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15202

Distr.
LIMITED

UNIDO/IS.556
6 September 1985

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ENGLISH

UNIDO WORKING PAPERS ON STRUCTURAL CHANGE

FINLAND IN THE CHANGING INTERNATIONAL DIVISION OF LABOUR*

Prepared by the

Regional and Country Studies Branch

Division for Industrial Studies

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V.85-30649

Foreword

Within the framework of UNIDO's programme of industrial studies, the Regional and Country Studies Branch carries out surveillance of structural changes in industry in the light of emerging trends in the international division of labour. These studies serve an analytical as well as a policy-oriented purpose: They are aimed at identifying the determining factors of structural changes such as resource endowments, factor proportions, technological innovations or corporate strategies and, on the basis of this analysis, to provide guidance in designing programmes of structural adjustment within the manufacturing sector.

The study presented here applies this general approach to the case of Finland and elaborates in detail on the adjustment requirements that Finnish industries are facing due to emerging competition from developing countries. To this end, industrial competition from third world countries is analyzed separately for three different market areas: import penetration of Finnish domestic markets, import substitution in the markets of developing countries and export competition in a third market. In sectoral terms, special emphasis is given to garments and forest industry as the two Finnish net export sectors. Finally, a short investigation is made of the stage and pattern of internationalization of the Finnish economy focussing on transfers of production capital and technology.

The study was prepared for the Regional and Country Studies Branch by Kimmo Kiljunen, Fellow of the Academy of Finland, Helsinki.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SUMMARY

The study investigates the implications that the changing pattern of the international division of labour due to Third World industrialisation has had on Finnish industrial and trade structures. The first two chapters offer the background for the rest of the exercise by presenting some factors of the Third World industrialisation process and the pattern of the international specialisation of the Finnish economy. The following three chapters form the core of the study by examining the effects of the new industrial competition within three possible market areas: a) import penetration into Finnish home markets, b) import substitution in the markets of developing countries themselves and c) export competition in a third market. In particular, the adjustment requirements of the two Finnish net export sectors - the garment and forest industries - are investigated separately. In the last chapter the transfers of production capital and technology are investigated in order to illustrate the stage and pattern of the internationalisation of the Finnish economy.

It was found that the structural characteristics of the Finnish foreign trade and industrial specialisation are somewhat similar to those of industrialising developing countries. Hence, for Finland the Third World industrialisation process is relatively more competitive as compared with the most advanced industrialised economies. Finnish economic relations with the Third World have been very meagre, and hence the import penetration effects in the home markets and the import substitution effects in developing countries have remained very limited. In contrast, the major restructuring requirements may be due to the intensification of export competition. During the 1970's Finland's export market shares shrank slightly, partly owing to increased Third World exports, particularly in those sectors upon which its relative industrial competitiveness and specialisation have traditionally been based. Nevertheless, for the time being, Finland has succeeded quite well in adjusting to the increasing Third World competition in its net export sectors. In the footwear and clothing industries the relative success has been dependent on the existence of the bilateral trading network with the Soviet Union as well as on the way of specialising in high-fashion goods and special products. In the forest industry, the Finnish competitiveness today is based on high-yield paper products which enjoy preferential tariff treatments in the main export markets of Europe, and hence, in the short term, the Third World competition will not be very severe.

Chapter 1

THIRD WORLD INDUSTRIALISATION

Since the Second World War a new international division of labour has been gradually replacing the traditional colonial production specialisation between peripheral primary producers and developed industrialised economies. During and after the war, some independent developing countries adopted a policy of import substitution and attempted to produce some of those manufactures at home which they formerly acquired from abroad, often by relying on direct foreign investments. Moreover, since the mid-1960's an export-oriented industrialisation process has emerged, and as a consequence, some developing countries are becoming sites for manufacturing industry on a rapidly growing scale for the first time.

Nevertheless, the overall process is slow. The present global economy is still primarily based on the colonial type of complementary trade pattern. Vertical division of labour, whereby developing countries exchange primary commodities for manufactured goods from developed countries, continues to be the dominant feature of world trade relations. Still today, primary products comprise some 80 per cent of the total exports of developing countries and even more, 85 per cent, of their exports to developed market economies. In contrast, manufacutured products comprise 80 per cent of the exports of developed market economies to the Third World.

In 1980 developing countries had 74 per cent of the world population, but only about 20 per cent of the gross national product (GNP), and furthermore, only 11 per cent of the manufacturing output and 9 per cent of the exports of manufactures.[1] These figures demonstrate their meagre role in global industrial production and the enormity of the contrasts in absolute and even more in per capita manufacturing output among different groups of countries.[2] As an example, the total manufacturing output in the Third World as a whole is about equal to that of Japan alone and smaller than that of West

Germany. These overall proportions should be kept in mind when starting to examine the new trends which have appeared in the world trade and output of manufactures over the past two decades.

During the first half of this century, industrial production was concentrated in some ten countries that accounted for at least 95 per cent of the total world manufacturing output. The present global spread of industrial capacity is, hence, a comparatively recent phenomenon spanning only the last few decades. Table 1 provides a simple overview of the changing map of world industry, in terms of the global distribution of manufacturing value added and exports. The data distinguish between three major economic regions - DMEs (developed market economies), SOCs (socialist countries) and LDCs (less developed countries).[3]

Table 1. Distribution of world manufacturing value added and exports by major regions in 1938-1980 (percentage share)

	DMEs	SOCs	LDCs
	Manufacturing value added		
1938	95.5		4.5
1948	78.0	14.7	7.3
1960	78.0	14.0	8.0
1970	73.4	17.8	8.8
1980	65.2	23.8	11.0
1982	64.0	25.0	11.0
	Manufacturing exports		
1960	83.8	12.4	3.8
1970	84.9	10.1	5.0
1980	82.7	8.1	9.2

Sources: OECD (1977), Midway Through Interfutures, Chapter X, Table 6; UNIDO (1983), A Statistical Review of the World Industrial Situation 1982; and UNCTAD (1982), Protectionism and Structural Adjustment, Trends in World Production and Trade, Table 5.

A constant feature of world industry has been the continued dominance of the developed countries. Prior to the 1970's, their predominance was practically unchallenged, although among themselves major shifts in their relative shares of industrial

capacity have taken place. In particular, socialist countries have industrialised very rapidly during the past two decades by nearly doubling their share of the world manufacturing value added (MVA) (from 14 per cent to 25 per cent), but the comparative importance of some individual countries in the established industrial core (e.g., Japan, Switzerland, West Germany) has also increased substantially.

The share of the LDCs in the global output and exports of manufactures has remained rather marginal, since developed countries accounted for 89 per cent of the world MVA and 91 per cent of exports in 1980. Nevertheless, the figures in Table 1 show a steady and gradual rise for LDC shares during the past two decades, indicating that their manufacturing output has grown faster than that of the DMEs. These gains in output shares are rather negligible, however, compared with the strides made by the socialist countries. But there is a major divergence, since the industrialisation process in the LDCs has been distinctly more export oriented, in particular, during the last decade. As a consequence, the share of LDCs in world exports of manufactures almost doubled from 5.0 per cent in 1970 to 9.2 per cent in 1980, while their share in the world MVA rose much less.

For a long time the growth of industry in LDCs was mainly due to import substitution. Only in Hong Kong, Taiwan Province and Puerto Rico did relatively important export-oriented industries emerge before the mid-1960's. Since then, however, an increasing number of LDCs have shifted from an inward to an outward looking strategy of industrial development emphasising global industrial specialisation and, hence, accepting their closer integration into the world market and stronger reliance on the market mechanism for resource allocation.[4] This change has been reflected in the structural composition of LDC exports. The proportion of manufactures in their total exports, though, has risen only from 13 per cent to 18 per cent between 1960 and 1980, but these shares become more meaningful if mineral fuels and related materials are excluded from the total trade to eliminate distortions due to large price increases in fuels. The new measure indicates a drastic transformation in the

composition of LDC exports. Manufactures accounted for less than one-fifth - 19 per cent - of all LDC non-oil exports in 1960, while twenty years later, in 1980, the share was already almost a half - 47 per cent.[5]

As manufactured goods from the LDCs are increasingly entering global markets, this implies a transformation in the traditional pattern of the international division of labour. Although the process is rather slow in aggregate terms, it seems to be persistent: developing countries are gradually industrialising and penetrating into the global markets of manufactured goods. This process has so far been characterised by concentration, i.e. by tendencies for country, branch and corporate concentration. In the following sections the aim is to examine these three concentration effects more closely.

1.1 Country concentration

Treating developing countries as a whole or using regional classifications leaves open the possibility that all LDCs are seen as moving along a similar path of industrialisation and participating relatively evenly in the growth of manufactured exports. In fact, the country experiences have been quite different and industrial export performance has varied widely among the LDCs.

1.1.1 Leading exporters of manufactures

Total world exports of manufactures in 1980 were slightly over 1 000 milliard dollars. Of the total, the LDCs accounted for some 100 milliard dollars, but among them only a handful of countries have been responsible for a very large proportion of it. In 1980 the twelve leading countries supplied some 87 per cent. The rest of the LDCs - that is more than 100 countries - realised no more than an aggregate share of around 13 per cent. These figures indicate a high degree of country concentration and a very limited participation of most LDCs in the process of industrial exports. The degree of country concentration has even been accentuated by the emerging export-oriented

industrialisation process, since in the mid-1960's the twelve leaders accounted for some 80 per cent of LDC manufactured export trade (see Table 2). Some regions like Africa and low-income countries in general have failed to participate in this export drive. The process of industrial exports has, in fact, tended to perpetuate the apparent disequilibrium existing within the Third World countries. This impression, however, should be qualified somewhat by the fact that the twelve most important exporters account for some 56 per cent of the total population in the Third World.

Table 2. Twelve leading exporters of manufactures• among LDC in 1965 and 1980

	1965••			1980	
	Value (mil.dollars)	Share (per cent)		Value (mil.dollars)	Share (per cent)
Hong Kong	989	24.9	Hong Kong	18208	18.1
India	809	20.4	South Korea	15722	15.6
Singapore	300	7.6	Taiwan Province	11310	11.2
Pakistan	190	4.8	Singapore	10452	10.4
Taiwan Province	187	4.7	China	8150	8.1
Mexico	166	4.2	Brazil	7770	7.7
Brazil	124	3.1	India	4424	4.4
Egypt	123	3.1	Mexico•••	3389	3.4
South Korea	104	2.6	Malaysia	2464	2.4
Argentina	84	2.1	Philippines	2141	2.1
Malaysia	68	1.7	Thailand	1886	1.9
Iran	58	1.5	Argentina	1861	1.9
Total	3201	80.6	Total	87777	87.2
Rest of LDCs	796	19.4	Rest of LDCs	12832	12.8
All LDCs	3970	100.0	All LDCs	100609	100.0

Notes: • Manufactures are SITC 5 to 8 less 68. Values are in current prices.
•• People's Republic of China is excluded. China would rank quite high, since its manufactured exports to the OECD area alone was 156 million dollars in 1965.
••• Data of Taiwan and Mexico are for 1979.

Sources: UN, Yearbook of International Trade Statistics 1966 and 1982; World Bank, World Development Report 1983 and 1984; D.B. Keesing (1978) Table 19; China Yearbook 1979, Republic of China, Taipei, (Taiwan Province)

Frequently, the leading LDC exporters of manufactures are segregated from the main body of LDCs and classified as 'newly industrialising countries' (NICs). The composition of this group

varies considerably in different studies and in the usage of different international organisations.[6] Moreover, the leading LDC exporters of manufactures comprise a group of quite different countries, as can be seen in Table 2. The pre-eminence of four East Asian exporters - Hong Kong, South Korea*, Taiwan Province and Singapor - is a prominent feature. During the last two decades the rates of growth of manufactured exports for these countries have been exceptionally rapid, ranging from 20 to 40 per cent a year. As a result, they account today for over 55 per cent of the total LDC manufactured exports, and consequently a considerable gap exists between these four countries and the 'second tier' of LDC exporters.

The leading LDC exporters of manufactures should not, however, be viewed as a static group, since throughout the 1970's the emergence of new exporters has continued. At the same time, the relative shares of some older significant LDC exporters have declined. In addition to the four leaders, countries such as Brazil, Malaysia, Thailand and the Philippines as well as Tunisia, Kuwait, Sri Lanka and Indonesia have markedly increased their manufactured exports since 1965, while India, Pakistan, Egypt, Iran and Lebanon have lost their previous relatively important shares.

Despite substantial growth rates in manufactured exports by several LDCs, their short-term impacts on the overall global industrial setting should not be exaggerated. The total manufactured exports of the four leading LDC exporters are less than Italy's exports alone. The United Kingdom's exports of manufactures are slightly less and West Germany's are almost twice the total exports of the twelve leading LDCs, which have altogether over 2 milliard inhabitants. Even Finland's global share accounts for more than the manufactured exports of India and Mexico put together.

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* The term South Korea, throughout this study, refers to the Republic of Korea.

1.1.2 Characteristics of leading exporters

The limited scope of the export-oriented industrialisation process in the Third World is accentuated by the fact that four small East Asian countries are the overwhelming leaders among LDCs. These four countries have, during the course of recent history, been more or less bulwarks of western metropolitan countries, and their establishment and survival have been characterised by very particular external, political as well as economic reasons. Hong Kong and Singapore are, in fact, city-states originally established as colonial entrepôts, and they became dominant finance and trade centres within their regions. After they were cut off from their respective hinterlands following the Chinese revolution and the breakdown of the Federation of Malaysia, both transformed gradually into manufacturing centres focused on export markets. South Korea and Taiwan Province were, on the other hand, created as independent entities as a result of the Cold War. Because of their strategic importance, they have not only been politically supported, but have also enjoyed massive foreign economic aid and received favourable trade treatments, especially from the United States. All these four East Asian countries have been characterised by an absence of natural resources, relatively small internal market size and a strong outward-looking policy orientation, the manufactured exports being predominantly aimed at the markets of DMEs.

The second cluster of LDC manufactured exporters is comprised of some large semi-industrialised countries such as Brazil, Mexico and Argentina in Latin America as well as India, Pakistan and China in Asia. They have relatively strong industrial bases, largely owing to their import-substitution policies and potentially sizeable internal markets. Although they have been exporting fairly important amounts of manufactures for a long time, their economies have been characterised by low export shares in their gross domestic product as well as in total manufacturing output. With the exception of Brazil and, to a lesser extent, Mexico and China, they have been unable to maintain the relative level of their manufactured exports among

the LDCs. Their industrialisation has been based mainly on the home markets or on the regional markets of surrounding developing countries, while the DME markets have been relatively less important compared with the four leading LDC exporters, except for Mexico having the large exports of the US companies located in the border zone.[7]

The third cluster of LDC exporters of manufactures includes a quite heterogeneous group of small and medium-sized countries. They have often been identified as the 'second tier' of developing country exporters between the NICs and the rest of the LDCs.[8] They account for very small shares of world manufactured trade, but in recent years they have achieved substantial real rates of growth of manufactured exports. This group includes such countries as Malaysia, Thailand, the Philippines, Indonesia and Sri Lanka in Southeast Asia; Chile, Venezuela and Colombia in Latin America; small territories like Macao and Bahrain; Barbados and several other Caribbean islands; and even some African countries such as the Ivory Coast, Kenya and Tunisia. The share of exports in their GDPs tends to be relatively large since they have traditionally concentrated on primary exports as a result of colonial mono-product specialisation. The emerging export-oriented industrial production could often be characterised as mono-industrialisation, too. It has been very typical to either process traditional primary exports further or sub-contract some intermediate products within an international chain of production, hence utilising local labour cost advantages. These new export industries have tended to form isolated export enclaves, sort of an offshore production centre for transnational corporations. Typically their dominant export markets are in DMEs.[9]

By and large, there has been a deficit in the manufactured trade balance of the LDC exporters, excluding South Korea and Taiwan Province in recent years. The industrialisation process has been highly dependent on imported inputs, especially capital goods and technology, and hence the exporters have had to borrow increasingly to pay for their import requirements. The external

debt burden has continuously grown, although the relative indebtedness of the exporters of manufactures is not on average worse than for the LDCs in general. The difference is that the NICs have had to cover their trade balance deficits almost entirely with non-concessional flows by drawing heavily on the international private banking system, and their debt service costs have consequently grown faster than in the other LDCs. Especially in Brazil, Mexico and South Korea, as big borrowers in absolute terms, the debt-service payments as well as the whole foreign debt have risen to significant proportions of their external incomes.

1.2 Branch concentration

1.2.1 Dominant manufactured export branches

In addition to a high degree of country concentration, the LDC exports of manufactures have also been characterised by a high degree of branch concentration. A low level of diversification is a typical feature in the export pattern of peripheral economies. This phenomenon is illustrated in Table 3, in which manufactured export structures of leading LDC exporters are shown. Due to a lack of comprehensive and comparable statistical data, the figures presented contain only exports to the OECD area. Nevertheless, since the OECD area covers over 70 per cent of LDC total manufactured exports, the figures are quite representative.

The dominant LDC export branches of manufactures can be grouped into three broad categories according to the types of manufacturing activities:

a) Resource-based processing activities. This category includes standardised semi-processed intermediates such as different types of processed agricultural products, leather products, wood manufactures as well as textiles, basic metals and minerals.

b) Low-skilled, labour-intensive consumer goods. This category consists of traditional simple export manufactures such as clothing, footwear, furniture and miscellaneous light manufactures (sporting goods, toys, travel goods).

c) Offshore processing. This category includes new types of export production, i.e. some very specialised labour-intensive processes for manufacturing components and final stages of assembly or semi-assembly operations. Typically, the branches are in the electronics and electrical engineering industries and instruments production. These

Table 3. Export structure of manufactures in the leading LDC exporters, 1981 (exports to the OECD area in percentages)

	Taiwan Prov.	Hong Kong	South Korea	Mexico	China	Brazil	Singapore	India	Malaysia	Philippines	Thailand	Argentina	Pakistan	Together
Labour-intensive intermediates														
leather prds	0.4	0.1	0.4	0.6	1.3	3.0	0.1	8.8	0.1	0.1	1.9	32.3	10.4	1.5
rubber prds	1.1	0.0	1.9	0.2	0.1	0.5	0.3	0.4	1.1	0.0	1.0	0.0	0.0	0.7
wood mnfs	4.2	0.2	2.2	1.5	0.5	2.0	2.6	0.6	6.1	9.2	4.0	0.0	0.0	2.3
textiles	4.2	4.3	8.3	2.0	26.4	10.2	1.6	24.9	5.2	2.5	15.5	4.1	62.9	8.3
non-metal mineral prds	2.2	3.1	2.0	2.2	3.1	2.9	0.8	21.3	0.5	1.0	21.9	0.1	1.8	3.5
Subtotal	12.1	7.7	14.8	6.5	31.4	18.6	5.4	56.0	13.0	12.8	44.3	36.5	75.1	16.3
Capital-intensive intermediates														
chemicals	2.0	0.2	2.6	6.5	12.9	8.9	0.8	1.5	1.9	2.7	3.9	23.7	0.4	3.5
pulp	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0	-	0.4	0.0	0.0	-	0.5
paper	0.4	0.2	0.7	1.9	0.4	1.7	0.1	0.1	0.0	0.1	0.1	0.6	0.0	0.6
iron and steel	1.0	0.0	9.0	0.9	3.9	13.5	0.4	0.8	0.1	1.3	0.3	4.8	0.0	3.2
Subtotal	3.4	0.4	12.3	9.3	17.2	31.9	1.3	2.4	2.0	4.5	4.3	29.1	0.4	7.8
Consumer goods														
pharmaceuticals	0.2	0.2	0.2	1.2	2.9	1.3	2.0	0.7	0.1	0.0	0.9	3.8	0.1	0.7
furniture	3.2	0.6	0.3	1.3	2.3	0.2	1.6	0.2	0.7	5.4	2.9	0.1	0.1	1.5
clothing	17.1	39.5	30.3	5.3	26.8	1.7	9.2	24.9	8.5	25.7	21.5	3.2	12.2	22.2
footwear	9.5	1.3	8.6	1.5	3.2	12.4	0.3	1.6	1.5	3.8	1.4	0.1	1.1	5.3
instruments	2.7	8.8	1.9	2.8	0.6	0.9	4.4	0.6	2.5	3.7	1.1	0.9	3.2	3.4
misc. light mnfs	17.6	20.0	9.5	13.7	10.0	1.5	5.4	4.7	1.9	8.9	8.9	3.5	4.1	12.2
Subtotal	50.3	70.4	50.8	25.8	45.8	18.0	22.9	32.7	15.2	47.5	36.7	11.6	20.8	45.3
Capital goods														
basic metal prds	5.6	2.2	4.6	2.0	3.1	1.3	1.3	5.0	0.5	0.2	1.9	1.6	1.4	3.3
industrial machinery	5.0	2.5	1.1	8.5	1.4	10.8	5.6	2.0	2.1	0.4	0.3	6.2	1.8	3.9
computing machinery	1.3	2.9	0.7	2.6	0.0	4.8	4.0	0.4	0.7	0.8	0.1	9.8	0.1	1.9
tele, TV, radio appar.	13.7	6.4	9.0	17.1	0.2	2.2	24.3	0.2	7.3	1.0	0.5	0.1	0.1	8.7
electrical machinery	6.9	6.7	5.7	21.4	0.2	3.0	29.1	0.7	58.4	31.0	11.6	0.4	0.0	10.4
transport equipment	2.3	0.7	1.0	6.6	0.8	9.4	5.1	0.8	0.8	1.7	0.1	4.6	0.3	2.5
Subtotal	34.1	21.4	22.1	58.2	5.7	31.5	70.3	9.1	69.8	35.1	14.5	22.7	3.7	30.7
Total manufactures	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total (mil.dollars)	14071	12266	11397	4855	4473	3896	3826	3037	2080	2028	1186	806	728	64650
Share of LDC total	19.1	16.6	15.4	6.6	6.0	5.3	5.2	4.1	2.8	2.8	1.6	1.1	1.0	87.5

Source: OECD, Foreign trade by commodities, 1981.

industries are highly technology-intensive and innovative in outputs, but only the unskilled, labour-intensive parts of the production chain are located in LDCs.

Traditional simple labour-intensive export products are still dominating - almost a half of the total LDC manufactured exports consists of textiles, clothing footwear and miscellaneous manufactures. Besides these sectors, the other major growth area during the past twenty years has been electrical engineering, in particular, some of its unskilled, labour-intensive partial operations. Cheap labour is the major abundant factor determining the location and growth of these branches, within which the LDCs have not only been able to hold, but also significantly improve their global market shares.[10]

The product scale in the exports of LDCs is still rather limited, and in particular if the product patterns are studied in relation to individual countries, the one-sidedness is even more striking. Moreover, the sectoral structures of manufactured exports vary among LDCs. Participation in the international division of industrial labour has thus led to heterogeneous specialisation patterns with limited diversification in different peripheral economies.[11]

Table 3 gives some evidence of the variety of industrial specialisation among the leading LDC exporters. The sectoral diversity is closely associated with the size of exports. Only those LDCs - particularly Taiwan Province and South Korea as well as some large semi-industrialised countries such as Brazil and Mexico - where the amount of exports is highest have also succeeded in developing several export-oriented manufacturing activities. Elsewhere, the export structure is highly concentrated on only a few branches.

Among traditional export products, the four East Asian NICs (except Singapore) are major suppliers of clothing, footwear and miscellaneous light manufactures accounting for around 70 per cent of total LDC exports in these branches. These four NICs are also major suppliers among the LDCs of several 'non-traditional'

exports such as electrical engineering products (63 per cent) as well as instruments and watches (76 per cent). In fact, Hong Kong alone is the world's largest exporter of toys and sporting goods, followed by Taiwan Province, and the third largest exporter of watches - the latter indicating the capability of the NICs to expand increasingly into skill-intensive sectors, too.

For the so-called 'second-tier' LDC exporters as well as the semi-industrialised large countries, a somewhat different set of products, primarily either resource-based or labour-intensive traditional manufactures, have been important. In Malaysia and the Philipoines, however, offshore processing of electrical appliances covers over 50 per cent and over 30 per cent of manufactured exports, respectively. Many large resource-rich LDCs export primarily standardised intermediate goods such as leather and wood products, textiles as well as processed basic metals and minerals or assorted chemicals. These products can be marketed through existing channels of trade similar to the traditional exports of primary commodities. The emergence of the second-tier exporters has, however, been accompanied by changes in their traditional export composition. The most salient feature is the fairly general decrease in the share of semi-processed intermediates and an offsetting rise in that of more labour-intensive finished manufactures.[12]

1.2.2 Pattern of industrial specialisation

The overall impression of the changing international division of industrial labour is that the LDC export composition has changed both through increased processing of specific export items (a deepening of the industrial base) and through diversification into new fields (a widening of the industrial base). The former is illustrating changes in the vertical division of labour via product development, and the latter reflects shifts in the horizontal division of labour via sectoral diversification. To analyse these changes, manufactured export structures of LDCs and DMEs are compared in Table 4, in which manufactured exports

Table 4. Export structure of manufactures in DMEs and LDCs (exports to the OECD area in percentages)

	DMEs	All LDCs	Leading LDC exporters	Rest of LDCs
Labour-intensive intermediates				
leather prds	0.5	1.6	1.5	2.8
rubber prds	1.3	0.7	0.7	0.1
wood mnfs	0.7	2.4	2.3	2.9
textiles	4.1	9.1	8.3	14.6
non-metal mineral prds	3.6	4.0	3.5	7.9
Subtotal	10.2	17.8	16.3	28.3
Capital-intensive intermediates				
chemicals	11.6	4.5	3.5	11.7
pulp	1.3	0.6	0.5	1.2
paper	3.3	0.5	0.6	0.2
iron and steel	6.1	3.8	3.2	8.2
Subtotal	22.3	9.4	7.8	21.3
Consumer goods				
pharmaceuticals	2.2	0.9	0.7	2.1
furniture	1.2	1.3	1.5	0.3
clothing	2.7	21.9	22.2	19.8
footwear	1.0	4.7	5.3	0.7
instruments	4.5	3.3	3.4	1.9
misc. light mnfs	5.3	11.5	12.2	6.4
Subtotal	16.9	43.6	45.3	31.2
Capital goods				
basic metal prds	3.4	3.0	3.3	0.5
industrial machinery	15.3	4.1	3.9	5.7
computing machinery	4.1	1.7	1.9	0.3
tele, TV, radio appar.	3.4	7.8	8.7	0.9
electrical machinery	5.6	9.6	10.4	3.8
transport equipment	19.0	3.1	5	7.9
Subtotal	50.8	29.3	.7	19.1
Total manufactures	100.0	100.0	100.0	100.0
Total (mil.dollars)	591100	73847	64650	9197

Source: OECD, Foreign trade by commodities, 1981

are divided into broad functional categories according to types of goods produced (intermediates, consumer goods and capital goods).

Furthermore, to illustrate patterns of industrial specialisation a fourfold typology of manufacturing branches can be constructed based on the argument

that the degree of processing and the skill-intensity of industrial production are the most important factors determining each country's relative competitive position in world trade.[13] According to these criteria, the manufacturing export structure of LDCs has been compared with DMEs in Table 5. There is inevitably considerable variation between individual countries within each country group; nonetheless, this broad and rudimentary classification does allow some general observations to be made.

Table 5. Classification of manufactured exports by skill intensity and value added content in LDCs and DMEs, 1981 (per centage share)

Export structure of LDCs

	low skill	high skill
intermediates	22.0	5.2
final products	45.5	27.4

Export structure of DMEs

	low skill	high skill
intermediates	19.6	12.9
final products	32.6	35.1

Note: Percentages are derived from Table 4.

By and large, the presented fourfold division does not illuminate very large differences between LDCs and DMEs in their manufactured export structure, which may be due to too high a level of aggregation. The major divergence is that in DMEs the

export structure has shifted relatively more towards branches with high skill-intensity. Nearly a half of the DME manufactured exports are in skill-intensive branches compared with the less than a third in LDCs.

Considering the degree of processing, the crude division between intermediates and final products does not indicate any substantial differences between the country groups concerned. The functional categorisation made in Table 4 illuminates more. As far as final products are concerned, the industrial division of labour between DMEs and LDCs is notable; the former tend to export capital goods, while the latter focus on consumer goods. Moreover, the LDC capital goods exports have heavily concentrated on a few leading exporters (primarily the NICs) and are frequently comprised of offshore processing of manufactured parts, accessories and appliances. In contrast, DME exports of relatively low-skill final products comprise primarily heavy engineering goods such as transport equipment rather than light consumer goods, which tend to predominate in the LDC export structure.

As regards intermediate products, the contrast between the export patterns of DMEs and LDCs is also notable. Table 4 reveals the relative specialisation of LDCs in branches with lower processing stages and higher labour intensity. For the LDCs, low-skill, labour-intensive intermediates with low value added, for example, leather products, wood manufactures, textiles, non-metal mineral products are relatively more significant, whereas in the DMEs the products spectrum differs by emphasising more highly processed and skill-intensive intermediates such as chemicals, rubber and paper products, as well as iron and steel, which frequently tend to be capital-intensive, too.[14]

In LDCs, besides a high sectoral concentration of manufactured exports, the industrialisation is mainly based on a) simple technological requirements, b) reliance on local natural resources with a rather low level of processing, c) relatively modest capital requirements and d) predominantly labour-

intensive production processes. The major divergence in manufactured export specialisation between DMEs and LDCs economies is, hence, based on structural categorisations of industries rather than sectoral ones. Technological development as well as capital intensity combined with the degree of processing and diversity of industrial production are the main factors determining each country's relative competitive position in global trade and their role in the international division of industrial labour.

1.3 Corporate concentration

The nation state is conventionally regarded as the basic unit in the international system, and hence the global economic transactions are analysed in terms of exchange between productive systems of nation states. Often this type of conceptualisation, however, ignores the fact that economic relations are actually based on the functioning of individual enterprises. It is not national economies but companies that carry out international investment, production and exchange activities. This distinction is becoming more relevant in a rapidly integrating world economic system.

The transnational corporations (TNCs) are among the most dynamically expanding participants in the world economy. These are defined as enterprises which own and control income-generating assets in more than one country.[15] Especially in developing economies, they have played a notable role in the rapid growth of industrial investments and trade. Their roles have varied from the provision of capital, management and technology to the simple provision of markets, trade mark use and marketing skills. The significance of the TNC activities in the present-day world economy is illustrated by the fact that in the mid-1970's the market value of international production through the operations of the TNCs exceeded that of world trade and was about one third of the world's gross output outside the socialist countries.[16] Furthermore, it has been estimated that intra-firm transactions within TNCs account for over one third

of global trade. If trade with minority-owned joint ventures and firms with technology or licensing agreements were included, the proportions would be even higher.[17]

Although there has been an increasing involvement of the TNCs in different types of non-equity arrangements in recent years, such as sub-contracting and marketing agreements as well as licensing, management and service contracts, their activities and growth are predominantly based on direct international investments, including joint ventures both in home and host countries. Hence, direct foreign investment (DFI) is often used as an approximate indicator describing the TNC investment behaviour and operations.

The bulk - more than two thirds - of international DFI flows have been made during the 1970's within the DMEs. Consequently, DFI assets held by TNCs in the Third World represent only about one quarter of the total world stock of foreign investments.[18] However, especially in the LDCs with low productive capacity, foreign investments form a significant part of the overall development process.[19]

The United States and the United Kingdom continue to be the two leading sources of private foreign investment, but their share of the total has tended to decline during the last decade, the corresponding increases taking place mainly from West Germany and Japan. Of the foreign affiliates located in the Third World at the end of the 1970's, some 36 per cent were subsidiaries of US companies, followed by 27 per cent from the United Kingdom, 7 per cent from France, 6 per cent from West Germany and Japan, and 4 per cent from the Netherlands.[20]

1.3.1 Forms of foreign participation in LDCs

Traditionally, during the colonial period foreign investment in the Third World was characterised by portfolio and bank-lending capital flows which served to develop resource-based, export-oriented agricultural and mineral production as well as the related infrastructure. There were also some relatively modest

direct investments in equity forms, for instance, in plantations and mines as well as in public utilities (railways, ports and power production).

After the Second World War there was a substantial increase in private investment in productive operations, the majority of which was direct rather than portfolio capital. Some foreign capital also went into related financial and service sectors, including banking, insurance and trade.

It was not until the mid-1960's that a substantial share of DFI was made in manufacturing. Since decolonisation the LDCs have increased their direct ownership and control over the extraction stage of production, and consequently there has been a gradual shift from foreign investments in the extraction of primary resources to manufacturing. In 1966 only 27 per cent of the DME total stock of DFI in the LDCs was in manufacturing, while a decade later the share was already about 44 per cent.[21]

Most of TNC activities in manufacturing in the Third World continue to be basically in a form of import substitution that is oriented towards local markets. During the past fifteen years or so, however, LDCs have also become sites for TNC manufacturing investments producing increasingly for world markets. Whereas at the beginning of the 1960's, manufacturing for the DME markets, especially by foreign firms, was virtually non-existent in LDCs, two decades later there is a great number of rapidly expanding industrial plants producing manufactured goods mainly for the export markets.

TNC involvement in LDC manufactured exports may be examined according to the three broad categories of dominant LDC export branches differentiated in the previous section 'see p. 10'.[22] As far as resource-based processing activities are concerned, in several branches it is in the strategic interest of TNCs to secure their sources of raw material and basic intermediate supply within international vertically integrated industries, preferably in the form of direct investment. The process of nationalisation of natural resource assets and growing local

participation which has taken place during the last two decades in LDCs have, however, driven TNCs to promote alternative mechanisms such as production-sharing and long-term purchase agreements.

As regards low-skilled, labour-intensive consumer goods, these branches are largely in the hands of locally owned enterprises. The TNCs involvement has been predominantly in other forms than direct investments - notably contractual purchasing linked to products or process licensing. Typically, the transnational buying groups - both multi-commodity trading houses and retailing firms - have had a major impact on the growth of exports of these manufactures.

The strongest direct participation by TNCs - increasingly in the form of joint-ventures - has taken place in terms of offshore processing. Various other names characterising strong TNC involvement such as foot-loose industry, contract manufacturing, offshore assembly, in-bond processing companies and run-away plants are frequently used to refer to this entirely new feature of international trade and investment. The production is vertically integrated into transnational operations of TNCs. A typical feature is a dependence on parent companies and other TNC affiliates for the supply of most of the intermediate products and inputs as well as for the marketing of the output.

Several authors have emphasised that a fundamental restructuring on a large scale is going on in the world economy, thus reflecting an emerging division of labour within the transnationally organised corporate structure. Production processes from mature industrial branches and labour-intensive segments of advanced industries have been increasingly relocated in LDCs. This type of production has been seen as an isolated operation, separated from the national economy and integrated vertically into the world market, hence, resembling the previous colonial-type economic specialisation.[23] Other authors have warned not to exaggerate the role of multinational investors in the LDC industrial exports. It has been noted that other

economic factors, such as retail and procurement houses, have been equal or even more important contributors to the LDCs export performance than direct foreign investors.[24]

1.3.2 Extent of TNC activities

The new stocks of foreign-owned industrial assets are heavily concentrated within the LDCs. The twelve leading manufacturing exporters (excluding China) are the main recipients of DFI in the Third World. They accounted for about 46 per cent of all DFI in 1981, and their proportion has steadily increased over the years, being 35 per cent in 1967 (see Table 6).

Besides manufacturing investments, DFI also includes investments in extractive industries, agruculture and services. That is why the share of offshore banking centres in the total stock of DFI has been notable (Table 6) and even growing. These small 'tax heavens' are increasingly attracting foreign capital for foreign-owned holding companies as well as for finance and insurance companies and other service sector activities. A large proportion of these foreign funds are, in fact, subsequently reinvested in other host countries for production.

As far as oil-producing countries are concerned, their proportion as recipients of DFI has steadily decreased parallel to their policy of increasing national control over domestic natural resources. Similarly, in other developing areas international direct investment has tended to stagnate relatively in recent years. This is in line with the shift of attention from primary to manufacturing investment, since the TNC investments in manufacturing have been more concentrated on a limited number of LDCs than total DFI. In this respect the share of the twelve leading LDC manufactured exporters is paramount - accounting for some 80 per cent of the total LDC stock of DFI in manufacturing.[25]

Table 6. Private direct investment stock from DMEs• in LDCs 1967, 1974 and 1981 (percentage share)

	1967	1974	1981
Brazil	11.3	16.0	14.3
Mexico	5.4	6.3	8.6
Argentina	5.5	4.5	4.7
Singapore	0.6	1.3	3.3
Hong Kong	0.9	1.9	3.2
Malaysia	2.1	2.3	2.9
India	4.0	3.4	2.3
Philippines	2.2	1.9	2.1
Taiwan Province	0.5	1.0	1.9
South Korea	0.3	1.4	1.3
Pakistan	1.1	0.9	1.0•••
Thailand	0.7	0.9	0.6•••
Total	34.6	41.8	46.2
OPEC countries••	27.8	19.9	18.6
Offshore banking centres	10.0	13.6	17.2
Rest of LDCs	27.6	24.7	18.0
All LDCs	100.0	100.0	100.0
All LDCs (milliards of dollars)	33.0	59.6	120.2

Note:

• DMEs contain DAC member countries

•• OPEC countries include thirteen countries: Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Quatar, Saudi-Arabia, United Arab Emirates and Venezuela

Offshore banking centres include six countries: Bermuda, Panama, Bahamas, Netherlands Antilles, Liberia, Trinidad and Tobago

••• Figures based on the year 1978

Sources:

OECD (1982) Investing in Developing Countries, 1982, Table 5;
OECD (1981) Internationl Investment and Multinational Enterprises, Table 9;
OECD (1976) Development co-operation, 1976 review; and
OECD (1972) Stock of Private Direct Investments by DAC countries in Developing Countries, end 1967.

Several factors have facilitated the rapid increase of LDC manufactured exports within the frame of the transnationally organised corporate system. These include factors such as rapid technical progress in all forms of communication, which have made the geographical proximity of management, sources of supply and markets less important for the industrial location. Technical progress has also made it possible to break up complex industrial processes into sub-processes and to disperse and co-ordinate these processes internationally. Tariff policies in DMEs have also facilitated international investment and sub-contracting activities as well as export incentives offered by many LDCs to foreign investors. [26]

The most complete form of incentive is the creation of a new type of industrial site, the export processing zone (EPZ) or free production zone. [27] These zones form geographically detached areas, which are administratively separated from the rest of the LDC economy. Their purpose is to attract export-oriented industries by offering especially favourable investment and trade conditions. The first EPZs were established in LDCs during the 1960's, but their number has grown rapidly since the mid-1970's. The principal countries in which most of the EPZs and related TNC plants have been established are the leading LDC exporters of manufactures, but by 1980 there were already 55 developing countries which had EPZs or were planning to set one up.[28] The TNCs have been able to expand effectively their sub-contracting and offshore processing activities by using EPZs, in particular, by taking advantage of low-cost labour.

The differences in labour costs and in conditions of labour utilisation are the major determinants in explaining the location of TNC export-oriented manufacturing operations in LDCs. Average hourly wages in manufacturing in LDCs are less than one-eighth of the average level in DMEs [29] (see Table 7). Moreover, the difference in total wage costs is even greater, because social security payments, fringe benefits, paid vacation days, travel, uniforms, meals allowances, etc., represent only some 20-30 per cent of the total labour costs in LDCs, compared

Table 7. Average hourly wages and annual wage rates in manufacturing in DMEs and leading LDC exporters of manufactures, 1980

	Hourly wages (US dollars)	Wage levels (compared with US)	Annual wage rates (thousands of dollars per employee)*
Sweden	8.99	124	12.7
Denmark	8.97	123	15.7
Norway	7.67	106	..
Netherlands	7.38	102	..
United States	7.27	100	14.1
Belgium	6.91	95	12.8
Switzerland	6.87	95	..
Canada	6.85	94	13.0
West Germany	6.73	93	14.8
Japan	6.66	92	..
Austria	6.20	85	10.4
New Zealand	5.48	75	..
United Kingdom	5.37	74	7.3
Australia	5.14	71	11.3
Finland	5.14	71	8.6
France	5.03	69	..
Italy	5.03	69	..
Ireland	4.40	61	..
Spain	3.60	50	..
Greece	2.20	30	..
Portugal	1.54	21	..
Mexico	1.68**	23	4.0
Brazil	1.28**	18	..
Hong Kong	1.13	16	..
Argentina	1.02	14	..
Singapore	1.02	14	3.1
South Korea	0.97*	13	2.2
Taiwan Province	0.92**	13	..
Thailand	0.57**	8	..
Malaysia	0.37**	5	1.1
Philippines	0.31	4	0.8
India	0.30	4	..
Pakistan	0.28	4	0.6

Note: * Data are for 1978
** My own estimates based on F. Frobel et.al. (1980)

Sources: ILO, Yearbook of Labour Statistics 1982; China Yearbook 1979, Republic of China, Taipei, Taiwan; F. Frobel et.al. (1980), Tables III-14 and III-15, and UNIDO, Industry in a Changing World (1983), Table VIII.1.

to about 80 per cent in DMEs.[30] In addition to the vast wage cost differentials, there are more working hours per week in the LDCs than in the DMEs.

Despite lower wage levels and longer working time, differences in labour productivity, particularly for manufacturing export industries, are not very significant between different countries. Most of the LDC production processes for exports are simple processing or assembling operations which require relatively unskilled labour often using modern and sophisticated equipment, and hence the labour productivity is about the same as in corresponding industries in DMEs. [31] Low absolute wages combined with small differences in labour productivity make wage costs per unit of output markedly lower in developing economies. These differences in average unit labour costs have been the major cause for the increasing participation of TNCs in manufacturing of exports in LDCs during the last two decades. Some evidence concering the impact of the TNCs on the production, employment and exports of manufactures in LDC can be seen from Table 8. In the literature there is a certain controversy about the importance of multinational investors in the industrialisation process and especially in the expansion of manufacturing exports from the Third World [32]. Little systematic data is available on the subject, which prevents a detailed analysis.

According to rough estimates, approximately 20 per cent of the manufacturing exports from the LDCs can be attributed to the majority-owned subsidiaries of TNCs located in these countries.[33] In the area of primary commodities, tne scale of transnational participation is traditionally stronger. It has been estimated that some 70 per cent of LDC primary commodity exports are carried out by transnationals - including trading companies.[34] This comparison tends to suggest that TNCs play a relatively modest role in the manufacturing exports from LDCs. There are, however, three factors that should be accounted for: a) the relative importance of DFI in manufacturing varies greatly according to country, b) it also varies according to product and industry and c) especially in manufacturing, there

Table 8. TNC shares in the production, employment and exports of manufactures in the leading LDC exporters (early or mid 1970s, percentages)

	Production	Employment	Exports
Singapore	83	67	70-90
Brazil	49	30	40-43
Mexico	28	21	25-35
Argentina	31	10-12	30
South Korea	11	12	28
Philippines	..	7	20-25
Taiwan Province	..	..	20
Hong Kong	12	11	10
India	13	13	5-10
Pakistan	..	..	5-10
Malaysia	44	33	..
Thailand	..	2	..
Colombia	43	28	30

Sources: UNCTAD, Trade and Development Report, 1982, Table 29; United Nations (1978), Transnational Corporations in World Development, Table III, 54; Deepak Nayyar (1978), Table 1; P.K.M. Tharakan (1981), Table 3.3; Angus Hone (1974); and ILO (1981), Employment Effects of Multinational Enterprises in Developing Countries, Table II.3.; UN (1983), Transnational Corporations in World Development, Table IV2 and IV3

are frequently other more suitable forms of participation in international production and marketing of certain products than DFI.

The investments of foreign firms in the manufacturing sectors of several LDCs are quite substantial (see Table 8). It varies from the case of a small open country such as Singapore, where transnationals account for some 70 per cent of manufacturing employment and over 70 per cent of exports, to large self-reliance-oriented countries like India and Pakistan, where the share of TNCs in manufacturing exports is under 10 per cent. Notable regional differences exist, since in the Asian countries, with the exception of Singapore, the share of total manufactured exports produced by foreign subsidiaries has varied between 28 per cent and 5 per cent, whereas in the Latin American countries the figures are between 43 and 25 per cent.

The differences in involvement between industrial branches are, however, even more distinct than the country variations. There are countries where TNCs account for two-thirds or more in some industrial sectors, while in other sectors their share may be negligible.[35] There is a general tendency for DFI in manufacturing to be concentrated on technically advanced sectors. In contrast, the TNC direct involvement has been relatively small in such traditional manufacturing sectors as textiles, clothing and leather.

In many countries locally owned firms have been major participants in the export drive. Especially in Far Eastern countries, in South Korea, Hong Kong and Taiwan, for example, the TNC involvement has been predominantly in forms other than direct investments. In these countries multinational buying groups and different types of sub-contracting arrangements have composed the driving force in the rapid manufactured export growth . There the transnational control over marketing and distribution networks as opposed to production is of crucial importance.

In these circumstances the absence of significant amounts of direct foreign investment and of majority-controlled affiliates does not indicate an absence of significant external influence over export production. This argument is supported by the fact that during recent years there has been a marked shift from equity participation and direct ownership by the parent company to a greater use of loans and supplier credits as well as turnkey operations, management and technical support contracts, licensing agreements, contractual purchasing arrangements and other types of sub-contracting agreements.[36]

These new forms of international investment have not prevented the TNCs from keeping and even strengthening their strong position in many LDCs. These new forms have gradually become a relatively more important means of presence than the traditional forms of direct investment through wholly owned and majority-owned subsidiaries.

An important qualitative change is taking place in the nature and composition of the international division of labour. Formerly, there was a relatively clear demarcation between the raw material producers and the more industrialised countries. At present, this difference is gradually disappearing, implying gradual shifts in the trade patterns between industrial and developing countries. The traditional colonial-type complementary trade is being replaced by more competitive trade relations, i.e. trading manufactures in exchange for manufactures. Although this international restructuring concerns only certain peripheral countries, certain sectors and certain types of activities, it already represents an essential feature of the future world industrial evolution. It is not a regulated process since commercial pressures against the old international division of labour seem to be a more important driving force than the political ones. Transnational enterprises, in particular, play a major role in the emergence of manufactured exports from peripheral economies - quite apart from their possible direct ownership of exporting production units. These structural changes in the global economy, that have been manifested by the increasingly competitive trade with the LDCs, cause adjustment constraints in developed countries.

The trade related adjustment constraints have different impacts between DMEs, since the countries differ from each other, too, not only in terms of size and physical conditions, but also in terms of the stage and nature of industrial development and the consequent specific characteristics of the trade structure. These differences have justified making a distinction between so-called core and semiperipheral economies within the 'developed world'. Finland, besides being a small open market economy, could also be characterised as one of the late-comers and a sort of semi-peripheral economy among the industrialised European countries. Hence, in the following the major interest is to investigate Finland's experience, as a small semi-peripheral industrial economy, concerning the pressures and adjustment constraints associated with the industrialisation process in the Third World.

Chapter 2

INTERNATIONAL SPECIALISATION OF FINLAND

In the preceding chapter the industrialisation process of developing countries was considered. In this chapter it is time to briefly characterise the roots and nature of Finnish industrialisation and its specific pattern of international specialisation, before investigating the additional constraints imposed on the economy by increasing competition from the Third World.

2.1 Development success in the semi-periphery

The industrialisation process in Finland is characterised by two essential features: first by its comparatively late start, and secondly by its strong external orientation. Still in the middle of the 19th Century, the manufacturing industry was virtually non-existent and the vast majority of Finland's population was occupied in subsistence agriculture, fishing and hunting. At the end of the last century, industrial progress gradually emerged reflecting the type of intermediate, semi-peripheral position of the country in the international division of labour.

In the Middle Ages Finland was colonised by the Swedish Crown and became somewhat of an eastern periphery and buffer-zone for the Swedish Empire against the growing Russian might. Economic development was very sluggish, and growth was considerably slower than in the Swedish core areas. Output and employment in the embryonic manufacturing and handicrafts production in Finland covered only five per cent of the Swedish total. Heavy taxes and manpower levies impoverished the rural population; about one-tenth of the male population were soldiers. External trade was very limited and passed primarily through Stockholm. Ample forest resources provided the basis for exports. Furs were exported in the Middle Ages, then followed by tar in the 17th Century and later by charcoal and timber.[1] According to the

mercantile trade policy, the exports of these staple products were monopolised by a few Swedish companies, and hence the periphery benefitted very little from the trade.

During the Napoleonic Wars at the beginning of the 19th Century, the 700 year Swedish rule collapsed as Russia seized Finland. In 1809 the country became part of Russia, though many traditional commercial and cultural links with Sweden remained for a long time almost unchanged. Finland's altered political status, however, made two important new development features feasible. First, autonomous institutions developed gradually during the 19th Century, which was decisive for the consolidation of Finland as an independent nation state. The country was not incorporated into the Russian Empire as one of its provinces, but as an autonomous Grand Duchy governed by Finns. The constitution, including the judiciary and civil administration, as well as religion were not the same as in Russia, but mainly an inheritance from the Swedish period. An independent fiscal system with a separate customs boundary were unique within the whole Russian Empire.

Secondly, the network of core-periphery relations with Sweden was broken up. In fact, Russia was economically more backward than Finland, and this relative advantage gave major impetus for economic development in the country. The capital of the Russian Empire was near the Finnish border, opening up new markets for Finnish exports. Whereas, in relation to Sweden, Finland had been peripheral, it was now one of the developed areas of the Russian feudal empire. Nevertheless, there was little sign of progress in the early years of Russian rule. Years of crop failures caused severe setbacks to the whole economy. There was a modest beginning of industrialisation - iron, textiles, glass and tobacco factories had emerged. The demand for tar in the international market declined with the passing of sailing ships. Mercantile rules, privileges and monopolies still limited foreign trade and the development of the economy.

2.1.1 Start of industrialisation

From the 1860's up to the end of the century, various structural changes occurred in the Finnish economy, reflecting shifts in its external relations.[2] A decisive factor was the rapidly increased demand for wood in Western Europe, as a result of deforestation, due to extensive industrialisation and urbanisation. The fall in transport costs after the introduction of steamships, made the utilisation of the abundant wood resources of Finland commercially profitable. At the beginning this development was markedly initiated by foreigners. Apart from Finns, several Swedish, English and Norwegian entrepreneurs helped to establish new forest-based industries.[3]

Also during the 1860's and 1870's traditional Finnish textiles, leather, glass and metal industries substantially increased their share in the Russian markets. Finnish commodities enjoyed a privileged position vis-à-vis foreign competitors because of the tariff advantages granted in the 1860's. This offered protected markets for the new vulnerable industrial enterprises, including metal engineering, textile and later paper industries. Raw materials, such as iron ore, base metals, and cotton, were imported, processed in Finland and then sold to Russia. Besides domestic capital, considerable amounts of Russian, Swedish and British capital were invested in those branches of industry.[4]

The Finnish government sponsored in many ways the start of the industrialisation process. A new joint-stock Company Act was enacted. Monetary independence stimulated the development of banking and credit. State loans at low interest rates were also granted to aid new industrial enterprises. New tariff laws reduced the foreign trade restrictions and ended duties on grain and several raw materials, including cotton. Ultimately, all the remaining restrictions on economic enterprises were eliminated in 1879. Canals, roads and the first railways were built and postal communications modernised. All these changes paved the way for the structural change of the Finnish economy.

However, from the beginning, Finnish industrialisation has been determined and conditioned by external factors. During the 1870's, 60 per cent of all products produced by the metal and engineering industry were exported to Russia, and over two-thirds of the textile industry products. Practically all forest industry products - timber and sawn wood - as well were exported, but to Western Europe. It is estimated that in the mid-1870's some 85 per cent of Finland's total industrial production went abroad.[5]

Gradually, external dependence started, however, to decrease. By 1899 only 50 per cent of the total industrial production was exported: textiles and the metal and engineering industries provided goods mainly for the home market. In 1913 only 10 per cent of the textile industry products and nine per cent of the metal industry products were exported.[6] There were obvious reasons for that. First, there was a gradual increase of domestic demand in Finland. Industrialisation itself broke down the traditional social relations of the subsistence economy. In particular, the development of the forest industry generated an extra flow of income into rural areas, especially for landholders.

Secondly, in the middle of the 1880's trade with Russia was restricted again. Finnish products were to be treated in Russian markets like other foreign products. This change decisively influenced the composition of Finland's external trade and industrialisation. During the 1870's Russia had taken one half of Finland's exports whereas thirty years later a little over one quarter of the exports went there. In a similar way imports from Russia decreased, though not so rapidly (see Table 9). Instead Finland was increasingly bound to the Western European markets. Great Britain became the most important export market, while Germany became by far the most significant source of imports.

Table 9. Finnish foreign trade in 1870-1910
(per cent share)

	1870		1890		1910	
	World*	Russia	World*	Russia	World*	Russia
Exports						
Agricultural prds	36.9	31.7	31.5	27.0	17.2	18.3
Timber	5.3	1.9	5.7	4.7	10.5	6.9
Sawn wood	47.3	2.0	55.3	1.7	61.0	8.1
Pulp and paper	0.0	4.9	2.6	20.2	9.2	39.0
Textiles and clothing	0.2	25.9	0.3	13.1	0.2	10.1
Chemical industry prds	8.8	6.9	4.0	2.3	0.8	1.1
Metal industry prds	0.0	23.6	0.7	15.5	0.2	4.5
Others	1.5	3.1	0.0	15.5	0.9	12.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Imports						
Foodstuffs	39.6	39.1	35.1	53.0	34.9	58.7
Raw materials and semi-manufactures	41.6	23.2	38.5	14.9	36.2	20.1
Fuels and lubricants	3.6	0.4	2.1	3.2	3.1	5.3
Investment goods	1.5	0.0	8.7	0.8	8.3	0.8
Consumption goods	13.6	37.3	15.6	28.1	17.6	15.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Direction	Exports	Imports	Exports	Imports	Exports	Imports
Russia	52.9	39.7	39.3	33.6	27.4	28.7
Sweden	10.0	11.0	7.8	8.4	4.0	5.1
Great Britain	19.0	11.9	19.1	16.4	29.5	11.9
Germany	7.6	21.8	6.5	31.9	12.0	41.6
Others	10.5	15.6	27.3	9.8	27.1	12.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: *Excluding Russia.

Source: Erkki Pihkala (1969), Finland's Foreign Trade 1860-1917, Publications of Bank of Finland, Helsinki.

Following the changes in the direction of trade, its composition also changed. The range of exports became narrower and the share of processed products decreased as ties with Western Europe increased. The expansion of the metal and textile industries halted. Only the paper industry was capable of expanding its market share and began to dominate the Russian trade (See Table 9). Before the First World War timber logs and sawn wood

constituted three-quarters of the total exports. The rest was mainly dairy products (butter). On the imports side there was growing dependence on western manufactured products, especially investment goods, as industrialisation expanded. The Finnish industrialisation had turned into a one-sided process.[7]

The whole economic development in Finland consequently became vulnerable to the fluctuations of the international economy. Earlier, the only economic cycles were generated by domestic harvests. Since the 1870's, however, cyclical swings have taken place in the foreign trade causing severe instabilities in economic development. The expansion of trade relations with the European core countries also caused a balance of payments deficit. As long as the Russian trade was dominant, the Finnish trade balance was positive, but after the 1890's there was a chronic deficit, especially with Germany.[8]

The low level of diversification and strong export orientation of the Finnish industrialisation led to heavy concentration in the leading industries. International slumps eliminated weak export enterprises. Competitiveness and stable development required large-scale production and common pricing policy. Already by the end of the nineteenth century, the most important exports of Finland were in the hands of a few companies, which have since continued to dominate the economic development of the country. A few financial groups were developed to finance exports, around which nearly all the largest private enterprises have been grouped.

Spatial concentration has also increased. The beginnings of manufacturing were scattered around the whole country, usually near to the source of raw materials. The use of steam instead of water power made it possible, however, to locate saw-mills, pulp and paper industries on the coast while the lakes and rivers offered efficient low-cost transportation of logs to the mills. Hence the centre of gravity of industrialisation focussed on the southern and south-western coastal areas, closer to export markets, causing, in the long run, severe regional disparities.

Though industial production grew at a rapid rate until the beginning of the First World War, Finland remained predominantly agrarian. The share of the working population making their living from agriculture had decreased from 85 per cent in 1870 to 70 per cent in 1910 (see Table 12 p. 99), but manufacturing was not able to absorb more than 12 per cent. The landless population had been increasing, and approximately half of the rural population owned no land, one-third were tenants who cultivated land under various lease arrangements and only some 20 per cent were landowners.

The population pressure was relieved by emigration. Before the last decades of the nineteenth century, no significant emigration had taken place. During the 1880's and 1890's some 2 000 people emigrated annually. Thereafter the number grew rapidly. During the years 1900-1915 the annual average was about 15 000. Estimates indicated that over 200 000 people had emigrated by 1920 or six per cent of the total population, mostly to the United States.[9]

The First World War broke the economic links to the European core. During the years 1915-1917 Finnish foreign trade took place almost entirely with Russia. Finnish domestic industry, especially metal and engineering, but also textiles and leather, received from Russia as many army contracts as they could carry out. Also their position in the domestic market strengthened as competition from imports stopped.[10] But there was soon a total collapse of economic relations between the two countries, lasting for over a quarter of a century.

2.1.2 Dependent growth

Finland's political independence was declared in 1917. The result of the civil war in 1918, in which the socialists were defeated, defined the course of economic policy and the pattern of development in the new republic. Agreements on commercial and economic collaboration, that were virtually semi-colonial were made with the Germans, who had occupied the southern parts of

Finland during the civil war. The result of the World War was that instead of becoming a 'colony' of one dominant power, Finland became part of the West-European periphery.

During the inter-war period Finland's role in the international division of labour was consolidated. The country was producing raw and semi-processed wood for exports while becoming a market area for central European trading operations. Independence had created formal conditions for a national tariff and foreign exchange policy, but the external transactions of a small open economy became determined by decisions made in the core areas, and international market forces.

Economic growth in Finland was highly dependent on foreign trade. Most investment goods as well as raw materials were imported. Even half of the food came from abroad at the beginning of the 1920's.[11] Trade was predominantly with the western European countries. Finland became part of the sterling area, reflecting its most dominant export relations. In 1933 the Finnish mark was officially tied to sterling and a number of bilateral trade agreements were concluded. For instance, free access of wood products into the British markets was gained by offering considerable tariff advantages for British industrial products in Finland.[12]

The export sector was extremely narrow and little diversified. Wood industry products constituted between 80-95 per cent of total exports. (Table 10). Hence, forestry became the basic sector determining the progress in the whole economy. By its nature, it is externally oriented, dependent on foreign markets and has relatively few linkages with other manufacturing sectors. Its interests in tariff and foreign trade policy and its dominance in national production have rather hindered diversification and increased the openness and vulnerability of the Finnish economy in relation to the European core.

Table 10. Finnish foreign trade in 1920-1940
(per cent share)

	1920		1930		1940	
Exports						
Agricultural prds	2.5		11.8		10.1	
Timber	6.1		8.1		9.0	
Sawn wood	50.3		41.0		31.3	
Pulp and paper	37.3		34.5		41.6	
Textiles and clothing	0.0		0.5		1.0	
Chemical industry prds	1.1		0.8		1.1	
Metal industry prds	0.8		1.4		3.7	
Others	1.9		1.9		2.2	
Total	100.0		100.0		100.0	
Imports						
Foodstuffs	33.3		26.8		15.2	
Raw materials and semi-manufactures	41.1		42.1		43.7	
Fuels and lubricants	5.9		9.0		9.6	
Investment goods	9.3		8.5		15.8	
Consumption goods	10.4		13.6		15.7	
Total	100.0		100.0		100.0	
Direction	Exports	Imports	Exports	Imports	Exports	Imports
Soviet Union	0.3	0.0	4.5	2.5	0.5	1.4
Sweden	8.2	10.6	5.4	7.4	2.8	11.2
Great Britain	43.0	27.7	38.9	13.6	42.7	18.4
Germany	4.8	16.9	12.5	36.9	14.8	18.1
United States	6.6	21.9	7.6	12.2	9.2	10.4
Others	37.1	22.9	31.1	27.4	30.0	40.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Heikki Oksanen and Erkki Pihkala (1975), Finland's Foreign Trade 1917-1949, Bank of Finland Publications, Helsinki.

The almost complete decline in trade with the Soviet Union (see Table 10) was the main reason why the range of exports narrowed. Manufactured products had previously been sold to the East. The small size of the economy and foreign competition made import substitution difficult. The government sought to promote it for reasons of foreign exchange, employment and defence, but frequently the interests of the export industry carried more weight in short-term policy considerations.

During the twenty years between the World Wars, economic growth in Finland, based mainly on industrialisation, was very rapid. By the end of the 1930's, the volume of industrial production was 300 per cent higher then twenty years earlier - one of the highest growth rates in the world, although one should consider the low starting level. The corresponding figure for Europe, was on average 80 per cent.[13] Reflecting rapid industrialisation, the demand for imported investment goods increased by the end of the 1930's. Capital accumulation was predominantly in Finnish hands, for after independence the strategic mining and forest sectors were taken into national ownership.

The heavy investment in the export sector explains the strong economic growth. The demand for forestry products in the European markets was steadily increasing. Though it was sensitive to cyclical changes - the demand for sawn timber is affected by booms in construction - the general price trend was favourable. The Nordic paper and pulp producers had created Scandinavian cartels in the 1930's, through which markets have been divided, production quotas defined and price competition eliminated.[14] Oligo-polistic pricing policy has given the forest industry stable returns to capital and incentives for further expansion.

Domestic cost factors also favoured expansion of the forest industry. Wood raw material was still relatively cheap. In the rural areas there was an abundance of labour. The labour movement was politically and organisationally weak, and consequently the general Finnish wage level remained lower than that of other Scandinavian or West European countries.

As a result of the strong economic growth during the 1920's and 1930's, industrial unemployment was quite marginal - except during the Great Depression. On the other hand, there was latent unemployment in the rural areas. The extensive land reform programme during the period 1918-1935 eliminated the group of leaseholders and landless population by creating nearly 150 000 new independent smallholdings. The forestry provided subsidiary earnings for these small farmers. Hence, the forest-based

industrialisation slowed down the rate of urbanisation and structural change in the economy. Agriculture still employed 60 per cent of the population (see Table 12 p.99).[15] The structural change of the Finnish economy was slow and painful due to the one-sided, though intensive, growth of the industrial sector.

2.1.3 Finnish-Soviet Economic Relations

The Second World War reorganised Finland's position in the international system both politically and, consequently, also economically. Twice Finland was at war with the Soviet Union, the second time joining the German invasion of Russia. After the war the Finnish security policy was reshaped. Instead of standing as an outmost western bulwark against the East, Finland began to take into consideration the security interests of the Soviet Union in its north-west frontier, culminating in 1948 in the Treaty of Friendship, Co-operation and Mutual Assistance with the Soviet Union. The treaty has since become the basis for improvements in mutual political, cultural and economic relations. The general foreign policy of Finland emphasises neutrality and non-alignment, giving the country the role of a bridge-builder between East and West. This has also offered an opportunity for changing Finland's established role in the international division of labour.

Finland was obliged to pay war reparations during the 1945-1952 period in the form of commodity deliveries; 72 per cent of the reparations goods consisted of the products of shipbuilding, machinery and the metal industries; the rest were paper industry products. Before the war the former industries accounted for only about five per cent of GNP and four per cent of total exports.[16] Naturally, the war indemnities were a heavy economic burden during the post-war reconstruction period. In the long run, however, they greatly assisted the diversification of Finnish industry and formed the basis of renewed trade with the Soviet Union.

In 1947 a commercial agreement was signed, under which most-favoured-nation treatment would be applied to Finnish-Soviet trade. Three years later the first Finnish-Soviet five-year trade and payments agreement was signed. Since the mid-1950's intergovernmental scientific, technical and economic agreements and commissions have been established, and finally in 1977 a long-term (15 year) framework of trade was agreed upon. During the 'cold war' Western countries froze their economic relations with the socialist countries with a trade embargo, but Finland did not take part. Consequently, Finnish industry faced little competition in the Soviet market and was, up to the end of the 1960's, its main western trade partner; even today it is the third largest, after West Germany and Japan. This pioneering role has provided many advantages.[17]

First, Finnish-Soviet trade takes place through barter agreements planned for a five-year period. The bilateral nature of the trade has meant a balance between imports and exports - a deficit in one year can be adjusted in the next. This saves foreign currency and creates no balance of payment problems, though the trade takes place at world market prices. Thus, for example, the oil crisis in the 1970's did not affect Finland's balance of payments directly, but instead increased Finnish exports. Moreover, the planning of long-term deliveries has made economic development more steady.

Secondly, Soviet trade has alleviated the cyclical fluctuations in Finland's foreign trade and economic development. During upswings, exports to the West have typically increased, matched by decreases to the East; during cyclical downswings when the trade to the European core faces difficulties, Finnish industry has searched for compensatory outlets in the Soviet Union.[18]

Thirdly, the composition of trade has been as favourable for Finland as during the 19th Century. Typically, in an infant phase of a production cycle new industries have been nurtured in the protective environment of bilateral trade, but when the product is competitive enough, export is directed into the European core markets. Built up to pay reparations, the

expanding Finnish metal and engineering industry has been able to secure export markets in the Soviet Union. Also the textiles, clothing and footwear industries have increasingly penetrated Soviet markets during the past ten years. These industries tend to be labour-intensive in contrast to the traditional capital-intensive character of Finnish exports. Employment considerations have been very apparent in the inter-governmental joint ventures in which the Finns are offering not only know-how, technical expertise and key equipment, but also labour for building industrial and mining complexes on Soviet soil. These projects have mainly taken place in the border areas and relieved the endemic unemployment situation in those less developed eastern parts of Finland.

While Finland is exporting processed manufactures, four-fifths of the imports from the Soviet Union have consisted of primary products, mainly fuels. The biggest obstacle to expanding Finnish exports has been the lack of demand in Finland for Soviet manufactures. Altogether, by composition Finnish-Soviet economic relations have been highly asymmetric. This has provided Finnish industry, and thus the economy, a sort of core position in this particular section of the international division of labour.

During the 1950's, the share of the Soviet Union in Finland's total trade was on average 20 per cent. Since then, the long-term trend declined, the share reaching 12 per cent at the beginning of the 1970's. After the energy crisis and general world-wide recession in the 1970's, the Soviet Union became once again the most important single trading partner for Finland (see Table 11).

Nevertheless, the dominant economic relations have been with Western Europe. The Finnish economy is structurally tied to the European core and the interests of the dominant sectors have demanded the strenthening of these ties.

2.1.4 Integration to the European Core

The main strategy of Finnish post-war foreign trade policy has been to liberalise Western trade and improve the competitiveness of the export industry in Europen markets. At the same time, there have been obvious limits on commercial integration into the West, because of the basic goal of foreign policy to preserve neutrality and national security. In 1947, Finland refused Marshall Aid when it became clear that the plan had generated an interbloc controversy. As a consequence, it was left out of the OEEC and it stayed out of the Council of Europe, both of which were important integrating institutions in Western Europe. But Finland joined the IBRD and the IMF in 1948 and a year later GATT. Consequently, throughout the 1950's, import tariffs were reduced, and finally in 1957 import regulation and licensing were abolished. The abolition of passport controls inside Scandinavia and the creation of the Pan Nordic Labour Market in 1954 eliminated barriers to Scandinavian labour mobility. The commercial integration into the west was continued in 1961 by Finland's association with EFTA. The most-favoured-nation status in Finnish-Soviet trade was reaffirmed, indicating Finland's aspirations toward equality. However, the tariff advantages for EFTA countries were more significant than for the Soviet Union, whose imports consisted mainly of tariff-free primary products.

In 1968, Finland officially joined the OECD and started to carry out the recommendations of the organisation to free movements of capital and to make international investments easier. Ultimately, in 1973, Finland signed a free trade agreement with the EEC, though there is no 'development paragraph' in the agreement that would anticipate closer forms of economic or political integration in the future. Soon afterwards, an agreement was made on trade and technical co-operation with the CMEA. These agreements, taken together, demonstrate Finland's role as a bridge-builder in East-West economic co-operation and its resolute efforts to keep neutral and thus safeguard national security.[19]

However, besides defensive security interests, offensive economic interests have promoted this whole series of institutional frameworks for external economic interactions. It is evident that the driving force in the Finnish trade liberalisation policy has been the dominant forest-based export industry. The country has remained as one of the leading sources of forest industry products for the European core, the main market being in Great Britain, where over 80 per cent of Finnish exports still consist of processed wood products.

As typical of a small economy with limited factor endowments and domestic markets, the industrialisation process tends to be externally oriented and highly specialised, and, hence, conditioned by foreign demand as well as supply factors. In Finland total exports accounted for about 28 per cent of the GDP in 1981, and imports covered some 29 per cent of total domestic demand. Particularly, in terms of the manufacturing industry, imports accounted for about 33 per cent of total demand and exports 41 per cent of gross manufacturing output. Also in other small industrialised market economies - the Scandinavian countries, Austria and Switzerland - foreign trade covers comparable shares of total output and demand. Differences exist, however, in the pattern of outward orientation reflected in the structural development of industry and the external specialisation pattern.

The reconstruction years after the Second World War created an opportunity to develop a more diversified industrial structure in Finland.[20] The reconstruction took place in the protected framework of a closer economy, and of the new barter-based Soviet trade. Also the direct participation in industry by the state was notable.[21] Since the gradual opening of the economy at the end of the 1950's, the share of trade of the gross production has rapidly increased. Besides the forest industry, the metal and clothing industries in particular were able to increase their exports. The diversification of exports has not, however, been so much the result of a restructuring of the traditional trade relations with Western Europe, but rather an opening up of new markets, mainly in the Soviet Union and

Scandinavia (see Table 11). The exceptionally rapid increase of Finnish exports to Sweden during the 1960's and its diversified composition has partly been the result of the intensive investment of the Swedish clothing industry in Finland and increased sub-contracting relations between the Finnish and Swedish engineering industries.

Table 11. Finnish Foreign trade by major partners and regions, 1953-1981 (per cent share)

	1953	1960	1965	1970	1976	1981
exports						
DMEs	61.6	72.1	72.3	77.8	69.5	63.8
of which Sweden	2.8	4.3	7.1	15.1	17.0	13.4
United Kingdom	21.3	23.8	20.1	17.4	14.2	10.7
West Germany	7.1	11.6	11.3	10.5	9.3	9.1
USA	7.2	4.9	6.0	4.7	2.8	3.7
SOCs	30.5	18.9	20.5	15.7	23.7	26.5
of which Soviet Union	25.4	14.1	15.9	12.3	20.2	24.7
LDCs	7.9	9.0	6.2	6.6	6.8	9.8
imports						
DMEs	56.0	73.7	75.2	75.8	68.1	63.2
of which West Germany	7.8	19.4	18.5	16.5	14.6	12.1
Sweden	4.0	10.2	12.8	16.1	15.9	11.3
United Kingdom	12.4	13.3	13.5	13.1	7.9	8.1
USA	5.4	6.3	6.2	5.2	5.2	7.5
SOCs	34.1	20.2	18.2	16.1	21.8	26.5
of which Soviet Union	16.9	14.2	14.0	12.5	18.5	23.5
LDCs	9.9	6.1	6.6	8.1	10.1	10.3

Sources: Official Foreign Trade Statistics of Finland, respective years.

After the foreign trade liberalisation the balance of trade deficit has become a chronic problem. In particular, there has continously been a trade deficit with West Germany, Japan and the United States, primarily due to high demand for technically advanced investment and consumer goods that has been satisfied by imports from these sources. In the post-war years only after big devaluations has the current account balance in some years

been positive. Finland's less diversified production structure has faced problems in competing in open markets with core economies.[22]

In the short term the deficit in the current account has been filled by foreign borrowing. At the end of the 1950's, Finland's long-term foreign debt was 2 per cent of GDP, in 1965 8 per cent and in 1981 already 20 per cent.[23] In the longer term, the balance of payments adjustment has necessitated changes in the exchange rate. Between 1945 and 1984 there have been thirteen devaluations in Finland, one of the highest figures in Europe. Frequently, exchange rate changes have taken place in connection with the devaluations of the core currencies (sterling, Swedish krona). The purpose of the repeated devaluations has been to maintain the competitiveness of the dominant export industries. However, because of the oligopolistic nature of the international market for forest-based products, the Finnish forest industry has not increased its competitiveness by reducing prices, but rather has acted as a 'price-taker' and thus benefitted in full from the short-term profit potential of a devaluation. This has been one reason why Finnish devaluations have been relatively successful in achieving notable but temporary improvements in the balance of payments.[24]

The long-term consequences of devaluations have been import price increases, multiplying in terms of general price advances. During the post-war period as a whole, prices rose faster in Finland than in most European countries. Between 1950 and 1980 the average annual increase in consumer prices was 8.7 per cent in Finland, compared with 6.2 per cent in the OECD area as a whole.[25]

2.1.5 Structural change of the economy

The post-war development of the Finnish economy has been characterised by relatively strong economic growth and, in particular, substantial structural change. During the period of 1950-80 the average annual growth rate of GNP was 4.6 per cent, while the corresponding figure for the OECD area as a whole was

3.9 per cent. Although the growth has been quite high, it has also been very unstable, fluctuating sharply year after year following international business cycles.[26] Due to the relatively high growth rate, the Finnish GNP per capita (10 680 dollars in 1981) has gradually approached the OECD average, being slightly above, for example, the United Kingdom, Japan and Austria, but below the main core economies in Europe.

In addition to a good average growth performance, the Finnish economy has undergone drastic changes in its structure. The shift away from agriculture towards industrial and service activities has been exceptionally intensive during the post-war period. Around 60 per cent of the labour force worked in the primary sector in 1940 and some 46 per cent still in 1950, while after that, in thirty years time, the share has dropped down to 13 per cent in 1980 (see Table 12). This has represented a transformation which has been much sharper than that undergone by any other Nordic countries or core economies in Europe. Only in some Southern European semi-peripheries, Spain and Italy being the foremost examples, has a very rapid expansion of the manufacturing sector during the post-war years caused as intensive a structural change as in Finland.[27]

Table 12. The Employment Structure in 1870 - 1980 (per cent share)

	1870	1910	1940	1950	1960	1970	1980
Primary (agriculture, foresty fishing)	85.0	70.0	60.0	45.8	35.5	20.3	12.6
Secondary (manufacturing, mining, construction)	6.0	12.0	22.0	27.1	30.3	34.2	33.4
Tertiary (commerce, transport, banking, services)	9.0	18.0	18.0	27.1	34.2	45.5	54.0
Total	100	100	100	100	100	100	100

Source: Statistical Yearbook of Finland, respective years.

In human terms, this transformation has meant a massive shift of employment from the countryside to the urban areas as well as an extensive internal migration from the less developed regions in the east and north of Finland to the south, in particular to the Helsinki region. Industrialisation has taken place mainly in the sourthernmost parts of the country, located nearer the export markets and dominant internal markets. Of the total value added in the industry in 1981 some 70 per cent was produced in the south and south-west regions - which constitute less than one-fifth of the whole land area and 58 per cent of the total population. Consequently there are wide regional variations in the employment structure. In the four developed southern provinces the proportion of the labour force engaged in primary production is less than 10 per cent and in industry about 40 per cent - quite similar to the corresponding figures of developed core Europe. As opposed to this, the northern and central parts of Finland, i.e. the less developed regions, have remained largely dependent upon traditional, mostly smallholder agriculture which has absorbed almost one-third of the total labour force. Small farms have been unable to offer year-round work. Particularly the mechanisation of agriculture as well as forestry - which provides subsidiary earning for small farmers - has increased the relative excess labour in the areas where primary activities still dominate. Moreover, the structure of secondary industry in the less developed regions has been quite unfavourable, the predominant branches showing slow growth rates and high capital intensity (forestry, mining and energy).[28]

After the intense sectoral change the average Finnish distribution of GNP and employment over the three major sectors - agriculture, industry and services - is no longer far from the European average, but nevertheless, the share of agriculture in the total labour force is still higher and the share of the manufacturing industry is lower than the average in the OECD countries. But in Finland the manufacturing employment is still growing, unlike in most other DMEs which have already reached the so-called mature post-industrial stage.[29] The average annual growth rate of industrial production in Finland between 1950-73 was about 6.9 per cent while the corresponding figure in the

OECD area as a whole was 5.5 per cent. Even within the context of the post 1974 recession, this general trend has been apparent: the Finnish manufacturing industry has grown at an annual rate of 3.7 per cent in 1974-80, compared with an average 1.7 per cent in the other DMEs. As a result, it employed some 27 per cent of the country's labour force in 1980, compared with around 20 per cent twenty years earlier, and it covered some 33 per cent of GNP in 1980, whereas in 1960 the share was 29 per cent.

Although it might be possible to illustrate the role played by the manufacturing industry in the Finnish economy during the post-war years as an 'engine of structural change', the real counterpart to the shift from agriculture has been the growth of the service sector. Its share in total employment has increased impressively up to over half of the total labour force (see Table 12). This change indicates, on the one hand, that the level of public services and general welfare have improved. On the other hand, the industrialisation has not been extensive and diversified enough to be able to absorb the surplus labour released from the primary sector, so part of the growth of the tertiary sector has been excessive.[30] Severe structural unemployment and finally emigration are further consequences.

The overall unemployment rate in Finland has continuously been above the OECD average. There has been a surplus of unskilled labour in the Finnish labour market during the whole post-war period, particularly in the less developed regions. Moreover, Finland belongs to the group of labour-exporting countries within Europe. The net emigration since the Second World War has been approximately 300 000 people, i.e. over 6 per cent of the present population. Over 90 per cent of Finnish emigrants have gone to Sweden. Since the creation of common Nordic labour markets and the abolition of passport controls inside Scandinavia in the mid-1950's, there have not been any institutional barriers to hinder emigration. The demand for low-skilled manpower in Sweden, differences in the standards of

living and wage differentials (see Table 7 p. 77) as well as the cultural similarity of the two countries have been factors paving the way for emigration.[31]

Finns living abroad contribute very little to the direct inflow of foreign exchange in the form of remittances since, unlike many other emigrant groups, they take their families with them. Typically, the migration has taken place in two stages. At first, the emigrants move into the more prosperous parts of Finland. There, however, the insecure employment prospects and the housing shortage, on the one hand, and the attractions of work in Sweden, on the other hand, finally lead to a decision to emigrate. In a free labour market the movement of labour is cyclically very sensitive. The outflow of labour from Finland increases when a cyclical upswing occurs in Sweden. During the peak years at the end of the 1960's, emigration reached almost 40 000 people annually, which resulted in an overall population decrease in Finland. Since then the emigration rate has slowed down, and there was actually a net gain from emigration during some years of the 1970's.

By way of conclusion, the specific role of Finland in the international division of labour has, on the one hand, paved the way for industrialisation and economic growth, and, on the other hand, conditioned the industrialisation process and created various unfavourable constraints on the overall economic development. The Finnish path suggests that the highly export-oriented, resource-based growth model does not necessarily lead to increasing peripheralisation, provided the economy is not trapped in this role. The successful translation of this lopsided development pattern into a viable economic structure depends on several factors.

In Finland the key factors alleviating and modifying dependence on the world markets have been its policy of national control of key resources enabling domestic capital accumulation and the subsequent intra-sectoral as well as inter-sectoral diffusion of the inherently enclave-like export industry. Successful agrarian reform and an income distribution policy have enabled a

relatively broad distribution of export receipts within the society. The role of direct state participation in industrial development has been notable not only in declining sectors but also in key sectors of manufacturing. Furthermore, an important factor contributing to an escape from unambiguous world market dependence has been the administered trade relations with the Soviet Union. All these factors have eventually lead to a gradually improving maturity and internal diversification and integration of the Finnish industrialisation process. The semi-peripheral economy has successfully avoided the peripheral development pattern, although the growth and diversification process is affected by specific constraints which may be associated with the external dependency relations.[32]

The concluding observations above are only tentative, demanding necessarily more profound and detailed analysis.[33] Here, however, the major interest is not the characterisation of Finnish semi-peripherality as such, but how Finland's specific role in the international division of labour is affected when the country is faced with new industrial competition emerging from the peripheral economies of the Third World. For this inquiry it is necessary to examine in a more detailed way the specific pattern of international specialisation in Finland.

2.2 Pattern of international specialisation

2.2.1 Measuring the specialisation pattern

In a quantitative analysis several indicators of international specialisation may be constructed. The indicator used here simply measures excess production in various manufacturing sectors. Hence, the gross domestic output of industry (labelled as O_i) is related to apparent domestic consumption ($C_i = O_i + M_i - X_i$, where M_i denotes the import values of manufacturing sector and X_i export values). Export sectors are those in which production surpasses total domestic demand ($O_i > C_i$) and import sectors are vice versa so that production fails to come up to total consumption ($O_i < C_i$).[34]

The indicator thus constructed is supposed to describe patterns of comparative advantage within industrial branches. The more production stands above domestic demand, the greater the comparative advantage, and the more domestic consumption is satisfied by imports, the smaller the comparative advantage. Accordingly, a rough impression of the changes in Finland's pattern of comparative advantage (or disadvantage) in different manufacturing sectors during the 1970's can be obtained from Table 13.[35]

A high degree of international specialisation can be observed in the Finnish manufacturing industry. Typically in a semi-peripheral economy industrialisation is based on a country's natural resource endowment or ample labour supply. As described in the preceeding sections the industrialisation process in Finland has originated from the utilisation of abundant forest resources. The forest industry still continues to be one of the leading industrial branches and the dominant export sector. The international specialisation index is above average in sawn wood, pulp, paper, wood manufactures and furniture, which together account for 41 per cent of Finland's total exports in 1981. Within the forest industry there has been a gradual upgrading towards more processed products, but nevertheless it is a resource-based branch with relatively little value-added content. During the post-war years the preponderance of the forest sector has diminished, but it still is the dominant export sector.

Besides another resource-based industry, non-ferrous metals (which is not included in manufactures), the only other clear-cut manufacturing export sector is garments (clothing and footwear). In contrast to the forest sector, its relative importance in exports has increased during the 1970's as indicated by the international specialisation index (see Table 13). All other industrial branches are more or less import dominated, meaning that domestic production fails to come up to total consumption. In terms of functional composition, the

Table 13. International specialisation index in Finnish manufacturing, 1970, 1976 and 1981

	O/C 1970	O/C 1976	O/C 1981
Labour-intensive intermediates			
leather prds	76.5	65.2	63.5
rubber prds	62.9	64.4	65.6
wood mnfs	215.6	164.4	176.4
textiles	74.4	74.3	70.9
non-metal mineral prds	92.5	96.6	99.2
Subtotal	94.3	92.7	96.9
Capital-intensive intermediates			
chemicals	72.5	79.6	86.2
pulp	180.9	139.4	147.9
paper	456.0	316.8	311.9
iron and steel	65.9	84.4	103.7
Subtotal	140.2	133.5	144.7
Consumer goods			
pharmaceuticals	59.8	67.4	90.7
furniture	115.2	117.5	135.2
clothing	135.1	170.6	238.5
footwear	112.2	128.8	161.3
instruments	30.2	33.3	46.7
misc. light mnfs	90.4	96.8	102.0
Subtotal	94.2	101.6	115.1
Capital goods			
basic metal prds	89.7	93.2	103.4
industrial machinery	71.6	82.0	88.1
computing machinery	14.1	15.7	33.7
tele, TV, radio appar.	76.7	86.8	93.2
electrical machinery	68.0	69.2	86.3
transport equipment	73.7	95.8	91.6
Subtotal	73.7	84.8	89.1
Total manufactures	99.8	103.0	112.3
sawn wood	263.2	183.9	288.4
non-ferrous metals	98.8	124.8	125.9
fuels	42.8	47.0	46.9

Note: O/C index stands for the value of gross output in industry divided by the apparent consumption $(O_i / (O_i + M_i - X_i)) \cdot 100$.

Sources: Appendix Tables 3 and 7.

strongest import dependency is felt in some labour-intensive intermediates (textiles, leather and rubber products) and in the capital goods sector.

A marked asymmetry is characteristic of the Finnish trade structure: the product pattern of imports differs noticeably from that of exports. This dichotomy makes the whole economic development quite volatile, varying with demand conditions in international markets. In Finland a gradual diversification within the industrial structure is, however, taking place. The import dependency has been reduced during the 1970's in all the metal industry branches, including the whole capital goods sector, and, on the other hand, the overwhelming dominance of the forest sector in exports has relatively decreased. This decline in the extent of specialisation in foreign trade and more balanced industrial production structure can be indicated by changes in the standard deviation of the international specialisation index. It has, indeed, noticeably decreased from 91.9 in 1970 to 65.0 in 1981.

2.2.2 Factor-intensity comparisons

The gradual diversification of Finnish industry as well as the foreign trade structure is a result of both the deepening of the industrial base (increased processing) and the widening of the industrial base (spreading into new fields). These changes are reflected in the sectoral and functional composition of the industrial structure. The branches of the manufacturing industry may also be characterised by different proportionate inputs of the factors of production or by specific organisational and locational factors. Hence, the gradual diversification process also implies changes in the pattern of international specialisation in terms of relative factor proportions.

The production factors may be classified and defined in various ways. Here, an attempt is made to analyse changes within the branches by five inputs - physical capital, labour, raw

materials, energy and research and development activity - as well as by wage level, labour productivity, proportion of women in the labour force, size of firms and regional concentration.

The indicators were constructed as follows. The relative capital intensity is measured as the industry's fixed capital per person employed. The value of fixed capital is derived from the fire-insurance rates of the branches. The indicator of capital intensity was formulated by relating the capital intensity of each branch to the average figure of all manufacturing industries.

The inverse of the capital intensity may be regarded as an approximation of relative labour intensity. Here, however, the indicator of labour intensity is measured as the sum of wages and salaries divided by the total value added of each branch.

The raw material intensity is simply defined as the value of consumed raw materials per gross unit of production by branches.

Two measures of relative research and development input are formulated. One is the number of research personnel employed divided by the total labour force in each industry. The other is the share of R & D expenditure with respect to the value added. The R & D indicator used here is a combination of these two measures.

The wage level of industry is measured by wages divided by the number of wage earners.

The relative labour productivity is indicated by the value added per person employed.

The energy intensity measure is the sum of purchased heat energy, electric energy and fuel divided by the value added of each branch.

The female intensity ratio is figured by relating the number of women employees to the total labour force by industries.

The relative firm size indicator is measured as total employment divided by the number of establishments in each manufacturing branch.

Finally, the LDR intensity indicator illustrating the relative concentration of the labour force in the less developed regions of Finland is measured as employment of LDRs divided by the total employment of each branch. The LDRs include all the provinces of Finland except the four southernmost provinces: Uusimaa, Turun and Porin, Häme and Kymi.

The examination is performed at a relatively high level of aggregation of manufacturing branches. Every branch considered is composed of a heterogeneous variety of production activities that frequently have different factor intensities. Hence, in this type of general examination, specific features of manufacturing sub-sectors are overlooked. However, the data presented can highlight the relative orders of magnitude between the main sectors.

Indicators of relative intensity of each of the production factors in the separate branches of industry are presented in Appendix Table 2. The indicator expressing wage level differentials has the smallest variation between manufacturing branches. On the other hand, the distribution of R & D resources is characterised by extremely heavy concentration in a very few industries. Seven branches - within chemical and capital goods industries - account for about three quarters of the total industrial R & D expenditures. Similarly, the energy intensity is solely concentrated in capital-intensive intermediate processing industries. Furthermore, a fairly clear pattern exists of how the production factors are combined in each branch. In Finland the industries with the highest capital intensity are raw material and energy intensive; they pay the highest wages and show the highest degree of labour productivity and the size of undertaking is large. On the other end, labour

intensive branches have the lowest productivity rate and show the lowest relative wage levels, have frequently small plant size and are female intensive.

According to the international specialisation index defined above, the manufacturing branches may be classified in rank order so that export and import sectors are examined separately. This classification is related to indices of factor intensity in Table 14. The relative factor intensity is labelled as (+) or (-) when the branch indicator is above or below average.

Table 18. Summary of relative factor intensities related to international specialisation of Finnish manufacturing industries, 1981

	international specialisation index (O/C)	R & D intensity	capital intensity	labour intensity	raw material intensity	energy intensity	wage level	labour productivity	female intensity	firm size	LDR intensity
Export sectors											
paper	277.8	-	+	-	+	+	+	+	-	+	-
(sawn wood)	256.8	-	+	+	+	-	-	-	-	-	+
clothing	212.4	-	-	+	-	-	-	-	+	-	+
wood mnfs	157.1	-	-	+	+	-	-	-	-	-	+
footwear	143.7	-	-	+	+	-	-	-	+	-	-
pulp	131.7	-	+	-	+	+	+	+	-	+	+
furniture	120.4	-	-	+	-	-	-	-	-	-	+
(non-ferrous metals)	112.1	+	+	+	+	+	+	-	-	+	+
Import sectors											
iron and steel	92.4	-	+	+	+	+	+	+	-	+	+
basic metal prds	92.1	-	-	+	-	-	-	-	-	-	+
misc. light mnfs	90.8	-	-	-	-	-	-	+	+	-	-
non-metal mineral prds	88.3	-	+	-	-	+	+	+	-	-	-
tele, TV, radio appar	83.0	+	-	+	+	-	-	-	+	+	-
transport equipment	81.6	-	-	+	+	-	+	-	-	+	-
pharmaceuticals	80.8	+	-	-	-	-	-	+	+	+	-
industrial machinery	78.5	+	-	+	-	-	+	-	-	+	-
electrical machinery	76.9	+	-	+	-	-	-	-	-	+	+
chemicals	76.8	+	+	-	+	+	+	+	-	-	-
textiles	63.2	-	-	+	-	-	-	-	+	-	-
rubber prds	58.4	+	-	+	-	-	-	-	+	+	-
leather prds	56.5	-	-	+	+	-	-	-	+	-	-
instruments	41.6	+	-	-	-	-	-	+	-	-	-
computing machinery	30.0	+	-	-	-	-	+	+	-	-	-

(+) = factor intensity is above average

(-) = factor intensity is below average

R & D intensity = R&D expenditure/value added + R&D personnel/labour force;
capital intensity = fixed capital/labour force;
labour intensity = (wages + salaries)/value added;
raw material intensity = raw materials/gross production;
energy intensity = energy costs/value added;
wage level = wages/wage earners;
labour productivity = value added/labour force;
female intensity = women employees/labour force;
firm size = labour force/establishments;
LDR intensity = LDR labour force/labour force

Source: Appendix Table 2.

In terms of factor intensities, the pattern of international specialisation of Finnish industry is quite distinct. The dominant export branches are either highly capital- and energy-intensive, relatively strandardised industries that are resource based with large plants and produce primarily semi-processed goods (pulp, paper, non-ferrous metals) or low-skill, labour-intensive industries with relatively small undertakings (clothing, footwear, wood manufactures. furniture). The import dependence, on the contrary, is strongest in sectors with a high degree of processing and R & D intensity. Apart from requiring high skills, these industries are often relatively labour intensive. Notable exceptions to this association are leather products and textiles, which are relatively standardised semi-manufactures, but nevertheless Finnish domestic consumption is satisfied by imports to a high degree. The import sectors tend regionally to be located in the southern parts of the country, while the export sectors are relatively more represented in the less developed regions of Finland utilising there primarily ample natural resources.

The same pattern of international specialisation presented above may be seen in the correlation matrix in Table 15. Since the ranking of the individual industries by their factor intensities is rather stable over time, the figures given can be assumed to be representative by and large of the whole 1970's. The statistical correlation between the international specialisation index and capital and raw-material as well as energy intensities is quite notable during the 1970's. This has been linked to the firm size, too. A small decline has occurred, however, in these correlations reflecting the gradual diversification process that has taken place within the Finnish manufacturing industry. A peculiar feature is that this diversification has increased both female intensity and LDR intensity in the Finnish specialisation pattern. Another consistent feature to be seen in the correlation matrix as well as in the previous Table 14 is the quite strong negative correlation between international specialisation and human capital and the skill intensity (measured by the R & D intensity indicator) of the branches.

Table 15. Simple correlation coefficients between international specialisation in Finnish manufacturing and factor intensities by branches, 1970, 1976 and 1981

	O/C 1970	O/C 1976	O/C 1981
R & D intensity	-0.316	-0.395	-0.368
Capital intensity	0.473	0.399	0.328
Labour intensity	-0.253	-0.141	-0.124
Raw material intensity	0.421	0.441	0.393
Energy intensity	0.308	0.275	0.232
Wage level	0.216	0.103	0.014
Labour productivity	0.253	0.123	0.072
Female intensity	-0.031	0.081	0.200
Firm size	0.361	0.318	0.255
LDR intensity	0.302	0.358	0.438

Sources: Table 13 and Appendix Table 2.

The conclusion to be drawn is that Finnish international specialisation is predominantly based on mature, non-science-based sectors benefitting either from local natural resources or relatively cheap labour. These industries are not in the most innovative sectors that lead technological development. Instead, design and production methods are standardised and productivity growth is also slow. This pattern of international specialisation is not quite typical among advanced industrialised economies.

The openness and the low-level of diversity in the export structure is partly related to the size of the economy. Small countries, because of the widespread existence of economies of scale, cannot produce as wide a range of products as larger countries. However, in a small core country the specialised branch structure is primarily concentrated in technically advanced industries with a high value added and often with a high labour intensity. [36] This type of industrial structure determines the dominant role of core economies in the international division of labour.

Finland, instead, is among those developed countries, that at present have an 'intermediate' position in the international division of labour. The structural characteristics of its foreign trade and industrial specialisation differ ostensibly from that of most other DMEs, although it has steadily moved closer to them during the 1970's. Still today the Finnish position in the international division of labour has, in fact, some similarities with the pattern of international manufacturing specialisation of the LDCs.[37]

Within the context of semi-peripheral economies, aggregated figures, such as presented above, may conceal fundamental dissimilarities in the composition of foreign trade by destinations. The form of international specialisation in one regional direction may be compensated by a totally opposite pattern of specialisation in another direction, and, thus, aggregated figures are frequently too comprehensive. Hence, when analysing restructuring constraints of the Finnish manufacturing industry in relation to changing external conditions, it is necessary to differentiate more clearly the characteristics of the trade structure by destination.

2.2.3 Trade structure by destination

Finland's foreign trade is heavily concentrated in Europe and especially in its neighbouring countries. The growth of demand by Finland's major Western trading partners, Great Britain and Sweden, has remained weaker than average for a considerable time. This slowdown and the abrupt increase in the world oil prices have been the main factors speeding up the Soviet trade during the 1970's. These changes in the world economy have also led at the end of the 1970's to a reorientation of Finnish trade towards new markets in the Third World, notably those of the oil-producing countries. The share of the LDCs in the total Finnish exports increased marginally from 6.2 per cent in 1965 to 6.8 per cent in 1976, but thereafter the growth has been more intense, reaching a share of 9.8 per cent by 1981. As

far as imports are concerned, the LDC proportion in the total has increased more steadily from 6.6 per cent in 1965 to 10.3 per cent in 1981 (see Table 11 p. 97).

Despite this growth, Finland's trade relations with the LDCs are still in a quite embryonic state compared to that of the other DMEs. Among the OECD countries, around 27 per cent of their total exports go to the LDCs and some 32 per cent of their imports originate there (compare with Figures 1 and 2 and see Table 16). These OECD average figures are truly dominated by the big countries, such as Japan and the United States, that have

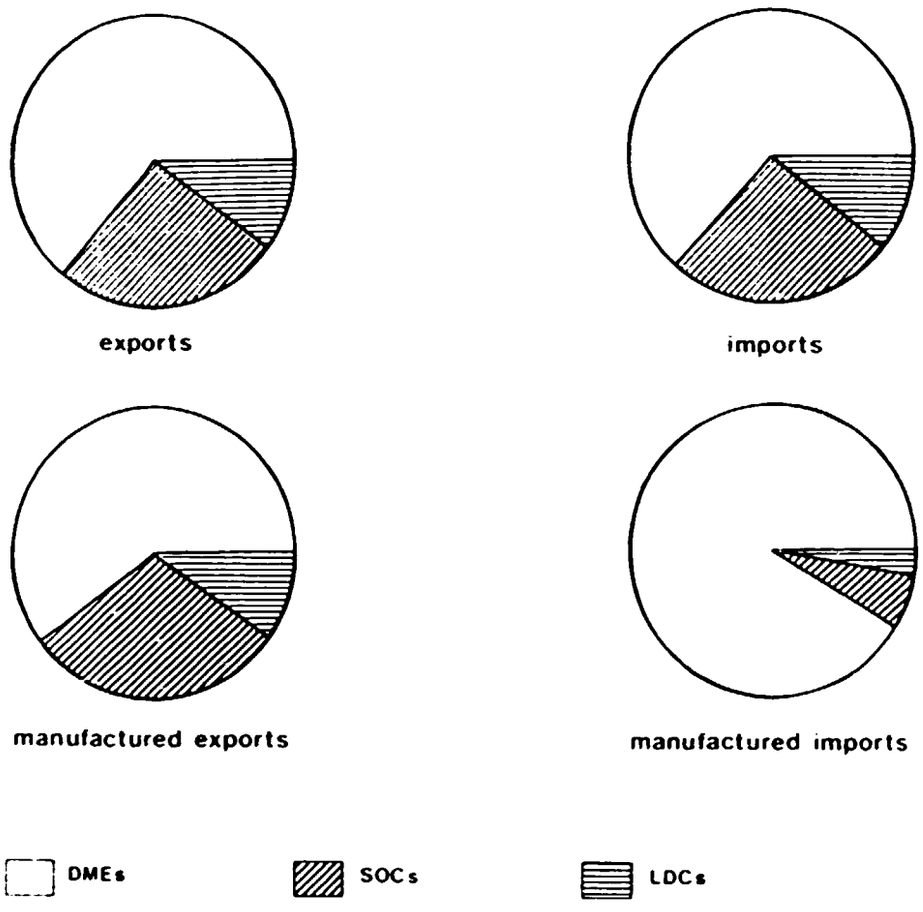
Table 16. Foreign trade with LDCs by main DMEs, 1981 (per cent)

	Exports to LDCs in total exports	Imports from LDCs in total imports	Trade ratio with LDCs*
Japan	48.4	63.5	-9.8
United States	38.3	45.2	-17.2
Spain	33.2	45.8	-37.0
Australia	32.4	26.4	5.7
Greece	30.8	24.9	-25.0
New Zealand	28.9	23.6	6.7
Italy	28.7	33.6	-16.0
France	26.6	27.8	-10.8
United Kingdom	23.2	17.8	11.9
Switzerland	20.9	9.0	33.7
West Germany	17.8	19.7	-1.2
Sweden	16.6	15.3	3.2
Portugal	16.6	27.0	-58.7
Denmark	14.8	10.1	13.3
Austria	14.1	11.9	-5.6
Belgium	11.8	16.6	-21.7
Ireland	11.8	5.2	24.9
Netherlands	11.4	23.5	-32.7
Canada	11.3	14.2	-8.7
Finland	9.7	10.4	-4.4
Norway	8.1	7.2	12.6
OECD total	26.7	32.2	-11.3

Note: *Trade ratio is defined as net trade balance as percentage proportion of total trade, i.e. $[(X-M)/(X+M)] \cdot 100$

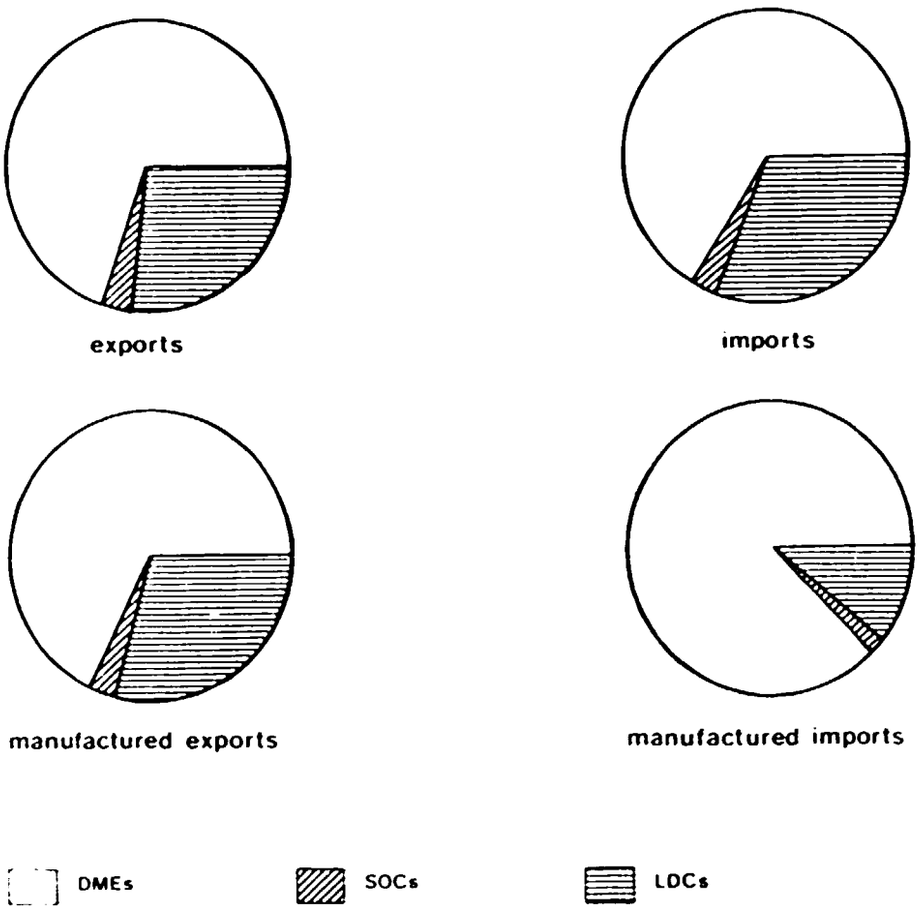
Source: OECD, Foreign trade by commodities, 1981.

Figure 1. Finnish foreign trade by major regions, 1981



extensive trade relations with the Third World. Nevertheless, compared to the other DMEs, too, Finland is lagging considerably behind, since only in Norway and Ireland is the foreign trade with the LDCs more modest than in Finland.

Figure 2. OECD trade by major regions, 1981



There may be several explanations. For a small, geographically distant, semi-peripheral economy it has been difficult to establish a comprehensive trading network with the Third World countries. This has been partially compensated by a large share of indirect imports and exports. In fact, some 50 per cent of the Finnish imports from the LDCs come via third countries, notably via leading core economies. The most important intermediate countries have been the United States, West Germany, Great Britain, Sweden, Switzerland, the Netherlands, France and Denmark.[38]

Another explanation for the low trade volume with the LDCs may be that the high share of socialist countries in Finland's foreign trade is at least a partial substitute for the low LDC share. Finnish trade relations with the East European countries, particularly with the Soviet Union, are exceptionally extensive compared to the other DMEs (Figures 1 and 2). Furthermore, there is a marked similarity in the composition of the trade flows with socialist countries and LDCs. The best example is that the bulk of Finland's oil requirements is purchased from the Soviet Union, while the other DMEs buy crude oil predominantly from the LDCs.

On the import side, many products which the socialist countries offer compete with the LDCs. These are mainly raw materials, but also some resource-based or labour-intensive standardised manufactures. In fact, only about 16 per cent of imports from the LDCs and 12 per cent from socialist countries comprise manufacturing products, while the comparable figure in terms of imports from DMEs is over 80 per cent.

When the changes in import structure between socialist countries and LDCs are compared with each other, it may be seen that the composition has shifted in opposite directions. The share of manufactured goods in Finnish imports from socialist countries has tended to decline steadily since the beginning of the 1960's. This process was especially speeded up by the large price increases in crude oil and fuels. In contrast, the share of manufactures in imports originating from the LDCs has increased during the last twenty years. The most notable changes have taken place during the last five years. Between the years 1976 and 1981 the relative shares of manufactured goods in Finnish imports from the LDCs have doubled (see Table 17). If mineral fuels and related materials are excluded, this transformation is even more drastic. The proportion of manufactures in Finnish non-oil merchandise imports from the LDCs has risen from about 8 per cent in 1970 to 35 per cent in 1981. As far as the composition of Finnish exports is concerned, the country group pattern is more symmetrical than in imports.

Table 17. Share of manufactures in Finnish foreign trade by major regions, 1953-1981 (per cent)

	DMEs		SOCs			LDCs			Total trade	
	imports	exports	imports	non-oil imports	exports	imports	non-oil imports	exports	imports	exports
1953	71.4	53.0	27.3	40.3	78.8	11.6	11.8	81.7	50.4	63.2
1960	82.5	56.6	27.8	45.2	85.4	7.4	8.7	90.2	66.9	65.1
1965	84.2	70.5	24.6	43.5	87.0	6.0	6.9	92.3	68.2	75.3
1970	86.5	76.0	21.7	45.2	91.1	6.3	8.6	89.3	69.6	79.2
1976	86.6	76.9	17.2	55.1	93.2	7.8	14.0	81.8	63.5	81.1
1981	80.3	73.4	12.4	62.5	87.2	15.6	38.8	77.9	55.6	77.5

Source: Appendix Table 3.

Manufactured products dominate the export structure in each direction, although it has the lowest share in the exports to the DMEs. If sawn wood is included, some 94 per cent of the total exports to the LDCs comprise manufactures, while the corresponding figures were 88 per cent in exports to socialist countries and 83 per cent to DMEs in 1981.

The relative shares quoted above tend, however, to conceal substantial quantitative differences between separate trade flows. The degree of the manufactured import penetration as well as the amount of exports differ significantly by country groups. The DMEs are overwhelmingly the major source of manufactured imports in Finland. They account for over 90 per cent of the total. Hence, the LDC share was no more than 3 per cent in 1981, although it has increased quite steadily during the 1970's (see Table 18 and Figure 1). In terms of Finnish exports of manufactured goods, the markets of both LDCs and socialist countries are relatively more important than mere import shares would suggest. Already some 10 per cent of the total manufactured exports are destined for the LDCs and almost 30 per cent to the socialist countries.

Table 18. Share of major regions in Finnish trade of manufactures, 1953 - 1981 (per cent)

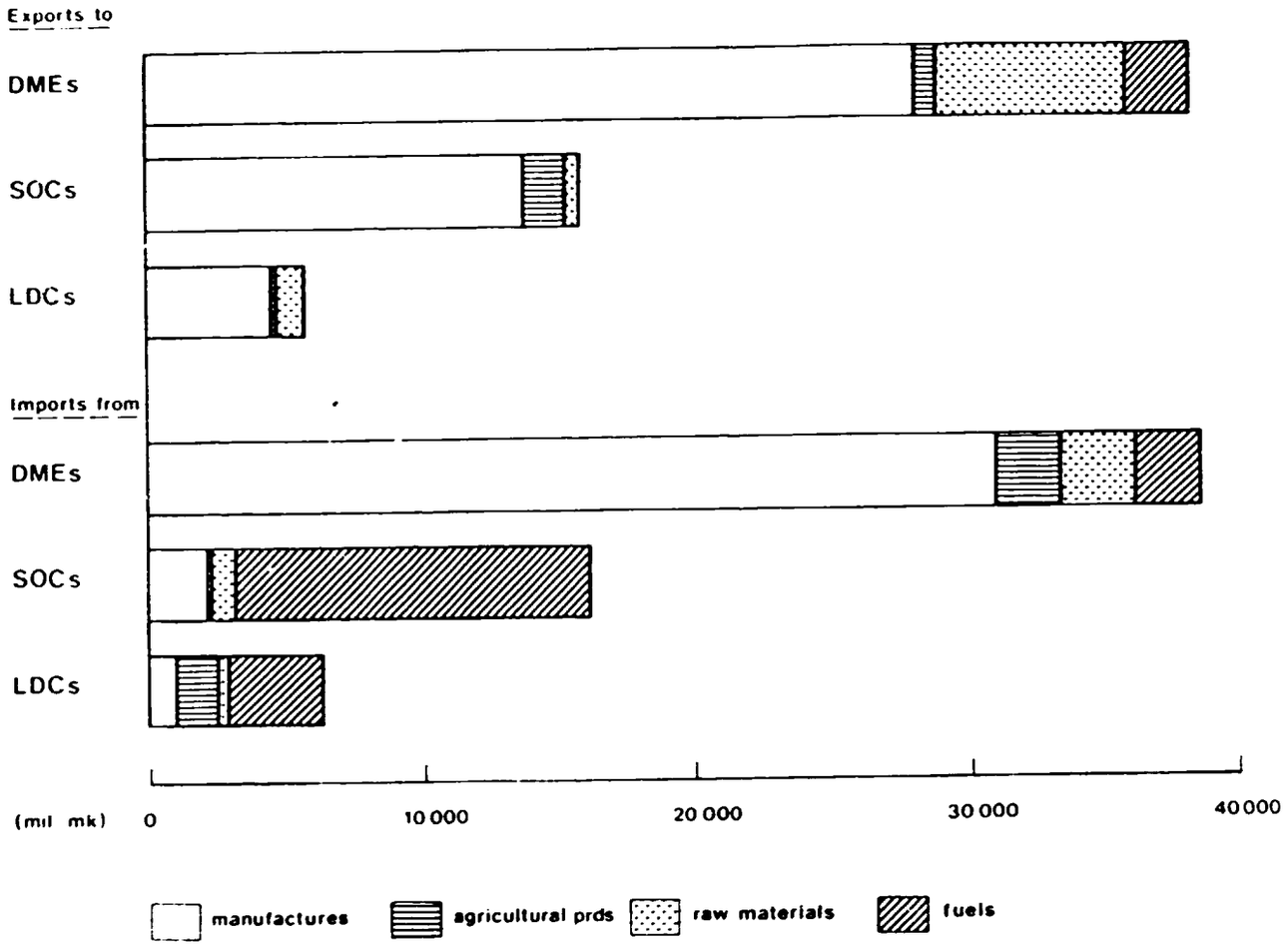
	Exports			Imports		
	DMEs	SOCs	LDCs	DMEs	SOCs	LDCs
1953	51.7	38.0	10.3	79.3	18.5	2.3
1960	62.7	24.8	12.5	90.9	8.4	0.7
1965	68.7	23.7	7.6	92.8	6.6	0.6
1970	74.6	18.0	7.4	94.3	5.0	0.7
1976	65.9	27.3	6.9	92.9	5.9	1.2
1981	60.4	29.8	9.8	91.2	5.9	2.9

Source: Appendix Table 3.

The differences in the magnitude ot the respective trade flows are well illustrated in Figure 3. Altogether, in terms of Finland's overall manufactured trade, the LDCs play a very meagre role. In fact, the import share of 3 per cent as well as the export share of 10 per cent by the LDCs are the lowest proportions (except Ireland) within the whole OECD area. In terms of the DME manufactured exports, on the average the Third World is a quite significant market area, accounting for about 30 per cent of the total exports. Correspondingly, some 11 per cent of the OECD countries' manufactured imports originate from the LDCs (Figures 2 and 4).

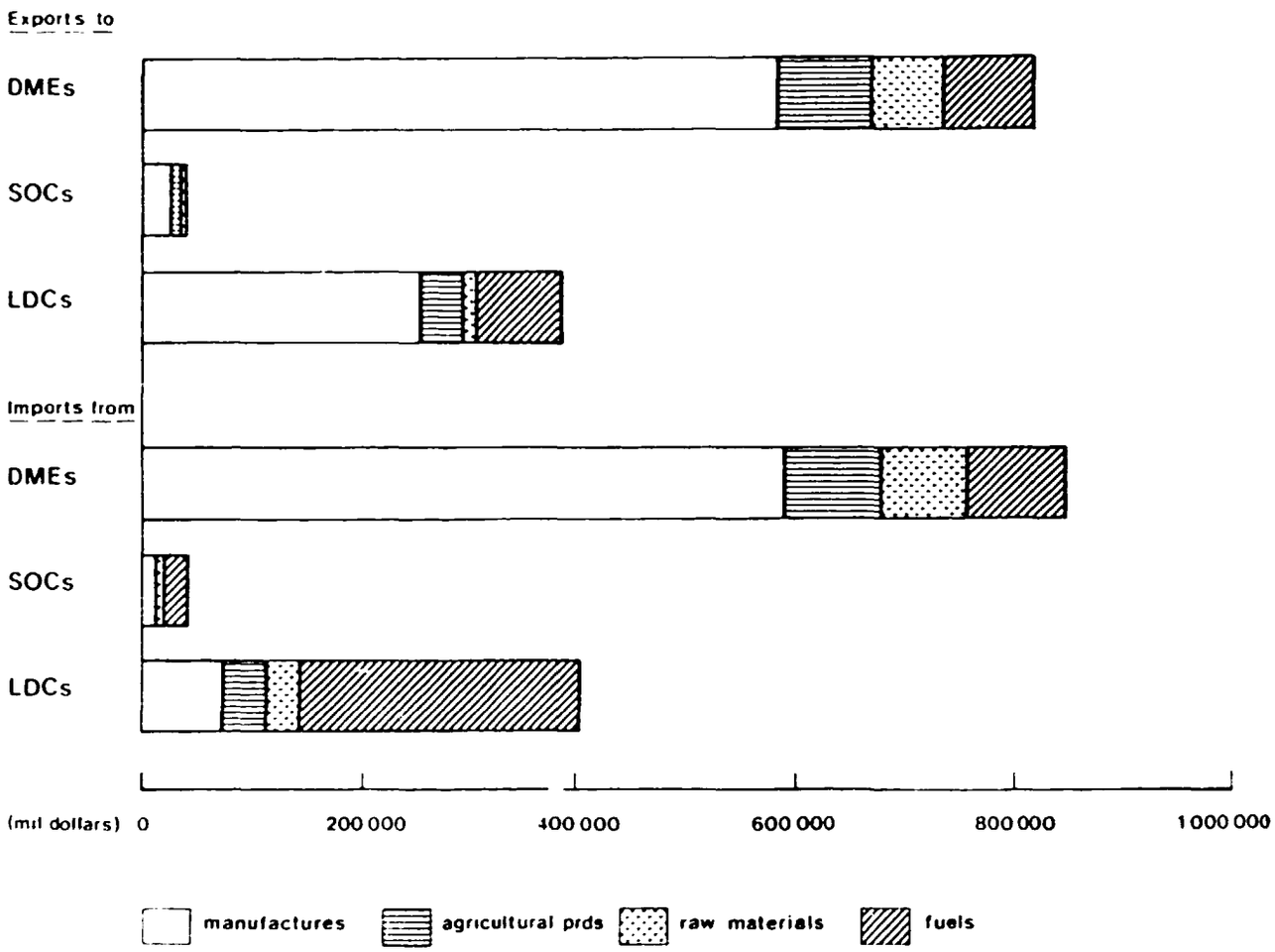
The extent to which the LDCs have succeeded in penetrating the DMEs has been described at times as a 'severe import threat' to industries in the latter economies. A detailed examination of the performance of LDCs as suppliers of manufactures suggests, however, that this fear may be exaggerated. The LDCs account for no more than one-tenth of the DME manufactured imports. Furthermore, their share is only about 3 per cent of the domestic sales of manufactured goods in DMEs. In the case of Finland, these proportions are even more insignificant. In 1981 only 2.9 per cent of Finnish manufactured imports and 1.0 per

Figure 3. Structure of Finnish trade by major regions, 1981



cent of the total domestic manufactured demand was covered by the LDCs (Table 19). Moreover, manufactured trade between Finland and the LDCs has been highly unbalanced, although the relative trade surplus has slightly declined. Finnish exports of manufactures to LDCs were over four times larger than the reverse flow, although this ratio has become somewhat more even - being about ten to one in 1970 - as the trade has increased during the course of the 1970's.

Figure 4. Structure of OECD trade by major regions, 1981



As typical of a latecoming, semi-peripheral economy, the expansion of domestic manufactured production in Finland has been predominantly dependent on changing demand and supply conditions in the more advanced core economies. About a third of the apparent domestic consumption of manufactures is satisfied by imports, which originate almost wholly from the DMEs. The manufactured import penetration from the DMEs is over thirty times larger than the imports from the LDCs (Table 19). Furthermore, while a trade surplus in Finnish manufactured trade

Table 19. Dependency structures in trade and production of manufactures by Finland, 1970, 1976 and 1981

Manufactured production and trade (mil.mk)	1970	1976	1981
A gross production	21 507.9	58 733.8	115 544.2
B total imports	7 708.4	18 141.8	34 080.0
C total exports	7 674.1	19 870.0	46 749.0
D imports from DMEs	7 265.4	16 847.2	31 074.0
E exports to DMEs	5 724.3	13 087.4	28 243.6
F imports from SOCs	386.5	1 071.1	2 019.3
G exports to SOCs	1 382.8	5 419.3	13 916.3
H imports from LDCs	56.5	223.5	986.7
I exports to LDCs	567.1	1 363.3	4 589.1
J trade surplus/deficit (C-B)	-34.3	1 728.2	12 669.0
K trade deficit with DMEs (E-D)	-1 541.1	-3 759.8	-2 830.4
L trade surplus with SOCs (G-F)	996.3	4 348.2	11 897.0
M trade surplus with LDCs (I-H)	510.6	1 139.8	3 602.4
N apparent consumption (A+B-C)	21 542.2	57 005.6	102 875.2
1. Imports to gross production (B/A%)	35.8	30.9	29.5
2. Import penetration (B/N%)	35.8	31.8	33.1
3. Import penetration from DMEs (D/N%)	33.7	29.6	30.2
4. Import penetration from LDCs (H/N%)	0.3	0.4	1.0
5. Propensity to export (C/A%)	35.7	33.8	40.5
6. Propensity to export to DMEs (E/A%)	26.6	22.3	24.4
7. Propensity to export to LDCs (I/A%)	2.6	2.3	4.0
8. LDC imports to total imports (H/B%)	0.7	1.2	2.9
9. LDC exports to total exports (I/C%)	7.4	6.9	9.8
10. Export coverage of imports (C/B%)	99.6	109.5	137.2
11. Export coverage of imports from DMEs (E/D%)	78.8	77.7	90.9
12. Export coverage of imports from SOCs (G/F%)	357.8	506.0	689.2
13. Export coverage of imports from LDCs (I/H%)	1 003.7	610.0	465.1
14. Relative trade deficit to DMEs (K/E%)	26.9	28.7	10.0
15. Relative trade surplus to SOCs (L/G%)	72.0	80.2	85.5
16. Relative trade surplus to LDCs (M/I%)	90.0	83.6	78.5

Sources: Appendix Tables 3 and 7.

exists with the LDCs as well as with the socialist countries, the manufactured trade balance with the DMEs has been continuously in a deep deficit.

Altogether, the LDCs play a marginal role as suppliers of manufactured goods to the Finnish markets and, similarly, their markets absorb only about 4 per cent of the Finnish manufactured gross production. This blunt picture of the impact of LDC industrialisation on the Finnish economy may, however, be qualified by a deeper examination of dynamism and the importance of specific product categories as well as particular developing countries.

2.2.4 Intensity of sectoral change

The first question to be asked is how the gradually expanding trade relations have affected the sectoral pattern of manufactured trade in each destination. In short, there have been obvious changes in the sectoral composition of manufactured exports and imports brought about by inter-industry differences in growth rates. For the purpose of a quantitative assessement of the degree of these structural changes by different directions over a given period, it is convenient to utilise an index of the overall magnitude of such changes. In order to keep the presentation simple and minimise the computations involved, the desired focus on relative growth rates is provided by analysing changes in the shares of individual branches in total manufacturing exports and imports between two periods. Hence, the summary measure of structural change (SC)[39] chosen here is

$$SC = 0.5 \sum_i \left| a_{i,t+a} - a_{i,t} \right|$$

where (SC) stands for half the sum of the absolute difference in shares for all (a_i) and where (a_i) denotes the percentage share for each branch (i) in periods (t) and (t+1) of the total manufactured exports (imports) for various country groups. In Table 20 a comparison is made between Finland and the OECD countries as a whole in terms of the degree of change in their trade pattern by destination during the 1970's.

Table 20. Indices of structural change for Finnish and OECD manufactured trade with major regions, 1970 to 1981

	Finland		OECD
	1976 to 1981	1970 to 1981	1970 to 1981
Exports to			
DMEs	6.8	15.8	8.5
SOCs	23.7	27.4	11.6
LDCs	16.3	30.2	6.9
Imports from			
DMEs	6.6	10.1	8.6
SOCs	18.4	28.0	19.4
LDCs	22.0	24.1	22.3

Sources: Appendix Tables 3 and 4.

During the 1970's in Finland as well as in the whole OECD area, manufactured trade relations with the LDCs and the socialist countries have experienced a higher degree of structural change than trade with and among the DMEs themselves (except OECD exports to LDCs). Finland differs from the more 'normal' case in terms of the relative intensity of these changes. In relative terms, a more rapid structural change has taken place in the composition of Finnish manufactured trade with all three major country groups - excluding imports from the DMEs - than the average in the OECD area. This may reflect the fact that, in general, the smaller countries (likewise the smaller trade flows) show a higher degree of relative change than the larger ones.[40] It is particularly interesting to note the intensity of the changes in the OECD countries' manufacturing import structure from the LDCs and the socialist countries vis-à-vis the relative stability of their export structure. This is also reflected in the continuity of the Finnish import structure of manufactures from the DMEs. In the Finnish case the intensity of changes in the manufactured import structure is in line with the normal development of the OECD area, while the export structure has changed to a markedly higher degree.

The next question comes to mind: What is the content of these structural changes? This leads us to a more detailed analysis of the international competitiveness of the manufactured industry by specific branches.

2.3 Competitiveness of manufacturing industry

2.3.1 Revealed comparative advantage

The factor proportions theory of international trade asserts that a country will export goods made with its relatively abundant factors of production (labour, capital, natural resources, know-how, etc.) and import goods requiring factors which are relatively scarce in that country. Hence, its competitiveness is based on factor endowments reflected in differences in relative factor prices and subsequent relative production costs.

Besides production costs and product prices, the real competitiveness of an economy is also affected by several non-price factors. [41] These include such factors as product quality and differentation, delivery times, design, ancillary services, market promotion and terms of payments. The higher the degree of processing and technological intensity of products, the greater the importance of these non-price factors as determinants of competitiveness. In particular, high quality, skill-intensive products in the international manufactured trade are less sensitive to price competition compared to primary products or semi-processed manufactures.

Moreover, in the present-day world economy there are a number of other features that call for qualifications in the explanation of trade patterns in terms of pure comparative advantage. These include protection, preferences and special support measures for industrialisation and exports. Furthermore, trade by bilateral agreements, notably with socialist countries, but also barter trade agreements with several LDCs affect the composition of

trade. It is important that attention is focused on changes in all these factors when the international competitiveness of a particular economy is assessed.

A straight forward attempt to quantity the importance of each determinant of international competitiveness is not possible, if for no other reason than for lack of suitable statistical data. Therefore, a proxy measure has to be adopted. One of the most common quantitative indicators has been constructed by applying the concept of revealed comparative advantage (RCA).[42] This indicator aims to summarise the net effect of the various determinants of international competitiveness. It supposes that differences in relative prices and costs and other competitive conditions eventually have an effect on the foreign trade flows of individual countries in every branch.

> On the assumption that the commodity pattern of trade reflects intercountry differences in relative costs as well as in non-price factors, this is assumed to 'reveal' the comparative advantage of the trading countries.[43]

The RCA concept takes into account all the above mentioned influences on the pattern of international trade, including the influence of trade barriers and subsidies. It rests on the assumption that a country's imports indicate which of the domestic industries are uncompetitive, whereas the exports point to the industries which display relative competitiveness. The concept is based on actual trade flows, and hence it cannot tell whether these patterns are optimum ones. It also assumes various protective measures, transport costs, consumer preferences, traditional ties, etc., to be constant across various branches. The RCA indicator is only a rough proxy, but in spite of the above mentioned restrictions, it still yields some useful information.

Commonly, revealed comparative advantage has been measured in two ways. One alternative is to view RCA as being determined by the relation between an industry's exports and imports. Another approach is to treat an industry's relative export performance as an indicator of comparative advantage. The latter approach yields a more accurate measure in inter-country comparisons,

since the export-import ratio is greatly influenced by the system of protection or subsidies used in different countries.[44] The former approach is, however, more useful in intra-country comparisons, when trade flows of a particular country are differentiated by directions. In line with these comments, four indicators of trade performance that can be associated with comparative advantage and, hence, with international competitiveness in manufacturing are constructed in this study.

a) A commonly used measure of trade performance is the trade ratio (TR),[45] which is defined as the net trade balance of a commodity group as a percentage proportion of the total trade of this group for each of the three country groups, i.e.

$$TR = \left[(X_{ij} - M_{ij}) \; / \; (X_{ij} + M_{ij}) \right] \; . \; 100$$

where (X) stands for export values, (M) for import values, (i) denotes a commodity group (manufacturing sector) and (j) a region (country group). A positive sign of this term expresses net exports and a negative sign net imports. The ratio has a maximum value of +100 indicating complete trade advantage (characterising commodities that were exported but not imported) and a minimum value of -100 indicating total disadvantage (for a commodity that was imported but not exported). Furthermore, $|TR|$ (the absolute value of the trade ratio) represents the percentage of inter-industry trade in the total trade of commodity group (i) for country group (j). Correspondingly, $100 - |TR|$ may be used as an indicator for intra-industry trade.[46]

b) A common type of measure of revealed comparative advantage is an indicator that compares the trade ratio of a commodity group with the trade ratio of an appropriate reference system, in this case total manufacturing.[47] The hypothesis behind this concept is that the comparative advantage of Finnish industry towards each of the three country groups should materialise in an industry with a large relative export surplus (low import deficits) in relation to the net trade position of all manufactured tradables. The calculations have been made according to the following formulae:

$$RCA = \left[(A - B) / (100 - B)\right] \cdot 100 \quad \text{if } A > B$$
$$= \left[(A - B) / (100 + B)\right] \cdot 100 \quad \text{if } A < B$$

$$\text{with } A = \left[(X_{ij} - M_{ij}) / (X_{ij} + M_{ij})\right] \cdot 100 \text{ and}$$
$$B = \left[\sum_{ij}(X_{ij} - M_{ij}) / \sum_{ij}(X_{ij} + M_{ij})\right] \cdot 100$$

where (X_{ij}) and (M_{ij}) represent exports and imports of industry (i) in trade with region (j). The RCA indicator ranges between the two extreme values of -100 and of +100 with positive values indicating comparative advantage and negative values indicating comparative disadvantage.

c) The export performance index (EP)[48] is measured by dividing an industry's share in a country's total manufactured exports by world exports of that industry as a share of world trade in manufactures, i.e.

$$EP = \left[X_{ij} / X_{mj} : X_{iw} / X_{mw}\right] \cdot 100,$$

where (i) denotes a commodity group, (m) total manufacturing, (j) a country and (w) the world total. In this study the world is represented by the manufactured trade of the OECD countries. Thus, for example, an export performance ratio of 110 indicates that the industry's share in the Finnish exports of manufactures is 10 per cent higher than the corresponding OECD total, while a value of 100 would imply 'normal' export performance in terms of the overall trade structure of DMEs. Calculations have also been made in terms of the country group breakdown of the Finnish exports by major regions.

d) In this study an indicator analogous to that of export performance has also been constructed for imports illuminating a relative import vulnerability of Finland in different manufacturing sectors. The import vulnerability index (IV) has been derived from data on relative import shares. The indicator represents the ratio between the share of imports of all

manufactures (m) of a commodity group (i) in a given country (j) and the corresponding share of world imports (w) of that industry to world trade in manufactures, i.e.

$$IV = \left[M_{ij} / M_{mj} : M_{iw} / M_{mw} \right] . 100$$

Here also the total imports of the OECD countries represent the reference group indicated in the formula as the world. Hence, an index number of 200 will mean that the Finnish economy is two times more sensitive to imports of the commodity category in question compared to that of the OECD countries on average.

These four indicators are used in the following investigation in order to identify changes in the sectoral competitiveness of the Finnish manufacturing industry. Due to statistical shortcomings and high aggregate level of analysis, the results have to be regarded as crude guidelines.

The choice of the period has partly been influenced by the availability of suitable statistical data. Consistent and regionally comprehensive statistics of Finnish foreign trade based on the revised SITC classification are available only from the year 1960 onwards - with the exception of the year 1953, which is also included in the investigation as a reference year from the period of foreign trade regulation. The year 1953 is also the first year when the export figures are not influenced by war reparations deliveries.

On the other hand, the special interest in this study is, how Finnish manufactured trade relations have been transformed due to Third World industrialisation. In this respect the relevant period is the last two decades. The principal years used in the analysis are 1953, 1960, 1965, 1970, 1976 and 1981.

International comparisons have been made primarily with the OECD area as a whole representing a 'normal' trade structure among DMEs.[49] Only in the sense of representing an average can the overall OECD pattern be called 'normal'. Obviously, no normative meaning is attached to it.

2.3.2 Trade ratio

Finland's trade ratio in manufactured goods has been subject to a positive long-term trend as indicated by Table 21. An exception to this trend is 1953, but that was still in the years of import regulation and licensing, which were finally abolished in 1957. Throughout the 1960's the manufactured trade ratio was negative, but it became positive during the 1970's. This has been primarily due to favourable developments in trade with both the DMEs and the socialist countries. Despite this favourable overall long-run trend, the manufactured trade ratio has been negative all the time in the major market area of Finland, i.e. in the trade relations with the DMEs.

Furthermore, there is one exception to the general favourable long-run trend: the trade ratio with the LDCs has suffered a continuing decline since 1960, indicating that LDC competitiveness in manufactured trade has relatively improved in Finnish markets. Still, however, Finland's manufactured trade performance with respect to LDCs has held an overwhelming advantage - although the deteriorating trend is quite persistent.

Table 21. Trade ratio of manufactured goods by major regions, 1953 - 1981

	DMEs	SOCs	LDCs	Total trade
1953	-6.3	47.1	71.8	14.9
1960	-23.2	45.6	88.8	-5.0
1965	-17.1	55.1	85.1	-2.2
1970	-11.9	56.3	81.9	-0.2
1976	-12.6	67.0	71.8	4.5
1981	-4.8	74.7	64.6	15.7

Source: Appendix Table 3.

The number of branches in which Finland had a positive trade ratio in 1981 was 10 out of 23 manufacturing sectors. There were, however, great differences with regard to the three country groups. Only six branches hold a trade advantage in trade relations with the DMEs (primarily the forest industry as well as clothing), whereas in trade with the LDCs the corresponding number of advantageous branches was 15 and with the socialist countries even 19 (Table 22). That emphasises the strong dissimilarity existing in the structure of Finnish manufactured trade flows by different destination. In short, this means that, on average, the manufacturing industry in Finland has had a substantial net gain in production and employment from trade with the LDCs as well as with the socialist countries. As far as manufactured trade with the DMEs is concerned, the case is the reverse. Altogether, the weakest sectors have been in capital goods and in some labour-intensive intermediates, although in this respect the country group pattern varies quite considerably as can be seen in Table 22.

In terms of total foreign trade including primary products, the picture about the trade ratio and the number of favourable branches by country groups turns around. Both socialist countries and LDCs are overwhelmingly net exporters of raw materials to Finland. Exceptions in this respect are in the agriculture trade with socialist countries and sawn wood trade with the LDCs. By contrast, Finland is a net exporter of primary products to the DMEs. Subsequently, it has a positive trade ratio in this section of foreign trade. This overall picture once again emphasises Finland's semi-peripheral, intermediate position within the international division of labour, as the pattern of specialisation varies according to the destination of trade. In the following, however, the major interest is in the sectoral composition of manufactured trade.

Table 22. Finnish trade ratios by major regions and commodities, 1981

	DMEs	SOCs	LDCs	Total trade
Labour-intensive intermediates				
leather prds	-43.0	-73.6	-89.7	-56.1
rubber prds	-62.1	-55.3	53.1	-60.4
wood mnfs	81.9	83.0	93.5	84.3
textiles	-59.9	14.6	-74.9	-51.8
non-metal mineral prds	-18.9	59.6	75.8	-3.0
Subtotal	-16.5	39.4	27.8	-6.0
Capital-intensive intermediates				
chemicals	-46.7	28.6	75.7	-23.9
pulp	93.7	99.3	97.9	95.0
paper	90.4	99.9	99.4	93.6
iron and steel	3.5	2.2	61.0	6.4
Subtotal	40.1	73.9	91.7	51.3
Consumer goods				
pharmaceuticals	-69.8	96.1	73.9	-12.2
furniture	50.5	84.9	85.4	62.9
clothing	56.5	88.6	-96.5	59.5
footwear	-5.6	90.1	-96.4	45.5
instruments	-62.2	42.2	26.2	-52.4
passanger vehicles	-64.1	-97.0	-12.0	-66.4
misc. light mnfs	-8.5	74.8	-39.2	5.5
Subtotal	-13.6	79.2	-42.7	8.8
Capital goods				
basic metal prds	-33.1	91.2	71.3	7.3
power gen. machinery	-61.8	-36.4	97.8	-44.9
industrial machinery	-34.8	75.5	92.3	-9.4
computing machinery	-82.6	51.5	-45.1	-79.7
tele, TV, radio appar.	-15.4	63.7	-28.3	-6.9
electrical machinery	-52.4	83.3	52.5	-18.7
transport equipment	-32.4	90.4	98.5	6.9
Subtotal	-39.1	77.4	76.3	-9.7
Total manufactures	-4.8	74.7	64.6	15.7
agricultural prds	-46.2	86.6	-82.2	-20.8
sawn wood	95.5	-85.5	97.1	77.1
non-ferrous metals	35.1	-14.4	-35.7	24.4
other raw materials	-13.8	-41.2	-12.6	-15.9
fuels	2.0	-98.3	-99.5	-76.2
Subtotal	14.8	-74.9	-60.9	-33.4
SITC 9	-8.3	-99.5	95.7	-41.7
Total trade	-0.3	-1.0	-3.5	-0.8

Source: Appendix Table 3.

2.3.3 Sectoral pattern of competitiveness

A high degree of product concentration in a few industrial branches has been typical in the growth of Finnish manufactured exports since the beginning of the 1950's. Nevertheless, a consistent trend of diversification has been apparent, especially in exports to the dominant western markets. On the other hand, manufactured exports to LDCs have been highly concentrated in only a few product lines. As far as manufactured imports are concerned, the trade with DMEs has also been relatively more diversified than imports from LDCs. Table 23 illustrates sectoral changes in the composition of Finnish manufactured trade in the period of 1953 to 1981 by ranking the five leading branches according to directions of trade.

In general, the overwhelming dominance of the traditional exports sector, forestry, has gradually diminished during the past two decades, although it still is the leading sector in exports to the DMEs. Especially in trade with the socialist countries - primarily with the Soviet Union - Finland has succeeded in developing new export-oriented manufacturing activities, particularly within sub-sections of transport equipment, industrial machinery and clothing. In an infant stage of production, new industries have been nurtured in the protective environment of bilateral trade as was described earlier (see pp. 93-94). When the production has become competitive enough, export has been partially directed into core markets, too. Similarly, Finnish adjustment to international cyclical fluctuations has been softened by respective alterations in market shares of bilateral trade.[50] In this respect the Soviet trade has played a comparable role of an additional supplementary market outlet for Finland as peripheral economies have typically offered for core ones.

Consequently, the Soviet Union's high share in Finland's foreign trade may be regarded as at least a partial substitute for the low share of the LDCs. The composition of Finnish exports to the LDCs is not based on 'new expanding industries', but, on the contrary, on traditional production lines. As the relative

Table 23. Five leading manufactured export and import branches (including sawn wood and non-ferrous metals) in Finland by major regions, 1953-1981 (percentages of total country group exports/imports)

1953		1960		1970		1981	
Exports to							
			DMEs				
sawn wood	40.7	sawn wood	34.8	paper	25.5	paper	22.3
pulp	22.6	paper	24.9	pulp	13.2	sawn wood	9.8
paper	20.4	pulp	18.6	sawn wood	12.9	industrial mach.	7.4
wood mnfs	7.0	wood mnfs	6.6	wood mnfs	6.4	pulp	6.9
non-metal. min. prds	0.5	industrial mach.	1.6	industrial mach.	5.0	clothing	5.1
the five together	91.2		86.5		63.0		51.5
			SOCs				
transport equip.	26.9	transport equip.	34.8	paper	27.4	paper	18.3
wood mnfs	16.6	paper	20.6	transport equip.	20.6	transport equip.	11.7
sawn wood	14.2	pulp	12.1	industrial mach.	12.3	industrial mach.	11.0
industrial mach.	13.4	industrial mach.	8.1	pulp	11.6	clothing	8.7
paper	8.9	sawn wood	5.8	clothing	4.0	chemicals	5.6
the five together	80.0		81.4		75.9		55.3
			LDCs				
paper	61.6	paper	48.4	paper	46.3	paper	29.2
sawn wood	15.5	pulp	15.9	transport equip.	18.0	sawn wood	15.6
pulp	12.4	transport equip.	8.6	pulp	7.9	industrial mach.	8.3
wood mnfs	5.6	industrial mach.	5.4	sawn wood	5.4	chemicals	7.7
misc.light mnfs	0.6	iron and steel	5.1	chemicals	4.0	wood prds	7.1
the five together	95.7		83.4		81.6		67.9
Imports from							
			DMEs				
industrial mach.	16.2	industrial mach.	22.1	industrial mach.	15.7	industrial mach.	15.2
transport equip.	12.7	iron and steel	11.7	transport equip.	9.9	chemicals	10.4
iron and steel	10.9	transport equip.	10.5	iron and steel	9.4	transport equip.	8.6
textiles	8.9	chemicals	9.2	chemicals	9.4	textiles	5.3
electric mach.	6.6	electric mach.	7.7	textiles	7.2	electric mach.	5.3
the five together	55.3		61.2		51.6		44.8
			SOCs				
chemicals	6.5	iron and steel	8.3	iron and steel	7.6	sawn wood	3.1
pas.vehicles	4.7	pas.vehicles	6.1	sawn wood	6.0	chemicals	3.1
textiles	4.3	chemicals	5.8	chemicals	4.2	non-ferrous metals	1.6
iron and steel	4.0	non-ferrous metals	2.8	non-ferrous metals	3.0	industrial mach.	1.5
transport equip.	1.7	sawn wood	1.9	industrial mach.	2.0	iron and steel	1.2
the five together	21.2		24.9		22.8		10.5
			LDCs				
rubber prds	5.1	rubber prds	4.1	non-ferrous metals	3.9	clothing	3.5
chemicals	5.0	chemicals	1.5	misc. light mnfs	1.4	textiles	2.1
non-ferrous metals	0.7	non-ferrous metals	1.1	clothing	1.3	leather prds	1.9
leather prds	0.5	textiles	1.0	textiles	1.1	misc. light mnfs	1.7
textiles	0.5	sawn wood	0.9	chemicals	0.6	non-ferrous metals	1.4
the five together	11.8		8.6		8.3		10.6

Source: Appendix Table 3.

competitiveness of the dominant longstanding export sector has gradually diminished in the traditional export markets, it has turned to search for new market outlets from the Third World. This differentiation of international competitiveness within the Finnish manufacturing industry is well illustrated by the calculations of revealed comparative advantage presented in Table 24.

Table 24. Finnish international competitiveness (RCA index) in manufactured trade, 1953, 1960, 1970 and 1981

	DMEs	SOCs	LDCs				Total trade			
	1981	1981	1953	1960	1970	1981	1953	1960	1970	1981
Labour-intensive intermediates										
leather prds	-50.7	-77.2	-100.0	-100.0	-100.0	-91.1	-80.0	-97.1	-52.1	-62.0
rubber prds	-67.3	-61.4	-99.6	-100.0	-69.4	44.3	-97.6	-91.5	-74.1	-65.7
wood mnfs	78.5	79.8	100.0	96.0	83.5	92.3	96.1	90.9	86.8	81.4
textiles	-65.4	-1.0	-98.8	-83.2	-66.2	-78.3	-96.2	-81.2	-57.9	-58.3
non-metal mineral prds	-29.9	52.1	98.7	83.1	83.1	71.3	-35.5	-46.3	-39.0	-16.2
Subtotal	-27.8	28.1	-22.0	-12.8	17.8	14.4	-2.0	-13.9	-11.6	-16.8
Capital-intensive intermediates										
chemicals	-53.9	15.3	-98.9	-32.1	66.0	71.1	-92.7	-86.1	-57.3	-34.2
pulp	92.6	99.2	100.0	100.0	100.0	97.6	99.9	99.4	98.4	94.1
paper	88.6	99.9	100.0	100.0	100.0	99.3	99.0	98.1	95.5	92.4
iron and steel	-10.6	-11.7	-59.8	100.0	73.7	53.7	-91.9	-87.5	-49.2	-8.1
Subtotal	28.9	69.0	82.8	97.1	96.6	90.1	40.9	41.1	40.6	42.2
Consumer goods										
pharmaceuticals	-73.9	95.3	-100.0	-47.4	88.9	69.0	-98.4	-97.7	-80.4	-24.1
furniture	41.3	82.1	100.0	50.3	56.6	82.7	48.5	82.7	43.3	56.0
clothing	48.4	86.5	-100.0	-88.8	-97.1	-97.0	-99.6	-54.6	43.3	51.9
footwear	-18.4	88.3	-13.0	-100.0	-95.6	-96.9	-42.5	-9.5	22.7	35.3
instruments	-67.3	31.4	96.4	90.6	49.2	12.4	-90.9	-91.4	-85.4	-58.8
passanger vehicles	-69.0	-97.4	-13.0	4.8	100.0	-23.9	-100.0	-99.7	-85.2	-71.0
misc. light mnfs	-21.0	70.1	89.2	33.4	-77.7	-47.4	-30.8	-62.3	-30.0	-8.8
Subtotal	-25.3	75.4	10.7	10.8	-53.3	-50.5	-84.9	-79.6	-26.4	-5.9
Capital goods										
basic metal prds	-42.2	89.6	98.8	98.5	68.5	66.0	-20.4	-42.1	-30.2	-7.3
power gen. machinery	-67.0	-45.0			100.0	97.4			-75.8	-52.4
industrial machinery	-43.6	70.9	-24.3	99.9	99.1	90.9	-42.4	-68.5	-39.4	-21.7
computing machinery	-85.0	42.4			-100.0	-52.6			-93.1	-82.5
tele, TV, radio appar.	-26.9	56.9			37.6	-38.0			-24.5	-19.6
electrical machinery	-58.9	80.2	100.0	98.8	82.9	43.6	-69.0	-72.7	-51.8	-29.7
transport equipment	-41.5	88.6	100.0	99.9	100.0	98.2	-5.5	3.7	-11.4	-7.6
Subtotal	-47.3	73.2	97.0	99.7	96.7	71.9	-28.1	-42.0	-34.0	-22.0
Total trade	-17.7	69.9	66.9	89.3	81.9	58.0	0.0	0.0	-0.0	-0.0

Source: Appendix Table 6.

In general, the results show the obvious fact that the RCA-position of Finland corresponds to the pattern indicated by the international specialisation index (see pp. 103-106). The industries revealing the strongest comparative advantage in 1981 were in the traditional forest sector and in garments - the former exhibiting a declining long-run trend and the latter, instead, an increasing trend. It is particularly interesting to note that the relative competitiveness of the forest industry, measured by

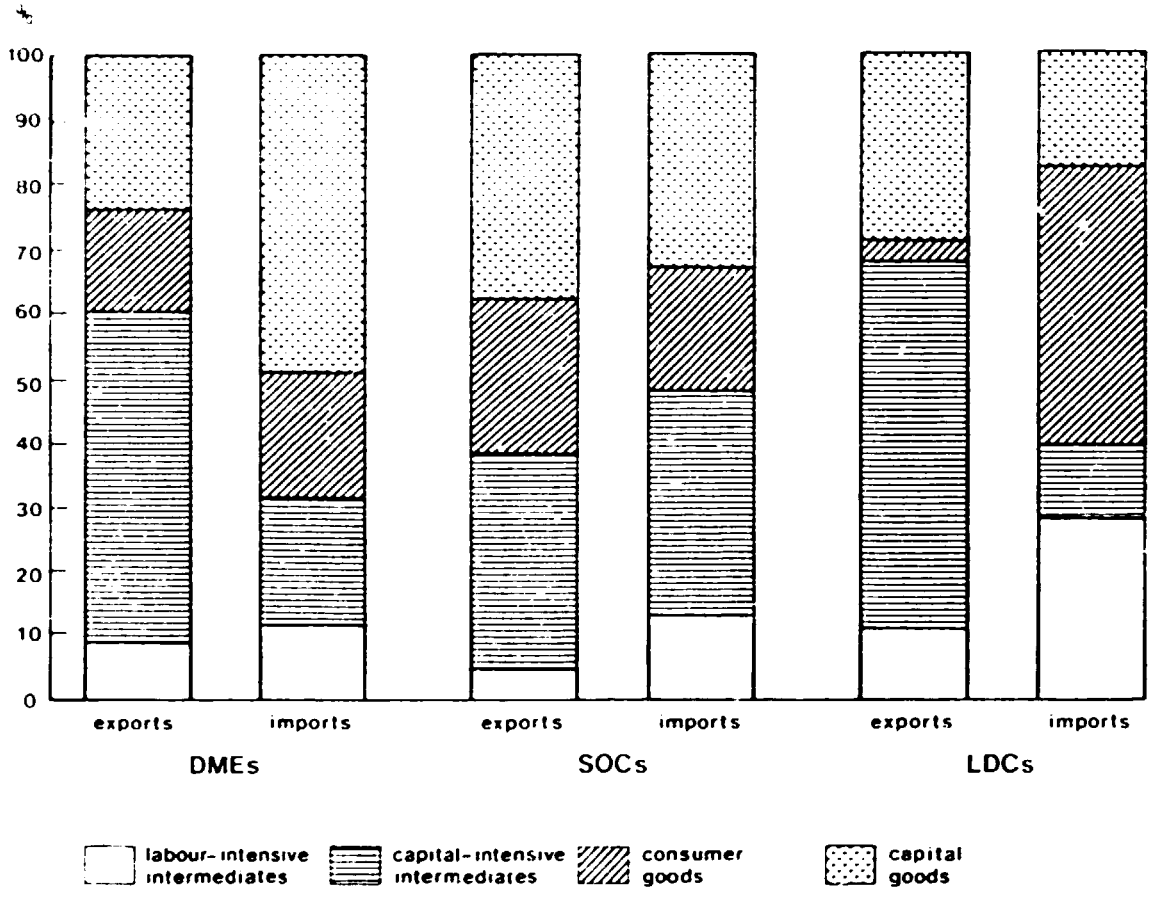
the RCA index has remained the strongest in the trade relations with the Third World compared with the relative decline of its competitive position in the main trade direction of DMEs.

The other branches where Finland predominantly exhibits comparative advantages - and even steadily improving ones - are clothing and footwear. These are mature labour-intensive sectors utilising the country's ample, relatively low-cost labour force. Within these sectors the variations of the RCA position with respect to the three regions under consideration are, however, significant. Finland's trade position with the LDCs demonstrates strong competitive disadvantages, whereas the pattern is the opposite in trade relations with the industrialised countries. This contrast stresses important differences in the overall RCA structure of Finland, reflecting essentially its intermediate type of position within the international division of industrial labour.

The Finnish import pattern differs crucially by directions. Its manufactured imports from the core economies is predominantly comprised of highly advanced products. Throughout the whole post-war period, the SITC sub-section industrial machinery has been the leading import branch, and the other high ranking import sectors consist of investment goods as well (see table 23). Contrary to this pattern, the Finnish manufactured imports from LDCs and socialist countries is predominantly composed of intermediates of simple, standardised consumer goods. There is quite a strong structural similarity in the Finnish import pattern with respect to socialist countries and LDCs, although the former consists more of resource-based intermediates compared with the latter that comprises predominantly labour-intensive intermediates or low-skill goods. Figure 5 illustrates well these country group variations of Finnish manufactured imports and exports in terms of functional categories.

The commodity composition of Finnish manufactured imports from LDCs and socialist countries is quite similar to other DMEs. The competitiveness and consequent export structure of LDCs seems to be primarily determined by the relative factor endowments, such

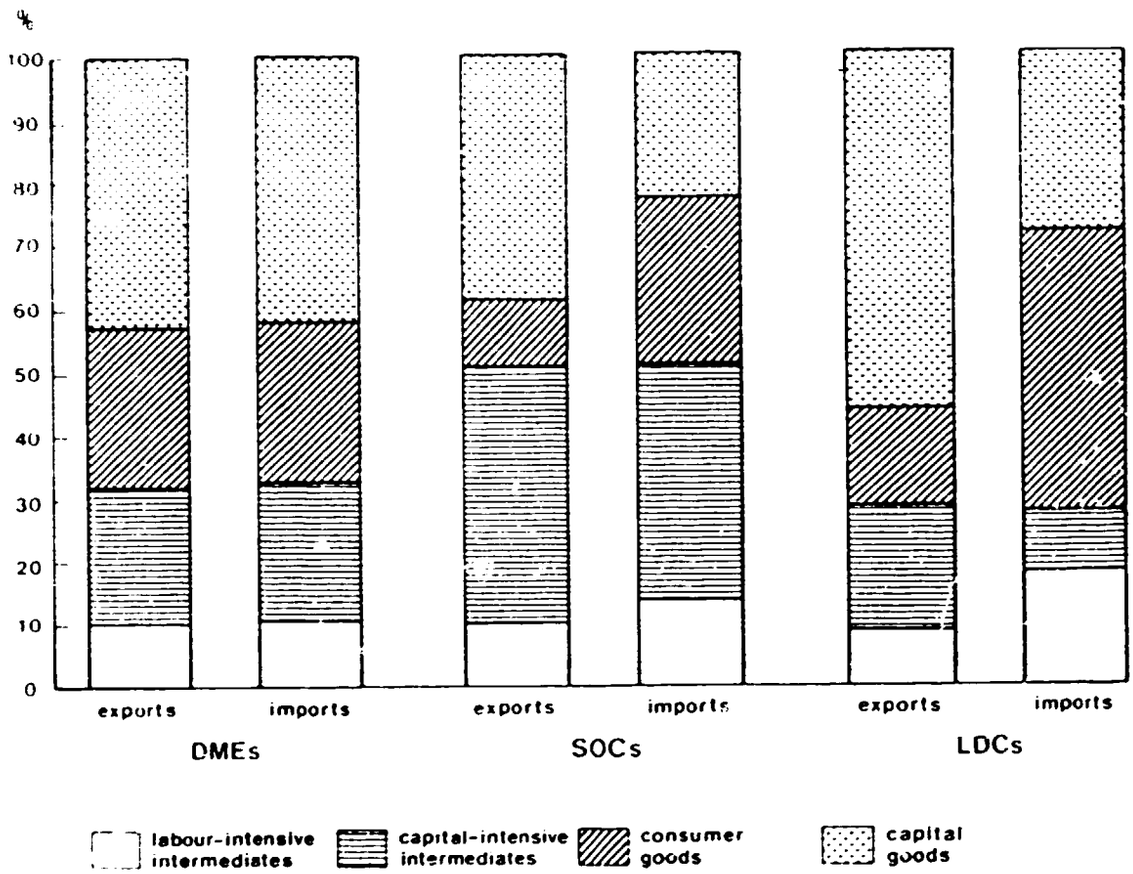
Figure 5. Structure of Finnish manufactured trade by major regions, 1981



as the possession of specific raw materials and cheap labour, and in this respect Finland is in a similar position in the international division of industrial labour that is similar to the core economies in general. Altogether, Finland's manufactured import structure deviates most markedly from the typical DME pattern in terms of a higher share of capital goods in its imports from the DMEs (compare Figures 5 and 6).

As far as the export structure is concerned, the divergence is more distinct. Relatively speaking, Finland exports far fewer final manufactured products including both consumer goods and

Figure 6 Structure of OECD manufactured trade by major regions, 1981



capital goods, and more resource-based products, especially capital-intensive intermediates, than the average among the OECD countries. This deviation is apparent, both in exports to DMEs and to LDCs. This type of commodity composition in foreign trade may be typical of a semi-peripheral economy, but in a longer term it is rather disadvantageous since the growth of the demand for intermediates in global markets has been below average. In the Finnish case the disadvantageous foreign trade pattern is

reflected in the income elasticities of demand for Finnish manufacturing exports and imports. The income elasticity of demand for imports surpasses the income elasticity for exports, which means that Finland tends to suffer from structural balance of payment constraints as the economy grows.[51]

The overall picture of the Finnish composition of manufactured trade is confirmed in a more detailed way by the RCA-calculation. In terms of the functional composition of manufactured trade, capital-intensive intermediates, explained by resource availabilities, form the only group within which Finland enjoys an overall comparative advantage; the strongest competitive position is with the LDCs (s. Table 24). Finland exhibits its strongest disadvantages in capital goods sector and in the chemical industry as well as in labour-intensive intermediates and in some branches of consumer goods (instruments and passenger vehicles). Although there has been a steady improvement in the competitive position within all these sectors (most notably in the chemical industry, iron and steel, basic metals and miscellaneous manufactured goods), the Finnish pattern is still in striking contrast with the more typical one in advanced industrial countries.

The country group variations are, however, most interesting. While Finland has comparative disadvantages in almost every manufactured branch with respect to the DMEs with whom it conducts most of its foreign trade, in relation to the LDCs and the socialist countries it posesses clear advantages. By functional categories of trade, consumer goods is the only sector within which the relative competitive position of LDCs is stronger than the Finnish one, and in trade with the socialist countries Finland enjoys comparative advantages in every functional category (Table 24). In fact, labour-intensive intermediates (leather, rubber, textiles), iron and steel, passenger vehicles and power generating machinery are the only branches in which Finland has a negative RCA index with the socialist countries.

As far as manufactured trade with the LDCs is concerned, besides clothing and footwear, Finnish disadvantages are felt primarily in other low-skill, labour-intensive branches such as leather products, textiles and miscellaneous light manufactures. Furthermore, the LDC competitive position vis-à-vis Finland is strong in a number of new light engineering products, of which the most prominent SITC sub-sections are computing machinery and telecommunication, TV and radio apparatus. Also in terms of instruments, watches and electrical machinery, the Finnish competitive position with respect to the LDCs has significantly declined (Table 24). This is in line with the changing international division of labour in which some LDCs are increasingly improving their global market shares by becoming sites of global offshore-processing activities carried out mainly by TNCs. This includes new types of export production of some specialised labour-intensive processes for manufacturing components or the final stages of assembly and semi-assembly operations. The most typical branches are the electronics and electrical engineering industries.

Altogether, comparative advantages and disadvantages have become less pronounced over time. The rapid expansion of manufactured trade has been accompanied by a good deal of product diversification. The standard deviation of the calculated RCA values has fallen from 68.0 in 1960 to 53.4 in 1981 (Table 25). Finland's specialisation profile in international trade has, hence, become less marked.

Table 25. Standard deviations of Finnish RCA indices in manufactures by major regions, 1953 - 1981

	DMEs	SOCs	LDCs	Total trade
1953	67.6	82.5	85.0	66.0
1960	68.1	76.9	78.0	68.0
1965	60.8	69.3	74.4	58.3
1970	60.5	74.2	80.8	59.8
1976	57.6	63.5	79.6	57.3
1981	54.8	61.0	72.2	53.4

Source: Appendix Table 6.

Trade flows increasingly take the form of simultaneous exchanges of goods stemming from the same industries. The increasing intra-industry type of trade reveals a trend from a predominantly complementary to a more competitive international division of labour. In terms of Finnish trade flows with the three major regions, this process has been most pronounced in trade with the DMEs, whereas the diversification process has been most sluggish in the LDC trade. In the latter case with a relatively low level of industrialisation, the pattern of external exchange of manufactured goods has still remained quite specialized.

2.3.4 Revealed comparative advantage and factor intensities

The RCA-calculations are complemented by an attempt to quantify the relationship between the competitiveness of manufacturing trade in different directions measured by the RCA index and the relative factor intensities. A marked pattern emerges that may be seen in the correlation matrix of Table 26.

Table 26. Simple correlation coefficients between Finnish manufacturing RCA indices by major regions and factor intensities, 1981

	DMEs	SOCs	LDCs	Total trade
R & D intensity	-0.406	0.066	-0.050	-0.387
Capital intensity	0.539	0.121	0.472	0.487
Labour intensity	-0.137	-0.186	-0.235	-0.164
Raw material intensity	0.438	-0.071	0.163	0.419
Energy intensity	0.453	-0.069	0.398	0.377
Wage level	0.124	0.211	0.485	0.082
Labour productivity	0.118	0.300	0.432	0.142
Female intensity	-0.028	-0.114	-0.742	-0.011
Firm size	0.296	-0.080	0.362	0.240
LDR intensity	0.658	0.249	0.123	0.620

Sources: Appendix Table 2 and 6.

In general, the figures of the table show that Finland has revealed comparative advantages vis-à-vis the LDCs in industries with a high capital and energy intensity, wage level and labour

productivity. The competitive position tends to be the strongest, as may be expected, in capital-intensive and resource-based sectors.

On the other hand, the weakest competitive position Finland has is in research and development intensive industries, particularly in trade with the DMEs, as well as in labour-intensive industries, most notable in trade with the LDCs. These observations are, by and large, consistent with what one would expect given the pattern of the international specialisation of the Finnish manufacturing industry (see Table 13).

Moreover, a country group comparison indicates a distinct difference in terms of the wage level. While Finland has been a low wage country with respect to DMEs, with whom it conducts most of its foreign trade, in relation to the LDCs it is a high-wage and high-productivity country with corresponding advantages in trade. This dichotomy may reflect Finland's intermediate, semi-peripheral position in the international division of labour. An analogous country group variation can also be observed in the R & D intensity and raw material intensity as factors of competitiveness in Finnish manufactured trade (Table 26).

The Finnish revealed comparative advantage vis-à-vis core economies is concentrated in resource-based industries with standardised products, while a similar correlation does not exist between these factors of competitiveness and trade relations with socialist countries or LDCs. Furthermore, particularly in trade with LDCs a marked negative correlation is to be found in terms of the female intensity. Moreover, the less developed regions of Finland are least competitive in trade relations with LDCs and most competitive in trade with DMEs. This reflects the high degree of industrial specialisation in trade between the peripheral regions of Finland and the core economies, but concerning trade with LDCs, the industrial structure of the LDRs is more competitive in its nature.

In this context, it is useful to make a distinction between the complementary and competitive aspects of industrial development elsewhere. This distinction is relevant in assessing the gains a country can derive from foreign trade in a dynamic world, which is necessarily characterised by unequal development of industrial potential over time and in different regions. The industrialisation process elsewhere is complementary to the extent that it raises the demand for exports, but it becomes competitive insofar as it leads to the development of alternative sources of supply. Hence, from the point of view of a particular country, the global industrial restructuring process may be characterised by a changing balance between complementarity and competitiveness. These effects obviously differ according to the structural characteristics of an economy. Thus, presumably because of the more flexible competitive characteristics of their industrial structure, core economies are potentially more capable of adapting to the effects of Third World industrialisation than semi-peripheral economies.

The major interest of this study is the differences in restructuring constraints between semi-peripheral Finland and the core economies as far as Third World industrialisation is concerned. The essential starting point is that although the industrialisation in LDCs may raise the demand for Finnish manufactured goods, it also creates additional sources of supply, which may compete with them in any market, including its home markets. The new industrial competition takes place within three possible market areas: a) as import penetration into Finnish home markets, b) by way of import substitution in the markets of LDCs themselves and c) as export competition in a third market. In the following, the investigation will be done at these three levels.

Chapter 3

IMPORT COMPETITION FROM LDCS

3.1 Import penetration

The emergence of some LDCs as dynamic new competitors in manufactured trade has given rise to considerable disquiet among DMEs, including Finland. This growing concern with the new competition is, of course, not independent of the overall economic conditions in particular industrial economies. The less favourable the economic situation is in general, the stronger the resistance to a potential structural adjustment. It is the simultaneity of adjustment problems facing the DMEs during the 1970's along with the poor overall economic performance - inflation, slow growth, high unemployment, balance-of-payments deficit, energy adjustment - that creates a context in which LDC manufactured export growth has been considered as an alarming source of 'market disruption'. In particular, the rapidly growing, low-cost imports from LDCs have been one of the few irritants to be easily identified. Primarily, attention has been given to their effects on domestic production and employment.

The anxiety is evident despite the fact that manufactured imports from LDCs are still quite marginal relative to the size of the markets in industrialised countries. In quantitative terms as indicated earlier, these imports constitute only about 11 per cent of the OECD countries' total manufactured imports and some 3 per cent of their overall consumption in manufactured goods. In Finland these proportions have been even more marginal: 3 per cent and 1 per cent, respectively. Hence, the LDC import penetration has played only a very limited role in creating any market disruption. Furthermore, corresponding exports to LDCs can hardly be neglected, if the effects of imports are considered. The manufactured exports of the DMEs as well as Finland to the LDCs have been over four times larger

than the reverse flow. This surplus indicates that an average manufacturing industry in the DMEs has, in fact, had a vast net gain in production and employment from trade with the LDCs.

This overall picture is, however, complicated by the fact that the relative importance of manufactured imports from LDCs is greater than absolute trade figures might suggest. It is not only that this import has increased at a rapid rate on the average since the mid-1960's, but that the range of goods as well as the number of exporters are still fairly limited. Consequently, the pressure of new highly competitive import penetration has been concentrated on a few products and potentially vulnerable sectors, and hence the problem and its causes are ostensibly easily identified.

3.1.1 Finland as an export market for LDCs

Finland is not an exception among the industrialised economies as far as the overall effects of the LDC manufactured import penetration are concerned. Nevertheless, because of the specific competitive characteristics of its industrial structure, the Finnish capability to adapt to change generated by the changing international division of labour may differ from the experiences of the core economies. The first notable difference is related to the importance of the Finnish markets in terms of the LDC export performance. No doubt, the leading core economies are the dominant markets for the LDC manufacturing export activities. Hence, it is not surprising that small countries like Finland play a very marginal role in the overall trade of LDCs. This marginality is accentuated by the fact that Finland is a remote market outlet for LDCs not only in absolute terms, but in relative terms as well. Some 0.3 per cent of the LDC manufactured exports to the OECD area goes to Finland, although Finnish markets absorb some 1.2 per cent of total OECD manufactured imports (see Table 27). As far as total trade is concerned, the divergence is slightly reduced, since about 0.4 per cent of LDC exports to the OECD countries are destined for Finland while Finland covers some 1.1 per cent of the total OECD imports.

Table 27. Manufactured imports from LDCs by main DMEs, 1981 (per cent)

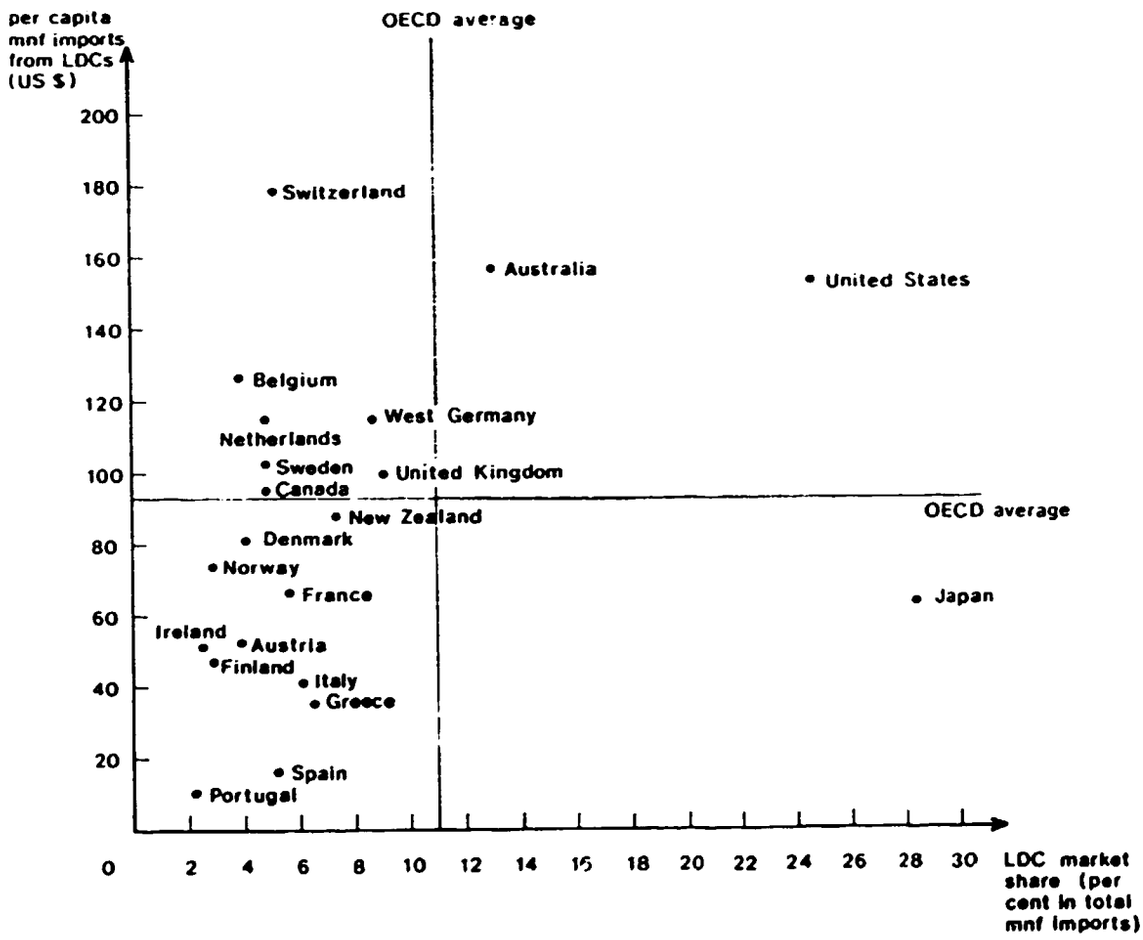
	Manufactured imports from LDCs			mnf imports
	per capita (US $)	share of total mnf imports	share of OECD total	share of OECD total
Switzerland	178.1	5.1	1.6	3.3
Australia	156.3	13.0	3.2	2.7
United States	152.3	24.6	47.7	21.3
Belgium	126.8	3.8	1.8	5.0
West Germany	115.9	8.7	9.7	12.3
Netherlands	115.5	4.9	2.2	5.0
Sweden	103.9	4.9	1.2	2.6
United Kingdom	99.9	9.1	7.6	9.2
Canada	95.6	4.9	3.2	7.1
New Zealand	88.4	7.3	0.4	0.6
Denmark	81.2	4.3	0.6	1.5
Norway	73.5	2.8	0.4	1.6
France	66.8	5.6	4.9	9.5
Japan	63.3	28.4	10.1	3.9
Austria	52.4	3.8	0.5	1.6
Ireland	51.3	2.5	0.2	1.0
Finland	46.3	2.8	0.3	1.2
Italy	40.8	6.1	3.1	5.6
Greece	34.9	6.5	0.5	0.8
Spain	16.1	5.2	0.8	1.7
Portugal	10.7	2.2	0.2	0.7
OECD total	93.4	11.0	100.0	100.0

Source: OECD, Foreign trade by commodities, 1981

Differences in the LDC manufactured import penetration among individual DMEs may be measured in various ways. The indicators chosen in Table 27 measure, on the one hand, per capita imports of manufactures from the LDCs and, on the other hand, market shares of the LDCs. Based on these figures, Figure 7 illustrates country variations. The vertical axis measures per capita manufactured imports, while the horizontal axis shows the LDC percentage share in each country's manufactured imports. The cross-bars in the diagram show averages for these variables. The chart thus indicates the level and share of each major developed country as a market for LDC exports of

manufactures. In Table 27 the countries have been listed in rank order in terms of the level of manufactured import penetration from the LDCs.

Figure 7. Manufactured imports from LDCs by DMEs, 1981



The differences depicted in the diagram and in the table show that among the DMEs the United States constitutes by far the most important single market for the LDC manufactured exports, accounting alone for over 47 per cent of the total OECD imports from LDCs in 1981. In addition to being the largest market in absolute size, the United States is also the greatest importer from LDCs on a relative basis, while Japan ranks second. About

one quarter of both of these countries' manufactured imports originate from LDCs. In all other DMEs the market share of LDCs has been far lower. The country with the third highest share in 1981, Australia, is also outside Europe. The effect of customs unions and strong economic integration within Europe have apparently diminished pressures to strengthen the industrial division of labour with peripheral economies in the Third World on the same scale as is the case in the United States or Japan. The relationship between core and peripheral economies within Europe have offered substitute market outlets and supply sources with respect to expanding trade relations with LDCs.

In Europe, only the United Kingdom and West Germany import manufactures on any significant scale from LDCs. Their importance, and to a greater extent the importance of the United States and Japan, can be traced to the countries direct participation in export manufacturing in peripheral economies. Export-oriented direct foreign investments as well as large multinational procurement and retail organisations with different types of sub-contracting arrangements have made crucial contributions to the performance of the LDC export to these core economies.

The other indicator in Table 27 and Figure 7, namely, manufactured imports from LDCs divided by population, illustrates the level of LDC import penetration in each country concerned. The ratio depends upon, among other factors, the size of the importing economy, the degree of its specialisation and natural resource endowments as well as trade policies that all influence the average propensity to import. Typically, a small, highly specialised industrial country has a relatively high propensity to import compared with a larger economy which produces manufactured goods to a greater extent and on a wider scale at home. Consequently, per capita imports of manufactures from LDCs tend to be relatively great in small DMEs, such as Switzerland, Belgium, the Netherlands and Sweden, compared with larger ones, although in the former the LDC share in their total manufactured imports may be low.

Nevertheless, among the DMEs Finland has taken one of the smallest proportions of its manufactured imports from LDCs and is also ranking at the bottom in terms of per capita imports together with the Southern European economies (Table 27 and Figure 7). The marginality of Finland as well as of Ireland and the Southern European countries as markets for LDC manufacturing export activities compared with other DMEs is presumably not attributable merely to differences in the size of the economy, nor to differences in trade policies, nor to differences in geographical distances. The primary reason for the differences can be traced to the specific competitive characteristics of their industrial structure. Their semi-peripherality within the European division of labour creates the context within which their industrial development is taking place. Their foreign exchange relations are predominantly with the core economies, and their industrialisation is dependent and conditioned by external supply and demand factors of more advanced industrial economies in a somewhat similar way as the peripheral industrialisation process in the Third World.

The very divergence in industrial structures between the two country groups - between (semi-)peripheries and core economies - provides the basis for complementarity in their mutual trade relations. The greater this divergence is, the greater the potentialities for expanding trade. As a result, substitutive trade relations between core and (semi-)peripheral economies tend to increase more intensely than structurally more similar trade between semi-peripheral and peripheral economies.

3.1.2 LDC imports by sectors

Although manufactured imports from LDCs play quite a marginal role in Finnish imports as a whole, the effects diverge, however, greatly by branches. Some Finnish industries are facing distinctly greater pressure for structural change than others as a result of import competition from LDCs. In Tables 28 and 29 those particular manufacturing sectors in which imports from LDCs represent either an already significant share or an increasing share are distinguished.

Table 28. Ten leading manufactured import sectors from LDCs to Finland and to OECD, 1981 (per cent)

	Finland		OECD	
	share in total mnf imports from LDCs	share of LDCs in total imports by branches	share in total mnf imports from LDCs	share of LDCs in total imports by branches
Clothing	22.7	26.4	21.9	48.4
Textiles	13.5	5.7	9.1	21.2
Leather prds	12.3	32.5	1.6	29.1
Misc.light mnfs	10.7	6.9	11.5	21.1
Tele, TV, radio appar.	6.5	6.7	7.8	22.2
Chemicals	6.4	1.4	4.5	4.5
Electrical machinery	5.5	2.5	9.6	17.4
Footwear	5.0	16.8	4.7	36.9
Iron and steel	4.2	2.2	3.8	7.0
Instruments	3.2	2.2	3.3	8.3

Sources: Appendix Tables 3 and 4.

Around 65 per cent of Finnish manufactured imports from LDCs comprised clothing, textiles, footwear and leather products as well as miscellaneous light manufactures (primarily travel goods, hand bags, toys and sporting goods). These sectors are the classic examples of the competition by peripheral industrialisers in the markets of core economies. These branches have not only maintained but also reinforced their competitiveness in the Finnish market by trebling their share in total imports during the last decade.

The other significant group of products constitutes some technically advanced light engineering goods, particularly different types of electrical appliances, instruments and watches. Their share in the Finnish manufactured imports from LDC was around 16 per cent in 1981, but only about 4 per cent ten years earlier in 1970. These products represent a new type of manufacturing exports in LDCs. Frequently, these activities are sub-contracted or carried out by subsidiaries of TNCs producing components, accessories or simple assembly products within their vertically integrated global production or marketing chain. It is only in very recent years that Finnish markets have begun to be involved in the network of such trade.

Not until the second half of the 1970's did these new manufacturing imports from LDCs play any role in Finnish total imports. Since then, however, the significance of these product groups has increased rapidly, most remarkably in the category of telecommunication, TV and radio apparatus (see Table 29). Despite this growth, the manufactured import sectors mainly affected by imports from LDCs are still those traditional sectors, primarily leather products (the LDC share is 33 per cent of total imports), clothing (26 per cent) and footwear (17 per cent).

Table 29. Share of LDCs in Finnish imports by ten leading LDC manufactured import branches, 1960-1981 (per cent)

	1960	1965	1970	1976	1981
Clothing	2.8	13.9	7.7	18.8	26.4
Textiles	1.1	2.2	1.5	4.5	5.7
Leather prds	0.5	0.7	7.5	8.9	32.5
Misc.light mnfs	1.2	2.2	4.1	3.6	6.9
Tele. TV, radio appar.	0.0	0.0	0.1	1.3	6.7
Chemicals	1.1	1.0	0.6	0.3	1.4
Electrical machinery	0.0	0.1	0.2	0.4	2.5
Footwear	10.6	3.9	11.6	13.6	16.8
Iron and steel	0.0	0.0	0.1	0.0	2.2
Instruments	0.0	0.7	0.5	0.7	2.2
All manufactures	0.7	0.6	0.7	1.2	2.9

Source: Appendix Table 3.

Compared with the OECD area, the commodity composition of Finnish imports from LDCs, by and large, has been similar. A major difference is that in Finland the proportion of its LDC imports from total imports has been below the OECD average in all the product groups - except leather products (Table 28). Particularly in the so-called new imports, the OECD countries on the average have taken a much higher proportion of their imports from LDCs than Finland.

Table 30. Import vulnerability of manufactured branches in Finland, 1981

	Imports from			
	DMEs	SOCs	LDCs	Total
Labour-intensive intermediates				
leather prds	161.8	71.8	756.9	179.3
rubber prds	125.0	180.2	29.5	128.6
wood mnfs	61.8	61.7	59.4	54.7
textiles	159.6	151.0	148.0	146.3
non-metal mineral prds	56.3	36.7	12.6	54.0
Subtotal	112.3	91.8	156.6	108.2
Capital-intensive intermediates				
chemicals	111.7	110.2	142.8	122.5
pulp	21.2	8.4	43.4	21.7
paper	42.1	2.7	102.6	43.3
iron and steel	87.1	89.6	111.7	93.8
Subtotal	89.4	95.3	121.6	97.4
Consumer goods				
pharmaceuticals	127.7	69.9	37.2	127.9
furniture	37.9	21.3	24.2	38.0
clothing	63.3	43.0	103.6	50.3
footwear	72.0	61.5	106.8	62.2
instruments	96.3	119.2	97.1	95.7
passanger vehicles	52.2	186.1	50.7	58.8
misc. light mnfs	82.5	84.8	93.2	75.8
Subtotal	73.8	71.4	96.3	70.9
Capital goods				
basic metal prds	118.9	54.8	88.7	115.4
power gen. machinery	86.4	364.6	7.9	101.7
industrial machinery	159.2	135.4	81.7	166.8
computing machinery	93.0	74.1	70.7	93.3
tele, TV, radio appar	81.9	270.6	83.8	73.9
electrical machinery	116.9	93.7	56.9	105.2
transport equipment	106.0	119.5	11.1	109.4
Subtotal	118.7	146.0	63.5	119.2
Total manufactures	100.0	100.0	100.0	100.0

Note: The import vulnerability index is defined as (Mij/Mmj:Miw/Mmw)·100, which represents the ratio between a share of commodity group (i) in Finnish imports (j) of all manufactures (m) and the corresponding share of OECD imports (w) of that industry to OECD imports in manufactures.

Sources: Appendix Tables 3 and 4.

This difference is accentuated in the examination of the import vulnerability indicator (Table 30) that is based on a comparison of relative import shares in Finland and in the OECD area as a whole. The table shows that the Finnish economy is more sensitive to imports of traditional manufactured export products of LDCs (particularly leather and textiles, but also clothing and footwear) compared to the average of the OECD countries. On the other hand, as far as LDC new manufactured exports are concerned, Finnish industry is, at the present time, still significantly less vulnerable than the OECD area as a whole. This distinct divergence may indicate that the semi-peripheral Finnish economy is integrating at a relatively slow pace into the new international division of labour compared with core economies.

3.1.3 Market shares

The figures about import shares or relative import vulnerability presented above do not, however, reveal relative degrees of market penetration by imports from LDCs in Finnish economy. Although, a gradually increasing proportion of its manufactured imports is coming from LDCs and in particular sectors even with a higher share than the average for the OECD countries, these data do not indicate potential internal market disruption effects caused by LDC import penetration. A quantitative view in this respect can be provided by examining the shares of Finnish domestic consumption that are accounted for by LDC imports.

The import penetration ratio (IPR) used here relates import values of industry (M_i) to apparent domestic consumption ($C_i=O_i+M_i-X_i$, where O_i denotes gross domestic output of industry and X_i export values), i.e. IPR = $\left[M_i/(O_i+M_i-X_i)\right]\cdot 100$. Accordingly, the extent of market penetration during the 1970's is demonstrated in Table 31. These statistics need to be interpreted with care, for in many cases the imports include goods which are not competitive with the products manufactured locally.

Some important features emerge from a consideration of the information in Table 31. First, the relatively limited share (about one-third) of imports in total domestic consumption of manufactures comes out. This ratio indicates that home demand is still primarily satisfied by domestic production. Furthermore, during the 1970's foreign suppliers have not succeeded in increasing their relative penetration in Finnish markets in spite of the steady international market integration process that has taken place by tariff reductions with the main trading partners in Europe.

Table 31. Manufactured import penetration in Finland by major regions, 1970, 1976 and 1981

	DME imports			SOC imports			LDC imports			Total imports		
	1970	1976	1981	1970	1976	1981	1970	1976	1981	1970	1976	1981
Labour-intensive intermediates												
leather prds	30.1	40.3	33.3	1.6	0.8	1.1	2.6	4.0	16.5	34.2	45.1	50.9
rubber prds	42.6	41.0	43.0	0.8	1.2	2.5	0.1	0.1	0.2	43.5	42.2	45.7
wood mnfs	7.8	6.0	5.8	0.6	0.6	0.8	0.4	0.5	0.6	8.8	7.0	7.1
textiles	33.2	32.6	37.3	1.1	1.8	2.9	0.5	1.6	2.4	34.9	36.0	42.6
non-metal mineral prds	12.5	10.3	12.7	0.8	0.7	0.9	0.0	0.0	0.1	13.3	10.9	13.7
Subtotal	25.6	23.0	24.2	1.0	1.2	1.7	0.4	1.0	1.9	27.0	25.2	27.8
Capital-intensive intermediates												
chemicals	34.2	30.5	31.4	3.2	2.5	3.9	0.2	0.1	0.5	37.7	33.2	35.8
pulp	0.4	0.5	1.2	0.3	0.0	0.0	0.0	0.0	0.0	0.7	0.6	1.3
paper	8.2	7.2	7.2	0.3	0.0	0.0	0.0	0.0	0.1	8.5	7.3	7.3
iron and steel	44.0	28.3	23.9	7.5	3.9	2.9	0.1	0.0	0.6	51.6	32.2	27.4
Subtotal	26.0	19.2	18.8	3.4	1.8	2.1	0.1	0.0	0.3	29.5	21.1	21.2
Consumer goods												
pharmaceuticals	44.0	41.2	42.0	1.0	0.7	0.5	0.0	0.1	0.2	45.1	42.0	42.7
furniture	9.3	8.4	8.9	0.6	1.1	1.3	0.1	0.0	0.2	10.0	9.5	10.4
clothing	20.7	18.7	30.1	0.7	0.9	4.7	1.8	4.5	12.4	23.1	24.1	47.2
footwear	17.7	16.7	26.8	0.8	2.8	3.9	2.4	3.1	6.2	20.9	22.6	36.8
instruments	73.9	79.0	74.2	1.4	1.8	1.6	0.4	0.5	1.7	75.7	81.3	77.6
misc. light mnfs	19.1	15.6	15.1	0.8	0.8	0.8	0.9	0.6	1.2	20.7	17.0	17.2
Subtotal	26.3	24.8	26.2	0.3	1.0	1.5	0.9	1.2	2.5	27.5	27.0	30.1
Capital goods												
basic metal prds	21.4	20.4	20.6	0.6	0.9	0.6	0.1	0.1	0.4	22.1	21.4	21.5
industrial machinery	46.2	45.4	45.9	1.5	4.2	3.0	0.0	0.0	0.1	47.7	49.6	49.1
computing machinery	88.8	88.3	73.6	0.3	0.5	0.4	0.1	0.7	0.7	89.1	89.5	74.7
tele, TV, radio appar.	57.2	39.2	46.7	1.8	1.4	2.1	0.1	0.5	3.5	59.0	41.2	52.2
electrical machinery	45.9	46.3	41.2	0.9	1.0	1.2	0.1	0.2	1.1	46.8	47.5	43.5
transport equipment	59.2	44.2	53.1	1.7	2.2	2.6	0.0	0.0	0.1	61.0	46.4	55.7
Subtotal	46.5	41.7	44.1	1.3	2.5	2.1	0.0	0.1	0.5	47.8	44.3	46.7
Total manufactures	33.7	29.6	30.2	1.8	1.9	2.0	0.3	0.4	1.0	35.8	31.8	33.1
sawn wood	7.2	4.3	4.0	20.4	30.1	23.4	0.9	0.4	0.6	28.6	34.9	28.0
non-ferrous metals	16.2	24.3	27.6	4.0	6.8	9.3	2.6	3.4	3.2	22.8	34.4	40.1
Total trade	18.2	16.3	18.2	3.9	5.2	7.6	1.9	2.4	3.0	23.9	24.0	28.8

Note: The import penetration ratio is measured by imports as a percentage share of apparent domestic consumption.

Sources: Appendix Tables 3 and 7.

Secondly, despite the general tendency, manufactured goods from LDCs have increased their share in Finnish markets - although to a quite marginal extent - particularly in the second half of the 1970's. This growth is especially accentuated by the fact that the LDC share in Finnish domestic apparent consumption has increased in each of the manufacturing industry classes. The most rapid growth in LDC import competition has taken place in the group of so-called new manuracturing imports, particularly in electrical appliances.

Nevertheless, in no sector of Finnish industry is penetration of LDC manufactures deep. In the vast majority of manufactured products, their market share is still only a small fraction of one per cent. Only for two industries, leather products (16.5 per cent) and clothing (12.4 per cent), did imports from LDCs account for more than one tenth of domestic sales in 1981 (Table 33). And furthermore, there were only six manufacturing branches in which the LDC import penetration share in the Finnish market was over one per cent. These were footwear (6.2 per cent), textiles (2.4 per cent) and miscellaneous light manufactures (1.2 per cent) as well as the new manufacturing import branches telecommunication, TV and radio apparatus (3.5 per cent), instruments and watches (1.7 per cent) and electrical machinery (1.1 per cent).

In particular, as far as the last new manufacturing import category is concerned, the import penetration ratios cited, while of small magnitude, nevertheless may overstate the importance of imports from LDCs. That is because this import is likely to contain a substantial and growing element of value added by DMEs. This would apply especially to the expanding offshore processing activities, in which the production in LDCs consists of assembling materials made abroad within the global production chain of transnational corporations. The conventional trade statistics are not able to distinguish between that part of the LDC export revenue which goes to domestic factors of production and that part which goes to external (or foreign) factors. Particularly, within the context of expanding new manufactured exports in peripheral economies

in which the import content of exported goods is high or a substantial portion of the value added in the exporting country is repatriated abroad (generally in the form of royalties and profit remittances or payments to foreign labour), only a small proportion of the total value of export activity may actually be retained by the domestic economy of LDCs. In this respect, a major part of the growing manufactured import penetration into Finland indicated in the statistics as LDC imports may, in fact, be attributable to expanding global activities of TNCs that are gradually restructuring world industry.

Altogether, the import penetration ratios presented in Table 31 show that foreign shares in the Finnish domestic market differ substantially with respect to major economic region. Hence,manufactured import growth from LDCs must be kept in perspective. The Finnish economy has predominantly been exposed to the pressure of foreign competition from core countries. The DMEs have captured an average share in the Finnish domestic market of manufactures that is thirty times greater than the LDCs. Even in the industries mainly affected by imports from LDCs - i.e. leather products, clothing and footwear - the market penetration portions of DMEs are two to four times greater than that of LDCs.

3.1.4 Trade balance comparisons

Data on import penetration may, however, give a quite misleading picture of the extent to which market disruption is caused by imports. To the extent that a country increases its exports in the same branch, relative to both imports and domestic consumption, by definition the import penetration ratio will have somewhat meaninglessly increased. As a result for some industry groups with ostensibly deep import penetration, Finland is in fact a net exporter. An extreme example is clothing in which the import penetration ratio alone will provide an overstatement of the effect of imports. Clothing imports captured almost a half of domestic demand in 1981, while at the same time the sector had a substantial export surplus, exports covering over three quarters of the gross

production. A similar example is the category of electrical machinery in the Finnish trade with the LDCs. The import penetration ratio of electrical machinery imports from LDCs increased from 0.2 per cent in 1976 to 1.1 per cent in 1981. Over the same period, however, Finnish exports to LDCs as a share of domestic gross output increased from 1.0 per cent to 4.0 per cent resulting in a substantial trade surplus.

Hence, the overall conclusion is that, while high import penetration of particular items may cause adjustment problems, a large negative trade balance is, however, a more fundamental sign of international weakness of an industry. As a whole, in 1981 exports of manufactures from Finland to LDCs were 4.6 times higher than the reverse flow. This great export surplus in manufactured trade has represented a persistent net gain for Finnish industry from trade with the LDCs. Nevertheless, within the manufacturing industry, there are quite strong variations by branches Table 32 is accordingly arranged in rank order of the trade balance and indicates the relative factor intensities for each branch.

Table 32. Finnish manufactured trade balance with LDCs related to relative factor intensities, 1981

	Trade balance (mil. mk)	R & D intensity	Capital intensity	Labour intensity	Raw material intensity	Energy intensity	Wage level	Labour productivity	Female intensity	Firm size	LDR intensity
Trade surplus											
paper	1 718.4	-	+	-	+	+	+	+	-	+	-
(sawn wood)	902.7	-	+	+	+	-	-	-	-	-	+
industrial machinery	584.1	+	-	+	-	-	+	-	-	+	-
wood mnfs	404.4	-	-	+	+	-	-	-	-	-	+
chemicals	392.7	+	+	-	+	+	+	+	-	-	-
transport equipment	360.3	-	-	+	+	-	+	-	-	+	-
pulp	247.6	-	+	-	+	+	+	+	-	+	+
iron and steel	129.9	-	+	+	+	+	+	+	-	+	+
basic metal prds	129.0	-	-	+	-	-	-	-	-	-	+
electrical machinery	118.9	+	-	+	-	-	-	-	-	+	+
furniture	37.4	-	..	+	-	-	-	-	-	-	+
non-metal mineral prds	31.3	-	+	-	-	+	+	+	-	-	-
instruments	22.1	+	-	-	-	-	-	+	-	-	-
pharmaceuticals	18.1	+	-	-	-	-	-	+	+	+	-
rubber prds	4.3	+	-	+	-	-	-	-	+	+	-
Trade deficit											
computing machinery	-7.4	+	-	-	-	-	+	+	-	-	-
tele, TV, radio apper.	-28.4	+	-	+	+	-	-	-	+	+	-
(non-ferrous metals)	-46.9	+	+	+	+	+	+	-	-	+	+
footwear	-48.8	-	-	+	+	-	-	-	+	-	-
misc.light mnfs	-59.5	-	-	-	-	-	-	+	+	-	-
textiles	-113.8	-	-	+	-	-	-	-	+	-	-
leather prds	-114.4	-	-	+	+	-	-	-	+	-	-
clothing	-219.8	-	-	+	-	-	-	..	+	-	+

Sources: Appendix Tables 2 and 3.

There are altogether seven manufacturing branches in which Finland has a negative trade balance with the LDCs. These deficit sectors may be put into two broad categories. On the one hand, the highest imbalance is observed in the case of the traditional export sectors of LDCs, particularly clothing, leather products and textiles. On the other hand, some sub-groups of the new manufacturing export of LDCs - telecommunications, TV and radio apparatus and computing machinery - also have turned to a deficit. In terms of factor intensities, all these branches tend to be low-wage, labour-intensive, particularly female-intensive sectors with relatively low labour productivity. Also the plant sizes tend to be relatively small. The major perceivable difference is related to R&D intensity, although this may be an ostensible difference, since the light engineering export production in LDCs typically also makes use of routine, simple processing or assembling operations with unskilled labour requirements. In the latter category Finnish industry has not been able to maintain its competitiveness vis-à-vis the LDCs relative to other industrialised countries. In the OECD area as a whole, there are only four deficit branches in the manufactured trade with LDCs - clothing, footwear, leather and wood products - and all of them are traditional export industries of LDCs.

3.1.5 Country concentration in import penetration

A more detailed examination reveals that even within deficit branches there are, in fact, only a few LDCs with which Finland has a deficit in trade. The vast majority of the LDCs have not been able to penetrate Finnish markets with manufactures at any rate. This reflects the overall high degree of country concentration in manufactured export performance of LDCs. Only twelve countries accounted for nearly 90 per cent of Finnish manufactured imports from LDCs, thus leaving only some ten per cent ot the total for the over one hundred remaining countries (Table 33).

Table 33. Twelve leading LDC exporters of manufactures to Finland, 1970 and 1981

	1970			1981*				
	value (1000 US $)	per cent share	Finnish mf trade balance (1000 US $)	ranking order for OECD-imports (in parentheses)	value (1000 US $)	per cent share	Finnish mf trade balance (1000 US $)	Finnish LDC imports as a share of OECD LDC imports (per cent)
1. Hong Kong	5 949	44.2	6 677	1. (2.) Hong Kong	49 843	22.4	-43 680	0.41
2. China	1 591	11.8	6 266	2. (3.) South Korea	37 433	16.8	-28 747	0.33
3. Argentina	1 206	9.0	12 925	3. (6.) Brazil	26 110	11.7	15 709	0.67
4. Egypt	972	7.2	784	4. (5.) China	22 734	10.2	1 865	0.51
5. Brazil	691	5.1	941	5. (1.) Taiwan Province	15 787	7.1	-10 501	0.11
6. India	562	4.2	1 856	6. (7.) Singapore	11 830	5.3	6 390	0.31
7. South Korea	400	3.0	-396	7. (8.) India	10 325	4.6	-4 958	0.34
8. Singapore	325	2.4	500	8. (12.) Argentina	6 563	2.9	40 517	0.81
9. Iran	321	2.4	9 214	9. (15.) Macao	4 422	2.0	-4 416	0.86
10. Mexico	264	2.0	5 226	10. (11.) Thailand	4 324	1.9	6 707	0.36
11. Uruguay	234	1.7	93	11. (9.) Malaysia	4 256	1.9	14 524	0.20
12. Pakistan	163	1.2	2 127	12. (4.) Mexico	3 836	1.7	67 184	0.08
Total twelve	12 678	94.2	46 109	Total twelve	197 463	88.5	60 594	0.32
Rest of the LDCs	789	5.8	62 593	Rest of the LDCs	25 525	11.5	715 490	0.23
All LDCs	13 467	100.0	108 702	All LDCs	222 988	100.0	776 084	0.30

Note: Manufactures are SITC 5 to 8 less 68.

* In 1981 manufactured imports from Polynesia ($ 6 833 mil., totally ferro-alloys) and Uruguay ($ 5 208 mil., of which $ 5 070 mil. is furskins) are excluded as casual cases.

Sources: OECD, Foreign trade by commodities, 1970 and 1981.

By treating the LDC group as a whole one leaves open the possibility that all LDCs are seen as participating evenly in the growth of manufactured exports. Nevertheless, as was shown earlier (pp. 4 - 6) there is a high country concentration, which is reflected in Finnish trade relations, too. Hence, while using the overall LDC category throughout this text, one is, in fact, referring primarily to the export performance of the leading LDC manufactured exporters. The NICs are the main LDC import sources in Finland. The small East Asian states, including Macao, are Finland's predominant suppliers of manufactures among LDCs, accounting for some 54 per cent of the total. Also the two Latin American countries Brazil and Argentina are ranking higher than their averages for the OECD area (and Mexico is ranking lower because of its specific trade relations with the US).

By and large, the Finnish manufactured trade balance with individual LDCs has been in surplus. During the 1970's, however, the success of the small Far Eastern NICs in their export performance has moved Finnish manufactured trade with them from a surplus to a deficit position. The highest

imbalance in 1981 was in trade with Hong Kong, South Korea and Macao. Their export performance has, however, varied widely along different manufacturing sectors. Table 34 illustrates country variations by leading commodity groups for Finnish imports of manufactured goods from LDCs.

Table 34. Leading LDC exporters to Finland by leading import branches in manufactures, 1981

			Per cent share of Finnish imports by five leading LDCs									
Trade deficit branches	all LDCs	12 leading LDCs										
clothing	26.4	24.9	Hong Kong	12.4	China	3.9	India	2.5	South Korea	2.1	Macao	1.9
leather prds	32.5	26.3	Brazil	19.1	Uruguay	5.9	Argentina	3.8	South Korea	1.5	India	1.5
textiles	5.7	4.5	South Korea	2.0	Brazil	0.7	China	0.6	India	0.5	Colombia	0.3
misc.light mnfs	6.9	6.5	Hong Kong	3.4	South Korea	1.0	Taiwan Prov.	0.9	China	0.8	Philippines	0.2
footwear	16.8	16.5	South Korea	12.2	Hong Kong	1.6	China	0.9	Taiwan Prov.	0.7	Malaysia	0.3
tele, TV, radio appar.	6.7	6.7	Singapore	2.1	South Korea	1.9	Hong Kong	1.4	Taiwan Prov.	1.0	Malaysia	0.2
computing machinery	1.0	0.9	Argentina	0.5	Singapore	0.1	Hong Kong	0.1	Brazil	0.1	Taiwan Prov.	0.0
Total mnf trade	2.8	2.5	Hong Kong	0.6	South Korea	0.5	Brazil	0.3	China	0.3	Taiwan	0.2
Some trade surplus branches												
instruments	2.2	2.2	Hong Kong	1.4	Taiwan Prov.	0.3	South Korea	0.2	Singapore	0.1	China	0.1
electrical machinery	2.5	2.4	Singapore	0.7	Taiwan Prov.	0.5	Malaysia	0.4	Hong Kong	0.3	South Korea	0.2
iron and steel	2.2	0.6	Polynesia	1.6	Brazil	0.5	Chile	0.0	China	0.0	Taiwan Prov.	0.0
chemicals	1.4	0.8	China	0.4	Mexico	0.2	Argentina	0.1	Brazil	0.0	Taiwan Prov.	0.0
wood mnfs	8.2	7.6	South Korea	2.6	Singapore	2.1	Taiwan Prov.	0.8	Thailand	0.8	Malaysia	0.5

Source: OECD, Foreign trade by commodities, 1981.

The country concentration by import branches is, in fact, much greater than the average figures on manufactured trade with LDCs as a whole would indicate. The trade structure with individual LDCs is, thus, very highly specialised. Particularly, as far as the traditional manufactured products are concerned, there is seldom more than one country from which the Finnish LDC import is originated. Clothing imports come predominantly from Hong Kong, leather products are from Brazil as well as its neighbours Uruguay and Argentina, textiles and footwear come primarily from South Korea and miscellaneous light manufactures are from Hong Kong. This heavy country concentration reflects the embryonic state of Finnish trade with the LDCs. The argument is reinforced by the fact that Brazil's imports alone in leather products, Hong Kong's in clothing and South Korea's in footwear comprised over ten per cent of total Finnish imports in those respective branches. In all other manufacturing branches the LDC leader's portion is less than three per cent of total imports.

It is particularly interesting to note that the import sources for the so-called new manufactured imports - primarily sub-groups of light engineering goods - are more widely divided among LDCs than is the case with the traditional products. The primary reason for this difference may be traced to the participation of TNCs in the new manufactured export production in LDCs that also determines the appropriate global marketing outlets. Hence, in Finnish imports of light engineering goods from LDCs there is also more than one dominant import source, although this trade is heavily concentrated regionally on those small Far Eastern suppliers.

3.1.6 Import creation and import diversion effects

The extent to which rapidly growing low-cost imports from LDCs has an impact on Finland's industrial structure depends to a large degree on whether it will displace imports from other sources rather than Finnish domestic production as long as it does not meet a new demand. As noted earlier, the share of manufactured imports from LDCs in Finnish total imports have increased, particularly in the latter half of the 1970's, and correspondingly the LDC import penetration ratio in the Finnish markets has grown. Nevertheless, that in itself does not necessarily imply market disruption effects or adjustment constraints on Finnish industrial production. In this respect, it may be misleading to consider only trade flows between Finland and LDCs. In order to assess the whole impact of the trade with LDCs on the Finnish industrial structure, one would also have to take into account the changes in the overall imports to Finland. Since the DME manufactured import penetration ratio in Finland is about thirty times greater than the LDC portion, this would indicate that significant demand potential exists for LDCs to expand their exports - just by replacing DMEs currently supplying Finnish markets - without undermining Finland's domestic production. In this respect, the balance of payments constraints and employment effects of low-cost import penetration from LDCs are also relatively less threatening. Obviously, the potential for such a process of country substitution varies greatly sector by sector.

One way of illustrating changes in sources of supply is to introduce the terms trade creation and trade diversion. The former concept refers to a displacement of domestic production in favour of an external source, indicating expansion of foreign trade, whereas the latter refers to a replacement of one import source by another. [1] These transfers and replacement processes in sources of supply may occur for different reasons, such as relative price or income changes, tariff reductions, preferential trade treatments or increased mobility of production factors. Here, however, the major interest is in the consequences rather than in the causes. The main question is what types of changes in the sources of supply or output substitution effects have been reflected by the growing manufactured import penetration from LDCs. This will be examined by applying the concepts of trade creation and trade diversion.

The operationalisation of these two concepts is conducted by comparing three components related to import penetration: a) changes of total imports in domestic consumption over a certain time period measured by the import penetration ratio, b) changes of the respective country's (region's) import in domestic consumption also measured by the respective import penetration ratio and c) changes of the country's (region's) share in total manufactured imports. These changes are indicated by a trend variable, and hence the potential alternatives are reduced to three: an increase, a balance or a decrease. Based on these components, trade creation and trade diversion effects are determined accordingly in Table 35.

The trade creation indicator is solely related to changes in the import shares of domestic consumption. Furthermore, a positive trade creation (expanding trade with a region resulting from the displacement of domestic production) takes

place only when a respective region's import penetration deepens together with a growth in total import penetration. Similarly, negative trade creation effects (domestic production is substituted for imports) require the combination of a decline in a region's import share in domestic consumption together with a decline in the total import penetration ratio. If the total import share of consumption and a region's corresponding share are not changing in the same direction, for example, if the total import penetration ratio is in balance or decreases while a region's import penetration ratio is increasing or vice versa, the possible substitution effects are only of the trade diversion type.

Table 35. Determination of trade creation and trade diversion effects according to changes in import structure

Imports of major region in domestic consumption	Share of major region in total imports	Total imports in domestic consumption (<) trade creation	(<) trade diversion	(≈) trade creation	(≈) trade diversion	(>) trade creation	(>) trade diversion
increases (<)	(<)	+	+	..	++	..	++
	(≈)	+	..				
	(>)	+	-				
is in balance (≈)	(<)					..	+
	(≈)			..	..		
	(>)	..	-				
decreases (>)	(<)					-	+
	(≈)					-	..
	(>)	..	--	..	--	-	-

++ distinctly positive
+ positive
.. no effects
- negative
-- distinctly negative

The trade diversion indicator, on the other hand, is determined by changes in a region's share in total imports. It is positive when a region's share in total imports is increasing and negative in case of a decline. Trade diversion is, moreover, emphasised when the total import penetration ratio is shifted into an opposite direction compared with a region's share in total imports. For instance, there is a strong positive trade diversion in favour of the LDCs if their share in the total Finnish imports is increasing while the total import penetration ratio is in balance or declining. Similarly, trade is distinctly diverting from LDCs to other external sources of supply, if the LDC import share is decreasing while total imports in domestic consumption are increasing. When distinctly positive and positive effects are differentiated here, this does not imply differences in relative quantities, but rather the qualitative deepness of the substitution process in question.

Given the relatively low level of the LDC manufactured import penetration into the Finnish markets, the whole examination of trade creation and trade diversion effects resulting from growing LDC imports must be kept in perspective. Finland's main competitors are still overwhelmingly the other DMEs. Keeping these considerations in mind, one may, however, observe certain interesting tendencies when analysing the effects of the changes in the Finnish trade patterns during the 1970's. These are illustrated in Table 36.

The overall pattern presented in Table 36 is fairly clear. The results suggest that the increase of the LDC manufactured imports to Finland during the 1970's has largely represented a replacement of imports from DMEs rather than displacement of domestic production. In manufactured imports from socialist countries, the substitution effects have not been significant. At the product group level this conclusion is further qualified. Such a process of country substitution between LDCs and DMEs has taken place particularly in imports of labour-intensive manufactures. In all major industrial branches,

Table 36 - Trade (import) creation and trade (import) diversion effects in Finnish imports by branches during the period 1970 - 1981 by major regions

	DMEs		SOCs		LDCs	
	import creation	import diversion	import creation	import diversion	import creation	import diversion
Labour-intensive intermediates						
leather prds	..	-	..	--	+	+
rubber prds	..	--	..	++	..	..
wood mnfs	-	-	..	+	..	+
textiles	+	-	+	+	+	+
non-metal mineral prds	..	..	..	..	..	..
Subtotal	..	--	..	++	..	++
Capital-intensive intermediates						
chemicals	..	..	..	..	..	..
pulp	..	..	..	..	..	..
paper	..	..	..	..	..	..
iron and steel	-	..	-	-	..	++
Subtotal	-	..	-	..	..	+
Consumer goods						
pharmaceuticals	..	++	..	--	..	..
furniture	..	--	..	++	..	..
clothing	+	-	+	+	+	+
footwear	+	-	+	..	+	+
instruments	..	--	..	..	..	++
misc. light mnfs	..	--	..	+	..	+
Subtotal	..	-	+	+	+	+
Capital goods						
basic metal prds	..	--	..	..	..	++
industrial machinery	..	..	..	..	..	..
computing machinery	-	-	..	..	..	+
tele, TV, radio appar.	..	--	..	..	..	++
electrical machinery	-	-	..	+	..	++
transport equipment	..	..	..	..	..	..
Subtotal	..	--	..	..	..	++
Total manufactures	..	--	..	..	..	++
sawn wood	..	--	..	..	..	..
non-ferrous metals	+	-	+	+	..	-
Total trade	..	-	+	+	+	+

Note: See the determination of trade creation and trade diversion effects in Table 35. The import penetration data is from Table 31 and the data on import shares by major regions is based on Appendix Table 3.

excluding, significantly enough, transport equipment, industrial machinery and capital-intensive intermediates, imports from LDCs have replaced imports from DMEs.

Furthermore, during the 1970's there were only four manufacturing branches that experienced adjustment pressures on the imports from LDCs measured by the trade creation indicator. These were, as could be expected, leather products, clothing, footwear and textiles. In all these four sectors LDC imports substituted for Finnish domestic production as well as diverted trade from DMEs in favour of LDC suppliers. Clothing and footwear, in particular, have been sectors within which Finland's own relative industrial competitiveness has been quite strong, and consequently the emergence of alternative low-cost sources of supply emphasises the vulnerability and adjustment constraints of these branches.

Besides the negative production effects, there are, however, positive consumption effects resulting from relative price changes. LDC import prices are lower compared with prices of home-produced goods, helping to keep down the rate of inflation. In order to determine, if these positive consumption effects could, at any rate, offset relative production losses, there is a need to examine more closely the effects of trade with LDCs on Finnish employment, particularly in the four most vulnerable branches.

3.2 Displacement of labour caused by LDC imports

The change of the input and output patterns and the consequent employment structure, i.e. structural change, is a permanent feature in the functioning of the national economy. The roots of structural change are manifold, comprising, for instance, shifts in factor endowments, technology, consumer preferences, economic and other policies as well as external competitive conditions. Structural change may be smooth or painful, depending on the flexibility of the economy, its specific

production characteristics and the type of constraints the economy faces. Its effects are directly experienced in terms of employment variation.

The primary concern with structural change arises from the belief that it has been the major cause of unemployment and that further structural adjustment will cause additional dislocation of labour. For that reason, the focus is usually upon employment changes and their origins.

Changes in employment result from a variety of causes, including alterations in the levels of demand, foreign trade and labour requirements per unit of output. The adverse effects of rapid increases in imports, in particular, have attracted attention, presumably because the sources of disturbance are so easily identifiable. The rise of the 'new protectionism' in the industrialised countries is attributed, in part, to this increased import penetration. Faced with choosing between adjustment and protection, the DMEs have not only maintained their trade barriers, but have also taken steps to increase them, particularly against growing low-cost manufactured imports from LDCs. These protectionist measures result from the DMEs' concern about domestic employment, especially in the industries adversely affected by imports from LDCs at a time when overall growth-rates are slow and unemployment is increasing. The measures are conceived to be a means of bringing about a managed process of structural change.

3.2.1 Employment change

In Finland, unlike in the core economies, manufacturing employment has increased in both relative and absolute terms during the whole 1970's, although at the same time the unemployment rate has been continuously above the OECD average. These features are partially explained by the lateness of the Finnish industrialisation process. Manufacturing employment increased annually by 1.5 per cent, indicating that about sixty thousand new jobs were created in Finnish manufacturing between

1970 and 1981. The growth rate of real production by industry over the same period was somewhat higher, 4.7 per cent per year (see Table 37).

However, despite this overall correspondence, since the mid-1970's output has continued to grow, but manufacturing employment has stagnated. During the period 1970-76 the rate of annual growth in manufacturing employment was 2.2 per cent, compared with only 0.6 per cent in 1976-81. This slowdown in employment growth in the late 1970's and at the beginning of 1980's has been due to structural rather than cyclical factors. The loss of the dynamism of manufacturing employment in Finland has been reflected, to some extent, by a slower growth of the labour supply (as a rapid shift away from the primary sector has settled) and, particularly, by an acceleration of productivity growth, since the annual growth rate of the real output by manufacturing industry was 5.7 per cent during the period 1976-81. The capability of Finnish manufacturing to generate additional employment has, hence, gradually diminished by the beginning of the 1980's. This may manifest a permanent feature in the process of structural change in the Finnish economy. The late-coming industrialisation may approach its mature stage and is becoming comparable in its structural development with the core economies.

Within the manufacturing industry as a whole, the variation in employment growth among individual branches has been very great. Table 37 illustrates the inter-industrial ranking according to the relative speed of employment growth during the 1970's. High growth, growing and slow growth sectors have been differentiated to denote expanding and shrinking activities relative to the average in manufacturing. Furthermore, there have been four sectors in which employment has declined.

Table 37. Growth of employment and gross output by manufacturing branches in Finland, 1970 - 1981

	Total employment			Average annual growth rate 1970 - 1981	
	1970	1976	1981	employment	real output
High growth sectors					
computing machinery	901	947	2 734	18.5	38.3
instruments	2 163	3 815	4 507	9.9	15.9
tele. TV, radio appar.	5 275	10 956	9 115	6.6	19.1
(fuels)	2 276	3 420	3 636	5.4	14.3
pharmaceuticals	3 730	4 890	5 611	4.6	6.2
iron and steel	10 342	15 629	14 824	3.9	12.2
electrical machinery	16 298	20 099	21 990	3.2	7.9
Growing sectors					
furniture	10 386	12 109	13 445	2.7	4.1
chemicals	20 434	24 896	26 229	2.6	6.1
misc.light mnfs	32 609	35 894	41 746	2.5	4.1
basic metal prds	24 923	30 255	31 683	2.5	5.1
transport equipment	32 124	39 165	40 678	2 4	5.2
(non-ferrous metals)	4 151	5 222	5 167	2.2	0.9
industrial machinery	52 897	61 015	63 519	1.8	4.2
paper	29 751	35 123	35 682	1.8	5.6
total manufactures	379 808	429 311	441 355	1.5	4.7
Slow growth sectors					
(sawn wood)	20 624	18 360	22 214	0.7	3.2
footwear	7 687	6 488	8 181	0.6	7.9
non-metal mineral prds	20 169	21 546	21 244	0.5	2.3
clothing	31 549	34 627	33 119	0.5	2.9
rubber prds	4 714	5 053	4 823	0.2	0.3
Declining sectors					
wood mnfs	24 214	21 367	22 757	-0.5	3.7
pulp	16 287	16 282	14 504	-1.0	1.5
leather prds	3 484	3 140	2 765	-1.9	1.5
textiles	29 871	26 015	22 199	-2.3	1.3

Source: Appendix Table 7.

It is obvious that the figures presented are also influenced by cyclical factors. Such influences could hardly be eliminated even if the benchmark years would fall precisely in the same phase of the business cycle, since in the business cycle there are always leading and lagging industries. Nevertheless, the

figures presented illustrate rough orders of magnitude and basic features in the process of structural change occuring within the employment and output pattern of Finnish industry.

Six out of the 21 manufacturing branches have exhibited high growth rates of both employment and real output. These are primarily new, sophisticated and skill-intensive industries with a high value-added content, the most typical example being branches of the electrical engineering industry. The time period may, however, be too short to indicate their real long-term growth potential in the Finnish economy, since their relative growth rates are overemphasised by the low starting level. The largest sectors in terms of employment, i.e. industrial machinery, transport equipment, basic metal products and miscellaneous light manufactures, have sustained their performance in average employment growth chroughout the 1970's. Traditional, standardised, resource-based or labour-intensive branches, such as the forest industry as well as clothing, footwear and particularly textiles and leather products, have been slow growth sectors. While real output in these industries has still grown, employment has been stagnant or even declined. Unambiguously, these branches form the hard core of the relatively declining industries within Finnish manufacturing.

As indicated before, in terms of the LDC manufactured import penetration into the Finnish markets as well as in terms of the displacement of domestic production measured by the trade creation indicator, textiles, clothing, leather products and footwear are the most sensitive branches; furthermore, in this section it has been shown that these are also declining sectors as far as employment is concerned. Naturally, this vulnerability has brought up anxiety about the potential disruptive effects of rapid increases in imports from LDCs on domestic employment.

3.2.2 Employment constraints of LDC trade in DMEs

The general analysis of the adjustment to foreign trade is not new. However, only quite recently has specific research been carried out in some developed countries on the employment implications of trade with LDCs.[2] These studies differ widely with regard to methodology, data base, sectoral breakdown and the period covered by the analysis. Nevertheless, there is a reasonable consistency in their findings.

Increased trade with LDCs appears so far to have had only a small effect on total manufacturing employment in the DMEs, losses in some industries being counterbalanced to a considerable extent by gains in others. The studies have found that the overall net effects have been very small indeed, i.e. less than a quarter of a percentage point of the total labour force. Even in the industries most strongly affected by imports from LDCs, such imports are responsible for only a fraction of the employment losses. Other major factors such as rising productivity, a faltering in aggregate demand or the competition of other industrialised countries are found to be far more important causes for observed labour displacement.

For example, it has been estimated that a total elimination of the trade barriers affecting imports from LDCs would result in only a 0.3 per cent decrease in all employment in DMEs during a period of 5 to 10 years, whereas the displacement of labour as a result of technological change linked to an increase in productivity amounts to 3-4 per cent annually.[3] In the EEC countries together about thirty times more jobs were lost in the period 1970-77 through the growth of labour productivity than through growth of imports from LDCs. Even in the sectors most strongly threatened by competitive pressure from LDCs - textiles, clothing and leather industries - for every displaced job as a result of imports from LDCs, there were some five jobs lost by increases in productivity.[4]

On the other side of the coin, according to ILO estimates, for every worker who is displaced in DMEs by increased imports from LDCs, some 3 to 5 workers would find employment in the LDCs concerned, and in the most favourable circumstances it could amount to even as many as 20 workers.[5]

Moreover, the labour displacement caused by low-cost import penetration is offset by jobs created as a result of additional exports to LDCs. Their industrialisation is highly import dependent, particularly on products requiring skilled labour, such as capital goods and machinery. This argument is justified by the fact that all DMEs have a surplus in their manufactured trade relations with the LDCs. It can be estimated that the 'employment balance' of trade in manufactures with LDCs is clearly positive for the DMEs, since nearly three times as many persons are required to produce exports to LDCs than are saved due to imports from there.[6]

The major issue in the DMEs is, hence, one of sectoral restructuring of labour rather than mere job displacement. Shifts in the sectoral pattern of employment accompanied by shifts in the occupational and skill structures are inevitable. Problems, however, arise because new employment opportunities are frequently offered to new labour groups, demanding quite different skills and are located in different places than the displaced ones. The industries in DMEs affected most severely by low-cost import penetration so far include clothing, textiles, leather products and footwear as well as parts of mechanical and electrical engineering. These are characterised by standardised and low-skill demanding production processes; they are typically small or medium-sized firms and are often regionally concentrated in structurally weak areas. The new imports normally come in the most price-sensitive manufacturing products, and, last but not least, the labour displacement effects are greater than import penetration rates might suggest. Displacement takes place in the most labour-intensive processes and industries. Moreover, the affected labour force consists of the most disadvantaged labour groups (female, unskilled, low-wage, old and immigrant workers). Although the

absolute extent of structural change induced by low-cost imports is marginal compared with overall employment, it will gradually grow in the future, and combined with other economic factors, such as slow demand growth, the need to adjust to technical changes and the overall recession, it has pushed governments to protect rather than to adjust to the present industrial structure.

3.2.3 The methodology of quantitative analysis

In order to quantify the employment effects of manufactured trade with LDCs in Finland, two types of calculations have been applied in this study. The first set of calculations measure the direct employment content of both exports and imports. The number of employment opportunities created or displaced are obtained by multiplying the actual labour force employed in each manufacturing branch by the ratio of either the exports or the imports to the gross output of production in the respective industries. These hypothetical employment figures are, hence, derived according to the following simple formulae:[7]

$$\text{Employment content of exports: } E_i \cdot X_{ij}/O_i$$
$$\text{Employment content of imports: } E_i \cdot M_{ij}/O_i,$$

where (X_{ij}) and (M_{ij}) represent exports and imports of industry (i) in trade with region (j), (E_i) stands for employment and (O_i) for gross output in industry (i).

The employment equivalents estimated by the above calculations do not mean the actual number of jobs of workers displaced or created. The latter may be different according to shifts in the aggregate demand for the products of the industry concerned. These estimates only aim to show the 'pure employment content' of import (or export) on the simplifying assumption that everything else during the period remained unchanged. Moreover, all imports classified according to industry are treated as perfect substitutes for domestic production. Similarly, exports are assumed to be perfect substitutes for local goods sold on the domestic market. These assumptions imply that an increase in employment due to a reduction in imports or expansion in

exports is the same as that arising from an equivalent increase in domestic production, although in many cases imports do not necessarily represent a competing supply.

The second formula quantifies the importance of trade as a source of change in manufacturing employment both in absolute terms and in relation to the employment impact of other sources of structural change. It is based on the same approach and assumptions as the previous one, but it is slightly more diversified by applying a simple statistical decomposition analysis and by focusing on actual changes in employment. The model breaks down the intertemporal change in employment into four components:

1. increase in employment potential due to expansion of domestic consumption
2. increase in employment potential due to export growth
3. decline in employment potential due to increased imports
4. decline in employment potential due to increased labour productivity

The methodology allows for an assessement of the relative weight of each of these sources of structural change. The analysis is based on two simple identities. The first one states that, abstracting from inventory changes, output (O) is equal to domestic apparent consumption (C) plus exports (X) minus imports (M):

$$(1)\quad O = C + X - M$$

The second identity states that labour productivity (P) is the ratio of output (O) to employment (E):

$$(2)\quad P = O/E$$

By solving for employment from these identities, the following expression follows:

$$(3)\quad E = (C + X - M)/P$$

Differentiation of (3) with respect to time gives:

$$(4)\quad dE = \frac{1}{Pt}(dC + dX - dM - E_{t+1} \cdot dP)$$

Where (d) indicates the change between time (t) and time (t+1). Finally, by substituting (E_t/O_t) for $(1/P_t)$ the following formula is obtained when the changes are small:

$$(5)\quad E_{t+1} - E_t = E_t/O_t(C_{t+1} - C_t) + E_t/O_t(X_{t+1} - X_t) - E_t/O_t(M_{t+1} - M_t) - E_t/O_t \cdot E_{t+1}(P_{t+1} - P_t)$$

In other words, the change of employment in a certain time period is broken down into the various demand factors and into productivity. The four terms represent the employment changes between (t) and (t+1) which are attributable to changes in domestic consumption, exports, imports and productivity. This formula can be readily extended to separate the employment effects of trade with the major trading partners by applying the following identities:

$$(6)\quad X = X_D + X_S + X_L$$
$$(7)\quad M = M_D + M_S + M_L,$$

where (D), (S) and (L) refer respectively to trade with DMEs, socialist countries and LDCs.

The method presented above is widely used to analyse the effects of trade on industrial employment.[8] It assumes that an increase in demand (domestic or foreign) leads to a corresponding increase in output of the product concerned, while an increase in imports (or productivity) leads to a decrease in output of the corresponding import-competing product. These output shares are then converted into employment changes using information about the labour requirements per unit of output in different branches of industry. Nevertheless, the methodology has a number of limitations.

First, only the direct or initial employment effects are considered, while the indirect impacts operating through multipliers and input-output linkages are ignored.

Secondly, the labour requirements per unit of output, i.e. the inverse of labour productivity, is assumed to be the same in the export industries as in the industries which suffer from import competition, although in reality that rarely is so.

Thirdly, in many cases imports are imperfect substitutes for domestic production, and hence not all imports can be considered as competing and potentially replacing home production. The employment pressure may be limited due to other factors, too. For instance, cheaper manufacturing inputs from external sources strengthen the competitiveness of domestic industries and may improve employment to some degree. This example leads to the fourth shortcoming in the methodology.

The analysis can only serve to demonstrate the apparent effect of the defined components isolated from each other and from other more basic factors of change, such as consumer preferences, government policies or changes in factor endowments. The analysis does not assume any interaction between the various sources of employment change, and hence it is not able to illuminate the underlying causal relationships. The effects thus calculated can be interpreted as causal factors only in the sense that all other factors were held constant, and then the change in employment would be equal to the contribution of the component in question. In reality,however, there are manifold interdependencies between the components of change.

For example, an increase in productivity in terms of the model always leads to a reduction in employment, although in many cases it may lower domestic prices and interacting with all the other components - e.g. reducing the potential level of imports and rising domestic demand - increase domestic output and employment. Similarly, cheap imports tend to increase productivity and also, by lowering prices, increase aggregate

demand and, to some degree, domestic employment. Furthermore, additional exports may increase productivity by enabling producers to achieve economies of scale.[9] In this analysis the employment change attributed to a particular component includes the second round effects of some of the other factors induced through these types of relationships. In most cases these second round effects are expected to be relatively small, and hence there is no attempt here to decompose the employment changes further to identify better the total influence of the specific factors examined.

Due to the methodological shortcomings and qualifications mentioned, the results of the calculations should not be interpreted with too high an expectation of accuracy. The figures presented in the following tables must be taken as only indicative. However, their order of magnitude and their direction allow us to make some useful comparisons. The analysis identifies the first round effects on employment of the various sources of change. The results describe roughly what has happened, but they do not describe why.

3.2.4 Direct employment effects of Finnish foreign trade

The first set of calculations quantify the direct employment content of Finnish trade relations in 1981. It is measured by counting the average unit labour requirements in each manufacturing sector, and then by simply translating trade into the average number of corresponding jobs, assuming that one unit of imports (or exports) displaces one unit of gross value of production (see page 119). This procedure offers only hypothetical employment figures, as mentioned before.

It can be estimated that in 1981 about 175 000 manufacturing employees in Finland worked directly for exports of industrial goods. These accounted for about 40 per cent of total manufacturing employment (Table 38). The production of exports to the LDCs alone required some 15 000 persons, representing

slightly over 3 per cent of the total manufacturing labour force. Corresponding calculations of the 'employment equivalent' of imports as the number of employees that would be necessary to produce the imported industrial goods at home yields a figure of 154 000. As far as imports from the LDCs are concerned, the number of 'displaced' manufacturing workers amounts to 5 500; that is 1.2 per cent of total labour force - but only about one-third of the positive employment effects of the corresponding exports. These figures show that Finland gains more jobs through its manufacturing exports to LDCs than it loses through imports, reflecting, of course, its trade surplus in manufactures. Only in trade with DMEs is the number of employees involved in exports of industrial products smaller than the number of jobs lost through imports. Altogether, the Finnish overall employment balance of trade, i.e. the net effect of manufacturing trade on employment, is positive.

Table 38. Direct employment content of Finnish manufactured trade by major regions, 1981

	Employment content of			As per cent of total manufacturing employment		
	exports	imports	net effect	exports	imports	net effect
DMEs	102 051	140 035	-37 984	23.1	31.7	-8.6
SOCs	58 821	8 534	50 287	13.3	1.9	11.4
LDCs	15 123	5 498	9 625	3.4	1.2	2.2
Total trade	175 995	154 067	21 928	39.9	34.9	5.0

The direct employment content figures are derived by multiplying labour force in industry i by the ratio of exports (imports) to gross output $E_i \cdot X_{ij}/O_i$ and $E_i \cdot M_{ij}/O_i$

Source: Appendix Table 9.

In order to provide a better comparison, the employment effects of exports and imports are related to units of one million Fmk in exports or imports. The resulting average labour-input coefficients in the Finnish manufactured trade are presented in Table 39. The estimates are based on the assumption that the labour-input coefficients are the same for exports and for imports in each industry group. Considerable differences in the coefficients exist, however, between manufacturing sectors, and, depending on the weights of the sectors in trade, the average labour-input coefficients are differentiated for total exports and imports.

Table 39. Average labour-input coefficient in Finnish manufactured trade, 1981 (jobs per one million marks of trade)

	Exports	Imports	Ratio of exports to imports
DMEs	3.6	4.5	0.80
SOCs	4.2	4.2	1.0
LDCs	3.3	5.6	0.59
Total	3.8	4.5	0.84

The estimates show the existence of a clear difference in the average labour intensity for the exports and for the imports of manufactured goods in Finnish trade. The imports from all sources are more labour-intensive than exports to them. This is due, in particular, to the natural resource intensity of Finnish exports. This difference in the labour intensity is particularly pronounced in trade with the LDCs, as might be expected. The average number of jobs for one million Fmk of output is 3.8 for exports to the LDCs and 5.6 for imports from the LDCs, the ratio of the two being 0.59. The effect of an equal absolute increase in the value of both exports to LDCs and imports from LDCs would therefore be a net loss of employment. For example, if imports from LDCs increase by an amount large enough to replace the domestic production of one hundred workers, the same amount of increased exports to LDCs would only create employment for 59 persons. Hence,

manufacturing imports from the LDCs to Finland are considerably more labour-intensive than the reverse flow of manufactures. That explains also why the Finnish manufactured trade balance with the LDCs is distinctly more favourable than the employment balance.

Nevertheless, the balance of employment effects on the Finnish manufactured trade with the LDCs was favourable to the extent of nearly 10 000 jobs in 1981 (Table 38). It may appear paradoxical that employment effects are favourable when exports are distinctly less labour intensive than imports, so that an equal increase in exports and imports has a marked negative employment effect. The number of employees required for the production of export goods is about 40 per cent less than the employment effect of the same level of LDC imports. The paradox is resolved, however, when it is recalled that Finland has continuously had a substantial trade surplus in manufactures with the LDCs, e.g. in 1981 the ratio was 4.6 to 1.

3.2.5 Sectoral employment effects of Finnish foreign trade

The main problem, however, is not so much the numbers of jobs displaced or created in general, but rather the employment constraints of foreign competition in individual branches. Examination of the net effects of manufactured trade by sectors reveals a concentration of employment creation and displacement according to the overall pattern of international specialisation in Finnish industry (see Table 40 and compare with Table 13 p. 52). As may be expected, a clear-cut positive net effect in employment is experienced only in the forest sector as a whole and in garments (clothing and footwear). All other manufacturing branches are more or less import dominated, and hence the net employment effects of foreign trade are mainly negative. The most affected branches are within the capital goods category, particularly in R&D-intensive light engineering goods, such as instruments and computing machinery in which the net employment effects of foreign trade, in fact, surpass the total employment of the industry concerned.

Table 40. Direct employment content of Finnish manufactured trade with LDCs by branches, 1981

	LDC trade				Total trade	
	exports	imports	net effect	net effect per cent of total employment	net effect	net effect per cent of total employment
Labour-intensive intermediates						
leather prds	39	720	-680	-24.6	-1 592	-57.6
rubber prds	39	12	27	0.6	-2 526	-52.4
wood mfs	2 243	76	2 167	9.5	9 860	43.3
textiles	109	758	-649	-2.9	-9 097	-41.0
non-metal mineral prds	159	22	137	0.6	-172	-0.8
Subtotal	2 589	1 588	1 002	1.4	-3 527	-4.8
Capital-intensive intermediates						
chemicals	1 080	150	930	3.5	-4 196	-16.0
pulp	339	4	336	2.3	4 700	32.4
paper	3 262	10	3 252	9.1	24 243	67.9
iron and steel	357	87	271	1.8	535	3.6
Subtotal	5 038	251	4 789	5.2	25 282	27.7
Consumer goods						
pharmaceuticals	64	10	55	1.0	-576	-10.3
furniture	263	21	242	1.8	3 499	26.0
clothing	31	1 728	-1 697	-5.1	19 233	58.1
footwear	6	314	-308	-3.8	3 110	38.0
instruments	287	168	119	2.6	-5 150	-114.3
misc. light mfs	211	482	-272	-0.7	811	1.9
Subtotal	862	2 723	-1 861	-1.7	20 927	19.6
Capital goods						
basic metal prds	776	130	646	2.0	1 034	3.3
industrial machinery	2 947	101	2 846	4.5	-8 542	-13.4
computing machinery	23	61	-38	-1.4	-5 377	-196.7
tele, TV, radio appar.	190	340	-150	-1.6	-663	-7.3
electrical machinery	887	276	611	2.8	-3 481	-15.8
transport equipment	1 811	28	1 784	4.4	-3 720	-9.1
Subtotal	6 634	936	5 699	3.4	-20 749	-12.2
Total manufactures	15 123	5 498	9 629	2.2	21 933	5.0
sawn wood	3 240	47	3 192	14.4	14 873	67.0
non-ferrous metals	63	133	-70	-1.4	836	16.2
fuels	2	877	-875	-24.1	-4 089	-112.5

Source: Appendix Table 9.

As far as manufactured trade with the LDCs is concerned, the sector which benefits most, besides the forest sector, is the very same capital goods category in which the net employment effect of total trade is the worst (particularly as a result of the trade with the DMEs; see Appendix Table 9). This contrast in the employment effects caused by the diverging regional foreign trade pattern is quite characteristic of a semi-peripheral economy. Altogether, capital goods and the forest sector account for about 84 per cent of the total employment created by the Finnish manufactured exports to LDCs.

Considering the 'employment equivalent' of the imports from LDCs, the negative effects are, of course, the highest in the leading import sectors. A negative net effect can be experienced only in the trade deficit branches. As indicated earlier, clothing, textiles, leather products and footwear are the sectors which are by far the most sensitive to import competition from LDCs. If miscellaneous light manufactures are included as the fifth traditional import sector, these branches together account for 73 per cent of the total hypothetical labour displacement caused by the manufactured imports from LDCs. The worst case is clothing, in which the imports from LDCs correspond to the output produced by some 1 700 employees, which is around 5 per cent of the total labour force in the industry. The net effect is relatively higher in leather products, in which LDC imports displace some 700 workers, being equivalent to 25 per cent of the total employment. The remaining two vulnerable sectors are footwear and textiles, but in both of these the relative labour displacement effect is less than 4 per cent of the total employment. As far as the so-called new imports of mechanical and electrical engineering goods are concerned, the net employment displacement by LDC trade is negligible - in fact in some sub-sectors, such as instrument and electrical machinery, the net effect is positive (Table 40).

These employment equivalents thus estimated are hypothetical in the sense that they do not mean the actual numbers of jobs of workers displaced or created. They only measure the direct employment content of foreign trade with the simplifying assumption that other things remain unchanged and that all imports (or exports) are perfect substitutes for the domestic goods. Hence, it would be more illuminating to examine the impact of foreign trade - particularly trade with LDCs - on the actual change in manufacturing employment. This would relate the shifts in the trade composition to the overall structural change in the economy.

8.2.6 Sources of employment change

The growth or decline in employment can be attributed only partly to the growth of imports or exports. Clearly, other factors are involved, too. Demand trends and changes in productivity are generally the most important causes of structural change. Also the level of Finnish trade with the core economies is clearly a more important factor than the quite modest trade with the LDCs. To quantify the relative importance of these various sources of change in manufacturing employment, the calculations were carried out by using the decomposition formula constructed above on pages 120-121. In Tables 42 and 43 the results of a decomposition of employment changes which are due to changes either in domestic demand, productivity or foreign trade are presented for the period 1970 to 1981. These components are closely linked, as described earlier, and hence the analysis offers only rough orders of magnitude.

The basic years of the analysis include two quite different stages of the business cycle in Finland. Finland was experiencing an economic recession in 1981, whereas 1970 was a time of economic expansion. Obviously, these cyclical factors have an effect on the absolute employment figures presented, even though they may not alter the relative importance or the order of magnitude of the major sources of employment change. The year 1976 has, however, been included in the examination representing a slow-growth stage in the business cycle comparable to the year 1981 (see summary Table 41).

The calculation yields figures of absolute changes in employment during the period of investigation, but these results have also been translated into corresponding annual rates of change. The following features are particularly noteworthy:

Table 41. Sources of employment change, 1970 to 1981

	Number of employees			Average annual percentage change		
	1970-76	1976-81	1970-81	1970-76	1976-81	1970-81
Employment change	49 503	12 044	61 547	2.2	0.6	1.5
due to change in						
Domestic consumption	103 198	67 332	170 530	4.5	3.1	4.1
Productivity	-50 952	-110 302	-161 254	-2.2	-5.1	-3.9
Foreign trade	-2 740	55 014	52 274	-0.1	2.6	1.3
of which						
Exports	39 379	80 695	120 074	1.7	3.8	2.9
Imports	-42 122	-25 681	-67 803	-1.8	-1.2	-1.6

a) First of all, as already evident in Table 37 p. 115, Finnish manufacturing employment as a whole expanded throughout the 1970's. Cyclical fluctuations have not concealed this basic trend. Average annual employment growth was 2.2 per cent from 1970 to 1976 compared with 0.6 per cent between 1976 and 1981, although the former years represent a move from economic expansion to recession, while the latter are both slow-growth years.

b) The major source for positive employment effects has been the growth in demand, domestic as well as foreign. The former has generally stimulated employment more than the latter. This emphasises that the overall industrialisation process in Finland is primarily based on expansion of domestic consumption rather than trade expansion. [10] The only exceptions to this rule are the export branches: the forest industry (sawn wood, paper, furniture), clothing and foot-wear as well as non-ferrous metals. In fact, clothing has suffered from decreasing (real) domestic demand during the 1970's (Table 42).

c) As for negative employment effects, increases in labour productivity are a more important source of labour displacement in the majority of the industries than imports. The two components may, however, be interlinked so that import competition increases domestic labour productivity. In such cases, according to the calculations above, large displacement

effects due to productivity increases will be observed while the displacement would causally have to be attributed to the actual or potential increase in imports.

d) In the majority of the manufacturing branches, the positive employment impact of increasing exports outweighed the negative impact of increasing imports. Hence, on the whole, the net effect of foreign trade on employment has been positive during the 1970's, although this influence has been smaller than the employment changes due to increasing domestic consumption or productivity. The sluggish development in Finnish manufacturing employment in the latter half of the 1970's was caused by internal factors - particularly by rapid growth in labour productivity and also by slow growth in domestic consumption - rather than by external factors. In fact, foreign trade induced a marked net gain in manufacturing employment, if the two periods 1970-76 and 1976-81 are compared to each other (Table 41).

3.2.7 Sources of sectoral employment change

Behind these changes at the level of the economy as a whole lie changes in the sectoral employment pattern. Table 42 indicates the contribution of each of the different factors to the absolute and to the annual percentage change in employment by branches over the eleven year period. The branches are in rank order according to the relative speed of employment growth during the 1970's.

Some interesting features about the process of structural change appear in the Table 42. The analysis shows that in high growth sectors (primarily light engineering goods and the chemical industry as a whole) large positive impacts on employment due to increases in both foreign and domestic demand tended to be associated with large negative impacts due to increases in productivity and imports. These industries

Table 42. Sources of employment change by manufacturing branches, 1970-1981

	Number of employees					Average annual percentage change				
	employment change	due to change in				employment change	due to change in			
		domestic consumption	productivity	exports	imports		domestic consumption	productivity	exports	imports
High growth sectors										
computing machinery	1 833	9 232	-2 139	1 105	-6 365	18.5	93.2	-21.6	11.2	-64.2
instruments	2 348	11 704	-3 354	3 502	-9 509	9.9	49.2	-14.1	14.7	-40.0
tele TV, radio appar.	3 840	10 933	-7 104	3 973	-3 961	6.6	18.8	-12.2	6.8	-6.8
(fuel)	1 360	5 518	-2 200	475	-2 433	5.4	22.0	-8.8	1.9	-9.7
pharmaceuticals	1 881	2 403	-1 332	2 343	-1 533	4.6	5.9	-3.2	5.7	-3.7
iron and steel	4 482	11 326	-12 549	4 488	1 217	3.9	10.0	-11.0	3.9	1.1
electrical machinery	5 692	12 926	-11 039	7 996	-4 191	3.2	7.2	-6.2	4.5	-2.3
Growing sectors										
furniture	3 059	2 429	-1 885	3 447	-932	2.7	2.1	-1.7	3.0	-0.8
chemicals	5 795	16 858	-10 035	6 467	-7 494	2.6	7.5	-4.5	2.9	-3.3
misc.light mnfs	9 137	12 190	-6 157	7 217	-4 113	2.5	3.4	-1.7	2.0	-1.1
basic metal prds	6 760	12 759	-8 786	7 624	-4 237	2.5	4.7	-3.2	2.6	-1.5
transport equipment	8 554	13 297	-9 176	8 185	-3 751	2.4	3.8	-2.6	2.3	-1.1
(non-ferrous metals)	1 016	207	253	1 110	-554	2.2	0.5	0.6	2.4	-1.2
industrial machinery	10 622	16 125	-16 034	22 378	-11 847	1.8	2.8	-2.8	3.8	-2.0
paper	5 931	8 742	-14 902	12 767	-676	1.8	2.7	-4.6	3.9	-0.2
Slow growth sectors										
(sawn wood)	1 590	284	-4 653	7 883	-1 923	0.7	0.1	-2.1	3.5	-0.8
footwear	494	2 405	-5 306	5 029	-1 633	0.6	2.8	-6.3	5.9	-1.9
non-metal mineral prds	1 075	4 254	-4 239	2 923	-1 863	0.5	1.9	-1.9	1.3	-0.8
clothing	1 570	-4 442	-8 870	18 002	-3 120	0.5	-1.3	-2.6	5.2	-0.9
rubber prds	109	634	-102	488	-911	0.2	1.2	-0.2	0.9	-1.8
Declining sectors										
wood mnfs	-1 457	8 216	-10 258	1 373	-788	-0.5	3.1	-3.9	0.5	-0.3
pulp	-1 783	2 678	-4 380	20	-101	-1.0	1.5	-2.4	0.0	-0.1
leather prds	-719	2 216	-1 263	341	-2 014	-1.9	5.8	-3.3	0.9	-5.3
textiles	-7 672	7 533	-12 368	1 562	-4 399	-2.3	2.3	-3.8	0.5	-1.3
Total manufactures	61 547	170 530	-161 254	120 074	-67 803	1.5	4.1	-3.9	2.9	-1.6

increase in employment has, however, been the rapid expansion in domestic demand that is also reflected in increased import penetration. In fact, the net employment consequences of foreign trade were negative in the leading high growth sectors of computing machinery and instruments as well as in chemicals. In these branches the technological development is very rapid in terms of both production processes and new products. The income elasticity of demand tends to be relatively high, too. Moreover, various sources of employment change are interlinked in the sense that cheaper manufacturing products from external sources have increased productivity and strengthened the competitiveness of the domestic industries in the export markets, too. These factors together have contributed to the observed marked improvement in employment.

At the other end of the interindustrial hierarchy, in the declining sectors, the net employment effect of foreign trade has been negative. The primary cause for a fall in employment in these sectors has not, however, been increased import penetration nor increased labour productivity but rather stagnating demand, particularly foreign but also domestic. The product composition in these sectors primarily comprises intermediates whose income elasticity of demand is typically low. Similarly, in the slow growth sectors the growth of demand has been modest, too. Meagre net employment growth has been maintained above all by the increases in external demand compared to the relatively modest effects of the other factors.

The problem lies in that the traditional competitiveness of the semi-peripheral Finnish economy is particularly concentrated in these declining or slow growth sectors. Changes in their employment have been determined mainly by shifts in external demand. This dependence is reflected in the overall external vulnerability of the Finnish economy. The potential low-cost import penetration from LDCs to the traditional Finnish export markets may thus cause adverse adjustment constraints.

3.2.8 Employment change due to foreign trade by regions

Table 43 disaggregates the employment effects of foreign trade according to the major trading regions between 1970 and 1981. As mentioned earlier, the overall net effect of manufactured trade has been positive (see also Figure 8).Particularly, trade with socialist countries but also with LDCs has contributed to the increase in employment; positive employment effects due to exports outweigh negative effects for most branches. The exceptions are mainly in a few resource-based branches in trade with socialist countries and in those sensitive import sectors indicated earlier in trade with LDCs. Altogether, manufacturing employment has increased at a rate of 1.0 per cent and 0.2 per cent a year due to trade with socialist countries and LDCs respectively. It has to be kept in mind, however, that the calculations applied are somewhat biased in a sense that positive employment effects by exports are slightly

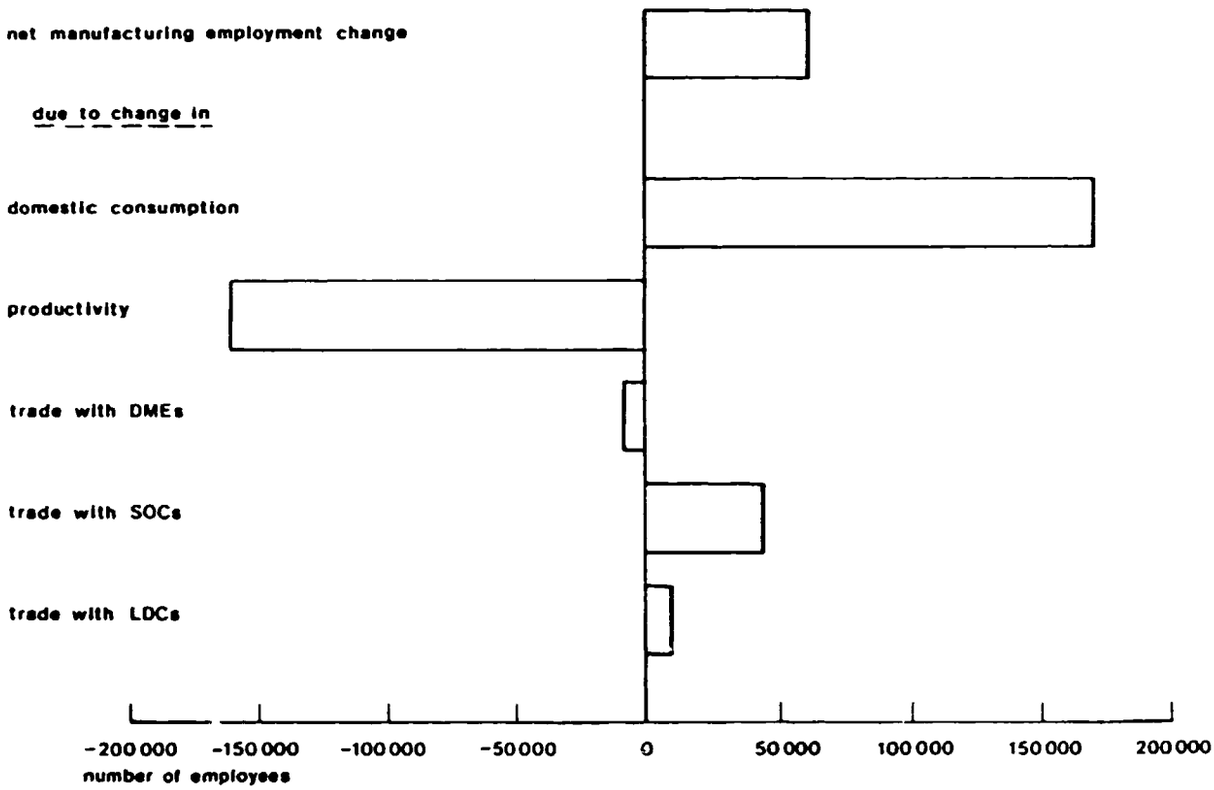
overestimated while negative effects by imports are underestimated. That is because the marginal labour productivity tends to be above the manufacturing average in the export industries and below the average in industries where imports are increasing.

Table 43. Employment change caused by trade with major regions, 1970-1981

	Employment change due to change in trade with											
	Number of employees			Average annual percentage change								
				trade with			exports to			imports from		
	DMEs	SOCs	LDCs	DMEs	SOCs	LDCs	DMEs	SOCs	LDCs	DMEs	SOCs	LDCs
High growth sectors												
computing machinery	-5 321	130	-69	-53.7	1.3	-0.7	9.0	1.7	0.4	-62.7	-0.4	-1.1
instruments	-6 589	421	121	-27.5	1.8	0.5	10.4	2.7	1.7	-37.9	-0.9	-1.2
tele, TV, radio appar.	-645	788	-132	-1.1	1.4	-0.2	4.7	1.7	0.5	-5.8	-0.3	-0.7
(fuels)	87	-1 506	-538	0.3	-6.0	-2.1	1.7	0.2	0.0	-1.4	-6.2	-2.2
pharmaceuticals	-1 176	1 967	19	-2.9	4.8	0.0	0.9	4.8	0.1	-3.7	0.0	-0.0
iron and steel	4 156	1 156	394	3.7	1.0	0.3	2.9	0.6	0.5	0.8	0.4	-0.1
electrical machinery	-947	3 943	809	-0.5	2.2	0.5	1.5	2.3	0.7	-2.0	-0.1	-0.2
Growing sectors												
furniture	1 053	1 174	289	0.9	1.0	0.3	1.6	1.2	0.3	-0.6	-0.2	-0.0
chemicals	-3 495	1 456	1 012	-1.6	0.6	0.5	1.3	1.1	0.5	-2.8	-0.4	-0.1
misc.light mfs	645	2 544	-85	0.2	0.7	-0.0	1.2	0.8	0.1	-1.0	-0.1	-0.1
basic metal prds	-1 883	3 892	778	-0.7	1.4	0.3	0.8	1.5	0.3	-1.4	-0.1	-0.1
transport equipment	1 504	3 346	-417	0.4	0.9	-0.1	1.3	1.1	-0.1	-0.9	-0.2	-0.0
(non-ferrous metals)	821	-297	32	1.8	-0.7	0.1	2.6	-0.2	0.1	-0.8	-0.4	-0.0
industrial machinery	1 249	5 988	3 294	0.2	1.0	0.6	1.9	1.4	0.6	-1.7	-0.3	-0.0
paper	5 828	4 274	1 988	1.8	1.3	0.6	2.0	1.3	0.6	-0.2	0.0	-0.0
Slow growth sectors												
(sawn wood)	3 596	-1 327	3 691	1.6	-0.6	1.6	1.6	0.3	1.6	-0.0	-0.8	-0.0
footwear	-986	4 703	-321	-1.2	5.6	-0.4	0.0	5.9	0.0	-1.2	-0.3	-0.4
non-metal mineral prds	27	867	166	0.0	0.4	0.1	0.8	0.4	0.1	-0.8	-0.1	-0.0
clothing	6 666	9 873	-1 657	1.9	2.8	-0.5	2.2	3.0	0.0	-0.2	-0.2	-0.5
rubber prds	-353	-108	38	-0.7	-0.2	0.1	0.8	0.1	0.1	-1.4	-0.3	-0.0
Declining sectors												
wood mfs	-2 668	882	2 372	-1.0	0.3	0.9	-0.8	0.4	0.9	-0.2	-0.0	-0.0
pulp	-606	311	214	-0.3	0.2	0.1	-0.3	0.2	0.1	-0.1	0.0	-0.0
leather prds	-951	7	-729	-2.5	0.0	-1.9	0.8	0.0	0.1	-3.2	-0.0	-2.0
textiles	-2 679	534	-692	-0.8	0.2	-0.2	0.1	0.4	0.0	-0.9	-0.2	-0.2
Total manufactures	-834	43 270	9 835	-0.0	1.0	0.2	1.3	1.2	0.4	-1.4	-0.2	-0.1

The negative employment effects due to imports are predominantly attributable to the trade with DMEs (Figure 9). Although the net effect of the trade with DMEs is more or less balanced due to the heavy concentration of the positive effects on a few export branches, the majority of the manufacturing branches have, however, continuously suffered from negative employment consequences. This illustrates the vulnerable position of Finnish industry in the international division of labour, since international cyclical fluctuations and demand changes may have a relatively strong effect via these few export branches.

Figure 8. Sources of employment change in manufacturing, 1970-1981

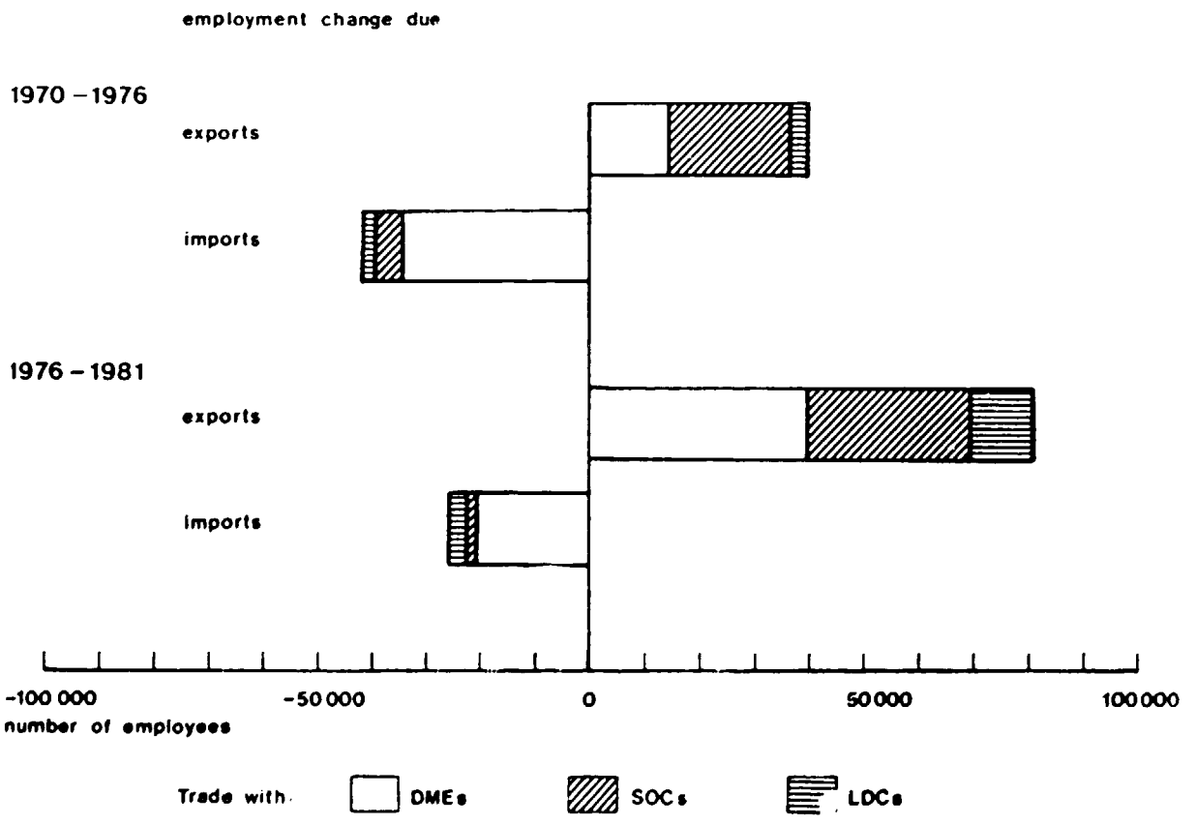


When the focus is specifically upon increased imports from LDCs, the analysis shows that the gross labour displacement per year has been negligible, representing a mere fraction of a per cent in relation to the total manufacturing employment as well as in relation to employment in most of the individual sectors affected (Table 43). If exports were also taken into account, the job gains in these industries due to increased exports to LDCs would substantially offset the jobs lost in import competing industries, as illustrated earlier. Furthermore, compared with other sources of employment change, particularly with the productivity increases associated with technological

changes, the contrast is even more pronounced. During the 1970's about thirty-three times more jobs were lost in Finland through the growth of labour productivity than through the growth of imports from LDCs. Similarly, the employment displacement effect of manufactured imports from DMEs was some twelve times more than that of imports from LDCs.

Nevertheless, in certain specific sectors the direct labour displacements caused by increased imports from LDCs may be rather significant. Table 44 examines the employment changes associated specifically with foreign trade with LDCs in the most sensitive sectors. The most severe effects were experienced in the leather products and clothing sectors. The

Figure 9. Employment change in manufacturing caused by trade with major regions, 1970-76 and 1976-81



gross labour displacement attributable to the net increase in trade with LDCs were some 730 jobs in the former and 1 660 jobs in the latter during the period of 1970 to 1981. These figures represent an average annual employment decline of 1.9 and 0.5 per cent, respectively. For the two other traditional import branches, job losses during the same eleven year period were 320 (-0.4 per cent per year) in footwear and 690 (-0.2 per cent per year) in textiles. These figures are not alarming, but nonetheless relatively high, particularly if compared to the net job losses in various other sectors caused by much greater trade flows with DMEs or socialist countries (see Table 43).

An explanation of this difference in the employment experience may be related to the nature of the division of labour with different trading partners. Trade with LDCs is predominantly characterised by an interindustrial division of labour with high sectoral specialisation, whereas among industrialised countries trade is of the more intra-industry type. In the latter case, employment gains and losses of trade are thus more or less offsetting each other within each sector.

Let us consider the other sources of employment decline between 1970 and 1981 in the most sensitive sectors. In clothing, for instance, increased productivity caused a 2.6 per cent annual reduction in employment and declining domestic demand a 1.6 per cent reduction, compared to a 0.5 per cent reduction due to trade with LDCs. Trade with DMEs and socialist countries, though, contributed positively to employment in clothing. In leather products productivity growth caused a 3.3 per cent annual decline in employment, trade with DMEs a 2.5 per cent decline and trade with LDCs a 1.9 per cent decline. The respective figures in footwear were 6.3 per cent, 1.2 per cent and 0.4 per cent and in textiles 3.8 per cent, 0.8 per cent and 0.2 per cent. These data indicate irrefutably that trade with LDCs is not the major cause for employment reductions and unemployment even within the sectors with the highest LDC import penetration ratio.

The problem of LDC competition is, however, accentuated by the fact that at the same time these branches are declining sectors in Finnish manufacturing industry and the total growth rate for manufacturing employment is declining. Hence, import competition may intensify adjustment difficulties, although those difficulties would have been present even in the absence of that competition. The traditional LDC import sectors reduced their labour forces by about 6 300 employees during the 1970's. A fall in the unit labour requirements - that is, improved labour productivity - contributed, however, eight times more to the fall in employment than did imports from LDCs (Table 44). Nevertheless, the relative importance of LDC import penetration in these sectors is gradually increasing.

Table 44. Sources of employment change in sensitive sectors of Finnish manufactured trade with LDCs, 1970-76 and 1976-81

	Traditional imports					New imports				
	clothing	textiles	leather	footwear	total	tele, TV radio appar.	electrical machinery	computing machinery	instruments	total
1970 - 1976										
Overall employment change	3 078	-3 856	-344	-1 199	-2 321	5 681	3 801	46	1 652	11 180
due to change in										
Domestic consumption	1 007	10 131	1 806	300	13 244	12 632	4 316	3 075	5 772	25 795
Productivity	-5 132	-11 235	-531	-2 339	-19 237	-5 532	553	-271	378	-4 872
Foreign trade	7 203	-2 752	-1 619	841	3 673	-1 419	-1 068	-2 758	-4 497	-9 742
of which LDCs	-841	-547	-177	-86	-1 651	195	-100	-62	143	176
Average annual change due to trade with LDCs	-0.4	-0.3	-0.8	-0.2	-0.4	0.6	-0.1	-1.1	1.1	0.1
1976 - 1981										
Overall employment change	-1 508	-3 816	-375	1 693	-4 006	-1 841	1 891	1 787	692	2 529
due to change in										
Domestic consumption	-5 449	-2 598	410	2 105	-5 532	-1 699	8 610	6 157	5 933	19 001
Productivity	-3 738	-1 133	-732	-2 967	-8 570	-1 572	-11 591	-1 868	-3 732	-18 763
Foreign trade	7 679	-85	-54	2 555	10 095	1 431	4 873	-2 502	-1 509	2 293
of which LDCs	-816	-145	-551	-235	-1 747	-327	909	-7	-22	553
Average annual change due to trade with LDCs	-0.5	-0.1	-3.5	-0.7	-0.5	-0.6	0.9	-0.2	-0.1	0.3

As far as the growth of new manufacturing imports - primarily light engineering goods - from LDCs is concerned, the net employment effects have been positive. These are, in general, high growth sectors in the Finnish economy, and while import competition from LDCs has intensified, the respective export growth has been even greater, as indicated in Table 44.

On the whole, these observations suggest three major conclusions. First, during the 1970's manufacturing imports from LDCs remained a minor source of employment change in

Finland. Second, job losses due to imports in some industries were compensated by gains due to exports in others, so that the net effect of trade with LDCs stimulated rather than reduced employment in Finnish manufacturing. Third, even in the sectors most strongly threatened by competitive pressure from LDCs, the labour displacements caused by imports from LDCs were less than the decline in employment due to technical progress.

3.2.9 Specific adjustment requirements due to LDC trade

The figures presented reveal that - in contrast with an increased division of labour with developed countries which, in general, leads to only slight switches of the labour force in relation to the volume of trade concerned - the changes resulting from an extension of manufactured trade with LDCs are quite considerable both in relative and in absolute terms because of high sectoral specialisation. It is not so much the negative net effect on total employment in these few 'employment deficit' branches that is alarming, but rather the concentration of the displacement on the most problematic sectors, i.e. slow-growth and declining manufacturing branches, and on disadvantaged groups of employees, i.e. women, unskilled and low-wage workers. In order to illustrate these adjustment constraints due to imports, in Table 45 the import penetration ratio of the major regions is correlated to the factor intensities of Finnish manufacturing branches.

Table 45. Simple correlation coefficients between manufactured import penetration ratios of major regions and factor intensities by branches, 1981

	Imports from			
	DMEs	SOCs	LDCs	Total
R & D intensity	0.630	-0.188	-0.176	0.550
Capital intensity	-0.496	-0.293	-0.302	-0.550
Labour intensity	0.245	0.467	0.271	0.317
Raw material intensity	-0.391	0.252	0.199	-0.315
Energy intensity	-0.470	-0.102	-0.231	-0.499
Wage level	0.032	-0.419	-0.561	-0.109
Labour productivity	-0.082	-0.548	-0.481	-0.210
Female intensity	0.025	0.442	0.655	0.184
Firm size	-0.147	-0.055	-0.296	-0.203
LDR intensity	-0.599	0.043	0.139	-0.500

Sources: Table 31 and Appendix Table 2

The correlation matrix reveals a marked pattern as far as the manufactured imports from LDCs are concerned. The negative statistical correlation between the wage level as well as the labour productivity with the LDC import penetration is quite notable. That is contrasted by a significant positive correlation in terms of female intensity. Hence, imports from LDCs are concentrated particularly in low-cost sectors with low labour productivity and a comparatively high proportion of females. A similar pattern is typical also in imports from socialist countries, while imports from DMEs do not show any correlation in this respect.

Furthermore, the correlation matrix indicates that the Finnish industries that have been affected most severely so far by the import penetration from LDCs are characterised by relatively standardised and low-skill production processes (compared with highly R & D-intensive imports from DMEs), they tend to be smaller-sized firms than on average and, moreover, they are located relatively more in the less developed regions (LDR) of Finland.[11] Hence, respective adjustment requirements are greater than mere import penetration ratios or labour displacement figures would suggest.

Nevertheless, employment losses due to manufactured imports are substantially overshadowed by the positive employment effects of exports to LDCs, as indicated earlier. Hence, the major issue is not job displacement as such, but rather the sectoral restructuring of labour. The problem arises only if the factor requirements in export production diverge greatly from those in the import-competing sectors. The more the commodity composition of exports and imports differ from each other and the more dissimilar the sectoral production functions, the greater the potential adjustment requirements and constraints. Typically in highly specialised trade relations between core and peripheral economies based primarily in interindustry exchange, there are notable differences in the factor content of import and export. This accentuates the respective adjustment problems.

Table 46 aims to differentiate the qualitative employment constraints caused by the Finnish manufactured trade with major regions. The indicators are obtained simply by relating each employment effect (calculated by the formula $E_i/O_i.X_{ij}$ presented on page 119) to units of one million Fmk in exports or imports. Dividing the effects of exports by the effects of an equal level of imports shows the differences in the factor content of exports and imports. These ratios are compiled in the right-hand part of Table 46. The model is similar - with similar assumptions and shortcomings - to the calculation of the average labour-input coefficients in Finnish manufactured trade presented in Table 39 page 125.

Table 46. Some average qualitative employment effect coefficients in Finnish manufactured trade, 1981 (jobs, (firms) per one million marks of trade)

	Generated by exports	Not required due to imports	Effect of exports divided by effect of imports
Female employment			
DMEs	1.42	1.48	0.96
SOCs	1.78	1.55	1.15
LDCs	0.92	3.54	0.26
Total trade	1.48	1.54	0.96
LDR employment			
DMEs	1.10	1.09	1.01
SOCs	1.22	1.11	1.10
LDCs	0.99	1.77	0.56
Total trade	1.13	1.11	1.02
R & D personnel			
DMEs	0.07	0.15	0.47
SOCs	0.08	0.10	0.85
LDCs	0.07	0.10	0.74
Total trade	0.08	0.14	0.54
Firms			
DMEs	0.040	0.052	0.77
SOCs	0.049	0.049	1.00
LDCs	0.034	0.085	0.40
Total trade	0.042	0.053	0.79

Source: Appendix Table 3 and Industrial Statistics 1981.

The potential labour market problems of an increased division of labour with LDCs arise primarily from the fact that the jobs are lost through imports in quite different sectors than those in which they are created by exports, with the corresponding structural consequences. The coefficients in Table 46 show clearly that export and import patterns in trade with LDCs diverge markedly in terms of the qualitative labour requirements. These differences are particularly pronounced if compared with the corresponding coefficients in the trade with DMEs or socialist countries.

As mentioned earlier (Table 39), the labour intensity of Finnish products competing with imports from LDCs is distinctly greater than the labour intensity of Finnish exports to LDCs. Furthermore, Table 46 shows that the share of females on the export side is only one-fourth of the share on the import side. This means, for example, that if imports from LDCs increase by an amount large enough to replace the domestic production of one hundred women workers, the same amount of increased exports to LDCs would only create employment for 26 women.

A similar strong discrepancy is also observed in terms of the regional effects of LDC trade. The proportion of employees in the less developed regions of Finland required for exports to LDCs averages only about half of that for imports. Hence, an equal growth in imports from LDCs would displace almost double the amount of LDR workers as created by the corresponding exports. It is particularly interesting to note that this type of regional pattern of employment effects in foreign trade is quite characteristic of a semi-peripheral economy. The relative vulnerability of employment in less developed (peripheral) regions of Finland is strongest in relation to manufactured imports from LDCs compared with other sources of imports. On the other hand, as far as export destinations are concerned, less developed regions on the average show the lowest and more developed (core) regions the highest competitiveness just in manufactured exports to LDCs. These differences are explained by the specific structural characteristics of industry in different regions within Finland.[12] Moreover, the firms

carrying out exports to LDCs tend to be larger and the firms competing with imports from LDCs tend to be smaller than the average firm size in Finnish foreign trade.

These observations lead to conclusions that structural consequences arising from an increased manufactured trade with LDCs are experienced both in terms of changes in employment overall and, particularly, in terms of changes in the structure of labour requirements. The calculations relating to exports and imports of equal size show that trade with LDCs leads to a higher net loss of jobs in Finland and to greater shifts in the sectoral, regional and labour quality structure than trade with DMEs or socialist countries. The shifts in production and employment between sectors are accompanied by changes in the vocational and qualification requirements of the labour force. The redundancy effects of imports from LDCs affect mainly low-wage, unskilled and female workers, often employed by relatively small or medium-sized firms located regionally in structurally weak areas. Hence, increasing trade with LDCs requires a higher qualification of employees and training of women in occupations which so far are the domain of men.

Nevertheless, it is necessary to keep in mind that structural changes in Finland arising from trade with LDCs are, after all, small compared with total employment or with structural changes due to other factors (e.g. productivity growth, shifts in aggregate demand or trade with core economies). In view of the order of magnitude revealed, trade with LDCs cannot be regarded as a cause of unemployment even in the most sensitive sectors or regions. On the contrary, manufactured exports have, to a considerable extent, offset the displacement effects due to imports. Hence, the above analysis essentially characterises the type rather than the magnitude of the potential threat of the expanding manufactured exports from LDCs.

In core economies increases in imports from LDCs will typically give rise to additional exports as the requirements of the LDCs for imported goods continue to be large due to industrialisation,. On the whole, LDC demand on the world market is dependent on the level of their foreign currency earnings. However, developed countries are not in a parallel competitive position to react to this potential growth in LDC demand. Hence, the next questions to be examined are whether the experiences of Finland are similar to those of most DMEs, and how its LDC market shares have evolved.

Chapter 4

MANUFACTURED EXPORTS TO LDCS

The integration of LDCs into the international division of labour in industrial activities implies continuous shifts in the trade patterns between core and peripheral economies. The traditional colonial type of complementary trade, i.e. trading primary products in exchange for manufactures, has gradually been replaced by more competitive types of trade relations as LDCs are becoming exporters of manufactures. Besides the expansion of manufactured exports, the industrialisation in LDCs has also affected the pattern of their manufactured imports, which has both increased and experienced changes in product composition.

Theoretically, it is possible to create and operate manufacturing industries without significantly increasing dependency on trade with the outside world. In reality, though, total self-reliance is unlikely to lead to rapid industrialisation. Late-coming peripheral industrialisers in the Third World are in many ways tied to industrially and technically more advanced external economies. The degree to which import requirements will increase as a consequence of industrialisation is, of course, to a considerable extent dependent on the policies followed by different countries in such fields as income distribution, the pattern of industrialisation and the overall openness of the economy. Besides that, there are major structural reasons which tend to increase import demand.

The existing factor endowment in the LDCs is typically incompatible with the advanced form of industrial production and the techniques they aim to absorb. Hence, to build up modern industrial facilities, import requirements for capital equipment and technical know-how (consultant and management services, technical personnel, licensed patent rights, etc.) will increase. Furthermore, in most cases the small scale of domestic markets determines the limits for potential diversification and

emphasises the need for international specialisation in industrial development. Rapid industrialisation will also lead to both a growth of income and greater use of material inputs, many of which will have to be imported. These factors together are reflected in the high income elasticity of demand for manufactured imports in the Third World.[1]

Hence, the industrialisation will directly and indirectly entail a significant increase in imports of manufactures in LDCs. The industrialisation may be characterised as complementary for DMEs to the extent that it raises demand for DME exports. On the other hand, Third World industrialisation becomes competitive insofar as it leads to development of alternative sources of supply in terms of expanding export production and also in terms of potential import substitution effects in the markets of LDCs themselves. To date, however, the increase in the LDC share of world manufacturing exports has been slower than the growth of imports.

Due to the low starting level, the LDC share in world export of manufactures nearly doubled over the last decade, increasing from 5 per cent in 1970 (being in absolute terms 9.7 milliard dollars) to 9 per cent in 1980 (99.7 milliard dollars). At the same time their share in world imports of manufactures increased even more, jumping from 21 per cent (39.1 milliard dollars) to 27 per cent (288.1 milliard dollars).

The discrepancy in the growth of LDC manufactured exports and imports has been reflected by severe supply constraints in LDC domestic economies and by the relatively slower pace at which the non-price competitive strength of their manufacturing industries is built up. For these reasons, accelerated industrialisation poses the danger of large potential trade and payment deficits in most of the LDCs. This has already been accentuated by a notable increase of foreign debt and the consequent debt service liabilities in a number of countries, particularly in those rapidly industrialising LDCs referred to as NICs. Moreover, constraints caused by sharply increased bills for imported oil must be added. The LDCs have tried to

accommodate this deterioration in their foreign exchange balance in various ways. The East Asian NICs have attempted to raise export earnings by increasing manufactured exports. The NICs in Latin America have leaned more towards accelerated import substitution involving various forms of import restriction and have also stepped up their external borrowing. These constraints have obviously obliged the NICs to import less than they would otherwise have been able to. Nevertheless, their industrialisation process as a whole has represented a new growth in the global demand for manufactured goods, primarily supplied by DMEs.

4.1 Differentiation among DMEs as suppliers of manufactures

All DMEs (except Australia) have traditionally had a large positive manufactured trade balance with LDCs (Table 49). However, there are distinct differences among DMEs in terms of the degree and the composition of this export surplus. Import requirements of LDCs - following the progress in their industrialisation process - have gradually come to be dominated by sophisticated and technology-intensive manufactures with a high value-added content. As far as various semi-manufactures and relatively simple labour-intensive consumer goods are concerned, the LDCs can, more and more frequently, satisfy their domestic demand themselves. This differentiation in the pattern of import demand of LDCs is reflected in the subsequent export performance of various DMEs.

From the point of view of the semi-peripheral industrial economies, the emerging industrialisation in LDCs is competitive rather than complementary. Hence, the potential new demand in LDCs will benefit semi-peripheral economies relatively less. They do not offer products most needed in LDCs, and even if they did, they could hardly compete with the more advanced products of the leading core economies. This is well illustrated in Table 47 and Figure 10, which quantify the performance variations of manufactured exports to LDCs by DMEs.

Table 47. Manufactured exports to LDCs by main DMEs, 1981 (per cent)

	Manufactured exports to LDCs				
	per capita (US $)	share of total mnf exports	share of OECD total	mnf exports share of OECD total	mnf trade ratio with LDCs*
Switzerland	830.0	21.6	2.1	2.8	64.7
Japan	589.7	47.7	27.1	16.8	80.6
Sweden	503.4	18.7	1.6	2.6	65.8
West Germany	450.1	18.8	10.8	17.0	59.0
Belgium	438.5	11.8	1.7	4.4	55.1
France	387.9	28.5	8.2	8.5	70.6
Netherlands	345.5	15.0	1.9	3.8	49.9
United Kingdom	345.0	29.4	7.5	7.6	55.1
Italy	328.6	29.7	7.2	7.2	77.9
Denmark	319.4	18.6	0.6	1.0	59.5
United States	267.9	40.6	24.0	17.5	27.5
Austria	265.5	15.0	0.8	1.5	67.1
Norway	256.5	19.2	0.4	0.6	55.4
Finland	208.1	10.0	0.4	1.2	63.6
Canada	149.4	10.6	1.4	4.0	22.0
Spain	148.1	39.2	2.2	1.6	80.4
Australia	112.3	51.4	0.7	0.4	-16.4
New Zealand	93.6	27.1	0.1	0.1	2.9
Greece	86.5	38.2	0.3	0.2	42.5
Ireland	78.7	6.0	0.1	0.5	21.1
Portugal	48.0	16.6	0.2	0.3	63.5
OECD total	326.3	29.6	100.0	100.0	55.5

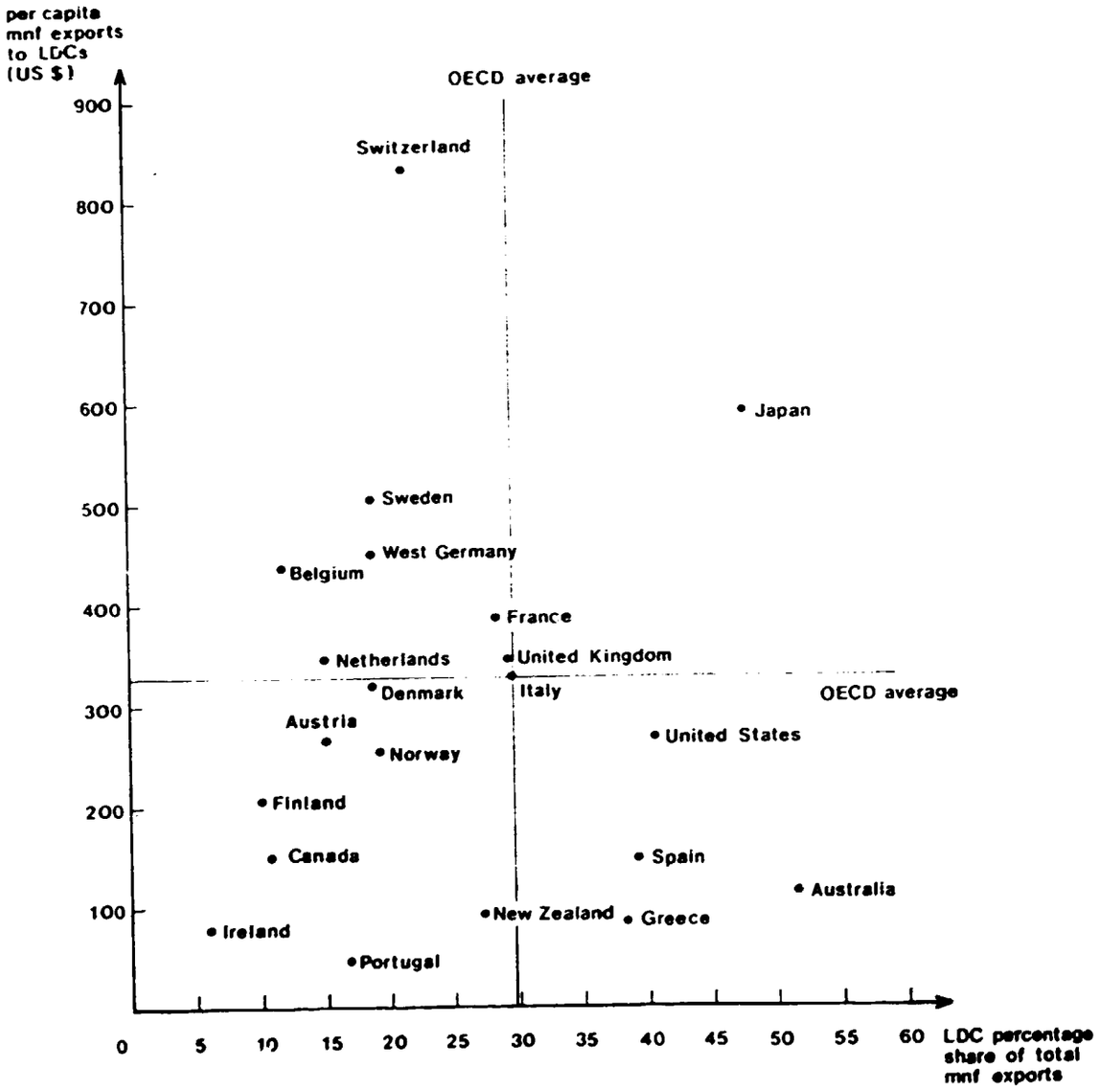
Note: *The manufactured trade ratio is defined as the net trade balance of manufactures as a percentage proportion of the total trade of manufactures, i.e. $[(X-M)/(X+M)] \cdot 100$

Source: OECD, Foreign trade by commodities, 1981.

Semi-peripheral economies enjoy only marginal market shares in LDCs as far as their manufactured exports are concerned. They lie at the bottom of Table 47 both in terms of their per capita manufactured exports and in terms of their market shares in OECD total manufactured exports to LDCs. Obviously, the United States and Japan constitute by far the most important manufactured exporters to LDCs by accounting for over half of the OECD total. More interestingly, however, several small core economies, such as Switzerland, Sweden, Belgium and the Netherlands, are among the leading manufactured exporters to LDCs measured by per

capita shares. They have clearly benefitted from the emerging international division of industrial labour and the consequent growth of manufactured demand in LDCs.

Figure 10. Manufactured exports to LDCs by DMEs, 1981



The Southern European countries as well as Australia and New Zealand have the lowest per capita exports, but this is partly related to their overall low level of manufactured export performance. Finland, Ireland and Canada, on the other hand, are not only showing low per capita exports, but the proportion of

manufactured exports to LDCs out of their total export of manufactures is also very modest. This observation is accentuated by the fact that they cover a distinctly larger share of OECD total manufactured exports compared with their share in the respective exports to LDCs. Some 0.4 per cent of OECD manufactured exports to LDCs come from Finland, while its share of total OECD manufactured exports is three times greater, about 1.2 per cent. Even starting with this relatively low level in regard to its global shares, Finnish market shares in OECD exports to LDCs have not improved during the past decade. In fact, Finland suffered slight losses in these market shares, declining from the level of 0.42 per cent in 1970 to 0.39 in 1981, representing a net loss of 7 per cent.

The conclusion is that the Finnish manufacturing industry has not succeeded in deriving advantage from increased demand for manufactures resulting from the Third World industrialisation. This may be related to the small size of the Finnish economy, to the unfavourable geographical location of the country, or to the relative significance of the trade with the East European countries. But a major factor is also the specific competitive nature of the Finnish industrial structure. The growth of demand for manufactures in LDCs has not primarily focused on the products that semi-peripheral economies like Finland mainly supply. On the contrary, Third World industrialisation has tended to lead to the development of alternative sources of supply, especially in those sectors on which the relative industrial competitiveness and specialisation of semi-peripheral economies have been traditionally based. Hence, their export performance in the LDC markets tends to be most sensitive also to the potential import substitution effects which are further limiting the scale of their exports.

4.2 Export destinations

The relatively modest export performance of the Finnish industry in relation to the increased demand for manufactures in LDCs is further revealed by an examination of the geographical pattern of exports. Typically, the exports have been directed toward the

more developed LDCs rather than the poor ones. Consequently, also alternations in export destinations have followed changes in purchasing power among LDCs.

During the 1960's the dominant LDC export markets for Finnish manufactures were in Latin America. Of the twelve leading export destinations in 1970, six were Latin American countries, and the others were mainly large semi-industrialised countries in Asia (Table 48). The sharp oil price rises of 1973 and 1979 and the consequent shifts in the global purchasing power have subsequently steered Finnish exports towards oil producing countries. Hence, the geographical pattern of Finnish manufactured exports to the Third World experienced a notable change during the 1970's. In fact, in 1981 the top four were oil producers, and altogether they numbered seven out of twelve of the leading export destinations. In regional terms a relative shift from Latin America to the Middle East took place. At the same time trade diversified slightly, since the share of the twelve leading destinations diminished from 73 per cent in 1970 to 64 per cent in 1981 (Table 48). Compared with manufactured

Table 48. Finnish manufactured exports to twelve leading LDCs in 1970 and 1981

	1970			1981		
		value (1 000 US$)	per cent share		value (1 000 US$)	per cent share
1.	Peru	14 935	12.3	1. Irak	97 450	9.8
2.	Argentina	14 131	11.6	2. Saudi Arabia	81 469	8.2
3.	Hong Kong	12 626	10.4	3. Iran	71 449	7.2
4.	Brazil	10 091	8.3	4. Mexico	71 020	7.1
5.	Iran	9 535	7.8	5. Egypt	49 698	5.0
6.	China	7 857	6.5	6. Argentina	47 080	4.7
7.	Mexico	5 490	4.5	7. Venezuela	44 215	4.4
8.	Colombia	3 807	3.1	8. Libya	42 193	4.2
9.	Nigeria	3 216	2.6	9. Brazil	41 270	4.1
10.	India	2 418	2.0	10. Nigeria	40 102	4.0
11.	Chile	2 324	1.9	11. Liberia	32 171	3.2
12.	Pakistan	2 290	1.9	12. China	24 599	2.5
	Total twelve	88 720	72.9	Total twelve	642 716	64.3
	Rest of LDCs	32 982	27.1	Rest of LDCs	356 356	35.7
	All LDCs	121 702	100.0	All LDCs	999 072	100.0

Note: Manufactures are SITC 5 to 8 less 68.

Source: OECD, Foreign trade by commodities, 1970 and 1981.

imports from LDCs, the country concentration of Finnish exports has been distinctly less marked, since the twelve leading sources of imports accounted for nearly 90 per cent of the total, as mentioned earlier (see p. 105). This divergence obviously reflects the limited scope of LDC industrialisation.

The relative shift of demand from the traditional markets of large semi-industrialised countries towards oil producers has also been reflected in the geographical pattern of OECD exports as a whole (see Table 49). In fact, at present the major OECD export markets among LDCs may be divided into two groups. The first group comprises oil producing countries, while rapidly industrialising economies among LDCs constitute the second expanding market area. This is highlighted by the fact that the share of NICs (Hong Kong, Taiwan, South Korea, Singapore, Brazil and Mexico) in OECD exports of manufactures to LDCs rose from 18.1 per cent in 1965 to 25.2 per cent in 1981. The growth was concentrated particularly in the Far Eastern NICs, whose share increased from 9.5 per cent to 14.6 per cent between these two years.

Table 49. OECD manufactured exports to twelve leading LDCs in 1965 and 1981

	1965			1981			
	value (mil. US$)	per cent share		value (mil. US$)	per cent share	Finnish percentage share of OECD exports
1. India	1 349.9	6.7	1. Saudi Arabia	23 069.0	9.0	0.35
2. Mexico	1 250.4	6.2	2. Mexico	19 822.1	7.7	0.36
3. Venezuela	933.6	4.7	3. Iraq	12 828.4	5.0	0.76
4. Hong Kong	726.7	3.6	4. Nigeria	10 729.5	4.2	0.37
5. Argentina	654.5	3.3	5. Hong Kong	10 366.2	4.0	0.06
6. Pakistan	638.8	3.2	6. Libya	9 925.4	3.9	0.43
7. Singapore	600.1	3.0	7. Singapore	9 626.7	3.8	0.19
8. Philippines	592.0	3.0	8. Taiwan Province	8 822.9	3.4	0.06
9. Iran	570.7	2.8	9. South Korea	8 588.2	3.4	0.10
10. Liberia	559.3	2.8	10. China	8 110.7	3.2	0.30
11. China	503.7	2.5	11. Venezuela	7 859.9	3.1	0.56
12. Peru	497.0	2.5	12. Brazil	7 449.4	2.9	0.55
Total twelve	8 876.7	44.3	Total twelve	137 198.4	53.6	0.35
Rest of LDCs	11 159.0	55.7	Rest of LDCs	119 132.4	46.4	0.44
All LDCs	20 035.7	100.0	All LDCs	256 330.8	100.0	0.39

Note: Manufactures are SITC 5 to 8 less 68.

Source: OECD, Foreign trade by commodities, 1965 and 1981.

In this respect the Finnish experience diverges distinctly from that of the OECD average. The role of the NICs as expanding markets for exports of a semi-peripheral economy has been

marginal. In fact, during the 1970's the share of NICs in Finnish exports of manufactures to LDCs declined from 23.9 per cent in 1970 to 15.0 per cent in 1981. This decline was particularly pronounced with the Far Eastern NICs, whose share diminished from 11.1 per cent to a mere 3.8 per cent. Not a single Far Eastern NIC belongs to the list of the twelve leading LDC export destinations of Finland, while all four of them are on a corresponding list of the OECD countries as a whole (compare Tables 48 and 49).

4.3 Composition of manufactured exports

The regional differences in the direction of exports between Finland and the rest of the OECD reflect the respective patterns of international industrial specialisation. Within manufacturing, the Finnish export structure to LDCs is heavily biased towards capital intensive intermediates with relatively low demand growth, while the dominant exports for OECD countries in general are advanced highly processed final products primarily within the capital goods sector (Table 50). Finland's traditional export sector, the forest industry dominates exports to LDCs by alone accounting for almost 57 per cent of the total.

Table 50. Ten leading manufactured export sectors to LDCs for Finland and for OECD, 1981 (per cent)

	Finland			OECD	
	share in total mnf exports to LDCs	share of LDCs in total exports by branches		share in total mnf exports to LDCs	share of LDCs in total exports by branches
paper	37.5	13.0	industrial machinery	18.7	37.7
industrial machinery	10.6	9.6	transport equipment	15.5	38.2
chemicals	9.9	16.2	chemicals	9.7	25.9
wood mnfs	9.1	20.8	iron and steel	7.9	33.6
transport equipment	7.9	9.3	electrical machinery	7.0	35.3
pulp	5.5	7.0	power gen. machinery	4.9	37.1
electrical machinery	3.8	11.7	basic metals	4.8	37.2
iron and steel	3.7	8.0	tele, TV, radio apper.	4.3	33.6
basic metals	3.4	10.2	instruments	3.8	26.3
power gen. machinery	2.6	27.3	passenger vehicles	3.8	15.3

Sources: Appendix Table 3 and 4.

Altogether, the share of exports to LDCs out of the total Finnish exports of manufactures slightly declined in the 1960's and at the beginning of the 1970's, but since the mid-1970's it has slightly increased again accounting for some 10 per cent of

the total in 1981. By manufacturing branches, however, there are quite notable variations in this share, as illustrated by Table 51.

Table 51. Share of LDCs in Finnish exports by ten leading export branches in manufactures, 1953 - 1981 (per cent)

	1953	1960	1965	1970	1976	1981
Paper	24.2	16.7	11.1	11.2	8.8	13.8
Industrial machinery	0.0	15.5	6.3	4.0	6.7	9.6
Chemicals	1.2	7.6	4.8	10.9	11.4	16.2
Wood mnfs	4.5	4.3	2.6	3.7	11.3	20.8
Transport equipment	0.2	9.2	4.6	16.9	10.4	9.3
Pulp	5.8	8.3	5.9	4.1	2.2	7.0
Electrical machinery	3.5	5.4	10.0	6.4	4.3	11.7
Iron and steel	0.1	65.9	7.7	2.9	0.7	8.0
Basic metals	4.3	26.4	4.4	3.7	10.3	10.2
Power gen. machinery	0.0	0.0	0.0	2.3	4.9	27.3
All manufactures	10.3	12.5	7.6	7.4	6.9	9.8
(Sawn wood)	4.0	1.7	1.3	3.4	11.1	19.4

Source: Appendix Table 3.

The traditional export sector, the forest industry, has not only maintained but even reinforced its competitiveness within Finnish exports to LDCs in recent years. Particularly in wood manufactures and sawn wood, but also in pulp and paper as well as in furniture, the share of exports to LDCs in the total Finnish exports has expanded.

Other significant growth sectors have been chemicals (fertilisers) and industrial machinery (lifting and loading equipment). Moreover, during the last five years, electrical machinery (cables and electric wires) and power generating machinery (steam boilers) have - starting from a low level - vigorously increased their contributions to Finnish exports to LDCs. Still during the 1960's, in some mechanical engineering sectors, such as transport equipment (ships) and instruments, exports to LDCs increased relative to total exports, but by the end of the 1970's LDC trade had gradually lost its relative

dynamism in these sectors. In all other manufacturing branches, exports to LDCs have been rather static and insignificant in Finnish foreign trade.

Altogether, the number of branches and sub-sectors in which Finnish exports to LDCs have experienced any notable dynamism is very limited. This fact is brought out by examination of the export performance ratio (Table 52) based on a comparison of relative export shares in Finland and in the OECD area as a whole. The highly specialised LDC export structure in Finland is clearly distinguishable. Only in the forest sectors is the export performance ratio above the normal export performance in the OECD area; there, in fact, the industries show a ten to twenty times greater share in exports than the corresponding average OECD share. Most other sectors show very poor export performance. The ratio is particularly low in consumer goods branches as well as in some capital goods sectors. These figures clearly highlight the relative marginality of LDC markets for the major part of the Finnish manufacturing industry. Only the dominant traditional export sector has been able to expand its trade relations towards the Third World along with its declining market shares in the core economies.

The highly specialised commodity composition of Finnish exports to LDCs primarily concentrated on a range of standardised semi-processed manufactures, tends to be rather disadvantageous in the future. For these products, the income elasticity of demand is typically fairly low; hence, they do not particularly benefit from the growth of demand for manufactures in rapidly industrialising LDCs. Furthermore, these items compete on the basis of cost rather than quality and product differentiation, while the importance of non-price factors as determinants of competitiveness is growing also in the LDC markets along with their industrialisation process. This is particularly evident with respect to growing demand for different types of capital goods - and especially with respect to cases in which LDCs are importing complete industrial plants and equipment on a turnkey basis. This may create an additional constraint, which is related to size. The magnitude of many projects may be too large

Table 52. Manufactured export performance ratio in Finland, 1981

	Exports to			
	DMEs	SOCs	LDCs	Total
Labour-intensive intermediates				
leather prds	67.3	1.3	46.6	49.2
rubber prds	33.2	5.8	11.9	23.2
wood mnfs	681.4	388.5	2 498.0	706.7
textiles	42.0	24.9	11.1	37.8
non-metal mineral prds	48.4	75.7	29.3	46.0
Subtotal	91.0	43.2	128.9	82.3
Capital-intensive intermediates				
chemicals	45.4	36.8	102.1	54.4
pulp	756.6	370.0	1 264.5	758.3
paper	953.3	501.7	2 008.6	1 000.4
iron and steel	103.4	8.6	47.6	66.4
Subtotal	234.2	83.3	284.6	213.2
Consumer goods				
pharmaceuticals	24.7	147.3	19.8	65.1
furniture	130.9	527.5	116.5	151.0
clothing	269.6	472.7	8.9	343.9
footwear	74.1	496.1	7.9	234.5
instruments	24.3	19.2	30.7	21.9
passenger vehicles	12.3	4.5	1.3	9.4
misc. light mnfs	82.1	186.6	29.3	83.4
Subtotal	62.6	221.5	24.0	77.8
Capital goods				
basic metal prds	66.2	171.1	70.8	86.2
power gen.machinery	22.0	54.1	52.6	23.8
industrial machinery	80.2	56.5	56.8	74.2
computing machinery	9.8	12.8	7.2	9.1
tele, TV, radio appar.	60.7	152.2	18.1	47.3
electrical machinery	41.6	112.7	53.7	54.0
transport equipment	56.3	211.1	51.0	70.1
Subtotal	55.4	97.7	51.5	60.9
Total manufactures	100.0	100.0	100.0	100.0

Note: The export performance ratio is defined as (Xij/Xmj : Xiw/Xmw)· 100 which represents the ratio between a share of commodity group (i) in Finnish exports (j) of all manufactures (m) and the corresponding share of OECD exports (w) of that industry to OECD exports in manufactures.

Sources: Appendix Tables 3 and 4.

for a small country like Finland. These factors together have limited the gains to Finnish manufacturing industry from Third World industrialisation.

4.4 Export creation and export diversion effects

The extent to which Finnish industry may obtain a net benefit by the growth of LDC demand depends to a large degree on whether it will create new production or merely change the direction of trade. This may be illustrated by utilising the concepts of trade creation and trade diversion presented earlier (see pp. 108-110). In this context the former concept refers to an expansion of foreign trade due to a growth of domestic production, whereas the latter refers to a replacement of one export destination by another.

The operationalisation of trade (export) creation is conducted by examining changes in the export shares of domestic output during a certain period. A positive export creation takes place only when the share of a certain export destination in domestic production increases together with a growth of total exports in domestic production. Similarly, a negative export creation refers to a situation in which both of these variables decline at the same time. The trade (export) diversion indicator, on the other hand, is determined by changes in an export destination's share of total exports. Moreover, this trade diversion is emphasised when in domestic production the share of total exports shifts in an opposite direction than the export destination's share. This emphasis does not, however, indicate differences in quantities, but rather in the qualitative strength of the trade diversion effect in question. Table 35 on page 162 offers a framework for the determination of export creation and export diversion effects. It is only necessary to substitute the terms export for import and domestic production for domestic consumption. The results concerning changes in the Finnish export structure with respect to the major regions are presented in Table 53.

Table 53. Trade (export) creation and trade (export) diversion effects in Finnish exports by branches during the period 1970 - 1981 by major regions

	DMEs		SOCs		LDCs	
	export creation	export diversion	export creation	export diversion	export creation	export diversion
Labour-intensive intermediates						
leather prds	+	-	+	+	+	+
rubber prds	+	..	..	-	+	+
wood mnfs	..	--	..	++	..	++
textiles	..	-	+	+	+	+
non-metal mineral prds	+	-	+	+	+	+
Subtotal	..	-	+	+	+	+
Capital-intensive intermediates						
chemicals	+	-	+	+	+	+
pulp	..	..	..	..	..	..
paper	-	-	..	++	..	+
iron and steel	..	-	+	+	+	+
Subtotal	..	--	..	++	..	++
Consumer goods						
pharmaceuticals	..	-	+	+	..	-
furniture	+	-	+	+	+	+
clothing	+	-	+	+	..	..
footwear	..	--	+	+	..	-
instruments	+	..	+	+	..	-
misc. light mnfs	+	-	+	+	+	..
Subtotal	+	-	+	+	+	..
Capital goods						
basic metal prds	..	-	+	+	+	+
industrial machinery	+	..	+	..	+	+
computing machinery	..	--	..	++	..	++
tele, TV, radio appar.	..	-	..	++	..	++
electrical machinery	+	-	+	+	+	+
transport equipment	+	+	..	..	..	-
Subtotal	+	-	+	+	+	+
Total manufactures	..	-	+	+	+	+
sawn wood	..	--	..	..	..	++
non-ferrous metals	+	-	+	+	+	..
Total trade	+	-	+	+	+	+

Note: See the determination of trade creation and trade diversion effects in Table 35. The data of export shares in domestic output is in Appendix Table 8 and the data on export shares by majos regions is based on Appendix Table 3.

As noted earlier, there are only a few sectors within which LDCs play any notable role as markets for Finnish exports. Hence, the relativity of export creation and export diversion indicators presented by branches in Table 53 must be kept in mind. The overall pattern is fairly clear. During the period of 1970 to 1981 the share of exports in Finnish manufactured gross production increased from 35.7 per cent to 40.5 per cent, indicating an overall export creation effect. This growth was primarily due to a rise in trade with socialist countries, but partly also due to growth of exports to LDCs. The share of LDC exports increased from 2.6 per cent to 4.0 per cent of manufactured gross output between 1970 and 1981.

The relative significance of the socialist country and LDC markets for Finnish manufactured exports also increased due to the trade diversion effect. The share of manufactured exports to DMEs in total exports declined in favour of increased exports to socialist countries and LDCs (see Table 54). All major industrial branches followed this general pattern, as is indicated in Table 53.

Table 54. Changes in export shares of manufactures in Finland by major regions, 1970 - 1981 (per cent)

	Exports to mnf gross output			Share of total mnf exports		
	1970	1976	1981	1970	1976	1981
DMEs	26.6	22.3	24.4	74.6	65.9	60.4
SOCs	6.4	9.2	12.0	18.0	27.3	29.8
LDCs	2.6	2.3	4.0	7.4	6.9	9.8
Total	35.7	33.8	40.5	100.0	100.0	100.0

Sources: Appendix Tables 3 and 7.

As far as manufactured trade with LDCs is concerned, the growth of exports in the dominant branches - namely, within the forest industry - has primarily been the result of a diversion of DME trade rather than from the effects of trade creation. A similar pattern is also observed in export growth of paper and wood products to socialist countries. Hence, this seems to indicate

that the LDC and socialist country markets serve primarily as auxiliary market outlets for the traditional dominant export production of Finland. But chemicals, industrial machinery and electrical machinery enjoyed - as did other relatively important LDC export branches - both export diversion and export creation effects, although on a very limited quantitative scale.

Altogether, the above observations suggest two major conclusions. First, as far as DMEs as a whole are concerned, Third World industrialisation is potentially complementary to the extent that it raises demand for DME exports. The new demand for manufactures tends to be concentrated in technically advanced sectors with a high value-added content, which are typically within the capital goods industries. These are sectors, however, which the competitiveness of semi-peripheral economies has not been primarily based on. Hence, expanding LDC demand for manufactures has not offered a significant new market outlet for their exports. Finland is also ranking very low among the DMEs as far as the magnitude of its manufactured trade with LDCs is concerned. Moreover, the geographical pattern of its exports is not focused on the most rapidly industrialising LDCs, but rather on oil producing countries and some large semi-industrialised economies.

Secondly, Third World industrialisation via import substitution is potentially competitive for DME exports in LDC markets. First and foremost, the export penetration potential of semi-peripheral economies tends to be squeezed by import substitution effects. This is because the first steps in the Third World industrialisation are typically concentrated on products semi-peripheral economies are mainly supplying. Nevertheless, this does not necessarily imply any significant market losses for the semi-peripheral economies, because their LDC market penetration shares have been quite marginal throughout and, moreover, based on supplementary types of activities.

LDC industrialisation may, instead, cause a major threat in the third country markets - namely, in the traditional export markets of semi-peripheral economies. The LDCs are increasingly

capable of providing alternative sources of supply in those manufacturing sectors upon which the relative industrial competitiveness and specialisation of semi-peripheral economies have traditionally been based. This problem will be investigated in a more detailed way in the following chapter.

Chapter 5

LDC COMPETITION IN THIRD MARKETS

The emerging international division of industrial labour resulting from the outward-oriented industrialisation process in the Third World creates various types of adjustment constraints in the international economy. For a developed country, new competition in manufactured trade is not only experienced in terms of increased import penetration, but also in terms of intensified export competition. Obviously, the nature and scope of this potential threat is subject to the specific competitive characteristics of each individual country. The major determinants in this respect are the physical size of a country, its available factor endowments, the level of the development of production forces, the pattern of international specialisation as well as the general policy orientation. The higher the degree of openness in the economy and the less diversified by composition and by destination its export structure is, the greater the disruptive potential of expanding manufactured exports from the Third World.

5.1 Competition in traditional export markets

Around 60 per cent of LDC manufactured exports go to DMEs. The share of Finnish exports destinated for DME markets is roughly similar. The core economies are, hence, representing the major market outlet for both Finland and LDCs as far as their manufactured exports are concerned. [1] Moreover, in both cases these exports comprise quite a narrow range of manufactures, and thus the economies are quite sensitive to competition. These facts, as such, do not necessarily imply that Finnish exports are threatened by LDC competition. To draw any conclusions in this respect, one should examine more closely the commodity composition of the respective export flows.

Forest products have overwhelmingly dominated Finnish manufactured exports to DMEs, accounting for about 52 per cent of the total in 1981. The forest industry has traditionally been

Table 55. Finnish competitiveness in manufactured trade with DMEs, 1981

	Trade balance (mil.mk)	Trade ratio 1970	Trade ratio 1981	Export performance ratio in total exports*	Share in total exports to DMEs
Trade surplus					
paper	8 149.1	94.0	90.4	990.7	22.3
(sawn wood)	3 671.0	92.5	95.5	939.3	9.8
pulp	2 567.3	98.9	93.7	786.3	6.9
clothing	1 403.6	40.9	56.5	280.2	5.1
wood mnfs	1 256.9	87.4	81.9	708.1	3.6
(non ferrous metals)	824.3	11.2	35.1	164.7	4.1
furniture	277.9	32.2	50.5	136.0	1.1
iron and steel	117.7	-44.2	3.5	107.5	4.6
Trade deficit					
footwear	-22.9	22.5	-5.6	77.0	0.5
leather prds	-146.5	-47.4	-43.0	70.0	0.3
non metal mineral prds	-197.4	-40.2	-18.9	50.3	1.1
misc.light mnfs	-213.7	-31.6	-8.5	85.3	3.0
tele, TV, radio appar.	-230.4	-28.0	-15.4	63.1	1.6
rubber prds	-383.4	-74.1	-62.1	34.5	0.3
basic metals	-626.2	-45.3	-33.1	68.8	1.6
pharmaceuticals	-708.0	-83.8	-69.8	25.6	0.4
powergen. machinery	-712.4	-79.0	-61.8	22.8	0.6
instruments	-1 022.0	-88.3	-62.2	25.3	0.8
computing machinery	-1 060.0	-93.2	-82.6	10.2	0.3
passenger vehicles	-1 124.2	-85.8	-64.1	12.8	0.8
electrical machinery	-1 404.3	-66.9	-52.4	43.2	1.7
textiles	-1 535.6	-58.6	-59.9	43.7	1.3
transport equipment	-1 626.0	-54.1	-32.4	58.6	4.4
chemicals	-2 564.6	-64.0	-46.7	47.2	3.8
industrial machinery	-3 025.3	-55.5	-34.8	83.3	7.4
Total manufactured trade	-2 830.4	-11.9	-4.8	103.9	73.4

Note: *See the definition of export performance ratio in Table 52. In this table it represents a ratio between a share of certain commodity group in Finnish total exports and the corresponding OECD share.

Sources: Appendix Tables 3 and 4.

the dominant export sector and the corner stone of Finnish industrialisation. Its past expansion has been determined by the steady demand growth in the core economies. The only other long-standing trade surplus sector in Finnish manufactured trade with DMEs has been garments (clothing and footwear), if non-

ferrous metals are excluded as manufactures. The relative international strength or weakness of an industry is indicated here by using trade balance figures. Table 55 is accordingly arranged in rank order of the trade balance. It highlights the relative competitiveness of each manufacturing branch in Finnish trade with DMEs.

It is particularly noteworthy that while the relative strength of the forest industry in the DME markets - measured by the trade ratio indicator - has declined, the competitiveness of the clothing industry has, by contrast, significantly improved. During the last few years also iron and steel production has emerged as a net export sector in trade with DMEs. All other manufacturing branches incur a trade deficit.

5.1.1 The Finnish and LDC export patterns compared

The export performance ratio presented in Table 58 - measuring the Finnish performance in relation to the OECD average - expresses the deep divergence between the export and import sector - hence, the high degree of specialisation in Finnish trade relations with core economies. Moreover, it is interesting to note that among the trade deficit branches the highest relative export performance is shown in industries like footwear, leather products and miscellaneous light manufactures. The pattern is thus fairly clear. Finnish comparative advantages in relation to DMEs are manifested in industries producing either standardised, resource-based intermediates (forest industry, non-ferrous metals, iron and steel) or low-skilled, labour-intensive manufactures (clothing, footwear, miscellaneous light manufactures).

This type of manufactured export pattern is distinctly similar to that of peripheral industrialisers in the Third World. The rank order of dominant sectors varies, but the structural parallelism is marked. In LDC manufactured exports to DMEs, the position of the clothing and textile industries is paramount, accounting alone for around a third of the total. If miscellaneous light manufactures, leather products and footwear

are included, these traditional LDC export sectors comprise nearly half of the total. The other significant group of LDC manufactured export products comprises some light engineering goods within the branches of instruments and electrical machinery, accounting for over twenty per cent of the total LDC manufactured exports. A third major group of export industries

Table 56. RCA indices of major regions and Finland in manufactured trade with OECD area, 1981

	Finland	DMEs	SOCs	LDCs
Labour-intensive intermediates				
leather prds	-40.1	2.6	-14.5	48.8
rubber prds	-60.2	-1.6	-17.7	-36.6
wood mnfs	82.7	0.1	47.3	55.6
textiles	-57.9	2.2	-11.2	24.2
non-metal mineral prds	-14.8	-6.8	43.4	10.1
Subtotal	-12.7	-1.4	10.8	20.7
Capital-intensive intermediates				
chemicals	-44.0	-0.9	7.6	-47.6
pulp	94.0	-2.4	2.0	3.4
paper	90.8	-1.8	-51.2	-67.1
iron and steel	7.9	-0.4	-28.7	-45.6
Subtotal	42.8	-1.0	-6.9	-46.5
Consumer goods				
pharmaceuticals	-68.3	0.6	-63.3	-56.7
furniture	52.8	-1.7	79.2	14.6
clothing	58.5	-3.8	51.4	82.7
footwear	-0.9	-2.3	35.9	80.2
instruments	-60.3	0.7	-46.1	-11.2
passenger vehicles	-62.3	1.0	74.3	-81.6
misc. light mnfs	-3.9	-3.6	26.0	34.5
Subtotal	-9.3	-0.7	30.3	29.7
Capital goods				
basic metal prds	-29.8	-0.4	-0.8	-32.2
power gen.machinery	-59.9	1.0	26.1	-60.0
industrial machinery	-31.5	2.7	-51.2	-83.9
computing machinery	-81.7	-0.3	-53.2	5.5
tele, TV, radio appar.	-11.1	4.2	-10.3	15.2
electrical machinery	-50.0	-1.9	-18.5	7.6
transport equipment	-29.0	2.7	-30.9	-79.7
Subtotal	-36.0	1.6	-33.2	-43.0
Total manufactures	0.0	-0.0	0.0	0.0

Source: Appendix Table 4.

is the forest sector, comprising about ten per cent of the LDC manufactured exports to DMEs. In fact, in LDC trade with DMEs, the only trade surplus sectors in manufactures - besides clothing, footwear and leather products - have been sawn wood and wood manufactures as well as non-ferrous metals. With these types of standardised, resource-based or low-skilled, labour-intensive manufactures, the LDCs have been able to improve their global market shares significantly in recent years.

The similarity in the pattern of external competitiveness between Finland and LDCs is clearly illustrated in Tables 56 and 57. The relative competitiveness is measured by the revealed comparative advantage (RCA) indicator, which is defined on pages 71-72. The results show, first of all, a high sectoral concentration of RCA indices - and, hence, a high specialisation - in both Finnish and LDC manufactured trade with DMEs. On the contrary, trade among DMEs is of a distinctly more intra-industry type, and thus the variations of the RCA figures are relatively low.

Moreover, the RCA-position of Finland is rather similar to the pattern of the competitiveness of LDC trade with DMEs, as might be expected from the observations made earlier. In contrast to that, the sectoral characteristic of Finnish manufactured trade diverges ostensibly from the normal pattern of industrial specialisation among DMEs. This feature is emphasised by the correlation matrix in Table 57, in which the sectoral RCA indices of the major regions and of Finland are correlated to each other.

The table reveals that the Finnish RCA-position in manufactured trade with DMEs correlates positively to that of the LDCs and of the socialist countries, while it has a negative correlation with the corresponding RCA indices of the DMEs. This contrast highlights the semi-peripheral position of Finland in the international division of industrial labour.

Table 57. Simple correlation coefficients of RCA indices of major regions in trade with the OECD area by manufacturing branches, 1981

OECD trade with	Finland	DMEs	SOCs	LDCs
Finland	1.000	-0.362	0.329	0.333
DMEs	-0.362	1.000	-0.391	-0.340
SOCs	0.329	-0.391	1.000	0.403
LDCs	0.333	-0.340	0.403	1.000

Source: Table 56.

In trade between Finland and core economies the division of labour is predominantly complementary in nature. By contrast, Finnish trade tends to be structurally competitive with LDC and socialist country manufactured trade in the OECD area, which reflects their similar type of position in the international division of labour. This observation suggests that for Finland the LDC manufactured export expansion may create adverse consequences in the traditional export markets. This vulnerability is particularly accentuated since Finland, like other semi-peripheral economies, has a high degree of country as well as commodity concentration in its exports.

5.1.2 Changes in export performance

Finland's performance under the changing conditions of world trade can be examined from a number of different viewpoints. Here a calculation of market shares is used.[2] It provides a quite clear and simple means of assessing how the above described qualitative similarities in the Finnish and LDC competitive position are reflected in their actual export performance.

Changes in market shares may be due to several factors. Relative competitiveness is affected by production costs and the consequent product prices as well as several non-price factors such as product quality and differentiation, market promotion and payment arrangements. The importance of price factors in determining competitiveness varies according to the product

type. For standardised mass-produced goods - typically supplied by semi-peripheral and peripheral economies - relative production costs and the subsequent prices primarily affect competitiveness, since they are typically price takers in the world markets. Moreover, export performance and the consequent market share changes may also be affected by factors other than competitiveness, such as shifts in market conditions or institutional factors. For example, market shares may be changed due to preferential trade arrangements.

The calculation of market shares summarises the net effect of these various determinants of export performance taking into account all the above mentioned influences. It is used here as a simple statistical measure to compare mutual variations in export performances between competing countries or country groups. No detailed analysis is made to assess why shifts in competitiveness have taken place, but rather the aim is to illustrate what has happened as well as who benefits at whose cost. Obviously, the market share comparison is based on a simplifying assumption that all trade classified according to each branch category includes perfect substitutes regardless of origin. This is, however, quite a doubtful assumption, since LDC exports in particular may not represent a competing supply in many cases.

In the following, changes in market shares are measured with respect to trade with DMEs, which form the dominant export market outlet for both Finland and LDCs. An increase in market shares means that the competitiveness of Finnish exports strengthens with regard to the competing countries, and the loss of shares that relative competitiveness weakens.

Finnish exports accounted for one per cent of the total value of the manufactured imports of the OECD region in 1981. Only in the net export sectors - the forest industry and clothing - was the relative market share above average, reaching a share of ten per cent in the paper industry as indicated in Table 61. Finland's largest overall market share in manufactures is in Sweden, being 8.0 per cent in 1981. The corresponding figures for Norway,

Table 58. Market shares in OECD imports, 1981 (per cent)

	Market shares				Change in market shares, 1970-81			
	Finland	DMEs	SOCs	LDCs	Finland	DMEs	SOCs	LDCs
Labour-intensive intermediates								
leather prds	0.5	69.0	1.4	29.1	0.1	-6.0	-0.7	6.6
rubber prds	0.4	92.7	1.0	5.9	0.0	-5.1	0.3	4.8
wood mnfs	5.6	63.3	2.5	28.7	-2.9	-1.3	-0.8	5.0
textiles	0.4	76.7	1.7	21.2	-0.1	-8.6	0.0	8.6
non-metal mineral prds	0.4	85.0	2.5	12.0	0.1	-4.3	-0.0	4.2
Subtotal	0.9	79.7	1.9	17.6	-0.3	-5.3	-0.0	5.6
Capital-intensive intermediates								
chemicals	0.5	91.9	3.2	4.5	0.2	-1.1	0.7	0.1
pulp	7.9	84.9	1.7	5.4	-3.4	-1.7	0.5	4.6
paper	11.1	86.1	0.9	1.9	-1.3	-0.4	0.1	1.5
iron and steel	1.1	89.0	2.9	7.0	0.4	-3.8	-1.1	4.5
Subtotal	2.6	89.8	2.7	4.9	-0.3	-1.7	-0.0	2.0
Consumer goods								
pharmaceuticals	0.3	94.4	0.6	4.7	0.1	1.1	-0.5	-0.7
furniture	1.3	81.0	5.9	11.9	-0.0	-10.3	1.4	8.9
clothing	1.5	47.1	3.0	48.4	-0.2	-23.6	0.5	23.3
footwear	0.5	59.8	2.8	36.9	-0.4	-26.1	0.1	26.5
instruments	0.2	91.0	0.4	8.3	0.2	-6.9	-0.4	7.1
passenger vehicles	0.1	98.4	0.7	0.8	0.1	-1.2	0.4	0.7
misc. light mnfs	0.7	77.1	1.2	21.1	0.2	-9.1	-0.3	9.2
Subtotal	0.6	80.5	1.5	17.4	0.1	-9.6	0.2	9.3
Capital goods								
basic metal prds	0.7	88.2	1.4	9.7	0.1	-7.7	0.1	7.4
power gen.machinery	0.3	92.9	1.3	5.6	0.2	-5.2	0.9	4.2
industrial machinery	0.9	95.4	1.3	2.5	0.3	-2.4	-0.1	2.2
computing machinery	0.1	94.7	0.2	5.0	0.1	-2.8	-0.1	2.8
tele, TV, radio appar.	0.5	77.0	0.3	22.2	-0.2	-13.4	-0.1	13.7
electrical machinery	0.4	81.4	0.8	17.4	0.1	-13.7	-0.0	13.7
transport equipment	0.5	95.8	0.7	3.1	-0.0	-2.2	-0.2	2.4
Subtotal	0.6	90.7	0.9	7.8	0.1	-6.0	-0.1	6.0
Total manufactures	1.0	86.5	1.6	10.9	-0.1	-6.0	-0.0	6.1
agricultural prds	0.1	68.4	1.6	29.8	-0.1	6.2	-1.8	-4.4
sawn wood	5.8	58.2	10.0	26.0	0.2	5.6	-4.5	-1.3
non-ferrous metals	1.1	71.1	3.4	24.4	0.5	8.6	-0.5	-8.6
other raw materials	0.8	65.8	2.6	30.8	0.4	3.4	-0.2	-3.6
fuels	0.2	23.9	6.0	70.0	0.1	-5.4	0.6	4.7
Subtotal	0.4	41.2	4.7	53.7	-0.1	-12.7	1.1	11.7
SITC 9	0.3	79.0	1.0	19.7	0.1	-6.4	-0.8	7.2
Total trade	0.7	65.1	3.0	31.1	-0.1	-11.0	0.3	10.9

Source: Appendix Table 4.

Denmark and the United Kingdom were 5.6 per cent, 3.6 per cent and 1.9 per cent, respectively. In the manufactured imports of other DMEs, Finnish exports account for less than one per cent, except for West Germany where the share was 1.1 per cent. Country-by-country developments during the 1970's indicate that, although Finnish market shares increased quite substantially in the Scandinavian countries, they declined in all the other major DMEs, with the exception of Japan.

Altogether, in the 1970's Finnish exports to the OECD market area increased at a slightly slower rate than total OECD manufactured imports, and this was reflected in losses of total market shares. The losses were attributable almost exclusively to the product groups of the forest industries. The paper industry suffered a market share loss of 1.3 per cent, wood products 2.9 per cent and the pulp industry 3.4 per cent. The other significant losers were clothing and footwear, the latter suffering in relative terms the greatest sectoral loss. Finnish footwear export to the OECD area fell to about half of the level it had had ten years earlier, i.e. its market share declined from 0.9 per cent in 1970 to 0.5 per cent in 1981 (see Table 58). The greatest growth in market shares in the past decade was recorded for non-ferrous metals, iron and steel, as well as industrial machinery. The other manufacturing sectors succeeded, by and large, in maintaining their relative position in the OECD markets.

There are several major factors affecting Finland's overall export performance and the relative losses in market shares.[3] First, the regional concentration of Finnish trade relations has made it difficult to keep pace with developments in world trade. This is because economic growth in the major destinations of Finnish exports, notably the United Kingdom and the Scandinavian countries, has been distinctly weaker than growth in DMEs in general during the last two decades. The replacement of the slowly expanding British market with the equally slowly growing markets of the Scandinavian countries has not improved the situation in this respect.

Second, the lack of diversification in the commodity composition of Finnish exports has also prevented the full utilisation of the expansion in markets, since the external demand for major Finnish export products has grown more slowly than the average. Moreover, the undiversified commodity structure tends to strengthen the effects of international cyclical fluctuations on the economy. Negative effects have not been fully offset by the positive ones over the course of business cycles; hence, the total impact of the commodity structure has been negative in the longer term. The gradual diversification in the commodity composition of exports during the 1970's has, however, slightly reduced the effect of the negative structural factor.[4]

Third, the loss of market shares is also due to stronger competition in the traditional export markets of major Finnish export products. In particular, new suppliers in the Third World have gained ground in the markets of the OECD area.

5.1.3 Market losses due to LDC competition

Some eleven per cent of OECD manufactured imports originated from LDCs in 1981. By sectors the greatest LDC market shares were recorded in clothing and footwear, accounting for 48.4 per cent and 36.9 per cent, respectively (Table 58). The second group of LDC export industries that have performed well in the OECD markets includes leather products, miscellaneous manufactures, textiles, wood manufactures, sawn wood, non-ferrous metals as well as electrical machinery, which each cover a market share of between 20 and 30 per cent. In all other manufacturing sectors LDC shares are relatively meagre.

The rapid expansion of overall LDC market shares in recent years is, however, notable. In relative terms it more than doubled during a decade, increasing from 4.8 per cent in 1970 to 10.9 per cent in 1981. Practically in every manufacturing sector LDCs were capturing new market shares. Extraordinarily fast growth was recorded for the footwear and clothing industries, as revealed in Table 58. Also the LDC export performance in the electrical machinery sectors was impressive.

How has this fast penetration of LDC exports affected Finland's position in its traditional export markets? The first observation is that in those sectors where Finland has suffered losses in the OECD markets, LDCs have been the main conquerors. Moreover, the disruptive potential of LDC export performance is accentuated by the fact that the major losses for Finland were recorded within its traditional key export sectors. In the paper industry the Finnish market share loss was 1.3 per cent during the 1970's, while LDCs gained a share of 1.5 per cent. In the pulp industry the Finnish market share declined 3.4 per cent and in wood manufactures 2.9 per cent, while LDCs captured 4.6 per cent and 5.0 per cent, respectively. Similarly, Finnish market losses in the footwear and clothing industries are clearly influenced by rapid expansion of LDC market penetration. Also in the other sectors in which Finland suffered losses - namely, textiles as well as telecommunication, TV and radio apparatus - LDCs have shown a high market penetration capability. On the other hand, in those sectors where Finland has enjoyed its fastest growth in market shares during the last decade, the LDC performance has been rather modest.

These structural features in export performance are summarised in the following correlation matrices in Tables 59 and 60. In the calculation a rank correlation is used. The industrial sectors have been organised in order according to the market share ratios of each country group and of Finland in the OECD market area. Sawn wood and non-ferrous metals are also included. The mutual correlation coefficients are given in Table 59. Similarly, the sectors have been put in rank order by the ratios of change in market shares between the years 1970 and 1981, and the subsequent coefficients are presented in Table 60.

Table 59 reveals the same phenomena as the RCA calculations in Table 57: the Finnish manufactured export pattern is rather similar to the export patterns of the LDCs and of the socialist countries. Their position in the international division of industrial labour is parallel; hence, in the comparison of their export performance the competitive aspects of the trade are

Table 59. Rank correlation coefficients of Finland's and major regions' market shares in OECD imports by manufacturing branches, 1970 and 1981

1970 Imports

from	Finland	DMEs	SOCs	LDCs
Finland	1.000	-0.649	0.540	0.256
DMEs	-0.649	1.000	-0.710	-0.824
SOCs	0.540	-0.710	1.000	0.658
LDCs	0.256	-0.824	0.658	1.000

1981 Imports

from	Finland	DMEs	SOCs	LDCs
Finland	1.000	-0.525	0.642	0.253
DMEs	-0.525	1.000	-0.576	-0.916
SOCs	0.642	-0.576	1.000	0.454
LDCs	0.253	-0.916	0.454	1.000

Sources: Table 58 and Appendix Table 4.

pronounced. In contrast, the Finnish pattern of international specialisation deviates quite distinctly from that of DMEs on the average, which is indicated by the negative correlation coefficient in Table 59, emphasising complementarity in these trade relations. Altogether, these structural features have not notably changed during the 1970's, since the coefficient matrices from the years 1970 and 1981 reveal quite the same pattern.

Table 60. Rank correlation coefficients of market share changes of major regions during the period of 1970 - 1981 in OECD imports by manufacturing branches

Market share change by	Finland	DMEs	SOCs	LDCs
Finland	1.000	0.276	-0.334	-0.452
DMEs	0.276	1.000	-0.283	-0.947
SOCs	-0.334	-0.283	1.000	0.210
LDCs	-0.452	-0.947	0.210	1.000

Sources: Table 58 and Appendix Table 4.

Considering Table 60, the correlation calculation shows a very interesting situation. There is a negative correlation between Finnish market share changes and that of the LDCs. Hence, Finland has tended to lose market shares, particularly in those industrial sectors in which LDCs and also socialist countries have gained - and vice versa. In fact, in terms of sectoral market share changes, socialist countries and LDCs have had a quite similar pattern. Finnish experiences have, instead, been closer to the general patcern among DMEs.

Nevertheless, a major difference exists between Finland and the core economies, and this is also reflected in their subsequent adjustment constraints. For core economies, LDC market penetration is predominantly complementary because the new supply of manufactured goods is not concentrated in those industrial sectors in which their competitive position is strongest. This is well highlighted by comparing Tables 59 and 60. There are strong negative correlations both in terms of market shares of DMEs vis-à-vis LDCs and in terms of changes in market shares. This implies that, while LDCs have captured markets in those industrial sectors in which DMEs have lost, these are not the leading export sectors for the latter. Moreover, in the core economies the potential adaptability to trade-related competitive shifts is high, because of their diversified industrial structure and high innovative capability.

The situation is quite the opposite in semi-peripheral economies. For them, as for Finland, LDC export expansion in manufactures creates a strong potential competitive pressure. They are losing market shares to LDCs, particularly in those sectors on which their relative industrial competitiveness and specialisation traditionally has been based. Hence, the new supply of manufactures in world markets has the potential to undermine the basis of their industrialisation. Therefore, semi-peripheral economies seem to be more vulnerable than core ones to the increasing export competition due to Third World industrialisation.

These adverse effects are accentuated by the fact that the industrialisation in the semi-peripheral economies has been predominantly dependent on changing market conditions in the core economies. Furthermore, in the former, the rigid undiversified production structure and limited capacity to innovate will jeopardise and even hamper elastic reallocation of resources and effective adjustment policies. Their dominant industries are not in the most innovative sectors that lead technological development. Instead, they are characterised by a high degree of product standardisation and limited skill requirements. The products are mainly semi-processed manufactures or simple consumer goods, which sell primarily on the basis of their price rather than their qualities or product differentiation. Moreover, for these products the income elasticity of world demand is fairly low. Therefore, the overall competitive position of semi-peripheral economies in the core markets has gradually weakened, and their position is being aggravated further by the expanding low-cost manufactured trade from LDCs.[5]

Although the market share figures and correlation calculations do not illuminate any causal relationships, one may conclude that in the Finnish case, too, the above measured market losses are partly due to increased LDC export competition. It is not possible, however, to quantify exactly to what extent the LDC market penetration has occured at the expense of Finnish exports. In order to illuminate further the disruptive potential of LDC export competition, an attempt is made in the following to examine more closely the adjustment constraints of the two net export sectors of Finland, i.e. garments and the forest industry.

5.2 Clothing and footwear exports

5.2.1 World leading exporters

LDC exports of clothing and footwear have recorded an extraordinary success, particularly over the last decade in the world market. These products account for a major share of the

manufactured exports from LDCs and have typically played a key role in the early stages of industrialisation and of export diversification. Subsequently, clothing and footwear represent the classic examples of the competition by peripheral industrialisers in the markets of core economies with the subsequent structural adjustment problems.[6]

In most DMEs, on the other hand, the clothing and footwear industries represent only a relatively minor part of total manufacturing production, and even a smaller share of their exports. The notable exceptions, in this respect, are the European semi-peripheral economies.

There is a consistent pattern of international division of labour among DMEs. Within the OECD area only the southern European countries (Italy, Spain, Portugal, Greece, Turkey and Yugoslavia) and Finland have recorded a surplus in their clothing and footwear trade (with the exception of Austria's small surplus in footwear). Hence, the semi-peripheral economies have exhibited comparative advantages in these mature labour-intensive industries vis-à-vis the core economies.

Finland is a good example. Besides forest products, its only other clear-cut manufacturing export sectors have been clothing and footwear, in which domestic production surpasses total domestic consumption. In fact, Finland ranked twelfth among the world exporters of footwear and thirteenth in clothing in 1981.

In clothing Finland has specialised to a considerable degree in specific sub-industries. The production has particularly concentrated on both men's and women's overwears. On a product basis, Finland does best in men's suits and jackets and women's coats, jackets and dresses, while ranking among the five leading world exporters of these products (see Table 61).

Table 61. Leading exporters in clothing and footwear subindustries in which Finnish competitive position is relatively highest, 1981 (per cent share of total market economy exports)

Men's overwear (CCCC 842)		Women's overwear (843)		Overwear knit (845)		Footwear leather (8510?)	
Hong Kong	16.9	Hong Kong	23.5	Italy	25.5	Italy	33.9
South Korea	15.9	West Germany	12.0	Hong Kong	18.7	South Korea	11.9
Italy	14.1	Italy	11.3	South Korea	10.7	Yugoslavia	7.2
Belgium	7.5	France	10.5	West Germany	8.5	Brazil	7.0
West Germany	7.4	South Korea	8.8	United Kingdom	7.4	Spain	6.8
United Kingdom	5.4	United Kingdom	7.1	France	5.4	France	5.3
France	5.0	Finland	3.3	United States	3.8	West Germany	4.1
Finland	4.3	Netherlands	2.9	Finland	2.4	Austria	3.2
United States	3.4	Belgium	2.7	Greece	1.8	United Kingdom	2.9
Netherlands	3.1	Malta	2.1	Netherlands	1.8	Finland	2.2

Suits (8422)		Coats and jackets (8431)		Women dresses (8452)	
Italy	21.6	South Korea	22.4	West Germany	25.1
South Korea	20.4	West Germany	17.0	United Kingdom	11.5
West Germany	16.2	Hong Kong	13.4	Hong Kong	10.8
Finland	7.8	Finland	9.1	France	10.5
France	6.5	United Kingdom	8.4	Finland	8.5

Jackets, blazers (8424)	
South Korea	42.9
Hong Kong	12.2
Finland	9.6
West Germany	6.3
Italy	5.6

Source: Yearbook of International Trade Statistics, 1983.

In general, the principal world exporters of clothing today are from the Far East. Hong Kong is the leading exporter, followed by Italy, South Korea and Taiwan Province. Clothing exports from LDCs by products are quite diversified, although their strongest dominance is in simple, inexpensive types of mass-produced goods, such as shirts, blouses, jerseys and underwear. In footwear, the world's largest exporter in recent years has been Italy, followed by Taiwan Province, South Korea, Brazil, Yugoslavia and Spain.

LDCs have emerged as major suppliers of clothing and footwear, particularly during the past two decades. Nevertheless, LDC clothing exports have a rather long standing. India, Japan and China were becoming strong exporters of cotton cloth already in the interwar period, but this was interrupted by the spread of protectionism in the 1930's and by the Second World War. In the 1950's Japan and India re-emerged as strong exporters, to be joined by Hong Kong, which had inherited textile and clothing entrepreneurs fleeing from the Chinese mainland. To be sure, still today LDC clothing and footwear exports are heavily concentrated in a small number of Far Eastern countries.

In clothing exports Hong Kong, South Korea and Taiwan Province alone accounted for 66 per cent of the LDC total and together with China and India their share was some 78 per cent in 1981. The concentration of LDC footwear exports is even higher, since only three leaders (Taiwan Province, South Korea and Brazil) accounted for 82 per cent of the total. Nevertheless, the growth rates of several other LDCs have been quite high during the 1970's, but their starting level has been so low that the shares of individual countries have still remained rather small.[7] The continuation of such rates could, of course, lead in the future to further change in the geographical composition of trade in favour of Third World producers.

5.2.2 Characteristics of clothing and footwear industries

The technology of both the clothing and footwear industries is generally standardised and universally readily available. Most technological innovations are, obviously, carried out in the core economies, but new production technology that increases productivity or saves energy and raw materials or improves product quality is fairly quickly diffused to all producer countries. Hence, no single producer may enjoy any significant technological advantages over a long term. Also the overall pace of technical progress has been very sluggish in these industries compared with other industrial sectors.

Both clothing and footwear have continued to be exceptionally labour-intensive sectors using quite simple equipment. Capital investment per worker is extremely low. In 1981, for instance, the capital intensity indices (measuring fixed capital per employee) in the Finnish clothing and footwear industries were only 16.1 and 16.9, respectively - distinctly less than in any other manufacturing sector - while the manufacturing average was 100.0 (see Appendix Table 2). These industries are also remarkable in their very low requirements for skilled labour and for economies of scale; consequently, the average plant size is relatively small. The labour typically comprises young unskilled female workers. In Finland sectoral comparisons reveal that, as far as female intensity indices are concerned, the clothing and

footwear industries rank overwhelmingly at the top among the industrial branches, whereas they lay at the bottom in terms of research and development intensity indices. The characterisation of the extreme structural features of these two sectors is completed by noting that the labour productivity and consequently the wage level are the lowest compared with other industrial branches (Appendix Table 2). Furthermore, labour productivity has grown much less than in any other manufacturing sector.[8]

All of these specific characteristics make the clothing and footwear industries an exceptionally competitive, easily entered and cost-conscious industry in every country. Its external competitiveness is primarily dependent on labour costs. Hence, these sectors are very sensitive to price competition and, furthermore, are subject to unstable market conditions.

The biggest technological changes affecting clothing and footwear have been in transportation and communication, where it has become feasible to link production with demand in more and more distant markets. Production has shifted away from major fashion centres and final markets towards low-cost regions within industrialised economies and, at the present, increasingly towards low-wage developing countries.

The difference in labour costs has been the primary factor contributing to the change in the geographic pattern of production and trade of clothing and footwear. Such differences can be expected to continue to support LDC export success in these sectors. The spread of labour costs in global terms is extremely wide. On the average, manufacturing wage differentials are in the region of six to one between DMEs and LDCs, but differences between two countries may be as high as forty to one.[9]

Moreover, the differences in real labour costs are greater than mere wage differentials may suggest. Shorter working time, social welfare provisions, fringe benefits, and the like generally raise labour costs in DMEs more than in LDCs.

Sectorally the widest wage gaps are found particularly for those industries which pay relatively low wages - namely, textiles, clothing, footwear and leather products. Nevertheless, productivity in LDCs is typically not far below developed country standards, although working conditions may differ greatly.

Differences in average unit labour costs and improvements in transportation and communications have encouraged international relocation of clothing and footwear production. However, foreign-owned firms comprise only a very small part of these industries in LDCs and account for a small share (probably on the order of 5 per cent) of their exports. This, however, understates the importance of outsiders in both industries.

By international standards LDC production may be competitive with regard to costs, but not necessarily quality or reliability. The most difficult part of garment production is keeping attuned to the fast-changing demand. Hence, production for exports has typically been stimulated and organised by outsiders - if not by direct foreign investment - by commercial sub-contracting arrangements. In many LDCs almost all the clothing or footwear exportation has been organised by foreign trading houses, retail chains or other major buyers. In addition to supplying designs and models and sometimes the materials to be made up, they check product quality and attend to sales and shipping. For example, it has been estimated that some 70 per cent of clothing exports of the world's largest supplier, Hong Kong, passes via sub-contracting of foreign trading companies. This kind of sub-contracting is an alternative to export-oriented foreign investment.[10]

5.2.3 Finnish competitiveness in clothing and footwear

Finland's intermediate, semi-peripheral position in the world economy is reflected in the country's pattern of international specialisation. This was well summarised in the calculations of revealed comparative advantages presented in Table 26, page 87. It was observed that in relation to LDCs Finland is a high-wage

and capital-rich country being competitive in industries with a high capital and skill intensity, wage level and labour productivity. But with respect to DMEs Finland is a relatively low-wage, capital poor country being competitive either in standardised, resource-based industries or in low-skilled, labour-intensive, low-wage industries. This dichotomy is highlighted by the dual position of Finland in the international division of labour as far as clothing and footwear industries are concerned. The Finnish trade position with LDCs demonstrates strong competitive disadvantages, whereas in trade relations with industrialised countries the pattern is the opposite.

Finnish clothing and footwear trade with industrialised countries has been in a surplus throughout the 1970's. The competitiveness has been based on the labour intensiveness of the production process concerned and on the lower labour costs with core economies (see Table 7, p. 24). On the other hand, vis-à-vis LDCs the foreign trade has been deeply in a deficit, which refers to poor competitiveness, particularly in terms of labour costs. In the LDC manufacturing sector the wage level is considerably lower than in Finland; for example, average hourly wages in manufacturing are about five times higher in Finland than in the Far Eastern NICs (Table 7). Higher transport costs, capital costs (e.g. faster depreciation and higher interest rates) and import duties tend to reduce the cost advantages of LDCs, but still they are highly competitive, particularly in simple mass-produced goods.

The increasing competitiveness of LDCs in clothing and footwear is manifested in their high import penetration capability. For example, during the 1970's imports from LDCs in the Finnish domestic consumption rose from 1.8 per cent to 12.4 per cent in clothing and from 2.4 per cent to 6.2 per cent in footwear. This rapid growth is, however, surpassed by even stronger import penetration from DMEs and, in relative terms, from socialist countries (see Table 62 and Figure 11).

Table 62. Importance of foreign trade in Finnish production and consumption of clothing and footwear, 1970 and 1981 (per cent)

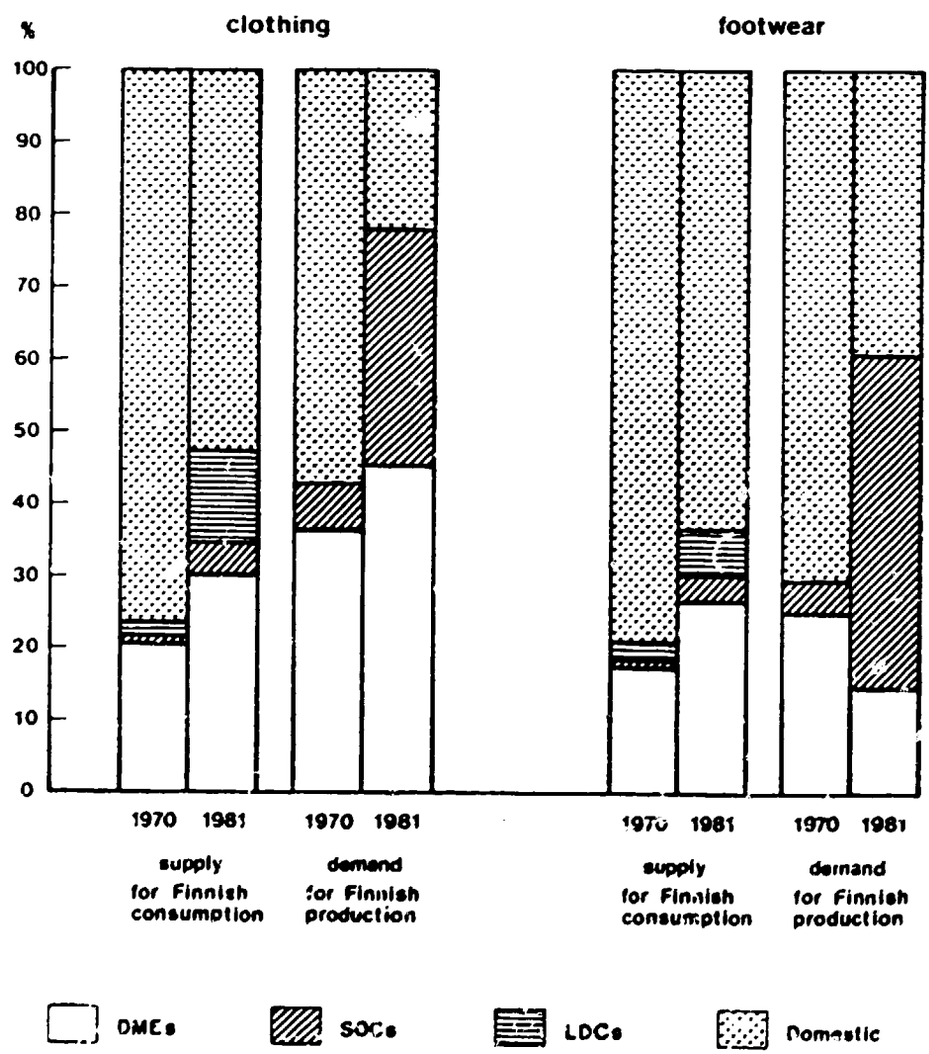
		clothing	footwear
Production to consumption			
	1970	135.1	112.2
	1981	238.5	161.3
Export in domestic production to			
DMEs	1970	36.4	25.0
	1981	45.3	14.8
SOCs	1970	6.6	4.5
	1981	32.4	45.9
LDCs	1970	0.0	0.0
	1981	0.1	0.1
Total export	1970	43.1	29.5
	1981	77.9	60.8
Import in domestic consumption from			
DMEs	1970	20.7	17.7
	1981	30.1	26.8
SOCs	1970	0.7	0.8
	1981	4.7	3.9
LDCs	1970	1.8	2.4
	1981	12.4	6.2
Total imports	1970	23.1	20.9
	1981	47.2	36.8

Sources: Appendix Tables 3 and 7.

Altogether, the importance of foreign trade in clothing and footwear consumption as well as production has increased markedly in Finland during the past decade. This fits well into the general sharp growth of world trade of these products. This may be due to increasing rationalisation and specialisation taking place in industrialised economies and facilitated by their mutual preferential trade arrangements and the consequent reductions of trade barriers. Another factor contributing to the growth of global clothing and footwear trade has, of course, been the penetration of low-cost LDC producers into the world markets.

In Finland, the effects of increasing LDC competition are not primarily experienced in terms of an import threat in home markets. As shown in Table 62, the import penetration portion of DMEs in clothing is, in fact, three times greater than that of LDCs, and the discrepancy in footwear is even higher: four to one. Similarly, the examination of employment effects of LDC trade, pursued earlier, indicated irrefutably that imports from LDCs are not the major cause for employment reductions even within these sectors with the highest LDC import penetration ratios.

Figure 11. Regional supply and demand pattern in Finnish clothing and footwear trade, 1970 and 1981



In contrast to that, the LDC penetration of low-cost clothing and footwear markets may have a major disruptive potential in the traditional export markets of Finland. The problem is accentuated by the fact that the competitiveness of the semi-peripheral Finnish economy is essentially concentrated in these labour-intensive, low-cost sectors in addition to the resource-based forest industry. Moreover, both the clothing and footwear industries are heavily outward-oriented. About 78 per cent of the Finnish clothing output and 61 per cent of the footwear production were exported in 1981. These rates are overwhelmingly the highest compared with any other manufacturing branches - excluding the sawn wood and paper industries (see Appendix Table 8). Hence, the overall development of these sectors is very sensitive to competitive shifts in external markets.

Furthermore, the international competition has tightened, since the clothing and footwear industries have experienced a gradual reduction in the rate of increase of world demand and in a number of cases - like Finnish domestic consumption of clothing during the 1970's - even falling demand, in which the share of basic necessities is gradually declining when income is rising. Typically, in the clothing and footwear industries the income elasticity of demand is low relative to other manufactures.

5.2.4 Exports by destination

During the course of the 1970's, the export production of the Finnish clothing and footwear industries surpassed production for domestic consumption. There were, however, great variations in export growth according to the destinations of trade (see Table 62). First, LDC markets played practically no role at all in the Finnish clothing and footwear export production during the past decade. Second, while in the clothing industry the share of exports to DMEs increased markedly in total production, the most dramatic growth has taken place in exports to socialist countries - namely, to the Soviet Union. Third, in the footwear industry, though the share of DME exports in total Finnish output fell drastically, that collapse was more than compensated for by an immense growth of exports to the Soviet Union.

Altogether, these changes in export destinations can best be studied on a country-by-country basis, because exports are heavily concentrated on certain markets only.

The major external markets for the Finnish clothing and footwear industries have been the Soviet Union, Sweden, Norway and the United Kingdom. The country composition of exports has, however, changed quite significantly during the course of the 1970's. Sweden became the leading export destination for the Finnish clothing industry in 1968 and afterwards until the end of the 1970's absorbed about a half of the total exports (see Table 63).

Table 63. Finnish clothing and footwear exports by major country destinations, 1970, 1976 and 1981 (per cent)

	Clothing		
	1970	1976	1981
Soviet Union	15.0	20.4	41.6
Sweden	51.1	50.3	27.1
Norway	6.9	11.0	11.1
United Kingdom	7.8	5.4	8.0
West Germany	2.8	2.3	3.7
Denmark	5.3	4.4	2.1
Switzerland	3.7	1.7	1.4
Netherlands	0.9	1.1	1.3

	Footwear		
	1970	1976	1981
Soviet Union	13.9	56.5	75.4
Sweden	39.9	23.7	14.0
Norway	13.0	9.4	6.2
United Kingdom	3.0	0.7	0.8
Canada	0.7	1.2	0.7
West Germany	2.4	0.6	0.5
Denmark	11.3	2.1	0.4
United States	7.0	2.6	0.4

Sources: OECD, Foreign trade by commodities, 1970, 1976 and 1981.

A major reason for the expansion of Swedish trade was the restructuring which took place in the Swedish clothing industry at the beginning of the 1970's. Production was transferred to lower-cost countries, particularly to semi-peripheral economies, like Finland and Portugal. Consequently, a major part of the

Finnish clothing exports are, in fact, a result of direct investment or sub-contracting arrangements made by Swedish companies.[11]

Foreign investment in Finland is more important in the clothing industry than in any other manufacturing sector - except light engineering industries (electrical machinery and instruments). In 1981 there were 213 foreign-owned manufacturing factories altogether (foreign share over 20 per cent), of which 34 - mainly Swedish-owned - were in clothing. The foreign-controlled plants represented on the average 4.4 per cent of total manufacturing value added, while in clothing the share of foreign-owned firms was 8.6 per cent.[12] The main attractions for foreign clothing establishments in Finland are the relatively low level of wages and the ample supply of labour. Typically, the investments were made in less developed regions of the country. The labour-intensive part of the production chain has been transferred to Finland, while the design of models and marketing is carried out in Sweden. About a third of the Finnish clothing exports to Sweden may be considered to come from Swedish-owned factories.[13]

By the end of the 1970's Sweden's relative share in total Finnish clothing exports had gradually declined. The most notable reason had been a very rapid increase in exports to the Soviet Union. Its share in the total rose from 20 per cent in 1976 to 42 per cent in 1981.

Even more remarkable, however, has been the change in the country composition of Finnish footwear exports in favour of the Soviet Union. During the 1970's its share in the total rose from 14 per cent to as high as 75 per cent (see Table 63). At the same time, the share of all other major external markets has fallen sharply. As a result, the geographic pattern of Finnish footwear exports has become very concentrated. At present, there are only three principal export destinations: the Soviet Union, Sweden and Norway. Together they account for 96 per cent of the total, yet ten years earlier their share was some 67 per cent. A similar type of tendency towards country concentration has

occurred in Finnish clothing exports, too, although it has not reached as strong a form as in footwear. These tendencies may indicate a constant shift in the external market conditions for Finnish exports of these traditional export products.

5.2.5 Adjustment requirements due to LDC competition

A marked pattern of change is observed in the geographical composition of the world clothing and footwear trade. Although DMEs are still major suppliers, they have lost their previous overwhelming dominance. During ten years the share of DMEs in total OECD imports of clothing and footwear declined quite remarkably: clothing went down from 71 per cent in 1970 to 47 per cent in 1981 while footwear imports declined from 86 per cent to 60 per cent. The share of socialist countries has remained constant, around 3 per cent throughout the period, whereas LDC import penetration has been very strong. In 1981 LDC clothing imports captured almost half, 48 per cent, of the import market in the OECD area, while the portion was only around a quarter ten years earlier. In footwear the relative import penetration of LDCs has been even more impressive; their market share increased from 10 per cent to 37 per cent in ten years.

The importance and dynamism of LDC import penetration is accentuated by the fact that while during the 1960's only a single country, Hong Kong, represented a major part of the imports from LDCs - alone accounting for over half of LDC clothing exports and about a third of footwear exports still in 1970 - during the 1970's several other LDC exporters have emerged. In global terms, the restructuring process has just started, and there are several reasons to expect that an ever-increasing share of DME markets will be captured by clothing and footwear imports from the Third World also in the future. Obviously, these changes have had and still have an influence on the competitive position of semi-peripheral economies in the OECD market area.

Finnish market shares in both the clothing and footwear imports of the OECD area have steadily declined along with the fall of overall DME shares. Particularly pronounced have been the market losses of the Finnish footwear industry. The development has, however, varied quite significantly according to the destination of trade.

In clothing the dominant DME market has been Sweden, accounting for around a half of the total Finnish exports to DMEs. Still today, Finland is the greatest single supplier of clothing to Sweden. During the first half of the 1970's, imports from Finland even reached a level of one third of the total Swedish clothing imports. This was generated by the transfer of Swedish production to Finland via sub-contracting and direct investment activities. During the course of the latter part of the 1970's, the relative share of imports from Finland has, however, gradually declined in Sweden. In Norway, though, Finnish market shares have improved steadily during the 1970's; hence, Norway has become the second largest DME market for the Finnish clothing industry. Both in Sweden and in Norway, the LDC market shares are distinctly below the OECD average so Finnish exports have not yet been adversely affected by LDC import penetration, despite the tendency of Swedish industry in particular to prefer increasingly low-cost producing areas in Southern Europe and in the Third World rather than Finland.

As far as other major DME markets are concerned, Finnish market shares in clothing have evolved quite steadily in the imports of the United Kingdom and Denmark, declined in Switzerland and slightly increased in West Germany. Hence, the overall export performance of Finland in clothing - despite its small decline in total DME market share - has developed quite satisfactorily, particularly with regard to the sharp increase of LDC imports and the significant market losses suffered by most DMEs as a consequence. The relative success of Finland in the short term may be due to two factors.

Table 64. Market shares of Finland and major regions in six leading DME clothing export destinations of Finland, 1970, 1976 and 1981 (per cent)

	Imports from	Market shares		
Sweden		1970	1976	1981
	Finland	18.7	22.2	18.5
	DMEs	58.6	46.4	51.8
	SOCs	2.8	2.6	2.0
	LDCs	19.9	28.8	27.7
	of which Hong Kong	13.6	14.5	11.6
	South Korea	2.5	7.0	5.6
	China	0.9	1.0	1.7
Norway				
	Finland	5.4	12.0	17.1
	DMEs	80.1	68.5	68.1
	SOCs	4.3	2.3	1.6
	LDCs	10.2	17.2	13.2
	of which Hong Kong	9.6	12.6	6.8
	China	0.3	0.4	1.0
	India	0.2	0.6	1.0
United Kingdom				
	Finland	2.4	1.5	2.2
	DMEs	53.2	42.7	46.5
	SOCs	2.6	2.6	1.9
	LDCs	41.8	53.2	49.4
	of which Hong Kong	38.2	33.8	24.8
	South Korea	0.5	7.1	10.2
	India	0.9	4.1	3.3
	Taiwan Province	0.8	2.4	3.2
West Germany				
	Finland	0.3	0.2	0.5
	DMEs	80.0	62.6	57.5
	SOCs	5.2	7.6	6.6
	LDCs	14.5	29.6	35.4
	of which Hong Kong	11.4	14.6	12.1
	South Korea	0.6	4.7	6.7
	Taiwan Province	0.8	2.5	3.4
Denmark				
	Finland	4.9	5.6	5.6
	DMEs	76.4	61.4	54.8
	SOCs	2.8	4.3	4.1
	LDCs	15.9	28.7	35.5
	of which Hong Kong	13.4	14.1	13.1
	South Korea	0.2	5.2	5.9
	India	0.9	1.4	3.1
Switzerland				
	Finland	1.5	0.9	0.8
	DMEs	91.0	79.6	79.0
	SOCs	1.7	2.0	1.0
	LDCs	5.8	17.5	19.2
	of which Hong Kong	4.3	10.9	11.6
	South Korea	0.3	2.3	2.2
	India	0.3	1.0	1.4
OECD total				
	Finland	1.6	1.6	1.4
	DMEs	70.8	52.8	47.2
	SOCs	2.5	4.0	3.0
	LDCs	25.1	41.6	48.4
	of which Hong Kong	13.6	15.4	14.5
	South Korea	3.2	9.6	10.3
	Taiwan Province	4.1	5.8	7.2

Sources: OECD, Foreign trade by commodities, 1970, 1976 and 1981.

First, LDC import penetration has been strongest in simple mass-produced goods like shirts and underwear, while Finnish clothing exports are based more on specialised products and high-fashion goods. It will also be of great importance for the future development of clothing exports to endeavour to increase specialisation and the value-added content as well as to improve product design and quality. These typically include products requiring a relatively short distance between the producer and the markets; hence, they are less sensitive to LDC competition.

A second factor contributing to the relative success of Finnish clothing exports vis-à-vis imports from LDCs is related to European trade policy. Since joining EFTA in 1961 and signing a free trade agreement with the EEC in 1973, Finland has enjoyed freer access to European markets than LDCs. Tariffs in these sectors with EEC countries were finally abolished in 1977. This has been particularly important in clothing trade, which is more restricted internationally than trade in any other manufacturing sector. Tariffs on clothing in DMEs are higher on average than in any other category of industrial products. Moreover, world trade in textiles and clothing has been restricted by general agreements from the beginning of the 1960's.[14] Further limitations have been imposed bilaterally within the framework of the so-called voluntary export restraint agreements defining special quotas for clothing imports from LDCs.

The trade policy of DMEs is probably the most difficult obstacle to expansion of LDC trade in clothing. There is certainly no question that trade restrictions discriminate against LDCs.[15] This situation, of course, offers relative competitive advantages for semi-peripheral economies as long as the present trade policy of core economies continues.

If Finland has not suffered significant losses in clothing exports to DMEs due to LDC competition, in footwear the situation is almost the reverse. Finnish market shares in various DMEs have declined heavily parallel to increasing import penetration from LDCs. There are, however, two exceptions. Both in Sweden and in Norway, footwear imports from Finland have

Table 65. Market shares of Finland and major regions in six leading DME footwear export destinations of Finland, 1970, 1976 and 1981 (per cent)

	Imports from	Market shares		
		1970	1976	1981
Sweden				
	Finland	10.2	9.8	11.0
	DMEs	81.4	74.4	69.8
	SOCs	3.4	2.7	1.3
	LDCs	5.0	13.1	17.9
	of which South Korea	0.1	4.1	9.3
	Taiwan Province	1.5	3.1	4.3
	Hong Kong	2.6	1.3	1.4
Norway				
	Finland	7.8	6.0	7.6
	DMEs	87.6	78.6	70.6
	SOCs	1.3	1.7	4.3
	LDCs	3.3	13.7	17.5
	of which South Korea	0.0	3.8	7.0
	Malaysia	0.1	6.2	5.2
	Brazil	0.0	1.1	3.4
United Kingdom				
	Finland	0.5	0.2	0.2
	DMEs	61.6	64.1	68.3
	SOCs	9.7	11.1	5.1
	LDCs	28.2	24.6	26.4
	of which South Korea	0.2	4.3	7.1
	Brazil	0.2	2.7	6.1
	Hong Kong	24.9	8.3	4.9
West Germany				
	Finland	0.1	0.0	0.1
	DMEs	93.4	88.9	86.8
	SOCs	2.3	3.5	3.6
	LDCs	4.2	7.6	9.5
	of which Taiwan Province	0.4	4.2	5.1
	South Korea	0.0	1.1	1.6
	Hong Kong	2.8	1.0	0.6
Denmark				
	Finland	5.7	1.4	0.7
	DMEs	86.2	82.7	74.4
	SOCs	2.5	1.8	2.2
	LDCs	5.6	14.1	22.7
	of which South Korea	0.0	4.4	9.5
	Brazil	0.0	4.7	4.1
	Taiwan Province	0.0	0.5	3.5
United States				
	Finland	0.1	0.1	0.0
	DMEs	85.4	48.0	31.3
	SOCs	1.2	0.8	2.3
	LDCs	13.3	51.1	66.4
	of which Taiwan Province	6.4	21.1	27.5
	South Korea	2.1	12.4	17.8
	Brazil	1.0	8.1	12.3
OECD total				
	Finland	0.9	0.5	0.5
	DMEs	85.9	68.1	59.8
	SOCs	2.7	3.5	2.8
	LDCs	10.5	27.9	36.9
	of which Taiwan Province	3.5	10.3	14.2
	South Korea	1.1	8.6	10.4
	Brazil	0.5	3.9	5.6
	Hong Kong	3.5	1.4	1.8

Sources: OECD, Foreign trade by commodities, 1970, 1976 and 1981.

managed to maintain their market shares, although imports from LDCs have grown significantly (see Table 65). In all other major footwear export destinations, Finland has, however, lost its competitive edge and suffered noticeable market losses. A critical example is Denmark, where the Finnish share in import markets was still some 6 per cent in 1970, while ten years later the share had declined to below one per cent. Danish footwear markets have increasingly been captured by low-cost LDC producers. It may be anticipated that a similar type of development will occur in other Scandinavian markets, too, as far as Finland's future export potential is concerned.

The clothing and footwear industries represent good examples of the competition by peripheral industrialisers in the markets of core economies. The effects of LDC competition are greater on semi-peripheral economies than on core ones, since the former have traditionally exhibited comparative advantages in these mature labour-intensive industries. For semi-peripheral economies, the high import penetration capability of LDCs is primarily manifested in terms of intensified export competition rather than in terms of an increased import threat in their home markets.

In the case of Finland, the clothing industry has suffered some export market losses, but relative to other DMEs the situation has not yet become alarming. The way to adjust has and will be to specialise in high-fashion goods and special products, while LDCs are supplying primarily standard lines of clothing. Moreover, Finland has been capable of maintaining its competitive advantages due to a preferential trade network established within the European countries that is discriminating against imports from LDCs.

In contrast to clothing, the Finnish footwear industry has suffered significant market losses in all major export destinations except its neighbouring countries. A major reason is evidently increased LDC competition. As a result, there is a high degree of country concentration in Finnish footwear exports so it is very vulnerable to any market fluctuations. A real

collapse in Finnish footwear production has, in fact, been avoided only by the immense expansion of exports to the protected markets of the Soviet Union. The relative success of the Finnish clothing industry, too, has considerably been dependent on the existence of the bilateral, planned trading network with the Soviet Union. Without this supplementary market outlet offered by the Soviet trade, structural constraints and adjustment problems in these sectors due to LDC export competition would have been very severe indeed for a semi-peripheral economy like Finland.

5.3 Forest product exports

The conventional approach of international trade asserts that a country will specialise in export products made with its relatively abundant factors of production. In a peripheral economy the production factors in which it typically exhibits comparative advantages are either an ample labour supply or a specific natural resource endowment. Hence, a standard pattern of peripheral industrialisation is based on the utilisation of a country's cheap labour force or local sources of raw materials. Clothing and footwear production represent very good examples of low-skilled, labour-intensive industries in which peripheral economies have enjoyed comparative advantages. Another classical example is the forest industry. For many peripheral countries, wood is the natural resource easiest to exploit in world markets. The cost of utilising forest resources and manufacturing wood products is relatively small compared to the investments usually required to enter the resource conversion field. Consequently, in recent years the only trade surplus sectors in the manufacturing trade of LDCs with DMEs have been - besides clothing, footwear and leather products - sawn wood and wood manufactures.

The international competitiveness of the mature standardised industries producing simple consumer goods or bulk types of products is primarily dependent on relative factor prices. In the clothing and footwear industries labour costs tend to determine the competitiveness. In the forest industry, though,

the key factor of comparative advantage is the raw material source. The access to wood has primarily determined the global location of the industry; hence, most of the major forest product exporters have substantial indigenous natural forests.

5.3.I Forest resources in Finland

Finland is a country of forests. Productive forest land covers some 60 per cent of the country's total land area, and the forest land per capita is the largest in Europe. Forests have traditionally served as Finland's main natural resource for industrial use and exports: since the 17th Century for making tar, subsequently for making charcoal and for shipbuilding, since the beginning of the 19th Century for sawn timber, and finally in the 20th Century for the rapid expansion of the mechanical and chemical forest industries.

Finland, together with the other Nordic countries, has been a traditional supplier of forest products to the rest of Western Europe. During the interwar period forest products constituted from 80 to 95 per cent of Finland's total exports. Since the Second World War, the overwhelming dominance of the forest industry has gradually declined, although even today its share is around 40 per cent of total exports. Of the developed countries of the world, Finland is still the most dependent on the forest industries.

The development path of the Finnish forest sector has been quite atypical in international terms. After independence, natural resources such as agricultural land, hydro-electric power, mines as well as forests were taken into national ownership, and industrial development in these sectors was reserved for domestic enterprises. The main part - some two-thirds - of the forest area have been owned by private non-industrial forest owners having mainly small (5-20 ha.) or middle-sized (20-50 ha.) forest holdings. Most private forest owners are farmers or have other rural occupations, although in recent years the number of urbanised forest owners has increased. Just under a quarter of the forest land is owned by the State and only some 8

per cent by wood-processing companies. This pattern of small farm woodland ownership has distributed the benefits of wood production and exports quite widely in society and has especially promoted rural development by providing both employment and income. The rapid mechanisation of forest jobs since the 1950's has, however, broken the traditional links between the forest sector and the small farms, provoking a rapid rural depopulation during recent decades.[16]

Despite the relatively small proportion of state-owned forests, the public control and institutional system of forest management is well established in Finland. The public policy has been to promote the forest resource use on the basis of the sustained yield principle. There are laws that prohibit overcutting and destruction of forests, and a system of public promotion of forest cultivation has been established. Since the end of the 19th Century, the major problem in the Finnish forest sector has been how to maintain the resources of the country's principal natural asset and to avoid overexploitation.[17] In fact, although Finland's share of the world's forest area is only around 0.5 per cent, it accounted for 1.4 per cent of world roundwood production in 1981 and, furthermore, for 9.7 per cent of world forest product exports.

The Finnish forests, like the forests in the other Nordic countries, are in virtually full use on a sustained yield basis. Hence, the raw material supply situation is very tight compared with most other forest product exporters. This has tended to limit the expansion of industrial capacity in this sector. As a result, during the 1970's Finland began increasingly to import timber, particularly from the Soviet Union. Some possibilities still exist to expand the domestic raw material base as well, e.g. by further intensifying forest management and cultivation, by increasing utilisation of trees more fully through use of tops and branches as well as industrial residues, or by recycling waste paper more efficiently. In this respect, a mixing of integrated industries would facilitate full utilisation of the diversity of the material available. Futhermore, when industrial growth is limited by the raw

material supply, growth can be brought about by increasing the refinement of the product. In practice, this can either mean moving from market pulp into paper and board, and finally into converted products, or it can mean moving from unfinished lumber into planed board or wood-based panels, and finally into furniture, joinery or pre-fabricated houses.[18]

Nevertheless, since the forest resources in the country are limited, the expansion of industrial capacity is sooner or later constrained by the availability of wood raw material. Subject to this constraint, industrial expansion will be guided significantly by cost competitiveness. The relative resource scarcity is reflected in the raw material prices. Hence, wood costs in Finland, like in the rest of Western Europe, are much higher than in areas where forest resources are more abundant, as in North America, the Soviet Union or tropical forest areas of LDCs. In Western Europe wood costs also tend to increase due to a scattered forest ownership structure and environmental considerations as well as due to poor growing conditions and the consequent high unit wood costs compared with sub-tropical and tropical zones. For example, the average stumpage price of pulpwood in Finland is about twice as high as in North America and four times higher than in Brazil.[19]

Obviously, differences in wood costs have an influence on the global structural development of the forest industry. The availability of an abundant raw material basis is one of the key determinants of competitiveness in this sector. In this respect, North America and the Soviet Union are very competitive as they hold substantial reserves of coniferous softwood resources. Some of them are easily accessible, as in the southern United States; some are less so, as in northern Canada, Siberia and the Soviet Far East. Furthermore, also the vast broad-leaved hardwood resources in the Third World are clearly underused for industrial purposes at the present time.[20]

5.3.2 Forest resources of the world

The total forested area of the world is about 4 100 million ha., covering some 30 per cent of the world land area. However, a great share of it is not suitable for industrial use. There are wooded areas with only limited tree coverage as well as forests that are not operable for a variety of reasons, such as physical or economic inaccessibility, or different legal constraints designed to preserve the forests. The amount of operable or productive forest available for roundwood production amounts to slightly less than half of the total world forest area. Some 52 per cent of it is located in the Third World. The total growing stock, given as the bole volume of all trees, is estimated at about 270 000 million m^3 for all the operable forests in the world, of which LDCs together account for some 64 per cent (see Table 66).

Table 66. World's forest resources and global use of wood, 1981

	Developed countries	LDCs
All forest area (million ha.)	1 910	2 215
Operable forest area (million ha.)	940	1 035
Growing stock in operable forests (milliard m^3)	96	174
Total roundwood production (million m^3)	1 314	1 828
of which industrial roundwood	1 069	315
fuelwood and charcoal	245	1 513
Roundwood utilisation per cent share of growing stock in operable forests	1.4	1.0
Industrial roundwood utilisation per cent share of growing stock	1.1	0.2

Sources: UNIDO (1983) Wood Resources and Their Use as Raw Material and FAO, Yearbook of Forest Products 1970 - 1981

Trends in forest resources have taken different courses in the developed and developing countries. In general, the growing stocks in Europe and North America have increased during the post-war period. This is primarily due to improved forest management, forest conservation policies and a better knowledge

of the resource base. In contrast, the forest area and growing stock in the LDCs have drastically decreased. Tropical rain forests, the main type in the LDCs, have decreased in area from around 1 600 million ha. to about 950 million ha. It has been estimated that during the period of 1976-1980 some 7.5 million ha. of LDC forests and another 3.8 million ha. of other wooded land have been lost annually.[21]

The forest use in LDCs is based on extractive exploitation. The forest exploitation has been uncontrolled, exceeding in many countries the sustainable capacity level. Moreover, bad logging practices have brought about erosion. Only a small fraction of LDC forests are properly managed and protected; in fact, nearly 90 per cent of the tropical forests have never been surveyed. Vast forest areas are, hence, either neglected or receive scant attention, although in tropical areas the ecological balance is particularly fragile. Forest management in LDCs is generally left to timber concessionaires, whose priorities, in response to fluctuating market requirements, are often in conflict with the national priority of ensuring the long-term productivity of forests.

The main cause of deforestation has not, however, been industrial utilisation, but agriculture and fuel needs. Spontaneous shifting cultivation is considered to be responsible for about 35 per cent of the total deforestation in Latin America, 70 per cent in Africa and 50 per cent in Asia.[22] In particular, the still widely used practice of indiscriminate slash-and-burn agriculture is devastating for forest resources. Another important cause is the conversion of forest land to extensive grazing. Despite this alarming trend of deforestation, LDC forests still contain about two-thirds of all the growing stock in the world's forest representing a significant productive potentiality in terms of woodbased industrialisation.

5.3.3 Use of forest resources

The world production of all roundwood reached some 3 100 million m^3 in 1981, of which 58 per cent was produced in LDCs and 42 per

cent in developed countries (Table 66). Hence, the overall distribution of global roundwood production corresponds roughly to the distribution of the forest resources. A major difference exists, however, in the type of wood use between regions. In LDCs the bias towards production of fuel wood is overwhelming. Nearly nine-tenths of the people in the Third World depend entirely on wood as their main source of fuel. Consequently, over four-fifths (83 per cent) of the wood cut down in LDC forests is used for energy as fuel wood and charcoal. Even though the pattern of wood use in developed countries - consisting primarily of roundwood production for industrial purposes - is the reverse, in global terms more than half (56 per cent) of the total wood consumption is used as fuel.

On the other hand, of the world production of industrial roundwood, only about one-fifth (23 per cent) is produced in the Third World. The foremost producer of industrial wood is North America, with about a third of the world total, followed by the Soviet Union and Europe with about a fifth each. The degree of industrial utilisation of the forests varies greatly by regions. Measured by the percentage ratio of roundwood production to the volume of growing stock, a remarkable difference between developed and developing countries is revealed (Table 66). In the former about 1.1 per cent of the growing stock is annually used as industrial raw material, whereas in the latter case the ratio is only 0.2 per cent.

The variations are even greater within the major regions. The most intensively used forests are those of the southern United States, where the utilisation ratio is about 4.6 per cent. In the Nordic countries the annual cuts are about 2.8 per cent and in the other European countries about 2.6 per cent of their wood growing stock. In North America as a whole the ratio is about 1.3 per cent, but in British Columbia it is as low as 0.7 per cent and in the Soviet Union only about 0.6 per cent.[23]

Within LDCs the forests are clearly an under-used source for industrial production. Although in some parts of the Third World, like Southern Brazil, Mexico, some West African countries

and the countries of Southeast Asia, forest resources are being used more and more intensively, in most parts the contribution of tropical forests to industrial development is negligible. The most extreme examples are the practically unlimited, but unused, forest resources of the Amazon and Congo river areas.

The forest industry is conventionally divided into a mechanical wood industry and a fibre-based chemical wood industry. The mechanical processing of wood involves three categories of manufacturing: lumber, and sawn wood; wood-based panels such as veneer, plywood, fibreboard and particle board; and products of secondary wood processing such as wooden articles, furniture, joinery and pre-fabricated elements. The chemical wood-processing industry produces pulp, paper and board as well as converted paper products.

Mechanical wood processing is typically a labour-intensive industry with relatively low capital and energy requirements, particularly when compared with the pulp and paper industry. It is not skill intensive, and the size of the undertaking is frequently rather small. In contrast, the manufacture of pulp and paper - although quite standardised - is a very capital-intensive, advanced technology process, usually making even the smallest mill a large undertaking. Subsequently, the barriers to entry have been much lower in mechanical wood processing than in the chemical wood industry.

Typically, the forest industry in LDCs has in its initial stage concentrated on mechanical wood processing. Of all industrial roundwood production in LDCs, some 87 per cent is produced for the mechanical wood industry - and, hence, only 13 per cent as pulpwood - while in developed countries the corresponding figures are 69 per cent and 31 per cent, respectively.

The pattern of forest utilisation in the LDCs is thus fairly clear. In terms of forest resources, they have about 52 per cent of the world's operable forest areas and even more, 64 per cent, of the wood volume in these forests. Their share of global roundwood production is about 58 per cent, but they produce only

about 23 per cent of the world's industrial wood. The unbalanced picture is accentuated by the fact that the proportion of LDCs in world pulpwood production is merely 11 per cent. While the relative importance of LDCs as suppliers of industrial wood has grown markedly during the last two decades, their contribution is still far from what it could be considering their vast forest resources (see Table 67).

Table 67. Comparison of forest resources and roundwood production of developed and developing countries, 1961, 1971 and 1981 (per cent of world total)

	Developed countries			LDCs		
	1961	1971	1981	1961	1971	1981
Growing stock	..	..	35.6	..	..	64.4
Total roundwood production	55.6	47.3	41.8	44.4	52.7	58.2
Industrial roundwood production	86.5	83.5	77.2	13.5	16.5	22.8
Pulpwood production	97.6	95.2	89.2	2.4	4.8	10.8

Sources: FAO, Yearbook of Forest Products, 1961 - 1972 and 1970 - 1981

There are several reasons - both economic and technical - for the low intensity of the industrial use of the LDC forests. At present, wood processing is limited in LDCs, owing to input constraints such as capital and skill, the characteristics of the available raw material, and the lack of basic infrastructure.

Particularly in the pulp and paper industries, the suitability of various species of wood is largely determinated by the quality of the fibre. The most important characteristics are fibre length and flexibility. Coniferous species have long fibres and broad-leaved species short fibres. The use of the two types of fibres depends on the type of paper to be produced, but a certain input of long-fibre pulp is generally required. Since the coniferous forests cover some 75 per cent of the forest area in the temperate and northern regions, vis-à-vis only 3 per cent

in the tropical regions, this tends to favour northern forests as a raw material source for the pulp and paper industry.

Furthermore, the composition of temperate and northern forests is rather uniform, generally being comprised of one predominant species. The tropical broad-leaved forests, on the contrary, are characterised by a generally heterogeneous mixture of hundreds of species. These different characteristics have important consequences for their utilisation. In most forest industry sectors, raw material of a rather uniform nature is required. Hence, because of species diversity and the consequent cutting and conversion costs, natural tropical forests have had, until now, rather limited industrial value.

5.3.4 New possibilities for utilising tropical forests

There are two major factors - technological progress in pulp making and the plantation programme - that have started to reshape the global structure of the forest industry by making tropical forest areas increasingly available as raw material sources. Chemical wood-processing industries are based on inventions of a century ago which made it possible to use wood as a raw material for paper. The groundwood and the sulphite processes were the original inventions, but they require long-fibre species, particularly spruce, as the raw material. The sulphate process, which was invented at the end of the last century, is less dependent upon the wood quality.

Practically all wood species can be pulped in this process, but the resultant pulp is dark brown and difficult to bleach. This situation changed only in the early 1950's, when the modern process for bleaching sulphate pulp was developed. This has had a profound effect on the world's forest industry, since a new type of pulp, short-fibre bleached hardwood pulp, was introduced. Forest areas with little or no coniferous species became potential raw material sources for pulping and paper making. This immediately expanded the raw material base in Europe, and particularly in North America new natural forests were taken into use. In a longer term, the most dramatic change

is, however, that the sulphate bleaching process has also made sub-tropical and tropical forests a potential source of chemical pulp and paper making.

Another development that has influenced the raw material availability of tropical forests is expanding use of plantation programmes. Since the 1950's forest plantations have extensively been used in several LDCs to stop deforestation and to provide fuel wood for urban areas, but, particularly during the course of the 1970's, fast-growing plantations have increasingly been established for industrial purposes. The chief attraction is the hope of growing cheap raw material by utilising the tremendous growth potential of bio-climatic conditions in the tropics. The usual species have been eucalyptus (hardwood) and pine (softwood), which can produce wood at five to ten times the growth rate of the natural forests in the temperate zones. Under favourable conditions the annual growth of eucalyptus may be 43 to 55 m^3 per hectare, and that of pine 20 to 45 m^3 per hectare, compared, for example, to the average growth of 4 to 6 m^3 per hectare a year that can be reached in southern Finland. Hence, the tropical forest plantations require rotation cycles of only 17 to 20 years for eucalyptus and 20 to 25 years for pine after the intial plantation work, instead of the 50-to-80-year rotation cycles required for the natural forests in temperate zones.[24] The cheap wood raw material potentiality is a permanent competitive advantage for many LDCs.

Table 68. Established and planned forest plantations in tropical LDCs, 1980 (million ha)

	Established plantations		Planned plantations (annual rate of formation 1981-85)	
	industrial	all	industrial	all
Tropical America	2.6	4.6	0.28	0.53
Tropical Africa	1.0	1.8	0.06	0.13
Tropical Asia	3.5	5.1	0.23	0.44
Total	7.1	11.5	0.58	1.10

Source: UNIDO (1983) Wood Resources and Their Use as Raw Material, Tables 1.7 and 1.8

In the LDCs of the tropical zone, the total area of plantations existing in 1980 is about 11.5 million ha. The fact that 40 per cent of all these plantations were established over the last five year period, 1976-1980, illustrates the rapid increase of this afforestation effort. Some 60 per cent of all plantations are used for the production of industrial wood. On a regional basis Latin America, tropical Africa and tropical Asia account for 40, 15 and 45 per cent, respectively, of the total plantations (Table 68).

However, the industrial plantations in particular are quite heavily concentrated in large countries. In Latin America, Brazil alone accounts for about 77 per cent of all the industrial plantations, and in tropical Asia some 85 per cent is concentrated in India and Indonesia. Nevertheless, in recent years the formation of forest plantations has expanded rapidly all over the tropical countries, where some 1 million ha. are established annually. This should, however, be compared with the annual deforestation of over 7 million ha.[25]

Once established, the potential contribution of fast-growing plantations to forest industry development is obviously very great. They can supply a uniform raw material instead of the existing mixed tropical hardwood forests. The plantations already contribute 40 per cent of the industrial roundwood production in tropical America, but still only 5 per cent in Africa and Asia. In the short term, until the 1990's, their influence on the global forest industry development and trade balance will remain rather limited, since the area devoted to such ventures is still quite small, but after that many LDCs may follow Brazil's example as an important power in forestry and the forest industries.

A gradual restructuring is going on in the world forest industries. The progress of bleaching technology has expanded the potential raw material base of the chemical wood-processing industry by making hardwood forest areas available as raw material sources. Furthermore, plantation forests with fast-growing timber crops will offer a considerable impetus for this

expansion in tropical countries. On the other hand, in the 1960's the expansion of the forest industry in the Nordic countries, the traditional suppliers of the Western European market, reached its wood producing limit. This has restricted the growth of the Nordic forest industry and has contributed to a large increase in the cost of its wood raw material. In the short and medium term, North America with its still abundant wood resources and ambitious plantation programmes - e.g. in the southern United States with already 8 million ha. of forest plantations - has a good potential to expand its forest industry and also to penetrate into European markets. In the longer term, however, a major source of forest industry products for the world markets may be in the Third World, where at present a vast wood industry development potential lies practically unutilised in the tropical forests.

5.3.5 Development of forest industry

Over the last quarter of a century, the world forest industry has grown steadily, although the overall growth of demand has not been as intense as in many other industrial sectors. In spite of the relatively moderate growth rate, the world consumption of forest products is still expected to increase.[26] The demand will grow fastest in the Third World, due to the low starting level, economic growth and urbanisation as well as spreading literacy. There the production of the forest industries has also grown the fastest in relative terms during the last two decades. The global share of LDCs has increased both in the mechanical and chemical forest industry sectors. The growth has been particularly intense in the production of wood-based panels and wood pulp, in which the global share of LDCs has increased threefold during the period of 1961 to 1981 (Table 69). Obviously, the developed countries still dominate the world forest industry production, but the continuation of such a growth rate in LDCs could lead gradually to considerable changes in the geographical composition of production. At present, about a fifth of the world mechanical wood processing takes place in LDCs, but still only a tenth of the chemical wood processing.

Table 69. Production of forest industries by Finland and major regions, share of world total, 1961, 1971 and 1981 (per cent)

	Finland			DMEs			SOCs			LDCs		
	1961	1971	1981	1961	1971	1981	1961	1971	1981	1961	1971	1981
Roundwood	2.5	1.6	1.4	32.7	28.4	26.4	20.4	17.3	14.0	44.4	52.7	58.2
Sawn wood	2.4	1.7	2.0	50.3	51.7	49.8	36.6	33.7	28.5	10.7	12.9	19.7
Wood-based panels	3.2	2.1	1.6	79.0	75.4	64.6	13.0	13.4	16.8	4.8	9.1	17.0
Wood pulp	6.9	5.9	5.8	82.0	80.8	77.1	8.6	9.7	9.6	2.4	3.7	7.4
Paper and board	3.1	3.4	3.5	82.2	79.8	75.9	7.8	8.5	8.0	6.8	8.4	12.6

Source: Appendix Table 10.

The Finnish share in the global forest industry has declined slightly in every sector except paper and paper board. The most dramatic decline has been experienced in wood-based panels - the sector with the highest growth rate in LDCs. The lack of raw material has prevented the expansion of the base industry in Finland; hence, the only way to grow has been to concentrate on end products - such as different paper grades - with a high value-added content. They do not have a cost structure primarily dominated by wood costs.

Regional shifts in the production capacity of the world forest industry are not necessarily reflected in the global trade structure, since the sector in global terms is very strongly home-market oriented. About 80 to 85 per cent of all forest industry production in the world is directed toward domestic markets. In Finland the situation is, hence, exceptional since about two-thirds of its forest industry products are exported and in paper products the share is above 80 per cent. In the LDCs the share of exports in total production has been below average, except in the sectors of wood-based panels and, in recent years, wood pulp (see Table 70). This indicates that the forest industry in most LDC cases is predominantly home-market oriented and in its initial stage primarily represents an

import-substitution type of industrialisation. Obviously, country variations in this respect are very great (Table 70).

Table 70. Share of exports in total production of forest products by Finland and by major regions 1961, 1971 and 1981 (per cent)

	Finland	DMEs*	SOCs	LDCs	World
Roundwood					
1961	12.0	2.7	1.9	1.5	2.0
1971	2.6	4.1	3.9	2.9	3.4
1981	6.2	5.6	4.8	1.9	3.3
Sawn wood					
1961	64.2	16.7	6.5	9.3	12.2
1971	64.0	18.1	8.2	11.0	13.9
1981	65.1	24.6	8.4	11.2	17.4
Wood-based panels					
1961	70.0	11.3	7.1	27.6	11.4
1971	62.5	10.7	10.5	47.2	14.1
1981	62.5	13.7	9.9	29.9	16.3
Wood pulp					
1961	37.2	17.0	6.0	3.6	15.6
1971	25.0	15.8	5.6	9.9	14.6
1981	23.3	17.4	7.4	18.0	16.4
Paper and paperboard					
1961	83.3	18.6	5.0	2.8	16.5
1971	81.8	20.5	10.0	2.8	18.1
1981	80.3	23.6	12.5	4.8	20.4

Note: *Including Finland

Sources: FAO, Yearbook of Forest Products, 1961 - 1972 and 1970 - 1981.

Altogether, in global terms the share of exports has gradually increased in every forest industry sector. In Finland, though, outward orientation has slightly decreased, particularly in pulp production, where upgrading in favour of paper products has taken place.

5.3.6 International division of labour in forest industry

The world economy can be divided into forestry product exporting areas and importing areas. Table 71 and Appendix Table 10 show the supply and demand pattern in the international economy based

on this division. As described earlier, there are some inherently wood-rich and wood-poor countries in the world, the first being the potential exporters and the latter the potential importers. Furthermore, among the exporters there is a distinct division of labour, which is affected by the degree of development and industrialisation of a particular country.

On a world basis, there are, and will continue to be, differences regionally between the production and consumption of forest products. The wood-poor areas in the Middle East and North Africa have consumed more wood products than they produce, but so have both Eastern and Western Europe as well as Japan. The major excess production regions have been North America, the Soviet Union and the Nordic countries as well as the Far East, with smaller surpluses coming from Latin America and Africa. Although the production in LDCs has increased substantially in the last two decades, the balance between production and consumption has remained quite stable due to a parallel increase in their consumption of wood products (see Appendix Table 10).

In fact, net imports of forest products are generally a relatively small proportion of consumption. The demand is primarily satisfied by domestic production, even in the main importing areas of the world. Notable exceptions are the Near Eastern countries, which must supplement domestic production with substantial imports, because of a major lack of natural forests. Obviously, all major exporters have large indigenous supplies of natural raw materials. There are, how-ever, a few countries in which the forest industry is dependent on significant imports of sawlogs. Japan, South Korea, Singapore and Taiwan are major exporters of wood products that base their industries on imported raw materials. Half of these raw material imports originate in North America and the other half in the ASEAN countries.[27]

The balance between production and consumption of forest products significantly varies regionally by sectors. These variations reflect the pattern of the international division of labour in the world forest industry. While the LDCs are net

Table 71. Trade balance of forest products by regions, 1961 and 1981

	Roundwood (million m³)		Sawn wood (million m³)		Wood based panels (million m³)		Pulp (million tons)		Paper (million tons)	
	1961	1981	1961	1981	1961	1981	1961	1981	1961	1981
DMEs										
Finland	5.6	-1.4	5.2	5.4	0.7	1.0	1.6	1.7	2.0	4.8
Western Europe	-13.8	-16.9	-11.9	-13.1	-0.5	-3.1	-1.9	-5.1	-1.2	-1.9
North America	0.9	17.6	3.3	9.0	-0.6	-0.9	1.4	6.3	1.6	5.5
other DMEs	-9.2	-35.1	-1.8	-4.5	0.4	-0.1	-0.2	-0.8	-0.4	-0.1
subtotal	-16.5	-35.8	-5.2	-3.2	0.0	-3.1	0.9	2.1	2.0	8.3
SOCs										
Soviet Union	5.3	15.1	4.9	6.6	0.0	0.9	0.2	0.5	-0.1	0.2
Eastern Europe	-0.6	2.7	0.8	0.4	0.1	-0.3	-0.3	-0.9	0.0	-0.4
subtotal	4.7	17.8	5.7	7.0	0.1	0.6	-0.1	-0.4	-0.1	-0.2
LDCs										
Africa	4.6	5.0	0.0	-0.3	0.1	-0.1	0.0	0.2	-0.2	-0.6
Latin America	0.3	0.4	0.2	-0.8	0.0	0.1	-0.5	0.7	-0.9	-1.9
Near East	-0.4	-0.7	-1.0	-4.2	-0.1	-1.1	0.0	-0.1	-0.3	-1.1
Far East	6.3	14.4	0.9	4.0	0.1	3.3	-0.3	-1.2	-0.6	-2.5
subtotal	10.8	19.1	0.1	-1.3	0.1	2.2	-0.8	-0.4	-2.0	-6.1

Source: Appendix Table 10.

exporters of forest products as a whole, their sectoral trade balance is positive only in production of roundwood and of wood-based panels. Particularly in paper products, all of them are major net importers. As far as regions within LDCs are concerned, the Near East is a net import area - and increasingly so - in every sector of the forest industry. The Far East is a major export area of mechanical wood processing, but a net import area in chemical wood processing. In Latin America the forest industry is primarily directed toward home markets, while Africa's role in international trade has been to be a source of tropical roundwood.

The pattern is the opposite in the DMEs. The higher the value-added content of a sector, the better the representation of that particular sector in the DMEs. Western Europe and Japan are the world's leading importers of roundwood and of sawn wood, while their dependence on imports is distinctly less as far as more processed wood products are concerned. Finland, too, is a net importer of roundwood today, while in other sectors it is a major net exporter, the most rapid expansion taking place in exports of paper products. This global division of labour in the trade of forest products is highlighted in Table 72 and Figure 12.

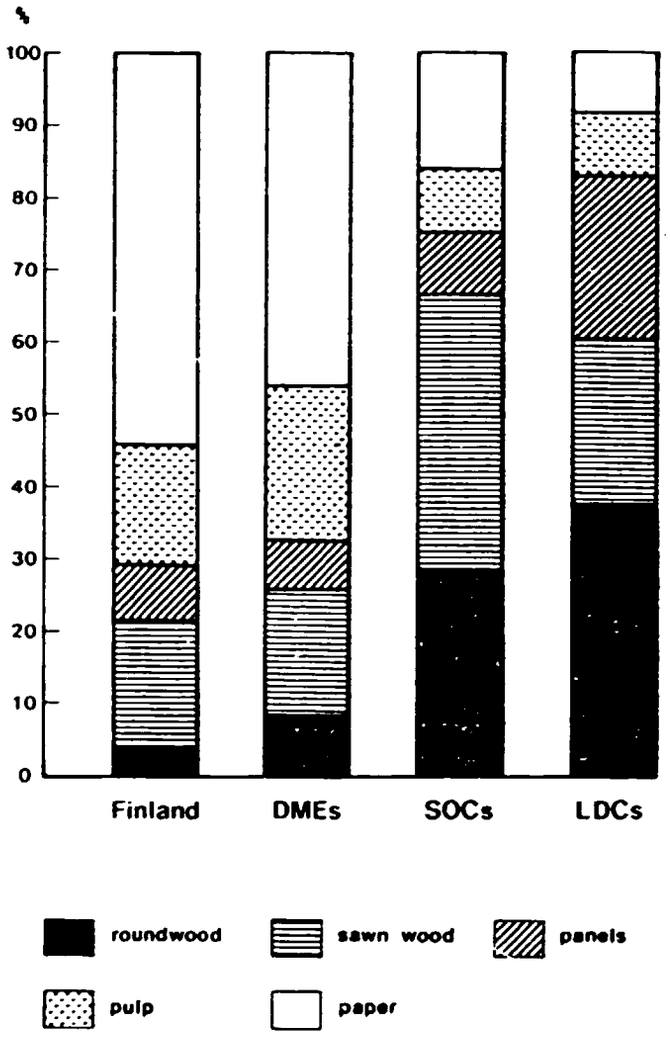
Table 72. Composition of forest product exports of Finland and major regions, 1981 (per cent)

	Finland	DMEs	SOCs	LDCs	of which		World total
					Latin America	Far East	
Roundwood	3.6	8.1	28.5	37.6	2.4	46.8	13.5
Sawn wood	18.3	17.7	38.1	22.6	25.9	25.0	19.9
plywood	5.9	3.8	4.5	21.6	8.9	23.3	6.8
particle board	1.0	2.2	1.5	0.4	0.8	0.1	1.8
fibre board	0.6	0.8	2.3	0.9	4.4	0.1	0.9
Wood-based panels	7.5	6.8	8.3	22.9	14.1	23.5	9.5
mechanical pulp	0.1	0.7	-	0.0	0.1	-	0.5
chemical pulp	16.4	20.5	8.9	8.7	35.9	0.0	17.5
Wood pulp	16.5	21.2	8.9	8.7	36.0	0.0	18.0
newsprint	13.8	14.2	3.7	2.4	10.2	0.6	11.7
printing, writing paper	19.2	11.6	2.4	2.0	3.2	1.6	10.3
household, sanitary paper	1.1	0.9	0.6	0.2	0.5	0.1	0.8
wrap., pack.paper, paper board	8.9	12.0	4.7	1.8	1.5	1.4	9.6
special paper	11.0	7.4	4.7	1.7	6.0	0.8	6.7
Paper and paperboard	54.0	46.1	16.1	8.1	21.4	4.5	39.1
Total forest products	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total (million $)	4 987.6	34 927.0	3 807.8	7 603.6	1 525.9	4 404.5	51 326.0

Source: FAO, Yearbook of Forest Products, 1970-1981.

The forest product export composition varies distinctly by regions. In the DME exports, the mechanical wood industry is represented below and the chemical wood industry above the world average, while in the exports of Socialist countries and LDCs these relations are reversed. In fact, around two-thirds of the forest product exports of the latter country groups are comprised of basic raw material: roundwood and sawn wood. The corresponding share in the DME exports is only about 25 per cent. On the other end of the production chain, paper and paper board account for about 46 per cent of DME exports, while only for 8 per cent of LDC exports. The pattern of the international division of labour is thus fairly clear.

Figure 12. Forest product export composition of Finland and major regions, 1981



5.3.7 The pattern of specialisation in LDCs

The LDCs have tended to specialise in a rather narrow range of forest products. A low level of diversification is a typical feature in their production and export pattern. In fact, besides roundwood and sawn wood, only the shares of plywood and, on a smaller scale, of veneer products in LDC exports are above the world average figures. Regionally, the high product

concentration of LDC exports is even more pronounced. In the Far East - representing about 58 per cent of the total LDC forest industry exports - some 95 per cent of exports are composed of either roundwood or sawn wood and plywood. In the other major LDC export area, Latin America, the wood processing is one step more advanced. Roundwood exports have a meagre share, while all grades of wood-based panels - except particle board - and chemical pulp have a share distinctly above the world average. These are also rather low-yield products, for which the wood cost is the dominant cost factor.

Altogether, the large discrepancy between processed wood and unprocessed wood in the LDC exports underlines the argument that there is great potential for expansion in the LDC forest industry. So far, their production and export pattern is predominantly complementary to that of the DMEs - and particularly to that of Finland, whose exports are primarily composed of high-yield products, such as different paper grades. Hence, the new supply of forest products from LDCs does not , in its present composition, threaten to undermine the base of the forest industry structure in Finland or in DMEs as a whole.

As well as a high degree of product concentration, there is also a strong country concentration in LDC forest product exports. In fact, only a handful of countries have been responsible for it. The three leading countries - Malaysia, Indonesia and Brazil - accounted for almost a half and the twelve leading countries for some 87 per cent of the total LDC forest product exports in 1981 (see Table 73). Regionally, the leading exporters are concentrated in four areas: South-East Asian insular, East Asia, West Africa and Latin America. Moreover, there are some other major LDC producers like Mexico, India and China, but their forest industries are predominantly home-market oriented.

Developed countries are, however, the leading forest product exporters in the world. Canada and the United States, with their large resources, have been the world leaders, followed by Sweden, Finland, the Soviet Union and West Germany. The top LDC - namely, Malaysia - does not appear until the seventh position of the world ranking order.

Table 73. Twelve leading LDC exporters of forest products, 1981

	Value (million US $)	Per cent share
1. Malaysia	1 713.0	22.5
2. Indonesia	1 020.3	13.4
3. Brazil	945.2	12.4
4. South Korea	550.5	7.2
5. Taiwan Province	502.4	6.6
6. Singapore	441.4	5.8
7. Philippines	421.5	5.5
8. Chile	344.7	4.5
9. Ivory Coast	300.2	3.9
10. Gabon	178.5	2.3
11. Burma	111.0	1.5
12. Cameroon	104.5	1.4
All above	6 676.8	87.2
Total LDCs	7 603.6	100.0

Source: FAO, Yearbook of Forest Products, 1970 - 1981.

Nevertheless, since LDCs have specialised in exports of basic forest products, their prominence is more accentuated in those sectors. Malaysia is the world's second largest exporter of roundwood, and two other South-East Asian countries, Indonesia and the Philippines, as well as two West African countries, the Ivory Coast and Gabon, are among the twelve leading roundwood exporters. Also, in the exports of sawn wood, three South-East Asian countries and Brazil are among the top twelve exporters of the world (see Table 74).

In the exports of wood-based panels, the position of LDCs has been the most prominent. In particular, the Far Eastern plywood industry, as the most important sub-sector of wood-based panels, has represented one of the most expansive sectors within the world forest industry during the past thirty years. First Japan developed a major plywood industry during the 1950's, and soon, in the course of the 1960's, it was followed by South Korea, Taiwan and, a bit later, by Singapore. Today, South Korea and Taiwan are, in fact, the world leaders in the exports of wood-based panels.

Most plywood production in the Far East is, however, based upon logs purchased from the South-East Asian countries. Within the last few years a change has occurred in this division of labour. The roundwood suppliers have moved to restrict the exports of logs and to insist that wood-based panels be manufactured in the country of the log source. Hence, it is possible that in the coming ten years Malaysia, Indonesia and the Philippines may assume the production and export roles filled so far by the Far Eastern countries.[28]

Table 74. Twelve leading exporters of forest products by sectors, 1981 (per cent share of world total)

Roundwood		Sawn wood		Wood-based panels		Wood pulp		Paper and paperboard	
United States	23.0	Canada	25.0	South Korea	8.2	Canada	34.5	Canada	21.2
Malaysia	15.7	Sweden	10.1	Taiwan Province	8.0	United States	17.9	Finland	13.3
Soviet Union	11.9	Soviet Union	9.3	Finland	7.9	Sweden	14.5	Sweden	12.9
Indonesia	10.3	United States	9.1	United States	7.2	Finland	8.9	United States	10.0
Ivory Coast	3.4	Finland	9.0	West Germany	6.2	Brazil	4.0	West Germany	7.3
Australia	2.8	Austria	6.0	Belgium	6.2	Soviet Union	3.4	United Kingdom	3.6
France	2.7	Malaysia	4.6	France	5.0	Norway	2.6	Japan	3.5
Finland	2.6	Romania	2.3	Singapore	4.4	Portugal	2.2	Netherlands	3.5
West Germany	2.5	Brazil	2.1	Soviet Union	4.1	Chile	2.0	France	3.1
Canada	2.3	Indonesia	1.9	Canada	4.0	New Zealand	1.5	Austria	2.9
Philippines	2.3	Yugoslavia	1.8	Malaysia	3.2	Austria	1.3	Norway	2.6
Gabon	2.3	Singapore	1.8	Austria	3.0	South Africa	1.3	Italy	2.5

Source: Appendix Table 11.

As far as chemical wood processing is concerned, the LDCs have not been able to penetrate into world export markets on a similar scale as they have done in the mechanical forest industry. So far, not a single LDC has succeeded in coming up to join the twelve leading exporters of paper and paper board products. By contrast, two Latin American countries - Brazil and Chile - have emerged among the top twelve wood pulp exporters of the world during the 1970's (see Table 74 and Appendix Table 11). Their examples may reflect the potential for LDC expansion in the future global trade of the chemical forest industry. This expansion will be primarily based on fast growing plantation forests. What kind of effect the spreading industrial use of LDC forest resources has had and will have on Finland's role in the world forest product trade is still an open question.[29]

5.3.8 Finland's global market shares

Finland has for a long time been among the leading countries in the international trade of forest products. In the long run, its global market shares have, however, gradually declined. In particular Finland has lost markets in Western Europe. Primarily North American but also LDC producers are efficiently penetrating into the traditional market area of the Nordic forest industries. At the same time, however, during the last quarter of a century, a substantial change has taken place in the composition of Finnish forest product exports. International specialisation within the Finnish forest industry has shifted it away from basic products towards end products with a high value-added content.

At the beginning of the 1960's, Finland was the leading roundwood exporter in the world, accounting for 13 per cent of the world total. Furthermore, together with Japan and Sweden it was the leading exporter of wood-based panels at that time. In fact, at the beginning of the fifties, Finland accounted for nearly a half of world plywood exports. Over the course of the next thirty years, though, the situation changed drastically.

In roundwood exports Finland has lost ground, in particular, to the United States (due to increased exports of coniferous logs from the US West Coast to the Far East) and to LDCs. The Finnish global share dropped to 2.6 per cent in 1981. Similarly, in the exports of wood-based panels, the Finnish share decreased between 1961 and 1981 from 13.8 per cent to 7.9 per cent, and also in sawn wood from 12.2 per cent to 9.0 per cent of global exports (see Table 75 and Figure 13).

The LDCs have taken over Scandinavia's and Japan's position as the dominant exporters of wood-based panels. In fact, Japan and Sweden are no longer among the twelve leading exporters in the world, and although Finland is still the third, its global market shares have steadily declined in every sub-sector of wood-based panels. At present, South Korea and Taiwan Province are the leading exporters of plywood - the most established and

conventional wood-based panel product - in the world, followed by Finland and Singapore. The present LDC dominance in the plywood exports is accentuated by the fact that among the eight leading countries six are LDCs (in addition to the above - mentioned, this includes Malaysia, the Philippines and Indonesia). Also in the fibre board exports, LDCs have emerged as important market powers, Brazil being the world's leading exporter today. The global market share of LDCs has increased from a mere 1 per cent in 1961 up to 15 per cent in 1981. With regard to wood-based panels, only in the exports of particle board - being of the most recent origin and having appeared in production only within the last thirty years - have the DMEs so far maintained their position as the principal exporters.

Table 75. Share of Finland and major regions in world exports of forest products by sectors, 1961, 1971 and 1981 (per cent)

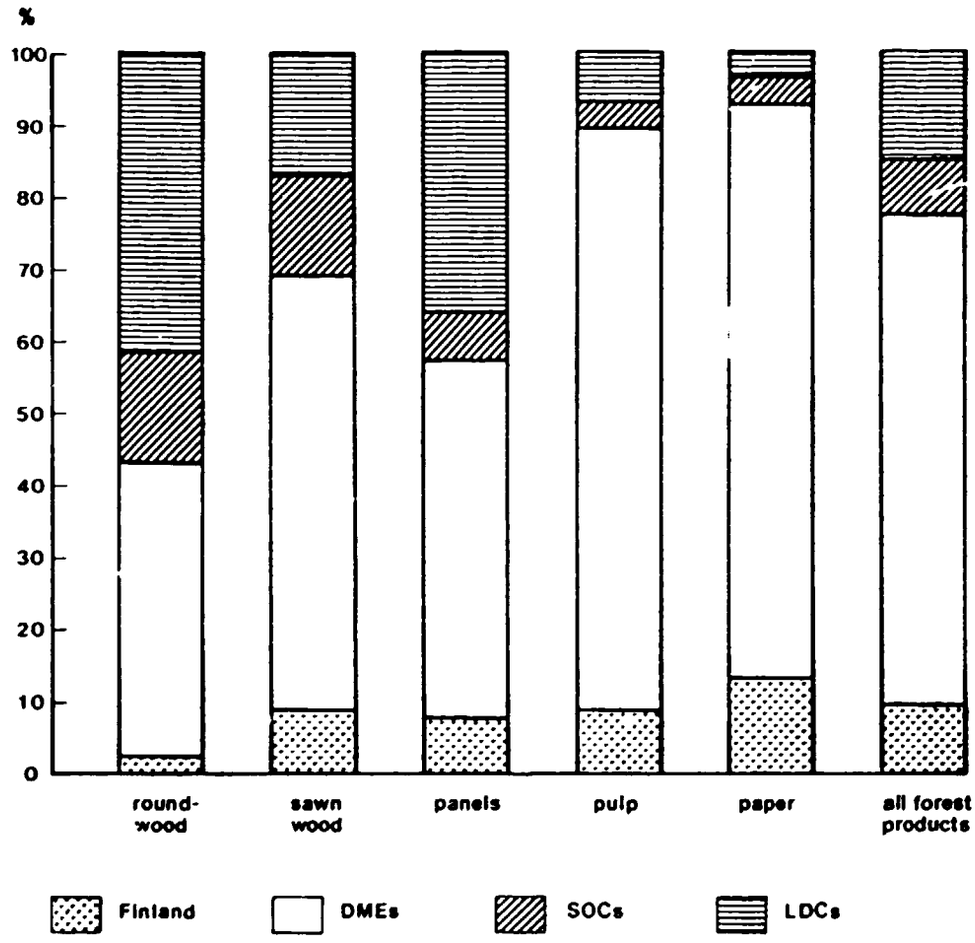
	Finland			DMEs			SOCs			LDCs		
	1961	1971	1981	1961	1971	1981	1961	1971	1981	1961	1971	1981
Roundwood	13.0	1.1	2.6	29.3	34.5	40.8	15.4	17.4	15.4	42.3	47.0	41.2
Sawn wood	12.2	8.0	9.0	57.2	60.5	60.4	20.3	19.0	13.9	10.3	12.4	16.7
plywood	13.7	10.5	8.6	63.8	43.7	39.2	8.3	6.0	4.9	14.2	39.8	47.3
particle board	12.0	8.0	5.7	76.4	80.9	85.2	4.9	9.6	6.1	6.8	1.5	3.1
fibre board	14.7	10.3	6.8	82.7	71.8	58.7	1.6	12.1	19.0	1.0	5.8	15.4
Wood-based panels	13.8	10.2	7.9	68.1	51.7	49.7	6.8	7.2	6.5	11.3	30.9	36.0
mechanical pulp	11.0	2.6	2.0	89.0	96.5	97.6	-	-	-	0.0	0.9	0.3
chemical pulp	15.2	10.1	9.1	80.7	83.8	79.9	3.5	3.8	3.7	0.7	2.3	7.3
Wood pulp	14.9	9.8	8.9	81.2	84.2	80.4	3.2	3.7	3.6	0.6	2.3	7.1
newsprint	10.6	10.2	11.5	86.6	86.0	83.1	1.9	3.0	2.3	1.0	0.8	3.1
print., writ.paper	13.2	14.6	18.2	79.7	80.8	77.2	4.5	3.3	1.7	2.7	1.3	2.9
other paper and board	17.6	14.7	11.7	78.2	78.3	79.4	3.0	5.3	5.1	1.2	1.7	3.8
Paper and board	13.7	13.2	13.3	82.4	81.4	79.9	2.6	4.1	3.4	1.3	1.3	3.3
Total forest products	13.4	9.3	9.7	68.2	67.3	68.0	9.3	9.7	7.4	9.1	13.7	14.8

Sources: FAO, Yearbook of Forest Products, 1961 - 1972 and 1970 - 1981

Also in the exports of wood pulp Finland as well as Sweden have gradually lost their global market shares. This is primarily due to increasing integration of pulp and paper manufacturing operations aimed at better wood utilisation and economy-of-scale benefits as well as the upgrading of the end product. North America has overtaken the Nordic countries as the leading exporting area. Another expanding source of wood pulp - particularly chemical pulp - has been some of the Latin American countries, namely, Brazil and Chile. Mechanical pulp is produced from coniferous species for special paper grades; hence, in its

exports the role of LDCs has been negligible. Altogether, however, the share of LDCs in the total world pulp exports has grown significantly, moving from 0.6 per cent to 7.1 per cent between 1961 and 1981.

Figure 13. Share of Finland and major regions in world exports of forest products, 1981



In the exports of paper products, LDCs have not so far been able to penetrate into world markets to any considerable extent. Finland, though, has succeeded in maintaining its global market share in this sector, despite the declining shares in every other forest industry sector (Table 75). Already over two decades, Finland has been the world's second largest paper exporter after Canada. Within specific paper grades the Finnish position is even more prominent. It has been the world's leading exporter of printing and writing papers for quite a time.

Moreover, in recent years Finland has overtaken Sweden as the world's principal exporter of household and sanitary papers as well as of special industrial papers (see Table 76). Hence, Finland has quite successfully substituted exports of specialised high-yield paper products for exports of basic wood products.

Table 76. World leading exporters of chemical forest industry products, 1981 (per cent)

Exports of	Share of world total					Share of country total				
	Canada	USA	Sweden	Finland	World	Canada	USA	Sweden	Finland	World
wood pulp	34.5	17.9	14.5	8.9	100.0	42.7	45.1	33.9	23.4	31.6
newsprint	60.3	2.3	10.0	11.5	100.0	48.3	3.8	15.2	19.7	20.4
printing and writing paper	5.8	5.4	7.1	18.2	100.0	4.1	7.8	9.4	27.2	18.0
household and sanitary paper	8.6	12.1	12.7	13.5	100.0	0.5	1.3	1.3	1.5	1.3
wrapping and packaking paper and board	5.4	24.6	22.1	9.0	100.0	3.6	33.2	27.7	12.[illegible]	16.9
special industrial paper	1.8	9.4	14.4	16.0	100.0	0.8	8.8	12.5	15.6	11.7
Total chemical forest industry	25.4	12.5	13.4	12.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: FAO, Yearbook of Forest Products, 1970 - 1981.

The Finnish success is even more pronounced when compared with the other leading forest product exporters. More so than Finland, they have concentrated on relatively low-yield, standard products such as pulp and newsprint as well as wrapping and packing paper and board (Table 76). Canada's paper industry is predominantly producing newsprint. The United States and Sweden are the world's leading exporters of wrapping paper and board. Also, the exports of pulp are relatively prominent in the exports of each of these three countries. Finland, on the other hand, has specialised relatively more in special paper grades.

5.3.9 Finnish exports by destination

The major export markets for the Finnish forest industry have traditionally been in Central Europe, particularly the United Kingdom. As it is Finland's major export industry, the trade network has been well-established and quite steady; hence,

Table 77. Finnish forest product exports by major country destinations, 1960, 1970 and 1981 (per cent of total)

	Total forest products			Sawn wood			Wood manufactures			Pulp			Paper			Furniture		
	1960	1970	1981	1960	1970	1981	1960	1970	1981	1960	1970	1981	1960	1970	1981	1960	1970	1981
United Kingdom	28.8	25.3	18.8	39.0	34.8	17.9	53.3	44.4	16.0	30.8	25.9	15.8	12.6	18.3	20.5	0.4	3.3	2.6
Soviet Union	5.7	7.8	15.6	2.0	0.0	0.1	1.9	1.0	8.3	4.9	6.7	14.2	10.2	12.1	21.0	72.0	25.1	33.7
West Germany	12.5	12.5	12.9	13.4	11.3	11.0	4.5	7.8	14.7	7.4	8.8	19.8	16.6	15.7	11.0	16.5	10.2	11.7
France	5.8	5.3	7.0	6.1	7.5	9.0	0.3	2.2	4.3	9.8	8.9	8.9	4.2	4.5	6.1	1.0	1.2	2.3
Sweden	2.3	3.8	5.5	5.2	3.6	10.0	3.7	12.9	11.8	-	0.1	0.5	0.6	2.9	3.0	1.7	33.9	26.4
Netherlands	7.4	6.6	4.3	10.5	12.3	8.1	5.8	2.3	4.2	7.1	8.3	4.3	4.9	4.5	2.9	1.7	1.2	1.7
Denmark	4.1	4.2	3.3	4.8	5.5	4.7	4.7	2.7	2.5	2.0	1.4	1.2	4.8	4.9	3.5	0.1	4.6	1.6
Italy	2.5	2.9	2.8	1.2	0.4	3.8	0.2	0.3	2.0	5.2	10.7	9.5	2.4	0.8	0.7	0.5	0.3	0.5
Belgium	4.0	2.9	2.1	5.0	5.4	3.9	2.6	0.7	2.3	2.9	3.2	2.5	3.9	2.4	1.3	1.2	0.7	0.5
Australia	1.4	1.3	1.9	0.3	0.2	0.1	1.1	0.5	-	1.7	1.4	0.6	2.4	1.9	3.2	0.0	0.1	0.4
United States	5.6	5.1	1.5	0.0	0.0	-	9.2	11.6	2.3	6.5	2.0	0.3	9.9	7.1	2.1	2.7	8.1	2.2
Subtotal	74.5	73.1	74.2	87.5	82.0	68.6	78.1	74.8	66.1	71.8	75.4	77.3	62.6	68.0	67.7	95.1	80.5	91.4
LDCs	8.6	7.3	14.1	1.7	3.4	19.4	4.3	3.7	20.8	8.3	4.1	7.0	16.7	11.2	13.0	0.2	0.7	5.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total (mil.mk)	2385.8	5453.0	23660.6	841.6	1006.6	4713.6	165.3	518.8	2010.8	542.7	1218.2	3557.9	828.8	2632.2	13218.9	7.4	77.1	599.7

Sources: Official Foreign Trade Statistics, 1960, 1970 and 1981.

drastic shifts in export destinations have been rare and rather anticipated. In the long run, however, a quite substantial change is taking place in the regional structure of Finnish forest product exports. The country composition has gradually widened along with the diversification and upgrading of the export structure. In particular, the dominance of the United Kingdom as the principal market outlet has diminished. In 1960 its share still accounted for 29 per cent of Finnish forest product exports, while in 1981 the share was 19 per cent. The composition of trade with the United Kingdom has changed very substantially, since the British share in Finnish paper has increased markedly, while in other sectors the decline has been very notable (Table 77). Another major decline is the almost total disappearance of the United States as an export market for Finnish wood manufactures and paper products.

Major increases in the shares of Finnish exports have been recorded by the Soviet Union and the LDCs. The Soviet trade has offered a new market outlet, particularly for the chemical forest industry, while the growth of LDC trade is primarily due to increased exports of the mechanical wood industry to the Near East. The latter growth is partly related to construction projects increasingly carried out by Finnish contractors in Middle Eastern oil-producing countries during the 1970's. At the same time as the Finnish forest industry exports have extended into new markets, its overwhelming dominance in the Finnish trade with the traditional export destinations has gradually decreased.

Nevertheless, excluding trade with the Soviet Union and Sweden, the Finnish export structure is still quite undiversified. As regards the major trade partners, forest products cover some 70 per cent of the Finnish exports to the United Kingdom and France and 55 per cent to West Germany. These shares were, however, considerably higher twenty years ago, as shown in Table 78.

The lack of diversification in the commodity structure of Finnish exports has made the overall economic development in the country vulnerable to changes in the major export markets. The

demand for forest products has grown more slowly than the average overall demand, although its growth is expected to be quite persistent over the longer run. Moreover, fluctuations in forest industry exports are usually much larger than variations in world trade in general. There are two reasons for this.

Table 78. Share of forest products in total Finnish exports to major country destinations, 1960, 1970 and 1981 (per cent)

	1960	1970	1981	Forest product exports 1981 (mil. mk)
United Kingdom	91.0	81.7	69.4	4 458.2
Soviet Union	30.4	35.7	24.8	3 693.7
West Germany	81.6	66.9	55.4	3 054.0
France	94.4	86.9	69.5	1 653.8
Sweden	40.0	14.1	16.3	1 311.2
Netherlands	94.0	80.1	49.7	1 019.8
Denmark	89.9	58.2	39.6	791.2
Italy	87.5	65.2	56.4	659.7
Belgium	80.9	87.7	54.7	498.2
United States	84.9	61.0	16.3	363.2
Australia	98.2	87.6	82.3	459.4
World total	75.4	56.3	39.2	17 599.0

Sources: Official Foreign Trade Statistics, 1960, 1970 and 1981.

First, the mechanical wood industry, in particular, is very sensitive to general economic trends and especially to the level of construction activities. It is estimated that construction - which is usually most strongly affected by cyclical variations - accounted for about 60 per cent of all sawn wood and for 50 per cent of all wood-based panels used in developed countries during the 1970's. [30]

Secondly, since the world forest industry is predominantly home-market oriented and imports are conventionally a supplement to domestic production, shifts in demand are first and foremost met through import reductions.

As a result, for example, in Finland, the annual fluctuations in the export volume of sawn wood were as high as 40 per cent during the most unstable years of the 1970's. Moreover, since instability is caused by shifts in demand and, subsequently, export prices, and since volumes move in the same direction,

export income fluctuations are even further aggravated.[31] Hence, in Finland international cyclical variations normally reach the economy after a time-lag, but their effects tend to be more pronounced than usually in DMEs.[32]

5.3.10 Factors of competitiveness in forest industry

The wood-processing industry is characterised by slow technical development. Although considerable evolution has occurred in sizes of production units and their technical details, there have been very few revolutionary changes in technology. The manufacturing technology is based on well-known principles and universally readily available machinery. Most products are bulk or semi-bulk types of standardised commodities. Products from different sources are typically interchangeable, hence, the main means of competition is price. Particularly in the competitiveness of capital-intensive chemical wood processing, differences in raw material costs are paramount. Also in the mechanical forest industry, wood cost is typically the dominant cost factor. Hence, the global structure of the forest industry tends to be determined by the availability of suitable raw material.

The Nordic countries, the traditional external suppliers of forest products in the Western European markets, have two main advantages: their wood resources are of good quality, and they are nearer to the main market than their overseas competitors. However, their wood resources are now fully utilised; hence, the wood cost is high. During the last two decades the Nordic countries have gradually lost their price leadership in the European market to overseas suppliers. Especially North American but also some LDC producers have increased their market shares in Western Europe. They can benefit from cheap wood raw material, particularly by utilising fast-growing plantations.

The high wood cost is especially disadvantageous in low-yield standard products such as sawn wood, wood-based panels, pulp and linerboard. In particular, pulp and different panel products can now use a wide range of wood raw materials; hence, it is, for

example, possible to utilise more effectively the diversity of material available from mixed tropical forests. To stay competitive, the Finnish forest industry has to concentrate more and more on end products which do not have a cost structure dominated by wood cost. This would imply a trend away from primary wood products into secondary wood manufactures, such as pre-fabricated houses, furniture and joinery, and from pulp into paper making and further into converted paper products. These products are competing primarily in terms on their high quality or specific design.

Furthermore, wood has the potential to become an increasingly important raw material for the chemical industry. Chemical feed-stocks derived from wood as by-products of pulp making are used in the production of turpentine, alcohol, adhesives and coatings as well as of viscose rayon and other synthetic fibres processed conventionally by the petrochemical industry. It is also technically possible to produce food for livestock as well as producer gas and even oil out of wood. As energy prices are increasing, the production of fuels, such as alcohol and producer gas, could become a more widespread use of the forest biomass. These opportunities have, however, been beyond the scope of the conventional forest industry to date.

In order to upgrade the industrial structure as well as to innovate new products or processes, substantial research and development efforts are demanded. Typically, the forest industry has been a non-science-based, already standardised, low-technology field compared with most other industries. Therefore, the relative research input has remained quite low, as highlighted in Table 79.

Altogether, Finland has devoted relatively modest resources to research and development. Total R & D expenditures in recent years have amounted to only slightly more than one per cent of the GNP, placing Finland on the same level as the other semi-peripheral economies of Europe. As a result, Finnish industrial development has been dependent on the importation of technology. Foreign technology inputs have mainly originated from West Germany, Sweden and the United States.

Table 79. Total research and development expenditure and R&D expenditure of paper industry in some DMEs, 1979 (per cent)

	Total R&D share of GNP	Paper industry R&D share of gross value
United States	2.4	0.8
West Germany	2.3	0.5
Sweden	1.9	0.9
France	1.8	1.0
Finland	1.1	0.6
Canada	0.9	0.4

Sources: Official Statistics of Finland, Research Activity 1981 and Marja Korpivaara (1983)

Nevertheless, in some specific fields, particularly in the wood processing industry, Finland has been able to reach notable technological self-sufficiency. Based on foreign basic technology adaptations, Finnish industry is today capable of producing its own machinery and equipment and of developing automated systems of production for wood processing sectors. In 1981 some 92 per cent of the domestic demand for pulp and paper making machinery was domestically satisfied, and some 24 per cent of the production of these machines was exported. A corresponding degree of self-sufficiency does not exist in any other sector of capital goods production except ship-building and on a minor scale lifting, construction and mining machinery. Finland has thus been able to become an important producer of paper machinery, challenging the domination of the traditional core producers. It is, in fact, estimated that over the past two decades a quarter of the world's total forest machinery deliveries have come from Finland.[33] Furthermore, during the last two decades, big specialised forest sector consulting companies have also emerged in Finland, and they have rapidly internationalised their activities.[34]

During the last decade, heavy investments have been made in the Finnish forest industry in order to modernise the production

capacity and to expand plant size and, hence, to strengthen the international competitiveness of the industry. At present, with its processing technology, machinery and production direction systems, the Finnish wood processing industry is the most advanced in international comparisons. Similarly, the product coverage of the sector has widened and the value-added content increased. The semi-peripheral economy has quite successfully focused its industrialisation efforts as well as export expansion on this resource-based sector.

In the long run, however, there are two major factors which are restricting the growth potentiality of the Finnish forest industry: first, tightened resource constraints and, second, competitive shifts in external markets due to new sources of production. Finland has already reached its wood producing limit on a sustained yield basis, and as wood has become a scarce resource, its price has tended to rise. Forest industry products compete primarily by price; hence, low-cost wood sources have gradually become more and more competitive. Technological advances in the use of short-fibre raw materials for pulp and paper making and programmes of establishing fast-growing plantations have opened up new vistas, particularly for the utilisation of tropical forest areas. At present, there is a great inbalance with regard to the distribution of forest resources and the processing of these resources between developed and developing countries. The vast potential of the tropical forests is practically unutilised.

5.3.11 Adjustment requirements due to LDC competition

The worldwide potential competitiveness of the new, low-cost raw material sources of LDCs has gradually started to reshape the global structure of the forest industry. During the last two decades, LDCs have been able to increase their global market shares in every forest industry sector. Particularly striking has been the expansion in the exports of wood-based panels. Also in sawn wood and pulp production LDCs have shown strong potential. This development is obviously creating notable adjustment requirements for the dominant export sector of Finland.

In the short run, however, the competitive threat of the LDC forest industry is rather limited in the traditional export markets of Finland. First, the new LDC wood processing industry is primarily directed toward home markets rather than exports. Secondly, Finland enjoys freer access to European markets than LDCs due to its preferential trade agreements with EFTA and the EEC countries. The international trade in wood and wood products is regulated by means of not only tariffs but also various non-tariff measures. Trade barriers particularly discriminate against processed products. While logs, sawn wood and pulp are admitted free of duty in DMEs, wood manufactures and paper products face high tariff rates, which in some cases are nearly prohibitive.[35] These trade restrictions offer a distinct advantage to Finland as opposed to its LDC competitors.

Third, at the initial stage, the LDC forest industry production and export pattern is predominantly complementary to that of Finland. LDC exporters are concentrated mainly in low-yield standard products such as sawn wood, wood-based panels and, on a limited scale, pulp, while Finnish competitiveness is based more on high-yield paper products, for which the wood cost is not the dominant cost factor.

Although the new supply of forest products from LDCs does not threaten to undermine the base of the Finnish forest industry structure in the near future, in the longer run, however, it has the potential to reshape the global structure of the wood-processing industry. The way for the Finnish forest industry to adjust - both in mechanical and chemical wood processing - is to further upgrade its industrial structure in favour of end products with higher value added and special qualities. More R & D inputs are needed, particularly for advancing chemical processes in the forest industry and thus for widening the use of the forest biomass. There are some possibilities of increasing the domestic raw material supply by utilising trees more fully to reduce forest residues as well as by recycling waste paper more efficiently. The only other alternative in efforts to solve resource constraints is to rely on external raw material supplies either by increasing imports or by internationalising manufacturing operations.

To what extent has the Finnish forest industry - as well as Finnish industry in general - been able to develop its multinational interests by direct foreign investment? This question is examined in a more detailed way in the next chapter. The main focus is on the Finnish investments in the Third World.

Chapter 6

PRODUCTION CAPITAL AND TECHNOLOGY TRANSFERS

Internationalisation of marketing and production via direct foreign investment (DFI) has been a conventional strategy in response to increasing competitive pressure in export markets. A typical sequence of this internationalisation process is for companies to first rely on traditional export transactions by utilising foreign trade representatives and agents. The second phase entails setting up their own sales affiliates abroad. The third stage involves executing a variety of licensing agreements for supplying specific technologies, machinery, training of marketing activities. And fourth, to increase further foreign involvement, companies attempt to locate production activities abroad with direct equity participation.[1]

A general motive for substituting capital investment for trade is to deepen and strengthen traditional export ties abroad. Increased competition, the existence of tariff barriers and quantitative import restrictions as well as policies of deliberate import-substituting industrialisation, typical particularly in LDCs, represent a major reason for DFI in production. There is, however, a difference between core and peripheral countries as recipients of foreign capital investment. In developed countries production investments are largely local-market oriented, i.e. aimed at maintenance of existing market shares and extending previous export ties of a home country, while in LDCs the bulk of DFI has been made either in the extractive sector or in export-oriented industries supplying the home country or third country markets. Accordingly, the main categories of foreign productive investment may be differentiated in the following way:[2]

Reason for investment	Critical determinant	Production directed toward
Securing of supplies	Resources	Export
Import substitution	Market size	Internal market
Export promotion	Production cost	Export

These three categories of DFI, although, of course, still occurring simultaneously, may also be interpreted as representing the main historical stages in the development of the global DFI pattern, particularly, with regard to peripheral economies as host countries. In a first stage, during the colonial period, the major interest of foreign investment was to activate deployment of natural resources in order to guarantee a regular supply of specific raw materials for exports.

After the Second World War, there has been a persistent increase of foreign investment in LDC manufacturing operations. After independence, most LDCs have adopted a policy of import substitution accompanied by high tariff walls and foreign trade restrictions. In order to overcome these trade barriers, to open up new markets, and to benefit from the protectionist policies, foreign manufacturing companies have tended to invest inside LDCs. Hence, they can supply LDC markets through local production rather than through exports from the home countries. These investments have predominantly been concentrated in a small group of upper income countries (like Brazil, Mexico, India and South Korea), with large internal or sub-regional markets.

Only recently, during the 1970's, a third type of DFI has been gathering momentum: export-oriented manufacturing investments are increasingly taking place for the specific purpose of selling the products in third markets or in the home market of the investing corporation, or of producing parts and components for assembly into finished products in other countries. The principal motivating force for these investments is usually related to differences in relative production costs, particularly in the relative labour costs between the home and host country. Hence, such investments have been most frequent in labour-intensive industries such as textiles and garments as well as electronics and light engineering. Besides equity investments, these operations have involved different types of non-equity arrangements, such as licensing, management and service agreements as well as international subcontracting.

Changes in the DFI pattern, like changes in the foreign trade flows, reflect the competitive position of a country in the international division of labour. A core economy tends to be a source of international investment, while a peripheral economy is an object for such investment by offering auxiliary markets, specific resources or relative advantages in factor costs. Reality is more complicated than this simple generalisation may suggest, since various other factors, besides those mentioned above, affect the direction of international investment, for example, geographical distance, capital concentration tendencies, labour shortages, skill differentials, trade barriers, restrictions on capital flows as well as the political and economic situation in a country. Nevertheless, in the global economy the general pattern is that a core country is a net foreign investor vis-à-vis a peripheral one.

Relative to a core economy, a semi-peripheral industrial economy has less capability and less of an incentive to internationalise its production capacity towards peripheral economies. Due to its own resource-based, undiversified industrialisation process, a semi-peripheral country has been relatively less dependent on external raw material supplies, and also factor cost differentials, particularly in labour costs, are less pronounced. Furthermore, for a semi-peripheral industrial economy the emerging industrialisation in LDCs is competitive rather than complementary by its nature, and thus it has not generated demand for those types of products the former are primarily supplying. The limited trade relations are reflected by the lack of deeper commercial involvement such as direct foreign investment or subcontracting arrangements. Altogether, semi-peripheral economies are net receivers for DFI rather than source countries. To the extent that they have invested abroad, it has not been to establish backward vertical integration in the extractive sector or forward vertical integration in export-oriented industr but horizontal investment in import-substitution typ f industries. This has meant, producing abroad what is already domestically produced for exports. These investments are primarily motivated by attempts to maintain existing market shares.

6.1 Finnish production participation in LDCs

The relative marginality of LDC markets for major parts of the Finnish manufacturing industry has been illustrated earlier (see Chapter 5). This marginality is accentuated further when Finnish direct investments in LDCs are considered. Without well established and extensive trade ties, there has been neither the base nor the incentive for Finnish companies to make productive investments in developing countries. As highlighted by Table 80, Finnish DFI performance in LDCs has indeed been very meagre compared to other DMEs both in absolute and in relative terms.

Table 80. Stock of direct investment in LDCs, by major DMEs, 1970 and 1981

	Stock of direct investment in LDCs					LDC affiliates
	(million dollars)		(percentage of total)		per capita	percentage of all
	1970	1981	1970	1981	(US $) 1981	foreign affilates 1980
Switzerland	875	3 151	2.0	2.4	0.490	13.4
Netherlands	2 247	5 089	5.3	3.9	0.357	17.5
United States	22 300	63 118	52.2	48.1	0.275	34.6
United Kingdom	5 912	14 713	13.8	11.2	0.263	23.7
Belgium	765	2 038	1.8	1.6	0.207	18.0
Canada	1 659	4 693	3.9	3.6	0.193	17.1
West Germany	1 942	[illegible]90	4.5	8.8	0.187	17.4
France	3 832	[illegible]674	9.0	6.6	0.161	30.4
Sweden	305	1 209	0.7	0.9	0.145	12.9
Japan	1 218	11 022	2.9	8.4	0.094	58.2
Denmark	45	470	0.1	0.4	0.092	14.3
Australia	305	1 359	0.7	1.0	0.091	43.5
Italy	1 245	3 584	2.9	2.7	0.063	25.4
Norway	46	224	0.1	0.2	0.055	13.8
Austria	15	175	0.0	0.1	0.023	18.0
New Zealand	-	70	-	0.1	0.022	23.1
Finland	1	73	0.0	0.1	0.015	6.9
Total	42 712	131 252	100.0	100.0	0.167	23.7

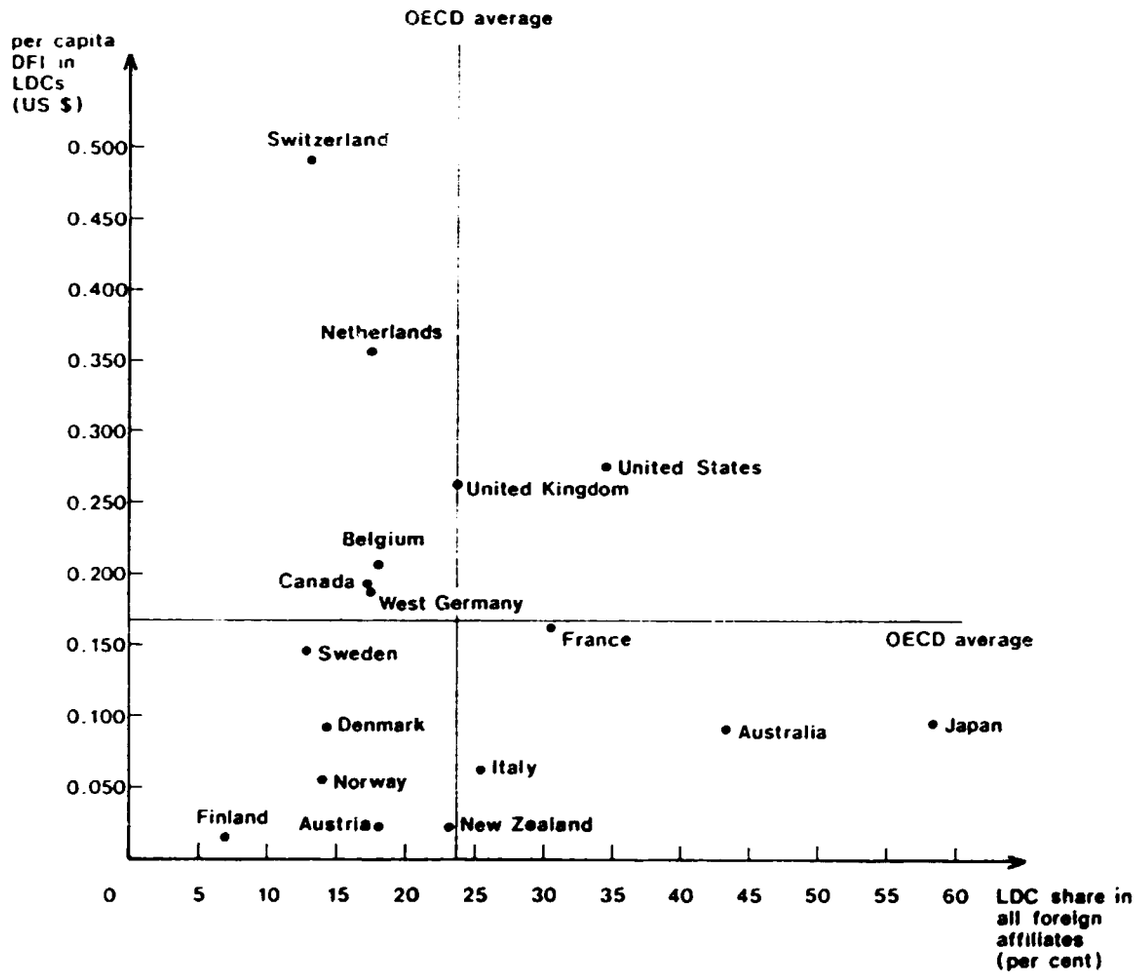
Sources: OECD (1983), Investing in Developing countries, Table 3; United Nations (1983), Transnational Corporations in World Development, Table II.8.

The United States has been by far the most important source of direct foreign investment. In 1981 it accounted for nearly a half of the total accumulated stock of DFI in developing countries which is controlled by companies based in DMEs. During the course of the 1970's, the distribution of the stock among source countries has, however, slightly changed. As Table 80 reveals, the importance of Japan and West Germany as sources of DFI has rapidly grown, while the shares of traditional large investors, such as the United States, the United Kindom, France and the Netherlands, have fallen correspondingly.

The global shares of small countries as sources of DFI stock are limited, although their relative importance may be quite high as is the case with Switzerland and the Netherlands. In order to measure relative differences among DMEs concerning foreign investment performance in LDCs, two indicators have been chosen. First, the stock of DFI has been divided by the population of a source country, and accordingly the countries have been listed in rank order in Table 80. These per capita figures illuminate the level of DFI involvement in each country. The second indicator shows the distribution of foreign affiliates between developed and developing countries. Based on these indicators, Figure 14 illustrates country variations among major DMEs. The lines in the figure indicate averages for these variables. DMEs in the upper right quadrant (like the US) are above average in both the level and share of DFI in LDCs, while those in the lower left are below average in both measures.

Finland's extremely low position among DMEs, as far as direct investment operations in LDCs are concerned, is well highlighted in Figure 14. Also the other Nordic countries are among those with the lowest proportion of affiliates in LDCs. Typically, those countries with the widest LDC trade relations in their total trade (like the US, Japan and Australia) also have the highest share of their foreign affiliates in LDCs. Moreover, in every Nordic country the per capita stock of direct investment in LDCs is below the DME average. The propensity to make LDC investments may be limited in the Nordic countries due to the smallness of their economy, lack of traditional political and economic ties, and especially due to geographic distance. As regards Finland, the DFI level per capita has, however, been significantly lower than in the other Nordic countries, being only a tenth of that of Sweden, a sixth of that of Denmark and about a fourth of that of Norway. These large differences may reflect the specific semi-peripheral competitive characteristics of the Finnish industrial structure.

Figure 14. Share and level of direct investment in LDCs by major DMEs, 1981



6.1.1 Subsidiaries abroad

Altogether, the extent of the internationalisation of Finnish industry is very limited. There are, in all, only four corporations that can be classified really as transnationals, i.e. which have at least six foreign manufacturing affiliates.[3] The first Finnish manufacturing subsidiary abroad - Kymi Paper Star Mill in England - was established in 1930 and the second

one was started in 1957. In comparison, several Swedish manufacturing firms were established abroad already at the end of the last century. In fact, not earlier than during the 1970's have Finnish corporations began to expand abroad to any considerable degree. In 1983 there were 1 235 Finnish-owned companies abroad, of which 162, or 13 per cent, were manufacturing subsidiaries - the rest being sales or service affiliates.[4] The corresponding figures for 1965 had been only 27 manufacturing subsidiaries out of a total of 135 subsidiaries, as indicated in Table 81.

Table 81. Number of Finnish subsidiaries* abroad, 1965-1983

	Subsidiaries			Manufacturing subsidiaries		
	all	in LDCs	LDC share of total	all	in LDCs	LDC share of total
1965	135	10	7.4	27	4	14.8
1970	310	15	4.8	54	4	7.4
1973	432	19	4.4	64	4	6.3
1976	661	39	5.9	85	6	7.1
1979	933	67	7.2	120	11	9.2
1981	1 095	86	7.8	123	14	11.4
1983	1 235	99	8.0	162	19	11.7

Note: *Companies in which direct Finnish ownership accounts for more than 20 per cent of the nominal value of the share capital

Source: Bank of Finland

Data concerning the number of affiliates do not indicate the size of the foreign operation. They can, however, serve as a better proxy measure of the global spread of corporate structures than data about direct investment flows. This is particularly true when the number of foreign operations are small like in the Finnish case. Therefore, in the following tables the data presented are based on the numbers of foreign affiliates.

In LDCs there were merely 99 Finnish-owned subsidiaries in 1983. Of these, 19 were manufacturing firms, accounting for about 12 per cent of all the Finnish manufacturing affiliates abroad. On the whole, the data in Table 81 indicate an upward trend in the

LDC share in the total Finnish foreign investment operations during the 1970's. However, the small number of foreign affiliates raises the question of whether it is at all meaningful to try to explain changes in the pattern of foreign investment with these figures.

Nevertheless, one conclusion can be drawn from Table 81: not until the beginning of the 1980's have Finnish corporations, in general, taken the initial steps to establish manufacturing plants in LDCs.

The major reason for the internationalisation process by Finnish companies has been to respond to increasing competitive pressure in export markets, and to defend existing market shares. Hence, the geographical distribution of foreign investment has mirrored that of exports. The greatest concentration of Finnish companies abroad is in Sweden. The other major areas for Finnish foreign investment have been the United Kingdom, the United States and West Germany. These four countries together account for about 59 per cent of all Finnish foreign affiliates and about 54 per cent of all manufacturing affiliates.

LDCs, instead, have traditionally represented a rather minor market outlet for Finnish exports. The absence of long-standing commercial ties has been reflected by the lack of direct investment operations, too. Only 8 per cent of all Finnish foreign affiliates and about 12 per cent of all manufacturing affiliates are located in LDCs. Moreover, as manufacturing investments represent only a small volume, the country concentration is very high indeed. A mere four countries - Brazil, Mexico and Saudi Arabia with relatively large internal markets and Singapore with a strong base in export-oriented manufacturing - have been practically the only recipients of Finnish production capital in the Third World, as illustrated in Table 82.

Table 82. Number of Finnish firms having subsidiaries, licensed production and trade representatives in LDCs and in world, 1983

	Subsidiaries		Licensed production	Traditional exports	
	all	of which manufacturing		via an agent	direct
Brazil	21	6	1	29	11
Singapore	13	4	1	56	30
Mexico	12	3	2	25	18
Saudi Arabia	10	4	1	64	117
Argentina	10	-	2	53	14
Hong Kong	7	-	-	31	15
Peru	3	-	1	33	10
All above	76	17	8	291	215
Rest of LDCs	23	2	16	927	1 311
All LDCs	99	19	24	1 218	1 526
World total	1 235	162	179	6 804	7 803
Sweden	287	41	6	715	839
United Kingdom	154	15	7	352	265
United States	143	20	16	189	289
West Germany	139	11	9	529	505
Norway	75	7	4	636	682

Sources: Bank of Finland and Finnish Foreign Trade Association

6.1.2 Other forms of foreign participation

While in the world markets as a whole foreign subsidiaries with direct equity participation continue to be the principal form of extension by transnational corporations, a variety of other forms of participation have appeared in recent years. More and more frequently transnational corporations are making different types of licensing agreements that are not associated with DFI or joint venture arrangements. A typical licensing agreement may contain contractual terms about use of trade marks, components, technical improvements and other inputs, or about access to foreign markets. These alternative arrangements, sometimes referred to as 'new forms' of foreign participation, have been particularly typical in operations in LDCs. Frequently this is the result of deliberate policies followed by the host developing countries, which have the effect of making access to their markets conditional on the acceptance of these alternative

forms, rather than direct control contained in equity investment.

Statistical evidence on the extent and growth of licensing and other non-equity forms of activities is, however, quite limited, because both the nature and the variety of these transactions make data collecting very difficult. Nevertheless, the scattered data available suggest that non-direct manufacturing investment actitivities are continuously increasing in the pattern of foreign operations of DMEs. [5]

Altogether, the structure of foreign operations of a country changes along with the internationalisation process from the clear dominance of conventional export activities to the dominance of foreign investment operations. Hence, national patterns among DMEs may represent quite different structures. This is indicated by Table 83, in which a comparative calculation about the pattern of foreign operations of some DMEs at the beginning of the 1970's is presented. [6]

Table 83. Foreign operation patterns of Finnish, Swedish, West German and US companies, 1969

Form of operation	Finland	West Germany	Sweden	United States
foreign sales through				
Exports	91.4	72.8	56.9	17.0
Sales subsidiary	2.8	7.5	13.4	17.8
Licensing operation	1.7	6.3	2.8	4.6
Production subsidiary	4.1	13.4	26.9	60.6

Source: Reijo Luostarinen (1975), Table 19

Although the data in Table 83 are over ten years old, they offer an indicative view of the relative importance of different forms of foreign operations in the countries concerned. In Finland, as a semi-peripheral economy, the internationalisation process has started much later than in the core countries. Traditional exports have been overwhelmingly the major form of foreign activities of Finnish firms, while in Sweden, for example, sales via foreign subsidiaries have been much more prominent. The United States has represented the most mature stage in the

process of internationalisation, and as a result the gross output of US-owned firms abroad has been three times larger than the value of its exports.

In Finland foreign market penetration through direct investment and licensing operations has been distinctly less important than in Sweden, West Germany or the United States. Furthermore, the pattern of Finnish foreign operations slightly differs by destination. In Table 84 these patterns are illustrated by a simple calculation based on the number of different operations used by Finnish firms in different foreign markets.

Table 84. Foreign operation patterns of Finnish companies in transactions with developed and developing countries, 1983

Form of foreign operation with	LDCs	Developed countries	Sweden	United Kingdom	United States	West Germany
Traditional exports						
direct	53.2	47.7	45.4	34.1	45.4	42.7
via an agent	42.5	42.5	38.7	45.2	29.7	44.8
Sales subsidiary	2.8	7.4	13.3	17.9	19.3	10.8
Licensing operation	0.8	1.2	0.3	0.9	2.5	0.8
Production subsidiary	0.7	1.1	2.2	1.9	3.1	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on data in Table 82.

Finnish foreign operations with LDCs have been almost wholly based on traditional export trade. Long distances, lack of traditional commercial ties and structural rigidities have restrained Finnish firms from penetrating more deeply into LDC markets. In this respect, forms of Finnish transactions with developed countries are slightly more diversified. Export trade is increasingly supported by direct investment, particularly in sales subsidiaries. Nevertheless, so far direct production investments and licensing agreements have played a very marginal role in Finnish foreign operations - particularly in LDC operations. This highlights the infant stage of internationalisation as well as the relatively low technical and commercial capability of Finnish industry in international terms.

New non-equity forms of arrangements, such as licensing and marketing contracts, have become more and more significant means

of foreign operations, most particularly in LDCs. These arrangements have been especially typical in outward-oriented, offshore-processing activities. As regards Finnish operations in LDCs, however, they are characterised not only by a lack of production investments, but also by a virtual absence of licensed production (see Table 82, p. 289). Those few manufacturing investments made by Finnish corporations in LDCs are primarily extending previous export relations rather than intending to establish outward-oriented offshore or subcontracting manufacturing activities. Hence, Finnish trade and investment operations in LDCs are primarily oriented toward local - or, at best, regional - markets, while generally it is increasingly typical that foreign manufacturing investments in LDCs are home-country or third-country oriented, utilising their low production costs, particularly their low labour costs. This is also reflected in the sectoral composition of Finnish investment operations abroad.

6.1.3 Sectoral composition of foreign investments

Finnish foreign manufacturing investments are highly concentrated in the forest industry or in the heavy engineering industry, i.e. in the major export branches of the country (see Table 85). This highlights the fact that Finnish corporations are, in general, aiming to produce abroad what they are already producing domestically for exports - and do not intend to meet the competition in domestic markets by foreign production. It is particularly notable that manufacturing investments in LDCs do not diverge from this general pattern. In contrast to the case of Finland, it is increasingly typical among DMEs that their LDC investments are more and more often related to their imports rather than to their exports. This refers particularly to the offshore-processing type of 'run-away' industries.[7]

The leading LDC low-cost export sectors - textiles, garments, light engineering goods and miscellaneous light manufactures - are very weakly represented in Finnish LDC production investment. Moreover, it is also notable that there are only two forest industry ventures owned by Finnish corporations in LDCs

(both in Brazil), despite the vast forest resources in the Third World. This may be due to the unstable economic and political environment in LDCs and the heavy capital investment needed in this sector as well as to the deliberate policy of increasing national control over domestic raw material resources in LDCs. Finnish affiliates in non-metallic mineral production are related to construction operations that have expanded quite rapidly during the 1970's, particularly in the Middle Eastern oil-producing countries. As a whole, however, it may be meaningless to draw very specific conclusions about the sectoral characteristics of Finnish LDC investments, since the number of ventures is so small.

Table 85. Number of Finnish manufacturing subsidiaries abroad by sectors, 1983

	Abroad	In LDCs
Food industry	10	-
Textiles, clothing and leather prds	7	1
Forest industry	41	2
Chemical industry	19	1
Non-metallic mineral prds	10	3
Iron, steel and non-ferrous metals	2	-
Basic metal prds	16	2
Industrial machinery	32	6
Electrical machinery	13	2
Transport equipment	3	1
Instruments	2	-
Misc. light mnfs	7	1
Total	162	19

Source: Bank of Finland

Nevertheless, the figures presented above suggest the conclusion that hardly any low-cost imports from LDCs to Finland have been generated by either subcontracting or direct investment operations of Finnish firms. For example, the only Finnish foreign production investments in clothing - the most typical low-cost sector - are five manufacturing plants in Portugal. In footwear, the single export-oriented production affiliate is the joint-venture established by the Nokia corporation in Malaysia in 1981. In contrast to that, in most other DMEs, i.e. in core economies, the major sources of low-cost import penetration from

LDCs have been various types of subcontracting, licensing and equity investment operations made by their own corporations.[8]

6.2 Construction and consulting activities abroad

Some 10 per cent of Finnish manufactured exports as well as direct investments are destined for LDCs, as indicated earlier. The share of LDCs has slightly increased during the course of the 1970's, but since the external commercial network of Finland is well-established and the international demand pattern changes quite slowly, drastic shifts in the direction of commercial transactions are rather rare, but in 'new export activities', like construction, the regional distribution of foreign activities may shift quite markedly during a relatively short period of time. The LDC share in Finnish construction and linked consulting export has increased very rapidly, indeed, during the 1970's, and now represents a much larger share than in the traditional export of goods.

The Finnish construction industry experienced a drastic change in its market orientation during the 1970's. Starting virtually as a home-market industry, it rapidly internationalised. The extensive industrialisation and urbanisation process in Finland during the post-war years demanded an exceptionally large-scale building programme, but towards the end of the 1970's the pace of domestic construction activity gradually decreased.[9] The industry became outward-oriented and began to operate increasingly abroad.

The real breakthrough in Finnish foreign constructing operations has taken place since the mid-1970's. The first contracts abroad were completed already in the late 1950's in the Soviet Union, but in 1970 total foreign invoicing by Finnish construction exporters still amounted to only about 10 million dollars. By 1975 it had reached about 100 million dollars and by the beginning of the 1980's it was already in the range of 1 000 million dollars annually. Hence, the Finnish construction industry has expanded its foreign operations very fast. In 1982 construction abroad accounted for about a quarter of the total

invoicing of all Finnish contractors. This was equivalent to around 12 per cent of all domestic construction activity. In Sweden, for example, the corresponding figure was 9 per cent.[10] Despite the late start as a construction exporter, compared with most other DMEs, Finnish contractors have succeeded quite rapidly in penetrating international markets.

The major market area of Finnish construction exports throughout the years has been the Soviet Union. It accounted for about three quarters of all foreign invoicing of Finnish contractors at the beginning of the 1970's, but since then the Soviet share has slightly declined to about half of the total at the beginning of the 1980's. The largest projects have taken place in the border areas. Typically, Finnish contractors have offered not only technical expertise, know-how and equipment, but also labour force for building industrial and mining complexes on the Soviet side of the border. These projects have increasingly been based on turnkey deliveries. The Finnish construction industry has thus been able to start its internationalisation process within the framework of planned bilateral trade agreements with the Soviet Union.

Since the mid-1970's, Finnish contractors have expanded their foreign operations, particularly towards the Third World. The country-concentration has, however, been very high indeed. The activities have been focused primarily on the Middle Eastern oil-producing countries. In fact, only three countries - Iraq, Saudi Arabia and Libya - accounted for over 50 per cent of total foreign invoicing of Finnish contractors in 1981 (Table 86). In this respect, the Finnish construction industry has followed the international pattern, since globally over 40 per cent of all foreign construction operations were carried out in the Middle East during the 1970's.

The overall demand for construction activities in the Middle Eastern countries has, however, slightly declined during recent years. The country composition of Finnish exports has changed accordingly. The limited country coverage is still apparent although the Soviet trade has been substituted for the exports

to the Middle East (see Table 86). As a potential alternative, the Finnish construction industry has not been able to penetrate into new market areas of LDCs to any considerable extent. Some undertakings, partly related to development co-operation projects, have been pursued in a few African countries - namely, in Egypt and Kenya - but in general the magnitude of these operations is still rather modest.

Table 86. Finnish foreign construction and consulting operations by regions, 1981 and 1983 (per cent)

	Construction		Consulting	
	1981	1983	1981	1983
Western Europe	1.2	1.4	22.2	20.7
North America	0.3	-	2.4	0.7
DMEs	1.5	1.4	24.6	21.4
Soviet Union	38.9	66.3	17.3	22.2
Eastern Europe	0.3	0.6	0.2	1.3
SOCs	39.2	66.9	17.5	23.5
Africa	20.5	18.8	27.8	34.0
Libya	15.7	12.5		
Middle East	37.2	12.1	22.4	13.5
Iraq	20.4	9.4		
Saudi Arabia	15.7	2.4		
Far East	1.6	0.7	7.0	6.1
Latin America	-	-	0.7	1.5
LDCs	59.3	31.6	57.9	55.1
Total	100.0	100.0	100.0	100.0
Total invoicing (mil.mk)	3 188	4 145	364	414

Sources: Association of General Contractors of Finland;
Finnish Association of Consulting Firms

Altogether, the global market share of the Finnish construction industry has been around 0.5 per cent at the beginning of the 1980's, - and even in the major LDC market area, the Middle East, the Finnish market share has not been above 0.7 per cent.[11] Nevertheless, compared to Finland's modest export performance and DFI activities in LDCs, the construction operations have been quite notable. The total LDC invoicing of Finnish building contractors was equivalent to 32 per cent of

the value of Finnish exports to LDCs in 1981. In some countries, like in Libya, Iraq, Kenya and Vietnam, the value of the Finnish construction operations, in fact, surpassed the value of the Finnish exports. Compared with total exports, the amount of all Finnish foreign construction operations was around 5 per cent in 1981.[12]

The expansion of building contracting exports has been followed by the growth of exports of planning services, which has frequently been related to construction projects. Hence, the intensity of the internationalisation process of Finnish consultancy work has been comparable to that of the construction operations. At the beginning of the 1980's, the value of exports by Finnish consulting firms was around 100 million dollars annually, while ten years earlier the value was only in the neighbourhood of 5 to 10 million dollars. At the present time, about one third of the total turnover of Finnish consulting firms derives from operations undertaken abroad.[13]

The country composition of consultancy exports differs slightly from the pattern of foreign construction activities (see Table 86). The Soviet Union is a major market area, although not so dominant as in construction. In consulting also Western European markets play a role, but during the 1980's the leading market area has been in the LDCs, particularly in countries like Libya, Saudi Arabia and Iraq, but also in Tanzania and Sri Lanka. The LDC country coverage of Finnish consultancy exports is, hence, notably more diverse than in construction operations. That is because consultancy work is very closely related to the Finnish development assistance. In fact, the rapid expansion of LDC consultancy operations at the turn of the 1980's is directly bound up with the simultaneous expansion of Finnish development co-operation efforts.

Finland has been a latecomer among DMEs as far as official development assistance is concerned. Furthermore, the quantitative growth of Finnish aid has been slow compared with those of the other donor countries, particularly those of the other Nordic countries. Finland's scarce capital resources,

narrow trade structure and lack of commercial ties with LDCs, all of which are related to the semi-peripherality of its economic structure, have been reflected also in the modest development aid performance of the country.[14] Finland has persistently been at the bottom of the DAC list of donors of development assistance. At the beginning of the 1980's, the situation slightly changed, and the aid disbursements started to increase reaching the level of 0.33 per cent of GNP in 1983, which is already quite close to the OECD average figure. The recent growth of official assistance has partly been related to the gradual expansion of Finnish overall commercial relations with LDCs, particularly since the middle of the 1970's. These trends thus suggest that the internationalisation process of the Finnish economy has gathered some initial momentum.

6.3 Finnish dependence on foreign production capital and technology

On the other side of the internationalisation process is the inflow of foreign production capital and technology into Finland. As a small country with a limited domestic market and a narrow industrial base, the economic development in Finland has been characterised by a low level of innovative activity. Hence, the country has been a large net importer of industrial technology and capital. The industrialisation process has essentially been dependent on adaptation of foreign technology inputs. Only in a few sectors - the best examples being forestry and the forest industry - have mutual internal productive connections between end products, inputs of investment goods, and indigenous R & D efforts emerged.

The ways in which foreign production technology has been absorbed vary greatly - involving, for example, the international sale of know-how, services, machinery and equipment as well as direct investment. The transfer of technology may be related directly to a transfer of industrial production capacities, or it may contribute to increases in capabilities to produce new technology. Because of this heterogeneity and variety of actions involved, well-developed

and consistent indicators of technology flows are not available. Hence, there are difficulties in attempting to quantify dimensions of technological dependence.

In this study, the attempt to measure flows of technology into Finland in some detail is limited to three indicators. These are a) payments for licences and other related technical services, b) trade in investment goods, and c) foreign direct investment.

6.3.1 International comparison of R & D expenditures

The most common way of illustrating differences in the levels of technological development between countries, is to relate overall research and development expenditure to GDP. The indicator is obviously a gross simplification, but it does provide one summary figure about the relative scientific and technological capacity of a country. Here it is supplemented by examining how much R & D efforts are performed, particularly by the industrial sector in each country. This is measured by dividing industrial R & D expenditure both by the domestic product of industry and by manufacturing employment (see Table 87). Although all these indicators are mere estimates, they do offer some information about the global access and distribution of technological resources.

Research and development resources are heavily concentrated in a small number of core economies.[15] The United States alone covers nearly a half of all resources devoted to R & D in the DMEs. If Japan, West Germany, the United Kingdom and France are also included, the total becomes 86 per cent of the overall R & D expenditure. These five large highly industrialised countries are not only dominant spenders of the world's R & D funds in absolute terms, but also in the context of their national resources measured by GDP, they belong to the leading countries. Their leading position is, however, challenged by a few small core economies like Switzerland, Sweden, the Netherlands and Belgium if R & D activities are related to GDP. Then, in fact, Switzerland ranks as the world leader, as indicated by Table 87.

Table 87. R&D expenditures by major DMEs, 1979 (per cent)

	R&D expenditure		Industrial R&D expenditure		Licence and royalt payments share of industrial R&D expenditure (1978)
	share of GDP	share of DME total	share of industrial domestic product	per capita employment (dollars)	
Switzerland	2.40	1.2	2.10	1 040	..
West Germany	2.40	10.5	1.95	900	10.4
United States	2.38	47.1	1.94	1 600	1.8
United Kingdom	2.20	6.7	1.87	630	12.1
Japan	2.11	15.4	1.38	730	10.7
Netherlands	1.99	1.8	1.33	1 010	33.8
Sweden	1.88	1.3	1.95	960	12.4**
France	1.81	6.7	1.37	800	13.6
Belgium	1.36	0.9	1.20	680	30.0**
Norway	1.35	0.4	0.85	530	..
Canada	1.11	2.1	0.64	390	..
Austria	1.10	0.7	0.78	300	40.8
Finland	1.08	0.3	0.80	370	31.9***
Australia	1.03	1.0	0.28	140	33.0**
Denmark	0.97	0.4	0.78	320	27.4**
New Zealand	0.88	0.1	0.21	70	68.8
Italy	0.85	2.6	0.59	270	41.4
Ireland	0.74	0.1	0.33	150	..
Spain	0.35*	0.6	0.25*	86*	155.4*
Portugal	0.34	0.1	0.07*	11	..
Greece	0.18	0.1	0.01	..	..

*1976
**1977
***1981

Sources: Same sources as in Table 88;
OECD (1982), Science and Technology

In most DMEs over half of the national R & D effort is performed by the industrial sector. Clearly, the country variations follow the pattern of the overall R & D spending. However, the prominence of the small core economies is accentuated even more so. Switzerland and Sweden spend the highest percentage shares of industrial gross output on research and development. This, of course, highlights the particularly strong innovative capacity of their industrial production, which has had a significant influence on their international competitiveness.[16]

As is shown in Table 87, the GDP percentages as well as the per capita distribution of R & D expenditures vary quite widely among DMEs. A familiar pattern exists. As may be anticipated, there is a clear difference between core and semi-peripheral economies as far as their R & D performance is concerned. The industrial development of the latter tends to be characterised by the relative scarcity of innovative activity. Finland is not an exception in this respect. Although, its overall R & D expenditures grew more rapidly than its GDP during the 1970's, Finland still ranks at the lower end of R & D spenders among DMEs. The relative lack of indigenous R & D resources has and will inevitably entail a dependency on external technological inputs as far as the industrialisation process is concerned.

6.3.2 Payments for foreign technology

Payments for foreign patents, licences, know-how and technical services represent the most identifiable form of technology transfer. An indication of payments and receipts in this regard is presented in Table 88, which illustrates the balance of technological payments for some DMEs. Payment statistics are not fully comparable on an international basis, because in different countries payments cover different combinations of licences, know-how and services. Furthermore, a large proportion of royalty and fee payments are between related enterprises; hence, taxation and regulations have pronounced effects on the methods and values of payments.[17] Therefore, any accounts of international technological dependency based on these figures are only indicative.

Among the fourteen DMEs for which data are available, only the United States, the United Kingdom and Denmark registered a surplus with respect to trade from technology in 1981. The other countries were thus net importers of technology measured by licence and royalty payment figures, principally from the United States. In fact, in the case of the United States, receipts from technology and related services were nearly ten times as much as all payments. However, out of the total receipts of 5 871 million dollars in licence fees, some 4 700 million dollars were

Table 88. Receipts and payments of licenses and royalties in some DMEs, 1978 (millions of US dollars)

	Receipts	Payments	Balance	Trade ratio
United States	5 871	610	5 261	81.2
Denmark	87	69	18	11.5
United Kingdom	744	625	119	8.7
Netherlands	277	446	-167	-23.1
Belgium*	126	216	-90	-26.3
Sweden*	75	132	-57	-27.5
France	346	679	-333	-32.5
West Germany	430	964	-534	-38.3
Austria	29	119	-90	-60.8
Japan	281	1 169	-888	-61.2
Italy	103	498	-395	-65.7
Spain	73	398	-325	-69.0
Australia*	13	74	-61	-70.1
Finland**	4	80	-76	-89.3

* 1977
** 1981

Sources: UN Centre on Transrational Comporations (1983), Table 3;
OECD (1981), Seminaire sur la Balance des Paiements Technologiques;
Bank of Finland

Note: The trade ratio is measured by $[(X-M)/(X+M)] \cdot 100$, in which (X) stands for receipts and (M) for payments.

paid by foreign subsidiaries of US transnationals to their parent companies. The rest represented receipts from other foreign firms. Furthermore, the proportion coming from subsidiaries is increasing faster than the comparable percentage for non-affiliated firms.[18] These observations may indicate that an increasing share of repatriated profits of US TNCs are transferred via licence payments. As far as the form of technology transfer is concerned, the United States and also the United Kingdom have relied more on foreign direct investment in contrast to, for example, Japan and West Germany, which have exported machinery and equipment rather than made DFI extensively.

In Table 87, licence and royalty payments were related to industrial R & D expenditures. The aim was to illuminate the degree of dependency on foreign technology supply in the context of the indigenous capacity to develop it. The results reveal, quite clearly, that those countries with the highest R & D capacity are least dependent on the foreign supply of know-how, licences and technical services - and vice versa.

In the Finnish case, foreign licence and royalty payments are equivalent to about a third of the value of the industrial R & D expenditures. This ratio is roughly within the same range as in several other small industrialised economies (see Table 87). What is notable, however, is the striking imbalance between Finnish receipts and payments.[19] In 1981 Finnish licence and royalty receipts from abroad were 19 million marks, whereas payments were nearly twenty times as much, 344 million marks. The corresponding figures in 1983 were 22 million marks and 425 million marks, indicating a constant imbalance in Finnish technological payments. These convincing figures are not, however, very representative of technological dependence, since by far the largest proportion of Finnish technological trade takes place via conventional exports and imports of capital goods and equipment. This seems to be in line with the argument that as industrialising countries have developed they have tended to buy more licences and advanced technical services, rather than buying machinery and equipment.[20] Since Finland belongs to the group of relativ ' ' less industrialised - and geographically as well as economically peripheral - countries among DMEs, the transfer of technology tends to take place primarily via traditional channels of trading goods.

6.3.3 Trade in investment goods

The pattern of external exchange in capital goods is the basic determinant in defining a country's position in the international division of industrial labour. The capital goods sector represents more than just another industrial branch, since it constitutes the core of the overall industrial accumulation process and productivity increases. It is directly

interrelated with other sectors of a national economy, thus making it possible to create an integrated industrial structure. It can be argued that on a hierarchical scale of industrial sectors, the capital goods industries are at the top since they command the essence of production processes in other sectors. Hence, in terms of the international division of industrial labour, the global distribution of capital goods production is paramount.

Two types of indicators have been chosen to illustrate the relative differences among DMEs as far as their investment goods production and trade is concerned. Here investment goods are defined as including machinery and equipment, without transport equipment.[21] The indicators, presented in Table 89, are measuring both the degree of import penetration and the trade performance capacity of major DMEs in the investment goods sector.

Table 89. Machinery and equipment trade of major DMEs, 1970 and 1981

	Share of imports in gross fixed capital formation (per cent)		Trade balance (mil. $)		Trade ratio	
	1970	1981	1970	1981	1970	1981
Japan	7.8	6.5	2 664	46 335	60.7	88.4
West Germany	26.0	43.9	6 716	27 305	46.6	39.9
Italy	34.3	50.4	1 304	6 847	22.9	24.6
Switzerland	53.6	73.5	416	3 089	15.0	23.3
United States	9.7	21.3	6 090	21 602	36.5	21.4
United Kingdom	32.9	57.0	2 455	5 271	29.9	12.3
Sweden	79.9	84.6	176	1 662	5.5	12.6
Denmark	83.3	84.6	-123	551	-8.0	9.9
France	32.6	45.0	-223	566	-3.2	1.5
Netherlands	88.9	122.1	-571	-519	-13.8	-3.1
Austria	55.7	67.2	-187	-395	-13.8	-5.2
Belgium	131.9	122.6	-459	-809	-15.6	-6.5
Finland	69.5	70.7	-351	-834	-45.3	-18.4
Spain	42.2	41.1*	-771	-1 351	-60.9	-22.2
Ireland	105.4	114.1*	-244	-987	-68.5	-33.6
Canada	70.4	90.9	-1 547	-9 455	-30.2	-38.9
Norway	100.1	96.4	-432	-1 986	-50.1	-45.1
Portugal	..	70.1	-261	-1 317	-65.4	-62.7
Greece	63.3	62.0	-386	-1 099	-96.5	-78.7

* 1979

Note: Machinery and equipment are SITC 7 less 78 and 79.

Sources: OECD (1983), National Accounts 1964 - 1981 and
OECD, Foreign trade by commodities 1970 and 1981.

Imports of capital goods by DMEs, expressed as a proportion of gross fixed capital formation of machinery and equipment, tend to be quite strongly related to the size of the economy. Large countries - whether core or semi-peripheral economies - are less dependent on imports, while small ones, including Switzerland, Sweden, the Netherlands and Belgium, have relatively high import penetration as far as their demand for investment goods is concerned. Altogether, in most DMEs - a major exception being Japan - imports of capital goods increased relative to gross investments during the 1970's. The growth of trade among DMEs in this sector has been facilitated by general trade liberalisation efforts and particularly by preferential trade arrangements established in Europe.

Data on import penetration may, however, give a quite misleading picture of the extent to which the industrialisation process as a whole is dependent on the external supply of capital goods. Small highly industrialised countries typically have a specialised industrial structure and are inclined toward increasing external trade relations, frequently on an intra-industry basis. They are typically capable of expanding exports within a branch in which imports may also be high. Hence, trade balance figures reflect the international strength or weakness of an industry more clearly than mere data on import penetration. For international comparisons, the relative trade balance as measured by the trade ratio indicator is the most illuminating.

With regard to the capacity to supply capital goods in the world economy, the industrial structures of Japan and West Germany exemplify the most vivid competitive strength. During the past two decades the previous leader - the United States - has gradually lost its prominent position. Nevertheless, all small core economies are more or less self-sufficient in the capital goods sector, as indicated in Table 89.[22] As opposed to that, semi-peripheral economies tend to have an overall trading imbalance in investment goods, which illustrates the dependence of their industrialisation process on the foreign supply of technology.

In Finland, some 70 per cent of gross fixed-capital formation in machinery and equipment has been covered by imports. The import share has remained stable during the 1970's. Although the Finnish trade balance in investment goods has slightly deteriorated in absolute terms, the relative trade balance measured by the trade ratio has improved quite significantly. Exports have grown faster than imports. The export success has, however, been concentrated in a few sub-branches - namely, in production of wood-processing machinery, lifting, loading and construction machinery, and cooling equipment as well as within the categories of electrical machinery, television receivers, and cables and insulated wires. If, moreover, shipbuilding is included, these are the principal capital goods that are export products of Finland. These are not the most skill- and R & D-intensive branches within the capital goods sector, which would thus lead to overall technological progress. The Finnish national economy is, hence, characterised by the lack of broadly based capital-goods industry. In fact, only within the forest industry, significantly enough, has an integrated industrial structure evolved. Every other industrial branch in Finland is more or less dependent on an external supply of investment goods and related technology.

Table 90. Machinery and equipment trade of Finland by major regions, 1981

	Imports		Exports		Trade balance	Trade ratio
	(mil. $)	(per cent)	(mil. $)	(per cent)	(mil. $)	
DMEs	2 520	93.9	1 036	56.0	-1 484	-41.7
SOCs	127	4.7	627	33.9	500	66.3
LDCs	36	1.4	186	10.1	150	67.6
Total	2 683	100.0	1 849	100.0	-834	-18.4

Source: Appendix Table 3.

The relative external dependency is even more pronounced if the regional distribution of the investment goods trade is considered. Some 94 per cent of the imported investment goods originate from DMEs, while the rest come primarily from socialist countries. In exports the corresponding regional shares are 56 per cent and 34 per cent (see Table 90). Hence,

the Finnish trade with DMEs incurs a large deficit in the capital-goods trade balance, but trade with socialist countries and LDCs, on the other hand, shows a surplus. These regional trade balance figures thus highlight the semi-peripherality of Finland vis-à-vis the dominant DMEs. With its respective trade ratio (-41.7), Finland ranks very low indeed among DMEs as far as the relative trade balance in machinery and equipment trade is concerned (compare with the ranking order in Table 89).

6.3.4 Foreign direct investment

Foreign direct investment is the most immediate form of transferring technological capacities between countries; consequently, it also creates the most overt dependency structures. Peripheral economies have typically been large net receivers of DFI in the world economy, while the core economies are the major suppliers.

Since the beginning of the 1960's in Finland, there has been a steady rise in investment operations of foreign companies. Until the mid- 1970's the country was, in fact, a net receiver of equity capital, but since then Finnish direct investment abroad has surpassed the counterflow. Furthermore, repatriated interest, dividends and payments for technology have been distinctly greater than the inflow of new foreign investment capital. The slow growth in foreign equity capital inflow is partly explained by the fact that the activities of foreign firms operating in Finland have been financed, to an increasing extent, through Finnish sources.

Finnish equity investment abroad has expanded particularly vigorously since the end of the 1970's, as indicated earlier. As a result, in 1979 the number of Finnish subsidiaries abroad for the first time exceeded the number of foreign firms in Finland (see Table 91). Nevertheless, as far as manufacturing subsidiaries are concerned, the number of foreign ventures in Finland is still above the number of Finnish ones abroad.

Table 91. Number of foreign subsidiaries in Finland and Finnish subsidiaries abroad, 1965 - 1983

	Subsidiaries		Manufacturing subsidiaries	
	foreign in Finland	Finnish abroad	foreign in Finland	Finnish abroad
1965	286	135	67	27
1970	480	310	106	54
1973	660	432	156	64
1976	782	661	171	85
1979	876	933	186	120
1981	958	1 095	202	123
1983	1 036	1 235	207	162

Source: Bank of Finland

In 1983, there were altogether 1 036 firms in Finland whose foreign ownership was over 20 per cent. Of these, 207, or 20 per cent, were manufacturing firms. Hence, the vast majority of foreign enterprises in Finland are sales and service affiliates typically owned by the world's leading TNCs.

Finland has been geographically a remote area as regards transnational production activities. Compared to most other DMEs, the degree of dependence of its production system on direct foreign investment is thus quite meagre. In the mid-1970's some 5 per cent of the total Finnish manufacturing turnover was generated by foreign-owned enterprises. In Sweden the corresponding figure was about 10 per cent, in Denmark 8 per cent and in Norway nearly 19 per cent.[23]

Besides the long distance, the small market size has contributed to the relative lack of foreign investment activities in Finland. Moreover, strategic raw material resources (forestry and mining) are protected by special legislation. Even relative labour-cost differentials - Finland being a low-cost area within Europe - have not been a strong enough incentive for foreign companies to locate their production plants in Finland to any considerable degree. Southern European semi-peripheries and, increasingly, developing countries offer more attractive and even adjacent locations for the labour-intensive investments of

TNCs. In fact, only for Scandinavian companies - particularly Swedish ones - has distance not been an obstacle to investment in Finland; hence, they have been able to utilise the relative production cost differentials between the neighbouring countries. Two-thirds of all foreign manufacturing plants operating in Finland are owned by companies from the other Nordic countries, as indicated by Table 92. Swedish companies alone account for 54 per cent of the total.

Table 92. **Number of foreign companies and payments of licenses and royalties in Finland by source country, 1983**

	Subsidiaries		Payments of licenses and royalties	
	all	of which manufacturing	mil. mk	per cent
Sweden	549	112	76.2	17.9
United States	99	15	181.0	42.5
Switzerland	84	23	34.0	8.0
Denmark	82	18	30.5	7.2
West Germany	53	8	20.7	4.9
United Kingdom	50	10	31.9	7.5
Netherlands	30	5	8.0	1.9
Norway	27	6	9.4	2.2
France	15	4	5.9	1.4
Belgium	11	3	5.6	1.3
Soviet Union	8	-	10.2	2.4
All above	28	3	413.4	97.2
Total	1 036	207	425.4	100.0

Source: Bank of Finland

As far as Finnish payments of licences and royalties are concerned, the position of Swedish companies is less pronounced. In fact, the dominance of US companies is accentuated. Over 40 per cent of all Finnish licence payments have gone to the United States.

Despite the fact that, internationally speaking, foreign enterprises in Finland play a relatively marginal role, in two types of activities they are relatively strongly established. Their importance has been rather significant, on the one hand,

in the technically most advanced sectors such as electrical and mechanical engineering as well as the chemical industry and, on the other hand, in labour-intensive sectors such as clothing, textiles and miscellaneous light manufactures (see Table 93). In these branches foreign-owned companies cover from 8 to 15 per cent of total value-added and employment.

Table 93. Foreign participation in Finnish manufacturing industry, 1981 (per cent)

	Foreign subsidiaries*		Share of all		
	number	distribution by sectors	firms	employment	value added
Food industry	13	6.1	1.2	4.1	6.1
Textiles	15	7.0	5.2	5.8	4.7
Clothing	34	16.0	7.4	10.1	8.6
Leather prds and footwear	-	-	-	-	-
Forest industry	5	2.3	0.4	0.4**	0.3**
Printing and publishing	9	4.2	1.2	0.7	1.9
Chemical industry	51	24.0	11.2	7.9	8.8
Non-metal mineral prds	5	2.3	1.2	2.6	2.7
Steel and non-ferrous metals	6	2.8	6.8	1.7	2.5
Basic metal prds	10	4.7	1.5	1.8	2.3
Industrial machinery	28	13.1	3.9	3.6	4.4
Electrical machinery	23	10.8	11.2	8.3**	8.3**
Transport equipment	4	1.9	1.4	0.4**	0.5**
Instruments	6	2.8	8.3	13.5	16.3
Misc. light mnfs	4	1.9	3.4	9.9	8.0
Total manufacturing	213	100.0	3.0	3.9	4.4

Note: *Companies in which foreign ownership accounts for more than 20 per cent of the nominal value of the share capital

**Only companies in which foreign share is over 50 per cent.

Source: Official Industrial Statistics of Finland, 1981.

The sectoral pattern of foreign manufacturing operations highlights the semi-peripheral characteristics of the Finnish industrial structure. It is typical that TNC operations in DMEs have focused on the technically most advanced sectors such as the chemical and engineering industries, whereas the role of transnationals in the traditional standardised sectors is practically negligible.[24] In Finland's case, however, Swedish

investments in labour-intensive export industries, such as in clothing, represent a transaction pattern prevalent in relations between core and peripheral economies. Similar technological and industrial dependence is shown when the Finnish engineering industry is increasingly subcontracting for Swedish machinery production. Hence, Swedish companies have moved some of their standardised and labour-intensive production processes into Finland in order to benefit from the lower labour costs there (see p. 24).

In global terms, however, Finland represents an insignificant destination for transnational production investments aiming toward export markets. TNCs operating in Finland have mainly been interested in widening their local market shares. Hence, some 80 per cent of the foreign enterprises operating in Finland are sales and service affiliates.

The above presentation leads to the conclusion that structural development in the competitive position of Finland has primarily been mirrored by changes in the foreign trade flows rather than by changes in capital inflows and outflows. As Finland is a semi-peripheral country, its industrialisation has been dependent on the foreign techonological supply, but it has absorbed these inputs primarily by importing capital goods rather than by importing direct investment capital. Hence, foreign investments in the Finnish production system have played a marginal role. The counterflow, i.e. Finnish production investments abroad, have been even more marginal. There are more foreign manufacturing affiliates in Finland than Finnish abroad. In particular, investments in LDCs have been negligible.

Up until the end of the 1970's, the country was a net receiver of investment capital, but during the last few years the initial steps in the internationalisation process of Finnish corporations have been taken. The prime motor of foreign investments has been to secure and widen existing market shares. Since LDC markets have played an insignificant auxiliary role in Finnish exports, they have also been very minor recipients of Finnish direct investment. Instead, LDCs may play a more

important, but unquantifiable role as a competitor for foreign investment in labour-intensive, low-cost industries or resource-based industries, hence challenging Finland's traditional position in the international division of industrial labour.

CONCLUSIONS

An inevitable transformation is taking place in the international division of labour. The developing countries, with over two-thirds of the world's population, will in coming years markedly increase their share in world manufactured production and trade - even if not as much as the Lima target suggests. This structural change has an impact on the patterns of production and trade in the already industrialised economies. Nevertheless, these trade-related adjustment constraints vary among DMEs, depending on the characteristics of industrial development and the consequent trade structure in each country. The purpose of this study has been to investigate how these restructuring constraints have been manifested in the Finnish case - representing an economy in an intermediate, semi-peripheral position in the international division of labour.

In a short summary of the Third World industrialisation process, the following features may be noted:

a) The relative contribution of LDCs to world manufacturing output and exports is still rather small, around ten per cent.
b) The country composition of LDC manufactured exports is highly concentrated. The ten leading countries account for over 80 per cent of the total.
c) The commodity composition of exports is also dominated by only a few branches, mainly by low-skilled, labour-intensive consumer goods, and by some standardised, resource-based products as well as most recently by labour-intensive components demanding simple production operations in some otherwise highly R & D-intensive sectors such as electrical engineering.
d) The role of TNCs in LDC manufactured exports is notable , although their influence in traditional export sectors is based on their control over international marketing and distribution networks rather than on direct equity

participation in production. In contrast, the new exports of LDCs are frequently initiated by TNCs, forming an integral part of the global production chain of the company.

Despite the growth of LDC manufactured exports, the global economy is primarily based on the colonial type of complementary trade pattern. Still today, primary products comprise some 85 per cent of the total LDC exports to DMEs, while manufactured products comprise 80 per cent of the reverse trade flow. This means that manufactured trade between DMEs and LDCs has been highly imbalanced, at a ratio of around four to one. Hence, on average, the manufacturing industry in DMEs has had a significant net gain in production and employment from trade with LDCs.

Moreover, as far as the composition of manufactured trade is concerned, also the emerging new international division of industrial labour is complementary rather than competitive in nature for most advanced industrial economies. Their industrial dominance and the key to their competitiveness is based on the acquisition of the most sophisticated, knowledge-intensive industries, i.e. those in the 'early stage' of the product cycle. Apart from requiring high skills, these industries are often relatively labour-intensive as well as having high value-added contents. That type of 'tailor-made' production is also less sensitive to price competition. The most typical sector is capital goods production.

By contrast, in LDCs the dominant industries are mainly in mature, non-science-based sectors benefitting either from local natural resources or cheap labour, in which the capacity to innovate and to lead technological development is limited. Design and production methods are standardised and productivity growth is slow. The major form of competition is price competition.

The Finnish trade and industrialisation pattern has deviated from the ones typical among advanced industrial economies. The net export sectors are either mature, capital-intensive, resource-based industries which produce semi-processed goods (pulp, paper, non-ferrous metals) or low-skilled, labour-intensive industries (clothing, footwear, wood manufactures, furniture). The import dependence, on the contrary, is strongest in sectors with a high value-added content and R & D-intensity. This type of dichotomy in the foreign trade structure makes the whole economic development quite volatile. In Finland a gradual diversification within the industrial structure is, however, taking place. The import dependency has decreased during the 1970's in all the metal industry branches, including the whole capital goods sector, and, on the other hand, the overwhelming dominance of the forest sector in exports has relatively decreased.

Nevertheless, the overall structural characteristics of Finnish foreign trade and industrial specialisation still have some similarities to those of the LDCs. Hence, for Finland the Third World industrialisation process is potentially competitive, to the extent that it leads to the development of alternative sources of supply in those sectors upon which the relative Finnish industrial competitiveness and specialisation have traditionally been based.

Moreover, as typical of an economy with a rather one-sided production structure and limited innovative capability, it responds quite ineffectively to changes in external competitive conditions. The adjustment may work through prices or quantities. As a general rule, the lower the price flexibility, the larger have to be the quantitative adjustments including the subsequent employment effects. Particularly in standardised, labour-intensive or resource-based industries which are relatively more sensitive to price competition, the adjustment to changing market conditions primarily takes place via shifts in output and employment. Hence, in semi-peripheral economies - like Finland - where these sectors dominate, structural changes

may potentially be quite disruptive. The more dynamic core economies are in a position to achieve greater technical progress and to make product improvements, and are therefore able to respond effectively to the changing international division of labour. There the potential adaptability to trade-related competitive shifts is high compared to that of semi-peripheral economies.

The new industrial competition takes place within three possible market areas: a) as import penetration into home markets, b) by way of import substitution in the markets of LDCs themselves and c) as export competition in third markets.

In Finland the pressure of foreign competition comes almost totally from core countries. Its economic relations with the Third World have to date been very meagre. Less than 3 per cent of the total manufactured imports originate from LDCs, while the corresponding figure for the OECD area as a whole is 11 per cent.

On the export side, some 10 per cent of the Finnish manufactured exports go to LDCs, while in the OECD area the proportion is about 30 per cent. There are several explanations for the relatively low level of Finnish trade with LDCs. The small size and geographical distance play a role. Also, trade with socialist countries, especially with the Soviet Union is, at least, a partial substitute for the low LDC share. But a major reason is the competitive nature of the Finnish specialisation pattern vis-à-vis that of the rapidly industrialising LDCs.

The above observations suggest two major conclusions as to why the Finnish manufacturing industry has not succeeded in deriving an advantage from the increased demand for manufactures resulting from the Third World industrialisation. First, new demand for manufactures tends to concentrate in technically advanced sectors, such as capital goods industries, which semi-peripheral economies like Finland are not primarily supplying. Second, even the export penetration potential of semi-peripheral

economies tends to be restricted by import substitution effects, since the LDC industrialisation is focussed on those sectors upon which the relative competitiveness of semi-peripheral economies has traditionally been based.

Due to meagre trade relations, the LDC import penetration into Finnish markets, along with the possible disruptive effects, has also remained very limited. Around one per cent of domestic manufactured demand has been satisfied by imports from LDCs. On the other hand, since the LDC manufactured imports have a high branch concentration, particularly in slow-growth or declining sectors such as leather products, clothing, footwear and textiles, the restructuring constraints may be greater than mere market share figures are suggesting.

As far as the employment effects of LDC import penetration are concerned, the calculations made in this study show that during the 1970's manufacturing imports from LDCs remained a minor source of employment change in Finland. Moreover, job losses due to imports in some industries were compensated by gains due to increased exports in others, so that the net effect of trade with LDCs stimulated rather than reduced employment. Furthermore, even in the sectors most strongly threatened by competitive pressure from LDCs, the labour displacements caused by imports from LDCs were less than the decline in employment due to technical progress. Altogether, during the 1970's about thirty-three times more jobs were lost in Finland through the growth of labour productivity than through the growth of imports from LDCs. Similarly, the employment displacement effect of manufactured imports from DMEs was some twelve times more than that of imports from LDCs.

Nevertheless, in certain specific sectors the direct labour displacements caused by increased imports from LDCs were rather significant. The most severe effects were experienced in the leather products and clothing sectors. The gross labour displacements attributable to the net increase in trade with LDCs were some 730 jobs in the former and 1 660 jobs in the

latter during the period 1970 to 1981. These figures represent an average annual employment decline of 1.9 and 0.5 per cent, respectively. For the two other traditional import branches, job losses during the same eleven-year period were 320 (-0.4 per cent per year) in footwear and 690 (-0.2 per cent per year) in textiles. Considering other sources of employment decline as regards clothing, for instance, increased productivity caused a 2.6 per cent annual reduction in employment and declining domestic demand caused a 1.6 per cent reduction, while for leather products productivity growth caused a 3.3 per cent decline in employment, and trade with DMEs caused a 2.5 per cent decline. These data indicate that trade with LDCs is not the major cause for employment reductions and unemployment, even within the sectors of the highest LDC import penetration ratio.

The problem of LDC competition is, however, accentuated by the fact that these branches are declining sectors in Finnish manufacturing, and displacement is concentrated within disadvantaged groups of employees, i.e. women, unskilled and low-wage workers, often employed by relatively small or medium-sized firms located regionally in structurally weak areas. Hence, import competition may intensify adjustment difficulties, although these difficulties would have been present even in the absence of that competition. Nevertheless, employment losses due to manufactured imports are substantially overshadowed by the positive employment effects of exports to LDCs. Hence, the major issue is not job displacement as such, but rather the sectoral restructuring of labour.

In the long run the major restructuring constraints may, however, be due to the intensification of export competition. This vulnerability is accentuated by the fact that Finland has a high degree of country as well as commodity concentration in its exports.

For core economies, LDC export growth is predominantly complementary because the new supply of manufactured goods is not concentrated in those industrial sectors in which their

competitive position is strongest. The situation is quite the opposite in semi-peripheral economies. For Finland LDC export expansion in manufactures creates a potential competitive pressure. It has lost market shares, partly owing to increased LDC exports, particularly in those sectors upon which its relative industrial competitiveness and specialisation have traditionally been based.

Nevertheless, for the time being, Finland has succeeded quite well in adjusting to the increasing LDC competition in its net export sectors. The clothing and footwear industries represent good examples of the competition by LDCs. Finland ranks twelfth among the world exporters of footwear and thirteenth in clothing. The Finnish clothing industry has suffered some export market losses during the 1970's, but relative to other DMEs the situation has not yet become alarming. The way to adjust has been to specialise in high-fashion goods and special products, while LDCs are primarily supplying standard lines of clothing. Moreover, Finland has been capable of maintaining its competitive advantages, due to a preferential trade network, established within the European countries, that is discriminating against imports from LDCs.

In contrast to clothing, the Finnish footwear industry has suffered significant market losses in all major export destinations except its neighbouring countries. A major reason is evidently an increased LDC competition. A real collapse in Finnish footwear production has, in fact, been avoided only by the rapid expansion of exports to the protected markets of the Soviet Union during the 1970's. The relative success of the Finnish clothing industry, too, has been considerably dependent on the existence of the bilateral, planned trading network with the Soviet Union. Without this supplementary market outlet offered by the Soviet trade, structural constraints and adjustment problems in these sectors due to LDC export competition would have been very severe indeed.

In the forest industry Finland has for a long time been among the world's leading exporters. In the long run its global market shares have, however, gradually declined, particularly in Western Europe, due primarily to North American but also to LDC producers. At the same time, during the last quarter of a century, the composition of Finnish forest product exports has been substantially upgraded.

In the long run there are two major factors which are restricting the growth potential of the Finnish forest industry: first, tightened resource constraints and second, competitive shifts in external markets due to new sources of production. Finland has already reached its wood-producing limit on a sustained yield basis, and as wood has become a scarce resource, its price has tended to rise. Forest industry products compete primarily by price, and hence low-cost wood sources have gradually become more and more competitive. Technological advances in the use of short-fibre raw materials for pulp and paper making, as well as in making programmes for establishing fast-growing plantations, have facilitated the utilisation of tropical forest areas.

In the short term, however, the competitive threat from LDC forest industry is rather limited. First, the new LDC wood-processing industry is primarily directed to home markets rather than to exports. Secondly, Finland enjoys freer access to European markets than LDCs due to its preferential trade agreements with EFTA and EEC countries. Third, at the initial stage, the LDC forest industry production and export pattern is predominantly complementary to that of Finland. LDC exporters are concentrating mainly on low-yield standard products such as sawn wood, wood-based panels and, on a limited scale, pulp, while Finnish competitiveness is based more on high-yield paper products, for which the wood cost is a relatively less important cost factor. Although the new supply of forest products from LDCs does not threaten to undermine the basis of the Finnish

forest industry structure in the near future, in the long run it has the potential of reshaping the global structure of the wood-processing industry.

These observations suggest a general conclusion that, particularly in semi-peripheral economies, there is a need for a far-reaching restructuring policy. It is not just one of many policy options, but an important precondition for preserving in the long run the overall industrial competitiveness in relation to trade-related competitive shifts in the world economy. The way is to diversify and upgrade the industrial structure, and to reallocate resources towards high-technology and innovative sectors. This implies a more integrated internal industrial development. This type of restructuring is, however, conditioned by the degree of integration of semi-peripheral economies within the European division of labour. The problem of adjusting to emerging LDC competition is thus complicated by the overall structural constraints of semi-peripheral economies and by the present institutional arrangements of their external relations. Hence, the task of adaptation and restructuring has to be understood in a broader context than would be required by simply adjusting to the low-cost competition of LDCs.

NOTES

Chapter 1

1. UNIDO (1983 c) and World Bank (1982).

2. Conventionally, an international comparison of the level of development has been made by indicating the average twelve-to-one difference in per capita gross national product between developed and developing countries (9.770 and 840 dollars, respectively, in 1980). Yet the distribution of the world industrial output is even more unequal than the distribution of its GNP. The average per capita GNP from manufacturing in 1980 was 2 720 dollars in DMEs compared with 170 dollars in LDCs - i.e. the difference was of the order of sixteen to one. These calculations are based on figures given by UN, 1980 Yearbook of National Accounts Statistics, Vol II, International Tables, and World Bank (1982). Compare with D.B Keesing (1978) Table 1.

3. Throughout this study the world economy has been divided into these three major regions. Unless otherwise specified, the following classification is used in the text as well as in the tables: the DMEs consist of all European market economies including Turkey and Yugoslavia; North America, Australia, New Zealand, Israel, Japan and South Africa. The socialist countries constitute centrally planned economies in Eastern Europe and the Soviet Union. The LDCs include the rest of the world, i.e. the Caribbean area, Central and South America, Africa (except South Africa), Oceania (except Australia and New Zealand) and all countries in Asia including China (except Israel and Japan).

   The category 'developed countries' refers to the DMEs and the socialist countries together. When the OECD area is referred to, it covers only the OECD member countries and, hence, includes only the principal DMEs, but not all of them. The terms 'developing countries', 'less developed countries' (LDCs) and the 'Third World' are used interchangeably throughout the test.

4. Several economists have supported export-oriented strategies as the most appropriate way for industrialisation in the LDCs. See e.g. I. Little, T. Scitovsky and M. Scott (1979); A.O. Krueger (1978) and B. Balassa (1981 b). Others have challenged the export-oriented industrialisation strategy. R. Prebisch (1959) and (1964) and P. Streeten (1973) and (1982). See also H. Spetter (1970) and G. Fichet and G. Norberto (1976).

5. UNCTAD (1978 c) and (1983 c). See also H. Chenery and D.B. Keesing (1978) and D.B. Keesing (1979).

6. UNIDO considers seven countries to be newly industrialising countries: South Korea, Hong Kong, Singapore, Brazil, Mexico, Argentina and Turkey, UNIDO (1981 c). The Royal Institute of International Affairs excludes Turkey from this list but includes instead Taiwan and India, Louis Turner et.al. (1980). See also Louis Turner et.al. (1982). The LO study (Swedish Central Trade Union) classifies as NICs Hong Kong, Singapore,

South Korea, Indonesia, Malaysia and the Philippines. LO (1980). In the OECD study the group of NICs also includes four Southern European countries: Greece, Portugal, Spain and Yugoslavia as well as Hong Kong, South Korea, Singapore, Taiwan, Brazil and Mexico. OECD (1979 b). The EIU Report has the same countries with the exception of Greece. Anthony Edwards (1979). The widest spectrum of countries as NICs is considered by the UK Foreign and Commonwealth Office in its study including the all above-mentioned as well as Thailand, Pakistan, Iran, Israel, Malta, Poland, Romania and Hungary. Foreign and Commonwealth Office (1979).

7. These countries have often been characterised as sub-imperialistic centres within the Third World, integrating the surrounding peripheral economies as their satellites. See e.g. R.M. Marini (1972), R. Väyrynen and L. Herrera (1975) and R. Väyrynen (1979 a).

8. See e.g. OECD (1982 b) and OECD (1982 a), Chapter XII, Developing country exports of manufactured products: The experience of the 'second-tier' countries. Several authors regard the appearance of second-tier exporters as part of a global industrialisation process in which all countries are progressing on the comparative advantage scale of industrial development, and consequently the number of NICs will continue to increase. See e.g. Bela Balassa (1981 b), Chapter 6.

Others like Paul Streeten and Deepak Nayyar warn that the experiences of the NICs cannot be generalised to all developing countries. P. Streeten (1982) and D. Nayyar (1978). The World system approach, represented e.g. by Andre Gunder Frank (1983), emphasises that just because rapid industrialisation has occurred in some parts of the world, that would exclude and prevent the rest of the world from doing the same. 'The recent export-led growth of the NICs is part of the process of unequal capital accumulation on a world scale' and the other part is unindustrialised periphery. This type of approach, however, overestimates the significance of external markets for rapid industrialisation and, hence, underestimates potential possibilities generated by growth in domestic demand.

9. See OECD (1982 b). Existing statistics frequently understate total manufactured exports to neighbouring developing countries because of inaccurate records and smuggling. Similarly, the frequent inclusion of re-exports distorts the picture in the opposite direction.

10. For further details, see UNCTAD (1978 a), J. Donges and J. Riedel (1977), D.B. Keesing (1979) and H.D. Tuong and A. Yeats (1980). See also Table p. in which market share changes in OECD imports by the major regions are differentiated.

11. UNIDO (1979 d) pp. 69-76 has compared industrial structures at the branch level in the developed and the developing countries. The conclusion is that in the former the sectoral structures of manufactured exports are more homogenous, in contrast to the variation in these structures between the LDCs. In addition to mutual similarity, in the developed countries manufactured exports are spreading in a relatively balanced way throughout all the industrial branches.

12. As regards the broad composition of manufactured exports in second-tier countries, product categories found in SITC 6 (basic manufactures) have lost considerable ground. But product categories within SITC 7 (machinery and transport equipment) and especially within SITC 8 (miscellaneous manufactures) have experienced rapid growth. OECD pp.129-131 and OECD (1982 b). See also H. Chenery and D.B. Keesing (1978).

13. The following branch classification has been applied:
intermediates/low skill: leather, wood, textiles, non-metal minerals, pulp, paper, iron & steel.
final products/low skill: furniture, clothing, footwear, miscellaneous basic metal, transport equipment.
intermediates/high skill: rubber, chemical.
final products/high skill: pharmaceuticals, instruments, industrial machinery, electrical machinery.

14. In a more detailed analysis based on a finer definition of processing chains, it has been revealed that well over one half of the total exports of the LDCs require further industrial processing before their final consumption, whereas the comparable figure for the DMEs is only about a quarter. UNIDO (1981 b). See also UNIDO (1979 d), pp. 187-193.

15. John M. Dunning (1974) p.13. There is no unambiguous definition of transnational corporations. Often a distinction is made between industrial TNCs, which are corporations with production facilities in two or more countries, and trading and other service TNCs. At the present, both sets of TNCs number around 18 000 worldwide. F.F. Clairmonte and J.H Cavanagh (1982). Conventionally, the concept of TNC only refers to international producing enterprises. A distinction is also made between TNCs and MNCs (multinational corporations), the latter referring to an international enterprise whose capital is owned by economic agents of more than one nationality. About selected definitions of TNCs, see United Nations (1973), Annex II.

16. J.H. Dunning (1978).

17. G.K. Helleiner (1975) pp.12-13. See also United Nations (1978), pp. 41-45. Precise measurement of the extent and the growth of TNC operations in the world economy is hampered by limited data. All figures presented are, hence, more or less estimates and should be taken merely as orders of magnitude.

18. OECD (1983), p. 7.

19. The growth of DFI flows into the LDCs has exceeded that of the investments in DMEs. The average annual growth rate of direct foreign investment flows from the DMEs to the LDCs has increased from 7.0 per cent in the 1960-68 period and 9.2 per cent in 1968-73 up to 17.5 per cent in 1973-81. As far as DFIs in the DMEs are concerned, the corresponding figures were 12.6 per cent in the 1960-73 period and 11.9 per cent in 1974-79. OECD (1981 b), Annex Table 6 and pp. 11-16.

20. UNCTC (1979) p. 11

21. In 1966, still 49 per cent of the DME total stock of DFI in LDCs was in extractive industries (40 per cent being in petroleum alone), while manufacturing had only 27 per cent and other sectors (particularly service industries and finance) 24 per cent. Due to substantial nationalisations within the extractive sector, its share declined by 1976 down to less than one fifth of the total DFI. In 1976 the major investors the US, the UK, West Germany and Japan, had from 39 per cent to 61 per cent (according to country) of their foreign direct investments in LDCs in manufacturing and from 23 per cent to 48 per cent in the service sector. OECD, (1977 a), p. 72 and OECD (1981 b), Annex Table 10. See also United Nations (1978), Table III-51, UNIDO (1979 c), p. 162, and UNCTAD (1978 d).

22. See e.g. D. Nayyar (1978) and C. Vaitsos (1979).

23. T. Szentes (1974); F. Fröbel, et.al. (1980); R. Murray (1972); G. Adám, Multinational Corporations and Worldwide Sourcing in H. Radice (1975); J. Annerstedt and R. Gustavsson (1975); R. Skarstein (1979) and H.S. Marcussen and J.E. Torp (1982).

24. C. Vaitsos (1979), Turner et.al. (1980), D. Nayyar (1977) and A. Hone (1974).

25. In these twelve leading exporters the average share of the manufacturing sector in the total stock of DFI has increased substantially from 56 per cent in 1967 up to 74 per cent in years 1975-76. OECD (1972) and ILO (1981 a) Table 10.

26. For further details, see e.g. J.M. Finger (1975 b); Fröbel et.al. (1980) and K. Kiljunen (1984 a).

27. Various terms, such as 'Export Processing Zones', 'Free Zones', 'Free Economic Zones', 'Investment Promotion Zones', 'Duty-Free Zones', 'In-Bond Industries' or even 'Process of Selective Deregulation' have been used to describe this entirely new, rapidly growing phenomenon in international production and trade. These are zones engaged primarily in manufacturing export production activities, as opposed to traditional 'Free Ports' or 'Free Trade Zones', which are predominantly engaged in commercial activities mainly in the form of transit trade. See for further details R. Skarstein (1979); H. G. Grubel (1982); ILO (1981 a), Chapter IV, UNIDO (1980 a), and ICFTU (1983). Several international organisations have promoted

foreign direct investment and the establishment of EPZs as one answer to the industrial-isation efforts of LDCs. Guideline legislation for EPZs and similar sites was developed by UNIDO already during the 1960's. See e.g. UNIDO (1976), and OECD (1983). Some other international organisations like UNCTAD have been more critical in assessing the success of EPZs. See UNCTAD (1982 c) and (1983 a).

28. UNIDO (1980 a), Annex Tables 1, 2 and 3; UNCTAD (1983 a), Annex Tables I and II; ICFTU (1983), Appendix I, and K. Kiljunen (1984 a) Table 4.

Several case studies have been done about individual EPZs in different countries. See e.g. about Mexico, G. Teutli Otero (1981) and NACLA; (1975), about South Korea, Chan-Jin Kim (1981), about Singapore, Chia Siow Yue (1982); about Sri Lanka, D. Ramanayake (1982) and J.A. Karunaratne (1982); about the Philippines, Judy S. Castro (1982); about Malaysia, M. Lester (1981) and M. Datta-Chaudhuri (1982); and about China, Chung-Tong Wu (1983). Some more general studies about EPZs - besides those mentioned in the previous notes - include S. Laestadius (1979), F. Fröbel et.al. (1980), D. Wall (1976), C. Hamilton and L. Svensson (1980), U.G. Hägglund (1979), A. Basile and D. Germidis (1984) and R. Maex (1983).

29. UNIDO (1983 b) Chapter VIII. The measure of wage levels used by UNIDO is the sum of wages and salaries reported by all manufacturing enterprises in each country divided by the number of employees. Accordingly, in 1978 the average annual wages in manufacturing were 12 500 dollars in DMEs and 2 100 dollars in LDCs, i.e. a difference of about six to one. If the number of hours worked are considered - the work year in LDCs being some 35 per cent longer than in DMEs - the difference in wage levels is about 8.1 to one.

30. R. Skarstein (1979) p. 11 and A. Robert (1983) p. 31.

31. According to several estimates, labour productivity for international sub-contracting operations in LDCs is, at its lowest, about 60 per cent of the DMEs' levels, and at its highest, may even be as much as 30 per cent higher than the average in DMEs. M. Sharpston (1974). See also F. Fröbel et.al. (1980) pp. 355-357 and P.K.M. Tharakan (1981) pp. 106-107.

32. In several studies it has been emphasised that foreign direct investment has played a major role in the rapid growth of manufacturing in the LDCs. See e.g. OECD (1981 b); G. Helleiner (1975) and F.F. Clairmonte and J.H. Cavanagh (1982). Others have stressed that local entrepreneurs aided by international buying groups have been a decisive factor in the development of exports. ILO (1981 b), D. Nayyar (1977), A. Hone (1974) and L. Turner et.al. (1980).

33. ILO (1981 b) p.73. This estimate does not include multinational buying groups, which have had a very important impact on manufactured growth in LDCs.

34. F.F. Clairmonte and J.H. Cavanagh (1982) pp. 157-162 and UNCTAD, (1982 c) p. 76.

35. In Brazil in the mid-1970's, the TNC affiliates accounted for 78 per cent of fixed assets in the electrical machinery industry, 74 per cent of non-electrical machinery, 84 per cent of transport equipment and 69 per cent of chemicals. In Mexico, the corresponding figures were 60 per cent of electrical machines, 95 per cent of non-electrical machines, 79 per cent of transport equipment and 68 per cent of chemicals. In Argentina TNCs accounted for 82 per cent of both non-electrical machines and transport equipment. In Hong Kong 40 per cent of employment in the electronics industry has been covered by transnationals. The share of TNC affiliates in these branches has reached even higher levels in many other LDCs where investment has been forthcoming from domestic sources to an even less appreciable extent. P. O'Brien, Table 3 and ILO (1981 a) pp. 29-33.

36. For a detailed presentation about 'new forms' of international investment, see C. Oman (1920) and A. Edwards (1979).

Chapter 3

1. From the beginning of the seventeenth century up to the mid-nineteenth century tar was the main export product of Finland. It is even estimated that during the seventeenth century Finland was the world's leading producer and exporter of tar. The distilling of tar took place in private domestic production. In the whole of Finland, the right to export tar was granted to the Swedish 'Norland-Finland Tar Company' and it defined the prices paid to the producers. As a result of the trade concentration the world market price of tar was steady and high, but the profits accrued to the tar company and the capital of the realm rather than to the Finnish peasant producers. Hence, despite the extent of the trade it was never able to act as an impetus for local capital accumulation and large-scale industrial production. See K.O. Alho (1949) p. 218 and E. Jutikkala (1968) pp. 104-105.

2. In English, the best presentation about Finnish industrialisation is L. Jörberg (1970) and E. Jutikkala (1962). See also J. Linnamo (1967). In Finnish, the most recent and comprehensive account is J. Ahvenainen, et.al. (1982) as well as P. Virrankoski (1975):

3. See. e.g. K.O. Alho (1949).

4. E. Pihkala (1969) pp. 32-33 and K.O. Alho (1949)

5. E. Jutikkala (1968) pp. 212 and 214, and E. Jutikkala (1962) p. 58.

6. E. Jutikkala (1967) pp. 86-87.

7. For further details, see L. Jörberg (1970) pp. 52-63 and E. Jutikkala (1962) pp. 60-64.

8. See V. Halme (1955).

9. R. Wuorinen (1975) pp. 197-198.

10. See E. Jutikkala (1968) p. 215 and E. Pihkala (1969) p. 46 and 54.

11. During the twenty years between the wars the food self-sufficiency of Finland increased from 50 per cent up to 90 per cent, reducing considerably the share of foodstuffs in imports.

12. H. Oksanen and E. Pihkala (1975).

13. See E. Jutikkala (1967).

14. P. Kosonen (1976) pp. 75-76, H. Oksanen and E. Pihkala (1975) p. 19 and S. Hänninen (1974).

15. In Europe, only in Rumania, Bulgaria and Yugoslavia was the proportion of agricultural population higher than in Finland; in the other Scandinavian countries the corresponding figures were in Sweden 31 per cent, Denmark 30 per cent, Norway 27 per cent. E. Jutikkala (1968) p. 218.

16. On average about 10 per cent of the State expenditures during 1945-1952 were used for the reparations, which constituted on average, 3.7 per cent of the GNP. The war reparations were a substantial stimulus to the Finnish metal and engineering industry, so that its output doubled. J. Auer (1956).

17. See e.g. H. Hakovirta and P. Patokallio (1975) and H. Kyröläinen (1977).

18. P. Hemmilä and J. Koponen (1975) p. 58.

19. For more details see e.g. H. Hakovirta (1976) and V. Reinikainen (1970). See also G. Maude (1976) and D.G. Kirby (1979).

20. The best summary report about the post-war economic policy and industrial development is E. Dahmén (1966).

21. Besides the usual investments in infrastructure, export promotion measures and subsidies to industry the state has taken part in production directly, covering about one-fifth of the total value added in the industry. This is more than the average (10-15 per cent) in other OECD countries. Besides primary production (mining, energy supply) the state takes part also in key sectors of manufacturing and heavy metal manufacture, as well as the pulp and paper industry. In a small, semi-peripheral economy the state has intervened directly in order to create preconditions for sectoral diversification of industrial production. The extension of public enterprises has, however, been more a result of ad hoc decisions than of a comprehensive and overall programme of structural change.

22. About Finnish balance of payment problems, see R. Airikkala and T. Sukselainen (1976). See also P. Wallensteen U. Vesa and R. Väyrynen (1973). They emphasise intra-Nordic co-operation as an option for countries such as Finland, to counter polarisation effects due to increasing economic integration within Europe. See also R. Väyrynen (1974).

23. Statistical Yearbook of Finland, respective years. See for further details A. Tanskanen (1976).

24. T.R.G. Bingham (1976) pp. 66-70.

25. OECD (1984).

26. In the period 1950-73 no other OME has experienced as severe absolute fluctuations in economic growth as Finland. The average amplitude of the business cycle was 8.0 per cent, T.R.G. Bingham (1976) pp. 31-38. Since 1973 the swings in

Finnish annual growth rates have also been abrupt. The recessions and cyclical upswings tend to be sharper than those experienced in other DMEs. OECD (1984).

27. P. Bairoch (1982), see particularly Table 16.

28. See for further details e.g. K. Kiljunen (1979 b) and (1979 c) and Central Statistical Office of Finland (1977).

29. See GATT (1983)

30. See T.R.G. Bingham (1976) Chapter III.

31. Two-thirds of emigrants are of working age. They tend to be rather young - 70 per cent between 15 and 35 years of age. At the end of the 1960's about 40 per cent of the Finns emigrating to Sweden were industrial workers. Only 15 per cent were from primary production. This is partly explained by the two stage migration flows. For more details, see e.g. R. Wiman (1975) and A. Majava (1979).

32. The effects of these external constraints are summarised in K. Kiljunen (1979 a) p. 300: "The rapid growth in Finland has been unstable and vulnerable. The reasonably high level of welfare is quite unevenly distributed socially and regionally. The structural diversification in terms of industrialisation has been one-sided including high sectoral concentration with little multiplier effect, a low level of processing and productivity and a lack of R & D efforts. The dependent, one-sided industrialisation has ultimately caused balance of payments problems, increasing foreign indebtedness, high inflation rate and severe imbalances in the labour markets, as well as extensive growth of the tertiary sector."

33. D. Senghaas (1981) and (1982) has compared the Finnish development pattern with other countries and comes to a similar conclusion that Finland has been able to achieve a considerable level of autocentric development - in contrast to deepening peripheralisation - despite a continuous export orientation based on staple commodities. J.Raumolin (1981) emphasises the relative success in Finnish development during the inter-war period compared with post-1945 period when Finland fell into 'maldevelopment trap' due to the externally oriented imitative growth pattern.

34. The indicator is derived from A. Tanskanen (1977).

35. Official Finnish statistics available do not relate commodity trade to domestic production. However, the Economic Planning Centre of Finland (TASKU) has created a data file (called TUTTI) combining basic industrial sector statistics with foreign-trade statistics. See P. Parkkinen (1977) and J. Halttunen and M. Lariola (1979). The foreign trade statistics used in TUTTI are based on the BTN (Brussels Nomenclature), and the disaggregation of sub-sections has been done in view of the specific structure of the Finnish economy. Hence, international comparisons are more difficult than by using the SITC classification.

Another problem is that a common, precise statistical definition of trade in manufactures does not exist. Traditionally, the scope of manufacturing activities is described in the framework of the industrial production (ISIC) statistics. On the other hand, the foreign trade data are based on the SITC classification. For the purpose of this study, trade in manufactures has been defined to include SITC codes 5 through 8 excluding 68 (non-ferrous metals) and including 25 (pulp). This means that SITC sections 0 through 4 represent primarly commodities including, for example, all types of processed foods. As far as industrial sector statistics (ISIC codes) are concerned they have been converted to SITC categories (see Appendix Table 1). Hence, the scope of manufacturing activities according to ISIC covers the whole code 3 less 31 (food, beverages and tobacco manufactures), 353 and 354 (petroleum products), 33 111 (sawn wood) and 372 (non-ferrous metals).

In 1976 a second revised version of the SITC classification came into force. In Appendix Table 1 the correspondence between SITC Rev. 1 and SITC Rev. 2 is also described.

The industry break-down of the present analysis has been carried out at a relatively high level of aggregation. The basis is a two-digit SITC category with some combinations of sections comprising a grouping of 21 industry sectors altogether. More-over, separate figures of some resource-based industries commonly accounted as raw materials have been presented. These are SITC codes 24 (sawn wood), 68 (non-ferrous metals) and 3 (fuels), since they constitute an important part in the economic relations between Finland and the Third World.

36. Patterns of manufacturing specialisation among the DMEs are compared in ECE, Structure and Change in European Industry, New York 1977 and ECE, Economic Survey of Europe in 1980, Chapter 4, New York 1981. See also L. Ohlsson (1980).

37. See K. Kiljunen (1979 a) and (1980) as well as H. Koskenkylä and K. Pekonen (1979) pp. 28-34; J. Halttunen and M. Lariola (1979) pp. 58-62; J. Raumolin (1981) and R. Alapuro (1980).

38. K. Markkula (1980).

39. The index of structural change adopted here has been utilised by ECE for quantitative assessment of structural changes in manufacturing output and employment in different countries. In this study a similar index has been developed for investigation of changes in trade patterns. See ECE (1981) p. 189. See also, UNCTAD (1982 c) pp. 70-71.

40. Compare with ECE (1981).

41. Factors affecting the real competitiveness have been discussed in I.B. Kravis and R.E. Lipsey (1971). See also related Finnish studies SITRA (1976 a), T. Larjavaara (1978) and J. Pekkarinen and T. Peura (1984).

42. The concept of revealed comparative advantage was made operational by B. Balassa (1965). For further elaboration, see also B. Balassa (1977) and (1979 b). About applications of the RCA concept, see e.g. J. Donges and J. Riedel (1973), R. Ballance, J. Ansari and H. Singer (1982) and K. Schatz and F. Wolter (1982).

43. B. Balassa (1977) p. 327.

44. Ibid. and UNIDO (1982 a) pp. 23-25 and UNIDO (1981 c) p. 73.

45. The trade ratio indicator has been introduced e.g. by UNIDO (1982 a) p. 23.

46. For a discussion on inter-industry and intra-industry trade, see H. Grubel and P.J. Lloyd (1975) and H. Giersch (1979). P. Parkkinen (1982) has pursued a study about intra-industry trade in Finnish foreign trade.

47. The RCA indicator used here has been applied by K. Schatz and F. Wolter (1982) p. 91.

48. See UNIDO (1982 a) p. 24.

49. As far as the commodity break-down is concerned, the previous disaggregation has been slightly deepened to include the sub-sections of passenger vehicles and power generating machinery. This has been done in order to characterise more precisely the functional composition of trade.

50. See e.g. P. Hemmilä and J. Koponen (1975).

51. For more details, see T. Hämäläinen (1971), T. Sukselainen (1974), P. Parkkinen (1977) and J. Pekkarinen (1981).

Chapter 3

1. The concepts of trade creation and trade diversion were introduced first by J. Viner (1953) in his pioneering study related to the theory of customs unions. Subsequently, these concepts have been widely used to analyse the effects of the change in trade patterns which might follow the establishment of a customs union. Trade would be created and the welfare effect would be positive when removal of tariff barriers inside a customs union resulted in a transfer of output from a high- to a low-cost source of supply within the union. But if removal of tariff barriers resulted in a switch from a more efficiently producing, low-cost country to a less efficiently producing, high-cost country, there would be what Viner called trade diversion. This will lead to a lowering of welfare, as it entails a less efficient allocation of resources.

   In this study these concepts are used for a more limited purposes of illustrating the pattern of changes in sources of supply resulting from the expanding manufactured import penetration from LDCs. The major interest is whether the

imports from LDCs have replaced domestic production or imports from other external sources of supply. The welfare aspects are not considered at all. See e.g. S. Hirsch (1973).

2. A very good review of several studies made in the 1970's assessing the effects of imports from LDCs on employment in different developed countries is UNIDO (1978). The UNIDO Working Papers on Structural Changes issued by the Division for Industrial Studies and the ILO Working Papers published by the International Division of Labour Programme within the World Employment Programme Research are the best sources of comparative research made in this field. Among these publications, there are case studies about adjustment problems and employment constraints from almost every industrialised economy, although not from Finland. See also H.F. Lydall (1975), V. Cable (1978), D. Schumacher (1977) and (1982), H. Kierzkowski (1980), L. Ohlsson (1980) and A.O. Krueger (1980 b).

3. See C. Hsieh (1975).

4. D. Schumacher (1982).

5. H.F. Lydall (1975).

6. This conclusion is based on estimates made by B. Balassa (1979 a). According to him, there are considerable differences in average labour-input coefficients for the exports and for the imports of manufactured goods of the developed countries in trade with the LDCs. For the OECD area as a whole, the average number of jobs for 1 million dollars of output is 18.4 for exports to LDCs and 28.5 for imports from LDCs, the ratio of the two being 0.65. This is not surprising, since imports from LDCs tend to be more labour-intensive than the corresponding exports of DMEs. Hence, on the basis of this type of a purely static analysis, one may conclude that if imports from LDCs increase by an amount replacing the production of one hundred workers in DMEs, the same amount in increased exports to LDCs would only create employment for sixty-five persons. Since DME manufactured imports from LDCs were 58 milliard dollars in 1980 and exports 234 milliard dollars, one can estimate the 'employment balance' for DME trade with LDCs. The employment creation effects of DME manufactured exports to LDCs were 2.6 times greater than the employment displacement effects caused by the reverse trade flows. B. Balassa's article (1979 a) is also published in B. Balassa (1981 b) Chapter 7.

7. The formulae have been introduced by OECD (1979 b) Annex II, which in turn cites Commissariat Général du Plan, Rapport du Groupe Chargé d'étudier l'évolution des économies du Tiers-Monde et l'appareil productif francais, Paris 1978.

8. See e.g. Vincent Cable (1978), Foreign and Commonwealth Office (1979), UNIDO (1979 a). Similar calculations have been carried out by A.O. Krueger (1980 b), K.W. Schatz and F. Wolter (1982) and UNIDO (1982 c).

9. A. Singh would like to question the appropriateness of the model even further. According to him, the model can not at all analyse the effects of trade in a balance of payments constrained economy (such as that of the UK), which is characterised by a long-term structural disequilibrium. In such an economy, an increase in trade imbalance has a multiple effect on the level of domestic demand and output, and hence on employment. These effects manifest themselves on the level of the economy as a whole and not simply as direct 'microeconomic' effects of the kind estimated by the model A. Singh (1981) pp. 30-33.

10. The conclusion that, with very few exceptions, domestic demand is the most significant component of industrial growth is also drawn by R. Ballance, J. Ansari and H. Singer (1982), chapter II, while studying the industrialisation process in some 30 LDCs. They state that export expansion is only a supplementary factor - at best, a catalyst. This finding is somewhat paradoxical in view of the emphasis often given to trade-related strategies for industrialisation. O. Forssel and I. Seppä (1976) have made an input-output analysis of the Finnish economy in order to estimate the relative significance of home market production.

11. It is particularly interesting to note that import competition from DMEs is regionally more concentrated on industries located in structurally strong areas in Southern Finland (Table 48). This is in line with the argument that in the more developed regions of Finland the prevailing industrial structure resembles the industrial structure of core economies. Hence, spatial core-periphery relations may exist intra-nationally as well as internationally. See e.g. K. Kiljunen (1977) and (1979 c), D. Seers, B. Schaffer, M.L. Kiljunen (1979) and D. Seers, K. Öström (1983).

12. See K. Kiljunen (1979 c).

Chapter 4

1. This is a major conclusion of the study pursued by W. Leontief, A.P. Carter and P.A. Petri (1977). See also B. Balassa (1981 a).

Chapter 5

1. Some 30 per cent of Finnish manufactured exports go to socialist countries, particularly to the Soviet Union. But although this trade represents a structurally beneficial supplementary market outlet for Finnish industry, it has not been examined in detail in the following. Soviet trade is based on planned barter agreements and does not reflect the same market constraints as trade with DMEs. Moreover, potential disruptive effects of increasing LDC export competition are primarily experienced in the markets of core economies.

2. About the application of market share approach in the calculation of Finnish export performance, see e.g. T. Sukselainen (1974).

3. See H. Tulokas (1981), H. Tulokas ja J. Nieminen (1984) and T. Sukselainen (1974).

4. Finnish export performance has been analysed in Committee Report (1976). According to the report the volume of Finland's exports increased yearly in the period 1960-75 by 4.5 per cent, while the average in the whole OECD area was 7.2 per cent. The weak export performance has been a consequence of the concentration of export production on a few slow-growing and cyclically sensitive sectors and its direction into slow-growth countries (UK, Sweden).

5. B. Kádár comes to a similar conclusion as far as East European (semi-peripheral) countries are concerned. He stresses that the socialist countries will be the first to face the effects of the LDC export-oriented industrialisation mainly on the Western European markets. B. Kádár (1974) pp. 28-30.

6. The most comprehensive study about adjustment constraints of the Finnish textile, clothing, leather and footwear industries due to increasing LDC competition is Jyrki Halttunen and Martti Lariola (1979). See also SITRA (1970) and (1972), L. Halme, P. Haavisto, J. Salomaa (1978), Teva-toimikunnan mietintö (1978), P. Haavisto (1980), M. Lariola (1980), L. Fagernäs (1980) and J. Lanner (1983). Some of the most recent international studies include A. Field (1979 a), D.B. Keesing (1978), A. Field and J.-P. Sajhan (1979), B.A. de Vries and W. Brakel (1981) and UNCTAD (1983 b). See also B. Evers, G. de Groot and W. Wagenmans (1975).

7. See A. Field (1979 a).

8. See international comparisons in D.B. Keesing (1978).

9. UNIDO (1983 b), Chapter VIII, Wages in manufacturing: an inter-national comparison. Data on labour costs of the textile industries in various countries are presented in D.B. Keesing (1978) Table 6 and J. Lanner (1983) Table 5.

10. B. Evers, G. de Groot, W. Wagenmans (1977). See also G. Shepherd (1980).

11. See Statens Industriverk (1979).

12. Industrial Statistics 1981, Official Statistics of Finland.

13. P. Haavisto (1980) pp. 80-82.

14. International trade in cotton textiles was regulated by the Short-Term Arrangement (1961-62) and the Long-Term Arrangement (1962-73). The most important agreement concerning trade in textiles and clothing is the Multi-Fibre Arrangement (MFA), signed in 1974 for a period of four years, and subsequently renewed in 1977 and again in 1981, which extended it unti'

1986. The MFA covers all major textile and clothing products and allows in principle a 6 per cent annual volume increase in LDC imports to DMEs.

15. See e.g. UNCTAD (1983 b), K. Morton and P. Tulloch (1977) and D.B. Keesing (1978) about restrictions against textile and clothing trade from LDCs.

16. Public forest ownership is dominant in most countries, supplemented with corporate ownership. In Sweden, for instance, wood-processing companies own 25 per cent of the forest area. In the Third World, forests are typically under public or a semi-feudal latifundia type of ownership. Hence, in international terms the Finnish pattern, in which most forests are owned by the independent peasantry, is quite exceptional. About the structure of Finnish forest ownership, see A. Reunala (1974) and M. Häkkilä (1981). Furthermore, the control over the forest industry in many countries is in foreign hands, like in Canada or in several LDCs, where the utilisation of forest resources is based on extractive exploitation. See R. Hayter (1984). Particularly in the Third World, comprehensive forest management systems exist in only a few cases, UNIDO (1983 d). See also J. Raumolin (1982 b).

17. See e.g. J. Raumolin (1983).

18. R. Eklund (1974) and J. Pöyry (1977).

19. N. Ryti (1981) and Jaakko Pöyry Consulting (1979).

20. The best comprehensive international survey about the forest sector development in the Third World is UNIDO (1983 a). See also UNCTAD (1980 b) and (1982 a).

21. J. Pöyry (1977) p. 2 and UNIDO (1983 d) pp. 25-28.

22. UNIDO (1983 d) p. 26.

23. J. Pöyry (1977) p. 4.

24. J. Pöyry (1982) p. 3.

25. UNIDO (1983 d).

26. FAO (1982).

27. For example, imports of rough wood account for an estimated 73 per cent of the value of gross output of wood products in South Korea, and in Japan the share is 24 per cent. UNIDO (1983 b) p. 351.

28. See UNCTAD (1982 a) and UNIDO (1983 d).

29. Very few studies have been made about the structural development of the Finnish forest industry in relation to the increasing competitiveness of LDC producers. In this respect

see H. Seppälä, J. Kuuluvainen, R. Seppälä (1980) and Jaakko Pöyry Consulting (1979). See also J. Raumolin (1984) and K. Aaltonen, I. Heikkilä, A. Ketolainen (1983).

30. UNIDO (1983 d) p. 45.

31. H. Kunnas (1981), K. Torvi (1980) and UNCTAD (1978 b).

32. See e.g. T.R.G. Bingham (1976).

33. See e.g. J. Raumolin (1984). The Finnish forest industry and the forest equipment suppliers are closely integrated, not only by mutual commercial transactions, but also by ownership structure. Dominant wood-processing companies have extended their involvement into metal. electro-technical and also chemical industries and have thus become large multi-sectoral conglomerates. Some examples are Rauma-Repola, Ahlström, Kymmene-Strömberg, Nokia and Tampella. This successful diversification from traditional wood processing towards forest machinery production and other industrial spill-over effects have been facilitated by the system of national control which has reserved industrial development in the forest sector for domestic enterprises. In contrast, for instance in Canada, where control over forest industry is to a marked extent in foreign (mainly US) hands, the industry has not been able to create backward and forward linkages with the domestic economy on a similar scale to that in Finland. Canadian forest industry is heavily dependent on importation as far as capital goods and R & D inputs are concerned. See R. Hayter (1984).

34. Jaakko Pöyry and Ekono are the biggest Finnish consulting companies in the forest sector. The Jaakko Pöyry Group, for example, has expanded rapidly and has today eleven subsidiary companies abroad, of which three are in the Third World.

35. See UNCTAD (1982 a).

Chapter 6

1. About the internationalisation process of the firm, see R. Luostarinen (1975) and (1979).

2. See C.V. Vaitsos, Power, knowledge and development policy: relations between transnational enterprises and developing countries, in G.K. Helleiner (1976 b).

3. The four Finnish TNCs - having at least six manufacturing affiliates abroad -are Kone, Nokia, Wärtsilä and Kymi, the first three being engineering groups and the last one a pulp and paper company.

4. In 1982 Finnish affiliates abroad employed altogether some 40 000 people, that is about 7 per cent of the domestic manufacturing employment, and their gross output was some 10 milliard marks, i.e. around 15 per cent of Finnish total exports. E. Åsvik (1982) and H. Aintila and P.J. Boldt (1984).

In comparison, employment in foreign affiliates of Swedish firms was 34 per cent of manufacturing employment in Sweden in 1978 and foreign production was 92 per cent of Swedish exports already in 1971, B. Swedenborg (1979). Sweden, in fact, represents a country in which the relative size of manufacturing investment abroad is one of the highest among DMEs. Only in the United States, Switzerland, the United Kingdom and France was international production as a percentage share of exports higher than in Sweden in 1971, the figures being respectively 396 per cent, 236 per cent, 215 per cent, and 94 per cent. For example, in Japan and West Germany the corresponding share was only 38 per cent and 37 per cent respectively, United Nations (1973) Table 19.

5. See e.g. United Nations (1983), H. Luukkanen (1982) and Committee Report (1980.

6. Because of the lack of comprehensive and uniform data, the figures in Table 86 indicate only the rough magnitude of different foreign operations. The patterns have been illustrated by using the values of sales of different operation forms. Hence, total foreign operations comprises the total sum of sales through direct exports, licensing, sales subsidiaries and direct production investments. See R. Luostarinen (1975) Tables 19 and 20.

7. See e.g. B. Swedenborg (1979).

8. See e.g. Foreign and Commonwealth Office (1979) and G. Shepherd (1979).

9. At its greatest height, during the 1960's and at the beginning of the 1970's, construction investments accounted for nearly 20 per cent of Finland's GNP, while the level in other Western European countries has been around 10-13 per cent. In the mid-1970's, housing construction in Finland approached 16 new dwellings per thousand inhabitants, compared with a general OECD average of about 8 dwellings per thousand. Since then, the relative volume of new construction activity has, however, decreased. At the beginning of the 1980's, construction investments in Finland fell below 15 per cent of GNP, i.e. closer to the average comparable international figures.

10. Data concerning foreign construction operations are based on calculations made by the Association of General Contractors of Finland. See also P. Huovinen (1977), K. Keravuori (1979) and R. Väyrynen (1983 b).

11. Contractors from the United States are dominating LDC construction markets, covering some 37 per cent of the total market shares (36 per cent in the Middle East) in 1982. South Koreans rank second, having a LDC market share of 11 per cent (21 per cent in the Middle East). Third is France with a market share of 9 per cent (7 per cent), followed by West Germany 8 per cent (5 per cent), Japan 8 per cent (5 per cent), Italy 6 per cent 6 per cent) and the United Kingdom 6 per cent (6 per cent). The data is given by the Association of General Contractors of Finland.

12. It is estimated that only about 30-50 per cent of LDC invoicing of Finnish contractors is registered in the trade statistics as exports of goods from Finland to the target country. This relates to the industrial and construction equipment which have been supplied by Finnish manufactures for foreign construction operations. The major share of the invoicing is registered in the services account as receipts from technical assistance and consultancy, or are related to local labour costs and sub-contracting activities. As regards the construction projects in the Soviet Union, the amount of Finnish material input is usually much larger than is the case in the LDC operations.

13. Data concerning the foreign planning services of Finnish consulting agencies are based on information supplied by The Finnish Association of Consulting Firms.

14. An analysis of the Finnish development assistance performance in relation to the semi-peripheral international position of the country is presented in K. Kiljunen (1983 b). See also V. Harle (1978), E. Antola (1979), U. Vesa (1979), R. Väyrynen (1980) and T. Rosberg and H. Rytövuori (1981).

15. The LDCs account for a very small fraction of world R & D: approximately 3 per cent. The share of the socialist countries is estimated to be around 30 per cent. J. Annerstedt (1979). Here, however, the major interest is in examining the differences among DMEs. In this respect the best sources are the publications, Science and Technology Indicators and The Science Resources Newsletter issued by the OECD Secretariat. The latest issues available have been from the year 1982.

16. The relationship between the innovative capacity of industry and the international competitiveness of a country, particularly in Scandinavian countries, is examined in detail by P.H. Kristensen and J. Annerstedt (1980). The Finnish case is studied by R. Lovio (1984) and R. Väyrynen (1984). See also K. Pavitt (1979) and (1980, particularly chapter 3).

17. In the case of the United States, for example, out of total receipts related to licences and royalties from abroad in 1978, corporations affiliated with US-based corporations accounted for 80 per cent. In the United Kingdom the corresponding figure was 28 per cent. Without doubt, this phenomenon is connected with the fact that licence payments are an expedient means of manipulating transfer prices, i.e. that profits are transferred by TNCs via licence payments. For further details, see UNCTC (1983).

18. Ibid, pp. 8-9.

19. In addition to licence and royalty payments, the Finnish data supplied by the Bank of Finland include fees for trade marks and the costs of patent applications, while management fees are not included.

20. H. Luukkanen (1980). See also Komiteanmietintö 1980:55. About foreign licence and know-how agreements made by Finnish corporations, see N. Oravainen (1979). R. Väyrynen (1976) has

examined the degree to which TNCs are dominating the Finnish patent market. See also R. Lovio (1985) and H. Luukkanen (1984).

21. This is a simplification, since not all goods classified by the trade and production statistics within the categories of machinery and equipment are investment goods - and similarly a major proportion of transport equipment includes, in fact, investment goods. Machinery and equipment are understood here as SITC 7 less 78 and 79, or ISIC 38 less 381 and 384.

22. For a more detailed presentation, see A. Field (1979 b), OECD (1979 a) and UNIDO (1981 a).

23. OECD (1977 b) Table 1. See also O. Knudsen and E. Landmark (1979) and H. Aintila (1975).

24. Compare e.g. with OECD (1981 c), Table 7, in which industries have been ranked according to the degree of TNC penetration in developed and developing countries.

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ABBREVIATIONS AND SYMBOLS

CMEA	Council for Mutual Economic Assistance
DAC	Development Assistance Committee (of OECD)
DFI	Direct foreign investment
DME	Developed market economy
ECLA	Economic Commission for Latin America
EEC	European Economic Community
EFTA	European Free-Trade Association
EP	Export performance
EPZ	Export processing zone
GATT	General Agreement on Trade and Tariffs
GDP	Gross domestic product
GNP	Gross national product
GSP	Generalised System of Preferences
IBRD	International Bank for Reconstruction and Development (World Bank)
IPR	Import penetration ratio
IMF	International Monetary Fund
ILO	International Labour Organisation
ISIC	International Standard Industrial Classification
IV	Import vulnerability
LDC	Less developed country
LDR	Less developed regions
MFA	Multi-Fibre Arrangement
MNC	Multinational corporation
MVA	Manufactured value added
NIC	Newly industrialising country

NIEO	New International Economic Order
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
OEEC	Organisation for European Economic Co-operation
OPEC	Organisation of Petroleum Exporting Countries
RCA	Revealed comparative advantage
R & D	Research and development
SITC	Standard International Trade Classification
SC	Structural change
SOC	Socialist country
TNC	Transnational corporation
TR	Trade ratio
UN	United Nations
UNCTAD	Urited Nations Conference for Trade and Development
UNCTC	United Nations Centre on Transnational Corporations
UNIDO	United Nations Industrial Development Organisation
UK	United Kingdom
USA (US)	United States
USSR	Soviet Union
..	Not available
-	Zero or negligible

STATISTICAL APPENDIX

Some of the data used to support the propositions made in this study are given in the following tables. Some of the series have been compiled specifically for this study. The official Finnish foreign trade statistics are primarily based on the BTN (Brussels Nomenclature), but since 1960 trade data have been published also by using the revised SITC classification. In this study the SITC classification is used, since it makes international comparisons possible. The data for Finland are taken from various issues of the Official Statistics, Board of Customs, Foreign Trade. The main statistical source for international comparisons has been various issues of OECD, Foreign trade by commodities. Finnish data have been published in the OECD statistics since 1967. The figures presented in Appendix Tables are in current prices.

A major problem of using the SITC classification for Finland in the 1950's and the 1960's is that the country group disaggregation - in particular as far as developing countries are concerned - varies notably. Henceforth, the SITC based trade data for the years 1953, 1960 and 1965 have specifically been collected for this study from the archives of the Foreign Trade Section of Finnish Board of Customs.

The world economy has been divided in this study into three major regions covering the following areas or countries:
DMEs (developed market economies) constitute all European market economies including Yugoslavia and Turkey; North America, Australia, New Zealand, Israel, Japan and South Africa;
SOCs (socialist countries) consist of East European centrally planned economies and the Soviet Union;
LDCs (less developed countries) consist of the Caribbean area, Central and South America, Africa (except South Africa), Oceania (except Australia and New Zealand) and all Asian countries including China and Vietnam (except Israel and Japan).

The domestic industrial production and employment data is from Official Industrial Statistics produced annually by the Central Statistical Office of Finland. If any other data sources than those mentioned above are used, they are indicated in the tables concerned.

Appendix

Table 1. SITC and corresponding ISIC categories constituting 'trade in manufactures'

	SITC code Rev.1	SITC code Rev.2	ISIC code
Labour-intensive intermediates			
leather prds	61	61	323
rubber prds	62	62	355
wood mnfs	63	63	331 less 33 111
textiles	65	65	321
non-metal mineral prds	66	66	36
Capital-intensive intermediates			
chemicals	5 less 54 and 55	5 less 54 and 55	351, 356 and 352 less 3522, 3523
pulp	25	25	34 111
paper	64	64	341 less 34 111
iron and steel	67	67	371
Consumer goods			
pharmaceuticals and cleaning prds	54 and 55	54 and 55	3522 and 3523
furniture	82	82	332
clothing	84	84	322
footwear	85	85	324
instruments (incl. watches)	86	87 and 88	385
passenger vehicles (incl. motorcycles)	732.1, 732.9	781 and 785	-
misc. light mnfs	81, 83, 89	81, 83 and 89	342 and 39
Capital goods			
basic metal prds	69	69	381
power gen.machinery	711	71	3821
industrial machinery	712, 715, 717 718, 719	72, 73 and 74	382 less 3821, 3825
office and computing machinery	714	75	3825
tele, TV, radio appar.	724	76	3832
electrical machinery	72 less 724	77	383 less 3832
transport equipment	73 less 732.1 732.9	78 and 79 less 781, 785	384

Note: Typically, a statistical definition of trade in manufactures includes SITC codes from 5 to 8 less 68 (non-ferrous metals). Here, however, 25 (pulp) is included because of its significance in Finnish exports. The correspondence between the SITC and the ISIC draws upon United Nations, Classification of Commodities by Industrial Origin, Statistical Papers, Series M, no 43. The scope of manufacturing activities according to the ISIC covers whole code 3 less 31 (food beverage and tobacco manufactures) and 353 and 354 (petroleum products) as well as less 33 111 (sawn wood) and 372 (non-ferrous metals).

Appendix

Table 2. Indices of factor intensities in Finnish manufacturing branches, 1981

	R & D intensity	capital intensity	labour intensity	raw material intensity	energy intensity	wage level	labour productivity	female intensity	firm size	LDR intensity
Leather prds	5.6	37.5	109.8	116.5	44.6	75.3	67.5	159.0	45.6	90.7
Rubber prds	131.6	91.5	106.1	76.4	56.9	87.1	82.2	137.4	336.2	31.9
Wood mnfs	13.7	82.8	108.4	103.5	79.0	85.3	75.9	91.7	77.0	190.3
Textiles	13.0	74.7	100.5	95.6	46.6	78.9	78.8	191.1	97.4	78.1
Non-metal mineral prds	42.1	107.9	93.7	69.2	139.6	100.9	105.3	64.9	63.2	78.1
Chemicals	158.3	162.5	83.9	123.8	157.7	102.9	125.8	92.6	93.0	92.8
Pulp	82.2	511.4	72.6	121.8	404.6	130.4	172.3	53.6	343.4	148.2
Paper	82.2	277.3	79.6	120.1	195.3	123.8	150.7	88.1	313.1	86.1
Iron and steel	79.4	254.4	109.2	120.6	447.5	115.4	103.5	51.6	320.7	152.8
Pharmaceuticals	595.6	98.8	61.1	65.4	20.3	85.2	166.2	161.8	119.3	27.8
Furniture	13.8	36.6	103.5	89.6	30.7	83.6	77.5	90.6	47.3	122.5
Clothing	13.1	16.1	112.6	89.5	13.9	72.0	63.0	247.1	90.1	155.6
Footwear	4.8	16.9	111.5	109.2	15.5	76.7	66.0	193.4	95.9	94.1
Instruments	486.4	31.1	88.6	55.1	11.6	96.3	116.7	98.3	78.5	80.2
Misc.light mnfs	15.5	46.7	91.6	45.6	12.4	99.9	114.8	133.2	61.9	75.2
Basic metal prds	45.9	46.3	102.2	86.1	30.7	99.8	94.5	63.5	61.3	122.6
Industrial machinery	141.7	50.8	116.6	91.2	28.1	107.4	91.5	47.0	119.3	83.9
Computing machinery	484.1	22.1	98.9	56.9	6.3	132.7	129.0	53.8	68.6	56.1
Tele, TV, radio appar.	726.5	31.1	124.8	109.8	13.4	89.6	79.6	148.7	207.9	55.6
Electrical machinery	252.0	64.6	110.2	94.5	26.6	99.4	93.8	93.4	182.7	133.3
Transport equipment	42.2	52.8	135.6	103.4	31.7	112.9	80.1	42.8	180.3	49.3
Total manufactures	100.0	100.0	100.0	100.0	99.9	100.0	100.0	99.9	100.0	99.9
Sawn wood	13.6	109.4	113.7	141.6	94.7	91.9	75.3	45.7	71.1	184.6
Non-ferrous metals	294.2	192.1	121.9	162.1	282.1	122.0	95.3	48.4	216.1	102.7
Fuels	143.3	527.9	23.4	186.7	45.5	122.9	534.2	64.8	175.5	8.7

Note:

R & D intensity = R&D expenditure/value added + R&D personnel/labour force;
capital intensity = fixed capital/labour force;
labour intensity = (wages + salaries)/value added;
raw material intensity = raw materials/gross production;
energy intensity = energy costs/value added;
wage level = wages/wage earners;
labour productivity = value added/labour force;
female intensity = women employees/labour force
firm size = labour force/establishments;
LDR intensity = LDR labour force/labour force

Sources:

Data on R&D expenditure and R&D personnel by branches is from Central Statistical Office of Finland, Research activity 1981, Helsinki 1983.
All production and labour force data are from Central Statistical Office of Finland, Industrial Statistics 1981, Volume I, Data by branch, Helsinki 1983.

Appendix Table 3. Finnish foreign trade by major regions, 1953-1981 (mil. mk)

Table 3 a. Trade with DMEs

	imports						exports					
	1953	1960	1965	1970	1976	1981	1953	1960	1965	1970	1976	1981
LEATHER	1.392	8.685	14.691	49.9	185.0	243.6	0.469	0.143	7.708	17.8	47.2	97.1
RUBBER	5.651	33.961	57.717	129.6	255.7	500.2	0.092	1.803	4.719	19.3	37.0	116.8
WOOD	2.151	7.858	14.431	32.4	73.1	138.8	56.309	151.015	228.934	483.1	717.4	1395.7
TEXTILES	60.586	179.705	233.997	607.1	1207.3	2048.9	1.306	18.243	57.540	158.5	317.5	513.3
NONMETAL	6.496	28.773	48.078	118.7	272.6	622.2	4.304	9.416	25.923	50.6	160.8	424.8
SUBTOT	76.276	259.182	368.914	937.7	1993.7	3553.7	62.480	180.620	324.824	729.3	1279.9	2547.7
CHEMICAL	41.044	230.212	384.361	788.3	1881.7	4027.7	1.930	13.675	56.658	173.3	583.3	1463.1
PULP	0.109	1.713	5.952	5.7	21.4	85.8	182.940	425.173	641.898	991.7	1177.5	2653.1
PAPER	0.987	8.273	24.748	59.0	199.6	432.2	165.399	567.101	999.859	1922.6	4409.7	8581.3
IRON	74.062	292.331	312.711	789.7	1124.5	1639.1	1.359	7.030	88.928	305.6	606.9	1756.8
SUBTOT	116.202	532.529	727.772	1642.7	3227.1	6184.8	351.628	1012.979	1787.343	3393.2	6777.5	14454.3
PHARMACE	9.728	34.713	99.463	206.4	468.1	860.9	0.089	0.257	3.309	18.2	88.9	152.9
FURNITUR	0.172	0.722	10.791	28.6	72.0	136.2	0.218	2.060	9.973	55.8	157.0	414.1
CLOTHING	8.963	10.310	31.113	138.4	257.0	540.6	0.030	2.325	16.073	329.7	1035.8	1944.2
FOOTWEAR	0.104	0.960	7.319	33.9	65.7	215.1	0.224	0.656	9.773	53.6	87.8	192.2
INSTRUME	9.552	46.434	92.128	196.1	689.1	1332.3	0.489	1.747	4.583	12.2	88.4	310.3
PASVEHIC	5.571	52.173	307.245	373.2	628.6	1438.4	0.000	0.015	0.143	28.6	223.2	314.2
MISCMNF	5.223	45.055	111.916	286.4	675.5	1356.7	4.263	8.722	31.558	149.0	472.1	1143.0
SUBTOT	39.313	190.367	659.975	1263.1	2856.0	5880.2	5.313	15.782	75.412	647.1	2153.2	4470.9
BASICMET	13.160	73.362	144.211	288.4	723.2	1258.2	1.843	5.243	17.428	108.7	247.1	632.0
POWERGEN	0.000	0.000	0.000	136.7	650.1	932.7	0.000	0.000	0.000	16.0	91.4	220.3
IND.MACH	110.391	555.455	814.979	1315.9	3051.0	5861.8	3.305	35.887	81.189	376.3	1151.5	2836.5
COMPUTIN	0.000	0.000	0.000	133.3	422.2	1171.5	0.000	0.000	0.000	4.7	21.2	111.5
TV.RADIO	0.000	0.000	0.000	161.5	600.9	864.8	0.000	0.000	0.000	90.8	368.7	634.4
ELECTRIC	45.217	194.240	348.936	551.5	1289.8	2041.1	1.447	7.670	36.531	109.3	281.6	636.8
TRANSPOR	86.336	264.665	270.142	834.6	2033.3	3325.2	3.068	32.740	38.196	248.9	715.4	1699.2
SUBTOT	255.104	1087.722	1578.268	3421.8	8770.4	15455.3	9.663	81.540	173.344	954.7	2876.9	6770.7
TOTAL	486.895	2069.800	3334.929	7265.4	16847.2	31074.0	429.084	1290.921	2360.923	5724.3	13087.4	28243.6
AGRICULT	80.001	162.792	248.978	394.4	940.0	2350.8	25.300	110.337	104.833	299.7	613.6	864.4
SAWNWOOD	1.312	4.424	16.692	37.9	68.5	86.6	329.104	792.847	664.031	969.7	1671.1	3757.6
NONFERRO	28.158	68.756	77.861	221.8	335.0	761.4	2.254	9.577	64.647	277.9	705.9	1585.7
OTHERRAW	60.804	151.990	224.507	352.6	769.0	2017.5	23.172	74.150	148.655	181.2	554.3	1529.0
FUELS	24.890	45.685	51.629	120.6	475.5	2331.5	0.011	1.069	1.852	79.3	370.8	2427.5
SUBTOT	195.165	433.847	619.667	1127.2	2588.1	7547.8	379.841	987.982	984.018	1807.8	3915.8	10164.2
SITC 9	0.016	5.049	5.475	3.6	20.4	69.8	0.000	1.315	1.520	1.7	16.8	59.1
TOTTRADE	682.076	2508.696	3960.071	8396.3	19455.7	38691.7	808.925	2280.218	3346.465	7533.8	17020.0	38466.9

Table 3 b. Trade with socialist countries

	imports						exports					
	1953	1960	1965	1970	1976	1981	1953	1960	1965	1970	1976	1981
LEATHER	1.619	1.862	2.487	2.6	3.8	7.9	0.001	0.003	0.001	0.013	0.1	1.2
RUBBER	0.319	1.177	1.397	2.4	7.2	28.5	0.062	0.028	0.348	0.286	4.5	8.2
WOOD	0.036	0.262	0.281	2.5	6.9	18.3	66.240	7.132	3.808	16.397	59.5	196.6
TEXTILES	18.062	8.633	9.755	20.8	67.5	157.2	0.471	0.229	3.142	9.082	59.2	210.9
NONMETAL	1.433	1.947	3.134	7.4	17.4	42.9	0.180	0.783	0.027	2.636	28.5	169.6
SUBTOT	21.469	13.881	17.054	35.7	102.8	254.8	66.954	8.175	7.326	28.414	151.8	586.5
CHEMICAL	27.100	40.137	46.720	74.5	156.1	499.8	1.261	4.183	11.377	35.928	112.4	900.9
PULP	0.009	0.001	0.015	4.3	0.3	2.3	26.742	72.278	140.709	176.431	359.8	654.6
PAPER	0.170	0.204	0.434	2.1	0.3	0.9	35.770	123.589	224.269	415.763	1220.4	2918.0
IRON	16.755	56.656	65.571	135.0	154.0	199.6	3.083	0.470	30.441	0.035	46.5	208.5
SUBTOT	44.025	97.078	112.740	215.9	310.7	702.6	66.856	200.520	406.798	628.157	1739.0	4682.0
PHARMACE	0.667	0.595	1.954	4.8	8.2	10.2	0.006	0.129	0.187	0.921	8.9	509.5
FURNITUR	0.004	0.015	0.659	1.8	9.5	20.0	0.393	5.365	8.443	20.743	62.7	245.0
CLOTHING	4.928	3.225	3.217	4.4	12.2	84.2	0.003	1.483	18.091	60.130	267.2	1391.8
FOOTWEAR	0.354	0.519	0.846	1.5	11.2	31.0	0.002	0.591	0.267	9.611	114.5	595.7
INSTRUME	2.557	1.464	2.829	3.8	15.3	29.1	0.049	0.117	2.912	0.553	18.3	71.6
PASVEHIC	19.633	41.545	25.249	17.0	90.6	136.4	0.000	0.121	0.036	2.461	2.0	2.1
MISCMNF	2.337	5.282	7.568	12.3	36.0	76.1	0.118	1.221	6.466	16.634	111.1	527.1
SUBTOT	30.480	52.645	42.322	28.6	183.1	387.0	0.571	9.027	36.402	111.053	584.7	3342.8
BASICMET	3.008	2.622	8.531	7.7	32.1	33.9	11.186	15.988	19.503	44.438	215.9	737.5
POWERGEN	0.000	0.000	0.000	11.0	197.0	197.8	0.000	0.000	0.000	3.788	30.9	92.2
IND.MACH	4.844	10.935	28.309	36.0	148.9	244.5	53.709	48.425	118.867	186.638	1137.8	1750.5
COMPUTIN	0.000	0.000	0.000	0.4	2.2	5.8	0.000	0.000	0.000	0.067	3.1	18.1
TV.RADIO	0.000	0.000	0.000	5.0	22.2	38.0	0.000	0.000	0.000	9.572	30.0	171.3
ELECTRIC	2.583	7.066	8.105	10.5	27.2	61.0	8.528	20.719	34.884	57.681	163.9	668.6
TRANSPOR	6.973	6.807	19.011	18.6	44.8	93.9	107.437	208.279	192.428	312.973	1362.2	1866.8
SUBTOT	17.408	27.430	63.956	89.2	474.4	674.9	180.860	293.411	365.682	615.157	2943.8	5305.0
TOTAL	113.382	191.034	236.072	386.5	1071.1	2019.3	315.241	511.133	816.206	1382.781	5419.3	13916.3
AGRICULT	146.987	135.765	63.380	125.5	79.4	114.9	11.509	17.595	72.553	90.125	255.6	1594.2
SAWNWOOD	0.103	13.300	108.508	107.2	476.9	510.0	56.675	34.872	13.245	2.420	1.8	39.9
NONFERRO	0.579	19.118	26.112	54.0	93.3	255.2	4.591	8.460	6.348	8.119	96.2	191.1
OTHERRAW	20.333	55.058	72.408	127.9	162.2	245.5	11.970	26.097	29.122	33.862	28.7	102.2
FUELS	134.441	264.730	415.730	927.3	4273.6	13034.2	0.038	0.002	0.099	0.356	15.5	108.7
SUBTOT	302.443	487.971	686.138	1341.9	5085.4	14159.8	84.783	87.026	121.367	134.882	397.7	2036.1
SITC 9	0.013	7.492	36.480	54.8	62.8	85.0	0.000	0.520	0.183	0.017	0.1	0.2
TOTTRADE	415.938	686.497	958.690	1783.2	6219.2	16264.0	400.024	598.679	937.753	1517.677	5817.1	15952.7

Table 3 c. Trade with LDCs

	imports						exports					
	1953	1960	1965	1970	1976	1981	1953	1960	1965	1970	1976	1981
LEATHER	0.613	0.049	0.125	4.267	18.435	121.0	0.000	0.000	0.001	0.001	0.088	6.6
RUBBER	6.178	8.448	0.102	0.294	0.692	1.9	0.015	0.001	0.031	0.053	0.158	6.2
WOOD	0.000	0.153	0.069	1.736	5.760	14.1	5.779	7.154	6.140	19.246	99.144	418.5
TEXTILES	0.569	2.164	5.387	9.870	60.599	132.9	0.004	0.188	0.541	2.002	5.418	19.1
NONMETAL	0.001	0.032	0.091	0.192	1.100	5.0	0.179	0.328	0.770	2.074	10.657	36.3
SUBTOT	7.361	10.846	5.774	16.359	86.586	274.9	5.977	7.671	7.483	23.376	115.465	486.7
CHEMICAL	6.069	3.096	4.537	5.234	5.888	63.2	0.038	1.475	3.438	25.487	89.765	455.9
PULP	0.000	0.000	0.000	0.000	0.185	2.6	12.874	45.226	49.307	49.999	34.980	250.2
PAPER	0.000	0.002	0.014	0.010	0.907	5.2	64.130	138.080	153.082	293.874	542.499	1719.6
IRON	0.020	0.000	0.001	1.365	0.133	41.6	0.006	14.467	10.015	9.008	4.466	171.5
SUBTOT	6.089	3.098	4.552	6.609	7.113	112.6	77.048	199.248	115.842	378.368	671.710	2597.2
PHARMACE	0.167	0.018	0.102	0.227	1.029	3.2	0.000	0.006	0.174	3.858	8.868	21.3
FURNITUR	0.000	0.006	0.102	0.156	0.270	3.2	0.016	0.017	0.293	0.562	12.890	40.6
CLOTHING	0.272	0.391	5.546	11.968	62.202	223.8	0.000	0.022	0.017	0.174	0.810	4.0
FOOTWEAR	0.000	0.175	0.332	4.649	12.060	49.7	0.000	0.000	0.000	0.105	0.198	0.9
INSTRUME	0.002	0.009	0.637	1.048	4.664	31.2	0.128	0.174	1.457	3.072	20.627	53.3
PASVEHIC	0.000	0.000	0.000	0.000	0.000	2.8	0.000	0.000	0.001	0.013	0.406	2.2
MISCMNF	0.030	0.635	2.633	12.916	26.350	105.7	0.625	1.182	0.567	1.617	17.863	46.2
SUBTOT	0.471	1.234	9.352	30.964	106.575	419.6	0.769	1.401	2.509	9.401	61.662	168.5
BASICMET	0.003	0.062	0.825	1.097	4.025	25.9	0.586	7.633	1.695	5.847	53.387	154.9
POWERGEN	0.000	0.000	0.000	0.000	0.176	1.3	0.000	0.000	0.000	0.470	6.247	117.5
IND.MACH	0.013	0.006	0.153	0.108	0.837	19.5	0.010	15.459	13.351	23.191	163.272	487.4
COMPUTIN	0.000	0.000	0.000	0.109	3.525	11.9	0.000	0.000	0.000	0.000	0.306	4.5
TV.RADIO	0.000	0.000	0.000	0.214	8.281	64.4	0.000	0.000	0.000	0.470	29.641	36.0
ELECTRIC	0.000	0.010	0.190	1.074	5.819	53.8	0.366	1.630	7.961	11.497	19.805	172.7
TRANSPOR	0.000	0.009	0.078	0.013	0.549	2.8	0.269	24.416	11.228	114.427	241.831	363.7
SUBTOT	0.016	0.087	1.246	2.615	23.212	179.6	1.231	49.138	34.235	155.902	514.489	1336.7
TOTAL	13.937	15.265	20.924	56.547	223.486	986.7	85.025	257.458	260.069	567.047	1363.326	4589.1
AGRICULT	81.782	108.522	202.513	497.314	1025.882	1512.5	2.440	9.011	5.734	20.977	65.124	147.6
SAWNWOOD	0.366	1.794	3.624	4.829	7.110	13.4	16.174	13.901	8.592	34.494	208.108	916.1
NONFERRO	0.799	2.268	28.295	36.112	46.171	89.1	0.480	2.430	4.303	8.037	14.183	42.2
OTHERRAW	21.553	46.726	48.610	82.123	194.069	232.7	0.002	2.508	3.024	3.370	12.714	180.5
FUELS	2.167	32.991	42.344	216.014	1383.329	3479.2	0.000	0.000	0.016	0.002	1.296	8.4
SUBTOT	106.667	192.301	325.386	836.392	2656.561	5326.9	19.096	27.850	21.669	66.880	301.425	1294.8
SITC 9	0.000	0.014	0.011	0.012	0.060	0.1	0.000	0.022	0.002	1.263	2.660	4.5
TOTTRADE	120.604	207.580	346.319	891.951	2880.107	6313.7	104.121	285.330	281.740	635.193	1667.412	5888.4

Table 3 d. Total trade

	imports						exports					
	1953	1960	1965	1970	1976	1981	1953	1960	1965	1970	1976	1981
LEATHER	3.624	10.596	17.303	56.767	207.235	372.5	0.470	0.146	7.710	17.814	47.388	104.9
RUBBER	12.148	43.586	59.216	132.294	263.592	530.6	0.169	1.832	5.098	19.639	41.658	131.2
WOOD	2.187	8.273	14.781	36.636	85.760	171.2	128.328	165.301	230.882	518.743	876.044	2010.8
TEXTILES	79.217	190.502	249.139	637.770	1335.399	2339.0	1.781	18.660	61.223	169.584	382.118	743.3
NONMETAL	7.930	30.752	51.303	126.292	291.100	670.1	4.663	10.527	26.720	55.310	199.957	630.7
SUBTOT	105.106	283.909	391.742	989.759	2183.086	4083.4	135.411	196.466	339.633	781.090	1547.165	3620.9
CHEMICAL	74.213	273.445	435.618	868.034	2043.688	4590.7	3.229	19.333	71.473	234.715	785.465	2819.9
PULP	0.109	1.714	5.967	10.000	21.885	90.7	222.556	542.677	831.914	1218.130	1572.280	3557.9
PAPER	1.157	8.559	25.196	61.110	200.807	438.3	265.299	828.770	1377.210	2632.237	6172.599	13218.9
IRON	90.837	348.987	378.283	926.065	1278.633	1880.3	4.448	21.967	129.384	314.643	657.866	2136.8
SUBTOT	166.313	632.705	845.064	1865.209	3544.913	7000.0	495.532	1412.747	2309.983	4399.725	9188.210	21733.5
PHARMACE	10.562	35.326	101.519	211.427	477.329	874.3	0.095	0.392	3.670	22.979	106.668	683.7
FURNITUR	0.176	0.743	11.552	30.556	81.770	159.4	0.627	7.442	18.709	77.105	232.590	699.7
CLOTHING	14.163	13.926	39.876	154.768	331.402	848.6	0.033	3.830	34.181	390.004	1303.810	3340.0
FOOTWEAR	0.458	1.654	8.497	40.049	88.960	295.8	0.226	1.247	10.040	63.316	202.498	788.8
INSTRUME	12.111	47.907	95.594	200.948	709.064	1392.6	0.666	2.038	8.952	15.825	127.327	436.2
PASVEHIC	25.204	93.718	332.494	390.200	719.200	1577.6	0.000	0.136	0.180	31.074	225.606	318.5
MISCMNF	7.590	50.972	122.117	311.616	737.850	1538.5	5.006	11.125	38.591	167.251	601.063	1716.3
SUBTOT	70.264	244.246	711.649	1322.664	3145.675	6686.8	6.653	26.210	114.323	767.554	2799.562	7982.2
BASICMET	16.171	76.046	153.567	297.197	759.325	1318.0	13.615	28.864	38.626	158.985	516.387	1524.4
POWERGEN	0.000	0.000	0.000	147.700	847.276	1131.8	0.000	0.000	0.000	20.258	128.547	430.0
IND.MACH	115.248	566.396	843.441	1352.008	3200.737	6125.8	57.024	99.771	213.407	586.129	2452.572	5074.4
COMPUTIN	0.000	0.000	0.000	133.809	427.925	1189.2	0.000	0.000	0.000	4.767	24.606	134.1
TV.RADIO	0.000	0.000	0.000	166.714	631.381	967.2	0.000	0.000	0.000	100.842	428.341	841.7
ELECTRIC	47.800	201.316	357.231	563.074	1322.819	2155.9	10.341	30.019	79.376	178.478	465.305	1478.1
TRANSPOR	93.309	271.481	289.231	853.213	2078.649	3421.9	110.774	265.436	241.852	676.300	2319.431	3929.7
SUBTOT	272.528	1115.239	1643.470	3513.615	9268.012	16309.8	191.754	424.089	573.261	1725.759	6335.189	13412.4
TOTAL	614.214	2276.099	3591.925	7708.447	18141.786	34080.0	829.350	2059.512	3437.198	7674.128	19870.026	46749.0
AGRICULT	308.770	407.079	514.871	1017.214	2045.282	3978.2	39.249	136.943	183.120	410.802	934.324	2606.2
SAWNWOOD	1.781	19.518	128.824	149.929	552.510	610.0	401.953	841.620	685.868	1006.614	1881.008	4713.6
NONFERRO	29.536	90.142	132.268	310.912	474.471	1105.7	7.325	20.467	75.298	294.056	816.283	1819.0
OTHERRAW	102.690	253.774	345.525	562.623	1125.269	2495.7	35.144	102.755	180.801	218.432	595.714	1811.7
FUELS	161.498	343.606	509.703	1263.914	6132.429	18844.9	0.049	1.071	1.967	79.658	387.596	2544.6
SUBTOT	604.275	1114.119	1631.191	3304.492	10330.061	27034.5	483.720	1102.858	1127.054	2009.562	4614.925	13495.1
SITC 9	0.029	12.555	41.966	58.412	83.260	154.9	0.000	1.857	1.705	2.980	19.560	63.8
TOTTRADE	1218.518	3402.773	5265.080	11071.451	28555.007	61269.4	1313.070	3164.227	4565.958	9686.670	24504.512	60308.0

Appendix Table 4. OECD foreign trade by major regions 1970 and 1981 (mil. dollars)

Table 4 a. Year 1970

	imports				exports			
	DMEs	SOCs	LDCs	Total	DMEs	SOCs	LDCs	Total
LEATHER	648.9	18.1	192.9	859.9	707.8	27.4	59.5	794.7
RUBBER	1312.9	9.8	14.8	1337.5	1301.2	26.3	371.1	1698.6
WOOD	1047.2	46.7	338.6	1432.5	1025.6	18.0	77.3	1120.9
TEXTILES	6610.4	127.9	969.6	7707.9	7362.8	340.1	1982.5	9485.4
NONMETAL	3614.4	100.1	315.9	4030.4	3803.2	76.9	695.9	4576.0
SUBTOT	13233.8	302.6	1831.8	15368.2	14000.6	488.7	3186.3	17675.6
CHEMICAL	11350.2	299.3	525.8	12175.3	11275.4	695.9	3448.7	15420.0
PULP	2254.8	28.4	19.9	2303.1	2156.1	99.4	189.9	2445.4
PAPER	3905.8	30.7	14.6	3951.1	3989.8	233.8	836.6	5060.2
IRON	10083.7	429.7	271.4	10784.8	10253.5	656.0	2845.7	13755.2
SUBTOT	27594.5	788.1	831.7	29214.3	27674.8	1685.1	7320.9	36680.8
PHARMACE	2343.6	25.5	136.9	2506.0	2359.6	72.6	1103.5	3535.7
FURNITUR	998.1	48.4	32.0	1078.5	896.5	9.7	102.1	1008.3
CLOTHING	3494.4	120.6	1208.6	4823.6	3397.9	134.2	371.2	3903.3
FOOTWEAR	1271.0	39.9	153.4	1464.3	1291.7	57.0	74.0	1422.7
INSTRUME	3859.1	33.1	47.5	3939.7	4098.7	98.9	1037.0	5234.6
PASVEHIC	9208.8	24.8	5.8	9239.4	9878.0	45.2	980.5	10903.7
MISCMNF	6446.9	108.4	888.1	7443.4	6555.3	76.8	1067.8	7699.9
SUBTOT	27621.9	400.7	2472.3	30494.9	28477.7	494.4	4736.1	33708.2
BASICMET	4086.0	56.0	94.2	4236.2	4220.4	140.4	1310.0	5670.8
POWERGEN	3273.9	13.9	44.6	3332.4	3495.7	42.8	1071.3	4609.8
IND.MACH	15723.2	229.3	36.7	15989.2	17160.2	1358.5	5912.7	24431.4
COMPUTIN	3642.8	9.5	81.1	3733.4	3631.1	83.3	411.2	4125.6
TV.RADIO	2783.4	13.0	260.2	3056.6	3173.9	40.1	1076.6	4290.6
ELECTRIC	8219.9	75.7	320.7	8616.3	8467.2	339.8	2378.5	11185.5
TRANSPOR	10863.8	90.4	76.3	11030.5	12555.0	312.4	4818.2	17685.6
SUBTOT	48593.0	487.8	913.8	49994.6	52703.5	2317.3	16978.5	71999.3
TOTAL	117043.2	1979.2	6049.6	125072.0	122856.6	4985.5	32221.8	160063.9
AGRICULT	20702.9	1122.8	11350.7	33176.4	17507.7	689.4	4464.9	22662.0
SAWNWOOD	2742.4	683.5	1287.6	4713.5	2308.6	11.6	107.8	2428.0
NONFERRO	6564.8	407.3	3426.6	10398.7	6141.9	162.1	753.0	7057.0
OTHERRAW	12702.4	582.6	6966.9	20251.9	9557.3	352.4	1119.6	11029.3
FUELS	6775.7	1230.5	15032.6	23038.8	6278.4	85.0	521.6	6885.0
SUBTOT	49488.2	3212.1	38064.4	90764.7	41793.9	1300.5	6966.9	50061.3
SITC 9	2439.1	52.0	356.7	2847.8	1481.3	33.0	526.5	2040.8
TOTTRADE	168970.5	6057.9	44470.7	219499.1	166131.8	6319.0	39715.2	212166.0

Table 4 b. Year 1981

	imports				exports			
	DMEs	SOCs	LDCs	Total	DMEs	LDCs	SOCs	Total
LEATHER	2864.5	57.2	1196.5	4118.2	2997.0	169.7	789.9	3956.6
RUBBER	7612.7	82.2	481.5	8176.4	7322.3	256.3	2906.4	10485.0
WOOD	4271.4	154.2	1777.3	6202.9	4257.0	91.2	933.8	5282.0
TEXTILES	24426.8	541.2	6720.4	31688.4	25377.2	1525.8	9598.1	36501.1
NONMETAL	21030.9	607.4	2963.5	24601.8	18247.7	403.8	6024.9	25476.4
SUBTOT	60206.3	1442.2	13139.2	74787.7	58201.2	2446.8	21053.1	81701.1
CHEMICAL	68610.5	2356.6	3312.4	74279.5	66954.1	4410.4	24898.1	96262.6
PULP	7690.3	142.9	448.7	8281.9	7287.9	318.9	1102.9	8709.7
PAPER	19521.9	176.2	379.4	20077.5	18708.7	1048.2	4772.0	24528.9
IRON	35796.8	1158.1	2788.4	39743.3	35295.4	4350.9	20096.2	59742.5
SUBTOT	131619.5	3833.8	6928.9	142382.2	128246.1	10128.4	50869.2	189243.7
PHARMACE	12824.4	75.8	643.3	13543.5	12890.1	623.4	5993.9	19507.4
FURNITUR	6836.4	488.1	989.0	8313.5	6575.5	83.7	1942.4	8601.6
CLOTHING	16254.4	1017.2	16173.4	33445.0	14989.3	530.7	2511.5	18031.5
FOOTWEAR	5683.1	262.2	3484.1	9429.4	5393.1	216.4	633.9	6243.4
INSTRUME	26306.4	126.9	2405.7	28839.0	26499.2	671.8	9690.4	36861.4
PASVEHIC	52412.2	380.9	413.0	53206.1	53201.0	84.4	9624.0	62909.4
MISCMNF	31272.8	466.2	8487.0	40226.0	28927.3	509.0	8785.5	38221.8
SUBTOT	151589.7	2817.3	32595.5	187002.5	148475.5	2719.4	39181.6	190376.5
BASICMET	20131.0	321.4	2184.5	22636.9	19837.3	776.9	12197.1	32811.3
POWERGEN	20539.1	282.0	1225.9	22047.0	20828.6	307.0	12439.7	33575.3
IND.MACH	70050.4	938.8	1786.8	72776.0	73511.7	5582.5	47860.2	126954.4
COMPUTIN	23951.5	40.7	1260.3	25252.5	23672.7	253.9	3466.8	27393.4
TV.RADIO	20098.0	73.0	5754.8	25925.8	21731.1	202.8	11079.6	33013.5
ELECTRIC	33220.8	338.3	7075.9	40635.0	31808.8	1069.5	17911.6	50789.9
TRANSPOR	59693.2	408.4	1895.8	61997.4	62672.3	1593.9	39732.4	103998.6
SUBTOT	247684.0	2402.6	21184.0	271270.6	254062.5	9786.5	144687.4	408536.4
TOTAL	591099.5	10495.9	73847.6	675443.0	586985.3	25081.1	255791.3	867857.7
AGRICULT	89312.7	2122.8	38882.6	130318.1	83642.9	10514.9	39328.0	133485.8
SAWNWOOD	10281.2	1604.0	4174.3	16059.5	8640.1	45.1	1081.9	9767.1
NONFERRO	21984.8	1042.4	7422.0	30449.2	20792.6	514.1	3384.1	24690.8
OTHERRAW	45177.7	1792.1	20895.6	67865.4	37325.6	1754.7	9437.3	48517.6
FUELS	88401.9	22031.1	257486.9	367919.9	82249.4	743.0	7863.6	90856.0
SUBTOT	255158.3	28592.4	328861.4	612612.1	232650.6	13571.8	61094.9	307317.3
SITC 9	12200.9	153.9	3026.7	15381.5	9210.7	349.1	4534.7	14094.5
TOTTRADE	858458.1	39242.2	405736.3	1303436.6	830846.6	39002.0	321420.9	1191269.5

Appendix Table 5. Shares of major regions in Finnish and OECD imports and exports, 1981
(percentages shares)

	Finnish imports			OECD imports			Finnish exports			OECD exports		
	DMEs	SOCs	LDCs	DMEs	SOCs	LDCs	DMEs	SOCs	LDCs	DMEs	SOCs	LDCs
LEATHER	65.4	2.1	32.5	69.6	1.4	29.1	92.6	1.1	6.3	75.7	4.3	20.0
RUBBER	94.3	5.4	0.4	93.1	1.0	5.9	89.0	6.3	4.7	69.8	2.4	27.7
WOOD	81.1	10.7	8.2	68.9	2.5	28.7	69.4	9.8	20.8	80.6	1.7	17.7
TEXTILES	87.6	6.7	5.7	77.1	1.7	21.2	69.1	28.4	2.6	69.5	4.2	26.3
NONMETAL	92.9	6.4	0.7	85.5	2.5	12.0	67.4	26.9	5.8	71.6	1.6	26.8
SUBTOT	87.0	6.2	6.7	80.5	1.9	17.6	70.4	16.2	13.4	71.2	3.0	25.8
CHEMICAL	87.7	10.9	1.4	92.4	3.2	4.5	51.9	31.9	16.2	69.6	4.6	25.9
PULP	94.6	2.5	2.9	92.9	1.7	5.4	74.6	18.4	7.0	83.7	3.7	12.7
PAPER	98.6	0.2	1.2	97.2	0.9	1.9	64.9	22.1	13.0	76.3	4.3	19.5
IRON	87.2	10.6	2.2	90.1	2.9	7.0	82.2	9.8	8.0	59.1	7.3	33.6
SUBTOT	88.4	10.0	1.6	92.4	2.7	4.9	66.5	21.5	12.0	67.8	5.4	26.9
PHARMACE	98.5	1.2	0.4	94.7	0.6	4.7	22.4	74.5	3.1	66.1	3.2	30.7
FURNITUR	85.4	12.5	2.0	82.2	5.9	11.9	59.2	35.0	5.8	76.4	1.0	22.6
CLOTHING	63.7	9.9	26.4	48.6	3.0	48.4	58.2	41.7	0.1	83.1	2.9	13.9
FOOTWEAR	72.7	10.5	16.8	60.3	2.8	36.9	24.4	75.5	0.1	86.4	3.5	10.2
INSTRUME	95.7	2.1	2.2	91.2	0.4	8.3	71.3	16.5	12.2	71.9	1.8	26.3
PASVEHIC	91.2	8.6	0.2	98.5	0.7	0.8	98.6	0.7	0.7	84.6	0.1	15.3
MISCMNF	88.2	4.9	6.9	77.7	1.2	21.1	66.6	30.7	2.7	75.7	1.3	23.0
SUBTOT	87.9	5.8	6.3	81.1	1.5	17.4	56.0	41.9	2.1	78.0	1.4	20.6
BASICMET	95.5	2.6	2.0	88.9	1.4	9.7	41.5	48.4	10.2	60.5	2.4	37.2
POWERGEN	82.4	17.5	0.1	93.2	1.3	5.6	51.2	21.4	27.3	62.0	0.9	37.1
IND.MACH	95.7	4.0	0.3	96.3	1.3	2.5	55.9	34.5	9.6	57.9	4.4	37.7
COMPUTIN	98.5	0.5	1.0	94.8	0.2	5.0	83.1	13.5	3.4	86.4	0.9	12.7
TV.RADIO	89.4	3.9	6.7	77.5	0.3	22.2	75.4	20.4	4.3	65.8	0.6	33.6
ELECTRIC	94.7	2.8	2.5	81.8	0.8	17.4	43.1	45.2	11.7	62.6	2.1	35.3
TRANSPOR	97.2	2.7	0.1	96.3	0.7	3.1	43.2	47.5	9.3	60.3	1.5	38.2
SUBTOT	94.8	4.1	1.1	91.3	0.9	7.8	50.5	39.6	10.0	62.2	2.4	35.4
TOTAL	91.2	5.9	2.9	87.5	1.6	10.9	60.4	29.8	9.8	67.6	2.9	29.5
AGRICULT	59.1	2.9	38.0	68.5	1.6	29.8	33.2	61.2	5.7	62.7	7.9	29.5
SAWNWOOD	14.2	83.6	2.2	64.0	11.0	26.0	79.7	0.8	19.4	88.5	0.5	11.1
NONFERRO	68.9	23.1	8.1	72.2	3.4	24.4	87.2	10.5	2.3	84.2	2.1	13.7
OTHERRAW	80.8	9.8	9.3	66.6	2.6	30.8	84.4	5.6	10.0	76.9	3.6	19.5
FUELS	12.4	69.2	18.5	24.0	6.0	70.0	95.4	4.3	0.3	90.5	0.8	8.7
SUBTOT	27.9	52.4	19.7	41.7	4.7	53.7	75.3	15.1	9.6	75.7	4.4	19.9
SITC 9	45.1	54.9	0.1	79.3	1.0	19.7	92.6	0.3	7.1	65.3	2.5	32.2
TOTTRADE	63.2	26.5	10.3	65.9	3.0	31.1	63.8	26.5	9.8	69.7	3.3	27.0

Appendix Table 6. Finnish international competitiveness (RCA index) in manufactured trade, 1953-1981

Table 6 a. Trade with DMEs and socialist countries

	DMEs						SOCs					
	1953	1960	1965	1970	1976	1981	1953	1960	1965	1970	1976	1981
LEATHER	- 56.1	-96.6	-29.6	-47.3	-61.1	-50.7	- 99.9	-99.7	-99.9	-99.0	-95.1	-77.2
RUBBER	- 97.2	-89.4	-84.5	-74.0	-75.8	-67.3	- 71.7	-95.1	-59.2	-78.7	-26.4	-61.4
WOOD	91.4	90.6	88.4	87.5	80.6	78.5	99.9	93.3	86.6	73.6	78.2	79.8
TEXTILES	- 96.3	-80.6	-59.6	-58.5	-60.1	-65.4	- 95.6	-94.6	-50.2	-39.1	-10.6	- 1.0
NONMETAL	- 30.6	-48.1	-28.4	-40.1	-29.0	-29.9	- 80.6	-39.6	-98.3	-47.4	20.6	52.1
SUBTOT	- 21.6	-13.5	- 4.2	-12.3	-25.2	-27.8	42.9	-22.0	-30.5	-11.2	15.4	28.1
CHEMICAL	- 92.2	-88.2	-73.7	-63.9	-54.7	-53.9	- 92.3	-80.1	-60.0	-34.8	-19.9	15.3
PULP	99.9	99.2	98.2	98.9	96.3	92.6	100.0	100.0	100.0	95.3	99.8	99.2
PAPER	98.6	97.3	95.3	94.1	90.9	88.6	98.9	99.6	99.6	99.0	99.9	99.9
IRON	- 96.9	-95.1	-54.7	-44.1	-32.9	-10.6	- 72.9	-98.3	-35.2	-99.9	-55.6	-11.7
SUBTOT	41.6	34.4	43.4	34.9	32.4	28.9	6.7	37.9	57.5	48.9	68.3	69.0
PHARMACE	- 98.4	-98.5	-93.4	-83.8	-69.5	-73.9	- 98.4	-62.5	-82.1	-67.7	- 0.4	95.3
FURNITUR	- 2.7	50.6	- 1.8	32.4	34.2	41.3	97.6	99.5	85.8	84.1	72.4	82.1
CLOTHING	- 99.4	-61.3	-30.3	41.0	58.4	48.4	- 99.9	-33.7	70.5	86.4	90.9	86.5
FOOTWEAR	25.5	-14.5	16.2	22.7	10.4	-18.4	- 99.0	10.9	-50.9	73.1	81.3	88.3
INSTRUME	- 91.5	-92.4	-90.3	-88.3	-78.2	-67.3	- 96.7	-84.4	3.6	-74.5	4.6	31.4
PASVEHIC	-100.0	-99.9	-99.9	-85.7	-49.9	-69.0	-100.0	-99.4	-99.7	-74.7	-95.9	-97.4
MISCMNF	- 21.8	-65.9	-55.0	-31.4	-21.3	-21.0	- 91.6	-60.5	- 5.8	15.1	48.7	70.1
SUBTOT	- 79.3	-83.9	-79.0	-32.1	-17.7	-25.3	- 96.8	-69.2	- 5.4	59.1	50.1	75.4
BASICMET	- 78.6	-86.0	-78.0	-45.1	-51.3	-42.2	50.2	73.2	40.4	70.5	72.9	89.6
POWERGEN	- 13.0	4.8	2.2	-79.0	-76.4	-67.0	- 13.0	4.8	2.2	-48.7	-74.1	-45.0
IND.MACH	- 94.9	-87.2	-81.5	-55.4	-47.6	-43.6	80.6	64.9	62.4	67.7	75.8	70.9
COMPUTIN	- 13.0	4.8	2.2	-93.2	-90.8	-85.0	- 13.0	4.8	2.2	-71.2	13.1	42.4
TV.RADIO	- 13.0	4.8	2.2	-27.9	-27.2	-26.9	- 13.0	4.8	2.2	31.5	10.9	56.9
ELECTRIC	- 94.6	-92.0	-80.6	-66.9	-65.7	-58.9	45.4	51.6	63.1	69.3	70.2	80.2
TRANSPOR	- 94.0	-76.8	-74.7	-54.0	-50.2	-41.5	85.7	94.0	82.4	88.8	93.3	88.6
SUBTOT	- 93.6	-85.3	-79.8	-56.3	-52.7	-47.3	79.4	83.7	70.9	74.7	70.9	73.2
TOTAL	- 18.5	-19.1	-15.2	-11.7	-16.3	-17.7	37.8	48.2	56.1	56.4	65.4	69.9

Note: The RCA index is derived according to the formulae presented in pages 126-127.

Table 6 b. Trade with LDCs and total trade

	LDCs						Total					
	1953	1960	1965	1970	1976	1981	1953	1960	1965	1970	1976	1981
LEATHER	-100.0	-100.0	- 98.4	-100.0	- 99.1	-91.1	- 80.0	-97.1	-37.0	-52.1	-64.4	-62.0
RUBBER	- 99.6	-100.0	- 52.3	- 69.4	- 64.4	44.3	- 97.6	-91.5	-83.8	-74.1	-73.9	-65.7
WOOD	100.0	96.0	97.8	83.5	88.5	92.3	96.1	90.9	88.6	86.8	81.3	81.4
TEXTILES	- 98.8	- 83.2	- 81.3	- 66.2	- 84.3	-78.3	- 96.2	-81.2	-59.7	-57.9	-57.4	-58.3
NONMETAL	98.7	83.1	79.3	83.1	80.4	71.3	- 35.5	-46.3	-30.0	-39.0	-22.1	-16.2
SUBTOT	- 22.0	- 12.8	14.8	17.8	10.3	14.4	- 2.0	-13.9	- 5.0	-11.6	-20.6	-18.8
CHEMICAL	- 98.9	- 32.1	- 11.8	66.0	87.1	71.1	- 92.7	-86.1	-71.2	-57.3	-46.9	-34.2
PULP	100.0	100.0	100.0	100.0	98.9	97.6	99.9	99.4	98.6	98.4	97.1	94.1
PAPER	100.0	100.0	100.0	100.0	99.7	99.3	99.0	98.1	96.5	95.5	93.4	92.4
IRON	- 59.8	100.0	100.0	73.7	93.9	53.7	- 91.9	-87.5	-47.9	-49.2	-35.0	- 8.1
SUBTOT	82.8	97.1	92.6	96.6	97.8	90.1	40.9	41.1	47.6	40.6	41.7	42.2
PHARMACE	-100.0	- 47.4	27.7	88.9	78.2	69.0	- 98.4	-97.7	-92.9	-80.4	-65.0	-24.1
FURNITUR	100.0	50.3	49.5	56.6	95.7	82.7	48.5	82.7	25.3	43.3	45.5	56.0
CLOTHING	-100.0	- 88.8	- 99.4	- 97.1	- 97.5	-97.0	- 99.6	-54.6	- 5.6	43.3	57.6	51.9
FOOTWEAR	- 13.0	-100.0	-100.0	- 95.6	- 96.9	-96.9	- 42.5	- 9.5	10.3	22.7	36.1	35.3
INSTRUME	96.4	90.6	40.5	49.2	61.4	12.4	- 90.9	-91.4	-82.5	-85.4	-70.9	-58.8
PASVEHIC	- 13.0	4.8	100.0	100.0	100.0	-23.9	-100.0	-99.7	-99.9	-85.2	-54.3	-71.0
MISCMNF	89.2	33.4	- 63.8	- 77.7	- 22.7	-47.4	- 30.8	-62.3	-50.9	-30.0	-14.1	- 8.8
SUBTOT	10.7	10.8	- 56.7	- 53.3	- 29.9	-50.5	- 84.9	-79.6	-71.7	-26.4	- 9.9	- 5.9
BASICMET	98.8	98.5	35.9	68.5	85.3	66.0	- 20.4	-42.1	-58.9	-30.2	-22.5	- 7.3
POWERGEN	- 13.0	4.8	2.2	100.0	94.3	97.4	- 13.0	4.8	2.2	-75.8	-74.8	-52.4
IND.MACH	- 24.3	99.9	97.8	99.1	98.9	90.9	- 42.4	-68.5	-58.7	-39.4	-17.0	-21.7
COMPUTIN	- 13.0	4.8	2.2	-100.0	- 84.7	-52.6	- 13.0	4.8	2.2	-93.1	-89.6	-82.5
TV.RADIO	- 13.0	4.8	2.2	37.6	54.3	-38.0	- 13.0	4.8	2.2	-24.5	-22.6	-19.6
ELECTRIC	100.0	98.8	95.4	82.9	52.4	43.6	- 69.0	-72.7	-62.8	-51.8	-50.2	-29.7
TRANSPOR	100.0	99.9	98.6	100.0	99.5	98.2	- 5.5	3.7	- 6.9	-11.4	1.0	- 7.6
SUBTOT	97.0	99.7	93.1	96.7	91.0	71.9	- 28.1	-42.0	-47.1	-34.0	-22.3	-22.0
TOTAL	66.9	89.3	85.4	81.9	70.5	58.0	0.0	0.0	- 0.0	- 0.0	0.0	- 0.0

Appendix Table 7. Employment and production by manufactured sectors in Finland, 1970, 1976 and 1981 (mil. mk)

	EMP1970	EMP1976	EMP1981	GDP1970	GDP1976	GDP1981
LEATHER	3484	3140	2755	125.8	299.3	454.9
RUBBER	4714	5053	4823	191.4	402.3	762.7
WOOD	34214	21367	22757	899.3	2016.6	4245.9
TEXTILES	29871	26015	22199	1368.6	2754.8	3893.8
NONMETAL	20169	21546	21244	875.4	2567.6	4854.1
SUBTOT	82452	77121	73788	3451.5	8040.6	14221.4
CHEMICAL	20434	24896	25229	1659.9	4906.2	11070.3
PULP	16287	16282	14504	2701.9	5485.5	10699.3
PAPER	29751	35123	35682	3293.4	8725.1	18811.4
IRON	10342	15629	14824	1181.8	3351.3	7113.6
SUBTOT	76814	91930	91239	8847.0	22469.1	47694.6
PHARMACE	3730	4890	5611	280.6	754.8	1857.1
FURNITUR	10386	12109	13445	352.6	1010.2	2075.4
CLOTHING	31549	34627	33119	905.3	2350.2	4290.2
FOOTWEAR	7587	6488	8181	214.7	507.9	1296.8
INSTRUME	2163	3815	4507	80.2	290.2	837.9
MISCMNF	32609	35894	41746	1357.9	4194.6	9148.6
SUBTOT	88124	97823	106609	3191.3	9117.9	19507.3
BASICMET	24923	30255	31583	1207.4	3308.0	6322.6
IND.MACH	52897	61015	63519	2251.1	5691.8	13037.3
COMPUTIN	901	947	2724	21.1	75.0	536.5
TV.RADIO	5275	10956	9115	215.7	1330.3	1725.9
ELECTRIC	16298	20099	21990	818.1	1927.0	4282.1
TRANSPOR	32124	39165	40678	1503.7	5774.1	8216.5
SUBTOT	132418	162437	169719	6018.1	19106.2	34120.9
TOTAL	379808	429311	441355	21507.9	58733.8	115544.2
SAWNWOOD	20624	18360	22214	1381.6	2912.2	6281.5
NONFERRO	4151	5222	5167	1349.6	1719.2	3470.2
FUELS	2275	3420	3636	885.9	5099.3	14421.7
GRANDTOT	476859	456313	478372	25125.0	68464.5	139717.5

Source: Official Industrial Statistics of Finland, 1970, 1976 and 1981.

Appendix Table 8. Finnish manufactured exports to output by major regions, 1970, 1976 and 1981 (percentage share)

	DMEs			SOCs			LDCs			Total		
	1970	1976	1981	1970	1976	1981	1970	1976	1981	1970	1976	1981
LEATHER	14.0	15.8	20.9	0.0	0.0	0.3	0.0	0.0	1.4	14.0	15.8	22.6
RUBBER	10.1	9.2	15.3	0.1	1.1	1.1	0.0	0.0	0.8	10.3	10.4	17.2
WOOD	53.7	35.6	32.9	1.8	3.0	4.6	2.1	4.9	9.9	57.7	43.4	47.4
TEXTILES	11.7	11.5	13.2	0.7	2.1	5.4	0.1	0.2	0.5	12.5	13.9	19.1
NONMETAL	5.8	6.3	8.8	0.3	1.1	3.5	0.2	0.4	0.7	6.3	7.8	13.0
SUBTOT	21.1	15.9	17.9	0.8	1.9	4.1	0.7	1.4	3.4	22.6	19.2	25.5
CHEMICAL	10.4	11.9	13.2	2.2	2.3	8.1	1.5	1.8	4.1	14.1	16.0	25.5
PULP	36.7	21.5	24.8	6.5	6.6	6.1	1.9	0.6	2.3	45.1	28.7	33.3
PAPER	58.4	50.5	45.6	12.6	14.0	15.5	8.9	6.2	9.1	79.9	70.7	70.3
IRON	25.9	18.1	24.7	0.0	1.4	2.9	0.8	0.1	2.4	26.6	19.6	30.0
SUBTOT	38.4	30.2	30.3	7.1	7.7	9.8	4.3	3.0	5.4	49.7	40.9	45.6
PHARMACE	6.5	11.6	8.2	0.3	1.2	27.4	1.4	1.2	1.1	8.2	13.9	36.8
FURNITUR	15.8	15.5	19.9	5.9	6.2	11.8	0.2	1.3	2.0	21.9	23.0	33.7
CLOTHING	36.4	44.1	45.3	6.6	11.4	32.4	0.0	0.0	0.1	43.1	55.5	77.9
FOOTWEAR	25.0	17.3	14.8	4.5	22.5	45.9	0.0	0.0	0.1	29.5	39.9	60.8
INSTRUME	15.2	30.5	37.0	0.7	6.3	8.5	3.8	7.1	6.4	19.7	43.9	51.9
MISCMNF	11.0	11.3	12.5	1.2	2.6	5.8	0.1	0.4	0.5	12.3	14.3	18.8
SUBTOT	19.4	21.2	21.3	3.4	6.4	17.1	0.3	0.7	0.9	23.1	28.2	39.3
BASICMET	9.0	7.5	10.0	3.7	6.5	11.7	0.5	1.6	2.4	13.2	15.6	24.1
IND.MACH	17.4	18.6	23.4	8.5	17.5	14.1	1.1	2.5	4.6	26.9	38.6	42.2
COMPUTIN	22.3	28.3	20.8	0.3	4.1	3.4	0.0	0.4	0.8	22.6	32.8	25.0
TV.RADIO	41.9	27.7	36.8	4.4	2.3	9.9	0.2	2.2	2.1	46.5	32.2	48.8
ELECTRIC	13.4	14.6	14.9	7.1	8.5	15.6	1.4	1.0	4.0	21.8	24.1	34.5
TRANSPOR	18.5	16.3	24.5	21.0	23.6	22.7	7.6	4.2	4.5	47.0	44.1	51.7
SUBTOT	16.3	16.2	20.8	10.3	15.4	15.6	2.6	2.7	3.9	29.2	34.3	40.2
TOTAL	26.6	22.3	24.4	6.4	9.2	12.0	2.6	2.3	4.0	35.7	33.8	40.5
SAWNWOOD	70.2	57.4	59.8	0.2	0.1	0.6	2.5	7.1	14.6	72.9	64.6	75.0
NONFERRO	20.6	41.1	45.7	0.6	5.6	5.5	0.6	0.8	1.2	21.8	47.5	52.4
FUELS	9.0	7.3	16.8	0.0	0.3	0.8	0.0	0.0	0.1	9.0	7.6	17.6
TOTTRADE	16.8	14.8	18.1	3.4	5.1	7.5	1.4	1.4	2.8	21.6	21.3	28.4

Appendix Table 9a. Direct employment content of Finnish manufactured trade with major regions by branches, 1981

	DME trade			SOC trade			LDC trade			total trade		
	imports	exports	net effect	imports	exports	net effect	imports	exports	net effect	imports	exports	net effect
LEATHER	1449	578	- 871	47	7	- 40	720	39	- 680	2215	624	- 1592
RUBBER	3163	739	- 2424	180	52	- 128	12	39	27	3355	830	- 2526
WOOD	744	7481	6737	98	1054	956	76	2243	2167	918	10777	9860
TEXTILES	11681	2926	- 8755	896	1202	306	758	109	- 649	13335	4238	- 9097
NONMETAL	2723	1859	- 664	188	742	555	22	159	137	2933	2760	- 172
SUBTOT	19760	13583	- 6177	1409	3057	1648	1588	2589	1002	22756	19229	- 3527
CHEMICAL	9543	3467	- 6076	1184	2135	950	150	1080	930	10877	6681	- 4196
PULP	116	3597	3480	3	887	884	4	339	336	123	4823	4700
PAPER	820	16277	15457	2	5535	5533	10	3262	3252	831	25074	24243
IRON	3416	3661	245	416	434	19	87	357	271	3918	4453	535
SUBTOT	13895	27002	13107	1605	8991	7386	251	5038	4789	15749	41031	25282
PHARMACE	2601	462	- 2139	31	1539	1508	10	64	55	2641	2065	- 576
FURNITUR	882	2681	1799	130	1586	1457	21	263	242	1032	4531	3499
CLOTHING	4173	15009	10835	650	10744	10094	1728	31	-1697	6551	25784	19233
FOOTWEAR	1357	1213	- 144	196	3758	3562	314	6	- 308	1866	4976	3110
INSTRUME	7166	1669	- 5497	157	385	229	168	287	119	7491	2341	- 5150
MISCMNF	6191	5216	- 975	347	2405	2058	482	211	- 272	7020	7832	811
SUBTOT	22370	25250	3880	1511	20417	18906	2723	862	-1861	26601	47529	20927
BASICMET	6305	3167	- 3138	170	3696	3526	130	776	646	6605	7639	1034
IND.MACH	33103	14893	-18210	2155	8978	6823	101	2947	2846	35360	26818	- 8542
COMPUTIN	5970	568	- 5402	30	92	63	61	23	- 38	6060	683	- 5377
TV.RADIO	4567	3350	- 1217	201	905	704	340	190	- 150	5108	4445	- 663
ELECTRIC	10482	3270	- 7212	313	3433	3120	276	887	611	11071	7591	- 3481
TRANSPOR	23583	9968	-13616	1140	9252	8112	28	1811	1784	24751	21032	- 3720
SUBTOT	84010	35216	-48794	4009	26356	22347	936	6634	5699	88955	68208	-20749
TOTAL	140035	102051	-37984	8534	58821	50287	5498	15123	9629	154061	175997	21933
SAWNWOOD	306	13288	12982	1804	503	- 1301	47	3240	3192	2157	17031	14873
NONFERRO	1134	2361	1227	380	59	- 321	133	63	- 70	1647	2483	836
FUELS	588	612	24	3286	48	- 3238	877	2	- 875	4751	662	- 4089

Note: The direct employment content figures are derived according to the formulae presented in page 172.

Appendix Table 9b. Direct employment content of Finnish manufactured trade with major world regions by branches, 1981 (per cent of total employment)

	DME trade			SOC trade			LDC trade			Total trade		
	imports	exports	net effect	imports	exports	net effect	imports	exports	net effect	imports	exports	net effect
LEATHER	52.4	20.9	- 31.5	1.7	0.3	- 1.4	26.0	1.4	-24.6	80.1	22.6	- 57.6
RUBBER	65.6	15.3	- 50.3	3.7	1.1	- 2.7	0.2	0.8	0.6	69.6	17.2	- 52.4
WOOD	3.3	32.9	29.6	0.4	4.6	4.2	0.3	9.9	9.5	4.0	47.4	43.3
TEXTILES	52.6	13.2	- 39.4	4.0	5.4	1.4	3.4	0.5	- 2.9	60.1	19.1	- 41.0
NONMETAL	12.8	8.8	- 4.1	0.9	3.5	2.6	0.1	0.7	0.6	13.8	13.0	- 0.8
SUBTOT	26.8	18.4	- 8.4	1.9	4.1	2.2	2.2	3.5	1.4	30.8	26.1	- 4.8
CHEMICAL	36.4	13.2	- 23.2	4.5	8.1	3.6	0.6	4.1	3.5	41.5	25.5	- 16.0
PULP	0.8	24.8	24.0	0.0	6.1	6.1	0.0	2.3	2.3	0.8	33.3	32.4
PAPER	2.3	45.6	43.3	0.0	15.5	15.5	0.0	9.1	9.1	2.3	70.3	67.9
IRON	23.0	24.7	1.7	2.8	2.9	0.1	0.6	2.4	1.8	26.4	30.0	3.6
SUBTOT	15.2	29.6	14.4	1.8	9.9	8.1	0.3	5.5	5.2	17.3	45.0	27.7
PHARMACE	46.3	8.2	- 38.1	0.5	27.4	26.9	0.2	1.1	1.0	47.1	36.8	- 10.3
FURNITUR	6.6	19.9	13.4	1.0	11.8	10.8	0.2	2.0	1.8	7.7	33.7	26.0
CLOTHING	12.6	45.3	32.7	2.0	32.4	30.5	5.2	0.1	- 5.1	19.8	77.9	58.1
FOOTWEAR	16.6	14.8	- 1.8	2.4	45.9	43.5	3.8	0.1	- 3.8	22.8	60.8	38.0
INSTRUME	159.0	37.0	-122.0	3.5	8.5	5.1	3.7	6.4	2.6	166.2	51.9	-114.3
MISCKNF	14.8	12.5	- 2.3	0.8	5.8	4.9	1.2	0.5	- 0.7	16.8	18.8	1.9
SUBTOT	21.0	24.6	3.6	1.4	19.2	17.7	2.6	0.8	- 1.7	25.0	44.6	19.6
BASICMET	19.9	10.0	- 9.9	0.5	11.7	11.1	0.4	2.4	2.0	20.8	24.1	3.3
IND.MACH	52.1	23.4	- 28.7	3.4	14.1	10.7	0.2	4.6	4.5	55.7	42.2	- 13.4
COMPUTIN	218.4	20.8	-197.6	1.1	3.4	2.3	2.2	0.8	- 1.4	221.7	25.0	-196.7
TV.RADIO	50.1	36.8	- 13.3	2.2	9.9	7.7	3.7	2.1	- 1.6	56.0	48.8	- 7.3
ELECTRIC	47.7	14.9	- 32.8	1.4	15.6	14.2	1.3	4.0	2.8	50.3	34.5	- 15.8
TRANSPOR	58.0	24.5	- 33.5	2.8	22.7	19.9	0.1	4.5	4.4	60.8	51.7	- 9.1
SUBTOT	49.5	20.7	- 28.7	2.4	15.5	13.2	0.6	3.9	3.4	52.4	40.2	- 12.2
TOTAL	31.7	23.1	- 8.6	1.9	13.3	11.4	1.2	3.4	2.2	34.9	39.9	5.0
SAWNWOOD	1.4	59.8	58.4	8.1	2.3	- 5.9	0.2	14.6	14.4	9.7	76.7	67.0
NONFERRO	21.9	45.7	23.7	7.4	1.1	- 6.2	2.6	1.2	- 1.4	31.9	48.1	16.2
FUELS	16.2	16.8	0.7	90.4	1.3	-89.1	24.1	0.1	-24.1	130.7	18.2	-112.5

Appendix Table 10. Ten leading exporters of forest products by sectors, 1961, 1971 and 1981 (per cent share of world total)

Roundwood		Sawn wood		Wood-based panels		Wood pulp		Paper and paperboard	
1961									
Finland	13.0	Canada	22.4	Japan	14.4	Sweden	27.6	Canada	36.6
Philippines	12.5	USSR	13.1	Finland	13.8	Canada	27.6	Finland	13.7
USSR	11.2	Swede	12.3	Sweden	9.5	Finland	14.9	Sweden	11.5
USA	7.7	Finland	12.2	France	8.8	USA	13.2	USA	10.2
Malaysia	5.6	Austria	7.8	Canada	8.5	Norway	6.1	Norway	4.4
Canada	5.5	USA	5.2	West Germany	6.6	USSR	2.4	United Kingdom	3.4
France	5.4	Romania	3.8	Belgium	3.5	Austria	2.0	Austria	2.8
Ivory Coast	4.3	Brazil	2.9	USSR	3.5	West Germany	1.1	West Germany	2.7
Gabon	4.0	France	2.8	Italy	2.7	South Africa	1.1	Netherlands	2.5
Ghana	3.6	Yugoslavia	2.0	Philippines	2.7	France	0.7	Japan	2.4
1971									
USA	17.9	Canada	28.0	South Korea	10.9	Canada	33.3	Canada	26.5
USSR	14.7	Sweden	13.3	Finland	10.2	Sweden	23.5	Finland	13.2
Philippines	11.7	USSR	12.2	Taiwan	7.4	USA	15.2	USA	12.4
Malaysia	11.2	Finland	8.0	Japan	6.9	Finland	9.8	Sweden	12.0
Indonesia	8.5	USA	5.7	Canada	6.0	Norway	3.9	West Germany	5.3
Ivory Coast	4.9	Austria	5.7	West Germany	5.9	USSR	3.0	Norway	3.8
Canada	3.2	Romania	3.8	France	4.9	Portugal	2.0	France	3.4
Sweden	3.0	Brazil	2.9	Belgium	4.8	South Africa	1.7	United Kingdom	3.2
France	2.8	Malaysia	2.2	Italy	4.2	Austria	0.9	Austria	2.8
New Zealand	1.8	Yugoslavia	1.8	USSR	4.2	France	0.8	Belgium	2.7
1981									
USA	23.0	Canada	25.0	South Korea	8.2	Canada	34.5	Canada	21.2
Malaysia	15.7	Sweden	10.1	Taiwan	8.0	USA	17.9	Finland	13.3
USSR	11.9	USSR	9.3	Finland	7.9	Sweden	14.5	Sweden	12.9
Indonesia	10.3	USA	9.1	USA	7.2	Finland	8.9	USA	10.0
Ivory Coast	3.4	Finland	9.0	West Germany	6.2	Brazil	4.0	West Germany	7.3
Australia	2.8	Austria	6.0	Belgium	6.2	USSR	3.4	United Kingdom	3.6
France	2.7	Malaysia	4.6	France	5.0	Norway	2.6	Japan	3.5
Finland	2.6	Romania	2.3	Singapore	4.4	Portugal	2.2	Netherlands	3.5
West Germany	2.5	Brazil	2.1	USSR	4.1	Chile	2.0	France	3.1
Philippines	2.3	Indonesia	1.9	Canada	4.0	New Zealand	1.5	Austria	2.9

Source: FAO, Yearbook of Forest Products 1972 and 1970-81.

Appendix Table 11. World production, consumption and trade balance of forest products by regions, 1961, 1971 and 1981

Roundwood (million m^3)

	Production			Consumption			Trade balance		
	1961	1971	1981	1961	1971	1981	1961	1971	1981
DMEs									
Finland	50.7	42.9	43.9	45.1	45.4	45.3	5.6	-2.5	-1.4
Western Europe	197.2	217.3	206.0	211.0	230.4	222.9	-13.8	-13.1	-16.9
North America	383.3	455.9	548.0	382.4	443.7	530.4	0.9	12.2	17.6
Other DMEs	90.0	86.6	77.0	99.2	127.6	112.1	-9.2	-41.0	-35.1
sub total	721.2	802.7	874.9	737.7	847.1	910.7	-16.5	-44.4	-35.8
Socialist countries									
USSR	351.0	384.7	356.6	345.7	369.7	341.5	5.3	15.0	15.1
Eastern Europe	67.4	77.1	83.0	68.0	77.8	80.3	-0.6	-0.7	2.7
sub total	418.4	461.8	439.6	413.7	447.5	421.8	4.7	14.3	17.8
LDCs									
Africa	209.9	295.1	392.1	205.3	288.5	387.1	4.6	6.6	5.0
Latin America	222.0	279.1	390.0	221.7	278.7	389.6	0.3	0.4	0.4
Near East	37.7	75.9	81.3	38.1	76.3	82.0	-0.4	-0.4	-0.7
Far East	440.1	758.6	965.1	433.8	734.8	950.7	6.3	23.8	14.4
sub total	909.7	1408.7	1828.5	898.9	1378.3	1809.4	10.8	30.4	19.1
World	2049.3	2673.3	3142.9	2050.1	2672.9	3142.0			

Sawn wood (million m^3)

	Production			Comsumption			Trade balance		
	1961	1971	1981	1961	1971	1981	1961	1971	1981
DMEs									
Finland	8.1	7.5	8.3	2.9	2.7	2.9	5.2	4.8	5.4
Western Europe	43.2	55.8	54.9	55.1	69.6	68.0	-11.9	-13.8	-13.1
North America	94.8	117.9	109.3	91.5	113.6	100.3	3.3	4.3	9.0
Other DMEs	33.7	48.9	44.6	35.5	52.2	49.1	-1.8	-3.3	-4.5
sub total	179.8	230.1	217.1	185.0	238.1	220.3	-5.2	-8.0	-3.2
Socialist countries									
USSR	104.3	123.2	98.3	99.4	115.5	91.7	4.9	7.7	6.6
Eastern Europe	20.6	21.8	21.3	19.8	21.3	20.9	0.8	0.5	0.4
sub total	124.9	145.0	119.6	119.2	136.8	112.6	5.7	8.2	7.0
LDCs									
Africa	2.1	4.0	6.4	2.1	4.2	6.7	0.0	-0.2	-0.3
Latin America	12.4	16.3	25.4	12.2	15.9	26.2	0.2	0.4	-0.8
Near East	1.1	2.9	4.2	2.1	4.2	8.4	-1.0	-1.3	-4.2
Far East	21.0	32.1	46.5	20.1	29.9	42.5	0.9	2.2	4.0
sub total	36.6	55.3	82.5	36.5	54.2	83.8	0.1	1.1	-1.3
World	341.3	430.5	419.1	340.7	429.1	416.8			

Wood-based panels (million m^3)

	Production			Consumption			Trade balance		
	1961	1971	1981	1961	1971	1981	1961	1971	1981
DMEs									
Finland	1.0	1.6	1.6	0.3	0.6	0.6	0.7	1.0	1.0
Western Europe	6.8	17.9	24.3	7.3	19.6	27.4	-0.5	-1.7	-3.1
North America	15.7	31.1	29.8	16.3	33.6	30.7	-0.6	-2.5	-0.9
Other DMEs	2.4	9.9	10.8	2.0	9.3	10.9	0.4	0.6	-0.1
sub total	25.9	60.5	66.5	25.9	63.1	69.6	0.0	-2.6	-3.1
Socialist countries									
USSR	2.4	6.3	10.5	2.4	5.9	9.6	0.0	0.4	0.9
Eastern Europe	1.7	4.2	6.4	1.6	4.2	6.7	0.1	0.0	-0.3
sub total	4.1	10.5	16.9	4.0	10.1	16.3	0.1	0.4	0.6
LDCs									
Africa	0.2	0.6	0.9	0.1	0.5	1.0	0.1	0.1	-0.1
Latin America	0.6	1.9	7.4	0.6	1.9	7.3	0.0	0.0	0.1
Near East	0.1	0.3	0.7	0.2	0.4	1.8	-0.1	-0.1	-1.1
Far East	0.6	4.3	8.1	0.5	1.7	4.8	0.1	2.6	3.3
sub total	1.5	7.1	17.1	1.4	4.5	14.9	0.1	2.6	2.2
World	31.5	78.1	100.5	31.4	77.7	97.4			

Wood pulp (million tons)

	Production			Consumption			Trade balance		
	1961	1971	1981	1961	1971	1981	1961	1971	1981
DMEs									
Finland	4.3	6.0	7.3	2.7	4.5	5.6	1.6	1.5	1.7
Western Europe	11.9	17.8	19.7	13.8	20.8	24.8	-1.9	-3.0	-5.1
North America	34.6	53.9	66.1	33.2	50.0	59.8	1.4	3.9	6.3
Other DMEs	5.0	10.8	10.8	5.2	11.4	11.6	-0.2	-0.6	-0.8
sub total	55.8	88.5	103.9	54.9	86.7	101.8	0.9	1.8	2.1
Socialist countries									
USSR	3.4	7.1	8.8	3.2	6.9	8.3	0.2	0.2	0.5
Eastern Europe	2.0	2.8	3.2	2.3	3.4	4.1	-0.3	-0.6	-0.9
sub total	5.4	9.9	12.0	5.5	10.3	12.4	-0.1	-0.4	-0.4
LDCs									
Africa	0.0	0.2	0.7	0.0	0.1	0.5	0.0	0.1	0.2
Latin America	0.7	1.8	5.0	1.2	2.3	4.3	-0.5	-0.5	0.7
Near East	0.0	0.2	0.3	0.0	0.3	0.4	0.0	-0.1	-0.1
Far East	0.8	1.6	3.2	1.1	2.2	4.4	-0.3	-0.6	-1.2
sub total	1.5	3.8	9.2	2.3	4.9	9.6	-0.8	-1.1	-0.4
World	62.8	102.1	125.3	62.8	101.8	124.2			

	Paper and paperboard (million tons)								
	Production			Consumption			Trade balance		
	1961	1971	1981	1961	1971	1981	1961	1971	1981
DMEs									
Finland	2.4	4.4	6.1	0.4	0.8	1.3	2.0	3.6	4.8
Western Europe	18.7	30.1	38.6	19.9	33.2	40.5	-1.2	-3.1	-1.9
North America	38.7	58.3	72.8	37.1	54.6	67.3	1.6	3.7	5.5
Other DMEs	6.3	15.2	21.3	6.7	15.5	21.4	-0.4	-0.3	-0.1
sub total	66.1	108.0	138.8	64.1	104.1	130.5	2.0	3.9	8.3
Socialist countries									
USSR	3.4	7.0	8.7	3.5	6.8	8.5	-0.1	0.2	0.2
Eastern Europe	2.6	4.1	5.3	2.6	4.6	5.7	0.0	-0.5	-0.4
sub total	6.0	11.1	14.0	6.1	11.4	14.2	-0.1	-0.3	-0.2
LDCs									
Africa	0.1	0.2	0.3	0.3	0.7	0.9	-0.2	-0.5	-0.6
Latin America	1.8	4.1	7.3	2.7	5.7	9.2	-0.9	-1.6	-1.9
Near East	0.1	0.4	0.7	0.4	1.0	1.8	-0.3	-0.6	-1.1
Far East	3.3	6.2	13.7	3.9	7.6	17.2	-0.6	-1.4	-2.5
sub total	5.3	10.9	22.0	7.3	15.0	28.1	-2.0	-4.1	-6.1
World	77.5	129.9	174.9	77.5	130.3	172.7			

Note: Apparent consumption stands for the value of gross production plus import minus export. Net import is indicated by (-) and net export by (+).

Source: FAO, Yearbook of forest products 1972 and 1970-1981.