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TROPICAL EXPORTS AND ECONOMIC GROWTH:
THE CASE OF CEYLON

by

CHRISHANTHI ABEYNAYAKE
B.A., University of Ceylon, Peradeniya, 1967

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Department of Economics

The University of British Columbia
Vancouver 8, Canada

Date August 30, 1972

A B S T R A C T

Ceylon has experienced a long period of export growth. Although export expansion led to a rise in G.N.P., there is not much indication that export expansion alone was sufficient to cause a sustained and general increase of per capita incomes. Per capita G.N.P. is estimated to have risen at the rate of 1.1 per cent per annum between 1926 and 1945. Trade also had only a limited effect in diversifying Ceylon's economic structure. Growth appeared to be confined to exports and immediately ancillary services.

The late 1940's ushered in a new era with the grant of Independence. Growth in per capita G.N.P. accelerated from 1947 to 4.0 per cent per annum and was accompanied by an expansion of domestic agriculture and industry despite the fact that Ceylon also experienced a population boom since 1947.

Why did exports fail to operate as a leading sector in the particular case of Ceylon? The problem is approached by an examination of the following relevant factors:

The historical background and the opening up of the economy to trade comprising an investigation of the impact of coffee plantations; some aspects of the production functions of export industries relevant to determining the magnitude of foreign exchange earnings, share of locally retained income; the scope for backward, forward and final demand linkages; the causes for inadequate response as well as the factors responsible for the acceleration in growth in later years.

A theory which states that the nature of the production functions of export industries has a direct bearing on the extent to which the stimulus from exports leads to the development of related sectors would be relevant to almost any underdeveloped export economy in which foreign trade plays a significant role. Other factors, however, such as the shortage of capital combined with the lack of credit facilities, the free availability of imports and inadequate infant industry protection, a land-based value system and the negative role of the government vis-a-vis domestic agriculture and industry seem to have been major impediments to diversification around the export base. Acceleration in economic growth and a greater degree of diversification in the economic structure of Ceylon in the post-Independence period appear to be connected with government policy, initiative and assistance.

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CHAPTER I

THEORETICAL PERSPECTIVE

Ceylon has experienced a long period (over a century) of export growth. The introduction of an export sector undoubtedly enhanced the value of the national product of Ceylon. Her economy prior to the establishment of plantations was a self-sufficient subsistence type which can hardly be supposed to have generated much non-agricultural investment, specialized entrepreneurship or a significant economic surplus. Trade apparently provided an outlet for the output of "surplus" resources which would otherwise have remained unused¹ or not been imported. Production of exports also resulted in substantial additions to the G.N.P.: the value of total export receipts rose from Rs 91 mil in 1900 to Rs 1916 mil in 1969. Thus a sector capable of rapid expansion was introduced into the economy.

Although export expansion led to a rise in G.N.P., there is not much indication that export expansion alone was sufficient to cause a sustained and general increase of per capita incomes. Per capita G.N.P. is estimated to have risen at the rate of 1.1 per cent per annum between 1926 and 1945 (see Table I-1). Trade also had only a limited effect in diversifying Ceylon's economic structure. Growth appeared to be confined to exports and to immediately ancillary services.

¹H. Myint, "The 'Classical Theory' of International Trade and Underdeveloped Countries," in Theberge (Ed.), Economics of Trade and Development (New York: Wiley, 1968), pp.

TABLE I-1
PER CAPITA G.N.P.^a

YEAR	POPULATION (Mil)	PER CAPITA G.N.P. (Rs)	YEAR	POPULATION (Mil)	PER CAPITA G.N.P. (Rs)	
1926	4.9	--	1955	8.7	582	
1926-29	5.1	219	1956	8.9	566	
1929-33	5.3	135	1957	9.2	578	
1933-39	5.7	118	1958	9.4	610	
1939-45	6.2	240	1959	9.6	612	
1945	6.7	273	1960	9.9	635	
			1961	10.1	621	
1947	7.0	373	1962	10.4	623	
1948	7.2	411	1963	10.7	638	
1949	7.5	382	1964	10.9	669	
1950	7.7	486	1965	11.2	670	
1951	7.9	577	1966	11.4	673	
1952	8.1	566	1967	11.7	702	
1953	8.3	561	1968	12.0	817	
1954	8.5	527	1969	12.3	882	
Population Growth Rate			1926-45	1.6%	1947-1969	2.4%
Per Capita G.N.P.						
Growth Rate			1926-45	1.1%	1947-1969	4.0%

Sources: W. Rasaputram, Influence of Foreign Trade on the Level and Growth of National Income of Ceylon 1926-57 (Colombo: Central Bank of Ceylon, 1964), p. 73; D. R. Snodgrass, Ceylon: An Export Economy in Transition (Illinois: Richard D. Irwin, Inc., 1966) Tables A-1, A-2, A-14. Central Bank of Ceylon, Annual Report of the Monetary Board to the Minister of Finance 1969 (Colombo: Central Bank of Ceylon 1970), Appendix II, Table 4; Demographic Yearbook 1970 (New York: United Nations, 1971), Table 4, p. 109.

^aNo attempt has been made to deflate G.N.P. because of the numerous difficulties involved. Official data on real G.N.P. are available from 1959-69. Even these estimates, however, are acknowledged to be "approximate and tentative" [Central Bank of Ceylon, Annual Report of the Monetary Board to the Minister of Finance 1962 (Colombo: Central Bank of Ceylon, 1963), p. 44]. as there are no realistic deflators. For instance, the Colombo Consumer's Price Index is heavily biased in favour of subsidized items.

Statistics with respect to the composition of G.N.P., structure of employment, share of exports in G.N.P. and concentration in exports indicate that Ceylon is a "typical" underdeveloped export economy. The primary sector accounted for 33.5 per cent of G.N.P. whereas the secondary sector accounted for just 17.8 per cent of G.N.P. in 1969. Fifty-three per cent of the total workforce found employment in the primary sector and 13 per cent in the secondary sector in 1963. In more developed countries the share of the secondary sector is larger and the primary sector generally small. Table I-2 below illustrates that in more developed countries, employment afforded by the primary sector is well below that of the secondary sector whereas the reverse is true of less developed countries.

TABLE I-2

PERCENTAGE OF LABOUR FORCE EMPLOYED
IN THE PRIMARY & SECONDARY SECTOR

	PRIMARY SECTOR	SECONDARY SECTOR
U.S. (1969)	5	32
U.K. (1966)	5	43
Canada (1970)	9	27
Australia (1966)	11	36
Japan (1965)	25	31
Iran (1966)	42	23
W. Malaysia (1962)	52	8
Pakistan (1965)	68	12
Indonesia (1964-65)	67	7
Thailand (1960)	82	4
Philippines (1965)	53	13
Ceylon (1963)	53	13

Source: I.L.O. Yearbook of Labour Statistics 1970 (Geneva I.L.O., 1971), Table 3.

Ceylon's exports which constituted 17.5 per cent of G.N.P. in 1969 are concentrated in a few primary products. Tea, rubber and coconut are the major exports and they account for around 90 per cent of total export value. The percentage share of tea, rubber and coconut in total exports was 63 per cent, 17 per cent and 10 per cent respectively in 1967. Other countries which also exhibit a similar concentration in exports include Colombia where coffee accounts for 59 per cent of total exports and petroleum 10 per cent; Venezuela -- petroleum 92 per cent; Panama -- bananas 50 per cent, refined petroleum 27 per cent; Malaysia -- rubber 33 per cent, tin 20 per cent and timber 17 per cent; Philippines -- coconut products 28 per cent, sugar 17 per cent, wool 26 per cent.¹

The late 1940's ushered in a new era with the grant of Independence. Growth in per capita G.N.P. accelerated from 1947 to 4.0 per cent per annum and was accompanied by an expansion of domestic agriculture and industry despite the fact that Ceylon also experienced a population boom since 1947.² A rate of growth of four per cent, however, can hardly be considered satisfactory. It is therefore important to enquire what potential there may be (or may have been) in more diversified growth based on the growth of export staples.

¹International Monetary Fund, International Financial Statistics, July 1969 (Washington, D.C.: I.M.F., 1969).

²The introduction of D.D.T. eradicated malaria in 1947. The drop in the death rate was immediate. In 1946, deaths per 1,000 stood at 20, in 1947 it declined to 14 and by 1949 it had dropped further to 12 per 1,000.

Exports and Economic Growth: Enclaves as Frustrated Staples

The "staple approach" to economic development views it essentially as a "process of diversification around an export base."¹ The spread effects of the export sector are determined by such factors as the resource base of the country, external demand and the production functions of the staples being exported. This gives us a possible line of investigation.

The nature of the production function has a direct bearing on the extent to which the stimulus from exports leads to the development of related sectors.² The degree of factor substitutability, returns to scale, etc., are defined by the production function of the export industry and determine the demand for factors, intermediate inputs, possibilities for further processing and distribution of income. Forward, backward and final demand linkages of export industries induce investment and determine the extent of diversification around the export base.³

Requirements of intermediate inputs for the export industry will encourage local production to the extent that they are needed in quantities large enough to permit a minimum efficient scale of production and provided that the necessary resources and technology are available. These requirements need not induce investment in an open economy (as imports are available) unless the inputs can be produced more cheaply at

¹M. H. Watkins, "A Staple Theory of Economic Growth" in W. T. Easterbrook and M. H. Watkins (Eds.), Approaches to Canadian Economic History (Toronto: McClelland and Stewart Ltd., 1967), p. 53.

²R. E. Baldwin, "Export Technology and Development From A Subsistence Level," Economic Journal (March, 1963), pp. 80-92.

³Watkins, op. cit., p. 54.

home. Some overhead investment has to be provided domestically to facilitate this. Watkins argues that the building of transport systems for movement of the staple is an important backward linkage in staple-led growth.¹

Forward linkages result from inducements to invest in industries using the exportable commodity as an input.² In increasing value added in the export sector the major determinants are the economic possibilities of further processing and the nature of the foreign tariff.³

Expenditure of the incomes accruing to factors in the export sector can also induce investment in domestic industries producing consumer goods. The absolute level of income and its distribution determine the size of the domestic market for these goods.⁴ The shares of wages and profits will vary according to whether the export industry is more capital or labour intensive. The share of profits tends to be higher in capital intensive industries whereas the share of wages is relatively high in labour intensive industries. This affects the pattern of demand, for where the share of wages is high, domestic investment may be stimulated due to the enlarged demand for simple consumer goods. The distribution of income is also important; when the distribution of income is markedly

¹ Watkins, op. cit., p. 55.

² Ibid., p. 55.

³ Ibid., p. 56.

⁴ Ibid., p. 56.

skewed (e.g., extremely high salaries for management and extremely low wages for labour) expenditure is on luxuries at one end and subsistence at the other. Final demand linkages tend to be higher, the higher the average level of income and the more equal its distribution: at higher average levels of income, consumers are likely to purchase a broad range of goods and services which lend themselves to economies of mass production.¹

On the supply side, too, expansion of exports create opportunities for investment by the supply of entrepreneurship, capital, technology, etc. Here, local entrepreneurship is a crucial factor -- "the ability to perceive and exploit market opportunities."² Foreign entrepreneurship may flow freely to export and import trades, but not so readily into the domestic sector. It is also suggested that plantation industries inhibit entrepreneurial ability with their lack of social mobility.³

Even where there is an adequate supply of local entrepreneurs, their effectiveness depends on the availability of skilled labour, capital and other resources. The higher the degree of processing in the export sector, the greater is the training of local labour and the diffusion of generally useful skills. It might be expected that savings will be generated from profits in export industries, but foreign capital also generally flows only into the export sector. The magnitude of domestic sav-

¹Watkins, op. cit., p. 56.

²Ibid., p. 57.

³Ibid., p. 57.

ings is again influenced by the production functions of the export industries. A skewed income distribution is sometimes alleged to lead to higher savings. Domestic savings would then be channelled into domestic investments so far as opportunities exist for profitable returns in domestic markets.¹

Investment opportunities can be provided by the forward, backward, and final demand linkage effects of export industries, as well as by the demonstration effect of export industries (i.e., local participation in export industries). Local participation in export industries can be prevented by technical complexity or economies of scale requiring large initial capital outlays. On the other hand, the demonstration effect of export industries can lead to production by small-holders when there are no significant economies of scale and methods of processing are simple.

Domestically retained income is an important measure of the extent to which export industries can directly contribute to local economic growth. Local payments enlarge the domestic market and also result in capital formation.² The degree of local ownership, levels of local taxation and export duties, and the percentage of costs of production and wages and salaries spent locally determine retained income. The higher the receipts from exports, the greater the expansion in the domestic market, other things

¹Watkins, op. cit., p. 58.

²Assuming that capital formation is a function of savings and investment opportunity.

being equal. Technological progress, adaptation of the product to suit changing tastes are some of the means by which productivity per worker and export income might be raised.

In addition to the ability of the economy to respond to external stimuli there must exist a capacity to shift to new types of exports and/or import substitutes to maintain sustained growth. The ability to shift to new foreign markets depends upon external demand and available resources: the ability to shift to the domestic market depends among other things on population and the level of per capita income that would enable the country to take advantage of the economies of scale in modern industry.¹

In L.D.C.'s export staples have been confined in greater or lesser degree to enclaves, and diversification around the export base has been limited. The failure of the export sector to send strong impulses to related industries has therefore to be explained.

Linkage effects of the export industries appear to have been weaker in countries where export production was superimposed on a pre-existent subsistence economy. On the demand side, the magnitude of the demand for intermediate inputs may not have permitted economic levels of production. Resources and technology for the production of inputs or for increasing value added may have been lacking on the supply side. Moreover, exporters of primary products tend to be countries with highly concentrated exports dependent on one or two export items for their entire foreign ex-

¹Watkins, op. cit., p. 63.

change earnings, which prevents a shift to new types of exports or import substitutes.

Furthermore, the skewed income distribution probably resulted in expenditure on subsistence by workers and on "luxuries" by management. L.D.C.'s were generally not in a position to produce luxuries, particularly as the market for them within L.D.C.'s was small. In the case of subsistence agriculture, increases in productivity may have required improvement in techniques of production. The dispersion of new techniques to domestic agriculture, however, could only have occurred when the market prices of these products rose and enabled farmers to purchase necessary capital items¹ and also compensated for the greater risks involved in employing new methods of production. Although the demand for agricultural products would have risen with the inflow of labour into plantations and mines, market price need not have risen as imports of agricultural products could also have increased. Moreover, the problems of the rural sector are often so complex that a high degree of government assistance is required before new techniques can be adopted.

Profits and savings tend to flow out in the absence of taxation. That which remains within the country is generally invested in the export sector due to land-based values, export mentality, etc. The discounted rate of profit in plantations and mines may therefore have been

¹R. E. Baldwin, Economic Development and Export Growth: A Study of Northern Rhodesia 1920-1960 (Berkeley, Calif.: University of California Press, 1966), p. 65.

considered higher than domestic industry. Furthermore, it is doubtful whether the share of locally owned capital was large enough to finance domestic industry. There could also have been an absence of institutions providing long-term credit to domestic industry. External capital would generally have been limited to the export and import trades. "The staple theory. . . is more than anything else a theory of capital formation and industrial location."¹ In the case of L.D.C.'s, however, external capital has not financed domestic industries linked to exports to any great extent.

It is often stated that there is a shortage of skilled labour in L.D.C.'s. This is reflected in the salaries of foreign skilled personnel who also have to be paid high wages to compensate them for loss of relatives and friends, etc. and for the poorer conditions of health, education . . . in L.D.C.'s. The lack of educational and technical facilities in L.D.C.'s however, need not have been a fully satisfactory explanation for the shortage of local labour and the substitution of foreign personnel for local labour and "one of the reasons for the shortage of skilled local labour seems to be a lack of effective demand for it. To a considerable extent this must be attributed to the (fact that). . . there is no vertical mobility of labour into skilled and managerial grades, which keeps these factors at a premium."² Entrepreneurship, a key factor in development could also have been in short supply due to the lack of social mobility in plantations and mines.

¹R. E. Caves and R. H. Halton (Eds.), The Canadian Economy (Cambridge, Mass.: Harvard University Press, 1961), p. 30.

²H. Myint, "The Gains from International Trade and the Backward Countries," in Theberge (Ed.), Economics of Trade and Development, op. cit., p.

Domestic market imperfection, too, may have obstructed the receptiveness of an economy to the stimulus from exports. The economies of L.D.C.'s are characterized by such factors as price rigidity and factor immobility. This is probably due to the fact that the subsistence and plantation economies are not fully integrated, i.e., the dualistic nature of the economy. Furthermore, internal marketing facilities tend to be poorly developed, if at all. In any case, the size of the market is so small that it is easier and may be more profitable to send exports out of the country than to reach the individual consumer within the L.D.C.¹ This perhaps accounts partly for the lack of domestic production.

In the case of Canada, a 'new country' which succeeded in diversifying around an export base, the continuous inflow of capital, her resource base, the favourable man/land ratio and the role of the State in promoting and shaping economic development were important factors in her growth. The linkage effects of the export sector were stronger than in L.D.C.'s. For instance, when external demand and rising per capita income led to the production of wheat, it involved considerable amounts of capital. The capital intensive nature of the wheat industry stimulated investment in machinery, agricultural implements and motor vehicles which were substituted for human and animal labour.² The income distribution from the production of wheat

¹G. M. Meier, International Trade and Development (New York: Harper and Row, 1963), pp. 182 and 183.

²Caves and Holton, op. cit., p. 43.

(the high average levels and widely distributed incomes of a 'commercially-oriented proprietor-farmer economy') favoured expansion of the domestic market.¹ Moreover, the "role of the state in Canada has been expansionist -- pushing frontiers westward, bolstering staple exports, encouraging industrialization, promoting immigration and facilitating capital inflows. . ."² Canadian tariffs have also been high and it is reported that "the wheat boom finally caused the Canadian policy of high tariffs and 'all-Canada transportation' to yield the desired pay-off of a large industrial sector."³ It is doubtful whether the governments of L.D.C.'s played such an important role in securing responses to staple expansion in the early stages of export growth. Furthermore, low tariffs on imports could have led to a high import content in local expenditure of L.D.C.'s.

Outline of Discussion

Why did exports fail to cooperate as a leading sector in the particular case of Ceylon?

The problem is examined in this thesis in the following manner.

¹G. W. Bertram, "Economic Growth in Canadian Industry 1870-1915: The Staple Model," in Easterbrook and Watkins (Eds.), Approaches to Canadian Economic History, op. cit., p. 77.

²Easterbrook and Watkins (Eds.), "Introduction," Approaches to Canadian Economic History, op. cit., pp. XIV, XV.

³Caves and Holton, op. cit., p. 44.

In Chapter II, Historical Background, we outline the early history of the economy of Ceylon as the pre-colonial economy was a modified version of the economy as it had existed for many centuries. The colonial economy prior to the coming of the British is also described in Chapter II.

Chapter III, The Shaping of a Dual Economy: Impact of the Coffee Plantations, comprises an investigation of the impact of the superimposition of a plantation sector upon a subsistence economy; shift in emphasis of government policy away from domestic agriculture towards plantation agriculture, predominance of plantations, adverse effects on domestic agriculture, dependence on imports. . . .

Part II: Technical Aspects of the Development of Tea, Rubber and Coconut as Export Staples, comprises three chapters, Chapters IV, V and VI. Tea, Rubber and Coconut: Background Notes on the Production Function, Contribution to Locally Retained Income and Future Prospects. In each chapter there is an examination of some aspects of the production function of the export industry relevant to determining the magnitude of foreign exchange earnings, share of locally retained income and linkage effects, which will then be pulled together in the subsequent section in Chapter VII. Also included is an examination of market price movements and competition from synthetic substitutes.

Part III: Evaluation and Conclusion comprises Chapters VII and VIII.

Chapter VII, The Scope for Linkage Effects, examines possible linkage effects; backward, forward and final demand linkages taking into con-

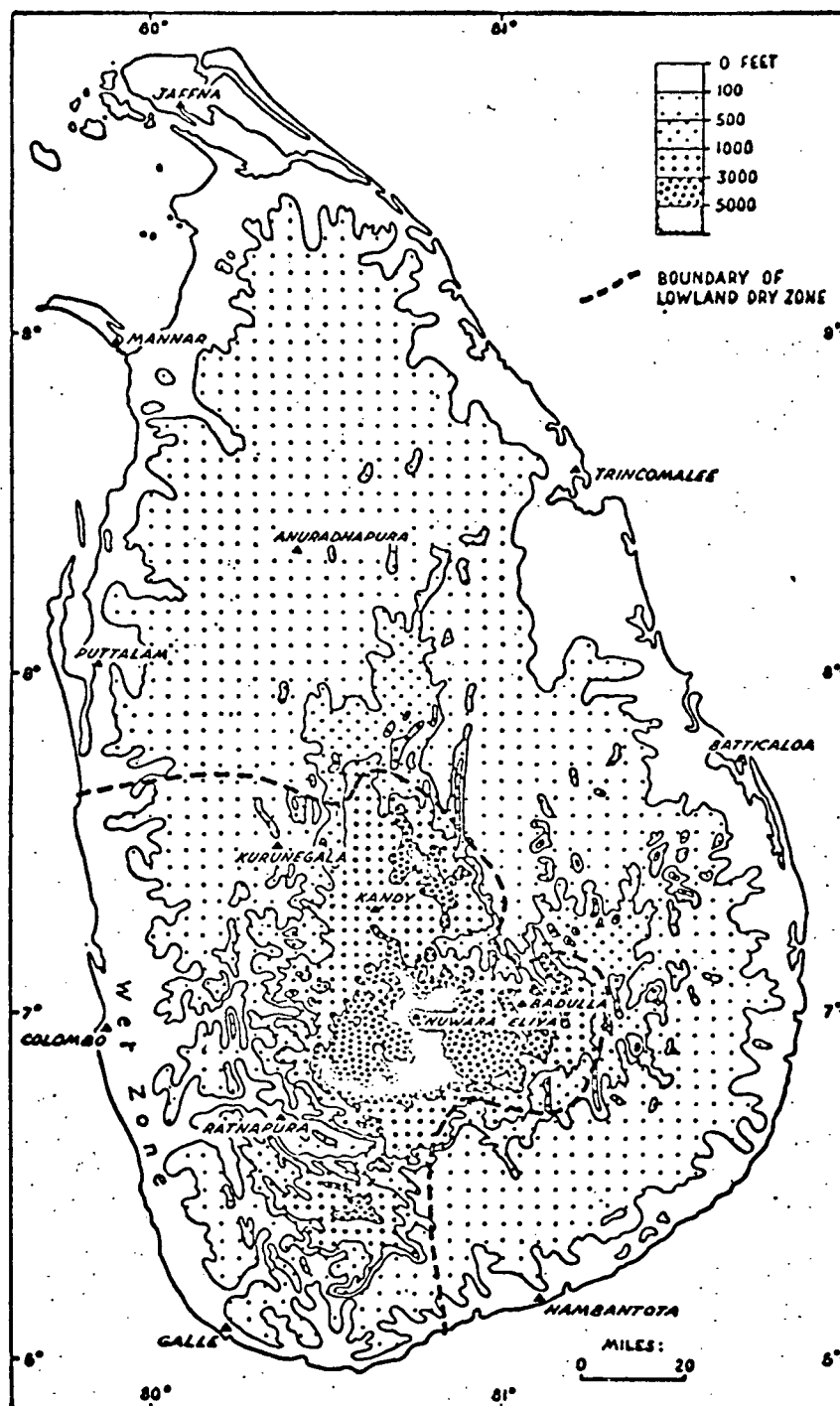
sideration economies of scale, equipment and skills, natural resource conditions.

Chapter VIII, Foreign Trade and Sectoral Growth: Causes for Inadequate Response comprises:

(a) effects of the interaction of the export sector on the rest of the economy during the colonial period via standards of living, levels of production and employment and reasons for the stagnant state of domestic agriculture and industry;

(b) terms of trade and their connection with development in the 20th century;

(c) post-Independence: factors responsible for the acceleration in growth, role of government in strengthening linkage effects of export industries.



MAP 1. Ceylon: Relief.

Source: B. H. Farmer, Pioneer Peasant Colonization in Ceylon: A Study in Asian Agrarian Problems (London, New York: Oxford University Press, 1957), p. 4.

CHAPTER II

HISTORICAL BACKGROUND

Brief Account of Early History

A people of Indo-Aryan stock settled in the Northern plains of Ceylon around the 5th Century B.C. The old Sinhalese kingdoms were feudal in structure. They were based on self-sufficient village communities. Ceylon's wealth lay in her rice fields and export trade consisting chiefly of pearls, gems, spices and elephants.

In Northern Ceylon¹ the rainfall is between 50 and 75 inches per annum. This region is also subject to drought during the Southwest monsoon from May to August. Paddy cultivation requires a plentiful supply of water. In the Dry Zone of Ceylon, where the old kingdoms were established, paddy fields were irrigated by a "colossal and complex system of interrelated dams, canals and tanks"² mingling the waters of rivers flowing in different directions."³

¹Ceylon can be divided into two broad regions based on rainfall -- the Wet Zone and the Dry Zone. The Southwest of Ceylon and its central mountains has an annual rainfall between 100 and 200 inches and forms the Wet Zone. Land outside this area forms the Dry Zone which occupies 70 per cent of the land area of Ceylon.

²The word tank denotes reservoirs -- great artificial lakes.

³S. Paranavitana, "Civilization of the Early Anuradhapura Period," in History of Ceylon, University of Ceylon Press Board (Colombo: Ceylon University Press, 1960), pp. 97, 98.

Agriculture was a dynamic sector in the old structure, as proven by the high degree of scientific knowledge and technical skill achieved by engineers in those times. For instance, one channel (the Jayaganga) was 45 miles in length, 40 feet wide and its gradient for the first 17 miles was only six inches to a mile.¹ The fall in ancient canals was generally one foot in a mile.²

Just as the economy was based upon agriculture, the service system was based upon caste and continued thus over the centuries. The caste system was a division according to occupation. On one side there were the agriculturists or farmers, constituting the bulk of the people, and on the other there was a multitude of professional castes such as artificers, huntsmen, fishermen, weavers of cloth, potters, etc.

Ceylon's favourable location on the East-West trading route contributed to her development as an entrepot and she had become an important stop-over and trading point for traders from Malaya, China, Arabia and Persia. Cosmos Indicopleustes had written of Ceylon at the beginning of the 6th Century -- "as its position is central, the Island is a great resort of ships from all ports of India and from Persia and Ethiopia and in like manner it despatches many of its own to foreign ports."³

¹Wilhelm Geiger, Culture of Ceylon in Mediaeval Times (Weisbaden: Otto Harrassowitz, 1960), p. 90.

²C. W. Nicholls, "Civilization of the late Anuradhapura Period," in History of Ceylon, University of Ceylon Press Board, op. cit., p. 164.

³Quoted in Ibid., p. 163.

There were colonies of merchants in the capital cities and sea-ports, most of them being foreigners. Customs duties were levied on exports and imports. Pearls and gems were a Royal monopoly. Although barter played an important role with respect to internal trade, trading and banking corporations had existed at trading centres,¹ and there is evidence of coined money being used extensively.²

By the 12th Century, however, the kingdom failed following a period of civil war and increasing pressure from South India. These kingdoms were thereafter confined to the Wet Zone area of the Southwest and Central regions of the island and there emerged a concentration of Tamils in the Jaffna peninsula. The irrigation system in the Dry Zone passed into ruin.

The Wet Zone was divided into two kingdoms, Kotte and Kandy. Kotte was close to the harbour of Colombo. The rulers of the Kotte kingdom are reported to have become more conscious of the value of foreign trade than their predecessors since they received less revenue from paddy than the latter, who reigned in the North Central Province. Wet Zone areas were less suited to the cultivation of rice. They had encouraged foreign trade especially in cinnamon.³ Coconut, too, was cultivated extensively, part of it being for export.⁴

¹S. Paranavithana, op. cit., p. 102.

²Ibid., p. 102.

³G. C. Mendis, Ceylon Today and Yesterday, 2nd edition (Colombo: The Associated Newspapers of Ceylon Ltd., 1963), pp. 105 and 106.

⁴S. Paranavithana, op. cit., p. 319.

After 1500, first the Portuguese and then the Dutch -- attracted by cinnamon which grows best in Ceylon -- controlled the maritime provinces of Ceylon. Finally these coastal areas came under the British in 1796 who by 1815 were in possession of the entire island.

The Colonial Economy Prior to the British*

Before the coming of the British, Ceylon was essentially a feudal, self-sufficient, peasant economy. Her export trade was almost entirely in the hands of foreign merchants, many of whom had settled in Ceylon. All power was vested in a king. Governmental organization was closely tied up with the system of land tenure and revenue. ". . .the relation between ruler and ruled and between various grades of society, being based on services in return for the holding of land, interlocked with the pervasive but not too rigid caste system."¹

A village consisted of a collection of landholdings. The cultivation of paddy was the major occupation of the people. Paddy was cultivated in valley bottoms and also in the hills by the terracing of hill slopes. In addition to paddy land, each village had gardens on unirrigable high lands containing vegetables, fruit and coconut trees among others, and chenas -- land cultivated by felling and burning jungle and left fallow for a period of years after cultivation for two or three years.

Paddy cultivation required a high degree of interdependence. As Bryce Ryan observes, "each operator's plot is separated from others by a

¹S. A. Pakeman, Ceylon (New York: Praeger, 1964), p. 39.

*We confine our attention to the Kandyan kingdom as there is a dearth of information regarding the system prevalent in the maritime provinces.

low bund which controls the flow of water from the higher to the lower land. In maintaining these boundaries, the various operators must be in agreement. Frequently they benefit mutually by joint work in maintenance and in construction. . . Even fairly uniform timing in the various stages of cultivation is desirable from the standpoint of pest control."¹ Moreover, when streams were diverted to fields and several people shared water from a single stream, owners of land at higher elevations were not permitted to divert the stream if such action meant that the fields below were deprived of their supply of water.² Then too, if the supply of water in a tank was sufficient only to irrigate part of the field, a portion of the field close to the tank was cultivated and each cultivator cultivated a holding in that field -- the share of each cultivator being generally in proportion to his original holding.³

The Gamsabhawa and Rajakariya were instrumental in the regulation and carrying out of agricultural operations. The Gamsabhawa was the village council which regulated village affairs and enforced customary law. Every agricultural operation was supervised by the Gamsabhawa -- particularly the maintenance and use of the irrigation system. Each cultivator

¹Bryce Ryan, Sinhalese Village (Coral Gables, Florida: University of Miami Press, 1958), pp. 16, 17.

²Ralph Pieris, Sinhalese Social Organization: The Kandyan Period, (Colombo: Ceylon University Press Board, 1956), p. 47.

³This practice is known as Bethma.

was assigned his share in both the use and maintenance of the system and was punished by the council for any offences such as that of failure to keep the works in repair. Rajakariya (i.e., service rendered to the king in return for land tenure) was the means by which the Gamsabhawa enforced the co-operation of the villager; it helped maintain the irrigation works in repair. The holding of land was bound up with the performance of service or payment in kind.

Prior to British times, the total world supply of cinnamon came from Ceylon. Cinnamon was grown in small gardens, it grew wild in the Kandyan jungles, and it was also grown in plantations by the Dutch. From 1691 to 1794 the average annual exports of cinnamon amounted to 400,000 lbs.¹ The average annual export of coffee varied between 40,000 lbs and 100,000 lbs.² The number of coconut trees was estimated at 10,000,000.³

A typical farmer would have had access to an extensive area of land. His techniques of production were suited to the land (for instance, farmers were even reported to have transplanted paddy. Furthermore, in hilly areas the land was terraced for the purpose of growing paddy).

¹L. A. Mills, Ceylon Under British Rule: 1795-1932 (London: Oxford University Press, 1933), p. 203.

²Ibid., p. 222.

³G. C. Mendis, Ceylon Under the British (Colombo: The Colombo Apothecaries' Co. Ltd., 1962), p. 51.

The birth rate and the death rate of the population were more or less in balance. There are no indications of a high rate of population growth -- the total population was as low as 2.3 million in 1867.

It is doubtful whether the feudal system encouraged production beyond subsistence, ceremonial and religious needs. Exports were a royal monopoly and foreign trade in the hands of foreigners. The economic system of the time does not seem to have been conducive to rapid growth.

By the time of the Portuguese arrival there were three different kingdoms -- those of Kotte, Kandy and Jaffna. The Portuguese ruled the kingdoms of Kotte and Jaffna. Although foreign trade expanded due to the emphasis on spices, the constant wars caused deterioration in agriculture and the conditions of the people, thus accentuating the decline begun in the 13th Century.

The Dutch continued the prevailing feudal system, as also had the Portuguese. Sinhalese and Tamil society changed little under their rule. The Dutch repaired irrigation works and encouraged agriculture. They also encouraged the cultivation of commercial garden crops. Paddy and coconut cultivation are reported to have increased considerably. They developed communications and broadened the system of elementary education.

The revenue of the Dutch Company gives us some idea of the magnitude of trade in those times. The revenue from the cinnamon monopoly in late 1780 and early 1790 was estimated at 1,600,000 rix dollars. The profits on a turnover of trade in merchandise of 200,000 rix dollars¹ amounted

¹Rix dollars refers to the Dutch currency of the time.

to 160,000 rix dollars (or 80 per cent). The total annual revenue from all sources during the same period was about 2,150,000 rix dollars.¹

Government by the Dutch, however, had become ineffectual and corrupt by the end of the 18th Century. Colvin R. de Silva observes that the "monopolistic economic system, the engrossment by the Company, by one expedient or another of nearly every valuable article of trade, and the multiplication of high and very often vexatious taxes hindered the prosperity of the Island and weakened the resources of its government."²

¹Colvin R. de Silva, Ceylon Under the British Occupation (Colombo: Colombo Apothecaries' Co. Ltd., 1953), pp. 11, 12.

²Ibid., pp. 13, 14.

CHAPTER III

THE SHAPING OF A DUAL ECONOMY: IMPACT OF THE COFFEE PLANTATIONS

When the British occupied Ceylon, her economy was basically agrarian. The principal exports continued to be cinnamon, spices, gems, ivory and pearls. Increasing competition from inferior but cheaper varieties of cinnamon and from substitutes such as cassia combined with a high export duty¹ led to the decline of the cinnamon trade by the 1850's.

By mid-19th Century, coffee plantations which were opened up by British investment and by British planters transformed the island into an export plantation economy. The size of her national income came to depend heavily upon this export as did government revenue and expenditure, imports and investment.

"Within the short space of a few years, coffee had made itself responsible for almost a third of the government's income. The stake was large enough to render it the State's most favoured child. In the years that followed, the planter's problems came to be regarded as synonymous with those of the country, and in the quest to solve them -- an undertaking to which the government lent its energetic support -- much that was new was introduced with startling rapidity. Thus did Ceylon dance to the coffee growers' tune for the greater part of the 19th century."²

¹The Javanese export duty was only ½d per lb and the Indian export duty was 3 per cent of the value of cinnamon while that of Ceylon was in excess of 250 per cent of the value of cinnamon. Source: Lennox A. Mills, Ceylon Under British Rule: 1795-1932 (London: Oxford University Press, 1933), p. 215.

²I. H. Vanden Driesen as quoted by D. R. Snodgrass, op. cit., p. 17.

Government servants were among the first to open up plantations. Planters were also represented in the Legislative Council which governed Ceylon. Hence it is not surprising that a large proportion of government expenditure contributed directly or indirectly to the development of the plantations.

For instance, in 1874 around 40 per cent of government expenditure was on roads, railways and bridges;¹ this expenditure being in a period when the export duty on coffee was abolished² is a rough indication of the extent to which everything else in the island took a subordinate place. Government revenue, too, showed a similar dependence on coffee since the most important revenue items were import duties, railway receipts and receipts from the sale of land. Government revenue from the import of rice³ was paid for mainly by the plantations since the imported rice was consumed mainly by the coolies on the estates. The railway was used predominantly by the coffee industry. By 1871, the value of exports other than coffee -- coconut oil, cinnamon and coir -- formed only around seven per cent, two per cent and one per cent respec-

¹Rough calculation from Table I-1.

²The export duty on coffee was repealed 1 January, 1870.

³The most important articles of import were rice and cotton goods.

tively of total export value. The coffee industry led to the growth of commerce; the value of foreign trade rose from £521,000 in 1825 to more than double this figure by 1849 (£1,143,000).¹

The Balance Sheet of Government Revenue and Expenditure for the year 1874 has been extracted from the Ceylon Directory and set out in Table III-1 as it illustrates well the dependence of government revenue and expenditure on the coffee industry.

The most important single revenue item is the import duty. Railway receipts too have contributed significantly to government revenue, so have licenses and stamps. Most of these items are connected directly to the growth of the export industry.

Roads had originally been built for military and administrative reasons, but were later constructed with the main aim of transporting coffee to the port of Colombo. The Colombo-Kandy road, for example, cut the cost of transporting coffee by around 80 per cent.² Most of the government officials bought plantations and constructed roads, especially in the direction of their estates.³ By the 1870's Colombo and Kandy were connected by road to the other major townships of the country.

The costs of transportation of coffee were high due to the pressure on the roads and the insufficient number of carts which transported the

¹G. C. Mendis, Ceylon Under the British, op. cit., p. 67.

²Calculated from figures given by Mendis, op. cit., pp. 50, 51. "With the completion of the road to Kandy. . . a Bullock cart carried 1,200 lb. of coffee for £1, whereas earlier the transport of an equal load required 30 porters who were paid £11 15s."

³Ibid., p. 71.

TABLE III-1

GOVERNMENT REVENUE AND EXPENDITURE 1874

I T E M	Rs(000)	AS PERCENTAGE OF TOTAL REVENUE
<u>REVENUE</u>		
Import Duty	2,814	21
Land Sales	723	6
Land Revenue (paddy, fine grain, etc.)	862	7
Licenses, stamps	2,947	22
Sale of government property	1,422	11
Railway receipts	2,359	18
Miscellaneous	<u>2,115</u>	<u>16</u>
TOTAL	13,243	100 (approx)
<u>EXPENDITURE</u>		
Civil establishments (police, railway and other public works)	3,784	31
Roads, streets, bridges	1,977	16
Military expenditure	1,300	11
Railway services and construction	1,480	12
Miscellaneous	<u>3,891</u>	<u>31</u>
TOTAL	12,432	100 (approx)
The excess of revenue over expenditure = Rs 811,000		

Source: A. M. and J. Ferguson, The Ceylon Directory: Calendar and Compendium of Useful Information: 1876-1878 (Colombo: Ceylon Observer Press), pp. 271-75. The year of publication is not available.

coffee. As explained below, this appears to have been due to a shortage of bullock. Moreover, coffee could not be stored for long periods since delay caused deterioration in its quality. During monsoon periods roads became impassable and this in turn led to delays in transportation. The transportation of rice from Colombo to Kandy caused at least a 60 per cent increase in the price of rice and hence added to the cost of plantations.¹ (Rice was imported mostly to feed the labourers on estates). By 1855, the establishment of railways became absolutely necessary because it was felt that "Ceylon would cease to exist as a coffee producing colony in the face of Brazillian and Javanese competition."² The construction of a railway to Kandy was begun in 1858 and completed in 1867. Railways provided the plantations with a cheaper and faster method of transport. Roads and railways connected the plantation areas with the Port of Colombo.³ The Colombo harbour was also developed and made safe by the building of a breakwater, and Colombo became an important port-of-call for steamers. The tonnage handled rose from 67,710 in 1870 to 455,517 in 1878 and 5,117,902 by 1890.⁴

Government expenditure on health, too, had its beginnings in connection with the plantations. Medical expenditure increased from £1000 in 1796-1815 to £50,000 in 1893.⁵ Plantation areas were provided by the

¹ L. A. Mills, op. cit., p. 240.

² Ibid., p. 255.

³ Roads and railways constructed during the entire period are documented by G. C. Mendis, Ceylon Under the British, op. cit.

⁴ Ibid., p. 119.

⁵ J. Ferguson, Ceylon in 1893 (London: J. Haddon, 1893), p. 10.

government with hospitals and dispensaries manned by medical officers and assistants. Plantations contributed towards expenses by a payment for labourers who received attention at such hospitals and dispensaries. However, the government spent sums far greater than that spent by estates.

Government expenditure on education increased from £3,000 in 1796-1815 to £50,000 in 1893 and the number of schools increased from 170 to 2200 over the same period as did the number of scholars, i.e., from 4,500 to 155,000.¹ During this period the secondary schools turned out the clerks and minor administrators required in the new departments of government service.²

The most important items of import at this time were rice, cotton goods, and fish in that order of importance (see Table III-2). Most of the rice was imported in order to feed plantation labour.

Among the factors which led to the large-scale cultivation of coffee and its profitability in Ceylon was the reduction in 1835 of the U.K. discriminating duty on coffee of 6d per lb on coffee from the West Indies and 9d per lb on coffee from other sources to a uniform tariff of 6d per lb on all imported coffees. The demand for coffee in Europe was increasing while West Indian production was declining simultaneously due to the abolition of slavery. (The West Indies had previously been the main supplier of coffee). Ceylon took up the slack in West Indian produc-

¹J. Ferguson, op. cit., p. 10.

²E. F. C. Ludowyck, The Story of Ceylon, op. cit., p. 220.

TABLE III-2
SELECTED IMPORT ITEMS

YEAR	RICE (['] 000 Bushels)	COTTON GOODS (£000)	FISH (£000)	COFFEE (£000)
1837	650	221	7	2
1845	2167	239	16	26
1850	2356	188	36	17
1855	2852	287	35	33
1860	2813	540	56	25
1865	4851	545*	67	23
1870	4736	977*	79	53**
1876	5745	953	88	92

* Table greatly overestimated that year.

** Consequence of a famine in South India.

Source: A. M. and J. Ferguson, The Ceylon Directory, 1876-78, op. cit., p. xvii.

tion; the acreage under coffee increased sharply from 4,000 acres¹ in 1836 to 59,000 acres in the early 1850's; coffee production too increased from 26,000 cwts in 1834 to 344,000 cwts in the early 1850's (see Table III-3). The value of capital invested in coffee has been estimated at £3,000,000 for the period 1837 to 1845.²

¹L. A. Mills, op. cit., p. 228.

²G. C. Mendis, Ceylon Under the British, op. cit., p. 66.

TABLE III-3

THE CEYLON COFFEE INDUSTRY 1834-1886
(Annual figures and annual averages)

YEAR	EXPORT VOLUME (000 cwts)	UNIT VALUE (s/cwt)	AREA PLANTED (000 acres)	YIELD (cwts/acre)
1834	26	30	na	na
1835-39	46	47	na	na
1840-44	97	49	23	4.2
1845-49	260	33	51	5.1
1850-54	344	40	59	5.9
1855-59	537	48	138	3.9
1860-64	615	51	199	3.1
1865-69	939	52	243	3.9
1870-74	881	66	276	3.2
1875-79	795	108	310	2.6
1880-84	433	89	259	1.7
1885	316	78	139	2.3
1886	179	89	110	1.6

Source: D. R. Snodgrass, op. cit., Table 2-1, p. 20.

The coffee industry was set up under conditions of favourable world demand. Increasing quantities of coffee were exported as its price rose until the 1870's when a coffee leaf disease -- *Hemileia Vastatrix* -- appeared. By the 1880's, the disease destroyed the industry.

Although large-scale plantation of coffee commenced around 1835, coffee had been introduced to Ceylon by Arab traders prior to the arrival of the Portuguese in 1505. During Dutch times, the average annual exports varied between 40,000 and 100,000 pounds.¹ Much of the coffee

¹L. A. Mills, op. cit., p. 22.

grew in the Kandyan jungles. In 1827, 1,792,448 pounds of coffee were exported from Ceylon.¹ It was essentially a peasant crop at this time.

Although the value of exports of coffee from large-scale plantations came to exceed that of the peasants, Ferguson reports that one third to one fourth the total quantity of coffee shipped throughout the coffee era was 'native coffee', grown on small holdings.² (As British-owned banks and agency houses rarely lent to Ceylonese, they were not able to purchase large holdings). Most of the coffee was exported to the United Kingdom; for instance, around 80 per cent of Ceylon-grown coffee was exported to the United Kingdom in 1874. Among other customers were Germany, France, U.S.A., and Austria in that order of importance.³

TABLE III-4
COFFEE EXPORTS FROM CEYLON

YEAR ENDING 10th October	PLANTATION		NATIVE	
	QUANTITY (000 cwts)	VALUE (£000)	QUANTITY (000 cwts)	VALUE (£000)
1850	219	483	104	174
1859	407	1099	195	389
1873	860	2322	128	256

Source: A. M. and J. Ferguson, The Ceylon Directory 1876-78 (attachment to p. 490).

¹E. F. C. Ludowyck, The Modern History of Ceylon, op. cit., p. 58.

²J. Ferguson, Ceylon in 1893, op. cit., p. 66.

³Based on A. M. and J. Ferguson, The Ceylon Directory, 1876-78, op. cit., attachment to p. 490.

The coffee revolution carved out a dual economy. The export sector was characterized by the use of modern methods of production, and operated in isolation from the rest of the economy where subsistence agriculture was carried out along traditional lines. Culturally, too, there were no ties between the villager who worked the paddy fields in the valley bottoms and the European planters and Indian labourers who worked in the plantations. The two sectors remained distinct and separate.

The impact of Western capitalism was to create a modern sector comprising commercial, financial, transportation and other service activities centred around the plantations and catering to its needs. It gave rise to the emergence of a money economy and created a class of immigrant wage earners¹ and foreign entrepreneurs. The capital necessary for the plantations first came from abroad and later through re-investment of profits. The only indigenous resource used extensively was land; this was sold at a nominal price (five shillings per acre), mainly to Europeans.²

¹			
<u>YEAR</u>	<u>NUMBER OF IMMIGRANT LABOURERS EMPLOYED (000's)</u>	<u>YEAR</u>	<u>NUMBER OF IMMIGRANT LABOURERS EMPLOYED (000's)</u>
1837	10	1865	222
1846	80	1870	253
1850	90	1875	315
1855	128	1877	380

Source: A. M. and J. Ferguson, The Ceylon Directory, 1876-78, op. cit., p. xvi.

²In the eight years following 1836 (i.e., when the plantations were first being established) nearly 255,000 acres of land was sold by the government at the price of five shillings per acre, the government paying for the cost of surveying it and accepting one tenth of the purchase price at the time of sale. E. F. C. Ludowyck, The Modern History of Ceylon (London: Weidenfeld and Nicolson, 1966), p. 59.

The importance of the coffee revolution lies in the fact that it set the pattern for future development. In 1955, H. A. de S. Gunasekera was able to write, "The period from the rise of coffee to the present day possesses an essential unity in that the basic economic structure remains unchanged."¹ After some experiments in alternate crops -- cinchona and cocoa -- Ceylon turned increasingly to the cultivation of tea. The acreage in tea rose swiftly during the late 1880's. In the early 20th Century, rubber began to be cultivated on a large scale. Cultivation of the coconut palm too moved up rapidly. Thus by the early 20th Century tea, rubber and coconut, in that order of importance, became Ceylon's major export earners. The plantation industries were all highly labour and land intensive. The type of commodities that proved most profitable as export lines in poor nations have generally been ones that technically required intensive use of unskilled labour or of a particular natural resource because advanced nations tended to possess cost advantages in commodities produced under modern technology involving relatively large amounts of skilled labour and capital.²

A plentiful supply of Crown land was sold at nominal prices to planters and cheap labour in virtually unlimited quantity was available from South India. Planters were exempted from the land tax of one tenth the produce from the land. A subsidy was provided by the government for

¹H. A. de S. Gunasekera, From Dependent Currency to Central Banking in Ceylon (London: G. Bell and Sons Ltd., 1962), p. 8.

²R. E. Baldwin, Economic Development and Export Growth: A Study of Northern Rhodesia 1920-1960, op. cit., p. 61.

the importation of Indian labour. Ceylon's climatic conditions and terrain were suitable for these crops, for which foreign markets were growing rapidly at the turn of the century. Hence foreign capital and entrepreneurship were ensured a higher rate of return than that prevailing in the home country. Higher wages also compensated for poorer health and educational conditions and the separation from relatives and home country. Higher returns on capital were necessary to attract foreign capital and to compensate for the risk inherent in less developed countries. An example of the higher returns from the coffee plantations is given below.

An estate which commenced in July 1837

Extent of forest 1892 acres

Dr.	total expenditure up to December 1841, including the purchase of forest, planting 305 acres, stores, machinery, etc.	£6938 7sh 3d.
-----	--	---------------

Cr.

1839	sale of seed and 42 bags of coffee	£ 445 18sh 6 3/4
	sale of 176 acres of forest	£ 176 0 0
1840	sale of seed and 796 units of coffee	£3017 10 5
1841	estimated value of 2000 cwt* shipped	£8000 0 0
		£11,639 8 11 3/4

* The crop of 2000 cwt was gathered off 200 acres of which only about 50 acres were in full bearing. The proprietor assured us that if he began again possessed of his present experience he would save a considerable sum in outlay.

Note: the land belonging to the particular estate was not the best.

Source: Observer (newspaper) May 1842, quoted by A. M. and J. Ferguson, The Ceylon Directory, 1876-78, op. cit. (pages not numbered).

Ferguson, who compiled the Ceylon Directory, estimates the profits from coffee at 20 to 25 per cent on capital invested in 1869.¹

Despite expansion in exports, the diffusion of new techniques and skills to the rural sector was negligible. There was little spillover of labour skills as the plantations did not develop more than rudimentary labour skills. As Myint points out, there was no reallocation of given resources (other than some land) but new effective demand was introduced for the output of "surplus" resources which would not have been used in the absence of trade. Plantation sectors expanded on the basis of increasing supplies of cheap labour with a minimum of capital outlay. Thus the contribution of Western enterprise to the development of the country's expansion process lay largely in the improvement of transport and communications and the discovery of new export crops. These were methods of increasing the total volume of resources being utilized rather than making a given volume of resources more productive. A significant part of the expansion cannot be attributed to revolutionary changes in techniques and increases in productivity.²

Although it was to be expected that the large number of workers employed and their high average propensity to consume food and simple durable goods would lead to increased domestic production by creating a large increase in market demand, the actual course of events proved to

¹J. Ferguson, Ceylon in 1893, op. cit., p. 66.

²H. Myint, "The 'Classical Theory' of International Trade and the Underdeveloped Countries" in Theberge (Ed.), Economics of Trade and Development, op. cit., p. 197.

be quite different. The weakness of spread effects arose from the nature of the plantation industry. The products of this sector were sold abroad and the factors of production necessary to this sector came from abroad with the sole exception of land. Almost all the intermediate goods used by this sector and the bulk of consumption items required by its workers were imported. The profits which accrued to the plantation industry were either remitted abroad or reinvested in the plantations. Of the wages that accrued to plantation labour, it was reported by a planter that two thirds was remitted abroad to South India.¹

The wealthy commercial and entrepreneur class (to which the plantations gave rise) had a standard of living far higher than the rest of the community and their demands were for goods which would not be produced domestically. They formed a very small group and therefore their demand did not create a market large enough to warrant domestic production. This led to the importation of goods necessary for the high standard of living enjoyed by this group. They became what Jonathan Levin has termed the "luxury importers."

It was not only this group that consumed imported items, but the local population at large, too, grew accustomed to depending upon imports.

"Forbes noted in 1836 that 'every article of British manufacture which natives might require or could afford to purchase was hawked through the most remote native hamlets, was offered for sale at

¹E. F. C. Ludowyck, The Modern History of Ceylon, op. cit., p. 67.

every cabin door and might be procured at prices which would barely remunerate the importing merchant and native peddler. . ."¹

By the 1870's, 30 to 40 per cent of the entire consumption requirements of rice was imported, nearly all the imports being for the plantation sector.²

Why did domestic agriculture not respond to the increased demand? Rice was imported from India and Burma and the imported rice was cheap.³ It was probably cheaper than the locally grown rice. (The returns at the time being 50 to 100 fold in India and Burma, in terms of bushels of grain, as against 12 to 15 fold in the best districts in Ceylon.⁴) However, the quality of the imported rice was lower than that of the locally grown rice which was far more nutritious than the import. The import duty balanced the rent or tithe on internal rice cultivation.

Prior to the opening of plantations by the British, irregular and/or insufficient rainfall used to cause periodic famines. This led to imports, for in good times there was a surplus practically all over the island, whereas in bad times there was no surplus for sale. At the

¹Quoted in E. F. C. Ludowyck, The Modern History of Ceylon, op. cit., p. 58.

²Percentages as estimated by A. M. and J. Ferguson in The Ceylon Directory, 1876-78. Prior to the opening of plantations, less than $\frac{1}{2}$ a million bushels of rice was imported. The figures shot up to six million bushels with the development of plantations. A. M. and J. Ferguson, The Ceylon Directory, 1876-78, op. cit., p. xvii.

³Prices of domestically produced rice are not available, but Ferguson states that the imported rice was cheap.

⁴A. M. and J. Ferguson, The Ceylon Directory, 1876-78, op. cit., p. xviii.

time of the opening of coffee plantations the wet zone was barely able to provide for the needs of the indigenous population since it comprised only a fraction of the area suited to rice production. The dry zone was under jungle at this time. Extending the area under rice production would have entailed bringing the neglected areas of the dry zone under cultivation. With the downfall of the old kingdoms, irrigation works had fallen into disuse and disrepair. Since increased rice production is dependent upon an assured supply of water, extending the area under rice cultivation would have been a difficult task. Very little was done by the government to bring the North Central Province into cultivation, despite the interest shown by one or two Governors.¹ Not only was the water supply to these areas insufficient, but malaria added to the problems. Peasant colonization schemes were only put into operation in 1930 (the first attempt to open up the jungle being the Minneriya Colonization Scheme).

In the areas already under rice cultivation, agriculture was carried out along traditional lines. As the peasants produced just sufficient for their needs, the risk involved in attempting to improve their methods of production would mitigate against them doing so. They had virtually no access to credit or marketing facilities. There were neither distribution nor marketing arrangements for the procurement and sale of local rice.

¹The expenditure pattern of the government was such that outside transportation and a small outlay on education and medicine, very little else was spent on developing the economy.

Peasants found it difficult to reach markets as they lived far from good roads. There were no major roads in the dry zone; moreover, in the wet zone some of the estate roads could not be used freely by the villager.¹

There is also "the possibility that the scorched earth policy implemented by British forces in suppressing the rebellion of 1817-18 might have produced a set-back in buffalo population and the technique of paddy cultivation with which it was associated."² Furthermore, rinderpest and other cattle diseases are reported to have taken heavy toll of the cattle population and paddy fields were often left uncultivated as a result of the loss of draught animals.³ Indiscriminate breeding and inbreeding of cattle and the methods of rearing them made them feeble in health and susceptible to disease. These factors led to a sharp reduction of the buffalo and cattle population. The few remaining animals, it is argued,⁴ were probably hired out at high rates and those cultivators who could not afford to hire out draught animals had to resort to manpower in ploughing their fields, entailing a retrogression in paddy technology. It is also possible that the loss of pasture land (referred to later in this chapter) occurring almost at the same time, prevented any remedial action being taken

¹A Plan for the Rehabilitation of the Kandyan Peasantry in Central and Uva Provinces 1955-56 to 1959-60, Ministry of Home Affairs (Ceylon: Government Press, 1956), p. 13.

²M. Roberts, "The Impact of the Wastelands Legislation and Growth of Plantations on the Techniques of Paddy Cultivation in British Ceylon: A Critique," Modern Ceylon Studies, Vol. I, No. 2, July 1970 (Peradeniya: University of Ceylon), p. 162.

³Ibid., p. 164.

⁴Ibid., p. 193.

to increase the cattle and buffalo population of the island.

The impact of the superimposition of a modern capitalist-type economy upon a traditional feudal economy also had adverse effects which led to a decline in domestic rice production. Among the factors leading to poverty among the peasantry and a decline in production are the following:

1. The abolition of Rajakariya (labour services) and the Gamsabhawa (village councils) by the British government meant that villagers had neither the means nor the authority to tend their irrigation works and regulate and carry out other agricultural operations. When rajakariya was abolished, people had to pay a tax which took the form of a share of the produce of land for which services had been rendered. It was probably hoped that labour for the plantations would be provided once the peasant was exempted from this type of service. These "changes however were not welcomed. The amount of labour performed for each holding had been fixed and generally was not heavy. Now instead a landholder had to give a share of the produce to government. They had to pay more if they extended the cultivated area. The collection of the taxes was farmed out and the farmer could harass them if he desired. . . And their land could now be seized for debt as it was their personal property, while earlier a creditor had only a right to their crops."¹

The Gamsabhawa lost its power of punishing offenders to the courts. Judges who were ignorant of customs and regulations pertaining to rice cultivation often gave wrong decisions.

2. Loss of land by the peasantry. Due to legislation passed at the time, peasants were left with little other than their paddy lands. Among these measures were:

"Ordinance No. 12 y 1840, to make provision for the prevention of encroachment on Crown lands. Section 7 states that "all forest, waste, unoccupied or uncultivated land shall be presumed to be the property of the Crown until the contrary thereof be proved, and all chenas and other

¹G. C. Mendis, Ceylon. Under the British, op. cit., p. 48.

lands which can only be cultivated after intervals of several years shall, if the same be situate within the² districts formerly comprised in the Kandyan provinces, (wherein no thombo registers have been heretofore established), be deemed to belong to the Crown and not to be the property of any private person claiming the same against the Crown, except upon proof only by such person.

Another measure that followed was the Temple Lands Registration Ordinance, No. 10 of 1856. This diminished the rights of the temples by the Crown succeeding to ownership of large extents of forest and waste lands as temples could not pay half the survey fees in order to prepare plans which were to be deposited with the Register of Temple Lands. The Lands Resumption Ordinance No. 4 of 1887 enabled the Government Agent to resume possession of lands alienated by the Crown which had been abandoned.

The Definition of Boundaries Ordinance, No. 1 of 1844 enabled the government to demand the production of deeds and documents of any person claiming lands and to make him pay the cost of survey. Even the paddy owners were caught in the net. . .for the Grain Tax Ordinance of 1878 made it obligatory on them to pay a tax based on income, a levy which resulted in the sale of land belonging to persons who were unable to meet it."¹

The onus of proof was laid upon the peasant. The forest lands, for instance, provided 'common land' for the village; here cattle were grazed and chena cultivation practised. Such rights of customary usage were not considered.

All royal property became Crown land and was sold at a nominal price to coffee planters. The villagers lost their rights to pasture as well as land for subsidiary crops. Forest land which had belonged to the king was lost under the Waste Lands Ordinance of 1840. Van Den Driesen

¹A Plan for the Rehabilitation of the Kandyan Peasantry in Central and Uva Provinces 1955-56 to 1959-60, op. cit., p. 4.

quoted the case of a coffee planter, who, when he took possession of his land found a prosperous village in the middle of it and many other planters were reported by this same planter to have told the same story: the villagers had simply been driven off the land.¹

"...rights of an individual proprietor which could be validated in a court of law in the 1830's had never been envisaged by the custom governing the use of land in the Kandyan kingdom."²

In any case, villages in plantation areas had no means of expansion as estates closed in around them. "And some at least of the private chenas and other lands which have been sold to estates were given up by their peasant owners because they were unable to take the risk of claiming for title to be settled in their favour when presumption was in favour of the Crown. It seems likely, too, that land policy and its effects have contributed to a sense of hopelessness among the Kandyan peasantry."³

3. Land clearings for commercial plantations led to silting and floods. The perennial streams which provided a constant supply of water for the irrigation of paddy crops were turned into "raging torrents" rushing excess water into the paddy fields. "Heavy siltation and water logging of the paddy land led to near suffocation of the peasants." In the process of land clearing "upper slopes of catchments were deprived of forest cover, river banks were denuded of forests right up to the water's edge and steep land left unprotected without any regard to crucial angles of slope. Inefficient drainage was added to these destructive activities and caused

¹Quoted by E. F. C. Ludowyck in The Story of Ceylon (New York: Roy Publishers, 1963), p. 194.

²E. F. C. Ludowyck, The Modern History of Ceylon, op. cit., p. 62.

³B. H. Farmer, Pioneer Peasant Colonization in Ceylon: A Study in Asian Agrarian Problems (London, New York: Oxford University Press, 1951), p. 91.

unprecedented silting and floods. Such new untried and unsystematic methods could be attributed to total ignorance of tropical conditions initially, but the devastation of acre upon acre of stream reserves continued unabated, despite severe warnings and in defiance of conditions imposing immediate remedial measures on lessees of Crown land. (The enormous areas which were cleared of forest for coffee planting did not return to jungle when they were abandoned but have remained as treeless patna).

Rubber and coconut plantations, though confined to the lower hills and coastal plains, have themselves contributed to the deterioration and erosion of vast quantities of soil. Cultivation practices which ensured the stability of the soil and minimized its wash-way took long years of trial and error before they could be implemented. Thus the practice of growing cover crops was introduced on rubber lands only in 1925 up to which year lands on which rubber was grown, were kept clean weeded. More recent innovations such as terracing the steeper slopes and the hedge planting of tea lands on the contour has yet to be translated into practice."¹

The three-fold system of land use by the villager, i.e., paddy fields situated in the lower slopes and valley bottoms and the home gardens, together with chena cultivation and the grazing of cattle in the forest, were particularly well adapted to the physical environment.²

Peasants had been accustomed to the encouragement and help of the government. G. Mendis, a historian, refers to Bertolacci as having:

¹Department of Census and Statistics, Census of Agriculture 1962, Vol. II (Ceylon: Government Press, 1966), pp. 28, 29.

²For a discussion of this point, see B. H. Farmer, Pioneer Peasant Colonization in Ceylon, op. cit.

said that commercial and agricultural interests were dependent almost totally on the encouragement which government afforded to the cultivation of rice. But during the period under consideration, conditions had changed. In 1837 the dams at Kirama and Urubokka which irrigated large tracts of paddy land were destroyed; again during a rebellion irrigation works had been damaged and the government took no notice of a population that was decreasing owing to drought and disease.¹ Colonial governments were interested mainly in balancing revenue and expenditure and paid scant attention to the development of domestic agriculture.

The paddy tax also adversely affected the paddy cultivator. "Several witnesses before the Grain Tax Commission even stated that certain mudlands were left uncultivated partly because of this impost and because their owners lacked capital. Under the Commutation system there was the further influence of evictions, which led to the abandoning of certain fields that had been regularly cultivated."² Table III-5 shows the contribution of the paddy tax to government revenue.³

Immigrant labour was used on estates. In the early stages of the plantation industry, villagers offered themselves for casual labour

¹G. C. Mendis, Ceylon Under the British, op. cit., p. 83.

²M. Roberts, "Grain Taxes in British Ceylon, 1832-78," Modern Ceylon Studies, Vol. 1, No. 1 (January, 1970), op. cit., p. 145.

³It is not possible to calculate paddy tax as a percentage of government revenue as the data pertaining to total government revenue during these years are not available.

TABLE III-5

REVENUE FROM PADDY TAX
(Selected Years)

YEAR	REVENUE FROM PADDY TAX (£)
1840	38,741
1850	39,146
1860	65,118
1870	100,047
1876	100,298

Source: M. Roberts, "Grain Taxes in British Ceylon, 1832-78," Modern Ceylon Studies, Vol. 1, No. 1 (Peradeniya: University of Ceylon), January, 1970, p. 116.

but "villagers have so often been duped and cheated out of their due that some have given up work and others daily become more averse to work on the estates."¹ Other factors added to the villagers' reluctance to work on the estates. Not only did the cultivation of traditional crops permit an easier life than that on the estates, but the wages offered by the estate sector were not high enough to attract labour away from the villages especially as there was no great pressure on the land at the time. Above all, the reluctance stems from the fact that the peasant had, in addition to his rice crop, supplementary food such as coconut, yams, fruit and many varieties of vegetables. This kept him

¹Reported by a Police Magistrate; quoted in F. C. Ludowyck, The Modern History of Ceylon, op. cit., p. 66.

content and there was no reason why he should give up a dependable means of keeping himself in comfort for the uncertainty of money wages on the plantations. Tradition would also have played a part in this reluctance, for the cultivator of land stood at the head of the social hierarchy in the system which prevailed prior to the transformation of the economy. Knox observed in the 17th Century that

"..husbandry is the great employment of the country, which is spoken of at large before. In this the best men labour. Nor is it held any disgrace for Men of the greatest Quality to do any work either at home or in the Field, if it be for themselves; but to work for hire with them is reckoned for a great shame; and very few are here to be found that will work so."¹

Imports² of cheap consumer goods infiltrated the island so that the local crafts fell away. Imports were cheap probably due to low costs of production in Britain arising from extensive economies of scale. Ferguson noted in 1893 that "native cotton spinners and weavers were at one time common, but the industry is dying out. . ."³ There was no serious attempt to uplift the peasantry -- Sinhalese and Tamil villagers paid "with the grain tax a much larger proportion of their earnings than any

¹R. Knox, An Historical Relation of Ceylon, 2nd edition (Dehiwela, Ceylon: Tisara Press, 1966), p. 180.

²The import trade was in British and Indian hands.

³J. Ferguson, Ceylon in 1893, op. cit., p. 62.

other class of persons"¹ -- or to seek means to increase rice production.

Economic growth was thus unevenly distributed, being confined mainly to the plantation sector and its ancillary services. Many Ceylonese found employment in connection with the export industry, especially in the service sector in such capacities as carters (before the advent of the railway), carpenters, boutique keepers, rice dealers in stores, peddlars in the villages, and towns which sprang up around the planting areas, clerks in Colombo and timber merchants. Furthermore, with the diffusion of education and ownership, there was created for the first time a local professional and capitalist class.

Prior to the establishment of plantations, the economy showed no signs of increasing specialization and capital accumulation. Entrepreneurs and investment were lacking. Therefore the economy needed a stimulus in order to induce growth beyond subsistence levels. Estate development, however, failed "to touch off any remarkable growth or transformation of the rest of the economy."²

¹E. F. C. Ludowyck, The Modern History of Ceylon, op. cit., p. 121.

²D. R. Snodgrass, op. cit., p. 54.

PART II: TECHNICAL ASPECTS OF THE DEVELOPMENT OF TEA, RUBBER AND COCONUT AS EXPORT STAPLES

Prefatory Note

The next three chapters constitute something of a "technical digression" to the general discussion. They deal with tea, rubber and coconut respectively, taking a basically industry-study approach. This part can be omitted by the general reader, or read quickly at first reading.

Each chapter examines those aspects of the production functions of the export industries which have relevance to the magnitude of export receipts, distribution of these receipts among various factors and the share of income retained locally, all of which determine "linkage investment" in the manner stated in Chapter I. Post war price trends and future prospects of the exports are then also discussed.

A description of methods of production and labour-use forms an introduction to each export industry. This also furnishes an idea of the labour intensity of plantation industry and the nature of skills imparted to labour.¹ This is followed by an investigation of factors which have led or could lead to an expansion in export income. These involve improvements in productivity brought about by technological progress and the extent to which the product has been adapted to suit changing requirements involving new processes of manufacture.

¹ Estates have employed around 30 per cent of the labour force between 1901 and 1953.

The next step has been to consider factors which affect the distribution of export income. Costs of production are divided into wages and other costs. The share and magnitude of wages and other costs have implications for final demand and backward linkages arising from expenditure on consumer goods and intermediate inputs. The share of profits is dependent upon world market prices and costs of production. The share of profits retained locally is expected to generate savings and contribute to capital formation. From the point of view of local retention of profits, the most important factor is its distribution between local and foreign ownership. Here economies of scale are explored in order to ascertain whether local participation has been limited by this factor. Production by small holders and government assistance to small holders are described, such production being an important spillover effect of plantations. Small holdings are also important from the point of view of local retention of earnings and employment of local labour. Finally, the contribution of export income to locally retained income has been calculated, and each chapter concludes with a discussion of post war price trends, the competition experienced from synthetic substitutes and future prospects of these exports.

Having ascertained the magnitude, distribution and share of export income retained locally, we investigate in Part III the extent to which local payments may have induced investment in related industries in Ceylon.

CHAPTER IV

TEA: BACKGROUND NOTES ON THE PRODUCTION FUNCTION, CONTRIBUTION TO RETAINED INCOME AND FUTURE PROSPECTS

Origin and Development of the Tea Industry in Ceylon

When coffee crashed in the 1880's, tea was found to be the most suitable alternative crop. Tea was successfully cultivated as early as the 1860's. Ceylon was found to possess an ideal climate for the tea plant. She also possessed at this time a well-developed harbour, a network of roads and railways linking the coffee growing areas to the capital port of Colombo, banks and agency houses, land on which coffee had formerly been grown lying idle, and a plantation labour force. Moreover, tea had become widely popular in the Western world in the 18th and 19th Centuries; it had gradually displaced coffee in England.

Acreage in tea expanded rapidly from 250 acres in 1873¹ to 35,000 acres in 1883 and 255,000 acres in 1893.² Similarly, the exports of tea over the same period rose from 23 lbs in 1876³ to 2,000,000 lbs in 1883 and 82,000,000 lbs. in 1893.⁴ Writing in 1893, Ferguson comments that "as was

¹J. Ferguson, Ceylon in 1893, op. cit., p. 79.

²G. C. Mendis, Ceylon Under the British, op. cit., p. 113.

³J. Ferguson, Ceylon in 1893, op. cit., p. 79.

⁴D. R. Snodgrass, op. cit., Table A-52.

the case with coffee, the preparation of the new staple in Ceylon is in a fair way to be brought to perfection. Improved machinery has already been invented by local planters and others to save labour, to counteract the effect of unsuitable weather or to turn out teas with better flavour; and yet the industry cannot be said to be more than a dozen years old in the island!"¹

By 1893, Ceylon's tea exports were comparable to those of India and China, the world's largest tea producers at the time. China, which had until the last quarter of the 19th Century been almost the sole supplier of tea to the West, was gradually displaced from the British market by the improved products of India and Ceylon. Demand shifted to black teas and the Chinese producers, who were less adaptable and heavily taxed, lost their position in the world tea market.

By around 1910, practically all land available for tea in Ceylon was under cultivation.² Fluctuations both in the price and quantity of tea exported were a regular feature of the tea industry -- see Table A-1. By 1945, Ceylon was exporting around 230 million pounds of tea valued at Rs 1.20 per pound.

Cultivation and Manufacture of Tea

The tea plant is an evergreen which flourishes in a warm, rainy climate. Tea is made from the young, tender shoots of the bush -- two leaves

¹J. Ferguson, Ceylon in 1893, op. cit., p. 82.

²580,500 acres were under tea in 1910. In 1960 there were 581,700 acres under tea. Source: D. R. Snodgrass, op. cit., Table A-37.

and a bud. The field work involved in growing and plucking tea is considerable and consists of plucking, pruning, weeding, fertilizing, dusting, spraying, draining, maintaining roads, etc. Around 85 per cent of the labour force on tea estates is employed in these tasks.¹

The average number of labourers per acre was reported to have been somewhat less than one labourer in 1929.² In the late 1950's, it was estimated at 1.1 labourers per acre.³ The increase was probably due to the higher yield per acre⁴ -- see Table IV-1. The number of workers per acre has been projected to increase from 1.1 to 1.9 on replanted areas.⁵ Around 576,000 workers were employed in tea plantations in 1960. The slight increase in the number of labourers per acre was necessary as there has been no mechanization of the field work. Although the tea industry has so far been labour intensive, the future prospects are for an increasing degree of mechanization of the field work. This is discussed at the end of this chapter.

¹C. R. Harler, Tea Growing (London: Oxford University Press, 1966), Table 25, p. 154.

²Includes both field and factory workers.

³Great Britain Colonial Office, Report on Ceylon for 1929 (London: H.M.S.O.), p. 9.

⁴The slight increase in the ratio from 1942 to 1959, i.e., 1.0 to 1.1 has been attributed to replanting by Y. Lim in 'Export Industries and Pattern of Economic Growth in Ceylon,' unpublished Ph.D. dissertation (University of California, Los Angeles, 1965), p. 69. Prior to 1959, however, there was practically no replanting. The Tea Replanting Subsidy Scheme was introduced in 1959 in order to induce estates to replant with high yielding clones. Total replanted area by the end of 1960 was only 1129 acres. Therefore we conclude that replanting could hardly have been a factor accounting for the increase in this ratio; it seems more likely that the increased yield per acre necessitated the increase in the number of labourers per acre.

⁵Ceylon National Planning Council, The Ten Year Plan (Colombo: Government Press, 1959), p. 194.

Tea factories are situated in tea estates as manufacture has to commence fairly soon after the leaf is brought to the factory because the quality of the tea leaf deteriorates rapidly with time.¹ Ceylon employs the orthodox method of manufacture; the manufactured product is obtained by withering, rolling, fermenting and firing the shoots.

A newer form of manufacture, the 'unorthodox' method of manufacture has been adopted by many countries. This does away entirely with the withering operation, requires less labour than the orthodox method of manufacture and leads to a saving in costs. "In Ceylon, however, the popularity of the Broken Orange Pekoes and B. O. P. fannings has survived these upheavals and has impeded a change from the old to the new forms of manufacture."²

Tea manufactured according to the unorthodox method differs from tea manufactured by the orthodox method in giving a stronger liquor, a brighter infusion and a quicker brew while they lack the appearance and flavour of tea prepared according to the orthodox method. Although there may be a reluctance to switch to the unorthodox methods of manufacture, especially in the case of high grown tea which fetches a high price, qualities such as appearance of tea are of far less importance today so that the above-mentioned properties of tea produced by the unorthodox method need not be

¹Smaller estates and small holders do not possess factories. They sell their leaf to nearby factories. The tea leaf is reported to deteriorate in quality in transit. Department of Census and Statistics, Census of Agriculture 1952, Part I, Tea Plantations (Ceylon: Government Press) 1956, p. 11.

²Nalini Jayapalan and A. S. Jayawardene, "Some Aspects of the Tea Industry -- Part III," Central Bank of Ceylon Bulletin, October 1967 (Colombo: Central Bank of Ceylon), p. 24.

such a drawback. For example, the appearance of tea is of no consequence in the case of tea bags and instant tea -- forms which are gaining popularity today. It is also reported that the tea packeting and distributing trade favours the tea produced by the unorthodox method as it lends itself to easier packeting.¹

A Tea Factory Development Subsidy Scheme was introduced in 1966 and one of its purposes was to foster modernization programmes in keeping with the latest technical developments essential for effecting economies in the cost of production. Adoption of modern processes can also be expected to lead to higher earnings on account of the factors mentioned in the previous paragraph.

Skills acquired in the manufacturing process, i.e., technicians, engineers, foremen, etc. could be of some value in the transmission of skills to the rest of the economy. Managerial, technical and clerical personnel are estimated to have accounted for 1.5 per cent of the labour force in 1950 and increased to around 2.3 per cent in 1960.² Hence the skill component of plantation labour is fairly low. Around 8.5 per cent of the labour force is employed in factory work.³ They probably acquire some familiarity with machine operation but are classified as 'unskilled' -- any skills they acquire are for the most part specific to plantation industry.

¹N. Jayapalan and A. S. Jayawardene, op. cit., Part III, p. 25.

²Based on D. R. Snodgrass, op. cit., Table 6-10.

³C. R. Harler, Tea Growing, op. cit., Table 25, p. 154.

Although most of the estate superintendents and assistant superintendents in early years were Europeans, these jobs are almost completely in the hands of Ceylonese today. Hence, Ceylonese have acquired some training in management of estates.

Technical Progress and Productivity

Technical progress has taken place in the tea industry almost from its inception in Ceylon. There has been increasing use of fertilizer, the development of high yielding clones by the Tea Research Institute (T.R.I.), the use of better methods of production and newer types of machinery in the factory.

The increase in productivity that occurred over the years is set out in Table IV-1. These increases are mainly due to the increased use of fertilizer, particularly following wartime shortages. The value¹ of imports of fertilizer rose from Rs 61 million in 1959 to Rs 110 million in 1968 and gives an indication of the increase in fertilizer consumption by the tea industry as this industry absorbs around half the quantity of fertilizer imported.

¹The quantity is not available except for 1965 in which year the volume of fertilizer used by the tea industry was reported to be 160,000 tons which was around 50 per cent of the total quantity of fertilizer available. Source: Ministry of Planning and Economic Affairs, Agricultural Development Proposals 1966-70 (Ceylon: Government Press, 1966), p. 231.

TABLE IV-1

TEA PRODUCTION AND YIELDS (Average)

	AREA PLANTED (000 acres)	PRODUCTION (Mil. lbs)	YIELD/ACRE* (lbs)
1880-84	23	1	52
1885-89	185	17	91
1890-94	281	71	252
1895-99	388	119	306
1900-04	425	151	355
1905-09	468	175	373
1910-14	493	193	391
1915-19	498	205	413
1920-24	418	187	447
1925-29	449	236	525
1930-34	558	243	435
1935-39	497	231	465
1940-44	550	274	498
1946-49	554	295	537
1950-54	568	332	584
1955-59	571	396	693
1960-64	588	465	791
1965-69	597	492	824

* This figure is an understatement as no allowance has been made for acreage replanted, acreage not in bearing, etc.

Sources: D. R. Snodgrass, op. cit., Table 2-5, Table 6-8, Table A-32, Table A-37, Central Bank of Ceylon, Annual Report of the Monetary Board to the Minister of Finance, various issues.

Aside from the increased use of fertilizer, research carried out by the T.R.I. has helped develop new high yielding clones yielding as much as 6,000 lbs of processed tea per annum, whereas the yearly average is now around 900 - 1,000 lbs. per acre. The area replanted as yet is too insignificant for it to have had much influence on the average yield per acre,

total replanted acreage being 33,428 acres in 1969¹ compared to a total area of 596,514 acres under tea.² The Census of Agriculture of 1952 also mentions that the increased yields recorded in recent years are due partly to effective control of Blister Blight -- a leaf disease.³

Technological progress has made possible an increase in yields from 435 lbs per acre in 1933-33 to around 1,000 lbs per acre in the early 1970's. (The area under tea has barely increased since the 1930's). The quantity of tea exported from Ceylon has practically doubled since the 1930's and the value of tea exports has risen from around Rs 200 million in 1930 to Rs 1062 million in 1969 (see Appendix, Table A-1).

The Distribution of Export Income

TABLE IV-2

PERCENTAGE DISTRIBUTION OF EXPORT RECEIPTS FROM TEA

I T E M	1920-38	1948-67
Export Receipts	100	100
Wages and Salaries	38	37
Other Costs	21	26
Export Duties	3	21
Company Taxes	1	11
P r o f i t s	38	9

Source: Table A-2 and Table A-3.

¹Ceylon Government, Administration Report of the Tea Controller for 1969 (Ceylon: Government Press, 1970), p. J85.

²Ibid., p. J71.

³Census of Agriculture 1952, Part I, op. cit., p. 9.

Wages and salaries are the largest items in the cost of production, which follows from the labour intensive nature and the degree of processing involved in the tea industry. Wages and salaries are spent overwhelmingly on food and textile products. The magnitude of plantation expenditure on these items and domestic production are dealt with in the subsequent section.

Other costs, too, account for a fair proportion of export receipts. Intermediate inputs used in the manufacture of tea are mainly fertilizer and packing materials, i.e., tea chests. Some part of the plantation requirements of these items are met by local production and are dealt with in the subsequent chapter.

The share of profits retained locally depends on domestic ownership of the area under tea. Foreign ownership has been highest in the tea industry. Foreign ownership of tea was put at 80 per cent of the acreage under tea by the Ceylon Banking Commission of 1934.¹ It seems to have declined to around 30 per cent by the end of the 1960's.² Local ownership may have been limited by the economies of scale involved in tea production and manufacture; hence we turn to a consideration of economies of scale in the production and manufacture of tea.

Economies of Scale

It is generally acknowledged that economies of scale in tea production are considerable. According to Wickizier, 500 acres is the minimum size

¹Sir W. I. Jennings, The Economy of Ceylon, 2nd edition (Madras, New York: Oxford University Press, 1951), p. 26.

for economic operation. In Ceylon, tea companies replaced individual proprietorships and later merged into larger corporations by bringing together several estates.¹ Fifty-one per cent of the acreage under tea in 1951 was in estates over 500 acres in size (see Table IV-3 below).

TABLE IV-3
SIZE OF TEA ESTATES

AS PERCENTAGES OF TOTAL ACREAGE UNDER TEA				
	1951	1954	1959	1969
Small holdings < 10 acres	11.9	12.2	13.4	17.4
Estates 10 - 100 acres	7.6	8.0	9.0	11.0
100 - 500 acres	29.6	28.7	27.7	24.4
> 500 acres	50.6	51.1	49.9	47.2

Sources: D. R. Snodgrass, op. cit., Table A-39, Administration Report of the Tea Controller for 1969, op. cit., p. J71.

Economies in the processing of tea -- the huge initial sum of capital required for setting up a factory with expensive machinery can only be considered by a large estate or co-operative factory which can produce enough leaves to use its machinery to capacity. The cost of production declines up to a point and increases thereafter as illustrated in Table IV-4. This is probably due to machinery being worked beyond its rated capacity. It is difficult to assign lowest manufacturing costs to estates of a particular size

¹V. D. Wickizier, Coffee, Tea and Cocoa, An Economic and Political Analysis (California: Stanford University Press, 1951), p. 180.

range as yields vary between estates of different size. On the basis of average yields, the lowest costs of manufacture appear to be associated with estates in the range of 1,000 - 1,499 acres.

TABLE IV-4

AVERAGE TEA MANUFACTURING COSTS ACCORDING TO SIZE OF OUTPUT

SIZE OF OUTPUT (lbs)	SIZE OF SAMPLE	COSTS (Cents/lb)
0 - 99,999	5	34.9
100,000 - 199,999	2	27.9
200,000 - 299,999	12	31.3
300,000 - 399,999	26	27.5
400,000 - 499,999	24	26.4
500,000 - 599,999	15	25.7
600,000 - 699,999	13	26.9
700,000 - 799,999	6	24.3
800,000 - 899,999	5	25.6
900,000 - 999,999	5	23.9
1,000,000 - 1,199,999	4	27.9
1,200,000 - 1,399,999	10	25.6
1,400,000 - 1,999,999	6	26.0
2,000,000 and over	<u>5</u>	<u>25.3</u>
	138	26.2

Source: Y. Lim, op. cit., Table VI-6, p. 77.

In addition to economies in processing, economies of scale appear to be realized in the field, too. The average yield per acre rises up to a point and then declines as larger units may "prove unwieldy in regard to supervision and intensity of cultivation."¹

¹Census of Agriculture 1952, Part I, op. cit., p. 11.

TABLE IV-5

YIELD OF GREEN LEAF BY SIZE OF TEA UNIT CULTIVATED -- 1951

SIZE (in Acres)	MATURE ACREAGE	AVERAGE YIELD PER ACRE (lbs Green Leaf)
Ceylon *	440,771	2,845
Under 10 *	235	1,123
10 - 19 *	896	1,629
20 - 49	7,122	1,856
50 - 99	9,942	2,072
100 - 199	20,082	2,164
200 - 499	115,099	2,709
500 - 999	169,438	3,005
1,000 - 1,499	80,587	3,059
1,500 - 1,999	21,837	2,851
2,000 and over	15,533	2,904
* Figure refers to units of tea of this size in estates of 20 acres or more.		

Source: Department of Census and Statistics, Census of Agriculture, 1952, Part I, op. cit., p. 11.

The yield figures also indicate that the highest yields are associated with estates in the 1,000 - 1,499 acre range. Furthermore, subject to limitations stated earlier, average costs of production appear to be least for these estates. Thus 1,000 - 1,499 acres appears to be the optimum size for estates under the prevalent form of management as there appear to be diseconomies with respect to supervision, costs of manufacture, etc. beyond this range.

It must be noted, however, that the yield per acre seems to be influenced by the elevation at which the estate is situated (see Table IV-6).

As large estates constitute the bulk of estates at higher elevations, while smaller holdings predominate at lower elevations,¹ this seems to be an added explanation of the higher yields accruing to larger estates. Hence the statements regarding optimum size have to be qualified by this fact.

TABLE IV-6
TEA ACREAGE AND AVERAGE YIELD ON ESTATES
CLASSIFIED BY MEAN ELEVATION -- 1951

ELEVATION (feet)	MATURE AVERAGE	RELATIVE PERCENTAGE	AVERAGE YIELD/ACRE (lbs of Green Leaf)
Ceylon	440,771	100.0	2,845
Under 100	2,020	0.46	2,328
100 - 499	21,102	4.79	2,762
500 - 999	24,288	5.51	2,972
1,000 - 1,499	16,749	3.80	2,860
1,500 - 1,999	22,772	5.17	2,396
2,000 - 2,999	71,349	16.19	2,516
3,000 - 3,999	115,101	26.11	2,844
4,000 - 4,999	123,446	28.00	3,008
5,000 - 5,999	38,202	8.67	3,110
6,000 and over	5,742	1.30	3,369

Source: Census of Agriculture 1952, Part I, op. cit., p. 12.

It is also held that the tea produced by larger estates fetches a higher price per pound due to such advantages as "the regularity of manuring, composition of fertilizers, pruning, plucking of tea leaves, withering, rolling, fermentation and blending. Careful supervision in minute detail of each stage

¹N. Jayapalan and A. S. Jayawardena, Some Aspects of the Tea Industry, Part III, op. cit., p. 27.

is essential in producing quality tea. The advantages of standardized production and well-organized supervision can be better secured in a sufficiently large unit of production."¹

This seems to be only part of the explanation as the price of tea is generally associated with its quality and quality in turn is associated with the fine flavour characteristic of teas grown at higher elevations. We noted earlier that large estates constitute the bulk of estates at higher elevations. Table IV-7 reveals clearly that high grown teas command premium prices.

TABLE IV-7

AVERAGE COLOMBO AUCTION PRICE OF TEA PER POUND

YEAR	HIGH GROWN	MEDIUM GROWN	LOW GROWN	ALL TEAS
1956	2.50	1.96	1.88	2.16
1957	2.05	1.61	1.88	1.86
1958	2.11	1.51	1.48	1.73
1959	2.13	1.69	1.67	1.85
1960	2.03	1.75	1.83	1.88
1961	1.99	1.72	1.74	1.83
1962	2.02	1.61	1.56	1.75
1963	1.90	1.54	1.53	1.68
1964	1.93	1.58	1.49	1.68
1965	1.93	1.66	1.64	1.75
1966	1.84	1.46	1.37	1.57
1967	1.82	1.47	1.20	1.50

Source: Central Bank of Ceylon Annual Report, op. cit., various issues.

¹Y. Lim, op. cit., p. 78.

Thus economies of scale seem to be of significance mainly in the manufacture of tea and to a lesser extent in its production. Economies associated particularly with manufacture are likely to have limited Ceylonese ownership. A study of production by small-holders illustrates difficulties encountered in the production of tea in years prior to the 1950's, and the manner in which some of them have been overcome in later years.

Small holders in the Tea Industry

A small holding is defined as a holding less than 10 acres in extent. Small holdings are important from the point of view of local retention of earning and employment of local labour. Furthermore, peasant producers of export crops were able perhaps for the first time to obtain a surplus over subsistence and grew accustomed to investing in products with long gestation periods. A tea plant takes around four years to come into bearing and reaches maturity around the 10th or 11th year. The normal life of a tea bush is around 40 years.

An important spill-over effect of plantations is production by small holders. Small holders imitate plantation methods and cultivate export crops. Furthermore, they are able to use the processing facilities of plantations, when the process of manufacture is too costly and complex for them to be in a position to manufacture the finished product.

Economies of scale and the labour intensive nature of tea production, however, made it difficult for small holders to cultivate the crop. Small holder tea cultivation never assumed the proportions it reached in the cultivation of coffee, rubber and coconut. Small tea producers accounted for around

12 per cent of the total acreage under tea in 1935. This proportion was held until the early 1950's when it started increasing slowly.

TABLE IV-8
EXTENT OF SMALL HOLDINGS IN TEA

YEAR	NUMBER	ACRES	PERCENTAGE OF TOTAL AREA UNDER TEA
1899	n.a.	3,000	0.8
1935	69,982	65,938	11.8
1939	76,826	61,322	11.1
1946	77,668	63,158	11.4
1951	84,363	67,414	11.9
1959	92,083	77,640	13.4
1969	112,231	103,869	17.4

Sources: D. R. Snodgrass, op. cit., Table A-39; N. Ramachandran, Foreign Plantation Investment in Ceylon 1899-1958 (Colombo: Central Bank of Ceylon, 1963), p. 163; Administration Report of the Tea Controller for 1969, op. cit., p. J71.

Prior to the 1950's, the position of the small holder was weak on account of technical and institutional considerations. He had limited access to credit with which to purchase fertilizer or otherwise improve his land. He also had to rely on nearby estates to purchase his leaf as there is a tendency for the quality of the leaf to deteriorate even in transit from the field to the factory and the estate thus possessed monopoly power in its facilities. A number of measures were initiated by the government in the 1950's with a view to helping the small holder. The increase in acreage under small holdings is probably due to these measures.

Methods of tea planting adopted by small holders, at least until the 1950's, were less efficient than on larger estates. The result was that the average yield per acre on small holdings was below that on the estates (see Table IV-6). Furthermore, it was also reported that they resort to overcropping which is invariably followed by declining yields.¹ The damage done by overcropping is great and cannot be easily corrected. The tendency to coarse plucking may have been due to ignorance regarding the advantages of finer plucking, and more importantly to low incomes of the cultivators. Small holdings of tea generally form a supplementary source of income. Peasants either owned plots of paddy lands or worked for hire on nearby estates. Hence they would probably not have paid close attention to every detail of cultivation,, whereas production of tea requires continuous attention and much care. Careless handling of the leaf between the time of plucking and arrival at the withering space is said to be the chief cause of loss of quality.² Moreover, coarse plucking may also have arisen from their weak bargaining position³ vis-a-vis estates; the fact that they had to accept prices fixed by estates may have led them to increase output by coarse plucking. All these factors would in turn induce estates to pay a lower price for leaf of poor quality.

¹Census of Agriculture 1952, Part I, op. cit., p. 11.

²C. R. Harler, Tea Growing, op. cit., p. 97.

³It was a frequent complaint that factories paid small holders unduly low prices.

This state of affairs has significantly improved through the provisions of the Tea Control Act, which requires factories engaged in bought leaf manufacture to pay prices considered reasonable by the Tea Controller. Moreover, under the Tea Small Holder's Cooperative Scheme, the government established tea collecting depots in order to ensure that small holders were paid a fair price for green leaf. It also acted as a safeguard against sub-standard plucking by rejecting coarse leaf.¹ In order to improve the condition of the small holder, the Government also started a system of co-operative societies which were to provide the small holder with advice, materials, such as fertilizer and operate processing facilities. By 1957, 25 Tea Producers' Cooperative Societies were founded.²

The Tea Rehabilitation Subsidy Scheme was launched in 1959, primarily directed at holdings below 100 acres. Under this scheme, subsidies of Rs 600/acre were paid for the improvement of the agricultural condition of tea lands by the application of fertilizer, adoption of soil conservation measures and increasing the stand. From 1963, this subsidy was increased to Rs 800/acre. The success of this scheme is indicated by the fact that in the first four years itself, applications received under the scheme exceed the target acreage of 60,000 acres laid down in the 10 Year Plan.

¹A Plan for the Rehabilitation of the Kandyan Peasantry in the Central and Uva Provinces 1955-56 to 1959-60, op. cit., p. 81.

²D. R. Snodgrass, op. cit., p. 141.

In 1964, subsidies which had been paid to estates over 100 acres (under the Tea Replanting Subsidy Scheme) for replanting old tea land with high yielding varieties of tea was thrown open to small holders on the ground that there were an appreciable number of small holders who had acquired experience and technical know-how in V.P.¹ work and were considered competent to handle such operations.²

The Tea Rehabilitation Subsidy Scheme was superseded by the Tea Fertilizer Scheme of 1967. This scheme too was confined to small holdings and estates below 100 acres in extent. In the case of small holders and small estate owners who have difficulty in transporting the fertilizer, it is delivered at distribution centres closest to the holdings.³ By 1969, almost 60 per cent⁴ of the area under small holdings was fertilized under this scheme. The positive response of small holders shows that they are willing to give their land proper care and attention and that the main drawback hitherto had been the lack of adequate sources of finance.

Field officers of the Tea Control Department "provide small holders with advice and assistance in regard to rehabilitation and replanting operations to be carried out under these schemes, particularly on such measures as the contour lining of their lands, the construction of drains, the supply of vacancies and the methods of application of fertilizer."⁵

¹V.P. stands for vegetatively propagated.

²Agricultural Development Proposals 1966-79, op. cit., p. 5.

³Administration Report of the Tea Controller for 1969, op. cit., p. J86.

⁴Based on Ibid., pp. J87 and J71.

⁵Ibid., p. J88.

Small holders have been given the opportunity of bringing their methods of cultivation up to the standards of those practiced by larger estates; it seems possible that they are no longer the inefficient producers they were at the beginning of the 1950's. The higher yield strains and the use of fertilizer and co-operative processing facilities would all have reduced the relative advantage enjoyed by large estates in growing and processing tea.

Domestic and Foreign Components in Export Receipts From Tea

Tea companies were not subject to any taxes (in Ceylon) until 1915, when export duties were introduced. Such duties were extremely low until 1947. Income tax was introduced in 1932 -- the rate of company taxation between 1932-38 varied between 12 per cent and 10 per cent of before tax profits.

1920-1938

We present below a breakdown of export receipts (for details see Table A-2) from which we attempt to estimate the domestic and foreign component of export receipts.

TABLE IV-9
DISTRIBUTION OF EXPORT RECEIPTS 1920-38 AVERAGE

I T E M	VALUE (Rs M11)	AS PERCENTAGE OF EXPORT RECEIPTS
Export Receipts	164	100
Wages and Salaries	61	37
Other Costs	35	21
Export Duties	5	3
Company Taxes	2	1
Profits	63	38

Source: Table A-2.

Profits net of export duties and company taxes constituted 38 per cent of the value of exports. Since foreign ownership in the tea industry was put at 80 per cent, it is likely that the greater part of these profits was remitted abroad.

Savings from wages and salaries were also remitted abroad. There are no firm figures of migrants' transfers and private remittances, but statistics for later years (1950-1969) show that the outflow of such payments were around five per cent¹ of export receipts and were equivalent to the outflow on account of investment income during these years.

Furthermore, at least 43 per cent² of wages and salaries was expended on imported goods as Ceylon imported much of her requirements of foods and textiles. Thus, at the most around 50 per cent of wages and salaries may have been retained locally. Likewise, approximately 40 per cent³ of 'other costs' would have been spent on such imports as fertilizer, liquid fuel, machinery, etc.

Export duties and company taxes from tea constituted around seven per cent⁴ of government revenue for the period 1932-38.

Hence local retention can perhaps be estimated at approximately 43 per cent of export proceeds for this period, and the foreign component is

¹Based on Central Bank of Ceylon Annual Reports, 1950-69.

²Percentage for 1949-50 for all classes of workers. Source: Ministry of Finance, Economic and Social Development of Ceylon 1926-50 (Ceylon: Government Press, 1951), p. 11.

³Estimated on the basis of statistics for 1959-66 and refers to all export industries -- tea, rubber, and coconut.

⁴Based on Economic and Social Development of Ceylon 1926-50, op. cit., Table XXV, and Department of Commerce, Thirty Years Trade Statistics of Ceylon 1925-54 (Ceylon: Government Press, 1955-57), Table 25.

estimated at 57 per cent of export earnings. Local retention is as much a matter of increasing domestic production as of domestic ownership, i.e., the outflow of exchange earnings has been due to both expenditure on imported goods as well as the remittance of profits and savings due to foreign ownership and labour.

Post-war Estimates 1948-1967

Taxes and duties have increased sharply since Ceylon achieved independence in 1948; they became the means by which the surplus accruing to the export sector was transferred to the rest of the economy.

Proceeding as in the previous section

TABLE IV-10

DISTRIBUTION OF EXPORT RECEIPTS 1948-1967 YEARLY AVERAGE

I T E M	VALUE (Rs Mil)	AS PERCENTAGE OF EXPORT RECEIPTS
Export Receipts	942	100
Wages and Salaries	354	38
Other Costs	242	26
Export Duties	194	21
Company Taxes	108	11
P r o f i t s	82	9

Source: Appendix, Table A-3.

Export duties and company taxes from the tea industry accounted for around 24 per cent¹ of government revenue during this period.

¹Based on Table A-3; D. R. Snodgrass, op. cit., Table A-46 and Central Bank of Ceylon Annual Report 1969, Appendix Table 32.

Foreign ownership of the tea industry declined from 50 per cent to 40 per cent of the total acreage under tea during the period. The remittance of profits declined correspondingly and amounted to around four per cent¹ of export earnings.

The import content of public consumption² fell from 43 per cent to about 23 per cent from 1949-50 to 1967.³ Assuming that the import content of plantation wages and salaries averaged 33 per cent over the period 1948-1967, the outflow on imports is estimated to have been around 12 per cent of export earnings.

The import content of 'other costs' of all exports⁴ was 37 per cent during the years 1959 to 1966.⁵ Hence the outflow on imports from this source is estimated at 10 per cent of export receipts.

The total foreign component of export earnings is thus estimated at 26 per cent for the period 1948-67. Local retention is high at 74 per cent of export earnings and is due to greater local ownership, higher levels of taxation and domestic production and is an improvement on the figure of 43 per cent for the period 1920-38.

¹Based on Central Bank of Ceylon Annual Reports, various issues.

²There are no separate statistics for plantation workers, urban workers, etc.

³Central Bank of Ceylon Annual Report 1967 (Colombo: Central Bank of Ceylon), Table II(A)9; and Economic and Social Development of Ceylon, 1926-50, op. cit., p. 11.

⁴Separate statistics are not available for tea, rubber and coconut respectively.

⁵Based on Central Bank of Ceylon Annual Report for 1966 and Department of Census and Statistics, Statistical Abstracts of Ceylon (Ceylon: Department of Government Printing) various issues.

The share of exports retained locally led to the establishment of domestic industry and improvement in domestic agriculture. Forward, backward and residentiary linkages are discussed in a separate chapter, i.e., The Scope for Linkage Effects from the Export Industries, Chapter VII.

Post-War Problems: Price Movements and Market Structure

From September 1939, the British government controlled the bulk of the world's tea trade. The international allocation of tea was terminated in early 1947. Tea prices rose with the freeing of war time restrictions. The production costs of tea also kept rising. The cost of production of a pound of tea increased from 45 cts in 1938 to Rs 1.18 in 1948,¹ the main reason being the war time increase in wages. Wages on plantations rose by about 50 per cent between 1944 and 1948,² and by a further 44 per cent between 1948 and 1951.³ Minimum wage legislation was introduced in Ceylon and the minimum wage rate index for tea and rubber rose from 100 in 1939 to 315 in 1948 and 463 in 1951.⁴

Furthermore, both export duties and taxes kept increasing. The export duty on a pound of tea rose from 3 cts in 1946 to 38 cts in 1948 and further to 52 cts in 1951.⁵ The rate of company taxation (for non-resident

¹Census of Agriculture 1952, Part I, op. cit., p. 13.

²N. Ramachandran, op. cit., p. 103.

³Based on D. R. Snodgrass, op. cit., Table A-29.

⁴Central Bank of Ceylon Annual Report 1968, Appendix, Table 45.

⁵D. R. Snodgrass, op. cit., Table 6-7, p. 135.

companies) increased from 15 per cent in 1937-38 to 34 per cent in 1950-51.¹ As a result of increasing costs and taxes many companies sought new production areas in countries like East Africa where costs, taxes and duties were lower.²

The outflow of sterling company³ capital has been gradually curbed since the inception of exchange control in 1948, when sterling companies were required to hold their surplus funds in Ceylon. The repatriation of capital was suspended in 1957. A moratorium on the transfer of dividends and profits was also instituted in August, 1964.

Tea prices rose until 1955, but the good prices did not last thereafter. The price of tea began to decline continuously since 1956 (see Table A-1). However, the industry's profitability is a somewhat different question because the increased use of fertilizer, etc., led to increased yields. As tea alone constitutes over 60 per cent of the export earnings of Ceylon, this continuous decline in price has had serious repercussions on the availability of foreign exchange. Some of the causes for this decline are therefore examined together with their implications for the future.

F.A.O. studies indicate that for several years global supply of tea has grown more rapidly than demand. Their projections, which start from

¹Economic and Social Development of Ceylon, 1926-50, op. cit., Table XXV.

²See N. Ramachandran, op. cit., p. 175 for details.

³Sterling companies are companies floated with sterling capital and registered in the U.K.

a "state of balance" in 1961-63, indicate that while production rises at 3.2 per cent per year, demand would rise by only 2.2 per cent to 2.7 per cent per year until 1975.¹ Thus their projections indicate a surplus of tea. (For developed countries, the increase in demand for tea is projected at 1.3 per cent to 1.5 per cent per year, whereas for developing countries, the increase is projected at 3.3 per cent per year).² A fall in the price of some 15 per cent to 30 per cent is predicted to be necessary to bring demand and supply into line.³ These studies point out that the decline in price could be moderated to some extent by "promotion campaigns and the extension of the tea drinking habit to new areas."⁴

Although the share of developing countries is increasing, it is doubtful whether the increase will be large enough to prevent a price fall. The recent turmoil in the Middle East which is the largest importer of tea after Great Britain may also prevent substantial increases in the consumption of tea in the area. Moreover, the F.A.O. projections do not take into consideration new forms of tea such as instant tea and tea bags.

¹F.A.O. Agricultural Commodities -- Projections for 1975 and 1985, Vol. I (Rome: Food and Agriculture Organization of the U.N., 1967), p. 251.

²Ibid., p. 246.

³Ibid., p. 252.

⁴Ibid., p. 244.

It is recognized that the main competitor to tea is instant coffee: 65 per cent of all marketed coffee is reported to be in the form of instant coffee.¹ This has made possible its sale from vending machines, etc., thereby opening up new markets for it.² The U.K. is the world's largest importer of tea -- her average annual imports between 1960 and 1964 accounted for 43.5 per cent of total imports of tea.³ She also has the highest per capita consumption of more than nine pounds per capita.⁴ But here, too, instant coffee accounts for the gradual decline in tea consumption as is shown in Table IV-12.

An increase in the production of instant tea may perhaps be expected to lead to an increased demand for tea in the future. Instant tea is produced in Ceylon, but its quantity is negligible, amounting in 1969 to around 0.63 per cent of total tea production. Instant tea produced in Ceylon is different to that produced in consuming countries as it is manufactured from green leaf in factories.⁵ (A process which cannot be done at the consumer end). It is said that the flavour of the Ceylon product is closer to conventional tea than the instant tea manufactured in consuming countries.⁶

¹ Agricultural Development Proposals 1966-70, op. cit., p. 14.

² Ibid.

³ N. Jayapalan and A. S. Jayawardena, "Some Aspects of the Tea Industry -- Part II," op. cit., Table 2.

⁴ Interim Report of the Tea Commission, op. cit., p. 62.

⁵ Agricultural Development Proposals 1966-70, op. cit., p. 14.

⁶ Ibid., p. 15.

TABLE IV-11

HOUSEHOLD EXPENDITURE ON BEVERAGES IN THE U.K.

BEVERAGES	(pence/head/week)			
	1958	1960	1962	1963
Tea	13.92	13.54	13.15	13.14
Coffee	2.92	3.12	3.64	3.99
(a) bean and ground	0.50	0.50	0.57	0.46
(b) essences	0.48	0.49	0.36	0.35
(c) "instant"	1.94	2.10	2.71	3.18
Cocoa	0.60	0.50	0.50	0.53
Branded fruit drinks	0.85	0.94	0.87	0.94
Liquid milk	29.54	30.79	32.80	33.63
Fruit juices	0.60	0.86	0.94	1.02
Total	<u>48.43</u>	<u>49.75</u>	<u>51.90</u>	<u>53.25</u>
Per capita consumption of tea (lbs.)	9.9	9.8	9.6	9.5

Source: N. Jayapalan and A. S. Jayawardena, "Some Aspects of the Tea Industry, Part II," Central Bank of Ceylon, Bulletin August 1967 (Colombo: Central Bank of Ceylon), p. 32; Ceylon Parliament, Sessional Paper No. VII-1968, Interim Report of the Tea Commission (Ceylon: Government Press, 1968), p. 62.

Instant tea production is also cost-saving in that it eliminates the unnecessary stage of converting green leaf into black and then into powder.

Marketing

There has been a growing awareness that monopolistic buying practices in the marketing of tea tend to depress prices. Almost three quarters of the

tea available in the world market is marketed through auctions. Most of the tea produced in Ceylon is disposed of at the Colombo and London auctions.¹

At the Colombo auction, two buyers accounted for one-fourth and 12 buyers account for just less than three-quarters of the total tea sold.² In respect of low grown teas, it was reported that there were 10 major buyers and of these, three accounted for around 50 per cent of total purchases. In the case of high grown teas, eight buyers dominated the auction and four of them accounted for more than 50 per cent.³ One buying agent acts for several principles abroad and "about 80 per cent of the buying in Colombo is done on the basis of fixed price limits imposed by principals overseas, and this leaves the buying agent with little or no discretion."⁴ Notice has also been drawn to the dual function of agency houses which act both as producers' representatives and agents of foreign buyers. This could well be detrimental to producers' interests. The number of actively bidding participants at an auction is thus very limited, although no direct evidence of collusion has been presented.

In considering the problem in 1968, the Ceylon Tea Commissioners arrived at the following conclusion:

¹For instance, in 1966, of a total crop of approximately 490 mil. lbs, 466 mil. lbs. was marketed through the Colombo and London auctions. 359 mil. lbs. was sold at the Colombo Auction. Interim Report of the Tea Commission, op. cit., p. 5.

²N. Jayapalan and A. S. Jayawardena, Some Aspects of the Tea Industry, Part IV, Central Bank of Ceylon Bulletin, December 1967 (Colombo: Central Bank of Ceylon), p. 23.

³Interim Report of the Tea Commission, op. cit., p. 8.

⁴Ibid., p. 9. Furthermore, conditions at the London auction seem to be no better: four or five buyers, large blender-packer-distributors account for about 75 per cent of total purchases, Ibid., p. 12.

"Under the present conditions of the tea market, it is the buyers who determine the level of prices at auctions and although it has been stated that producers' interests are carefully conserved, the suspicion that they suffer in the result cannot be altogether dismissed as unjustified."¹

Although it is argued that production has increased faster than the demand for tea, and resulted in a lowering of prices, imperfections in the market structure may perhaps have been an additional factor aggravating the decline. In evidence given in 1952 before the Government's Official Committee on the Tea Industry in India, it "was alleged that the slump in tea prices which then prevailed was 'managed' by British producing interests in India who were also blenders and retailers of tea in England. It was suggested that what these firms lost by realizing a lower price in India, was made up from the retail margin in England and elsewhere."²

The structure of the U.K. tea industry is of relevance to a consideration of market imperfections. Production and manufacture of tea is carried on in primary producing countries. Manufactured tea is blended and packeted for retail in Britain both for its domestic and export markets. Many British firms and agencies acquired control over the 'production, trade, transport and marketing' of tea.³ For instance, James Finlay and Co. Ltd., has in its agency nine tea and rubber estates in Ceylon. It acts as banker, agent for tea and carries out shipping and insurance business. The company's principal interests are in

¹Interim Report of the Tea Commission, op. cit., p. 9.

²N. Jayapalan and A. S. Jayawardena, Some Aspects of the Tea Industry, Part IV, op. cit., p. 22.

³Ibid., p. 24.

India, Pakistan and Ceylon. It has its holdings in tea, jute, cotton and other producing companies.¹

"...there appears to have developed an elaborate interlocking mechanism with an ability to control the tea trade formed by agency houses, holding companies and board room associations. . . Given this ramification in the ownership and control of the tea industry, there is a possibility of an alignment of interests of the financier, the producer, the broker, the transporter, the blender and the distributor. It is possible. . . that the view of those who own and control the trade might prevail over the national interest of the producing country. For instance, there is considerable evidence that the expatriate producing firms will not obtain supplies from the cheapest source but from Ceylon agents who have 'close connections with London Agent directors of Sterling Companies' . . . It appears that in the mind of the average consumer, the image of tea is not linked up with Ceylon or India or East Africa but with names such as "Brooke Bond," "Lyons" or even "Typhoo". . . If both prices and the product can be determined by a few large firms, then the market ceases to perform its conventional function of influencing the behaviour of buyers and sellers: instead the behaviour of a few firms directs the market. . ."²

If the major tea producing countries were to co-operate, they could move into marketing and blending. The results of advertising and long association could be broken with counter-advertising and a quality competitive product.

Although a producing country may have little control over prices, it can have some effect on the costs of production. Cost saving could be effected in several ways.

¹N. Jayapalan and A. S. Jayawardena, Some Aspects of the Tea Industry, Part IV, op. cit., p. 24.

²Ibid., pp. 28-29.

1. Yields have improved considerably with greater use of fertilizer over the years. But even around 1966, fertilizer consumption by the tea industry was at 80 per cent of optimum consumption.¹ Subsidies were given to small holders and small estates (i.e., those less than 100 acres in extent) under the Tea Rehabilitation Subsidy Scheme of 1959, to cover half the cost of fertilizer used for a period of five years. It is reported that in the first four years itself, applications received under the scheme exceeded the target acreage of 60,000 acres.²

2. Replanting with high yielding clones has been encouraged by the Tea Replanting Subsidy Scheme of 1959, under which subsidies are paid for replanting old tea lands with high yielding varieties of tea. Clones have been developed which yield as much as 6,000 pounds per acre as against the present average yield of around 900 to 100 pounds per acre. A subsidy of Rs 2500 per acre was given to estates for replanting, but due to the high cost of replanting, there was some hesitancy on the part of estates to undertake replanting. The subsidy was therefore increased since January 1963 to Rs 3750 per acre where reconditioning of the soil was necessary and Rs 3250 per acre where reconditioning was not necessary. Since 1964 this scheme was thrown open to small holders, too. Furthermore, since May 1969, loans up to Rs 2,000 per acre have been granted in addition to the subsidy. The loans are granted at low rates of interest and on liberal repayment terms. The total replanted

¹Agricultural Development Proposals 1966-70, op. cit., p. 23.

²Ibid., p. 7.

acreage has risen from 1,100 acres in 1960¹ to 33,400 acres in 1969.²

3. The Tea Factory Development Subsidy Scheme was introduced in 1966. It was essentially a loan scheme for the purchase of tea machinery and the construction of new factories as it was recognized that taxation left little retained earnings for capital investment and hence factories were working beyond rated capacities and Ceylon had not kept pace with technical developments in tea manufacture.³ As the capital invested in tea factory development was below optimum levels, further incentives have been granted since 1969. These incentives include outright payment of subsidies and a favourable rate of exchange for imports of raw materials and finished goods required in tea factory development.⁴

4. Mechanization of tea plucking could lead to significant cost reductions. It is also of relevance particularly in view of the increasing popularity of "instant tea" and tea bags and the declining importance of the appearance of made tea on the one hand, and the increase in yields expected from replanting on the other hand.

The U.K. is the largest importer of tea in the world and here too it appears that the main demand is for low quality teas.⁵ Packeted tea is

¹Central Bank of Ceylon Annual Report 1968, op. cit., p. 32.

²Administration Report of the Tea Controller for 1969, op. cit.,
p. J89.

³Agricultural Development Proposals 1966-70, op. cit., pp. 10-11.

⁴Administration Report of the Tea Controller for 1969, op. cit.,
p. J88.

⁵The majority of retailed tea costs around 7 sh/lb.; costs and margins for packers and distributors are around 3sh 3d/lb. (Interim Report of the Tea Commission, op. cit., p. 24). Hence the price a packer could offer

a blend of many varieties of tea, but it appears that low quality teas must predominate. Hence although one of the greatest disadvantages of mechanized plucking is said to be its lack of discrimination, i.e., around 20 per cent of the pluck may be of coarse leaf,¹ we find that this does not constitute an important disadvantage as demand is concentrated upon low quality teas.

The increase in yields from replanting is expected to lead to an increase in the labour required particularly for plucking. (As noted earlier more than half the labour force is at present engaged in plucking and the labour requirements have been projected to double with replanting). This would involve a large increase in costs of production especially as wages have been rising fairly rapidly.²

S. J. Wright who reported on the possibility of introducing mechanization of plucking in Ceylon came to the conclusion that "with Ceylon tea as it is planted and organized at present, there is little prospect of lowering production costs by mechanization. But given the more appropriate bush pattern that could be introduced wherever tea is replanted or new tea opened, there is every prospect that by fairly straight-forward mechanization, present labour requirements of tea growing could be reduced by at least 50 per cent."³

for tea would be about 3sh 9d/lb. which is the price of low quality tea.

¹C. R. Harler, "Costs of Opening up Tea Estates," World Crops, July 1956, p. 271.

²The minimum wages of workers have risen by around 20 per cent between 1952 and 1967. Source: Central Bank of Ceylon Annual Report 1968, Appendix, Table 45.

³J. Lamb, "A Note on Mechanization of Tea Cultivation in Ceylon," World Crops, May 1954, pp. 193, 194.

Thus even though the tea industry has so far been labour intensive, the prospects are for an increasing degree of mechanization.

CHAPTER V

RUBBER: ASPECTS OF THE PRODUCTION FUNCTION, CONTRIBUTION TO RETAINED INCOME AND FUTURE PROSPECTS

Origin and Development of the Rubber Industry in Ceylon

Commercial trade in rubber began in the 19th Century. Wild rubber production was unable to satisfy the ever-increasing demand for the product. In 1876, seeds of *Hevea Brasiliensis* were taken from Brazil to England where they were successfully germinated. The plants were then introduced to Ceylon and other British colonies in the Far East. The cultivation of Hevea in Ceylon commenced in 1896, the acreage planted by 1898 being 1071 acres.¹

Commencement of rubber plantations coincided with declining prices of tea and rapidly rising prices of rubber. The price of rubber shot up from 2sh/lb. to 4sh/lb. in 1901 and 6sh/lb. in 1904-06,² when rubber assumed great importance due to the development of automobiles. Ever since then, tyre and tyre products have provided the main market for rubber.³ Furthermore, experiments conducted by the Royal Botanic Gardens (Ceylon) during 1877-99 helped demonstrate better methods of tapping and other improvements in cultivation and manufacture.⁴

¹G. C. Mendis, Ceylon Under the British, op. cit., p. 149.

²L. A. Mills, Ceylon Under British Rule, op. cit., p. 254.

³F. A. O. Agricultural Commodities -- Projections for 1975 and 1985, op. cit., p. 314.

⁴L. A. Mills, op. cit., p. 254.

Under these stimuli, the acreage under rubber rose from 2,000 acres in 1900 to 50,472 acres in 1906.¹ Exports of rubber increased from four tons in 1900² to 700 tons in 1905.³ Rubber plantings were also undertaken in other parts of Asia. The phenomenal development of automobiles led to an ever-increasing demand for rubber. The price of rubber fluctuated during booms and slumps. The Stevenson Rubber Regulation Agreement of 1934 represents an attempt by rubber producing countries to prevent a price decline in times of depression. The price of rubber declined from Rs 2.42 per pound in 1913 to 12 cents at the height of the depression of the 1930's and rose slowly to 39 cents per pound at the outbreak of World War II.⁴

Rubber Cultivation and Manufacture

Hevea Brasiliensis is almost the only source of natural rubber supply. It thrives in tropical temperatures. Rubber is obtained from the latex which issues when the bark of the tree is cut. The latex is collected, coagulated and dried to produce crude rubber. Manufacture of crude rubber is a simpler process than the manufacture of tea.

¹G. C. Mendis, Ceylon Under the British, op. cit., p. 150.

²Ceylon Parliament, Report of the Commission on the Rubber Industry in Ceylon, Sessional Paper XVIII, 1947 (Colombo: Government Press, 1947), p. 3.

³Ibid., p. 3.

⁴See Table A-4.

Unlike tea, rubber is both grown and manufactured by small holders. The proportion of rubber under small holdings is considerable at 31 per cent of the total acreage under rubber.¹ Large estates are capitalistically organized and subject to systematic technological progress whereas on small holdings production methods are simpler and more haphazard.

The rubber tree requires very little care and is not harmed if left untapped. Practices such as clean weeding only cause damage, particularly by their effect on soil fertility. Soil erosion was particularly marked in the hilly areas of Ceylon. Less fertilizer is used in rubber than in either coconut or tea -- the average optimum dosage being seven cwts for tea, 3½ cwts for coconut and only 90 lbs. for rubber.² The average level of fertilizer application on rubber lands in the 1960's was just less than one cwt per acre³ and was reported to be about 94 per cent of optimum consumption.⁴ The bulk of fertilizer used by the rubber industry is taken up by areas with young rubber, i.e., immature rubber and rubber that just comes into tapping. It has been found to assist in the growth of the tree. In the case of mature rubber, the yield increases on account of the application of manure have not been of significance -- hence the older rubber plantations receive very little fertilizer.

¹ Administration Report of the Rubber Controller for 1969 (Ceylon: Government Press, 1970), p. K60.

² Agricultural Development Proposals 1966-70, op. cit., p. 231.

³ Ibid., p. 232.

⁴ Ibid., p. 231.

These characteristics are reflected in the lower labour requirement for rubber than for tea. The labour requirement rose from one labourer to three acres in 1929¹ to one labourer to 2.5 acres in 1959.² Around 192,000 workers were employed in the rubber industry in 1960.³

As mentioned earlier, the process of manufacture differs between small holders and estates. Latex collected from rubber trees is coagulated with the use of acetic or formic acid. Most rubber is then manufactured into smoked sheet or crepe. Small holders are only able to manufacture sheet rubber.

In the manufacture of sheet rubber, rubber is passed through hand or power rolls after coagulation. Large estates have batteries of power driven mills. It is thereafter passed through a marking roll and dried in a smoke house. On small holdings, one or two hand mangles are used in contrast to the use of sheeting batteries and engines on large estates. Furthermore, on some small holdings, the water is eliminated by pressing with hands and feet and the final drying by exposing the sheets to the sun.⁴ Costs of production are therefore lower on small holdings though the product is of course less uniform and of a lower grade.⁵

¹Great Britain Colonial Office, Ceylon Report for 1929, op. cit., p. 14.

²Ceylon National Planning Council, The Ten Year Plan, op. cit., p. 22.

³D. R. Snodgrass, op. cit., p. 297.

⁴Great Britain Colonial Office, Ceylon Report for 1929, op. cit., p. 13.

⁵This can be seen in Table V-6.

Crepe rubber is manufactured by rolling the coagulated rubber into strips which are then macerated by running the sheeting rolls at unequal speeds. Crepe rubber is dried in special houses that have controlled heat and no smoke. This form of manufacture is gaining increasing popularity in Ceylon on account of the premium to be obtained on this type of rubber. It is generally produced on estates as small holders do not possess the capital outlay or the throughput necessary for the purchase and working of machinery.

Ceylon has barely begun to move into the new process rubbers being produced by Malaya and Indonesia.¹ It is hoped that block rubber will eventually replace sheet production. As Ceylon obtains high premia on sole crepe and the better grades of latex crepe which exceed the premium Standard Malayan Rubber (S.M.R.) enjoys above other grades, these types, i.e., crepe will continue to be produced in increasing quantity.

The S.M.R. scheme was launched in Malaya in 1965 in order to compete effectively with the specialized forms in which synthetic rubber is manufactured to meet consumer requirements. S.M.R. is superior to conventional rubber in that it is graded by technical standards -- the key specification being dirt content. This specification ensures that rubber has a guaranteed degree of cleanliness and thereby constant quality. These improvements in grading, processing and presentation can be expected to contribute to

¹There is one Heveacrub factory which was set up in 1969. Another factory is expected to go into production this year. Small consignments known as Standard Ceylon Rubber (S.C.R.) Technically specified, have been shipped abroad. There is also a government proposal to establish five block rubber factories over a period of three years. John, Keell, Thompson, White Ltd., John Keell's Rubber '70 (Colombo: Carson Cumberbatch & Co. Ltd.), p. 8.

increases in income from rubber exports. It is also clear that block rubber production will have to replace sheet production if Ceylon is to be able to meet world market requirements.

Furthermore, this process leads to quick manufacture¹ and economies of scale in processing.² Any reduction in costs associated with new forms of manufacture would be valuable in view of the fact that the rubber goods manufacturing industry is increasing in importance in Ceylon. The future competitive strength of natural rubber is also tied up with reductions in the cost of production.

Many sheet manufacturing estates have been producing increasing quantities of blanket crepe in recent years as pale crepe fetches attractive prices. Production of sole crepe has risen from 400 tons in 1960 to 2200 tons in 1970, latex crepe from 26,500 tons to 41,700 tons³. Ceylon is the only quality producer of thick pale crepe.⁴ No. IX Pale Crepe produced in Ceylon is technically pure and the best in the world commanding premium prices. The clones planted in Ceylon produce a pure white latex which is ideal

¹Latex delivered to the factory in the morning is completely processed into block form and specified within the same day. John, Keell, Thompson & White Ltd., John Kell's Rubber '70, op. cit., p. 9.

²See F.A.O., Agricultural Commodities -- Projections for 1975 and 1985, op. cit., p. 322, for details.

³John Keell, Thompson & White Ltd., op. cit., p. 11.

⁴Ibid., p. 1.

for pale crepe manufacture. Furthermore, many estates in Ceylon are medium-sized, i.e., 500 - 1,500 acres in extent and are suited to production of pale crepe. Estates larger than this have to incur heavy expenditure in order to manufacture pale crepe.¹

The premium fetched by S.M.R. rubber is only a few cents over R.S.S., whereas the price difference between R.S.S. and latex crepe was as much as 22 cts. in 1968 and the price difference between R.S.S. and sole crepe was even greater being 75 cts. in 1970 (see Table V-1). If the price of crepe continues to be high, increased production of crepe rubber could enhance the value of earnings from rubber considerably.

TABLE V-1

AVERAGE PRICE OF VARIOUS FORMS OF RUBBER (Rs)

	1968	1969	1970
Sheet No. I	0.88	1.04	0.91
Latex Crepe No. I	1.10	1.15	1.10
Latex Crepe No. IX	1.11	1.16	1.11
Scrap Crepe No. I	0.82	0.94	0.85
Sole Crepe No. I	1.20	1.53	1.67

Source: John Keell's Rubber '70, op. cit.,
Tables 7 & 8, p. 14.

¹Written communication from worker in Rubber Research Institute, Ceylon.

Acquisition of skills. We assume that managerial, clerical and technical workers constitute around 2.3 per cent¹ of the labour force employed on rubber estates. Furthermore, factory labour accounts for about 11 per cent of the total labour force.² Any skills acquired by these personnel are probably of limited use in other industries. As the World Bank Report points out, the export industries "are too specialized to have built much in the way of broad industrial experience, trained labour and technical know-how for expansion into new industrial fields."³

The manufacture of rubber goods in Ceylon, on the other hand, offers further opportunity for training in generally useful and transferable skills. Only 29 per cent of the workers in the rubber goods manufacturing industries are termed 'unskilled.'⁴ Engineers, technicians, foremen and 'skilled' workers constituted 31 per cent of the total work force.⁵ As these rubber goods manufacturing industries are expanding rapidly, they are a fairly important source of training and employment of skilled personnel.

¹The proportion for the tea industry.

²On the assumption that the distribution of wages is representative of the proportion in which labourers are distributed between field and factory work and on the basis of statistics from the Department of Census and Statistics, Statistical Abstract of Ceylon for 1967-68 (Ceylon, Department of Government Printing, 1970), Table 58 and the accounts of one sterling company rubber estate.

³International Bank for Reconstruction and Development, The Economic Development of Ceylon, second printing (Baltimore: Johns Hopkins Press, 1956), p. 506.

⁴Department of Census and Statistics, Survey of Industrial Production, 1968 (Ceylon: Government Press, 1970), p. 18.

⁵Ibid., p. 18.

Technical Progress and Productivity

Technical progress in the industry as in tea has been continuous since its inception -- better methods of tapping, weeding, the use of modern machinery in factories and the beginnings of new methods of processing. There are continuous measures for eradicating disease. The Rubber Research Institute (R.R.I.) of Ceylon is reported to be taking measures towards breeding high yielding disease resistant clones.¹ Sulphur dusting is compulsory for all rubber estates over 50 acres in extent as it is expected to control the disease Oidium. Moreover, there is a government-sponsored scheme for the co-operative sulphur dusting of small holdings and small estates.

Increases in productivity between 1946 and 1969 are given in Table V-2. There is hardly any increase in yields between 1946 and 1960. This is not surprising since replanting got underway after 1953 and the results of rejuvenation could not have been expected to show until around 1960. Furthermore, high yielding clones planted in 1953 would have reached maturity only in 1965 or so. There has been a noticeable increase in yields from 1960, reflecting the beginning of production from replanted areas.

The most important and almost the single cause of this increase in productivity noticeable since 1960 has been the replanting with high yielding clones. The total acreage under high yielding rubber is in the region of 374,000 acres -- the acreage replanted under the Rubber Replanting Scheme being 276,130 acres, accounting for 49 per cent of the actual area under rubber.²

¹Department of Census and Statistics, Census of Agriculture, 1952, Part II -- Rubber Plantations (Ceylon: Government Press, 1956), p. 12.

²Administration Report of the Rubber Controller for 1969, op. cit., pp. K68 and K69.

TABLE V-2

YIELD OF RUBBER PER BEARING ACRE

YEAR	LBS/BEARING ACRE	YEAR	LBS/BEARING ACRE
1946	345	1958	415
1947	476	1959	395
1948	341	1960	418
1949	353	1961	400
1950	412	1962	434
1951	381	1963	440
1952	351	1964	450
1953	363	1965	560
1954	348	1966	609
1955	361	1967	647
1956	368	1968	671
1957	399	1969	673

Sources: D. R. Snodgrass, op. cit., Table 6-12, p. 147;
Central Bank of Ceylon Annual Reports, Administration Report of
the Rubber Controller for 1969, op. cit., p. K61.

Planting of new areas in rubber requires the sanction of the Rubber Control Department. Areas newly planted have to be planted with high yielding varieties of rubber. Permission is also granted to plant with ordinary rubber provided such plants are budded within a specified period. The Rubber Re-planting Scheme was launched in 1953. As noted in Table V-12, progress under this scheme has been highest on small holdings and points to their enthusiasm to replant. On almost the entire area replanted between the years 1953 and 1959, the average yield per acre exceed 1,000 lbs/year.¹ In a

¹ Administration Report of the Controller of Rubber for 1969, op. cit., pp. K72-K73.

sample of estates over 100 acres in extent, yields over 2,000 lbs/acre were recorded.¹ Furthermore, clones which yield 3,000 lbs/acre have been developed and as yet there is no indication that a yield limit has been reached.

The Rubber Research Institute is also taking an interest in yield stimulation. Here the lack of suitable experimental material is reported to have been a limiting factor.² This shortage may be due to lack of foreign exchange with which to purchase the necessary chemicals, the age of trees planted for experiment, etc.³

In early years, practices such as clean weeding led to soil erosion. Care is now being taken to prevent soil erosion. Permits are granted for planting new areas under rubber on condition that soil conservation measures are adapted on such areas. Small holders are paid soil conservation grants.

Distribution of Export Receipts

Wages and salaries are the largest item in the cost of production as in the tea industry. As mentioned in the previous chapter, wages and salaries are expended mainly on food and textiles. The magnitude of plantation expenditure on these items and domestic production are dealt with in the subsequent section. Other costs, too, account for a fair proportion of

¹ Administration Report of the Controller of Rubber for 1969, op. cit., p. K73.

² Research Programme of the Rubber Research Institute, from Agricultural Development Proposals 1966-70, op. cit., p. 58.

³ As no data were available regarding the shortage, the above-mentioned factors are mere speculation.

export receipts from rubber. The main intermediate inputs probably are acetic and formic acids and fertilizer. Some proportion of these items are met by local production and are dealt with in the subsequent section.

TABLE V-3
PERCENTAGE DISTRIBUTION OF EXPORT RECEIPTS

I T E M	1920-38	1952-67
Export Receipts	100	100
Wages and Salaries	26	46
Other Costs	13	17
Export Duties	1	12
Company Taxes	1	13
Profits	55	10

Source: Tables A-5 and A-6.

Rising export duties and company taxes enhanced government revenue in later years. High profits in the period 1920-38 would have been partly remitted abroad since foreign ownership in 1934 was put at 45 per cent.¹ Foreign ownership declined to 36 per cent by 1954² and further to 14 per cent by 1969.³

¹Sir Ivor Jennings, op. cit., p. 26.

²D. R. Snodgrass, op. cit., Table A-38.

³Administration Report of the Rubber Controller for 1969, op. cit., p. K60.

Among the factors responsible for the pattern of ownership, and in particular the relatively high proportion of Ceylonese ownership are the location of rubber growing areas in the low and mid-country. About half the acreage opened out in rubber belonged to Ceylonese who had had dealings with Europeans in the past and had money and clear title to their land.¹ Small holders are reported to have replaced paddy and cinnamon with rubber.² Other factors were the ease and low cost of production and manufacture and perhaps the fact that with the development of the tea industry, there was more capital in the hands of Ceylonese. The larger rubber companies, however, were mainly British-owned sterling companies.

One of the most important causes of Ceylonese ownership has probably to do with the absence of significant economies of scale in the manufacture and production of rubber. Economies of scale in rubber production and manufacture are therefore investigated in order to ascertain whether this has in fact been of importance in the relatively high proportion of Ceylonese ownership. (Ceylonese ownership in 1969 was around 86 per cent of the acreage under rubber).

Economies of Scale

Rubber does not show clear cut economies of scale either in production or in manufacture.

¹E. F. C. Ludowyck, The Modern History of Ceylon, op. cit., p. 93.

²G. C. Mendis, Ceylon Under the British, op. cit., p. 150.

(a) Production

Output per acre is dependent on numerous factors such as soil conditions, care and method of tapping, age of trees, climate, elevation, exposure to wind, disease control, the distribution and level of rainfall, the type of planting material used, etc.

TABLE IV-4

SIZE OF ESTATE AND AVERAGE YIELD PER ACRE -- 1951

SIZE GROUP	TOTAL MATURE ACREAGE	AVERAGE YIELD/ACRE (lbs. Dry Rubber)
Ceylon -- All Estates	301,009	383
Under 15 Acres*	1,008	338
10 - 19	2,696	289
20 - 49	23,466	293
50 - 99	25,131	302
100 - 199	28,336	326
200 - 499	62,926	351
500 - 999	72,808	415
1,000 and over	84,558	450

* Figures refer to units of this size in estates of 20 acres and over.

Source: Census of Agriculture 1952, Part II -- Rubber Plantations, op. cit., p. 10.

Table IV-4 gives some indication of the size holdings to yields. At that time, however, there was a high proportion of senile rubber -- 60 per cent of all rubber was more than 30 years old.¹ Slaughter tapping during

¹Census of Agriculture 1952, Part II -- Rubber Plantations, op. cit., p. 13.

the Japanese occupation of most other rubber-producing countries in Asia strained the Ceylon rubber plantations to the 'utmost' and left them in 'derelict condition.' Furthermore with intensified tapping during the Korean War, a further portion of rubber was tapped beyond repair.¹ The effects of senile rubber would have been particularly marked on smaller holdings as the adverse effects of the International Rubber Regulation Agreement² (I.R.R.A.) and their inability to replant would have led to a greater degree of senility on their holdings.³

¹Census of Agriculture 1952, Part II -- Rubber Plantations, op. cit., pp.11, 12.

²The I.R.R.A. seems to have caused serious hardship to small holders; for details see P. T. Bauer, The Rubber Industry: A Study in Competition and Monopoly (The London School of Economics and Political Science, Longmans, Green & Co., 1948), pp. 88-110. Small holders suffered by being under-assessed under this scheme. The estate quota was much greater than that of small holdings. Although the average yield per acre by size group is not available for 1934, a comparison between the average yields of 1951 and the export quotas of 1934 indicate that small holders were in fact under-assessed, especially in view of the fact that their yields in 1951 were bound to be less than those of 1934 as they suffered from various handicaps mentioned by P. T. Bauer, op. cit.

Size Group	Average Yield/Acre (lbs.)	Export Quota per Acre (lbs.)
	<u>1951</u>	<u>1934</u>
Small holdings (<10 acres)	338	195
Estates (10 - 100 acres)	295	265
Estates (>100 acres)	381	330

Sources: Census of Agriculture 1952, Part II -- Rubber Plantations, op. cit., p. 10; N. Ramachandran, op. cit., p. 78.

³Replanting seems to have been confined to large estates until 1953.

Subject to these limitations Table V-4 illustrates that estates of 500 - 999 acres and over 1,000 acres produce yields greater than small holdings. The lower yields on small holdings are also due in part to the fact that they are less densely planted than larger holdings as there was interplanting of other crops with rubber. Small holdings in Ceylon are even less densely planted than other countries, the average planting density being 150 trees per acre in Ceylon as against 220 in Malaya and 350 in the Netherlands Indies.¹

A study of larger holdings undertaken in 1953 does not indicate any association between the size of holdings and yields per acre (see Table V-5).

TABLE V-5
YIELD/ACRE IN ESTATES CLASSIFIED BY SIZE

ACREAGE IN PRODUCTION	TOTAL ACREAGE IN PRODUCTION	AVERAGE YIELD (lbs/Acre)
90 - 299	2,994	502
300 - 599	7,525	498
600 - 999	13,042	502
1,000 and above	10,113	466

Source: C. Fernando, "Yields, Costs and Returns of Company Owned Rubber Estates in Ceylon," Central Bank of Ceylon Bulletin, November 1954 (Colombo: Central Bank of Ceylon), Table VII, p. 13.

¹K. Knorr, World Rubber and its Regulation (Stanford, Calif.: Stanford University Press, 1945), p. 34.

(b) Manufacture

In manufacture, the methods of the small holder are less costly on average than those of estates which use expensive machinery, etc. Moreover, company-owned and other large estates bear heavy overhead costs as a result of their organization which stretches from tappers, weeders, factory workers, foremen, estate conductors and their labourers, estate clerks, dressers to assistant managers, managers, visiting agents, visiting engineers, medical officers and accountants, agency firm, secretarial firm, to board of directors and shareholders,¹ thus adding considerably to the cost of production. This elaborate hierarchy entails expenditure on housing, etc.

It is also possible that the Agency system of management added considerably to the cost of production. These agencies hired and supervised managerial staff, purchased supplies for plantations and acted as shipping agents and even controlled the policy of rubber companies under their management.² Management fees were considerable. Moreover, they are reported to have made profits in buying and selling stores to estates and acting as shipping agents.³

These factors are reflected in the lower manufacturing costs of small holders (see Table V-6).

¹P. T. Bauer, op. cit., pp. 200, 201.

²K. Knorr, op. cit., p. 24.

³Ibid., p. 25.

TABLE V-6
THE AVERAGE COST OF MANUFACTURING RUBBER

OUTPUT (lbs)	SIZE OF SAMPLE	COST PER POUND (Cents)
0 - 49,999	(49)	6.9
50,000 - 99,999	(15)	7.4
100,000 - 199,999	(24)	7.7
200,000 - 299,999	(10)	8.5
300,000 - 399,999	(12)	8.3
400,000 - 499,999	(8)	8.8
500,000 - 599,999	(8)	8.3
600,000 - 699,999	(8)	8.8
700,000 - 799,999	(5)	8.6
800,000 - 999,999	(5)	8.3
1,000,000 and over	(8)	10.2
	<u>152</u>	<u>8.9</u>

Source: Y. Lim, op. cit., p. 101.

The estate product, however, is generally of higher and purer quality -- the better grades of rubber being produced in large factories and fetching higher prices. Furthermore, small holders do not produce crepe rubber which usually sells at a premium above sheet rubber. Small holders were reported to produce 10 per cent of their crops as Grade I, 30 per cent as Grades II and III and 60 per cent as Grade IV in 1947¹ and thereby sustain an average loss of 10 cents per pound.² This was attributed to their

¹Report of the Commission on the Rubber Industry in Ceylon, 1947, op. cit., p. 112.

²Ibid., p. 112.

inability to own a sheeting mill and a smoke house.¹ With the growth of Co-operative Rubber Sales Societies this state of affairs is being gradually remedied.

Thus the fact that there are no clear cut economies of scale in rubber production and manufacture contributed towards a greater degree of Ceylonese ownership and to a fairly high proportion of production by small holders. Production by small holders reflects a favourable demonstration effect from plantations. The position of small holders, the difficulties they encounter and government assistance to small holders are considered next.

Small Holders in Rubber

Production by small holders represents an important spillover effect of introducing rubber plantations. Many small holders manufacture rubber in addition to cultivating it. Small holders appear to have owned a fair proportion of the acreage under rubber from the earliest days of rubber planting.

Small holders in Ceylon rarely depend solely upon rubber growing. They are generally able to turn to the production of other food crops in times of poor prices. Rubber land is generally interplanted with other crops. Small holders generally own paddy lands in addition to rubber and some of them even work for hire on nearby estates. This is made possible by the fact that rubber is easily cultivated and costs little to manufacture. The

¹Report of the Commission on the Rubber Industry in Ceylon 1947,
op. cit., p. 112.

rubber tree does not require constant care, unlike the tea bush; even if left untapped for long periods, no damage is done to the tree.

Interplanting reduces the risks inherent in an export crop such as rubber.¹ Paddy is grown for the same reason. The earnings from an acre of rubber have been estimated at Rs 150² whereas those from an acre of paddy work out to around Rs 112.³

TABLE V-7
RUBBER LAND UNDER SMALL HOLDINGS

YEAR	AS PERCENTAGE OF THE TOTAL AREA UNDER RUBBER
1922	13.8
1936	21.3
1946	23.1
1951	26.2
1959	28.6
1969	31.0

Sources: N. Ramachandran, *op. cit.*, p. 72;
D. R. Snodgrass, *op. cit.*, Table A-39; Adminis-
tration Report of the Rubber Controller for
1969, *op. cit.*, p. K60.

¹The price of rubber rises and falls in boom and slump.

²Asian Industrial News No. 3 1968 (New York: United Nations, 1968), p. 66.

³Based on average yields and guaranteed prices.

Small holder production was traditionally of lower grade rubber and received lower prices than those produced by estates. Lower prices obtained by small holders were probably justified by the fact that their product was not uniform and sometimes incompletely cured. Co-operative factories appear to offer a solution to this problem. The Report of the Ceylon Rubber Commission of 1947 made the following recommendation:

"We have considered the possibility of large, up-to-date and well-equipped factories being built in the centre of districts largely devoted to the growing of rubber, and where a large number of small holders exist. The object of these factories would be to collect latex by lorry from peasant holdings and small estates near the main roads radiating from the focal point at which the factory is to be situated. On delivery at the central factory, the latex would be taken over and manufactured under the direction of the manager of the factory into whatever type of rubber was at that time selling to the best advantage."¹

The first Co-operative Rubber Sales Society was formed in 1952; the members were all small holders. The society was granted a loan of Rs 3000 by the Board of the Rubber Research Scheme which enabled it to build a smoke-house, purchase rollers and coagulating pans, etc.² It was reported that over 97 per cent of the rubber produced by this society was sold as Grade I rubber. Other co-operative societies have subsequently been formed on a similar pattern.

Since the 1950's there have been many other government-sponsored schemes to assist small holders and bring about rigorous replanting. Small

¹Report of the Commission on the Rubber Industry in Ceylon, 1947, op. cit., p. 113.

²Ibid., p. 112.

holders are paid subsidies of Rs 1500 per acre for replanting under the Rubber Replanting Subsidy Scheme. Fifty-five per cent of the total area under small holdings has been replanted under this Scheme. The subsidies are paid in installments in order to ensure that all the operations connected with replanting are carried out.¹ Each stage is inspected by the Rubber Controller's Department and rubber instructors visit newly-planted areas and advise permit holders on up-to-date methods of planting, soil conservation, etc.²

Peasant class permit holders are paid soil conservation grants according to a graded scale -- steep slopes receiving the highest grants as soil conservation is more costly on hilly ground. There is a government sponsored scheme for co-operative dusting of small holdings and small estates. Furthermore, fertilizer is supplied to small holders through rubber depots in such form as to enable even the smallest holder to obtain his requirements. Small holders are not required to pay cash for their fertilizer -- the cost of the fertilizer being recovered from the replanting subsidy.

Thus small holders have been assisted significantly by the government and enabled to take advantage of the spillover effect of plantations. They have been given the opportunity of cultivating high yielding rubber and to some extent of producing high grade rubber.

¹D. R. Snodgrass, op. cit., p. 148.

²Administration Report of the Rubber Controller for 1969, op. cit., p. K65.

Estimate of Domestic and Foreign Components in Export Receipts From Rubber

(a) 1920-1938

As noted earlier in the section on Tea, export duties were introduced in 1915 and company taxes in 1932. These taxes were low in early years, particularly before the late 1940's.

Proceeding as in the case of tea, we present a breakdown of export receipts from rubber (see Table A-5 for details). From this table, we attempt to estimate the domestic and foreign component of export receipts.

TABLE V-8

YEARLY AVERAGE DISTRIBUTION OF EXPORT RECEIPTS 1920-1938

I T E M	VALUE (Rs Mil)	AS PERCENTAGE OF	
		EXPORT	RECEIPTS
Export Receipts	69	100	
Wages and Salaries	18	26	
Other Costs	9	13	
Export Duties	1	1	
Company Taxes	1	1	
P r o f i t s	38	55	

Source: Table A-5.

We follow the method adopted in calculating the foreign and local components of export earnings in tea.

The foreign component of wages, salaries, and other costs is put at 50 per cent and 40 per cent respectively.¹ The foreign component of pro-

¹The same proportion as for the tea industry as these figures are estimated from statistics which do not cover tea, rubber and coconut individually.

fits is estimated to have been around 45 per cent, which was the proportion of rubber land under foreign ownership at this time.

Export duties and company taxes were negligible during this period.

The total foreign component is estimated at 45 per cent¹ and the local component at 55 per cent of the export earnings from rubber during the period 1920-38.

(b) 1952 to 1967

Proceeding as before and noting that taxes and duties increased sharply since Ceylon achieved Independence in 1948, we present Table V-9 in order to estimate the domestic and foreign component of receipts from the export of rubber during this period.

TABLE V-9

YEARLY AVERAGE DISTRIBUTION OF EXPORT RECEIPTS 1952-67

ITEM	VALUE (Rs Mil)	AS PERCENTAGE OF EXPORT RECEIPTS
Export Receipts	304	100
Wages and Salaries	139	46
Other Costs	51	17
Export Duties	35	12
Company Taxes	41	13
P r o f i t s	30	10

Source: Table A-5.

¹This figure is 12 percentage points lower than the tea industry both on account of the large share of profits and higher level of local ownership than in tea.

Export duties and company taxes from rubber accounted for around five per cent of government revenue during this period.

Profits amounted to 10 per cent of export earnings. Foreign ownership is estimated to have averaged around 25 per cent of the acreage under rubber during this period; hence the foreign component of profits is calculated at this proportion.¹ The import content of wages and salaries and other costs is put at 33 per cent and 37 per cent respectively.²

The foreign component of export earnings from rubber is estimated at 24 per cent for this period as against 45 per cent in the previous period. As in the case of tea, this decline in the foreign component is due to higher rates of local taxation, greater domestic production and increased local ownership of rubber lands.

The foreign component of earnings from rubber during this period is almost the same as that for tea during the same period, despite greater local ownership in rubber. This is probably due to the fact that the lower share of export duties and company taxes in rubber offset the gains from profits on account of higher local ownership.

The share of export receipts retained locally influenced the growth of domestic agriculture and industry. Local production of rubber led to the establishment of a rubber goods manufacturing industry. Forward, backward and residentiary linkages are discussed in a separate chapter.

¹The foreign component, however, is not equivalent to the outflow of profits as there was a moratorium on the remittance of profits during this period.

²See section on tea. Statistics are available for the export industry as a whole and not separately for tea, rubber and coconut.

Post War Problems: Price Movements and Synthetic Substitutes

When Japan seized the Malaysian rubber producing region during World War II, about 9/10ths of total world exports of crude rubber were automatically cut off from the U.S. and the U.K.¹ Efforts were made to expand rubber supplies from countries under the control of the Allies. Producers were promised up to £45/acre for replanting 'slaughter tapped' areas. The price of rubber exported from Ceylon increased from 58 cts in 1941 to Rs 1.02 in 1945.² Her exports increased by about 25 per cent between 1941-42, but dropped slightly thereafter due to labour shortages, the effects of overtapping and adverse weather conditions.³

TABLE V-10

NATURAL RUBBER EXPORTS 1942-1945

	1942	1943	1944	1945
Ceylon (000 tons)	116	94	103	95
Ceylon's exports as percentage of total exports	69%	56%	48%	49%

Source: P. T. Bauer, op. cit., p. 306.

The shortage of natural rubber in this period led to greatly enhanced production of synthetic rubber in the U.S. The production of synthetic

¹K. Knorr, World Rubber and Its Regulation, op. cit., p. 90.

²D. R. Snodgrass, op. cit., Table A-52.

³K. Knorr, op. cit., p. 180.

rubber grew rapidly since then and became a major threat to the post-war natural rubber industry (see Table V-11).

TABLE V-11
CONSUMPTION OF NATURAL AND SYNTHETIC RUBBER
(Mil Tons)

Y E A R	NATURAL	SYNTHETIC
1953-1955 (Average)	1806	1292
1961-1963 (Average)	2228	2706
1969	2900	4570

Sources: Administration Report of the Rubber Controller for 1969, op. cit., p. K67; F.A.O., Agricultural Commodities -- Projections for 1975 and 1985, op. cit., p. 315.

The price of rubber exports from Ceylon dropped from Rs 1.02 in 1945 to 63 cts in 1949 but with the outbreak of the Korean War, the price shot up to Rs 1.53 in 1953 and to Rs 2.53 in 1951. However, these prices started declining thereafter. The decline has been almost continuous since then -- the F.O.B. price of a pound of rubber in 1967 was as low as 97 cts. The cost of production was reduced despite higher wage levels from a high of around 97 cts per pound¹ in 1955 to around 70 cts. per pound in 1967.²

In 1952, Ceylon entered into a bilateral trade agreement with the People's Republic of China whereby she obtained favourable prices both for

¹Rough calculations from D. R. Snodgrass, op. cit., Table 5-5 and Table A-52.

²Statistical Abstract of Ceylon for 1967, op. cit., p. 98.

rubber and rice. According to the terms of the 1952 Agreement, Ceylon was to sell China 50,000 metric tons of sheet rubber and import 27,000 tons of rice per year.¹ These bilateral agreements were renewed when they expired and continue in force today. Since 1957 China stopped paying a premium for Ceylon rubber, but established an aid programme by which China gave Ceylon Rs 15,000,000/year for five years -- this sum being equivalent to a premium of 23 cts. per pound.²

The People's Republic of China continued to be Ceylon's best customer. She purchased 56 per cent of total rubber exports in 1968.³ These bilateral agreements have lent an element of stability to Ceylon's rubber industry especially with the diminishing demand from Western countries after the Korean War boom. Furthermore, the largest future increase in consumption of natural rubber both in relative and absolute terms is projected for centrally planned countries.⁴

The Future of Ceylon's Rubber Industry

As noted in Table V-11, the production of synthetic rubber has cast some doubts about the future of plantation rubber. Natural rubber pro-

¹D. R. Snodgrass, op. cit., p. 144.

²Ibid., p. 145.

³Central Bank of Ceylon Annual Report 1968, p. 259.

⁴F.A.O., Agricultural Commodity Projections for 1975 and 1985, op. cit., p. 314.

duction has risen in the 1950's and 1960's and its price has declined despite considerable expansion in the use of all kinds of rubber -- natural, synthetic and reclaimed. The use of synthetic rubber has expanded more rapidly than that of natural rubber.

There are many different types of synthetic rubber. In some uses, the synthetic material is even said to be superior to natural rubber. The product which is most competitive with natural rubber, i.e., produced in large quantity and the cheapest variety of general purpose synthetic rubber in S.B.R.¹ It is, however, reported that S.B.R. is less resilient than natural rubber and is more likely to generate heat; properties which make it less useful for use in heavy duty tires.² "Polyisoprene which almost exactly duplicates natural rubber is still produced in relatively small quantities. Nevertheless it presents the greatest potential threat to natural rubber in those end uses in which it has hitherto been irreplaceable."³ Although the developing pattern of elastomer usage renders this particular comparison hardly more important than that with comparable rubbers, it appears to be a matter of time when almost exact duplicates such as polyisoprene will be produced in large enough quantity and at prices as low as those of S.B.R.

¹ F.A.O., Agricultural Commodities -- Projections for 1975 and 1985, op. cit., p. 314.

² Ibid., p. 314.

³ Ibid., p. 314.

The position of natural rubber is being steadily eroded by synthetic rubber. For instance, between 1953-55 and 1969, world consumption of synthetic rubber increased by 254 per cent while that of natural rubber increased by only 61 per cent.¹ World consumption of all rubber in 1975 has been projected to be around 39 per cent to 67 per cent more than in 1966; however, the share of natural rubber in this total has been projected to decline further to 34 per cent,² on the assumption that improvements in grading, processing and presentation would slow down the rate of replacement by synthetic rubber.³

Projections of production which take into account replanting schemes envisaging an expansion of the area under high yielding trees suggest that at 1961 to 1963 prices some 16 per cent to 18 per cent natural rubber would be in excess of consumption requirements.⁴ This would mean that the price of natural rubber would decline sharply unless there is heavy accumulation of stocks.⁵ The reduction in natural rubber prices necessary to balance production and consumption has been put at 30 per cent to 35 per cent of the level prevailing in 1961-63.⁶

¹From Table V-11.

²F.A.O. Agricultural Commodities Projections for 1975 and 1985, op. cit., p. 316.

³Ibid., p. 314.

⁴Ibid., pp. 320 and 321.

⁵Ibid., p. 321.

⁶Ibid., p. 321.

During the 20th Century, the price of natural rubber rose from U.S. \$1,276.9 per metric ton in 1900 to a high of \$2,267.2 in 1910 and declined almost continually thereafter to \$577.5 in 1969.¹

The future competitive strength of natural rubber is thus intimately tied up with the reduction of costs of production. The cost of producing synthetic rubber is bound to decrease further especially as labour costs do not form such a large proportion of total costs as in plantation rubber. Furthermore, synthetic rubber is capital intensive, which generally permits a lowering of prices over the years as long as scale economies can be exploited.

Possibilities for Cost Reduction in Natural Rubber

1. The most important prospect for reducing costs in natural rubber production is that of extensive replanting with high yielding clones. In Ceylon the average yield in 1969 was 673 pounds per acre, but varieties yielding as much as 3,000 pounds per acre have been developed and as yet there are no indications of a yield limit.

The government launched a Rubber Replanting Subsidy Scheme in 1953. The scheme has continued in operation, with a present subsidy of around Rs 1500 per acre.² By 1968, a little more than 262,000 acres³ (comprising over one-third of the Island's acreage in rubber) had been replanted under this scheme. The total acreage under high yielding plants has been

¹New York average prices. Source: Rubber Statistical Bulletin, Vol. 24, No. 8 (May, 1970) (London: The Secretariat of the International Rubber Study Group), Table 56.

²Administration Report of the Rubber Controller for 1969, op. cit., p. 32.

³Central Bank of Ceylon Annual Report, 1968, op. cit., p. 32.

estimated to be in the region of 374,000 acres.¹ Small holders have shown that the highest response to this scheme, possibly because there was a high degree of senility in small holder rubber.

TABLE V-12
RESPONSE TO THE REPLANTING SUBSIDY SCHEME

SIZE GROUP	CULTIVATED AREA	AREA REPLANTED 1953-1969	PERCENTAGE REPLANTED
Estates > 100 acres	264,017	117,330	43.3
Estates 10 - 100 acres	131,920	67,359	50.9
Small holdings < 10 acres	172,696	91,449	54.8

Source: Administration Report of the Rubber Controller for 1969, op. cit., p. K69.

Vigorous replanting programmes have been launched by other rubber producing countries, too, in order to reduce the cost of production. Such reductions, however, cannot be realized in the immediate future since

(a) a programme for slaughter tapping areas to be replanted has to be carried out three to four years in advance;²

(b) there is a long gestation period as the tree comes into production about seven years from planting and takes around 12 to 13 years to reach maturity.

¹Administration Report of the Rubber Controller for 1969, op. cit.,
p. 60.

²Agricultural Development Proposals, 1966-70, op. cit., p. 21.

Over the period 1965-64 natural rubber has sold on average at prices two per cent above synthetic rubber.¹ Therefore, it is hoped that with the possibilities of cost reduction by replanting with high yielding clones, natural rubber may remain cost competitive.

2. A new development with great potential is the use of yield stimulants. In Malaya, extremely high yields have been obtained by treating the bark of the tree with a chemical, "ethrel," which liberates ethylene gas and increases yields.² However, the long-term effects of stimulation on growth and yields are not yet known.³ Furthermore, the present high cost and restricted supplies of this chemical would also limit its application on a large scale.⁴

3. As discussed earlier new methods of grading, processing and presentation make rubber more attractive to the market by ensuring constant quality according to technical specifications.

Despite the possibilities for cost reduction, an important factor that has tended to increase costs over the years has been the increase in wages in keeping with a steadily rising cost of living. (The minimum wage rate index shows an increase of about 39 per cent between 1952 and 1968.⁵

¹P. W. Allen, "The Way Ahead for Natural Rubber," in J. A. Byrdson (Ed.), Developments with Natural Rubber (London: MacLaren, 1967), p. 7.

²John, Keell, Thompson & White Ltd., op. cit., p. 7.

³Agricultural Development Proposals 1966-70, op. cit., p. 58.

⁴John, Keell, Thompson & White Ltd., op. cit., p. 7.

⁵Based on Central Bank of Ceylon Annual Report 1968, Appendix, Table 45.

Natural rubber production is labour intensive unlike synthetic rubber; salaries, wages and other allowances account for somewhat more than 70 per cent of the cost of producing natural rubber.¹ Tapping alone accounts for about one-third the cost of production.²

It is not likely, however, that increases in wages could offset the cost reductions effected by replanting with high yielding clones. Furthermore, replanting lowers the wage cost since a tapper can handle as many high yielding trees as low yielding trees, and budded rubber trees are easier to tap, the only difference being the extra weight of latex a tapper has to carry to the factory. The use of trucks to transport the latex can eliminate this problem. Hence natural rubber production offers scope for cost reduction by labour saving technological progress.

¹Based on Statistical Abstract of Ceylon, 1967-68, op. cit., p. 98.

²Based on the accounts of one sterling company rubber estate.

CHAPTER VI

COCONUT: BACKGROUND NOTES ON THE PRODUCTION FUNCTION, CONTRIBUTION TO RETAINED INCOME AND FUTURE PROSPECTS

Origin and Development of the Coconut Industry

The cultivation of coconuts in Ceylon is a very old industry and dates back to ancient times; the earliest recorded reference being in the time of Dutu-Gemunu (Cl01 - 77 B.C.).¹ Coconut cultivation expanded considerably under the Dutch. By the end of the 18th Century it was estimated that there were 10 million coconut trees in the coastal area between Chilaw and Moratuwa.² Thus the coconut industry preceded tea and rubber in the economic development of the island.

Systematic cultivation according to Western methods began from about mid-19th Century when coconut oil was used in the manufacture of soap and margarine in Europe. Copra and coconut oil were produced at low cost and sold at lower prices than the animal fats with which they had to compete in Europe, especially as they were not subject to the costs of conversion entailed in the animal industries.³

Coconut palms were planted along the coast at first and later extended inland. The acreage under coconut rose from 250,000 acres in 1860 to 650,000 by the beginning of the 20th Century and further to about 1.1

¹Department of Census and Statistics, Census of Agriculture 1952, Part III -- Coconut Plantations (Ceylon: Government Press, 1956), p. 5.

²Ibid., p. 5.

³Katherine Snodgrass, Copra and Coconut Oil, Fats and Oils Studies, No. 2 (April, 1928) (California: Stanford University, Food Research Institute, 1928), p. 4.

million acres by 1929¹ at which level it has remained. The most recent estimates put the acreage under coconut at 1.15 million acres.² Coconut plantations cover almost the combined acreage under tea and rubber and occupy the second largest area under any single crop, the largest area being occupied by paddy.

The most important coconut exports are coconut oil, copra and dessicated coconut.³ Relatively small amounts of coir fibre, coir yarn coconut shell charcoal, fresh coconut and poonac are also exported. The export figure is not a reliable indicator of production as coconut is extensively used for domestic purposes. Fifty per cent of coconut production is consumed locally.⁴ The coconut tree is referred to as the 'Tree of Life' on account of the infinite variety of uses to which every part of the coconut tree can be put.

The coconut industry was mainly a peasant and small holders' industry. Small holdings of less than 20 acres in extent covered about 70 per cent of the land under coconut in 1965.⁵ Small holders are generally able to manage their little coconut groves in addition to paddy land. To them,

¹Census of Agriculture 1952, Part III -- Coconut Plantations, op. cit., Table 1, p. 5.

²Administration Report of the Commissioner of Coconut and Cocoa Rehabilitation for 1969 (Ceylon: Government Press, 1970), p. E35.

³Coconut oil, copra and dessicated coconuts account for well over 90 per cent of total coconut exports.

⁴Agricultural Development Proposals 1966-1970, op. cit., p. 65.

⁵Ibid., p. 24.

it is an important source of some basic necessities as well as cash income.

Coconut Cultivation and Manufacture

The coconut palm grows best in areas with a high temperature (80°F - 90°F) and a heavy and well distributed rainfall. The coconut industry is mainly a peasant and small holders' industry. Coconut plantations, many of them below 50 acres in extent, were opened up in the 19th Century and accounted for around 32 per cent of the acreage under coconut as late as 1946.¹

Coconut palms respond readily to cultivation -- good cultivation practices lead to increased yields. Coconut palms, however, are less demanding of attention than either tea or rubber as they will continue to grow and bear even if neglected and nuts are picked only six times a year. Without cultivation, the yield from a coconut palm is about 30 nuts per palm; with cultivation, the yield is over 80 nuts per palm.² Hence cultivation of the palm lends itself ideally to small holders.

Labour is used in weeding, draining, fencing, manuring, etc. A resident labour force is maintained for these purposes. Casual labour is hired for plucking nuts six times a year. The number of labourers required

¹Census of Agriculture 1952, Part III, op. cit., p. 6.

²Great Britain Colonial Office, Ceylon---Report for 1929, op. cit., p. 16.

for coconut planting has decreased over the years. This decrease is probably due to greater mechanization of the field work (especially in view of the fact that the use of fertilizer has increased and more attention paid to suitable cultivation practices in later years).

TABLE VI-1
LABOUR REQUIREMENTS PER 100 ACRES

YEAR	NUMBER OF LABOURERS
1929	20 - 25
1951	11
1958	8

Sources: Great Britain Colonial Office, Ceylon -- Report for 1929, op. cit., p. 15; Census of Agriculture 1952, Part III, op. cit., p. 20, The Ten Year Plan, op. cit. p. 22.

There has been some mechanization of the field work. It is reported that tractor mounted ditchers and even heavy drainage machinery is used in forming drains. In manuring too, the smaller horticultural cultivator is reported to be proving popular.¹ The four-wheeled tractor with a rear mounted post-hole borer has found ready acceptance and this has permitted the planting of seedlings at a fraction of the cost of manual methods.² The

¹R. Wijewardena, "Mechanization on Coconut Plantations," World Crops, Vol. 10, No. 12 (December, 1948), p. 440.

²Ibid., p. 440.

higher level of mechanization has contributed towards a lessening of costs connected with labour in a labour intensive industry. As is the case with the other exports tea and rubber, it is essential that coconut remains cost competitive.

After the coconut fruits are plucked, their kernel is dried to produce copra. Copra is the most important manufactured coconut product as it is used for the manufacture of coconut oil. The production of copra is carried out by estates and small holders. Small holders as well as some estates sun dry their copra and then kiln dry it. Sun drying gives it a better appearance and a higher oil content than if it is solely kiln dried.¹ The process lasts about a week involving one day's sun drying and five to six days kiln drying. It was reported that in the 1930's, Ceylon copra realized higher prices than the produce of other countries as it had a better appearance and a higher oil content.² But this may not hold today on account of the use of patent driers: sun-dried copra and that produced in efficient driers are of the same standard.³ Sun drying is particularly suited to the small holder who is able to save on fuel costs. The ideal copra kiln for use by the small holder is reported to be the Ceylon-type drier with some improvement in design to make possible the production of copra

¹F. C. Cooke, Copra Production by the Small Holder, Part II, World Crops, Vol. 18, No. 12 (December, 1956), p. 490.

²Statistics and Intelligence Branch of the Empire Marketing Board, Survey of Oilseed and Vegetable Oils, Vol. II, 1932 (H.M.S.O., 1932), p. 29.

³C. Piggott, Coconut Growing (London: Oxford University Press, 1964), p. 75: "The Ceylon drier. . . gives an excellent copra." Source: J. G. Thieme, Coconut Oil Processing, F.A.O. Agricultural Development Paper No. 89 (Rome: Food and Agricultural Organization of the United Nations, 1968), p. 34.

in just 2½ days.¹ Even the 'edible white' grade of copra can be produced by the small holder. Thus the small holder is able to prepare high grade copra with use of simple structures made of a few simple items including parts of the coconut palm itself.

On estates which handle large quantities and rely on wage labour, more mechanized methods, i.e., the use of hot air driers offer advantages.² The Census of Agriculture for 1952 reports 1,134 copra kilns and 50 patent driers on some 3,690 estates cultivating coconut.³ The number of patent driers are bound to have increased over the years. Furthermore, a large part of the processing is done in mills possessing patent driers and not on estates themselves.

It is doubtful whether generally useful skills are acquired by persons growing coconut and producing copra. Planting coconut and production of copra have, however, led to the manufacture of a variety of products, notably coconut oil, dessicated coconut, coir fibre and yarn. These products are produced in modern mills as well as by small holders. Modern complexes manufacturing chemicals from oils and fats are replacing more primitive forms of manufacture. Workers in modern mills receive a training in generally useful and transferable skills in capacities such as engineers and technicians.

¹C. Piggott, op. cit., p. 437.

²(a) the cost of building a large installation of sun drying platforms is higher than a hot air drier; (b) there is no risk of copra spoilage during a long period of wet weather. (a) and (b): C. Piggott, op. cit., pp. 75 and 78. (c) labour is costly and kiln drying requires more labour than hot air drying.

³Census of Agriculture 1952, Part III, op. cit., p. 41.

Technical Progress and Productivity

Productivity has risen over the years judging from the fact that annual production has increased while the acreage under coconut has barely increased.

TABLE VI-2
AVERAGE ANNUAL PRODUCTION^a (ESTIMATED)

YEAR	(MIL NUTS)
1931-34	1,674
1935-38	1,636
1939-42	1,515
1943-46	1,638
1947-50	1,716
1951-54	2,234
1956-58	2,183
1959-61	2,372
1962-64	2,794
1965-67	2,518

Sources: Census of Agriculture 1952, Part III, op. cit., p. 13;
Agricultural Development Proposals 1966-70, op. cit., p. 26; Central Bank of Ceylon Annual Report, various issues.

^aThe figures have been presented in three and four yearly periods in order to eliminate to some extent the fluctuations in production caused by weather conditions.

Although the average yield per acre is running at around 2,500 nuts an acre per annum, yields of 6,000 nuts per acre per annum are reported on exceptionally well-managed estates.¹

¹Administration Report of the Commissioner of Coconut and Cocoa Rehabilitation for 1969, op. cit., p. E42.

The increase in the average yield per acre has been attributed largely to the increased use of fertilizer, especially under the Coconut Fertilizer Subsidy Scheme. Fertilizer consumption almost doubled between 1954 and 1956 when the scheme was introduced and increased four-fold by 1968.¹ It has been estimated that at present only about 30 per cent of the acreage under coconut receives artificial fertilizer.² In addition, animal manuring was also reported on 1,429 estates in 1951, although the number of cattle on these estates were reported insufficient to provide the necessary manure requirements.³ The optimum fertilizer dosage for an acre of coconut land is estimated at 3½ cwt.⁴ Thus Ceylon's total acreage of coconut land requires more fertilizer than either tea or rubber.⁵

The Coconut Fertilizer Subsidy Scheme provides cultivators of coconut land with a subsidy of 50 per cent of the cost of their fertilizer. Only about 70 per cent of the fertilizer for which permits are issued are

¹Fertilizer consumption by the coconut industry rose from 16,000 tons in 1954 to 31,000 tons by 1956 and 66,000 tons by 1968. Sources: Census of Agriculture, 1952, Part III, op. cit., p. 16; Agricultural Development Proposals 1966-70, op. cit., p. 25 and Administration Report of the Commissioner of Coconut and Cocoa Rehabilitation for 1969, op. cit., p. E41.

²Administration Report of the Commissioner of Coconut and Cocoa Rehabilitation for 1969, op. cit., p. E42.

³Census of Agriculture, 1952, Part III, op. cit., p. 11.

⁴Agricultural Development Proposals 1966-70, op. cit., p. 231.

⁵Optimum consumption for the present acreage under tea, rubber and coconut is estimated at 195,405 tons, 26,518 tons and 201,250 tons respectively. Ibid., p. 231.

actually taken up by the permit holders¹ due to unstable climatic conditions, fluctuations in the price of coconut and lack of credit facilities.²

Only about 30 per cent of the land under coconut receives fertilizer. In view of its importance in increasing the yields of coconut, it is clear that the use of fertilizer should be extended to a much larger area. It is reported that a scheme of credit facilities to participants of the Coconut Fertilizer Subsidy has been recently formulated.³ Extension of the area fertilized will probably proceed at a faster pace when this scheme is implemented.

Small holders are assisted by the distribution of fertilizer through co-operative societies which eliminate to some extent the problems faced by small holders with respect to transport and finance. They pay for the fertilizer only when the co-operative society distributes it to them and receive a 2½ per cent discount on fertilizer thus purchased.⁴

The Department of Coconut and Cocoa Rehabilitation inspects the coconut lands of those who receive fertilizer under this scheme in order to ascertain that the fertilizer distributed is properly utilized. Inspectors of this Department are in charge of visiting such areas and imparting information and advice with respect to manuring coconut land.⁵

¹Agricultural Development Proposals 1966-70, op. cit., p. 26.

²Ibid., p. 27.

³Administration Report of the Commissioner of Coconut and Cocoa Rehabilitation for 1969, op. cit., p. E39.

⁴Ibid., p. E36.

⁵Ibid., p. E37.

It is often reported that the cultivation practices and methods of management of small holders are well below the required standard. The main cause for sub-optimal practices appears to be economic as credit facilities in particular are lacking.

The Coconut Rehabilitation Scheme of 1956 was aimed at:

1. Improving the yields of coconut lands by the supply of fertilizer at subsidized rates; and
2. Subsidizing the supply of selected high grade coconut seedlings for filling vacancies, replacing low yielding palms, new plantings and replacing old coconut trees.

However, as pointed out by the Commissioner of Coconut Rehabilitation, such a scheme alone is not sufficient to overcome poor cultivation practices.¹ Furthermore, even the subsidies given to coconut producers are less than those given to small holders in tea and rubber.

There was no systematic practice of regularly replacing old trees with new ones prior to the Coconut Rehabilitation Scheme of 1956. It is, therefore, not surprising that the statistics in the Agricultural Census of 1952 point to a high degree of senility among the palms. Most of the Island's coconut palms are over 50 years.² The low level of production between 1931 and 1947 was attributed to the general neglect of coconut plantations, senility of palms and adverse weather conditions.³ Furthermore, many of the coconut lands had been cultivated with 'mixed unselected planting material.'⁴

¹Administration Report of the Commissioner of Coconut and Cocoa Rehabilitation for 1969, op. cit., p. E42.

²Agricultural Development Proposals 1966-70, op. cit., p. 28.

³Census of Agriculture, Part III, op. cit., p. 11.

⁴Ibid., p. 11.

Seedlings from selected seed nuts were supplied by the Coconut Research Institute since October 1948. A considerable acreage was also replanted with seedlings produced in private nurseries. Under the Rehabilitation Scheme, seedlings which cost the Coconut Research Institute 92 cts to produce are sold at the subsidized rate of 25 cts each,¹ i.e., the cultivator receives seeds at 27 per cent of cost. Seedlings issued under this scheme have risen in number from 900,000 in 1956 to 1,472,000 in 1969.²

Unlike tea and rubber, however, there is no guarantee that seedlings of a high yielding palm will reproduce the performance of the parent tree.³ Thus the increase in yields is merely the beneficial effect of replacing senile plants with younger plants. Furthermore, there is no guarantee that under planting has been carried out on a systematic basis and maintained as required.⁴ The success of coconut under planting is dependent on operations such as fencing, gradual thinning of the old stand, judicious application of fertilizer, care of seedlings against pests, diseases, etc. and systematic weeding being carried out regularly during the early stages of planting.⁵ If these operations are not carried out in the early stages,

¹Administration Report of the Commissioner of Coconut and Cocoa Rehabilitation for 1969, op. cit., p.E40.

²Ibid., p. E40.

³Agricultural Development Proposals 1966-70, op. cit., p. 28.

⁴Ibid., p. 29.

⁵Ibid., p. 29.

the productivity of palms will be low. The Agricultural Development Proposals emphasize that additional inducements (such as a subsidy of Rs 400/acre were paid in installments) are necessary to ensure that underplanting is carried out and maintained up to accepted standards of cultivation.¹

New planting with selected seedlings and greater use of fertilizer can be expected to raise productivity further and increase the magnitude of earnings from coconut.

Local Participation

Local participation in the coconut plantations and in small holdings is greater than in either rubber or tea. The share of foreign ownership of the area under coconut was put at five to 10 per cent by the Banking Commission of 1934.² Foreign ownership of the total acreage was around three per cent in the 1950's.³ A few British-owned mills, however, process a high proportion of coconuts grown in Ceylon.⁴ The high degree of Ceylonese ownership of the land under coconut is probably due to the location of coconut land, i.e., areas owned by Ceylonese in which coconut was cultivated from ancient times and the fact that a large initial capital outlay is

¹Agricultural Development Proposals 1966-70, op. cit., p. 31.

²Sir Ivor Jennings, op. cit., p. 26.

³Only 7.7 per cent of all coconut estates (i.e., including small holdings) were reported to be foreign owned in 1951. Source: Census of Agriculture 1952, Part III, op. cit., p. 7.

⁴D. R. Snodgrass, op. cit., p. 49.

not necessary. A significant factor in this connection may probably have been the fact that there were no significant economies of scale. Hence we turn to a consideration of the economies of scale in the production and manufacture of coconut.

Economies of Scale

Data on the cost of production by size of estate are not available. It is likely, however, that small holders who incur less costs on labour and management¹ produce coconut at a lower cost than estates.

TABLE VI-3
YIELD BY SIZE OF ESTATE 1951 and 1961

SIZE GROUP (in acres)	ACREAGE COVERED IN SAMPLE	AVERAGE YIELD PER ACRE (Nuts)	ACREAGE COVERED IN SAMPLE	AVERAGE YIELD PER ACRE (Nuts)
	1951	1951	1961	1961
Total Estates	235,423	1,850	19,265	3,042
Under 10*	1,858	984		
10 - 19*	5,444	1,126	24	2,415
20 - 49	47,014	1,360	556	3,268
50 - 99	45,567	1,687	2,227	2,873
100 - 199	50,750	1,956	3,485	3,031
200 - 499	52,706	2,051	6,046	2,882
500 - 999	23,542	2,252	4,758	3,388
1,000 and over	8,560	3,106	2,169	2,800

* Refers to units of coconut of this size in estates 20 acres and over.

Sources: Census of Agriculture 1952, Part III, op. cit., Table XVII; Y. Lim, op. cit., Appendix, Table VI-1, p. 222.

¹ Labour and management costs accounted for around 75 per cent of total costs in the period 1920-38; see Table VI-5.

The statistics point to contradictory conclusions. Whereas the 1951 data indicate substantial increasing returns to scale, the 1961 statistics do not indicate any significant increase between holdings of different size groups. It is also possible that the yields of holdings less than 10 acres in Table VI-3 are inaccurate as this category is badly under-represented; the acreage covered in the sample of these units is less than one per cent of the total acreage covered in the sample, whereas holdings of this size constitute around 30 per cent of the acreage under coconut. Statistics in Table VI-4 indicate that the yields of holdings less than 10 acres may have been slightly above the average yield for the entire island in 1951.

TABLE VI-4
COMPARISON OF YIELDS

	ESTIMATED AVERAGE YIELD/ACRE (Nuts)	
	1951	1961
All Estates and Small Holdings and Town and Village Gardens	2,000 (approx.)	2,262
Estates above 10 acres in extent	1,934	3,042

Sources: Census of Agriculture, 1952, Part III, op. cit.,
p. 10; Central Bank of Ceylon Annual Report for 1968, p. 34, Table VI-3/

Table VI-3 does not reveal much regarding small holdings which predominate in the coconut industry. The statistics with respect to units less than 10 acres in extent are extremely scanty. From Table VI-4, we note that

in 1951, the average estimated yield per acre for the entire island was around 2,000 nuts. This figure is slightly greater than the 1951 Census average for estates greater than 10 acres in extent. It indicates that small holders had somewhat higher yields than estates. The 1961 data, however, seems to indicate the reverse with the average yield for estates at 3,024 nuts/acre substantially greater than the average yield for Ceylon which was just 2,262 nuts/acre. It appears that the yields of small holders depressed the average level considerably. Small holders often plant catch crops which prevent both varieties (coconut and catch crops) from giving a good yield and is unprofitable in the long run.¹ (It is not possible, however, to compare relative efficiency with different crops due to the paucity of data). Hence it is possible that the yields of small holders are less than those of well managed estates.

Small holders suffer from having limited access to credit. They are generally dependent on a single buyer -- typically the boutique keeper, who also acts as the village money lender. He is thus able to exploit them in many capacities; he buys their produce at low prices and sells goods to them at high prices and charges exorbitant rates of interest² on the money he lends. This also points to the possibility of lower yields on small holdings due to their inability to purchase manure, etc. However, it is not

¹C. Piggott, Coconut Growing, op. cit., p. 56.

²Rates of interest ranging from 12 per cent to 18 per cent appear to be most common in rural areas. Source: H. A. de S. Gunasekera, section on Ceylon in W. F. Crick (Ed.), Commonwealth Banking Systems (Oxford: Clarendon Press, 1965), p. 296.

possible to arrive at firm conclusions regarding economies of scale either in manufacture or production in the absence of further data.

Estimate of Domestic and Foreign Components in Export Earnings
From Coconut

(a) 1920-1938

We present below a breakdown export earnings from coconut and attempt to estimate the domestic and foreign component of these earnings.

TABLE VI-5

DISTRIBUTION OF EXPORT RECEIPTS 1920-38 (YEARLY AVERAGE)

I T E M	VALUE (Rs Mil)	AS PERCENTAGE OF TOTAL
Export Earnings	56	100
Wages and Salaries	25	45
Other Costs	8	14
Export Duties	1	2
Company Taxes	1	2
P r o f i t s	22	39

Source: Table A-10.

If the profits are divided equally between the profits for processing and those for growing, i.e., in the ratio 1:1,¹ the outflow on account of profits can be estimated.² As foreign owned mills process most of the

¹A rough estimate derived partly from the statistics in the Census of Industry, 1952, for coconut oil processing.

²Approximately.

coconut for export, around 75 per cent of the profits from processing are estimated to have been remitted abroad. Profits remitted are estimated to have been around Rs 9 million of the total profits of Rs 22 million.

Forty-five per cent of wages and 40 per cent of "other costs" are estimated to have been spent on imports. Export duties and company taxes have been extremely low.

The total outflow is estimated at 41 per cent of export earnings. The proportion retained domestically, i.e., 59 per cent, contributed to additions to savings from profits and to the demand for consumer goods such as food and textiles and intermediate inputs such as fertilizer due to expenditure of wages, salaries and other costs. Many of these items are produced in Ceylon -- this is discussed in the subsequent section.

(b) 1948-1967

TABLE VI-6

DISTRIBUTION OF EXPORT RECEIPTS 1948-67 (YEARLY AVERAGE)

	VALUE (Rs M11)	AS PERCENTAGE OF TOTAL
Export Receipts	234	100
Wages and Salaries}	92	39
Other Costs		
Export Duties	33	14
Company Taxes	44	19
P r o f i t s	65	28

Source: Table A-11.

The import content of wages and 'other costs' averaged around 33 per cent and 37 per cent respectively during this period. The outflow on

account of wages and other costs is estimated¹ to be around 12 per cent of the export earnings. The outflow on profits is estimated² to have been around 11 per cent of export earnings. Thus the total outflow for the period 1948-67 was around 23 per cent of the export earnings which is comparable to that from rubber, despite the greater degree of local ownership in the area under coconut.

The forward, backward and final demand linkages of the coconut industry are numerous and are discussed in the subsequent section.

Post War Developments and Export Prospects

Vegetable oils constitute the largest part of world supplies of all oils and fats. The other sources of oils and fats are animal and marine oils. Groundnuts, soya bean and sunflower oil together account for about half of all vegetable oil supplies.³ The largest single item in the world trade in oils and fats is soya beans and oil.⁴ Copra and coconut oil are the next most important items in international trade in oils and fats, accounting for about seven per cent of the total trade in oils and oilseeds

¹By apportioning the costs of production between wages and other costs according to the data for the period 1944-54 and the data from the Census of Industry, 1952.

²Assuming that profits are divided equally between those for growing and processing and assuming that the foreign component of the profits from processing average around 75 per cent.

³Great Britain Commonwealth Secretariat, Vegetable Oils and Oilseeds, 1965/66, op. cit., p. 3.

⁴Ibid., p. 10.

(see Table VI-7). The Philippines is predominant among copra and coconut oil exporters providing nearly three-fifths of total exports.¹ Hence Ceylon's exports constitute but a minor fraction of world oils and fats.

TABLE VI-7
ESTIMATED WORLD SUPPLIES OF OILS AND FATS
(000 Tons)

	1960	1963	1967
1. Coconut Oil	2,041	2,087	2,016
2. Total Vegetable Oil	16,776	18,470	20,824
3. Total Animal Fats	10,629	11,184	11,918
4. Total Marine Oils	731	770	1,027
5. Total Oils and Fats	28,136	30,424	33,769
6. Coconut Oil as Percentage of Total Oils and Fats	7.3%	6.9%	6.0%

Source: Great Britain Commonwealth Secretariat, Vegetable Oils and Oilseeds 1966-67, Table I, p. 9 and Table II, p. 10.

In recent years the importance of coconut oil in the production of soap has declined as tallow is being widely utilized. Furthermore, the production of synthetic detergents has reduced the use of soap. It is also reported that, in the manufacture of margarine, fish oil, lard and edible tallow are becoming increasingly important items partly because

¹Great Britain Commonwealth Secretariat, Vegetable Oils and Oilseeds 1965-66, op. cit., p. 10.

of their relative cheapness.¹ Moreover, there has been a growing use of animal oils reflecting consumer preference for butter over margarine especially as butter has been relatively cheap.² The use of coconut oil in chemical products is also reported to be threatened by synthetic products, notably petroleum based fatty alcohols and low costs of production are all important in this highly competitive field. It is reported that the Philippines is setting up an industrial complex to produce fatty alcohols, plasticisers and glycerine from coconut products.³ Ceylon has also set up a plant in the public sector, The Ceylon Oils and Fats Corporation, consisting of an oil milling section, a refinery, a provender plant and a fat splitting unit.

However as Ceylon is an extremely small supplier, she stands to gain by increasing her exports of coconut products especially if she can lower her costs of production. In recent years, increased consumption within Ceylon has lowered her exportable surplus. Thus expanding exports are tied up with both lowering costs of production and increasing yields on the existing land area.⁴ Moreover, the market for such coconut products as dessicated coconut and fresh nuts is large and growing. In addition, Ceylon and India are the only major producers of coir products; the demand for

¹Great Britain Commonwealth Secretariat, Vegetable Oils and Oil-seeds, 1966-67, op. cit., p. 35.

²Ibid., p. 219.

³Ibid., 1965-66, p. 130.

⁴As land suitable to coconut growing is probably exhausted.

coir products does not appear to be diminishing. Furthermore, new uses have been found for coconut oil in the manufacturing process (for instance, its use in synthetic rubber production).

It is essential that coconut oil remains cost competitive. In Ceylon the cost of production of coconuts increased by almost 256 per cent between 1938 and 1954.¹ It ceased to rise thereafter and remained at much the same level until 1967. The share of labour wages rose from about 11 per cent in 1938 to 40 per cent in the 1940's and further to 50 per cent in 1954.² The share of labour wages and salaries of management, etc. amounted to well over 50 per cent of the cost of production in the 1940's and rose to over 70 per cent by 1954.³ Increased use of machinery in field operations should help reduce costs and increase productivity per man. As noted earlier there are indications that there is a growing use of machinery in the field. Furthermore, productivity has increased over the years mainly due to the increased use of fertilizer.

¹Computed from Census of Agriculture 1952, Part III, op. cit., Tables 27 and 28.

²Ibid.

³Ibid.

PART III: EVALUATION AND CONCLUSION

CHAPTER VII

TOWARDS A MORE DIVERSIFIED ECONOMY: THE SCOPE FOR LINKAGE EFFECTS FROM THE EXPORT INDUSTRIES

The main objective of the present chapter will be to investigate what potential spillover effects are possible from the expansion of these export sectors to other sectors.

A. Spillover Effects of the Tea, Rubber and Coconut Industries

As has been shown in the chapters of Part II, the three export industries are labour intensive requiring on average 1.1, 0.4 and 0.08 labourers per acre and having labour coefficients of 5.25,¹ 5² and 4.6³ labour units per Rs 10,000 worth of output in tea, rubber and coconut respectively. Hence wages and salaries account for a sizeable share of the cost of production and around 40 per cent of export receipts. This has resulted in expenditure on subsistence items such as food and textiles as noted in the section⁴ on final demand linkages in this chapter.

The skill component of the plantation labour force, however, is very low. For instance, the percentage of workers employed in factory work

1, 2, ³See Table VII-9.

⁴Section C, Chapter VII.

and in management/clerical/technical capacity were 8.5 per cent and 2.3 per cent respectively in the tea industry. It is likely that the skill component of the labour force in rubber and coconut is no greater than in the tea industry. Training in generally useful skills is limited as skills acquired by these workers are likely to be specific to plantations. The production of rubber has, however, given an impetus to the establishment and development of a rubber goods manufacturing sector. Here, workers receive a training in skills which may be transferable to other industries. Similarly, there is some training in useful skills in the coconut processing industries, particularly the modern mills.

Economies of scale appear to be associated with tea estates up to the size range 1,000 - 1,499 acres under prevalent forms of production and manufacture.¹ This is one of the factors which explains the higher degree of foreign ownership and lower degree of land under small holdings in tea than in other export crops. Government assistance in recent years has led to the use of higher yield strains and fertilizer by smaller estates and small holders and the establishment of co-operative factories and are expected to have reduced the relative advantage enjoyed by large estates in growing and manufacturing tea.

Rubber can be manufactured both in modern factories using expensive machinery as well as by small holders using simple equipment. There is little evidence of economies of scale either in production or manufacture. The quality of the product, however, is an economy of scale in

¹Subject to numerous limitations mentioned in Chapter IV.

processing which is generally beyond the reach of small holders. It is also easier for bigger estates to replant without incurring losses for seven years until the rubber tree comes into tapping (i.e., large estates are able to replant a portion of the area under rubber at a time, whereas a small holder may have to uproot all the rubber trees on his land). Government assistance has helped to reduce the relative advantages enjoyed by large estates. The establishment of co-operative factories has improved the quality of the rubber produced by small holders. Subsidies for replanting have offset to some extent the losses incurred in the process of replanting. Furthermore, the areas in which rubber grew were owned by Ceylonese. All these factors favoured a greater degree of Ceylonese ownership of rubber land than was the case in tea and the manufacture of rubber even by small holders. Hence the proportion of profits retained locally was greater in rubber than in tea.

There appear to be no clear cut economies in coconut growing and production. Coconut producers obtain the least share of government assistance. New plantings and the greater use of fertilizer that are likely to result from recent programmes of government assistance are likely to eliminate or reduce any advantages enjoyed by larger-sized estates. Coconut is processed in both small holdings and on large estates and in modern mills. Coconut growing is ideally suited to small holder production as small holders are able to tend coconut along with other crops as coconut trees do not require constant attention. The coconut paddy complex is a common phenomenon and the greater part of the land under coconut is in small

small-sized holdings. Small holders also resort to planting catch crops in coconut lands. Interplanting and paddy cultivation are means of insurance against fluctuations in the price of an export crop such as coconut. Coconut growing appears to be more profitable than any alternative crop suited to coconut lands. The earnings from an acre of coconut land have been estimated at Rs 206¹ whereas earnings from an acre of paddy land are around Rs 112.²

Prices obtained for tea have been declining due to Ceylon's inability to enter into marketing on a large scale and competition from substitutes such as instant coffee. Despite the recent decline in the unit price of tea, foreign exchange earnings from tea have risen due to expanded production. Expansion of production has been made possible by increases in productivity accompanying increased use of fertilizer. New forms of manufacture which result in economies in the cost of production and a product suited to present tastes have yet to be adopted on a large scale.

Natural rubber faces competition from synthetic rubber and the future competitive strength of natural rubber is tied up with reduction of costs of production. The prospects for increasing foreign exchange earnings from rubber are connected with increasing productivity,³ as well as producing

¹Asian Industrial News No. 3, 1968 (New York: United Nations, 1968), p. 66.

²Based on yields and guaranteed price, 1968.

³As practically all the land suitable for rubber and not cultivated in other crops is already under rubber cultivation.

a larger proportion of rubber in the form of crepe and new process rubbers.

Coconut oil also faces competition from other vegetable oils, animal oils as well as synthetic substitutes and cost competitiveness is important in maintaining markets. The prospects for increasing foreign exchange earnings are connected with increasing productivity by the use of selected seedlings and greater use of fertilizer both of which are subsidized by the government.

Local retention of export receipts in the post-war period average around 75 per cent and has contributed to the demand for and development of domestic agriculture and industry. Expenditure of export receipts on intermediate inputs such as fertilizer, capital goods, i.e., machinery and consumer goods mainly food and textiles has resulted in local production.

Furthermore, the local availability of coconut gave an impetus to further processing of coconut products. The manufacture of coconut products accounted for around 40 per cent of total industrial production in 1952. Similarly, the local availability of rubber has led to a rubber goods producing industry. Local rubber goods production has been increasing in recent years. Rs 52.8 million worth of rubber goods were produced in 1969.

B. Backward Linkage Effects

The first results of production for export and its growth were the production of intermediate goods, the provision of ancillary services -- banking, transport, distribution, commercial, etc. -- and some degree of processing of these products.

Export proceeds and costs of production are presented in Table VII-1. The costs of production have been divided into 'wages and salaries' and 'other costs' in order to separate the final demand linkages from the backward linkages.

TABLE VII-1
EXPORT PROCEEDS AND COSTS OF PRODUCTION

	COMMODITY	EXPORT RECEIPTS	WAGES AND SALARIES	OTHER COSTS
1920-38	Tea	164	61	35
1920-38	Rubber	69	18	9
1920-38	Coconut	56	25	8
1948-67	Tea	942	354	242
1948-67	Rubber *	304	139	51
1948-67	Coconut *	234	-- 92 --	

* Rough estimate

Considering the item 'other costs', imported materials constituted 37 per cent¹ of its total value between 1959 and 1966,² the remainder comprising the contribution of locally produced materials and the input from the service sector. The item 'other costs' represents the raw material and intermediate input content of the export industries. The ratio of

¹Based on Central Bank of Ceylon, Annual Report for 1966 and Statistical Abstract of Ceylon, various issues.

²The percentage of imports refers to all export crops. There are no separate statistics for each crop. Accurate data are not available for other years.

raw materials and intermediate inputs to total export value works out to around 18 per cent for the period 1920-38 and 22 per cent for 1948-67. Although this ratio is fairly low, some intermediate inputs were needed in large enough quantity to stimulate local production (provided that the local requirements were consistent with a minimum efficient scale of production and that most of the raw materials were available locally).

1. Fertilizer. Fertilizer is an important item in 'other costs.' For instance, in tea, it is as high as 25 per cent¹ of other costs. The consumption of fertilizer by the three major export industries as well as paddy -- the next largest consumer of fertilizer -- is given in Table VII-2.

TABLE VII-2
CONSUMPTION OF FERTILIZER

TYPE OF CROP	CURRENT CONSUMPTION 1965 (tons)	CURRENT CONSUMPTION AS PERCENTAGE OF OPTIMUM
Tea	160,000	81.9
Rubber	25,000	94.3
Coconut	50,000	24.8
Paddy	51,350	20.3

Source: Agricultural Development Proposals 1966-70, op. cit., p. 231.

² Approximate figure based on the accounts of one sterling company estate.

The consumption of fertilizer has been rising rapidly during the 1960's, mainly due to the distribution of subsidized fertilizer. Further increases can be anticipated in the future as there are plans for increasing the distribution of subsidized fertilizer. By far the greater proportion of fertilizer is used by the export industries. They have provided an impetus to the establishment of a fertilizer industry in Ceylon.

A small proportion of fertilizer has always been manufactured in Ceylon. Ferguson reported in 1876 that "there are so many competitors local and foreign in the field for the supply of manures to planters that there is some difficulty in selection. . ."¹ However, this statement was made at a time when the application of fertilizer had not reached anywhere near its level in later years (especially the 1950's and 1960's). The Census of Industry, 1952, reported local production of Rs 16 million worth of fertilizer.² There are no complete statistics for later years.

Locally produced fertilizer consists mainly of poonac. Cattle manure, bones and gas lime are also used as manure. Poonac is the by-product obtained in the manufacture of coconut oil. Thus some of the fertilizer required as an input for the export industries forms part of the output of the coconut industry.

¹A. M. and J. Ferguson, Ceylon Directory, 1876-78, op. cit., pages not numbered.

²Department of Census and Statistics, Statistical Abstract of Ceylon for 1963 (Ceylon: Department of Government Printing), Table 149.

The local production of fertilizer appears to have been profitable. The gross rate of return¹ in the fertilizer industry was as high as 103 per cent in 1952.² In 1968, too, the category 'other chemicals',³ comprising fertilizer, coconut oil, etc. registered returns of 151 per cent.⁴ The high rate of profit can probably be attributed to the local availability of copra.⁵

The bulk of Ceylon's requirements of fertilizer, however, is imported as the principal raw materials required for the production of fertilizer -- ammonia, sulphur, rock phosphate and potash -- are not available domestically. It is also doubtful whether the demand for fertilizer even in the late 1960s was of a sufficient scale to warrant expanded local production, particularly as costs decline with the scale of production. Table VII-3 illustrates the growth of demand from the pre-1960 period.

¹ Refers to Gross Output minus Total Payments expressed as a percentage of Fixed Assets. There is no allowance for taxation, depreciation, etc.

² Based on Census of Industry 1952, reported in Statistical Abstract of Ceylon, 1963, op. cit., Table 149.

³ There was no separate item 'fertilizer.'

⁴ Based on Survey of Industrial Production 1968, op. cit., pp. 10 and 11.

⁵ There is no data on the price of fertilizer and it is not possible to examine whether its price fell accordingly with the high level of profits.

TABLE VII-3
IMPORTS OF FERTILIZER^a

YEAR	QUANTITY (000 cwts)
1925	2,089
1945	1,854
1949	2,312
1954	3,680
1965/66	8,000
1968/69	26,600

^aConsists mainly of sulphate of ammonia, super phosphates, muriate of potash and a host of other fertilizers.

Sources: Ceylon, Department of Commerce, Thirty Years Trade Statistics of Ceylon 1925-1954 (Colombo: Government Press, 1955-57), Table 20; Central Bank of Ceylon, Annual Report for 1969, Table II, C5.

The cost of producing fertilizer domestically in LDC's is often found to be higher than purchasing an imported equivalent. For instance, it "is sometimes suggested that, instead of establishing ammonia units of smaller capacity in each country in the (ECAFE) region, a joint project should be set up in Iran to produce ammonia on a very large scale on the basis of natural and associated gasses that are flared today. The delivered price from such a unit in Iran is likely to be lower than the cost of locally produced ammonia in many countries of the region."¹ Furthermore, the price of

¹Economic Commission for Asia and the Far East (ECAFE), Industrial Development in Asia and the Far East, Vol. IV, Development of Key Industries (New York: United Nations, 1966), p. 147.

sulphur has risen as world demand has grown at a faster rate than production.¹

Fertilizer production is, as a general rule, a highly capital intensive industry and requires skilled management experience and entrepreneurship.² Despite the disadvantages with respect to economies of scale, it appears that most countries in the ECAFE region are going ahead with plans to produce fertilizer domestically. They seem prepared to accept higher costs of production in order to save foreign exchange³ and perhaps to generate employment and reduce dependency on foreign suppliers.

Example (a) Sulphuric Acid. Many L.D.C.'s in the ECAFE region already produce sulphuric acid or envisage its production in the near future -- the main demand for sulphuric acid being for fertilizer production especially ammonium phosphate or super phosphates. Ceylon had installed capacity of 3,300 tons of sulphuric acid/year in the 1960's and intended to increase this to 225,000 tons/year. Similarly, at this time, Malaya had installed capacity of 19,800 tons and Indonesia envisaged future capacity of 352,000 per year.⁴

¹ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 147.

²Ibid., p. 147.

³Ibid., p. 147.

⁴Ibid., p. 174.

The cost of production of sulphuric acid is dependent upon the type of raw material¹ employed, the size of plant and the process used. For instance, in India when imported sulphur was used as the raw material for the production of sulphuric acid, its cost of production dropped from \$28.20 per ton with a 50 ton per day plant to \$22.70 with a 1,000 ton per day plant.² When pyrite was used as the raw material, the production cost of sulphuric acid fell more sharply from \$30.90 per ton with a 50 ton per day plant to \$18.10 per ton with a 1,000 ton per day plant.³ Furthermore, the minimum economic size required to produce sulphuric acid from gypsum is even larger than in the case of sulphur or pyrite.⁴

The future increase in capacity envisaged in Ceylon calls for a fairly large-sized plant. Statistics with respect to production costs are not available.

Example (b) Nitrogeneous Fertilizer. Ceylon's consumption of nitrogeneous fertilizer rose from 15,800 metric tons N in 1951/52 to 34,700

¹Sulphur, pyrite or gypsum.

²ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 175.

³Ibid., p. 175.

⁴Ibid., p. 174.

metric tons N in 1961/62.¹ New capacity to be installed in an ammonia plant was to be around 82,500 metric tons of ammonia and the production capacity of ammonia sulphate and urea plants were to be 42,000 and 18,400 metric tons N per year respectively.²

The trend today, however, is towards 'larger and more sophisticated plants',³ and Ceylon's requirements are not likely to lead to the cheapest levels of production. In Japan and Iran single train plants of 750 tons and 1,000 tons per day are being established⁴ -- the cost of production is estimated to decline from \$50.92 per ton of ammonia to \$41.80 when production capacity is increased from 300 tons per day to 900 tons per day.⁵ Once more, with nitrogenous fertilizer, an important factor affecting the cost of production is the scale of plant. Other factors such as the raw material used and the process employed also affect the cost of production.

These examples suffice to illustrate that Ceylon is not in a position to produce fertilizer cheaply in view of the level of domestic demand and the difficulty of exporting domestically produced fertilizer as other L.D.C.s are also setting up fertilizer plants. The mixing of imported fertilizer is carried out by the Ceylon Fertilizer Corporation. Further fertilizer production is expected in the near future when the State Fertilizer

¹ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 183.

²Ibid., pp. 188 and 189.

³Ibid., p. 190.

⁴Ibid., p. 190.

⁵Ibid., p. 190.

Manufacturing Corporation commences production based on the petro-chemical by-products of the Roil Refinery. The fertilizer plant accompanying the petroleum plant is expected to lead to considerable economies in the cost of producing fertilizer.

2. Other Agricultural Chemicals. A certain proportion of agricultural chemicals, such as insecticides, fungicides, weedicides and pesticides, are manufactured locally by foreign companies. There are no complete statistics but two reporting units produced 23,977 cwts of these products valued at Rs 2,968,155 in 1966.¹ The production of these chemicals may have arisen from the local availability of some by-product. However, there is no information on the factors which determine why they are produced locally.

There are factors making for higher costs of producing pesticidal chemicals in general in L.D.C.'s than in advanced countries. Chemicals are produced locally to meet specific demands and as a result plants tend to be operated on a less economic scale than those in advanced regions.² Furthermore, costs of imported machinery and raw materials are higher than they are to producers in advanced regions, and production of these chemicals in warm climates entails refrigeration, etc. and adds further to the costs.³

¹Ceylon Ministry of Industries and Fisheries, Statistics of Industrial Production 1965-67 (Colombo: Government Press, 1968), p. 28.

²ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 229.

³Ibid., p. 229. There is no data on costs of production, profitability, etc. of the agricultural chemical industry in Ceylon.

3. Engineering Industries. In Ceylon, one early and favourable linkage effect touched off by the development of plantations was the establishment of repair and maintenance shops. Engineering establishments engaged in the manufacture of machinery for the export industries and other foundry products are reported to have been in existence since the mid-19th Century.¹ These "light engineering establishments are considered to be of basic and great importance for overall economic development."² The Census of Industry, 1952, listed 61 engineering establishments producing a gross output of Rs 94 million³ accounting for 15.4 per cent⁴ of the gross value of output of all industries in that year. The number of engineering establishments rose to over 200⁵ and the value of gross output to Rs 226 million in 1969.⁶

The major engineering firms not only operate repair and maintenance shops, but five of them are reported to have manufactured about Rs 6 million worth of machinery for the tea and rubber industries in the early 1950's.⁷

¹ECAFE, Industrial Development in Asia and the Far East, Vol. II, Country Reports (New York: United Nations, 1966), p. 135.

²United Nations, Asian Industrial Development News, No. 5, 1970 (New York: United Nations, 1970), p. 20.

³Statistical Abstract of Ceylon, 1963, op. cit., p. 215.

⁴Based on Ibid., pp. 215 and 216.

⁵Survey of Industrial Production, 1968, op. cit., p. 11.

⁶Central Bank of Ceylon, Annual Report, 1969, op. cit., Table II(b)

2.

⁷I.B.R.D., The Economic Development of Ceylon, op. cit., p. 561.

In the 1950's and 1960's Ceylon produced about 30 per cent of the world's supply of certain types of tea machinery,¹ exporting machinery to India, Australia and Africa; 60 per cent of the quantity of machinery required domestically for the export industries was produced in Ceylon.²

Early production of machinery in Ceylon is likely to have been determined by the uncomplicated nature of the equipment such as rollers, driers, water pumps, copra kilns, etc. used in the export industries. The machinery produced was not tied specifically to either foreign owned or locally owned plantations. Machinery produced locally probably served the specific needs of plantations better than imported machinery. Furthermore, engineering services had to be rendered locally as the transport cost of sending machinery abroad for repairs would have been impossibly high, whereas local labour was cheap.

Most of the engineering establishments in Ceylon are small-scale private establishments.³ There are also a large number of "small engineering workshops engaged in the repair of motor vehicles and the manufacture of small parts for machines used in the rubber and tea processing industries."⁴

¹I.B.R.D., The Economic Development of Ceylon, op. cit., p. 561 and ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 135.

²ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 135.

³Ibid., Vol. IV, p. 105.

⁴Ibid., p. 105.

Moreover, there are a few large engineering firms producing machinery for the export industry and two large-scale government engineering workshops.

The above-mentioned engineering establishments have now reached a stage where they produce a variety of products including metal products, machinery, transport equipment and the workshops are equipped to perform major overhaul and repair of machinery. Most of the inputs used in the engineering industry, however, are imported.

Local repair and maintenance facilities provided by the engineering industry and the production of spare parts would have had the beneficial effect of saving capital. Poor maintenance and repair tend to lower the efficiency of installed machinery, increase the costs of production and lead to the production of lower quality goods.¹ Similarly, if spare parts were imported, large stocks would have to be held in order to avoid the risk of closing down production in the event of a shortage of spare parts. A well-developed engineering industry helped Ceylon to avoid these problems and the wastage of capital involved. The rates of return in existing industry (see Table VIII-10) and plantations were fairly high and were probably made possible in part by the availability of these services.

The engineering industry introduced techniques different to those used in plantations and labour skills, valuable prerequisites for more generalized development. Skills acquired by operatives in the engineering indus-

¹UNIDO, Maintenance and Repair in Developing Countries (New York: United Nations, 1971), p. 7.

try are transferable and these shops thereby created positive externalities for other manufacturing industries. In 1968, the engineering industries employed 470 technicians and engineers, 215 foremen and 4,465 skilled workers.¹ These skilled workers accounted for 53 per cent of all employees, whereas in other industries the proportion was 38 per cent.² Furthermore, all operatives in the engineering industry acquire some skills.

The engineering industry was one of the earliest industries to be established in Ceylon and it introduced a higher level of technology. It was well suited to the factor endowment of Ceylon in being fairly labour intensive (see Table VII-9) and a relatively heavy consumer of power. (As we mention below, Ceylon has abundant resources of hydro electric power). Furthermore, small-scale engineering establishments have been economically viable units as they tend to be more labour intensive and their capital requirements are small. The rate of return in engineering industries has risen from 25 per cent³ in 1952 to 109 per cent⁴ in 1968.

The engineering industry, initially connected with plantations, was later enlarged with the emergence of an industrial sector. Problems connected with the engineering industry are those commonly encountered by

¹Based on Survey of Industrial Production 1968, op. cit., p. 17.

²Based on Ibid., p. 17.

³Based on Statistical Abstract of Ceylon, 1963, pp. 214 and 215.

⁴Based on Survey of Industrial Production 1968, op. cit., pp. 10 and 11.

L.D.C.'s. This sector is heavily dependent on imported machinery and equipment and consequently in times of foreign exchange shortage (a frequent occurrence in Ceylon) the supply of imports is curtailed and machinery and equipment cannot be fully utilized. Furthermore, the domestic market for machinery and equipment is small and it is difficult for the industry to continuously expand on the basis of the domestic market. Ceylon exports some machinery. Beyond such items which suit specific requirements of plantations, high costs of production would probably limit exports from Ceylon.¹ It is reported that there are only a few machinery items, such as simple agricultural implements, bicycles, etc., which can be produced competitively in L.D.C.'s.²

The percentage share of the engineering industries to total manufacturing output of Ceylon was 14 per cent in 1969. This can be compared to the share of other selected countries as follows: 22 per cent Australia; 30 per cent Japan; 23 per cent New Zealand; 18 per cent India; 35 per cent U.S. and 40 per cent U.K.³

4. Power. The development of hydro electric power was closely linked with plantations. Estates built their own plants. Private power

¹One factor in favour of L.D.C.'s are the relatively lower wage costs.

²ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 144.

³Ibid., p. 145.

generation primarily for the estate sector is estimated to have amounted to almost 80 per cent of power generated in 1939.¹ Even as late as 1950, power consumption by tea and rubber factories and coconut oil mills amounted to 60 per cent of the total power output in that year.² Total installed capacity in 1950 was 143,400 k.w. Since then, power consumed by other sectors of the economy has been expanding and government power generation has tended to eclipse private power generation. Total installed capacity amounted to 262,000 k.w. in 1969.³

It is reported that one of the favourable effects of hydro electric power projects in Northern Rhodesia was the expansion in the cement industry.⁴ In Ceylon, it led to the use of large quantities of cement for building dams, etc. and would possibly have contributed to the factors which led to the establishment of a Cement Corporation.

5. Cement. It is not possible, however, to attribute the production of cement to the favourable demand effect of plantations and connected activities such as power generation, etc., as the demand generated by these sectors was not of sufficient magnitude to justify economic production. Imports of cement amounted to 950,000 cwt in 1925, and had increased to 2,745,000

¹Based on D. R. Snodgrass, op. cit., Table A-43, p. 348.

²Based on Ibid., and I.B.R.D., Economic Development of Ceylon, op. cit., p. 462.

³Ministry of Finance, Economic and Social Progress 1965-69 (Ceylon: Department of Government Printing, 1969), p. 50.

⁴R. E. Baldwin, Economic Development and Export Growth, op. cit., p. 180.

cwt in 1949,¹ whereas the minimum economic scale of production was considered to be 100,000 tons per annum based on the rotary kiln process.²

The increased demand for cement in the post-war years, connected with various other developments in the economy, led to the establishment of a cement factory in the latter part of 1950. The first plant was set up in the public sector with a capacity of 100,000 tons per annum (minimum economic size). Ceylon possessed the necessary raw material limestone and clay resources.

The demand for cement has exceeded local production of cement for imports have continued. In 1954, for instance, 82,000 tons³ of cement were produced locally and 20,000 tons⁴ were imported. As the demand for cement continued to rise the production capacity of the factory was more than quadrupled and more cement factories were established. A second factory was built in early 1970 with a capacity of 220,000 tons per year. Development programmes indicate that by early 1972, the combined output of the cement factories will be about 790,000 tons which is expected to meet domestic requirements.⁵

¹Ceylon Department of Commerce, Thirty Years Trade Statistics, op. cit., Table 20.

²ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 362.

³Ibid., Vol. II, p. 144.

⁴Thirty Years Trade Statistics, op. cit., Table 20.

⁵Central Bank of Ceylon, Annual Report, 1969, op. cit., p. 71.

It is interesting to note that 200,000 tons per year is considered to be the minimum economic size for developing countries in which a cement industry is well established.¹ Costs of production continue to decline with an increasing scale of production. In West Germany, for instance, the cost difference is around \$7 per ton between a capacity of 100 tons per day and 1,200 tons per day.² "The present trend is towards 1,000 tons per day or higher capacity rotary kilns. However, in the case of developing countries where production of 1,000 tons per day is envisaged at a particular location it would be more useful to install two kilns each of 500 tons per day rather than a single kiln of 1,000 tons per day. This might add to maintenance costs, and therefore costs of production, but the extra expenditure would be more than offset by savings resulting from continuous production of at least 500 tons per day of cement without having to provide for stoppages for repairs and making of the refractories. Furthermore, the technical skill required in operating these plants would be far less exacting."³

Although we would expect the costs of production and hence sales prices to decrease in Ceylon with the increase in capacity,⁴ the sale price increased from Rs 183 per ton in 1966/67 to Rs 222 per ton in 1969/70 (with

¹ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 362.

²Ibid., p. 363.

³Ibid., p. 363.

⁴Capacity increased from 120,000 tons in 1966/67 to 350,000 tons in 1969/70, Central Bank of Ceylon Annual Report 1969, op. cit., Table II(c), 6.

production costs being estimated at Rs 220 per ton in 1969/70).¹ The increase in costs of production has been attributed to higher wage costs and higher costs of imported clinker.²

Locally produced cement costs appreciably less than imported cement despite the increase in price.³ Imported cement cost Rs 653 per ton in 1954⁴ and costs more today,⁵ whereas locally produced cement was sold at Rs 222 per ton in 1969/70.⁶ Furthermore, the Ceylon Cement Corporation has registered profits although profits have decreased from 16 per cent of capital invested in 1965/66 to 10 per cent in 1969/70 with the increase in costs of production.⁷

6. Transport Facilities. Input requirements also took the form of transport facilities which were provided mainly by the government. Roads and railways, for example, were all built by the government. The Ceylon Government Railway employed a large number of skilled and semi-skilled workers; the workshop of the C.G.R. was a source of technical training for its employees. This shop turned out articles for use by other government depart-

¹Based on Central Bank of Ceylon Annual Report 1969, op. cit., Table II(c)6.

²Ibid., p. 71. It is expected that local clinker will be increasingly substituted for imported clinker.

³The locally produced cement is probably not of the same type or quality as the imported cement.

⁴Thirty Years Trade Statistics, op. cit., Table 20.

⁵The statistics were not available.

⁶Based on Central Bank of Ceylon Annual Report 1969, op. cit., Table II(c)6.

⁷Ibid.

ments and for private orders in addition to normal railway work.¹ The workshop has provided externalities to other industries and has also improved the quality of labour by training them in skills which could be used by other manufacturing industries.

7. Backward Linkage Effects Specific to Individual Export Industries.

(a) The tea industry. Tea chests are a major item in 'other costs' of production in the case of the tea industry. The percentage share of 'other costs' expended on tea chests is approximately 20 per cent.² Part of the requirements of tea chests are met domestically by the Ceylon Plywood Corporation (see Table VII-4). The Plywood Factory was established in 1941. The project was prepared by the government. The government also offered to underwrite the full issue of shares, but there was no response from private enterprise. Finally the government established the factory.³

Plywood is used chiefly for making tea chests in Ceylon. The large tea planters were shareholders in companies which supplied them with foreign-made tea chests and hence they were not interested in the project. It was also suggested that perhaps the shortage of trained workers and the lack of information regarding the availability of supplies of logs for the mill may

¹I.B.R.D., The Economic Development of Ceylon, op. cit., p. 643.

²Based on statistics of one large Ceylon sterling tea company.

³I.B.R.D., The Economic Development of Ceylon, op. cit., p. 509.

have discouraged private investors.¹

TABLE VII-4

DOMESTIC PRODUCTION AND REQUIREMENTS OF PLYWOOD TEA CHESTS
1958-59 to 1967-68
(Selected Years)

	1958-59	1960-61	1963-64	1965-66	1967-68
Total Domestic Requirements (mil)	3.6	4.1	4.4	4.9	5.3
Domestic Production (000's)	331	458	637	714	977
Ratio of Local to Imported Tea Chests	1:10	1:8	1:6	1:5	1:4

Source: Wiratunga, 'An Illustrative Study of the Foreign Exchange Savings Realized by Three Public Sector Corporations 1957-58 to 1967-68,' Central Bank of Ceylon, Staff Studies, Vol. 1, No. 1 (Colombo: Central Bank of Ceylon, 1971), p. 50.

The Industrial Products Regulation Act. (I.P.R.A.) was applied to plywood chests in August 1949 by which importers were required to purchase a specified ratio of the corresponding domestic product. By 1959, the G.A.T.T. Supplement on Basic Instruments reported that "the quality of local chests has improved considerably during the last few years and it now only met the standards of the imported product, but in some respects was even superior to the quality of the imported product, insofar as the timber in the manufacture of

¹I.B.R.D., The Economic Development of Ceylon, op. cit., p. 509.

local chests was pretreated for immunity against borer attack and that the bonding medium used was a plastic glue which makes the plywood water-repellent and exceedingly strong. . .whereas the market price of imported plywood chests without linings and fittings has risen from Rs 4.89 in 1955 to Rs 5.77 in 1957, the 'standard price' of the local product¹ has fallen from Rs 6.00 to Rs 5.90 during the same period. . ."²

The Ceylon Plywood Corporation worked at around 85 per cent of capacity in 1968-69 and 1969-70.³ Imported chests still have the major share of the market as the Corporation has been slow to expand due to such factors as strikes and irregularity in the supply of timber, etc.

(b) The coconut industry. As noted earlier, some of the machinery used in the production of copra, coconut oil and coir fibre is produced in Ceylon. Furthermore, small holders build their own kilns and chekkus, etc. They produce their own machinery by copying the machinery used in modern mills. Small holders are gradually turning to the use of motor driven chekkus.

Containers for oil are also produced locally. Five reporting units produced steel drums and storage tanks to the value of Rs 5 million

¹The local product presumably had linings and fittings and hence was cheaper than the imported product.

²General Agreement on Tariffs and Trade, Basic Instruments and Selected Documents, 7th Supplement, 1959 (Geneva: 1959), p. 74.

³Based on Central Bank of Ceylon Annual Report 1969, Table II(c)3.

in 1967.¹ These could probably serve (among other things) as containers for coconut oil.

C. Final Demand Linkages

Final demand effects are indirect and work through the increase in demand arising from the expenditure of wages. As the wages of plantation labour constitute a fairly large proportion of costs of production (e.g., 36 per cent on average in the period 1920-38), the final demand linkages arising from the expenditure of wages should have been of some importance in giving an impetus to domestic production.

For a very long period, however, much of the subsistence requirements for the immigrant plantation labour was not provided locally. Hence the direct effect of the "local" labour component was not of great importance from the point of view of the growth of domestic production of consumption goods. Expansion in domestic production in later years was mainly due to government policy and assistance.

The general mechanism by which forward demand linkages works is through an increase in the price of goods -- food and textiles in the case of Ceylon -- demanded by plantation labour. Expansion of export industries normally result in increased wages, which in turn lead to a rise in demand for food and textiles and this is likely to raise their prices. In Ceylon, however, such an effect could hardly have taken place as imported goods were freely available.

¹Statistics of Industrial Production 1965-67, op. cit., p. 31.

TABLE VII-5
PERCENTAGE DISTRIBUTION OF PLANTATION EXPENDITURES,
1953

I T E M	PERCENTAGE
Food	66.1
Clothing	9.4
Housing	0.6
Miscellaneous	21.0
Medical	0.6
Durable Consumer Goods	1.9
	<u>99.6</u>

Source: Central Bank of Ceylon, Survey of Ceylon's Consumer Finances, 1953, op. cit., Table 25.

Wages and salaries of the tea, rubber and coconut industries in 1953 were Rs 302 mil, Rs 152 mil, and Rs 62 mil respectively. In 1963, they were Rs 414 mil, Rs 113 mil, and Rs 83 mil respectively. Using these values we attempt to compare the distribution of plantation expenditure between the years 1953 and 1963.

A little over 75 per cent of plantation wages was spent on food and textiles. The demand for these items is universal and the demand effect of plantation expenditure would have added to the demand for the same items from other sectors of the economy and contributed to a widening of the market for these products. Domestic production of these items has increased throughout the 1950's and the 1960's.

TABLE VII-6
PATTERN OF PLANTATION EXPENDITURE 1953 and 1963

I T E M	1953			1963		
	IMPORTS (Rs Mil)	DOMESTIC PRODUCTION (Rs Mil)	PLANTATION OUTLAY AS PERCENTAGE OF DOMESTIC PRODUCTION	IMPORTS (Rs Mil)	DOMESTIC PRODUCTION (Rs Mil)	PLANTATION OUTLAY AS PERCENTAGE OF DOMESTIC PRODUCTION
Rice	521	291	30	192	517	14
Flour		--	--	60	--	--
Fish	a	29	72	a	(124) ^d	c
Coconut Product	--	431	7	--	405	7
Vegetables	a	316	13	a	390	8
Sugar	71	--	a	71	8	300
Other Foods ^b	204	227	42	253	359	59
Clothing	52	11 ^e	418	93	38	179
Housing	--	82	6	--	179	14
Total Plantation Outlay (Rs Mil)		516			610	

^aIncluded in 'other foods.'

^bDomestic production is underestimated as processed foods are included in industrial products.

^cPlantation expenditure on this item is not available separately in 1963.

^dThe value of fish production has been added to the value of other foods on account of (c) above.

^eUnder estimation as this is the value reported in the Census of Industry, 1952, which does not include small-scale production (small-scale production is common in textile production).

Sources: D. R. Snodgrass, *op. cit.*, Table A-1; *Statistical Abstract of Ceylon*, 1962, p. 214; *Statistical Abstract of Ceylon*, 1965, p. 193; *Thirty Years Trade Statistics*, *op. cit.*, Table 20; *Central Bank of Ceylon, Annual Report*, various issues; *Central Bank of Ceylon, Survey of Ceylon's Consumer Finances, 1953* (Colombo: Central Bank of Ceylon, 1954), Table 25; *Central Bank of Ceylon, Survey of Ceylon's Consumer Finances, 1963* (Colombo: Central Bank of Ceylon, 1964), Table 85.

1. Rice. For hundreds of years, rice has been the staple diet of the Ceylonese. The plantation sector with its large labour force added to the demand for rice. In 1953, for instance, plantation outlay constituted 30 per cent of domestically produced rice. Imports of rice and wheat flour (a substitute for rice) far exceeded domestic production of rice in 1953 (see Table VII-6).

A great deal of government attention was focussed on domestic agriculture in the 1950's and 1960's. It has involved the provision of credit to paddy farmers both for production and consumption purposes, colonization schemes in the dry zone, improving and extending irrigation facilities, a guaranteed price scheme, provision of fertilizer at subsidized prices, crop insurance schemes, etc.

As a result of these measures output has risen by almost 300 per cent (production rose from 22 mil bushels in 1950¹ to 65 mil bushels in 1969²) and yields have doubled between 1950 and 1969.³ Ceylon produced approximately 80 per cent of her requirements of rice in 1969.

2. Sugar. Sugar is another item on which there is a fairly high percentage of plantation spending. For instance, in 1953, four per cent of

¹D. R. Snodgrass, op. cit., p. 330.

²Central Bank of Ceylon Annual Report 1969, op. cit., p. 24.

³Based on statistics from D. R. Snodgrass, op. cit., p. 331, and Central Bank of Ceylon Annual Report 1969, op. cit., p. 24.

total expenditure was on sugar.¹ This is the highest proportion of spending on any single item with the exception of rice and wheat flour. Rs 71 million worth of sugar was imported in 1953 and around 30 per cent of these imports were absorbed by the plantation sector. Domestic production of sugar commenced around 1960.

It is possible to grow cane profitably in Ceylon provided that processing facilities are available. The gross return possible from an acre of cane was estimated to be around Rs 1000 in 1957;² it was also estimated that, to be equally advantageous an acre under paddy should yield nearly 150 bushels at the 1957 import price or more than 80 bushels at the guaranteed price.³ The yields in 1957 were around 32 bushels per acre.⁴ Furthermore, the returns from coconut and rubber cultivation are put at Rs 206 and Rs 150 per acre⁵ -- though land suitable for either paddy or cane are not necessarily competitive with rubber or coconut.

Imports reached a level which made domestic production possible by the late 1940's -- assuming that capacity output given in the Ten Year

¹Survey of Ceylon's Consumer Finances 1953, op. cit., Table 25.

²The Ten Year Plan, op. cit., p. 225.

³Ibid., p. 225.

⁴D. R. Snodgrass, op. cit., p. 331.

⁵Asian Industrial Development News, No. 3, 1968, op. cit., p. 66.

Plan (1958) represented the minimum economic level of production (see Table VII-8). The Ten Year Plan (1958) suggested the establishment of the plants noted in Table VII-8.

TABLE VII-7
IMPORTS OF SUGAR

YEAR	QUANTITY (000 tons)
1929	11.5
1939	13.6
1949	22.5
1951	25.0
1956	189.0

Source: Thirty Years Trade Statistics, op. cit., Table 20; Ten Year Plan, op. cit., p. 254.

TABLE VII-8
SUGAR FACTORIES TO BE ESTABLISHED

SUGAR FACTORY	TO COMMENCE	CAPACITY OUTPUT (000 Tons)
Kantalai I	1959	19.2
Gal Oya	1959-60	40.0
Kantalai II	1962	60.0
Walawe I	1962	31.5
Walawe II	1965	31.5
		<u>182.2</u>

Source: The Ten Year Plan, op. cit., p. 371.

Though sugar production commenced around 1960, domestic production fell far short of these levels. The Kantalaia and Gal Oya units produced a mere 10,800 tons in 1969-70.¹ The state-owned sugar corporation has run into problems of organization and suffered from faulty planning since its inception; production of sugar cane has also been highly variable due to a shortage of water and led to the under-utilization of capacity.²

The value³ of domestically produced sugar is higher than the imported product; for instance, it was valued at Rs 1120/metric ton⁴ in 1969-70 whereas the c and f price of imported sugar was Rs 436/ton in 1969.⁵ (In addition to sugar, the Sugar Corporation produces spirits and offsets the losses in sugar production by its profits on the sale of spirits).

3. Textile Production. Around nine per cent of plantation expenditure was on textiles. Even as late as 1953, however, domestic production was negligible. Textile production experienced an upsurge in the 1960's. By 1969 local textile production was valued at Rs 228 million,⁶ well over 300 per cent of the plantation outlay on textiles in 1963. The textile

¹Central Bank of Ceylon Annual Report 1969, Table II(c)1.

²Ibid., p. 55.

³This is not the sale price; it is probably the cost of production.

⁴Based on Central Bank of Ceylon Annual Report 1969, Table II(c)1.

⁵Central Bank of Ceylon Annual Report 1969, p. 233.

⁶Ibid.

industry of Ceylon passed through the usual stages of import substitution of the products most readily manufactured locally, a fairly high degree of self-sufficiency (70 per cent in 1969) and has now begun to export garments.

The main obstacle to the earlier domestic production of textiles appears to have been the free flow of imports. Textile production increased slowly from Rs 11 mil in 1952 to Rs 19 mil in 1961. The domestic textile industry received an impetus from the imports controls imposed since 1960. By 1969, the domestic production of textiles had risen sharply and the value of textile production (Rs 228 mil) was 12 times its value in 1961. The gross rate of return in this industry rose from 37 per cent in 1952¹ to 92 per cent in 1968.²

The textile industry has the highest labour coefficient³ among industries other than the plantation sector (see Table VII-9) and is thus well suited to the factor endowment of Ceylon. Small-scale production and the use of traditional techniques are also common features of the textile industry of Ceylon. Textile industries in Ceylon were not excessively demanding of skilled labour. In addition, one or two modern large-scale textile concerns were established (for instance, the National Textile

¹Based on Statistical Abstract 1963, op. cit., pp. 214 and 215.

²Based on Survey of Industrial Production 1968, op. cit., pp. 10 and 11.

³This refers specifically to the industry in Ceylon and does not imply that the textile industry as a whole has fixed technical coefficients.

Corporation in which the capital invested was¹ Rs 209 million, and the Wellawette Spinning and Weaving Mills). The capital requirements of small scale establishments are not high in relation to the value of output. The capital/worker ratio in the textile industry in 1968 was around Rs 3230, whereas for all industries (including textiles) it was Rs 4900.² Specific figures relating to different types of products or connected with the degree of finishing, etc. are not available.

The economic size³ of a cotton mill in India and Pakistan is generally considered to be 25,000 spindles and 500-600 looms.⁴ In Ceylon, the National Textile Corporation planned to set up two additional mills with a capacity of 112,000 spindles between 1966 and 1975. As of 1969-70, one factory was in production and it was producing near-capacity and registering some profits.⁵

The textile industries are an important branch of industry accounting for 14 per cent of total industrial production in 1969. There are many industries connected with textiles -- handlooms, garment manufacture, etc. Other possible forward linkages are rubber coated and water-proofed fabrics.⁶

¹Central Bank of Ceylon Annual Report 1969, op. cit., p.

²Based on Survey of Industrial Production 1968, op. cit., pp. 10, 11.

³It is not specified whether economic size refers to minimum or optimum.

⁴ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 515.

⁵For details see Central Bank Annual Report 1969.

⁶ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 533.

Globally, however, the textile industry is being changed into a capital intensive industry by advanced countries, and brings with it new problems connected with high rates of obsolescence of machinery, etc. to L.D.C.'s. The impact of automation is reported to be considerable in the textile industry, though not of such proportion or as serious as in the engineering industries.¹

The plantation demand for textiles was fairly significant, accounting for about one-fourth of the total demand for textiles in the 1950's and was certainly a factor responsible for the establishment of a textile industry. The textile industry was established in the mid-19th Century when plantation demand for textiles must have accounted for an even greater share (than its share in the 1950's) of total demand. A traditional handloom sector was in existence long before the establishment of plantations, probably largely serving the needs of the subsistence sector. There is no information with respect to its size or growth/decline.

D. Labour Coefficients and Skill Components of Plantations

The labour coefficient of the tea, rubber and coconut industries are far above those of other industries (see Table VII-9). Thus the export industries can claim to be the most labour-intensive industries in Ceylon. Although the wages of labour expanded the domestic market for simple items such as food and textiles, subsistence was not provided locally for the population influx. Even in the 1950's plantation labour relied on imports for

¹ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 533.

over 40 per cent of their expenditures. Their impact on the development of the rest of the economy was thus limited.

TABLE VII-9
LABOUR COEFFICIENT PER Rs 10,000 OF OUTPUT

YEAR	I N D U S T R Y	LABOUR COEFFICIENT
1960	Tea	5.25
1960	Rubber	5.08
1960	Coconut	4.63
1968	Food, beverages, tobacco	0.41
1968	Textiles, weaving apparel, leather	1.59
1968	Manufacture of wood and wood products	1.51
1968	Manufacture of paper and paper products	0.75
1968	Manufacture of chemicals, petroleum, coal, rubber and plastic products	0.55
1968	Manufacture of non-metallic mineral products (except petroleum and coal)	0.65
1968	Manufacture of fabricated metal products, machinery and equipment	0.95
1968	Basic metal products	0.35

Sources: Central Bank of Ceylon Annual Reports, various issues; D. R. Snodgrass, op. cit., Table A-12.

The skill component of labour employed in the export industries rates very low in comparison with other industries. Skilled labour¹ comprising factory workers, managerial and clerical hands constituted 2.3 per cent of the total employed in the tea industry in 1960 (see Chapter IV). In all other industries, the skill component is as high as 54 per cent.² Lack

¹Note: this definition of skilled labour differs from the more rigorous one employed earlier in this chapter.

²Based on Survey of Industrial Production, 1968, op. cit., p. 17.

of a pool of skilled labour meant that other industries had to incur costs involved with training unskilled labour.

E. Forward Linkages

The domestic availability of raw materials has given rise to an increasing degree of processing in tea, rubber and coconut.. Furthermore, the processed product, notably in rubber and coconut has been used as an input by other industries producing a variety of products. Local availability of rubber and coconut has reduced costs and increased the profitability of these other industries.

1. Tea. Instant Tea -- a new type of instant tea was produced in Ceylon in 1959 by the Tea Research Institute and the Ceylon Institute for Scientific and Industrial Research. As noted earlier, this product differs from other forms of instant tea available in the market and it possesses a flavour closer to that of conventional black tea than instant teas produced by consuming countries. Instant tea, manufactured by Cey Tea Ltd., amounted to 30,572 lbs in 1969. The exports of instant tea rose from 90,312 lbs in 1967 to 290,128 lbs in 1969.¹ Information with respect to production costs, profitability, etc. are not available.

2. Rubber. The Manufacture of Rubber Goods -- at the outbreak of World War II there were a few small rubber manufacturing concerns. With the termination of the war and the availability of imports, Ceylon found it difficult to meet competition from imports due to the "difficulty of obtaining

¹Administration Report of the Tea Controller for 1969, op. cit., p. J74.

new machinery and the necessary raw materials."¹ By 1947, six small factories were reported to have been engaged in the manufacture of rubber goods.² In order that the industry be firmly established, the Commission on the Rubber Industry in Ceylon, 1947, was of the opinion that it needed such assistance as:

(a) imposition of protective tariffs on items capable of being manufactured in Ceylon to a standard, not markedly inferior to that of the imported article;³

(b) lowering of customs duties on rubber manufacturing machinery, plant and specialized equipment and on raw materials such as chemicals, etc. essential for the manufacture of rubber goods.⁴

In spite of the shortage of machinery more than 100 different types of articles were produced locally in 1947.⁵ The share of rubber products in total industrial output was around 3.2 per cent in 1969.⁶

Local consumption of rubber has increased fairly rapidly in the past few years, almost doubling between 1965 and 1969 (see Table VII-10). The rate of return from the production of rubber goods was around 45 per cent in 1968.⁷ The comparatively low return probably has to do with the

¹Report of the Commission on the Rubber Industry in Ceylon, 1947, op. cit., p. 116.

²Ibid., p. 116.

³Ibid., p. 123.

⁴Ibid., p. 120.

⁵Ibid., p. 116.

⁶Based on Central Bank of Ceylon Annual Report for 1969, op.cit., p. 38.

⁷Based on Survey of Industrial Production, 1968, op. cit., pp. 10, 11.

setting up of the Tyre Corporation and the underutilization due to 'complexities of production.'

The difference in the cost of raw rubber between a producing country and a non-producer can be as high as 25 per cent.¹ Although this is a favourable factor for the establishment of rubber industries in producing countries, other factors such as the need to import machinery and materials and the lack of technical know-how work against this advantage.²

TABLE VII-10

LOCAL CONSUMPTION AND PRODUCTION OF RUBBER GOODS

YEAR	CONSUMPTION (In Tons)	VALUE OF RUBBER PRODUCTS (Rs Mil)
1965	1846	19.1
1966	2178	18.9
1967	2648	20.7
1968	3223	41.3
1969	3496	52.8

Sources: Administration Report of the Rubber Controller for 1969, op. cit., p. K62; Central Bank of Ceylon Annual Report 1969, op. cit., p. 38.

The major local consumers of rubber are given in Table VII-11.

The Ceylon Tyre Corporation: Tyres, tubes and flaps are manufactured by the Ceylon Tyre Corporation which commenced production in 1967. It intends to branch out into the manufacture of other rubber products. By 1970, this

¹ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 327.

²Ibid., p. 327.

Corporation supplied 55 per cent of the total domestic requirements of tyres and tubes.¹ The sharp increase in the value of rubber products is connected with the development of the tyre industry, as the value of rubber products rose from Rs 7 mil in 1966² (before the production of tyres and tubes) to Rs 41.3 mil in 1968³ (after the Tyre Corporation commenced production after 1967).

TABLE VII-11

PERCENTAGE OF PRODUCTION OF RUBBER GOODS
1969

Manufacture of tyres, tubes and flaps	32
Retreading tyres	31
Rubber soles and heels	12
Cycle tyres and tubes	8
Foam rubber products	6.5
Rubber toys	1.5
Other rubber goods ^a	9.0

^aInclude a wide range of miscellaneous rubber goods comprising conveyor belts, chair back buffers, insole rubber sheets, rubber mats, hoses, rubberized fibre products, etc.

Source: Administration Report of the Rubber Controller for 1969, op. cit., p. K62.

¹W. J. Fernando, "Export Diversification and Import Substitution," Central Bank of Ceylon Staff Studies, Vol. 1, No. 1, op. cit., p. 173.

²Central Bank of Ceylon Annual Report for 1969, op. cit., p. 43.

³Ibid., p. 43.

The Ceylon Tyre Corporation commenced production in 1967-68 and production reached around 60 per cent of capacity in 1969-70.¹ The corporation intends to increase production in stages due to the complexity of the technological process and as workers have to acquire the necessary skills. Underutilization of capacity is also reported to be due to delays in getting sufficient moulds.² There have been delays in the arrival of tyre moulds and it is probable that the shortage of sufficient moulds may have resulted from foreign exchange shortages.

In view of these difficulties, and in order to be in a position to take advantage of the economies of scale,³ Ceylon would do well to examine the possibilities of joint ventures with industrialized countries to obtain a continuous flow of technical know-how, specialized processes and methods, etc. Even more importantly, major rubber manufacturing companies have large interests in synthetic rubber production, which is a powerful factor in influencing these companies to use synthetic rubber. Association of major rubber manufacturers with rubber producing countries could have the added advantage of tying users to natural rubber on account of their vested

¹Based on Central Bank of Ceylon Annual Report for 1969, op. cit., Table II(c)5.

²Ibid., p. 66.

³It has been estimated that in Japan, an increase in capacity in plant size from 1250 tons/month to 5000 tons/month reduces total costs by \$130/ton. Source: Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 326. The Ceylon Tyre Corporation has a production capacity of 250,000 tyres, 152,000 tubes and 88,000 flaps per annum. Source: Ceylon Bank of Ceylon Annual Report, 1969, Table II(c)5. Hence it is doubtful whether the Corporation is in a position to benefit from economies of scale.

interested in its production.¹

3. Coconut. Copra, coconut oil and dessicated coconut are the most important coconut exports. In addition to these there are a number of other coconut products which are exported. They include coir fibre, coir yarn, coconut shell charcoal and poonac (oil cake). Furthermore, there are numerous other products which are not exported such as those produced from the sap, which when fermented yields toddy and when distilled produces arrack. By boiling down the toddy, a jaggery is obtained. Toddy vinegar is also produced. Coconut palms planted along the coast of the Western and Southern provinces are reported to have been mainly for the supply of toddy to the arrack distilleries.²

Copra³ is the most important manufactured coconut product as it is used for the manufacture of coconut oil. Copra is reported to be one of the richest raw materials for vegetable oil extraction as it has an oil yield of up to 64 per cent.⁴ Poonac (oil cake) is a by-product in the manufacture of coconut oil from copra. Copra and coconut oil constitute the most important coconut exports of Ceylon accounting for about two-thirds of the value of all coconut exports between them. Production of copra is described in Chapter VI.

¹ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 329.

²Great Britain Colonial Office, Ceylon Report for 1929, op. cit., p. 15.

³Copra is the dried coconut kernel.

⁴J. G. Thieme, op. cit., p. 33.

3(a). Coconut Oil. The extraction of coconut oil from copra is one of the oldest industries of Ceylon. Coconut oil processed in Ceylon was shipped in far greater quantity than copra in the years between 1870 and 1907 (see Tables A-7 and A-8). Thereafter (i.e., since 1908) copra was exported in larger quantity than coconut oil. However, since 1932 there was a reversal of this trend and coconut oil reverted to its former dominant position both in terms of value and quantity.

We examine the prices of copra and coconut oil during these three periods in order to explain the relative importance of each product during these periods. See Table VII-12.

TABLE VII-12
PRICES OF COPRA AND COCONUT OIL

	COPRA AVERAGE PRICE PER CWT	OIL AVERAGE PRICE PER CWT	RATIO <u>PRICE OF COPRA</u> <u>PRICE OF OIL</u>
(1) 1870-1907	8.63	13.95	.61
(2) 1908-1931	15.15	22.10	.68
(3) 1932-1967	34.60	47.20	.73

Source: Table A-3.

The price of copra relative to coconut oil rose between periods (1) and (2), and the exports of copra rose above those of coconut oil (see Figure 1). However, between periods (2) and (3), although the price of copra relative to oil rose still further, there was a reversal of the

earlier trend and exports of coconut oil took predominance over those of copra in apparent defiance of Figure 1, possibly on account of the factors listed below.

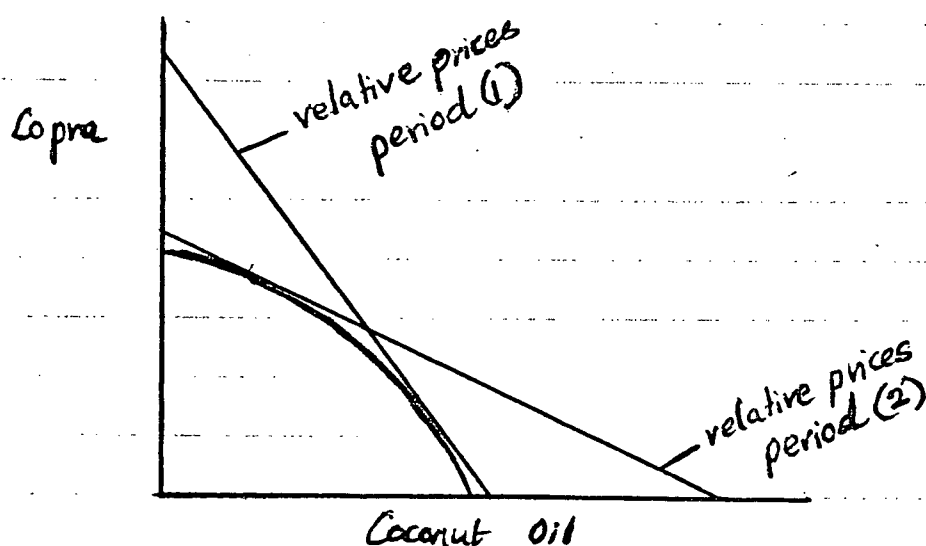


Figure 1

There are various factors which favour the development of local processing.

1. The lower freightcharges for oil, lower loading charges (20 per cent less than copra) and the higher price obtained for oil. For instance, in 1959 the unit value of coconut oil was Rs 84 as against Rs 60 for copra.

2. The fact that the by-product poonac can also be exported; although the freight on both poonac and oil may well exceed that on copra, this would be offset by the higher export earnings.

3. Poonac is a valuable animal food containing 19 per cent protein -- it could encourage local cattle breeding, poultry farming, etc.

4. The local industry leads to domestic production of soaps, oil, margarine, etc.

5. Oil is easier to store than copra and can also be stored for longer periods and occupies less storage space.

6. The quality of oil is less affected (than copra) by storage and transit.

7. As Ceylon manufactures dessicated coconut, the manufacturing parings and rejected coconuts can be used as raw material by the local oil industry.

8. Overcapacity is no problem in oil milling since most mills use expellers or hydraulic presses which are separate units that can be switched off. A certain amount of overcapacity also offers an advantage to the oil miller since he can adapt his output to seasonal fluctuations in copra production and prices.¹

9. Lower wages than in industrialized countries is an advantage in favour of L.D.C.'s like Ceylon, although higher costs of imported machinery probably offset this; however, some machinery is also produced locally.

10. Oil produced from fresh copra has a lower free fatty acid content than that produced from stale copra and can therefore be refined more cheaply.²

11. Poonac is also used as fertilizer. Local fertilizer production has been highly profitable.³ The gross rate of return in 1952 was around 103 per cent.

12. Furthermore, the manufacture of oil by small holders is particularly encouraging since it has been a source whereby they acquire some familiarity with the use of machinery. Moreover, some small share of the machinery needed in the industry is produced domestically.

¹(1) through (8) are drawn largely from J. G. Thieme, op. cit., pp. 5 and 6.

²H.M.S.O., Survey of Oilseeds and Vegetable Oils, Vol. II, 1932, op. cit., pp. 179 and 180.

³Based on Statistical Abstract of Ceylon, 1963, op. cit., pp. 214 and 215.

The predominance of coconut oil exports is in keeping with the recent trend towards processing raw materials in their country of origin. Forty per cent of the value of industrial output in 1952 consisted of coconut oil milling.¹ In 1963, it accounted for 25 per cent of total industrial output.² Exports and local consumption of coconut oil are put at 100 - 125 tons per day and a total of approximately 150,000 tons of coconut is recovered by the milling industry every year.³

Oil milling in Ceylon has shown continuous technical advancement. The introduction in 1901 of the first continuous oil expeller led to the extension of oil milling in Ceylon, especially as the expeller equipment was better suited to the small miller than the hydraulic press which involved a larger capital investment.⁴

"The modern trend is to have large-scale. . . seed-crushing and solvent extraction plants equipped with a refinery for refining the crude oil. Many plants also have soap manufacturing units and hydrogenation plants for the manufacture of margarine or vanaspati or hardened oils. This becomes an integrated oil and fat processing plant and it is much more economical to run such plants because waste and by-products of one process are utilized in another. The latest trend is to supplement the above plants with fatty acids splitting and distillation plants. . ."⁵

¹Based on Statistical Abstract of Ceylon 1963, op. cit., pp. 214, 215.

²Central Bank of Ceylon Annual Report 1963, op. cit., p. 115.

³ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 147.

⁴R. Child, "The Coconut Industry of Ceylon," World Crops, Vol 2, No. 3 (March, 1950), p. 103.

⁵ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 260.

In keeping with this trend a 'complete and integrated' unit has been set up in the public sector -- the Ceylon Oils and Fats Corporation. It is the largest plant for the extraction of oil, although production has been low except in the provender plant even as late as 1969-70 due to many problems such as technical defects, breakdown in machinery and shortage of raw materials, etc.¹ This plant comprises a milling section for the extraction of oil, a refinery for refining oil from the solvent extraction process, a provender plant and a fat splitting unit and glycerine recovery plant.²

Among ECAFE countries, the manufacture of chemicals from oils and fats is reported to be developed to a full extent only in Japan and is developing in Ceylon, Taiwan, India and Pakistan.³ Ceylon has a plant with a capacity to produce 17 tons of fatty acids per day -- 6286 tons of fatty acids were produced in 1968-69.⁴

In modern mills, oil expellers are used in processing, or else oil extraction is carried out by the use of solvents. Modern processes are reported to be more efficient than the chekkus. For instance, poonac obtained from rural industries contains up to 10 per cent of oil. However, chekkus with electric motors produce poonac with an oil content of only

¹Central Bank of Ceylon Annual Report, 1969, op. cit., p. 54.

²ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 147.

³Ibid., Vol. IV, p. 307.

⁴Central Bank of Ceylon Annual Report, 1969, Table II(c)1.

three to four per cent. Mechanically pressed oil cakes contain about four per cent and the oil content is sometimes as low as 0.5 per cent after solvent extraction.¹

Mills using screw expellers and hydraulic presses produce much of the oil for export. Milling on a large scale is undertaken by a few modern mills. It was reported in 1963 that the installed capacity of modern expellers was for the production of up to 250,000 tons of oil per year.² Actual output, however, had not exceeded 68 per cent of available capacity due to a number of factors.³

1. Production is guided by external factors -- in some years it is found more economical to export copra than to export oil on account of prices in the world market.

2. Production of coconut is adversely affected by bad weather.

3. Technical defects, etc., in the largest plant for the extraction of oil.

Primitive mechanical presses are also used for pressing copra. The most efficient among these is the Chekku widely used in India and Ceylon.⁴ The method of extraction consists of grinding the copra in a chekku consisting of a wooden pestle which is turned round by bullock power to crush the

¹J. G. Thieme, op. cit., p. 19.

²ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 147.

³Ibid., p. 147.

⁴J. G. Thieme, op. cit., p. 14.

copra in a mortar. A power driven engine sometimes replaces the bullock. Chekku's produce very good oil. The extraction of oil, too, is very high -- a level of 62.5 per cent of the weight of copra was reported by the U.S. Tariff Commission of 1926.¹ In general, however, chekkus are less efficient than modern processes and oil processed in these mills are only used domestically for culinary purposes probably due to impurities present in the oil, etc.²

Thus government complexes like the Oils and Fats Corporation are gradually replacing chekkus. These more economical integrated units are able to manufacture chemicals from oils and fats and use wastes and by-products of the entire process for the manufacture of many products. The chekkus are not in a position to compete with such complexes.

In developed countries, modernization of equipment has resulted in low operating costs and improved processing power.³ Moreover, customs duties on processed products are much higher than those on raw materials. For instance, while there are no import duties on oil seeds, duties on oil are reported to vary between 10 and 15 per cent.⁴ Primitive methods of extraction cannot survive under such conditions especially in a country which is dependent on exports of coconut oil for a fair share of her foreign exchange earnings.

¹Katherine Snodgrass, Copra and Coconut-Oil (Stanford, Calif.: Stanford University, Food Research Institute, 1928), p. 22.

²ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 147.

³Ibid., Vol. IV, p. 309.

⁴Ibid., p. 309.

3(b) Dessicated Coconut. A coconut growing country has a distinct advantage in producing this as the delivery of fresh nuts is essential for success in the manufacture of dessicated coconut.

Ceylon began manufacturing dessicated coconut in 1890, 632 tons being exported in 1891.¹ Exports of dessicated coconut reached a peak of 43,641 tons in 1927.² Ceylon was the leading exporter of dessicated coconut until the Philippines entered export markets aided by a differential U.S. tariff. Today Ceylon and the Philippines are the only major producers of dessicated coconut. Ceylon exported 1,382,000 cwt of dessicated coconut in 1968.³

3(c) Poonac. Poonac is the by-product obtained from the milling of copra. With efficient expellers, copra is reported to yield 61.5 per cent of oil and 34.5 per cent of cake.⁴ Ceylon exported almost all the poonac she produced until 1939.⁵ The loss of her usual markets in war time dislocation compelled the use of poonac within the country. Today small quantities of poonac are exported. For instance, Ceylon produced 87,000 long tons of oil cake and exported 4,000 long tons in 1962.⁶ Most of the

¹R. Child, "The Coconut Industry of Ceylon," op. cit., p. 104.

²Ibid., p. 104.

³See Table A-9.

⁴R. Child, "The Coconut Industry of Ceylon," op. cit., p. 104.

⁵Ibid., p. 104.

⁶ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit.,

poonac is consumed locally as animal feed¹ and manure.

3(d) Coir Products and Fibre Yarn. The extraction of coir for foreign trade and its manufacture on a large scale are almost entirely confined to Ceylon and India. The export of coir was mentioned during Dutch times and it is reported that coir was first exported when the maritime provinces of Ceylon were ruled by the Dutch. By the 1840's, coir exports amounted to more than 1,000 tons per year.²

Exports of coir products have expanded since these early years, although they do not compare in magnitude with the major coconut exports. Exports of bristle and mattress fibres amounted to about 28,000 tons and 63,000 tons respectively in 1968.³

In Ceylon, many items of manufacture such as bristle and mattress fibre, coir yarn, rope, twine, mats, matting, etc. are produced from the coconut husk. The most important of these products in export are bristle and mattress fibre. The value of coir fibre and coir goods produced in modern mills in 1952 was Rs 25 million.⁴

Coir fibre and yarn are produced both on small holdings and in mills. Small holders have been influenced by methods of manufacture in mills. For instance, defibring is carried out with the use of machinery

¹Poonac is a source of high protein animal food.

²R. Child, "The Coconut Industry of Ceylon," op. cit., p. 104.

³Central Bank of Ceylon Annual Report, 1968, op. cit., p. 262.

⁴Statistical Abstract of Ceylon, 1963, op. cit., p. 214.

in mills. The defibring machine most commonly used in Ceylon is produced locally. This machine has been copied by small holders in a crude way -- and it is produced more cheaply by the small holders.¹ There is also a considerable amount of fibre extraction by hand. Some mills are owned by Ceylonese farmers and small holders. The few larger ones, however, are owned by large trading companies -- generally British owned.

Some of these products, notably coconut oil and coir products, made possible the production of many other items such as glycerine, soap, margarine, brooms, brushes, mats, etc. (see Table VII-13). Domestic self-sufficiency has been reached, in all the products indicated in this table except paints and varnishes.

It is not possible to gauge the relative returns from different output compositions as there are no data on the value of inputs and the cost of labour, etc. The price per pound is highest in refined coconut oil and soap.

¹R. Kalaw, The Coconut Industry (Manila: Burea of Printing, 1940), p. 24.

TABLE VII-13

SOME INDUSTRIES UTILIZING COCONUT PRODUCTS AS THEIR MAIN INPUT^a

INDUSTRY	YEAR	NO. OF REPORTING UNITS	QUANTITY	VALUE OF PRODUCT (Rs)	PRICE PER LB.
Refined Coconut Oil)	1966	1	48,160 (cwt)	4,980,551	93 cts
)	1967	2	46,709 (cwt)	1,905,732	
Glycerine)	1966	1	2,486,400 (lbs)	1,252,000	80 cts
)	1967	1	2,555,840 (lbs)	2,035,000	
Soap)	1966	11	48,712,651 (lbs)	42,381,798	91 cts
)	1967	16	54,512,372 (lbs)	49,798,015	
Candles	1966	8	1,851,224 (lbs)	1,474,706	80 cts
Twine)	1965	7	n.a.	267,930	n.a.
)	1966	11	147,708 (lbs)	n.a.	
Brooms, Brushes, etc.)	1967	9	number 394,335	873,756	
Paints)	1967	10	381,529 (Glns)	10,212,308	
Varnish and French Polish)	1967	16	67,162 (Glns)	1,016,125	

^aThese statistics are not comprehensive. They serve the purpose of giving an indication of some industries based on coconut products. There are numerous other industries which are not indicated in this table.

Source: Statistics of Industrial Production 1965-67, Ministry of Industries and Fisheries, op. cit., pp. 26, 28, 31.

F. Conclusion

Until the 1950's, when government policy began to direct the course of economic development, there was a fair degree of domestic response in the areas of input requirements of the export industries and manufacturing coconut products -- it was barely noticeable in the provision of subsistence requirements for plantation labour.

Export industries stimulated investment through the backward linkage mechanism. This was partly because the input requirements of the export sector were limited to transport facilities and other services provided by the government, chemicals, fertilizer, a fair proportion of uncomplicated machinery, power and a few other items. Related industries, such as repair and maintenance shops, power generation, etc., could be established efficiently and cheaply in Ceylon, given her resource endowment and the impossibility of importing repair and maintenance services. Some of the machinery produced locally was designed to meet the needs of specific export industries. Furthermore, some part of the fertilizer requirements were obtained as a by-product in producing coconut oil from copra.

The investment stimulus provided by the forward linkage is stronger in the coconut and rubber industries than in tea on account of their greater range of manufacturing possibilities. Manufacturing possibilities in tea are limited to producing instant tea, the production and export of which is a recent phenomenon. The coconut industry offered many investment outlets in the form of plants producing copra, coconut oil, coir products,

poonac, dessicated coconut, etc., which in turn stimulated investment in soap, glycerine, brooms, brushes, confectionary products, etc. Many of these industries have been in existence for a long period. Local production of rubber goods was extremely limited until the late 1960's.

It is clear from these effects that Ceylon can find profitable use for her export staples. Their limited effects to date relate to such factors as land shortage, lack of market research and promotion, the size of the domestic market, infant industry obstacles, ignorance and neglect of value-added possibilities and lack of effort by the government to assist small holders (prior to the 1950's).

Final demand linkages of the export sector are limited mainly to the subsistence requirements of food and textiles on account of the low wages of plantation labour.¹ Until recent times, a high proportion of these items were imported. Domestic production of food increased as a result of government endeavour. Textile production rose with the imposition of import controls.

¹The average wage paid to plantation labour for two months was R3 107 in 1963 as against wages of Rs 403 for the urban sector as a whole and Rs 210 for the rural sector. Source: Survey of Consumer Finance, 1963, op. cit., p. 96.

CHAPTER VIII

FOREIGN TRADE AND SECTORAL GROWTH: ANALYSIS OF INADEQUATE RESPONSE

The Standard of Living in Ceylon

Eighty-five per cent of the population was classified as rural in 1946, as against 89 per cent in 1901.¹ According to the Pre-War Rural Economic Surveys, 60 per cent to 70 per cent of the peasants in the low country villages surveyed had total gross incomes of less than Rs 20 per month.² This includes income in cash and kind including the cash value of their own produce consumed at home. The only up country village studied had a median income of less than Rs 10 per month compared with Rs 15 for low country villages.³ This includes income derived from domestic agriculture, labour on estates, roads, boutique keeping, carpentry, etc. Of conditions in Kandyan villages, the report of the Kandyan Peasantry Commission, 1951, states that:

"The general standard of living is low and goes down often to starvation level. The income of the peasants falls short of their bare needs and they are as a rule in a chronic state of indebtedness and poverty. . .The outstanding feature. . .was the progressive backwardness of the peasantry and of their conditions of life as they receded further

¹D. R. Snodgrass, op. cit., Table A-18.

²B. H. Farmer, Pioneer Peasant Colonization in Ceylon: A Study in Asian Agrarian Problems (London: Oxford University Press, 1957), p. 92.

³Ibid., p. 93.

and further away from urban and municipal areas."¹

Thus, the standard of living of the average villager was extremely low, despite almost a century of growth based on plantations -- 'a stagnating, poverty-stricken domestic sector alongside a thriving export sector.'²

A. Sectoral Growth: Colonial Period

G.N.P. classified according to industry (Table VIII-11) combined with employment data (Table VIII-1) seems to indicate that domestic industry and agriculture were rather stagnant sectors between 1901 and 1946, whereas the service sector and the export sector both expanded. The value of exports rose from Rs 91 mil in 1900³ to Rs 765 mil in 1946.⁴ The total outflow from the export sector was slightly above half the value of export receipts during the period 1920-38⁵ and indicates the somewhat dual nature of the economy.

1. Domestic Agriculture. The number of people employed in domestic agriculture declined from 623,500 in 1901 to 556,300 in 1946.⁶ Considering rice, the most important domestic crop, we find that imports of rice

¹Kandyan Peasantry Commission Report, 1951, quoted in B. H. Farmer, op. cit., p. 94.

²Jonathan V. Levin, The Export Economies: Their Pattern of Development in Historical Perspective (Cambridge, Mass.: Harvard University Press, 1960), p. 184.

³E. Gunawardhene, op. cit., Appendix C, Table V.

⁴Central Bank of Ceylon Annual Report, 1966, Appendix II, Table 32.

⁵Based on calculations in Part II, we estimate that the total outflow of export receipts was in the region of 51 per cent during this period.

⁶D. R. Snodgrass, op. cit., Table A-26.

and wheat flour (which acts as a substitute for rice) have increased over the years -- (see Table VIII-1). Volume figures for domestic rice production are not available;¹ available data on imports of rice and wheat flour, however, seem to indicate that domestic rice production was more or less stagnant and not able to keep up with population growth. (Rice production does seem to have risen slightly between 1900 and 1946 as per capita imports of rice and wheat declined slightly from 1.8 cwts per person in 1925 to 1.4 cwts per person in 1946).²

TABLE VIII-1
WHEAT FLOUR AND RICE IMPORTS (Selected Years)
(000 cwts)

YEAR	RICE	WHEAT FLOUR
1900	5,600	n.a.
1925	8,321	320
1934	9,553	340
1939	11,675	380
1941	10,937	443
1943	2,772	4,066
1946	5,074	4,251
1948	8,188	3,373

Sources: E. Gunawardhene, op. cit., p. 218; Thirty Years Trade Statistics, op. cit., Table 20.

¹It may be assumed that domestic production accounted for around half the rice consumed.

²Based on Table VIII-1 and D. R. Snodgrass, op. cit., Table A-14.

Methods of cultivation in domestic agriculture remained poor. This resulted in low incomes, which in turn made it difficult to increase production. The general import category of "food, drink and tobacco" amounted to 313 mil,¹ representing 66 per cent of the value of domestic agricultural production in 1946. Problems of rural agriculture in Ceylon as elsewhere were manifold, connected with flooding, droughts, landlessness, indebtedness, absentee landlordism, etc.

2. The service sector. Increasing numbers seem to have found employment in the tertiary sector (see Table VIII-10). This sector accounted for about 37 per cent of G.N.P. in 1945. The service sector comprised trade, transport, banking, engineering and government services such as education and health. Some of these services owe their beginnings to military and administrative reasons, but as the plantation sector expanded these services were further developed predominantly to serve its needs.

The rise of plantations gave an impetus to the development of these services. The government played an important role in building up this sector. Many other governments have done likewise as private investment is not easily attracted towards such investments on account of the lumpy nature of social overhead capital, the long gestation period involved and the fact that the returns accrue to the community and country as a whole.² Social overhead

¹Thirty Years Trade Statistics, op. cit., p. 17.

²W. W. Rostow, The Stages of Economic Growth: A Non-Communist Manifesto (Cambridge, Mass.: Harvard University Press, 1968), p. 25.

outlay constituted around 60 per cent of government expenditure in the fiscal year 1925-26 and around 50 per cent in 1945-46.¹

3. The Industrial Sector. Industrial products accounted for just four per cent of G.N.P. in 1946.² Furthermore, statistics presented in the Census of Industry of 1952 indicate that around 45 per cent of industrial production consisted of the processing of coconut products. Employment in the secondary sector, as a percentage of the total number employed, declined slightly from 11 per cent to 10 per cent between 1901 and 1946 (see Table VIII-10).

B. Causes of Undiversified Growth

In a general sense, the pattern of growth, i.e., the expansion of the export sector and the accompanying service sector could be seen as stemming from the nature of the production functions of the export industries. The provision of overhead facilities combined with favourable demand and profit prospects made possible the expansion of the export sector. Furthermore, although the direct contribution of the export sector to government revenue was fairly low, for instance 10 per cent in 1925-26 and declining to four per cent in 1940-41, its indirect contribution in the form of import duties was high at 29 per cent of government revenue in 1925-26,

¹Economic and Social Development of Ceylon 1926-1950, op. cit.,
Table XXIV.

²Based on D. R. Snodgrass, op. cit., Table A-1.

increasing to 36 per cent in 1945-46.¹ (A high level of imports was made possible by export earnings; imports also resulted from the requirements of the plantation sector to a certain extent)). Hence government expenditure on overhead facilities was made possible to some extent by the existence of the export sector.

On the other hand, as noted in the previous section, export receipts were spent on many items including importantly food, textiles and some industrial products which Ceylon was in a position to produce. A pattern of growth dictated by the production functions of export industries should have included a rise in domestic agriculture and industry to meet the demand generated by the plantations. It is therefore of relevance to consider factors which impeded the growth of domestic agriculture and industry.

(1) Domestic Agriculture. Ceylon imported large quantities of rice and other agricultural products, although land (over three million acres) and labour were available. The process of opening up the country under plantations had adverse effects upon domestic agriculture. Institutions which regulated agriculture were abolished; it is also possible that villagers lost some of their lands; their agriculture was damaged by silting and floods caused by clearing hilly areas of forest, etc.; they had no access to credit or marketing facilities. A free flow of imports² prevented domestic agriculture from benefitting from the incentive of higher prices which normally accompany a rise in demand. Furthermore, the grain tax levied at the time balanced

¹Based on Economic and Social Development of Ceylon 1926-1950, op. cit., Tables XXIII and XXI and D. R. Snodgrass, op. cit., Table A-65.

²Import duties were low. For instance, they accounted for 10 per cent of the total value of imports as late as 1929.

the import duty. Agriculture which formerly received assistance from the government was somewhat neglected. The Dry Zone lay under jungle and its irrigation works were in disrepair. Government expenditure on this sector was minimal and had no relevance to the vastness of the problems connected with domestic agriculture.

Thus it appears that the state of domestic agriculture was adversely affected by the introduction of plantations, the minimal assistance given by government, combined with the policy of free imports. It is not so likely that it was the nature of the production functions of the export sectors which impeded the development of domestic agriculture -- rather the market for food was enlarged by the sizeable money outlay on this item -- plantations being labour intensive industries.

(2) Domestic Industry. Substantial growth of domestic industry dates from about 1960. The industrial sector of earlier years was limited to export processing, and a few other industries.¹ However, imports of manufactured products were of considerable magnitude amounting to Rs 127 mil and Rs 349 mil in 1925 and 1947² respectively and ranged from cutlery to machinery. These imports included products which could probably have been manufactured domestically -- for instance, rubber goods were imported despite the fact that the cost difference³ of raw rubber between a rubber producing

¹See Table VIII-3.

²Thirty Years Trade Statistics, op. cit., Table 13.

³We assume that the cost of the raw material is an important factor. This, however, is not the only factor of importance -- other factors such as the cost of machinery and equipment, availability of skilled labour, size of the market, etc., are also of importance.

country and a non-producing country would have been in the range of 20 to 25 per cent.¹

Absence of a broad based industrial structure and the slow growth of industry have been attributed to such factors as (a) a shortage of capital; (b) the free flow of imports; (c) low profitability, (d) shortage of skilled personnel; (e) the role of government.

(a) Capital formation. Statistics with respect to gross capital formation² are available from 1938 and indicate a low level of capital formation and hence appears to establish the fact that there was a shortage of capital for industry.

TABLE VIII-2

SAVINGS AS A PERCENTAGE OF GROSS NATIONAL INCOME

	1938	1947
Capital Formation	5.9	5.4
Government	0.8	1.3
Private	5.2	4.1
Increases in assets abroad	<u>-3.4</u>	<u>-7.5</u>
Total	<u>2.6</u>	<u>-2.1</u>

Source: Economic and Social Development of Ceylon, op. cit., p. 27.

¹ECAFE, Industrial Development in Asia and the Far East, Vol. IV, op. cit., p. 327.

²There is no allowance for depreciation. It has been stated that

Savings and investment capacity generated by the plantations was limited by the extent of foreign remittances from this sector. Estate labour brought in to work the plantations remitted their savings mostly to India. The managerial classes, too, can be expected to have remitted at least part of their savings abroad and perhaps invested the rest in plantations.¹ Statistics of migrants' transfers and private remittances are not available for years prior to 1950; statistics from 1950 indicate that the outflow almost equalled that of investment income.²

Similarly, profits accruing to the export sector were either re-invested or remitted abroad. Profits averaged around 40 per cent of export receipts for the period 1920-38.³ The outflow on investment income was reported to have averaged around 23 per cent of the total export receipts between 1920 and 1945.⁴

The lucrative export-import trade, too, was in foreign hands and profits accruing to this sector would probably have been remitted abroad.⁵

the allowance for depreciation in an agricultural country like Ceylon would be much smaller than that for highly industrialized countries. Source: Economic and Social Development of Ceylon, 1926-50, op. cit., p. 27.

¹Management was transferred to Ceylonese after Independence. Ceylonese labourers, too, are increasing in number.

²The outflow on investment income and that on private transfers between 1950 and 1958 were approximately equal. For instance, in 1958 the outflow on investment income was Rs 77 mil. and on private transfers Rs 88 mil.

³See Chapters IV, V and VI.

⁴Lim, op. cit., quoting M. R. P. Salgado and Central Bank of Ceylon figures.

⁵The statistics would have been included under either Investment income or Migrant's transfers and private remittances.

Capital formation by the government was extremely limited (see Table VIII-2). It could, however, have been substantial had the tax base been less narrow. Neither company taxes nor export duties were imposed for almost a century. Furthermore, at the time plantations were being opened up, land was distributed free, and later at the nominal price of five shillings per acre to foreigners. This resulted in a loss of potential revenue to the state.

Moreover, there was a shortage of adequate credit facilities for Ceylonese. Most of the Ceylonese had to resort to the Chettiar money lenders¹ who are reported to have charged rates of interest ranging from 10 per cent to 200 per cent.² The Ceylon Banking Commission of 1934 was of the opinion that "the public should have adequate financial assistance so as to enable indigenous capital and enterprise to participate more actively in the trade and industries of the country. . ."³

The rapid growth of trade and commerce accompanying the rise of the coffee industry created a demand for banking services. Exchange banks were established in mid-1900 in response to this demand. The exchange banks served the plantation and commercial sectors of the economy. Their lending policy was extremely conservative and limited mainly to short-term credit.

¹The Chettiars were primarily Indian traders. Most of the Chetty Banks collapsed between 1925 to 1934.

²H. A. de S. Gunasekera, From Dependent Currency to Central Banking in Ceylon, op. cit., pp. 201, 202.

³Report of the Ceylon Banking Commission, 1934, quoted in ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 97.

They served the purpose of financing the turnover of trade. Plantations obtained long-term finance from other sources such as Agency Houses and the reinvestment of profits. Ceylonese rarely obtained credit from these banks, and even when they did obtain credit, it was at higher rates than those at which it was available to Europeans.¹

The fact that Ceylonese had barely any access to credit facilities from these banks was attributed to the state of the law (the complicated land law) and doubtful title to land, which made land unsuitable security for bank loans. This is disputed by H. A. De S. Gunasekera.

"It does not seem likely, however, that the deficiencies of the law were an important factor in restricting the flow of bank credit. . . If the state of the law had in fact hampered their activities, it is reasonable to assume that some attempt would have been made to have the law revised. The fact was that the banks preferred to specialize in the finance of foreign trade. For years this sector of the economy had been in the hands of Europeans. When Ceylonese businessmen entered this field, the conservatism of the bankers made them reluctant to cater for this new source of demand."

"The failure of foreign banks to integrate themselves fully with the internal economy has been a common phenomenon in countries which have been the field of capital investment by overseas countries. The problem arises especially in those areas where foreign capitalism has been superimposed over an indigenous precapitalist economy. Almost identical complaints regarding the exchange banks were made before the Indian Central Banking Inquiry Committee of 1931."²

¹H. A. de S. Gunasekera, op. cit., p. 196.

²Ibid., pp. 204-205.

(b) Imports. The free flow of imports was undoubtedly an obstacle to the development of domestic industry. Ninety per cent of the requirements of manufactured goods were imported from abroad.¹ Even the food and textile requirements of workers were met to a large extent by imports. It appeared easier and cheaper to import these goods, as this involved using the well-organized channels of trade, rather than developing distribution and marketing arrangements domestically. It must be noted in this context that in all developed countries the "foundations for development were laid either by closure. . .or by expansion of territory."² Arguments for the protection of infant industry are too well known for reiteration.

A surprisingly high proportion of plantation spending from wages as well as other costs appears to have been on imports.³ There was also the customary leakage on luxury consumption from the salaries of management. The level of luxury imports to total imports was 17 per cent in 1929;⁴ importation of luxury goods did not loom larger in Ceylon simply because she continued to import so much of her basic requirements such as food. "Middle class" demands for luxury goods also did not develop as the income distribution of Ceylon remained extremely skewed -- a characteristic feature of

¹ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 117.

²G. Beckworth, Persistent Poverty, op. cit., p. 221.

³For details, see Chapter VII.

⁴D. R. Snodgrass, op. cit., Table 3-3.

less developed economies. As late as 1953, one per cent of income receivers at the highest levels received 18.2 per cent of the total income, whereas at the lowest levels 10 per cent of income receivers had only 1.4 per cent of the total income.¹

(c) Levels of profitability. Most of the capital belonging to Ceylonese seems to have been diverted into the export sector -- there was increasing Ceylonese ownership of the acreage under export crops, particularly in the 1950's when foreign capital was repatriated. Investment also flowed into such fields as export-import trading, ownership of residences and into the few existing industries. The generally held opinion is that this pattern of investment resulted from relative levels of profitability.

Prior to 1951, tea and rubber shares are reported to have paid as much as 20 per cent or more.² A study of a random sample of Ceylon Sterling Tea and Rubber Companies, however, revealed that between 1939 and 1958 net dividends exceeded profits and dividends were hence paid to some extent out of capital.³ Returns on export-import trading are reported to have ranged

¹Survey of Ceylon's Consumer Finances, 1953, op. cit., p. 15.

²ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 117.

³Net Dividends as a Percentage of Profit -- 15 Tea Companies:
1939-43: 107.8; 1944-48: 105.3; 1949-53: 85.9; 1954-58: 106.6.

Dividends paid by eight rubber companies (£):

	1939-43	1944-48	1949-53	1954-58
Profit/Loss	7,270	-2,687	-1,267	-16,359
Dividends	13,668	6,486	7,838	3,729

Source: N. Ramachandran, op. cit., pp. 109, 118.

from 10 per cent to 70 per cent.¹

Statistics of other industries existing during this period are scanty and limited to the Census of Industry, 1952.² Existing data do not permit a study of rates of profit over a period of years. Table VIII-3 contains industries which had been in operation for a short period along with other industries which had been established in mid-19th Century.

The processing of coconut products, i.e., coir products, coconut oil milling and fertilizers, stand out as the most remunerative industries. This is probably due to the domestic availability of raw materials and also to the fact that the raw material forms the major item in costs. The rate of return on textiles is comparatively low at 37 per cent, but does not compare too unfavourably with the returns of 20 per cent on tea and rubber shares.

Barring coconut oil milling, we note that the pattern of existing industries does not indicate that investment has been greatest in the most profitable industries. For instance, returns in the engineering industry are among the lowest, although the value of production is among the highest -- its share in the total value of production was 15 per cent -- the second largest industry in existence. Fertilizer, coir products, plumbago, footwear, confectionery, distilleries, breweries and matches registered the

¹B. Stein, "Development Problems in Ceylon," printed in R. I. Crane (Ed.), Aspects of Economic Development in South Asia (New York: Secretariat, Institute of Pacific Relations, 1954), p. 86.

²There were few restrictions on imports in 1952. Existing industries had to compete with imports. Its likely that most of these industries were in existence since mid-19th Century.

highest returns, but together they accounted for just around 13 per cent of total industrial production. This may have been due in part to such factors as a limited supply of locally produced raw materials and narrow domestic markets. It indicates also that perhaps profit rates have been wrongly estimated.

Higher profits do not appear to be directly associated either with capital employed per person or with the net output per person employed. Furthermore, total capital employed in the coconut processing industries accounted for 14.9 per cent of capital employed in all industries, while capital employed by the other more profitable industries mentioned earlier accounted for 5.9 per cent. The share of the more profitable industries in total production was 51 per cent.¹

The rates of return presented in Table VIII-3 indicate that many of the industries may probably have been more profitable than tea and rubber. It is not possible, however, to arrive at a firm conclusion in the absence of further data.

The diversion of investment into industries other than exports were probably prevented by the risks involved in domestic production in the face of a free availability of imports.² Furthermore, local tradition placed

¹Based on Statistical Abstract of Ceylon, 1963, op. cit., Table 149.

²The introduction of restrictions was primarily responsible for the growth of the industrial sector. Industrial products have even begun to be exported. Their profitability has also risen greatly -- to be discussed later.

TABLE VIII-3
STATISTICS BY INDUSTRY, 1952

	CAPITAL PER PERSON	NET OUTPUT PER PERSON	GROSS RATE OF RETURN ^a	GROSS OUTPUT AS PERCENTAGE OF ALL INDUSTRIES
	(Rs)	(Rs)	(%)	
1. Plumbago	1,834	2,360	94	1.1
2. Salt	n.a.	6,277	--	0.5
3. Milk Products	18,990	7,996	32	0.2
4. Grain Milling	8,570	2,279	18	2.1
5. Confectionery, Canning, Processing	1,834	2,621	82	1.2
6. Distilleries and Breweries	12,650	18,840	146	2.3
7. Aerated and Mineral Wastes	6,846	5,129	55	1.1
8. Tobacco	23,120	4,524	14	10.5
9. Textiles and Thread	7,760	3,907	37	1.8
10. Coir Fibre and Coir Goods	1,577	3,853	208	4.1
11. Footwear (excluding rubber)	624	1,760	85	0.1
12. Plywood and Timber Sawing	3,120	2,355	41	1.1
13. Printing, Bookbinding, etc.	4,562	3,581	34	6.1
14. Leather, Leather Goods (excluding footwear)	7,410	2,175	13	0.2
15. Rubber Goods	4,847	4,510	59	0.8
16. Fertilizer	25,250	27,821	103	3.3
17. Coconut and Oil Milling	5,112	6,514	109	38.5
18. Soap, Glycerine, Perfumes	34,100	10,739	25	3.8
19. Matches	1,717	2,596	94	0.5
20. Bricks and Tiles	3,894	2,461	43	0.3
21. Ceramics, Glass, Cement	15,600	5,062	23	1.6
22. Engineering	5,346	26,616	25	15.0
23. Jewellery and Plastics	6,090	5,342	68	0.5
24. Electricity	33,170	12,061	29	2.6
25. Coal, Gas, Oxygen, Carbon Dioxide	21,400	10,924	42	0.8

^aGross output minus cost of materials, fuel and electricity and remuneration of employees as a percentage of the productive capital employed. There is no allowance for depreciation or taxes; company taxes have been levied since 1932 and increased from 10 per cent in 1932-33 to 28 per cent in 1950-51.

Source: Statistical Abstract of Ceylon, 1963, op. cit., Table 149, pp. 214, 215.

land high in the scale of values both on account of the feudal system which existed prior to plantations as well as the plantation system itself. Hence the discounted rate of return in the export industries appears to have been higher than in other industries.

(d) Skilled labour. It is also held that the shortage of skilled labour was an obstacle to a greater degree of industrialization during this period. The skill component of plantation labour was extremely low at 2.3 per cent. Furthermore, the quality of education at the time was purely academic and suited more to reproducing knowledge than to applying it.

It is difficult, however, to attach too much importance to this factor. The engineering industry which was highly using of skilled labour was one of the first industries to be established -- technicians, engineers, foremen, and skilled workers comprised 53 per cent of all employees, whereas in other industries the proportion was 38 per cent.¹ Moreover, there has been a fairly rapid growth of industry since 1960 despite the shortage of skilled labour.

Furthermore, education was not geared to training in technical skills at least partly because there was no demand for them. It is reported that when it was first instituted, the Technical College "did not attract pupils as the courses led to no definite opening or employment. In 1887, it was reorganized to provide a training ground for recruits to the chief government technical departments such as the Public Works, the Survey, the Railway and the Telegraph and in 1903 the number (of students) rose to 254."²

¹Based on Survey of Industrial Production, 1968, op. cit., p. 17.

²G. C. Mendis, Ceylon Under the British, op. cit., p. 166.

(e) Conclusion. There appear to have been many interrelated obstacles to the development of domestic industry. These difficulties could have been remedied by such measures as taxation, some restriction of imports, expansion of the banking sector along the lines suggested by the Ceylon Banking Commission of 1934, i.e., the establishment of banks which would lend against immovable property and invest in the shares of joint stock companies, etc. The 'obstacles' seem to be connected to the negative role of the government vis-a-vis domestic industry.

Kravis cites Nurkse's remark that the impact of trade sometimes produced lopsided economic development, as in the dual economies of South-east Asia, which was considered to be better than no growth, but showed the limitations of growth via external trade when other conditions of progress were absent. He (Kravis) then goes on to state that "it is the presence or absence of 'other conditions of progress' referred to by Nurkse in passing that is the crux of success or failure in economic growth. The 'other conditions' were present in the U.S. and the expansion of trade was a very helpful but not essential factor in growth. They were absent in many other areas, and, despite the fact that some of these places shared in the expansion of world trade, they did not develop."¹

It appears that where these other conditions such as entrepreneurship, skilled labour, supplies of capital, etc. are absent, the government has to attempt to develop such conditions by establishing institutions which provide capital, inducing people to invest and even stepping directly

¹ . Kravis, "Trade As A Handmaiden of Growth," Economic Journal, (December, 1970), pp. 854, 855.

into agricultural and industrial production. The Report of Government Commercial Undertakings 1947 and the World Bank Report 1952 were of the opinion that the government should attempt to create an atmosphere favourable for private investment.¹

C. The Terms of Trade and Their Effect

The Prebisch-Singer² thesis holds that trade between developed and underdeveloped nations leads to a decline in the long run terms of trade and the transfer of income from underdeveloped to developed regions due to such factors as income inelasticity of demand for primary products, the diminished importance of raw materials in manufacturing industry on account of improved technology, the fact that labour in underdeveloped countries are not as strongly unionized as their counterparts in developed countries. Therefore, it is concluded that the existence of unfavourable market conditions which result in a deterioration of the terms of trade of L.D.C.'s, retard development of L.D.C.'s.

We examine Ceylon's terms of trade with a view to ascertaining (a) whether there was a deterioration in the long run terms of trade; (b) whether there was a tendency for the terms of trade between manufacturers and primary producers to turn against the latter; (c) whether there was a connection between the terms of trade and the rate of growth of per capita G.N.P.

¹ECAFE, Industrial Development in Asia and the Far East, Vol. II, op. cit., p. 110.

²R. Prebisch, "The Role of Commercial Policy in Underdeveloped Countries," American Economic Review (May, 1959), pp. 251-273; H. Singer, "The Distribution of Gains Between Investing and Borrowing Countries," American Economic Review, Papers and Proceedings (May, 1950), pp. 473-485.

TABLE VIII-4
TERMS OF TRADE
(1958=100)

YEAR	EXPORT PRICE INDEX	IMPORT PRICE INDEX	TERMS OF TRADE
1938	24	28	86
1948	72	70	103
1949	76	85	89
1950	103	90	114
1951	124	115	108
1952	96	114	84
1953	98	114	86
1954	109	106	103
1955	114	102	112
1956	107	102	104
1957	102	108	94
1958	160	100	100
1959	104	102	102
1960	104	102	101
1961	95	101	94
1962	93	95	98
1963	93	105	89
1964	93	107	86
1965	95	109	88
1966	90	119	76
1967	85	123	69
1968*	101*	160*	64*
1969	101	170	61

* The statistics for 1969 are not strictly comparable to the rest of the table as the values from a later table have been spliced onto this table.

Source: Central Bank of Ceylon Annual Report, 1968, op. cit., Appendix II, Table 36; Central Bank of Ceylon Annual Report 1969, op. cit., Appendix II, Table 49.

Ceylon's exports increased both in terms of quantity exported and unit value, taking the 20th Century as a whole. Of Ceylon's major export industries, the tea industry commenced and began expanding toward the end of the 19th Century, rubber and coconut around the beginning of the 20th Century. Although export prices rose, so did the costs of production. For instance, the cost of production of a pound of tea rose from 45 cents in 1938 to Rs 1.15 in 1948,¹ while the price of a pound of tea rose from 73 cents to Rs 1.99 over the same period.

There were cyclical fluctuations in the terms of trade between 1900 and 1955, but on the whole they did not exhibit a persistent trend either upward or downwards (see Table A-12). The post-war demand for exports was fairly high and offset a pre-war decline. The good prices and firm demand of post-war years did not last. Export prices have been declining continuously since 1955 as did the terms of trade (see Table VIII-4).

Furthermore, the future of Ceylon's chief exports appear to be pretty dim.² Some of the reasons cited by Nurkse³ regarding the lagging demand for primary product exports appears to have been at work in the case of Ceylon's exports. Tea faces declining prices, rubber faces competition

¹Census of Agriculture, Part I, 1952, op. cit., p. 13.

²For reasons, see sections on the development of tea, rubber and coconut, respectively.

³The secular trend towards reduced usage of primary materials per unit output of manufacturers subsidization of agriculture in industrial countries coupled with propagation of modern agricultural technology, the substantial substitution of synthetics for imported natural materials and the low income elasticity of demand for foodstuffs.

from synthetic rubber and coconut oil from other natural oils and fats as well as synthetic substitutes. FAO projections seem to indicate that the prospects for a substantial increase in export earnings from these products are remote. And, as rightly pointed out by Kravis, "it can hardly be hoped that the world will always increase its consumption of coffee and cocoa *pari parissu* with its real income."¹ It is doubtful whether the income elasticity of demand for these exports is high; in fact, the available evidence seems to indicate the opposite. Expenditure on tea has decreased, even though expenditure on all beverages other than tea has increased with rising incomes (see Table IV-12).

Although trade depends on the ability to shift into different lines of production, a primary producing country such as Ceylon whose exports are highly concentrated in a few products lacks the necessary flexibility due to such factors as the cost of planting anew, availability of suitable land, the difficulty of breaking into new markets, etc., and above all, the undiversified nature of the economy.

Any hopes for the future appear to be centred around cutting costs, improving quality and other product differentiation. Indeed, Kravis' findings indicate that those countries with a successful performance (among L.D.C.'s) owed it to increasing their share in the world market for traditional exports. These findings have serious implications for L.D.C.'s in that success depends upon competition with each other in a world market which cannot be expected

¹I. Kravis, "Trade As A Handmaiden of Growth," op. cit., p. 864.

²This table deals with expenditure in the U.K. -- the world's largest tea consuming nation.

to continue increasing its demand for such products indefinitely.

We present import prices for investment, intermediate and consumption goods separately (see Table VIII-5) and attempt thereby to examine whether there was a tendency for the terms of trade between manufacturers and primary producers to turn against the latter. The category "Food and Drink" comprises primary products for the most part. "Other" consumer goods are manufactured goods such as cars, watches, etc. Investment goods comprises manufactured goods -- machinery, etc. and Intermediate goods comprises both primary products and manufactured goods.

Categories (3) and (6) comprising manufactured goods have risen more in terms of price than the food and drink and intermediate goods categories which contain primary products -- some indication that the post-war terms of trade were more favourable to manufactured goods. There is no conclusive evidence here as category (2) has increased less than category (1) and hence contradicts the earlier statement. On the other hand, category (5) has increased more than category (6) and seems to confirm the statement (see Table VIII-5).

Just as favourable effects of the terms of trade have contributed towards G.N.P. in post-war years,¹ adverse effects from the terms of trade have also affected G.N.P. Central Bank of Ceylon statistics show increasingly

¹An export multiplier of 2 has been calculated for the period 1926-57 by W. Rasaputram, op. cit., p. 77. Another export multiplier of 2.5 has been calculated for the period 1938-54 by Y. Lim, op. cit., p. 41.

TABLE VIII-5
IMPORT PRICE INDICES
(1958=100)

YEAR	CONSUMER GOODS					
	FOOD & DRINK (1)	TEXTILES (2)	OTHER (3)	COMBINED (4)	INTERMEDIATE GOODS (5)	INVESTMENT GOODS (6)
1938	25	30	26	26	35	32
1948	98	149	66	68	85	64
1949	97	119	59	92	75	64
1950	100	126	65	96	82	71
1951	112	146	86	124	99	88
1952	129	119	89	119	108	95
1953	131	115	94	120	101	102
1954	117	106	93	110	95	97
1955	106	101	100	104	99	97
1956	107	102	100	104	98	96
1957	112	111	96	109	109	103
1958	100	100	100	100	100	100
1959	102	103	98	101	95	111
1960	101	108	98	101	94	120
1961	99	111	96	100	89	112
1962	98	104	92	98	85	92
1963	107	104	126	111	86	98
1964	115	101	129	116	82	96
1965	108	104	121	110	82	132
1966	108	96	132	111	91	185
1967	110	101	135	114	86	204
1968	154	128	178	155	105	241

Source: Central Bank of Ceylon, Annual Report, 1968, op. cit.,
Appendix II, Table 37.

adverse effects since 1960 (see Table VIII-6).

As the terms of trade have shown no tendency to decline continuously until 1955, the low level of per capita income and its slow growth until the late 1940's cannot be attributed to a decline in the terms of trade. Indeed, faster growth in per capita G.N.P. in later years almost coincides with a period of deterioration in the terms of trade. The decline in the terms of trade since 1955 led to the development of import substituting domestic industry. This deterioration since 1955, however, has had the effect of slowing down the pace of industrialization since Ceylon is dependent on her earnings from exports for the importation of the necessary raw materials and machinery, etc.

D. Sectoral Growth -- Post-Independence Period

As stated by Levin, when political power passed into domestic hands, government action began to play a key role in the economy. The government began to absorb a greater share of export proceeds by way of taxation and channel this to the domestic sector. Table VIII-7 illustrates the sharp increase in export taxation soon after Independence and the relative decline in the importance of export taxation in the 1960's as other sectors of the economy expanded.

In the export sector foreign management and ownership were replaced. The outflow of export receipts slowed down to a mere trickle. The outflow of investment income has been around four per cent of export earnings between 1959 and 1969.¹ Private transfers have averaged 2.5 per cent of export earnings be-

¹Based on Central Bank of Ceylon Annual Reports, op. cit., various issues.

TABLE VIII-6
THE TERMS OF TRADE EFFECT
(Rs Mil)

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. G.N.P. (at constant 1959 factor cost prices)	5893.3	6288.5	6424.7	6709.9	6899.7	7363.3	7550.6	7818.3	8181.1	8861.5	9370.3
2. Terms of trade effect due to export of:											
a) Tea	- 31.9	-36.9	+ 1.4	-133.7	-156.0	-211.8	-317.7	-419.2	-484.5	-545.7	
b) Rubber	+ 37.3	-24.5	-13.3	- 55.7	- 93.7	-103.5	-145.3	-190.1	-261.7	-193.8	
c) Coconut Products	- 26.0	-90.3	-79.6	- 63.1	- 84.4	- 12.0	- 44.6	- 54.7	- 17.7	- 49.7	
d) Other Products	+ 10.0	+ 1.1	+ 9.6	+ 10.7	+ 18.3	+ 18.4	+ 2.3	- 3.1	- 19.9	- 21.5	
e) All Exports	- 10.6	-150.6	-81.9	-241.8	-315.8	-308.9	-505.3	-667.1	-783.8	-810.7	
3. Gross National Income (at constant 1959 factor cost prices)	5893.3	6279.9	6274.1	6628.0	6657.9	7047.5	7241.7	7313.0	7514.0	8077.7	8559.6

Source: Central Bank of Ceylon Annual Report 1969, op. cit., Appendix II, Table 6.

tween 1958 and 1969.¹ This has been the result of greater Ceylonese ownership and employment as well as government regulations. A moratorium on the transfer of dividends and profits was instituted in August 1964. Successive measures introduced in 1959 and 1960 have restricted migrants' transfers.

TABLE VIII-7
EXPORT TAXATION 1925-26 to 1968-69
(Selected Years)

YEAR	EXPORT DUTY (Rs Mil)	AS A PERCENTAGE OF TOTAL REVENUE
1925-26	11.5	10
1930-31	9.8	10
1935-36	4.6	5
1940-41	5.6	4
1945-46	13.7	4
1949-50	167.2	27
1955-56	322.1	28
1960-61	303.6	22
1965-66	255.8	14
1968-69	300.3	11

Sources: Economic and Social Development 1926-50, op. cit., Table XXIII; D. R. Snodgrass, op. cit., Table A-65; Central Bank of Ceylon Annual Reports, op. cit., various issues.

¹Based on Central Bank of Ceylon Annual Reports, op. cit., various issues.

The banking system was expanded to include a number of specialized institutions providing long-term credit to agriculture and industry such as the Agricultural and Industrial Credit Corporation, the Development Finance Corporation, etc. Gross domestic capital formation as a percentage of G.N.P. rose from 5.4 per cent in 1947 to 19 per cent in 1959¹ and further to 21 per cent in 1969.²

Government efforts in the sphere of agriculture have been fairly successful. For instance, the output of rice increased by 300 per cent and yields doubled. Government policy has also been fairly successful in giving an impetus to industry -- the value of industrial products increased from Rs 331 million in 1961 to Rs 1,627 mil in 1969, the compound rate of growth between 1961 and 1969 being 19 per cent per annum. Government aid and policy have thus led to an expansion in both domestic agriculture and industry since the 1950's. These sectors have grown faster than the export and service sectors in contrast to the earlier period. The share of exports in G.N.P. has dropped from 32 per cent in 1946 to 19 per cent in 1966 and further to about 13 per cent in 1969. Furthermore, small holders in export agriculture have been assisted by the provision of subsidized fertilizer and co-operative processing facilities, etc.

The share of the industrial sector in G.N.P. was as low as four per cent in 1950 -- after about a century of export-dominated growth. By 1969,

¹Based on Central Bank of Ceylon Annual Report, 1969, op. cit., Appendix II, Tables 4 and 7.

²Based on Ibid., Appendix II, Tables 4 and 7.

it had risen to 15 per cent of G.N.P. The value¹ of industrial products increased from Rs 155 mil in 1950² to Rs 331 mil in 1961 and further to Rs 1,627 mil in 1969.³

The growth of private industry since Independence has been largely a response to government policy with respect to imports. There is also a substantial public industrial sector. Some industries have been set up under virtual state monopoly and include such products as petroleum, basic industrial chemicals and fertilizer mixing and manufacture. Import substitution in industry commenced with the introduction of stringent import controls in the face of declining export prices and expansionist domestic fiscal policies. The nature of industrialization was influenced by the administration of controls.

In 1966, the Ministry of Industries indicated that in the allocation of foreign exchange to industry, the following industries would be given priority -- industries based primarily on indigenous raw materials, industries with export potential, industries likely to promote agricultural development, textiles, building and construction, and engineering industries. Industrial investment has been assisted by such institutions as the Ceylon Institute of Scientific and Industrial Research, 1955; Development Finance Corporation, 1955 and the Cottage and Small Scale Industries Development Board, 1964, set up by the government.

¹Statistics of the volume of production are not available. The increase in value may be due partly to higher prices of industrial goods aided by tariff protection and need not necessarily be in the volume of production.

²D. R. Snodgrass, op. cit., Table A-38.

³See Table VIII-8.

TABLE VIII-8
 VALUE OF INDUSTRIAL PRODUCTION BY MAJOR ECONOMIC CATEGORIES
 1961-1969
 AS PERCENTAGE OF TOTAL

YEAR	CONSUMER GOODS	INTERMEDIATE GOODS	INVESTMENT GOODS	VALUE OF TOTAL PRODUCTION (Rs Mil)
1961	56.3	37.0	6.7	331.7
1962	60.8	32.7	6.5	388.0
1963	63.7	29.3	7.0	432.0
1964	63.3	27.2	9.5	537.5
1965	53.9	37.3	8.7	847.0
1966	56.5	34.9	8.6	850.3
1967	55.4	31.2	13.4	954.2
1968	49.7	34.2	16.1	1398.6
1969	51.7	31.1	17.2	1626.8

Source: Central Bank of Ceylon Annual Reports, 1965, 1966, 1967 and 1969, op. cit.

Some idea of the profitability of these industries is indicated by the Survey of Industrial Production, 1968. Most industries registered returns higher than they did in 1952. The higher returns are due probably to the fact that the country is still in the process of gaining economies of scale and to the protected market. Some of these products are being sold at prices lower than their imported counterparts although this may be due in part to differences in quality and to duties on imports, etc.

TABLE VIII-9
GROSS RATES OF RETURN 1968

INDUSTRY	GROSS RATE OF RETURN PERCENTAGE ^a
Food, Beverage and Tobacco	117
Textiles and Wearing Apparel	92
Leather and Leather Products	233
Wood and Wood Products	45
Paper, its Products and Printing	110
Industrial Chemicals	106
Other Chemicals	151
Rubber Products	45
Petroleum and Coal	204
Plastic Products	126
Non-metallic Mineral Products ^b	260
Engineering	109
Iron and Steel	40

^aGross output minus total payments expressed as percentage of the value of fixed assets.

^bIncludes pottery, glass, etc.

Source: Based on Survey of Industrial Production, 1968,
op. cit., pp. 10, 11.

The import content of private consumption, public consumption and gross domestic fixed capital formation has been reduced from 31 per cent, 10 per cent and 33 per cent in 1959¹ to 17 per cent, 4 per cent and 24 per cent respectively in 1968;² indicating a higher degree of domestic production.

¹Central Bank of Ceylon Annual Report, 1967, op. cit., Table II(a)9.

²Central Bank of Ceylon Annual Report, 1969, op. cit., Appendix II, Table 13.

The composition of imports, too, appears to have altered somewhat in favour of investment and intermediate goods (see Table VIII-12).

Favourable demand repercussions from the plantations did not lead autonomously to diversified growth in the economy. The government had to play an important role in assisting the domestic economy to capture the opportunities for development made possible by the growth of plantations. In its absence, the main function of trade was to provide "an outlet for the surplus product above domestic requirements."¹

If the country was not opened up to foreign trade it is doubtful whether economic growth could possibly have been greater as the feudal economy which preceded plantations lacked entrepreneurship, investment, etc. Furthermore, the revenue from export and import duties made possible social overhead investment; later these duties and the taxation of related sectors made possible the expanded role of government after Independence.

Growth in Ceylon's G.N.P. has accelerated noticeably since Independence. It was not due primarily to favourable external conditions, nor the existence of plantations. The main source of growth was internal -- government expenditure and other public policy. However, growth would have been seriously retarded but for the existence of a well-developed export sector. Export proceeds have been the means by which Ceylon has been able to obtain her requirements of machinery, and raw materials indispensable for development. Trade bestowed further benefits such as the transmission of managerial talents and entrepreneurship and the supply capital mentioned by Haber-

¹H. Myint, "The 'Classical Theory' of International Trade and Underdeveloped Countries," in Theberge, op. cit., p. 189.

ler.¹ But when growth did occur, trade expansion acted more as a 'hand-
maiden of growth' rather than as an 'autonomous engine of growth.'

¹G. Haberler, "International Trade and Economic Development," in G. M. Meier (Ed.), *Leading Issues in Economic Development*, 2nd edition (U.S.A.: Oxford University Press, 1970), pp. 492-97.

TABLE VIII-10
ATTACHMENT TO SELECTED INDUSTRIES
AS A PER CENT OF TOTAL

	1901	1946	1953	1963
Estate Agriculture	<u>27</u>	<u>30</u>	<u>29</u>	
Other Agriculture	<u>38</u>	<u>21</u>	<u>33</u>	
Other Primary	<u>3</u>	<u>2</u>	<u>2</u>	
Total Primary	67	53	54	53
Manufacturing	10	9	10	
Construction	1	1	2	
Total Secondary	<u>11</u>	<u>10</u>	<u>12</u>	13
Professional	2	3	4	
Government	1	3	4	
Other Tertiary	15	21	21	
Total Tertiary	<u>19</u>	<u>27</u>	<u>28</u>	29
Insufficiently described	3	10	6	5
T O T A L	100	100	100	100
Total Number Employed (Million)	1.7	2.6	3.0	3.2

Sources: D. R. Snodgrass, op. cit., p. 323; Statistical Abstract of Ceylon 1967-68, op. cit.

TABLE VIII-11

G.N.P. (AT CURRENT PRICES) 1938-69^a (Selected Years)

	1938	1945	1949	1953	1959	1963	1966	1969
1. Domestic Exports	255	572	982	1,457	1,456	1,430	1,389	
2. Agriculture, Forestry, Livestock and Fisheries	109	472	646	1,068	1,354	1,617	1,751	3,852
3. Industrial Products	29	81	118	192	225	404	432	1,929
4. Capital Development	30	119	233	377	544	651	620	
5. Transport	29	112	143	192	469	529	700	1,091
6. Trade	53	180	277	332	673	734	887	1,715
7. Ownership of Dwellings	25	41	52	82	169	223	318	375
8. Government	50	194	295	411	702	821	943	478
9. Services n.l.e.	58	206	290	345	416	469	532	1,474
10. G.D.P.	638	1,977	3,036	4,456	6,015	6,877	7,571	10,925
11. Factor Income from Abroad	14	13	20	35	-37	-53	-42	-104
12. G.N.P.	652	1,990	3,056	4,491	5,978	6,824	7,529	10,821

^aCeylon's official data. Statistics from 1959 are not strictly comparable with those for the earlier period as they contain Central Bank revisions. 1969 statistics, too, are not strictly comparable with those between 1959 and 1966.

Sources: D. R. Snodgrass, op. cit., Table A-1, p. 240; Central Bank of Ceylon Annual Reports, op. cit., various issues.

TABLE VIII-12

THE COMPOSITION OF IMPORTS 1959-69 (Selected Years)

	PERCENTAGE			
	1959	1962	1965	1969
1. Consumer Goods	<u>60.0</u>	<u>54.6</u>	<u>52.8</u>	<u>47.9</u>
A. Food and Drink	39.9	38.0	41.0	38.0
of which				
(i) Rice	14.1	11.7	9.8	10.1
B. Textiles (including clothing)	8.9	9.0	7.3	4.8
C. Other Consumer Goods	11.2	7.7	4.6	4.7
of which				
(i) Pharmaceuticals	1.6	1.5	1.4	1.3
2. Intermediate Goods ^a	<u>19.8</u>	<u>24.6</u>	<u>28.1</u>	<u>23.3</u>
of which				
(i) Fertilizer	3.0	3.6	6.0	2.6
3. Investment Goods	<u>19.4</u>	<u>20.3</u>	<u>17.7</u>	<u>27.5</u>
of which				
(i) Cement	n.a.	n.a.	1.2	0.6
(ii) Transport Equipment	7.3	5.5	6.5	8.4
(iii) Machinery & Equipment	6.7	6.8	6.8	14.5
Total 1, 2, 3	99.2	99.5	98.6	98.7
Unclassified Imports	0.8	0.5	1.4	1.3
Total Imports	100.0	100.0	100.0	100.0
Value of Total Imports (Rs Mil)	2,005	1,660	1,474	2,543

^aComprises fertilizer, petroleum products, coal, chemical elements and compounds, etc.

Source: Central Bank of Ceylon Annual Report, 1964, op. cit., p. 57; Ibid., 1969, p. 235.

APPENDIX

TABLE A-1

TEA EXPORTS
1882 - 1969

YEAR	QUANTITY (Mil lbs)	UNIT VALUE	TOTAL VALUE (Rs '000)	YEAR	QUANTITY (Mil lbs)	UNIT VALUE	TOTAL VALUE (Rs '000)
1882	1	.85	592	1920	185	.44	86,782
1883	2	.46	916	1921	162	.70	112,708
1884	2	.72	1,436	1922	172	.84	146,036
1885	4	.71	2,482	1923	182	1.02	185,686
1886	8	.64	5,102	1924	205	1.05	214,965
1887	14	.59	8,300	1925	209	.95	199,697
1888	24	.53	12,625	1926	217	.98	213,775
1889	34	.52	17,859	1927	227	.94	213,775
1890	46	.50	22,900	1928	237	.85	261,311
1891	68	.45	30,473	1929	252	.82	205,194
1892	72	.45	32,576	1930	243	.75	182,038
1893	82	.50	40,723	1931	244	.57	138,699
1894	85	.54	46,103	1932	253	.43	107,693
1895	99	.50	49,291	1933	216	.55	117,910
1896	110	.38	41,836	1934	219	.66	145,063
1897	114	.41	46,931	1935	212	.69	145,764
1898	122	.38	47,734	1936	218	.70	153,392
1899	149	.36	53,735	1937	213	.80	170,587
1900	149	.36	53,735	1938	236	.73	172,421
1901	144	.33	47,611	1939	228	.82	188,029
1902	151	.36	54,299	1940	246	.84	207,910
1903	149	.38	58,199	1941	238	.95	224,736
1904	158	.36	56,855	1942	266	.96	253,762
1905	142	.42	59,564	1943	264	1.02	269,374
1906	171	.36	61,390	1944	276	1.13	311,271
1907	180	.42	74,635	1945	232	1.20	278,476
1907	179	.41	73,553	1946	292	1.30	380,545
1909	193	.42	81,012	1947	287	1.97	566,523
1910	184	.46	84,137	1948	296	1.99	590,271
1911	187	.46	84,900	1949	298	2.18	649,845
1912	192	.44	83,817	1950	287	2.52	751,651
1913	192	.46	87,788	1951	305	2.62	800,036
1914	194	.46	89,726	1952	315	2.30	723,048
1915	216	.57	122,458	1953	336	2.46	826,090
1916	203	.52	105,266	1954	361	3.11	1,122,798
1917	195	.49	95,663	1955	362	3.30	1,194,227
1918	181	.46	83,176	1956	348	3.00	1,043,847
1919	209	.56	116,502	1957	366	2.77	1,015,896

TABLE A-1 (Continued)

YEAR	QUANTITY (Mil lbs)	UNIT VALUE	TOTAL VALUE (Rs '000)
1958	411	2.75	1,130,969
1959	384	2.72	1,045,013
1960	410	2.67	1,095,679
1961	426	2.62	1,115,000
1962	452	2.54	1,149,000
1963	456	2.50	1,140,000
1964	456	2.51	1,142,000
1965	495	2.45	1,210,000
1966	441	2.33	1,027,000
1967	478	2.22	1,061,000
1968	460	2.52	1,162,000
1969	445	2.39	1,062,000

Sources: Snodgrass, op. cit., Table A-52;
Central Bank of Ceylon, Annual Reports, op. cit., various issues.

TABLE A-2
DISTRIBUTION OF EXPORT RECEIPTS FROM TEA
1920 - 1938
(Rs Mil)

YEAR	VALUE OF EXPORTS	WAGES & SALARIES	OTHER COSTS	EXPORT DUTIES	COMPANY TAXES ¹	PROFITS ²
1920	81	40	25	n.a.	--	16
1921	113	36	22	n.a.	--	55
1922	146	52	32	n.a.	--	62
1923	186	59	36	n.a.	--	91
1924	215	67	41	n.a.	--	107
1925	200	63	38	n.a.	--	99
1926	213	71	41	n.a.	--	101
1927	214	70	39	n.a.	--	105
1929	205	73	39	n.a.	--	93
1930	182	68	36	7	--	71
1931	139	56	30	7	--	47
1932	108	54	30	6	2	14
1933	118	48	28	5	4	33
1934	145	62	38	55	5	35
1935	146	63	39	5	5	40
1936	153	65	40	4	5	38
1937	171	65	40	44	7	55
1938	172	87	41	4	6	54

Sources: Snodgrass, op. cit., Ceylon, Table A-52; M.R. P. Salgado, The Ceylon Economy 1920-38, quoted in Lim, op. cit., p. 86; Economic and Social Development of Ceylon, Table XXV, 30 Years Trade Statistics, op. cit., Table 25.

¹Calculated at the rate of 12 per cent of before tax profits for years 1932-37 and 10 per cent for 1938. This introduces some error as resident companies were taken at slightly different rates. Moreover, it is assumed that all producers are companies.

²Profits include an estate duty which is a negligible sum running at around a total of Rs 1 to Rs 2 mil per year for tea, rubber and coconut estates. 1920-30 profits include export duties which were also low.

TABLE A-3
DISTRIBUTION OF EXPORT RECEIPTS FROM TEA
1948 - 1967
(Rs Mil)

YEAR	VALUE OF EXPORTS	WAGES & SALARIES	OTHER ¹ COSTS	EXPORT ² DUTIES	COMPANY TAXES	PROFITS
1948	590	215	158	113	55	49
1949	650	231	169	113	55	82
1950	752	249	157	131	91	124
1951	800	290	203	164	68	75
1952	723	309	195	115	57	47
1953	825	302	195	139	119	71
1954	1123	348	251	214	194	116
1955	1194	350	268	300	173	10
1956	1044	342	266	221	142	72
1957	1016	377	217	238	126	58
1958	1131	440	182	281	156	72
1959	1045	390	275	198	125	58
1960	1096	386	288	139	203	79
1961	1115	404	285	139	203	79
1962	1149	416	290	224	94	115
1963	1140	414	293	216	98	119
1964	1142	433	294	218	112	85
1965	1210	436	337	229	104	104
1966	1027	401	303	205	59	599
1967	1061	450	323	223	38	38

¹ 10 per cent of total cost has been added to cover transportation and handling costs from factory to ship and taxes levied for health programmes, tea research, etc., as suggested by Snodgrass, op. cit., Ceylon, p. 135.

² 1961-67 includes tea tax.

³ 1948-60 includes income tax on companies, profits tax. 1961-67 does not include profits, remittance tax for non-resident companies or tax in lieu of estate duty for non-resident companies.

Sources: Snodgrass, op. cit., Ceylon, Table A-52, and p. 114; Central Bank of Ceylon, op. cit., Annual Reports; Census of Agriculture 1952, Part I, p. 13; Lim, op. cit., p. 86, Statistical Abstracts of Ceylon, op. cit.

TABLE A-4
RUBBER EXPORTS
1913 - 1969

YEAR	QUANTITY (Mil lbs)	UNIT VALUE	TOTAL VALUE (Rs '000)	YEAR	QUANTITY (Mil lbs)	UNIT VALUE	TOTAL VALUE (Rs '000)
1913	25	2.42	61,269	1944	224	.99	222,791
1914	34	1.67	57,220	1945	215	1.02	218,404
1915	49	1.62	78,997	1946	228	.99	226,665
1916	55	1.90	103,812	1947	181	.75	135,502
1917	72	1.81	130,968	1948	206	.69	141,619
1918	46	1.34	62,252	1949	195	.63	122,862
1919	101	1.31	132,071	1950	262	1.53	401,120
1920	88	1.02	89,961	1951	226	2.53	572,439
1921	88	.59	51,602	1952	206	1.76	363,060
1922	105	.54	56,970	1953	213	1.54	328,893
1923	84	.88	73,594	1954	203	1.36	275,967
1924	83	.77	63,750	1955	222	1.58	350,348
1925	102	1.66	169,992	1956	190	1.54	292,553
1926	130	1.29	170,078	1957	209	1.44	300,298
1927	125	.58	73,986	1958	207	1.25	258,109
1929	181	.48	86,631	1959	266	1.45	297,820
1930	171	.28	47,158	1960	235	1.61	378,374
1931	138	.14	19,842	1961	197	1.32	260,000
1932	111	.12	13,233	1962	224	1.29	290,000
1933	142	.16	22,995	1963	209	1.23	257,000
1934	179	.32	56,615	1964	253	1.15	290,000
1935	120	.32	38,394	1965	267	1.14	304,000
1936	112	.42	46,840	1966	298	1.13	337,000
1937	156	.49	77,010	1967	291	.97	282,000
1938	115	.39	45,275	1968	328	1.01	331,000
1939	135	.50	67,564	1969	315	1.37	431,000
1940	197	.57	113,101				
1941	202	.58	118,287				
1942	251	.69	171,824				
1943	220	.77	169,006				

Sources: Snodgrass, op. cit., Ceylon, Table A-52; Central Bank of Ceylon, Annual Reports, op. cit., various issues.

TABLE A-5
 DISTRIBUTION OF EXPORT RECEIPTS FROM RUBBER
 1920 - 1938
 (Rs Mil)

YEAR	EXPORT RECEIPTS	WAGES & SALARIES	OTHER COSTS	EXPORT DUTIES	COMPANY TAXES	PROFITS
1920	90	23	14	n.a.	nil	53
1921	52	17	8	n.a.	nil	27
1922	57	19	9	n.a.	nil	29
1923	74	18	8	n.a.	nil	48
1924	64	20	9	n.a.	nil	35
1925	170	23	10	n.a.	nil	137
1926	170	29	11	n.a.	nil	130
1927	119	30	11	n.a.	nil	78
1928	74	30	11	n.a.	nil	33
1929	87	38	13	n.a.	nil	36
1930	47	34	13	3	nil	-3
1931	20	16	6	1	nil	-3
1932	13	11	5	nil	nil	-3
1933	23	13	5	nil	1	4
1934	57	21	9	nil	3	24
1935	38	20	8	nil	1	9
1936	47	18	8	nil	3	18
1937	77	25	11	nil	4	37
1938	45	18	8	nil	3	16

Sources: Snodgrass, op. cit., Ceylon, Table A-52; M. R. P. Salgado, quoted in Lim, op. cit., p. 106; 30 Years Trade Statistics of Ceylon, 1924-54; Economic and Social Development of Ceylon, op. cit., 1926-50.

TABLE A-6
DISTRIBUTION OF EXPORT RECEIPTS FROM RUBBER
1952 - 1967
(Rs Mil)

YEAR	EXPORT RECEIPTS	WAGES & SALARIES	OTHER ¹ COSTS	EXPORT DUTIES	COMPANY TAXES	PROFITS
1952	363	134	67	44	65	53
1953	329	152	60	33	53	31
1954	276	141	69	31	22	13
1955	350	167	70	37	48	28
1956	293	147	49	53	29	15
1957	300	138	61	60	28	13
1958	258	144	37	49	20	8
1959	298	133	49	45	48	23
1960	378	141	66	53	86	32
1961	260	102	55	54	22	27
1962	290	114	58	30	40	48
1963	257	113	56	29	27	32
1964	290	132	63	12	42	31
1965	304	158	51	22	37	36
1966	337	155	57	17	54	55
1967	282	151	55	--	38	38

¹Contains a margin of 10 per cent for transportation and handling costs from factory to ship and taxes levied for research, etc. as suggested by Snodgrass.

Sources: Snodgrass, op. cit., Ceylon, p. 114; Central Bank of Ceylon, Annual Reports, op. cit., various issues; Lim, op. cit., p. 106; Statistical Abstract of Ceylon, op. cit., various issues.

TABLE A-7
COCONUT OIL EXPORTS
1870 - 1969

YEAR	QUANTITY (^{'000} cwt)	UNIT VALUE	TOTAL VALUE (Rs ^{'000})	YEAR	QUANTITY (^{'000} cwt)	UNIT VALUE	TOTAL VALUE (Rs ^{'000})
1870	136	12.50	1,700	1908	644	18.60	11,985
1871	207	12.50	2,588	1909	600	21.91	13,142
1872	278	11.90	3,307	1910	528	26.05	13,741
1873	114	12.44	1,418	1911	505	26.03	13,146
1874	145	12.46	1,807	1912	402	26.35	10,587
1875	124	12.44	1,542	1913	547	30.60	16,738
1876	213	12.46	2,653	1914	486	27.54	13,392
1877	133	12.42	1,652	1915	502	25.84	12,959
1878	175	12.47	2,183	1916	323	27.66	8,935
1879	218	12.47	2,718	1917	435	23.19	10,081
1880	352	12.46	4,386	1918	527	29.57	15,693
1881	202	12.42	2,508	1919	676	37.97	25,674
1882	211	12.44	2,625	1920	508	39.14	19,865
1883	348	12.46	4,335	1921	485	31.00	15,025
1884	384	12.44	4,778	1922	555	26.91	14,925
1885	265	12.45	3,300	1923	481	29.00	13,935
1886	277	12.46	3,451	1924	553	28.64	15,827
1887	323	12.46	4,025	1925	617	27.24	16,813
1888	364	12.45	4,531	1926	570	27.17	15,489
1889	380	12.44	4,728	1927	673	24.62	16,568
1890	369	12.44	4,589	1928	779	24.73	19,266
1891	427	12.44	5,310	1929	879	20.51	18,024
1892	565	12.44	7,026	1930	764	17.26	13,190
1893	389	15.56	6,045	1931	963	12.60	12,130
1894	450	15.56	6,993	1932	1,025	14.12	14,475
1895	419	15.56	6,522	1933	1,061	10.18	10,800
1896	391	15.56	6,080	1934	1,397	7.49	10,461
1897	488	13.07	6,383	1935	1,109	12.31	13,647
1898	467	13.07	6,109	1936	689	16.44	9,949
1899	468	14.25	6,673	1937	1,337	15.00	20,061
1900	468	14.25	6,673	1938	1,508	9.32	14,657
1901	474	16.03	7,601	1939	1,258	10.56	13,286
1902	551	18.15	10,008	1940	597	11.33	6,763
1903	688	16.03	11,023	1941	563	13.58	7,643
1904	511	18.00	9,197	1942	497	23.15	11,504
1905	587	16.71	9,816	1943	961	21.90	21,049
1906	539	17.71	9,546	1944	827	23.59	19,509
1907	479	24.72	11,830	1945	774	27.60	21,359

1946

TABLE A-7 (Continued)

YEAR	QUANTITY ('000 cwt)	UNIT VALUE	TOTAL VALUE (Rs '000)
1946	861	34.56	29,758
1947	846	57.31	48,488
1948	1,515	55.49	84,061
1949	1,784	68.01	121,327
1950	1,514	84.13	127,374
1951	2,195	103.44	227,061
1952	2,134	62.36	133,084
1953	1,871	75.98	142,153
1954	1,378	72.71	100,191
1955	1,945	58.25	113,291
1956	1,699	58.40	99,221
1957	1,081	62.83	67,920
1958	887	69.78	61,897
1959	1,390	84.36	117,264
1960	1,110	71.85	79,753
1961	1,837	58.16	106,500
1962	2,043	55.08	112,500
1963	1,621	61.04	98,950
1964	2,351	65.42	153,800
1965	1,738	83.09	144,000
1966	1,457	74.45	108,000
1967	1,334	65.70	88,000
1968	1,261	105.40	133,000
1969	1,103	97.65	108,000

TABLE A-8
COPRA EXPORTS
1870 - 1969

YEAR	QUANTITY ('000 cwt)	UNIT VALUE	TOTAL VALUE (Rs '000)	YEAR	QUANTITY ('000 cwt)	UNIT VALUE	TOTAL VALUE (Rs '000)
1870	41	8.00	5,024	1908	749	11.16	912
1871	51	8.00	3,931	1909	785	12.76	365
1872	41	6.76	3,931	1910	624	16.80	717
1873	34	5.62	4,541	1911	822	16.03	1,496
1874	29	6.42	4,099	1912	614	16.42	1,644
1875	8	6.25	7,352	1913	1,117	18.76	1,277
1876	28	6.21	7,974	1914	1,412	16.47	1,377
1877	20	7.95	4,904	1915	1,209	14.61	1,071
1878	46	8.67	5,661	1916	1,310	13.58	1,255
1879	65	8.15	5,322	1917	1,079	12.25	429
1880	93	9.81	8,356	1918	1,272	10.03	1,480
1881	54	6.76	10,008	1919	1,760	18.39	921
1882	96	7.47	10,479	1920	1,358	20.92	1,625
1883	171	8.75	13,173	1921	1,367	17.78	1,251
1884	202	8.14	10,083	1922	1,687	17.07	579
1885	162	7.88	20,959	1923	1,015	17.86	451
1886	157	8.77	23,248	1924	1,769	17.53	565
1887	136	7.88	17,657	1925	2,274	16.83	1,328
1888	147	8.54	21,868	1926	2,419	16.47	39,848
1889	55	7.81	13,216	1927	1,982	16.07	31,845
1890	156	9.48	12,758	1928	1,977	16.09	31,802
1891	69	13.37	32,357	1929	2,042	12.89	26,316
1892	169	9.61	28,405	1930	1,813	9.94	18,029
1893	87	14.36	24,304	1931	1,877	6.77	12,715
1894	46	12.66	28,804	1932	914	9.06	8,284
1895	41	11.13	18,123	1933	1,287	5.31	6,828
1896	58	9.81	31,008	1934	2,109	4.38	9,244
1897	140	9.46	38,268	1935	975	8.02	7,818
1898	517	9.71	329	1936	1,035	9.74	10,077
1899	403	9.76	408	1937	1,417	8.83	12,511
1900	403	9.76	277	1938	1,504	5.84	8,783
1901	458	9.92	191	1939	1,061	6.69	7,102
1902	378	10.85	188	1940	1,566	6.32	9,892
1903	732	10.29	50	1941	2,138	6.92	14,799
1904	723	11.03	174	1942	2,297	12.14	27,887
1905	391	12.53	159	1943	2,953	12.67	37,403
1906	449	12.62	399	1944	2,020	14.17	28,625
1907	384	13.85	530	1945	2,274	17.06	38,803

TABLE A-8 (Continued)

YEAR	QUANTITY (^{'000} cwt)	UNIT VALUE	TOTAL VALUE (Rs ^{'000})
1946	776	21.14	16,407
1947	595	35.94	21,387
1948	1,089	38.74	42,191
1949	431	50.04	21,567
1950	422	60.37	25,463
1951	387	69.92	27,059
1952	815	40.73	33,194
1953	428	53.40	22,825
1954	920	49.40	45,445
1955	1,531	37.41	57,281
1956	1,160	42.23	48,989
1957	700	47.63	33,343
1958	560	52.40	29,346
1959	860	59.97	51,572
1960	580	55.48	32,181
1961	1,100	43.47	47,820
1962	1,448	40.74	59,000
1963	862	45.55	39,260
1964	1,162	47.44	55,140
1965	819	59.26	49,000
1966	417	58.92	25,000
1967	316	58.61	18,000
1968	425	79.25	34,000
1969	381	78.25	26,000

TABLE A-9
DESICCATED COCONUT EXPORTS
1892 - 1969

YEAR	QUANTITY ('000 cwt)	UNIT VALUE	TOTAL VALUE (Rs '000)	YEAR	QUANTITY ('000 cwt)	UNIT VALUE	TOTAL VALUE (Rs '000)
1892	16	23.10	370	1927	873	23.46	20,482
1893	27	21.91	597	1928	787	25.21	19,840
1894	43	23.45	1,001	1929	690	17.21	11,876
1895	73	22.66	1,658	1930	705	14.24	10,036
1896	94	21.81	2,051	1931	669	10.21	6,832
1897	103	20.69	2,152	1932	599	11.94	7,150
1898	121	19.20	2,332	1933	790	8.54	6,747
1899	130	17.67	2,295	1934	647	6.39	4,135
1900	126	17.74	2,238	1935	664	11.01	7,308
1901	126	18.38	2,315	1936	602	11.70	7,042
1902	239	11.99	2,871	1937	589	11.51	6,780
1903	164	18.91	3,105	1938	594	7.41	4,399
1904	169	18.31	3,094	1939	673	10.60	7,132
1905	186	17.94	3,301	1940	285	9.61	2,738
1906	182	18.72	3,404	1941	106	10.37	1,099
1907	205	21.78	4,471	1942	112	19.28	2,159
1908	246	17.44	4,299	1943	66	25.76	1,700
1909	231	19.09	4,407	1944	58	26.00	1,516
1910	264	23.76	6,276	1945	107	30.37	3,250
1911	292	24.03	7,023	1946	194	52.71	10,226
1912	279	23.99	6,689	1947	231	100.01	23,103
1913	304	25.89	7,867	1948	236	106.97	25,245
1914	312	25.13	7,839	1949	312	81.73	25,500
1915	349	24.78	8,647	1950	898	106.06	95,238
1916	306	28.44	8,705	1951	795	82.63	65,687
1917	272	34.41	9,361	1952	1,112	58.71	65,280
1918	203	25.47	5,180	1953	1,146	68.79	78,838
1919	675	36.93	24,928	1954	1,104	66.01	66,250
1920	519	35.34	18,330	1955	1,157	47.37	54,807
1921	871	30.56	26,602	1956	1,275	50.85	64,836
1922	768	26.24	20,159	1957	978	56.08	54,846
1923	819	27.74	22,716	1958	1,135	63.71	72,310
1924	871	25.21	21,964	1959	1,050	71.43	75,000
1925	794	23.65	18,778	1960	1,099	64.96	71,400
1926	754	22.91	17,276	1961	967	49.30	47,660

TABLE A-9 (Continued)

YEAR	QUANTITY ('000 cwt)	UNIT. VALUE	TOTAL VALUE (Rs '000)
1962	981	57.12	56,040
1963	967	61.60	59,570
1964	1,080	59.36	64,100
1965	1,041	79.51	82,000
1966	930	67.20	63,000
1967	926	66.10	61,000
1968	1,382	118.70	164,000
1969	1,018	86.24	87,000

TABLE A-10
DISTRIBUTION OF EXPORT RECEIPTS FROM COCONUT
1920 - 1938
(Rs Mil)

YEAR	EXPORT RECEIPTS *	WAGES *	OTHER* COSTS	EXPORT DUTIES	COMPANY TAXES	PROFITS
1920	71	28	9	n.a.	nil	34
1921	71	29	10	n.a.	nil	32
1922	70	29	6	n.a.	nil	31
1923	61	25	9	n.a.	nil	27
1924	77	33	12	n.a.	nil	32
1925	81	34	12	n.a.	nil	35
1926	79	33	12	n.a.	nil	34
1927	78	33	11	n.a.	nil	34
1928	79	33	12	n.a.	nil	34
1929	64	33	11	n.a.	nil	20
1930	47	28	10	2	nil	7
1931	36	19	6	1	nil	10
1932	35	17	5	nil	nil	13
1933	29	14	4	nil	1	10
1934	28	16	4	nil	1	7
1935	36	16	5	nil	2	13
1936	33	12	3	nil	2	16
1937	47	20	6	nil	2	19
1938	34	23	6	nil	1	4

* Includes value added by coconut processing!

Sources: Lim, op. cit., Appendix Table II-6; M. R. P. Salgado, The Ceylon Economy 1920-38, A National Accounts Study, Vol. II, Table 21, quoted in Lim, op. cit.; 30 Years Trade Statistics, op. cit., Table 25; Economic and Social Development of Ceylon, 1926-50, op. cit.

TABLE A-11
DISTRIBUTION OF EXPORT RECEIPTS FROM COCONUT
1944 - 1967
(Rs Mil)

YEAR	EXPORT RECEIPTS	WAGES & SALARIES ¹	COSTS ²	EXPORT DUTIES	MARGIN ³
1944	53	15	10	nil	28
1945	68	19	13	nil	37
1946	68	18	13	nil	37
1947	101	18	13	8	62
1948	166	26	21	30	89
1949	190	37	30	34	89
1950	280	37	27	36	210
1951	370	49	56	47	218
1952	258	54	58	28	118
1953	273	62	41	32	138
1954	243	56	22	35	120
1955	259	102		33	124
1956	244	92		28	124
1957	194	61		18	115
1958	199	58		16	125
1959	284	76		26	178
1960	184	54		24	106
1961	202	73		30	99
1962	227	90		31	106
1963	198	65		42	91
1964	273	105		56	112
1965	275	81		56	138
1966	196	65		31	100
1967	167	62		20	85

¹Coconut is exported mainly in the forms of coconut oil, copra and dessicated coconut.

²Do not include processing costs.

³'Margin' for this period, i.e., 1944-67 is not comparable to 'profits' for the period 1920-38 as the former includes processing costs.

Sources: Lim, op. cit., Appendix II-6; Central Bank of Ceylon Annual Reports, op. cit.; Census of Agriculture, Part III, op. cit., pp. 20, 21; Snodgrass, op. cit., Ceylon, Table 5-6; Statistical Abstract of Ceylon, op. cit., various issues; 30 Years Trade Statistics, op. cit., Table 25.

TABLE A-12
INDEX NUMBERS OF TERMS OF TRADE

YEAR	TERMS OF TRADE	YEAR	TERMS OF TRADE
1900	98	1929	113
1901	98	1930	97
1902	103	1931	90
1903	106	1932	85
1904	101	1933	92
1905	99	1934	96
1906	100	1935	93
1907	119	1936	136
1908	109	1937	142
1909	113	1938	99
1910	129	1939	125
1911	126	1940	112
1912	123	1941	108
1913	131	1942	87
1914	112	1943	67
1915	117	1944	63
1916	107	1945	85
1917	93	1946	74
1918	65	1947	92
1919	65	1948	83
1920	46	1949	93
1921	62	1950	121
1922	72	1951	122
1923	92	1952	88
1924	101	1953	98
1925	102	1954	119
1926	100	1955	132
1927	97		
1928	94		

Estimate of Costs of Processing Coconut Products and The Share of Profits
(1948 - 1967)

Data with respect to the cost of processing coconut products is limited to data on the cost of processing coconut oil published in the Census of Industry, 1952. The gross output of coconut oil was valued at Rs 234 million in 1952. The total cost of production amounted to Rs 189 million, of which wages accounted for Rs 5 million.¹ Hence profits for that year from the production of coconut oil were Rs 45 million.

Of the coconut oil produced, approximately Rs 150 mil was exported in 1952. Its cost of production is estimated at Rs 123 million -- the share of wages and salaries is put at Rs 3 million, and processing costs at approximately Rs 6 million (assuming that they accounted for about five per cent of the cost of production).² The bulk of the cost of production appears to have been spent on the input, i.e., coconut. Furthermore, assuming that the share of processing and wages in both copra and desiccated coconut were around Rs 4 million and Rs 2 million respectively and that the profits from processing these items amounted to about Rs 20 million in 1952, export receipts from coconut products can be divided in the following manner.

	<u>Export Receipts</u>	<u>Wages, Salaries</u>	<u>Other Costs</u>	<u>Export Duties</u>
1952 - Rs Mil	258	59	68	32

¹Statistical Abstract, 1963, op. cit., pp. 214, 215.

²The price of oil depends mainly on the price of seeds, the processing costs being negligible, United Nations, ECOSOC, ECAFE, Vol. 4, p. 258.

Assuming that the costs of production remained constant during the period 1948-67 and assuming further that company taxes averaged 40 per cent¹ during this period, export receipts for the period are divided as follows.

<u>Year</u>	<u>Export Receipts</u>	<u>Wages & Salaries</u>	<u>Other Costs</u>	<u>Export Duties</u>	<u>Company Taxes</u>	<u>Profits</u>
1948-1967	234	92		33	44	65

¹Company taxes ranged between 25 per cent and 50 per cent of after tax profits. This estimate of 40 per cent is a very rough approximation due to the predominance of small holders and the fact that processing and growing coconut are separate operations.

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