend growth rates are derived by fitting a linear time trend to the natural log transformed data. Annual growth rates refer to exponential growth.

[14] The extreme instability of the country's export sector has been well documented. In a study of 18 developed and 45 developing countries over two periods — 1946-1958 and 1954-1966 — Erb and

was caused by deteriorating rubber prices amid a worldwide trade depression that resulted in acute distress for those associated with the that industry. The statistics indicate sharply lower levels of private consumption, capital formation and exports in 1921. The "Great Floods" that hit Malaya at the beginning of 1927 took a massive toll on rubber and copra exports during that year. Drastic reductions in rubber and tin export quotas and low prices for these commodities largely explain the downturn in 1938.

Given the size of the export sector in the Malayan economy (Figure 8.15), changes arising from that sector are likely to have significant spillover effects on other sectors of the economy. A change in export proceeds directly affects government revenue as well as the incomes of all those engaged in the export sector. These changes are in turn transmitted to the rest of the economy through multiplier and accelerator effects. Dawe (1993) has shown that export instability causes spillovers that affect the structure of relative prices in the economy, which in turn affects investment behavior and hence growth. Despite these vulnerabilities, overall growth in Malaya during the first four decades of the twentieth century has been impressive.

Schiavo-Campo (1969) found that the Malaysian export sector experienced a higher degree of instability than the export sector of other countries.

Figure 8.1
Gross Domestic Product in Current and Constant (1914) Prices
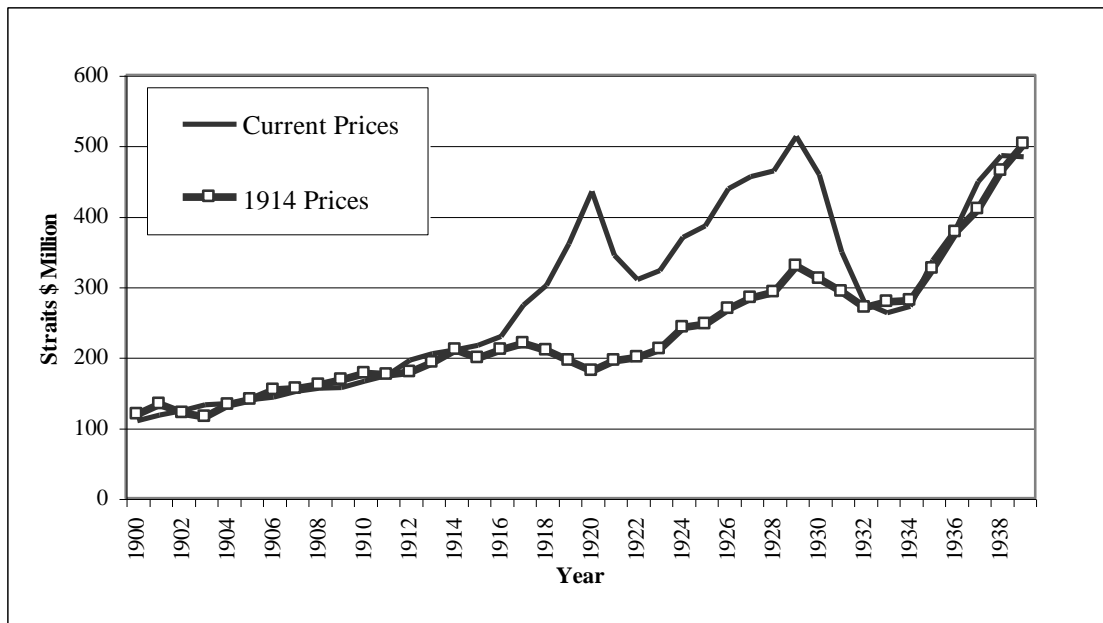**1900-39**
Malaya
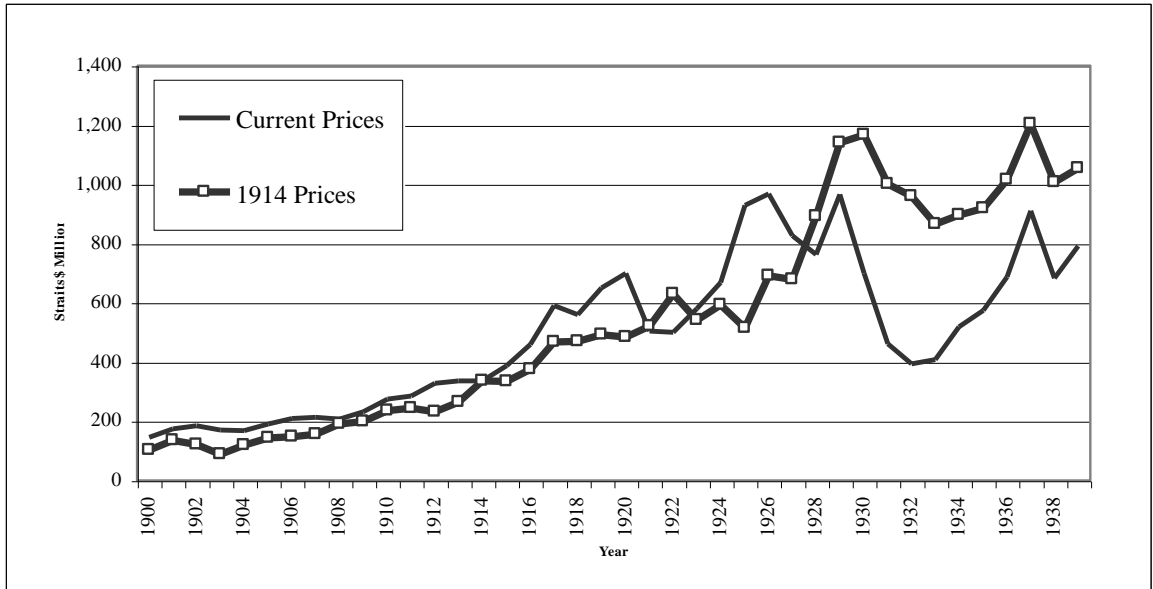
Sources: Tables 8.3 and 8.4.

Figure 8.2
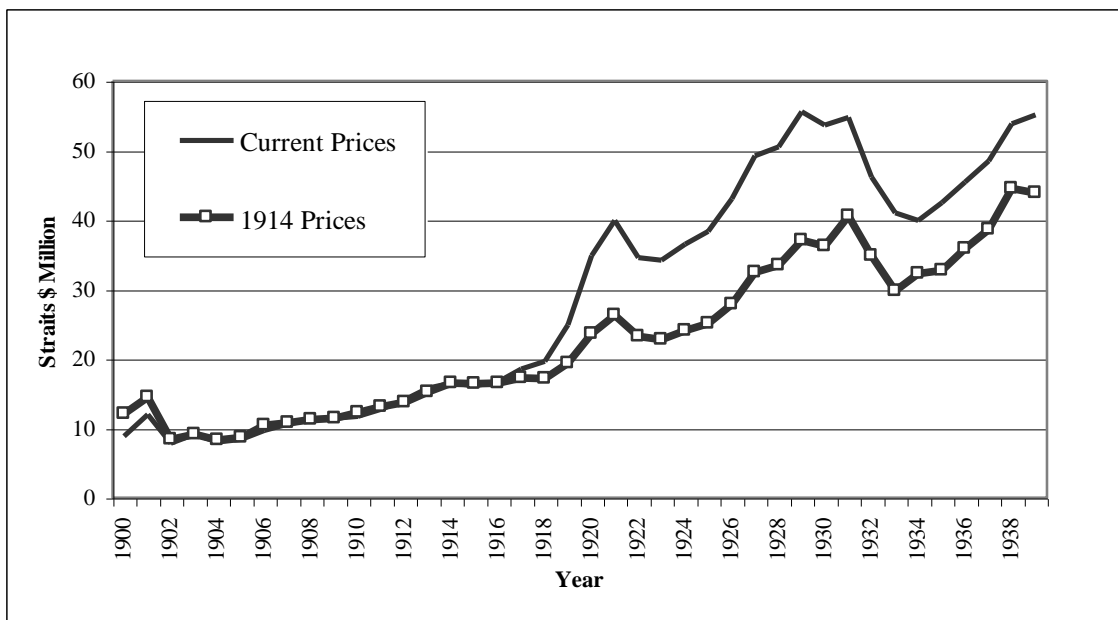**Gross Domestic Product Per Capita in Current and Constant (1914) Prices**
1900-39
Malaya

Source: Table 8.5.

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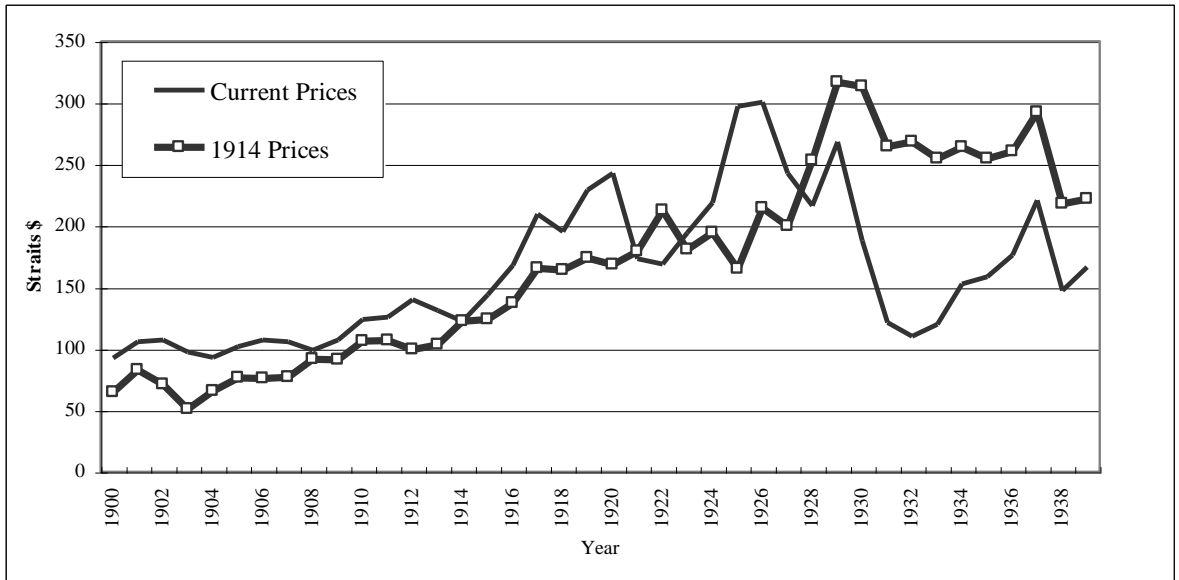
Figure 8.3
Private Final Consumption Expenditure in Current and Constant (1914) Prices
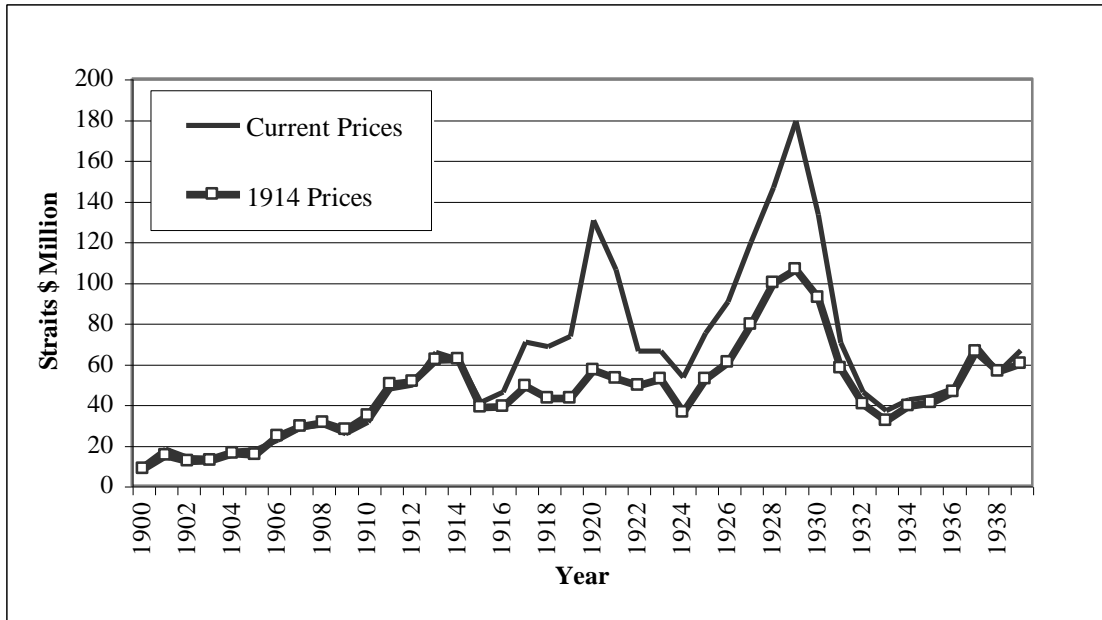**1900-39**
Malaya

Sources: Tables 8.3 and 8.4.

Figure 8.4
Government Final Consumption Expenditure in
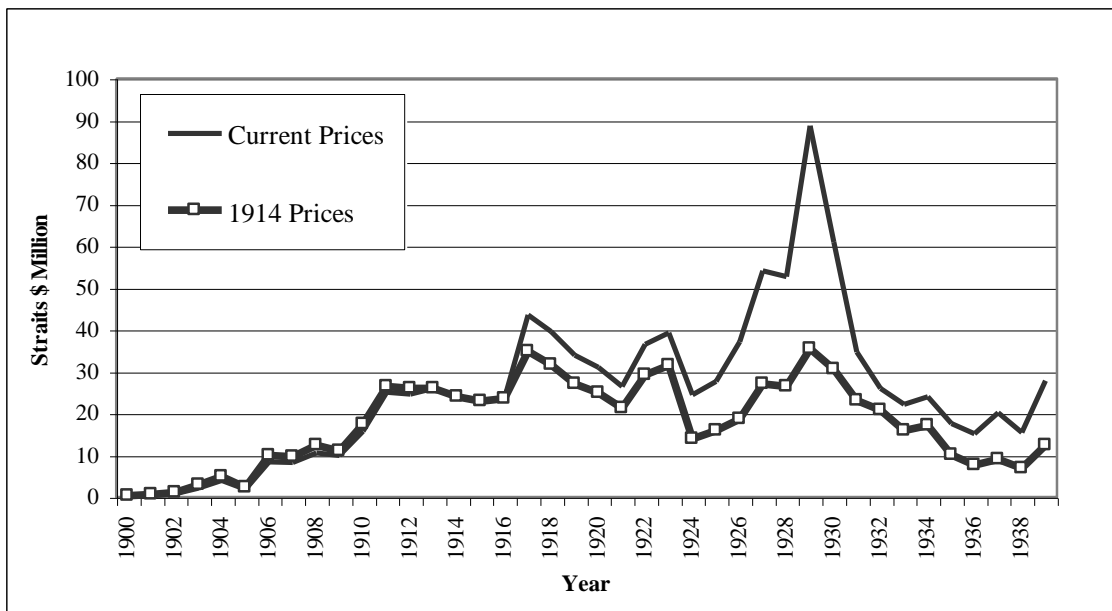**Current and Constant (1914) Prices**
1900-39
Malaya

Sources: Tables 8.3 and 8.4.

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Figure 8.5
Gross Capital Formation in Current and Constant (1914) Prices
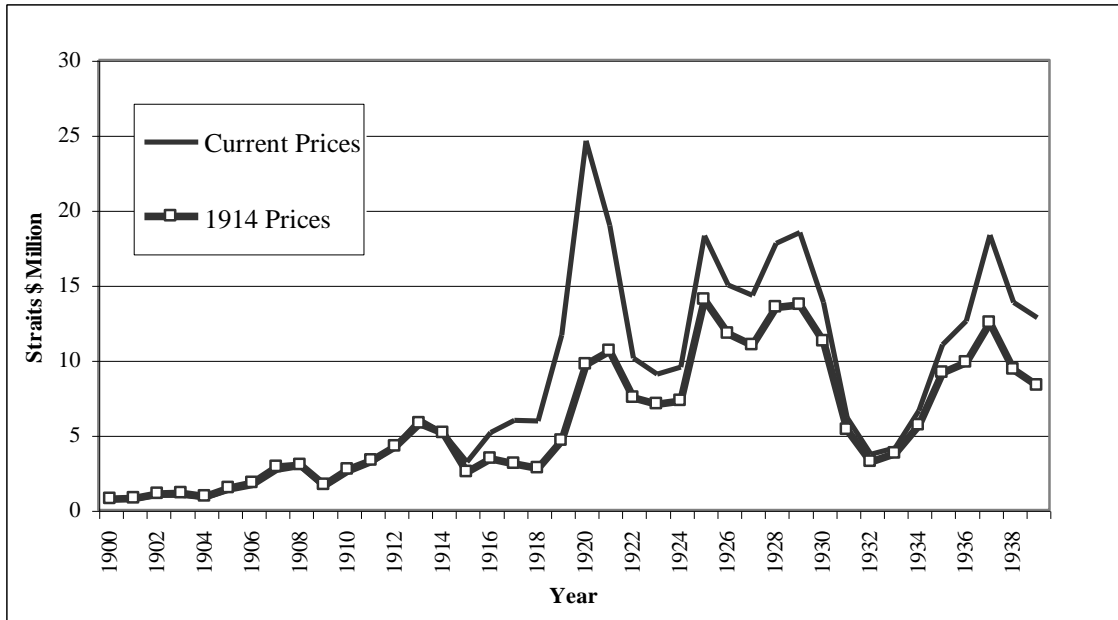**1900-39**
Malaya

Sources: Tables 8.3 and 8.4.

Figure 8.6
Gross Domestic Capital Formation of
Perennial Crops in Current and Constant (1914) Prices
1900-39
Malaya
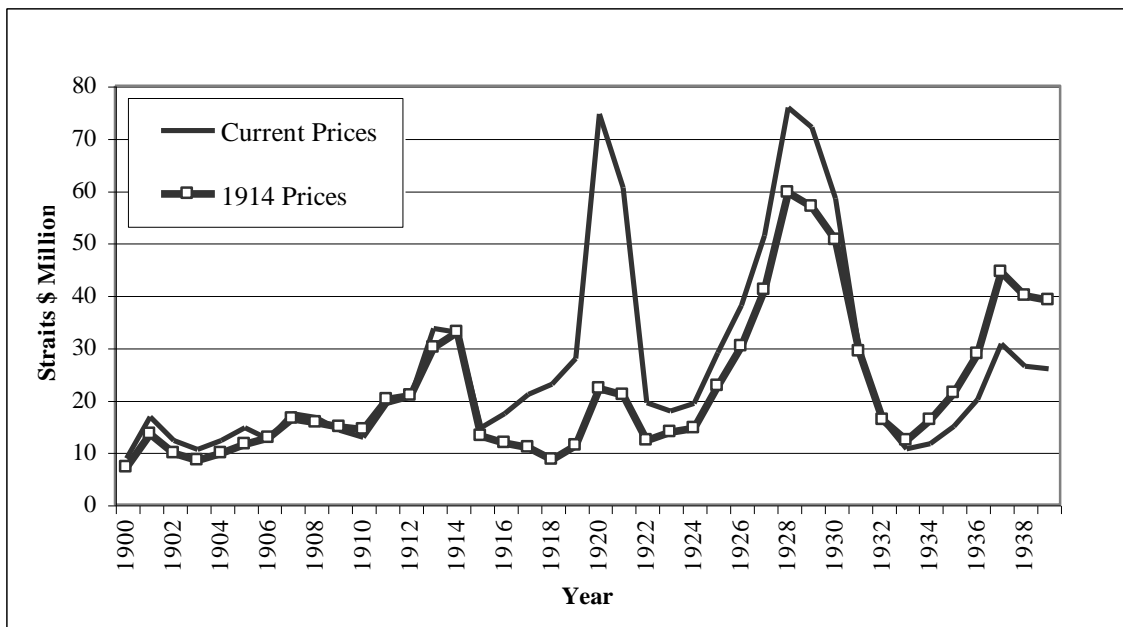

Source: See main text, sections 6 and 8.

Figure 8.7
Gross Capital Formation of
Machinery & Equipment in Current and Constant (1914) Prices
1900-39
Malaya

Source: See main text, sections 6 and 8.

Figure 8.8
Gross Capital Formation of
Construction in Current and Constant (1914) Prices
1900-1939
Malaya

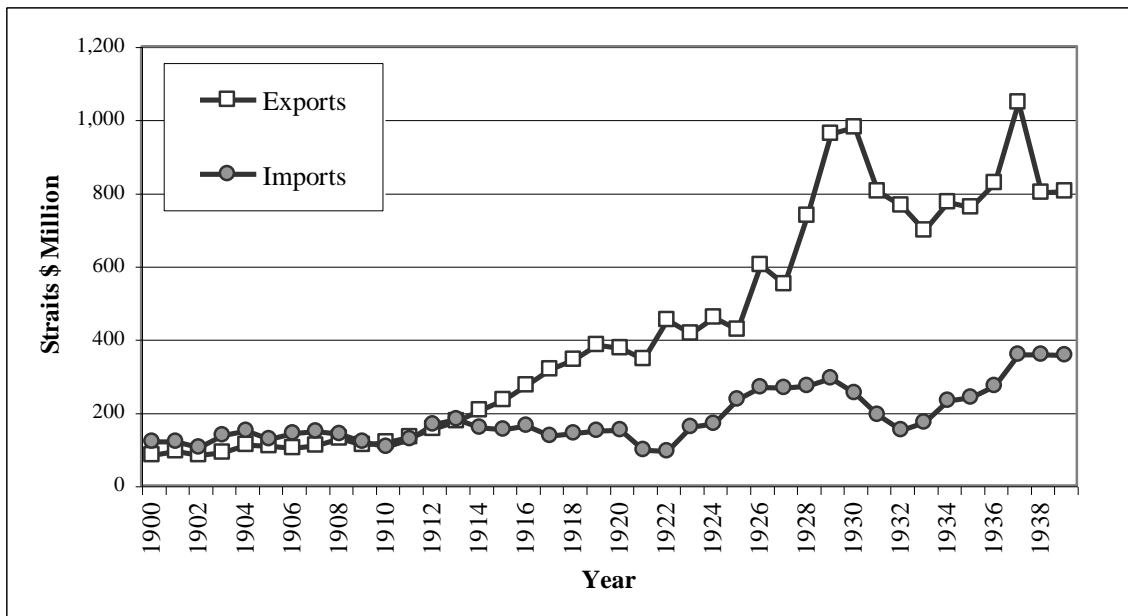
Source: See main text, sections 6 and 8.

Figure 8.9
Exports and Imports of Goods and Services in Current Prices
1900-39
Malaya
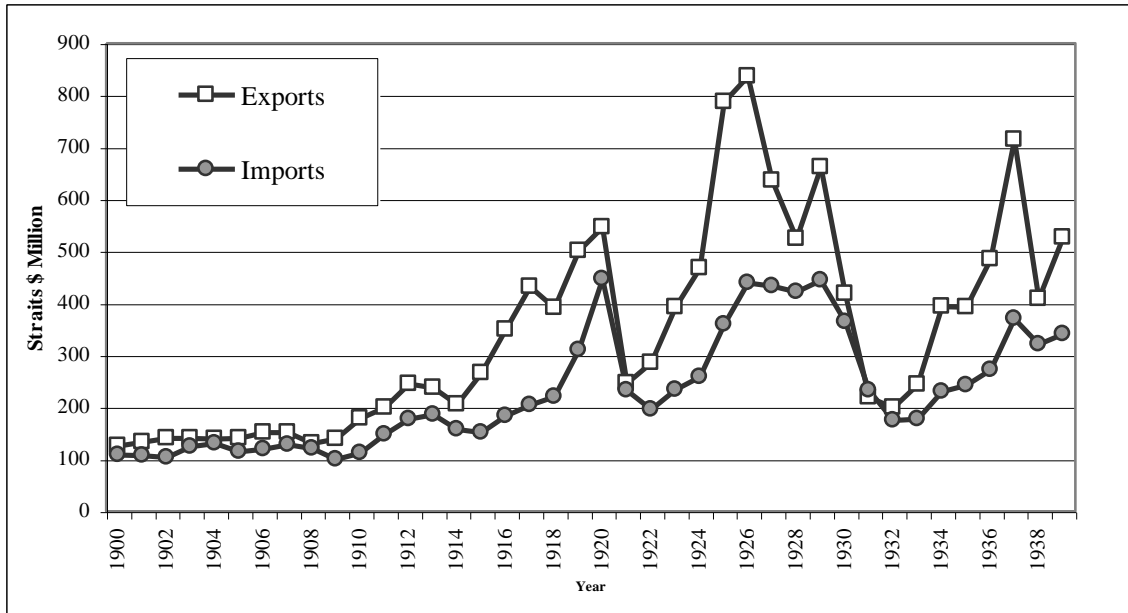
Source: See main text, section 7.

Figure 8.10
Exports and Imports of Goods and Services in Constant (1914) Prices
1900-39
Malaya

Source: See main text, sections 7 and 8.

Figure 8.11
Percentage Share of Food, Beverages and Tobacco in
Private Final Consumption Expenditure in Current Prices
1900-39
Malaya and Selected Countries
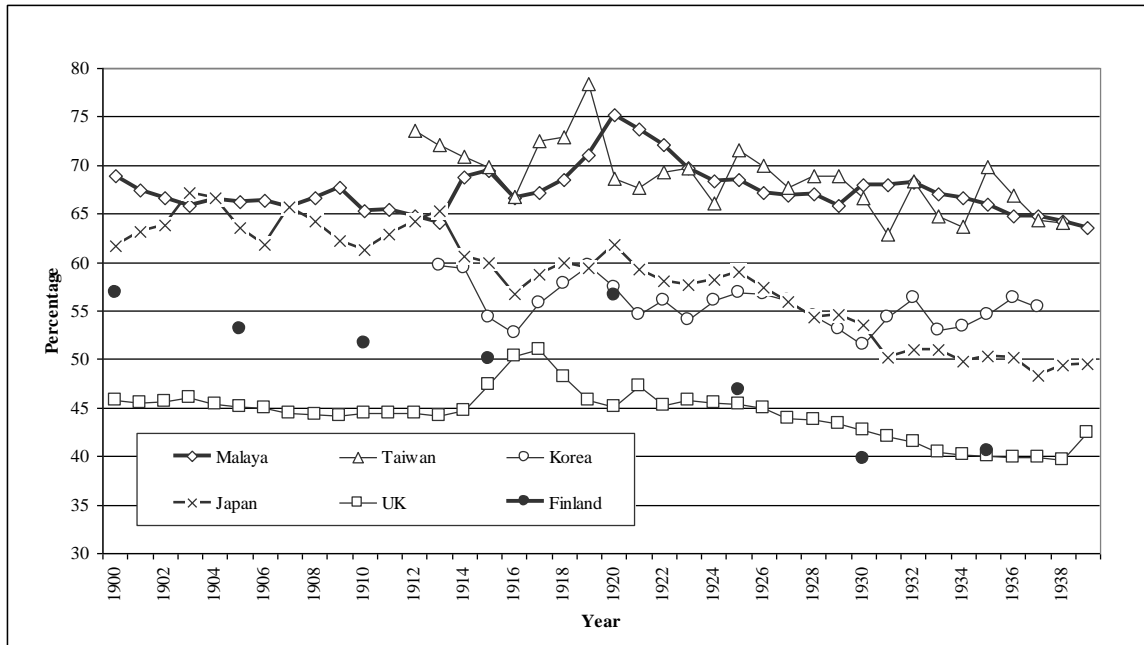
Sources: See main text; Stone and Rowe (1966); Ohkawa *et al* (1974); Mizoguchi and Umemura (1988); Hjerppe (1996).

Figure 8.12
Percentage Share of Private Final Consumption Expenditure in
Gross Domestic Product in Current Prices
1900-39
Malaya and Selected Countries
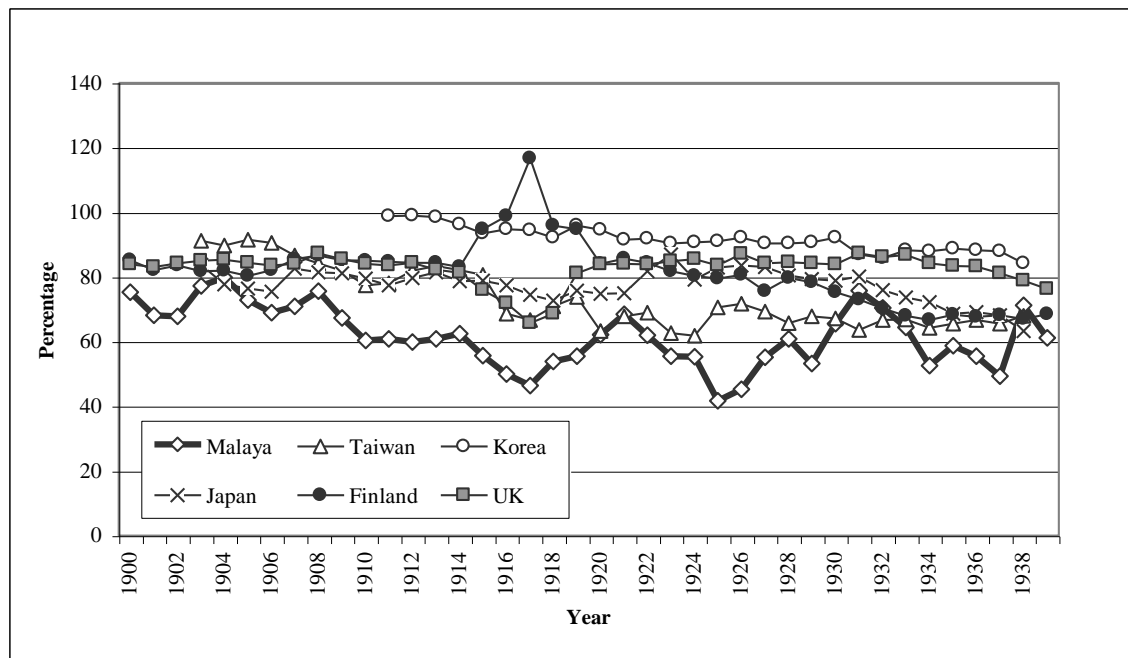
Sources: Table 8.3; Feinstein (1972); Mizoguchi and Umemura (1988); Hjerppe (1996).

Figure 8.13
Percentage Share of Government Final Consumption Expenditure in
Gross Domestic Product in Current Prices
1900-39
Malaya and Selected Countries
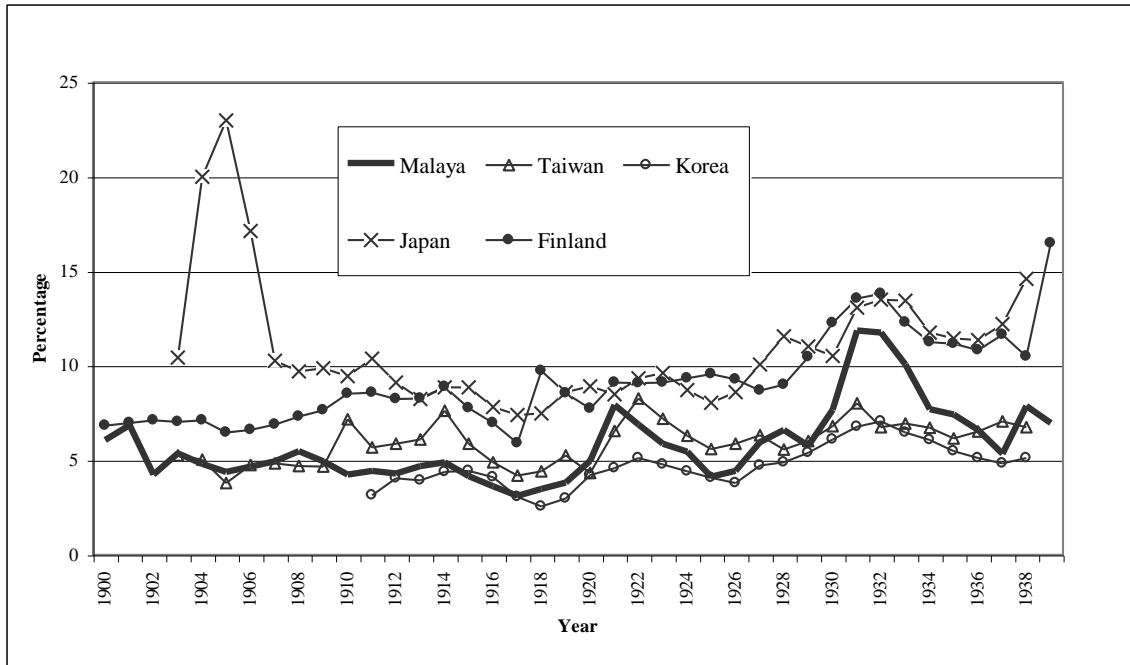
Sources: Table 8.3; Mizoguchi and Umemura (1988); Hjerppe (1996).

Figure 8.14
Percentage Share of Gross Capital Formation in
Gross Domestic Product in Current Prices
1900-39
Malaya and Selected Countries

Sources: Table 8.3; Mizoguchi and Umemura (1988).

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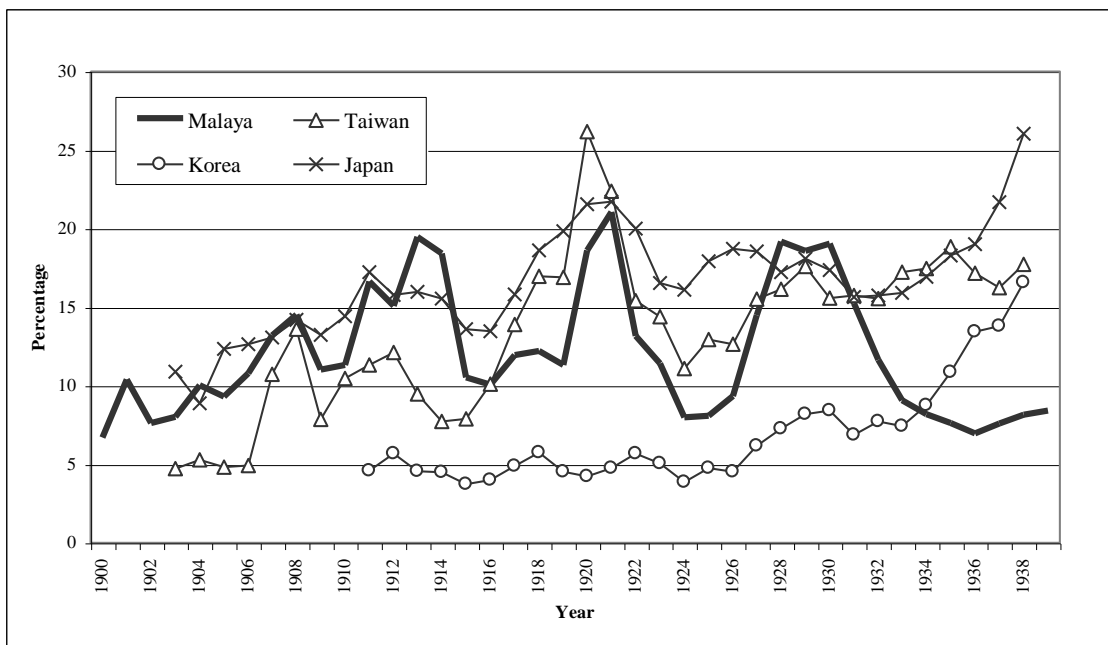
Figure 8.15
Percentage Share of Exports of Goods and Services in
Gross Domestic Product in Current Prices
1900-39
Malaya and Selected Countries
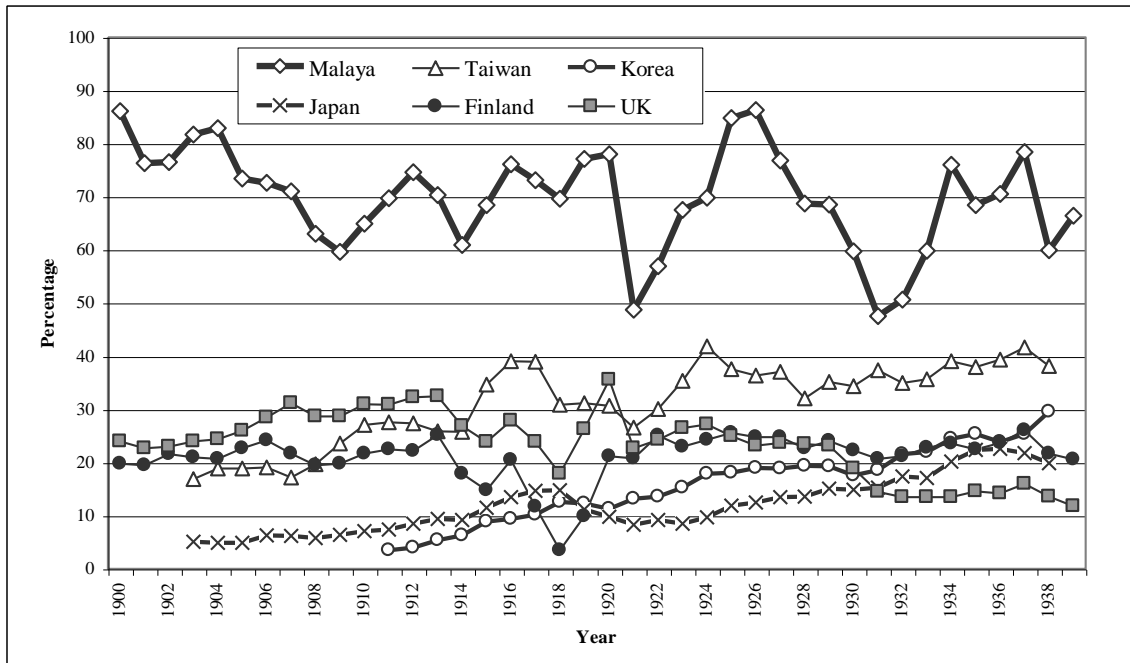
Sources: See main text, section 7; Feinstein (1972); Mizoguchi and Umemura (1988); Hjerppe (1996).

Figure 8.16
Percentage Share of Imports of Goods and Services in
Gross Domestic Product in Current Prices
1900-39
Malaya and Selected Countries

Sources: See main text, section 7; Feinstein (1972); Mizoguchi and Umemura (1988); Hjerppe (1996).

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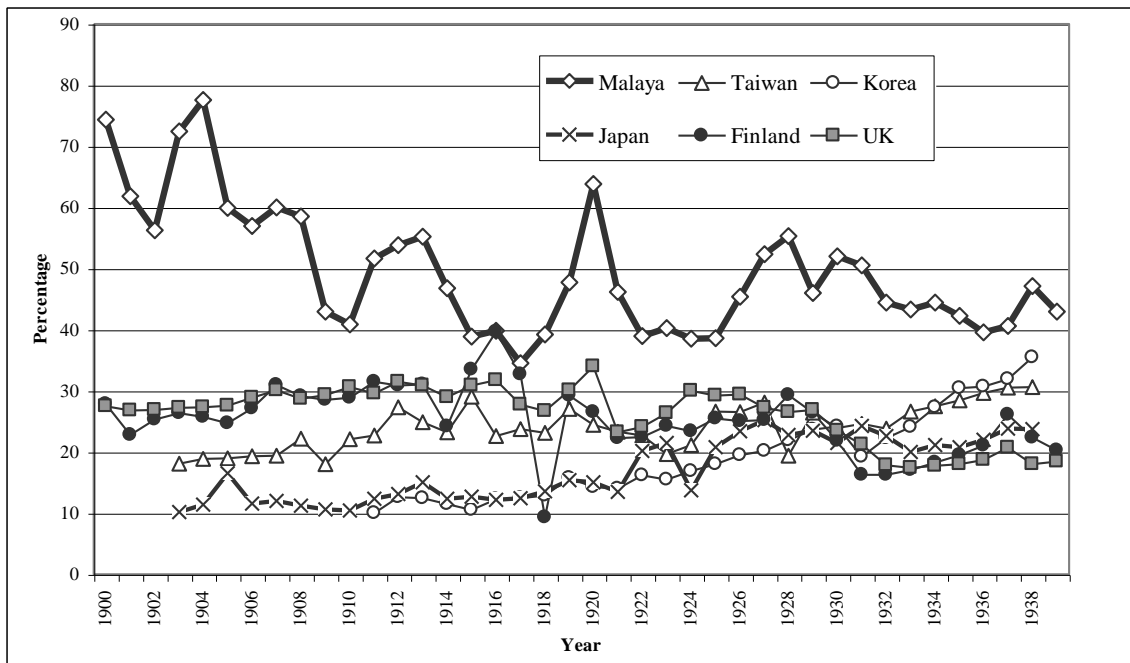
Table 8.3
Gross Domestic Product in Purchasers' Value in Current Prices
1900-39
Malaya

(Straits $ Million)

	Private Final Consumption Expenditure		Government Final Consumption Expenditure		Gross Capital Formation		Net Exports of Goods and Services		GDP at Market Prices
	[1]	% of GDP	[2]	% of GDP	[3]	% of GDP	[4]	% of GDP	[5]=[1]+[2]+[3]+[4]
1900	109.3	75.3	8.8	6.1	9.7	6.7	17.1	11.8	145.1
1901	118.1	68.1	11.9	6.9	18.0	10.4	25.2	14.5	173.3
1902	124.6	67.9	7.8	4.2	14.0	7.6	37.2	20.3	183.6
1903	132.1	77.3	9.2	5.4	13.7	8.0	16.0	9.4	171.0
1904	134.3	79.8	8.1	4.8	16.9	10.0	8.9	5.3	168.2
1905	139.4	72.9	8.4	4.4	17.8	9.3	25.7	13.4	191.2
1906	143.6	68.9	9.7	4.7	22.5	10.8	32.6	15.6	208.4
1907	151.5	70.9	10.6	5.0	28.2	13.2	23.5	11.0	213.7
1908	156.0	75.5	11.3	5.5	30.0	14.5	9.3	4.5	206.5
1909	156.7	67.4	11.5	4.9	25.6	11.0	38.7	16.6	232.5
1910	165.8	60.3	11.7	4.3	31.1	11.3	66.3	24.1	275.0
1911	174.0	60.9	12.7	4.4	47.5	16.6	51.6	18.1	285.8
1912	196.1	59.8	14.1	4.3	49.5	15.1	68.2	20.8	327.9
1913	204.9	60.8	15.8	4.7	65.6	19.5	50.8	15.1	337.1
1914	210.6	62.5	16.5	4.9	62.0	18.4	47.7	14.2	336.8
1915	216.2	55.7	16.1	4.1	40.8	10.5	114.9	29.6	388.0
1916	229.4	50.0	16.7	3.6	46.1	10.1	166.5	36.3	458.7
1917	273.9	46.4	18.5	3.1	70.6	12.0	227.6	38.5	590.6
1918	301.7	53.8	19.6	3.5	68.4	12.2	170.6	30.4	560.3
1919	360.6	55.5	24.9	3.8	73.4	11.3	190.4	29.3	649.3
1920	434.7	62.1	34.8	5.0	130.2	18.6	99.9	14.3	699.8
1921	344.7	68.5	39.9	7.9	106.0	21.1	12.8	2.5	503.5
1922	309.9	61.9	34.5	6.9	66.0	13.2	90.1	18.0	500.6
1923	322.2	55.5	34.2	5.9	66.3	11.4	158.1	27.2	580.8
1924	369.4	55.3	36.5	5.5	53.3	8.0	209.1	31.3	668.3
1925	386.4	41.6	38.3	4.1	75.0	8.1	428.6	46.2	928.2
1926	438.3	45.3	43.1	4.5	90.3	9.3	396.8	41.0	968.4
1927	455.8	55.1	49.2	5.9	119.7	14.5	202.2	24.4	827.0
1928	463.6	60.8	50.5	6.6	146.4	19.2	102.5	13.4	762.9
1929	512.8	53.2	55.6	5.8	179.1	18.6	216.9	22.5	964.5
1930	458.5	65.5	53.7	7.7	133.3	19.1	54.2	7.7	699.5
1931	349.0	75.8	54.7	11.9	70.2	15.2	-13.6	-3.0	460.4
1932	276.6	70.4	46.2	11.8	45.8	11.7	24.2	6.2	392.8
1933	262.6	64.4	41.1	10.1	37.0	9.1	67.3	16.5	408.0
1934	272.0	52.6	39.9	7.7	42.3	8.2	163.4	31.6	517.6
1935	336.9	58.8	42.5	7.4	43.6	7.6	150.1	26.2	573.1
1936	381.5	55.5	45.5	6.6	47.8	7.0	212.7	30.9	687.5
1937	448.2	49.3	48.5	5.3	69.0	7.6	344.2	37.8	910.0
1938	485.4	71.1	53.8	7.9	55.7	8.2	87.4	12.8	682.3
1939	484.1	61.2	55.1	7.0	66.6	8.4	185.8	23.5	791.6

Source: See main text.

Table 8.4
Gross Domestic Product in Purchasers' Value in Constant (1914) Prices
1900-39
Malaya

(Straits $ Million)

	Private Final Consumption Expenditure		Government Final Consumption Expenditure		Gross Capital Formation		Net Exports of Goods and Services		GDP at Market Prices
	[1]	% of GDP	[2]	% of GDP	[3]	% of GDP	[4]	% of GDP	[5]=[1]+[2]+[3]+[4]
1900	118.8	116.7	12.1	11.9	8.1	8.0	-37.1	-36.4	101.8
1901	133.3	98.2	14.5	10.7	15.0	11.1	-27.1	-20.0	135.7
1902	120.8	99.5	8.4	6.9	11.9	9.8	-19.8	-16.3	121.4
1903	115.0	129.1	9.1	10.2	12.4	13.9	-47.4	-53.2	89.1
1904	132.4	111.4	8.3	7.0	15.6	13.1	-37.5	-31.6	118.8
1905	139.3	97.0	8.7	6.1	15.2	10.6	-19.6	-13.6	143.6
1906	152.9	103.5	10.4	7.0	24.4	16.5	-39.8	-26.9	147.8
1907	155.3	99.9	10.8	6.9	28.9	18.6	-39.7	-25.5	155.4
1908	160.2	83.9	11.3	5.9	30.9	16.2	-11.4	-6.0	191.0
1909	167.5	84.7	11.4	5.8	27.5	13.9	-8.7	-4.4	197.8
1910	177.1	75.2	12.2	5.2	34.4	14.6	11.6	4.9	235.4
1911	174.6	71.8	13.1	5.4	49.8	20.5	5.7	2.3	243.1
1912	178.9	77.0	13.7	5.9	51.0	21.9	-11.2	-4.8	232.4
1913	192.5	72.6	15.2	5.7	61.6	23.2	-4.0	-1.5	265.3
1914	210.6	62.5	16.5	4.9	62.0	18.4	47.7	14.2	336.8
1915	198.5	59.5	16.4	4.9	38.5	11.5	80.3	24.1	333.8
1916	210.4	56.1	16.5	4.4	38.8	10.3	109.5	29.2	375.1
1917	219.5	47.1	17.3	3.7	48.8	10.5	181.0	38.8	466.5
1918	209.2	44.5	17.2	3.7	43.0	9.1	200.7	42.7	470.0
1919	195.1	39.7	19.4	3.9	42.9	8.7	234.3	47.7	491.7
1920	180.7	37.3	23.6	4.9	56.7	11.7	223.6	46.1	484.7
1921	194.6	37.4	26.3	5.1	52.6	10.1	246.8	47.4	520.3
1922	199.0	31.6	23.2	3.7	49.0	7.8	358.7	57.0	629.8
1923	210.9	39.0	22.8	4.2	52.3	9.7	254.5	47.1	540.6
1924	242.4	40.8	24.1	4.1	35.8	6.0	291.2	49.1	593.4
1925	246.5	47.9	25.1	4.9	52.4	10.2	190.8	37.1	514.7
1926	268.0	38.8	27.8	4.0	60.7	8.8	334.1	48.4	690.5
1927	284.1	41.8	32.5	4.8	79.0	11.6	283.8	41.8	679.4
1928	292.2	32.8	33.5	3.8	99.5	11.2	466.1	52.3	891.3
1929	329.0	28.9	37.0	3.2	106.1	9.3	667.2	58.6	1,139.3
1930	311.2	26.7	36.2	3.1	92.3	7.9	725.6	62.3	1,165.3
1931	292.4	29.2	40.5	4.0	57.6	5.8	610.1	61.0	1,000.6
1932	270.0	28.2	34.9	3.6	40.1	4.2	613.9	64.0	959.0
1933	278.7	32.2	29.8	3.4	31.7	3.7	525.2	60.7	865.5
1934	280.5	31.3	32.3	3.6	39.0	4.4	543.3	60.7	895.0
1935	325.7	35.4	32.7	3.6	40.6	4.4	520.0	56.6	919.0
1936	377.0	37.2	35.8	3.5	46.1	4.5	555.7	54.8	1,014.6
1937	409.8	34.0	38.6	3.2	65.7	5.5	689.8	57.3	1,203.9
1938	463.9	46.1	44.5	4.4	56.0	5.6	442.0	43.9	1,006.4
1939	502.4	47.7	43.9	4.2	59.7	5.7	447.7	42.5	1,053.6

Source: See main text.

Table 8.5
Gross Domestic Product Per-Capita in Purchasers' Value in
Current and Constant (1914) Prices
1900-39
Malaya

(Straits $)

	GDP (Current Prices)	GDP (1914 Prices)	Population	GDP per-capita (Current Prices)	GDP per-capita (1914 Prices)
	[1]	[2]	[3]	[4]=[1]/[3]	[5]=[2]/[3]
1900	145,060,441	101,841,643	1,570,896	92.3	64.8
1901	173,279,206	135,670,372	1,635,409	106.0	83.0
1902	183,568,420	121,388,652	1,713,663	107.1	70.8
1903	170,955,919	89,115,806	1,753,538	97.5	50.8
1904	168,235,587	118,760,146	1,812,308	92.8	65.5
1905	191,214,540	143,561,585	1,880,054	101.7	76.4
1906	208,384,194	147,785,305	1,945,596	107.1	76.0
1907	213,741,336	155,384,161	2,017,951	105.9	77.0
1908	206,538,657	190,989,190	2,086,852	99.0	91.5
1909	232,510,879	197,824,444	2,172,720	107.0	91.0
1910	274,976,917	235,364,938	2,219,235	123.9	106.1
1911	285,819,293	243,066,109	2,274,530	125.7	106.9
1912	327,915,128	232,442,102	2,339,051	140.2	99.4
1913	337,093,734	265,290,272	2,566,179	131.4	103.4
1914	336,790,519	336,790,519	2,754,426	122.3	122.3
1915	387,975,477	333,824,763	2,696,760	143.9	123.8
1916	458,675,766	375,116,139	2,734,931	167.7	137.2
1917	590,574,750	466,480,613	2,817,753	209.6	165.6
1918	560,304,626	470,042,776	2,867,967	195.4	163.9
1919	649,325,379	491,706,111	2,833,425	229.2	173.5
1920	699,755,097	484,704,521	2,882,497	242.8	168.2
1921	503,463,625	520,314,967	2,906,691	173.2	179.0
1922	500,573,957	629,831,676	2,966,405	168.7	212.3
1923	580,794,641	540,577,204	2,989,096	194.3	180.8
1924	668,317,924	593,369,813	3,054,976	218.8	194.2
1925	928,199,306	514,698,006	3,123,400	297.2	164.8
1926	968,353,027	690,472,079	3,221,437	300.6	214.3
1927	826,977,712	679,359,167	3,405,621	242.8	199.5
1928	762,940,541	891,277,043	3,524,515	216.5	252.9
1929	964,507,301	1,139,315,702	3,598,696	268.0	316.6
1930	699,548,835	1,165,326,088	3,720,329	188.0	313.2
1931	460,439,352	1,000,632,344	3,786,297	121.6	264.3
1932	392,755,892	958,954,939	3,571,845	110.0	268.5
1933	407,969,718	865,510,417	3,397,968	120.1	254.7
1934	517,604,104	894,996,615	3,390,128	152.7	264.0
1935	573,126,769	918,959,382	3,611,770	158.7	254.4
1936	687,464,875	1,014,621,488	3,896,094	176.4	260.4
1937	910,015,601	1,203,889,140	4,120,363	220.9	292.2
1938	682,263,528	1,006,394,322	4,623,929	147.6	217.6
1939	791,597,163	1,053,627,624	4,751,035	166.6	221.8

Source: See main text.

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