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for a sustainable future

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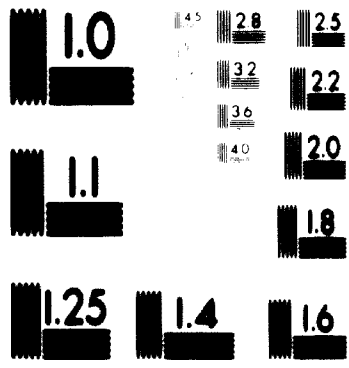
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Manufacturers were asked about their attitude to establishing a factory on the Island, and a clear need for more publicity emerged. (Section 7).

11. The characteristics of the labour intensive industries are set against the requirements and current problems of Mauritius. Although few industries completely satisfy these needs, the scope for development of new industries would widen considerably if measures were taken to overcome some of the background problems, especially in the areas of transport and public utilities,, (Section 8).

12. Specific policy implications of labour intensive industrialisation for export are outlined in order to determine ways of maximising potential benefits in the light of awareness of some of the dangers involved. In addition to the measures already taken, the following should be considered:

(a) the establishment of officially backed export and investment promotion centres in at least the following cities:

Hong Kong,
New York,
Tokyo, and
London;

(b) Some relaxation at a future date of the regulation forbidding export enterprises to sell on the local market; and

(c) measures to encourage small-scale enterprises to export directly or to carry out sub-contract work for larger companies (Section 9).

1. INTRODUCTION

1.1 The Study

Under a contract dated 31st December, 1973, the United Nations Industrial Development Organisation (UNIDO) engaged Maxwell Stamp Associates, Consulting Economists, to carry out a study to identify labour intensive manufacturing industries, operating on an international scale, which might be suitable for establishment in Mauritius, taking into account:

- (a) the special difficulties that the Government of Mauritius would face in attempting to use labour intensive industries as an instrument of development;
- (b) the special problems of the Government of Mauritius with respect to its high male unemployment rate; and
- (c) the difficulties in the identification of suitable industries for Mauritius.

The terms of reference are set out in Section 1.2.

Although this report has been commissioned by UNIDO, they have no responsibility for, and are not in any way committed to, the views and recommendations expressed herein.

1.2. Terms of Reference.

The Contractor shall render, on the terms and conditions hereinafter set forth, the services and facilities necessary to investigate the present pattern of location, product orientation and other features of labour intensive sub-contracting, component manufacture, part processing and complete manufacturing. In this connection the Contractor's work shall include, but not be limited to, the following:

- a) an inventory of such manufacturing at present sub-contracted, by companies from highly industrialized countries to companies in areas offering low cost skilled labour, e.g. Ireland, Hong Kong, Singapore, South Korea, Puerto Rico (lists of products and companies involved; principal countries of destination of processed products; characteristics of selected processing establishments such as fixed investment, employment, working capital, financial structure; annual value added; incentives granted by host governments); (the organization of information used in "Profiles of Manufacturing Establishments", published by UNIDO, would seem to be suitable also for this purpose);

- b) an inventory of types of industries, and the names of particular industries, in selected highly industrialized countries, who normally purchase components from external sources, including lists of such components, the processing of which is labour-intensive and, for this reason, is difficult to integrate into rationalized production schemes used for the ready products;

- c) an inventory and analysis of cases where industries in highly industrialized countries, when establishing plants in developing countries, have substituted labour-intensive processes for normally used machine intensive processes.

- d) interviews with companies in suitable industries in order to determine their likely attitude to establishing in Mauritius.

1.3. Acknowledgements.

The consultants would like to record their thanks to the many persons, in both public and private organisations, without whose co-operation this study could not have been completed. During the course of visits to Singapore, Hong Kong and Korea, a considerable number of executives in private companies gave up their time to be interviewed by the consultants and provided valuable information. Others responded generously to postal questionnaires. Considerable assistance was obtained from the Director of the Economic Development Board in the Republic of Singapore, and from officials of the Departments of Commerce and Industry, Census and Statistics and Labour, of the Government of Hong Kong. Special thanks are due to Mr. John Boath, Technical Adviser (UNIDO) with the Medium Industry Bank, Republic of Korea, and to Mr. Lee Chul Jin, also of the Medium Industry Bank, who provided the consultants with particularly valuable information on Korean manufacturing establishments. Among the other individuals who assisted with their advice and expertise, the consultants would like especially to thank Mr. Angus Hone of the Institute of Commonwealth Studies, University of Oxford, and Mr. Michael Sharpston, Economics of Industry Division, International Bank for Reconstruction and Development.

2. LABOUR INTENSITY AND LABOUR INTENSIVE INDUSTRIES

2.1. Definition of Labour Intensity

In attempting to identify products suitable for manufacture in developing countries the theory of factor proportions, normally identified with Hecksher and Ohlin, provides the most useful starting point. In its simplest form this theory states that countries may be expected to have a comparative advantage in the production of goods requiring a relatively large input of the factors of production with which they are most liberally endowed. This would mean that the majority of less developed countries would specialise in the production of unskilled or semi-skilled labour intensive goods, while importing capital intensive goods, since underdevelopment is often defined in terms of scarcity of capital equipment and technically skilled labour.

The Hecksher-Ohlin theory assumes the existence of perfect competition and the absence of trade barriers and economies of scale. As will become clear in this report, trade barriers and trade policies generally have a significant impact on the prospects for manufactured exports from developing countries. Concerning scale, firms in developing countries operate at a disadvantage, especially during the early years of their existence, owing to the lack of a large home market, and of experience and contacts in international markets. Consequently, developing countries are likely to enjoy a comparative advantage in industries where scale effects are small and where there is scope for small size enterprises to operate efficiently by international standards. Frequently, there are also industries where mechanisation beyond a certain low limit is not possible, such as clothing, wood carving and the assembly of electronic products.

In order to select and evaluate labour intensive industries it is necessary to use an index of labour intensity. Three indices have been considered, none of which is perfect, in order to determine the most reliable.

These are: the value of capital assets per employee, the proportion of the value of output represented by labour costs and value added per employee.

The value of capital assets per employee, in principle, can measure the amount of machinery per worker and thus the direct relationship between capital and labour required to produce a given commodity. The difficulty with this criterion is the limited extent to which it is practically possible to measure capital. Not all capital is of the same age. Estimates of replacement value of machinery of the same or of similar equipment vary widely. There are differences in the quality of equipment which are not fully reflected in its price. Frequently the only data available refer to depreciated capital values, and this introduces a further degree of arbitrariness. There are no valid, independent estimates of capital per head in different industries which make sensible inter-industry comparisons possible.

The ratio of labour costs to the value of total output can be a useful guide to the importance of labour in a production process. It unfortunately is affected by changes in other variables - for example, the cost of raw materials - which have little or nothing to do with the relationship between capital and labour. This arbitrary factor also renders inter-industry and international comparisons hazardous.

We are left, then, with value added per employee. Lary* has suggested that human capital intensity (a measure of skill content) may be indicated by total labour costs per person employed, while physical capital intensity may be measured by non-wage value added per person. Thus, the higher the labour cost and non-wage value added per person, the greater the degree of both skill content and physical capital intensity.

* Hal B. Lary, Imports of Manufactures from Less Developed Countries, New York, 1968.

The theoretical foundation for this is that under perfectly competitive conditions (including the absence of uncertainty), the rate of return on capital and the wage rate for each grade of employee would be the same in each industry, so that the two measures could be used as accurate indices for inter-industry comparisons of skill content and capital intensity. Unfortunately, in practice, the accuracy of the indices is likely to be adversely affected by the following:

- (a) the rate of profit used in the theoretical model is net of true depreciation. In practice it is very difficult, if not impossible, to separate true from accounting depreciation;
- (b) even if the profit figure could be adjusted for true depreciation, it would be an unreliable guide to the real return on capital, especially when the establishment concerned was part of an international enterprise which indulged in intra-firm accounting in respect of transfers of primary and secondary factors of production; and
- (c) normally non-wage value added contains more than profit and depreciation. It also includes interest payments which are affected by market imperfections, as well as rent, advertising expenditure, insurance, technical fees and other general overheads which may be unconnected with relative factor intensities.

For these reasons, non-wage value added per employee can only be a rough indicator of capital intensity. On the other hand, it does have significant advantages over the alternatives, not the least being that the data is relatively easily available. It is, therefore, the measure to be used in this study: the lower the value added per employee, the lower is the intensity of physical and human capital, and the higher the labour intensity.

2.2. Identification of Labour Intensive Industries

In this section published data are analysed to identify the more labour intensive industries in which developing countries have been most successful in the past and which also have the greatest potential for the future.

Research carried out by UNCTAD* into the performance of developing countries in the export of manufactures to developed market-economy countries provides a useful starting point for identifying labour intensive industries. This study attempted to explain developing countries' share of imports to developed countries through the structure of manufacturing industries, in relation to three variables which were considered most important to the developing countries' ability to compete. The three variables were the degree of skill in the labour force, the size of manufacturing establishment and labour intensity. Data on these three variables was obtained from the US and UK Censuses of Production under the assumption that the ranking of industries in different countries would not vary significantly. The assumption was tested in an earlier study by Lary** and the results, although not entirely satisfactory, appeared to support the hypothesis; the errors inherent in using census of production data being thought more likely to account for the unexplained variation than fundamental changes in industry structure.

The products included in the UNCTAD study were those identified by the three digit SITC coding of manufactured products (plus a few "four digit" products), imports of which by eighteen developed countries (EEC, EFTA, U.S., Japan, Canada, Australia and New Zealand) from all developing countries were worth at least \$1 million in any year of the period 1960-66. Some products were excluded from the study because of special factors;

* Trade in manufactures of developing countries 1969 review, UN New York, 1970.

** Hal B. Lary: op cit.

amongst these were all the "three digit" products in SITC section 7, except telecommunications apparatus (SITC 724). Data for products in SITC section 7 were not considered to reflect flows of manufactures from developing countries since much of the developed countries' imports of machinery and transport equipment from developing countries consists of second-hand machines being imported for repair, resale or scrapping.

The results of the study showed that developing countries fared less well as the skill requirements increased, reflecting difficulties caused by the shortage of skilled labour generally found in developing countries. Similarly imports tended to be lower in industries in which the average plant size was relatively large. However, the relationship between physical capital intensity and imports to developed countries was found to be positive, implying that developing countries have done less well in labour intensive industries and that physical capital intensity has not been a factor limiting export performance. This surprising result was thought most likely to be due to the processing of raw materials, which have been some of the most successful export products, and which often have to be processed by capital intensive methods.

A study of the products considered in the UNCTAD analysis enables a list of the more labour intensive industries to be compiled. Table 2.1 is an updated analysis of these products, using the most recent census of production data from the UK and US. The proxy variables used are wages and salaries per employee for skill level, non-wage value added per employee as a measure of capital intensity, and average value added per establishment for size of plant. Although there are some large changes in the ranking of products by labour intensity compared with the earlier data used by UNCTAD, for both the UK and the US there is a significant correlation in the rank order of products at the 99 per cent confidence level. Table 2.2 shows the twenty product groups with the lowest non-wage value added per employee in the UK and US.

Prominent in both lists are clothing, textiles and wood products. Plastic products, clay products and toys and sporting goods are also relatively highly labour intensive in both countries.

Looking more closely at the product groups which appear in the list of the twenty most labour intensive industries in one country, we find there is considerable variation in labour intensity in the other country. Of the product groups that appear only in the US list, special textile fabrics and telecommunications apparatus are above average labour intensity in the UK (out of 56 identifiable groups). Leather is in the middle group in UK industry, ranked number 29. However, jewellery and dyeing and tanning extracts are in the more capital intensive group, ranked numbers 40 and 41 respectively. A total of 61 separate product groups were covered in the US, and both dried salted meat and other preserved meat and fish which are included in the 20 most labour intensive UK industries studied, are also above average labour intensity in the US (ranked 23 and 24 respectively).

The other four products that only appear in the UK list are all relatively capital intensive in the US. Somewhat surprisingly cutlery, ranked 8th in labour intensity in the UK, was ranked 50th in the US, a very large disparity even taking into account possible errors due to differences in classification between the two countries. Scientific instruments were ranked at number 44 in the US, iron and steel plates (38) and household base metal products (41).

Nearly all these relatively labour intensive product groups are also below the average in skill requirements and size of plant. as can be seen from Table 2.3 A notable exception is iron and steel plate which, particularly in the US, is significantly above average in these two variables. Scientific instruments are above the average in skill requirements in both countries, as is furniture in the UK.

LABOUR INTENSIVE
INDUSTRIES FOR
MAURITIUS

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(1 of 2)

REPORT

Prepared for
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MAXWELL STAMP ASSOCIATES LTD.

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There is a marked difference in the size of plant of dyeing and tanning extracts between the two countries, being one of the smallest on average in the US but significantly above the average in the UK.

The study by Lary, mentioned above, goes further in the identification of labour intensive industries. He considered as labour intensive all manufactures which meet two conditions. The conditions are, firstly, in value added per employee in the United States, they do not exceed the national average for all manufacturing by more than 10 per cent; secondly, total imports by developed from less developed countries in 1965 add up to at least \$100,000 at the "three-digit" SITC level. As would be expected, there is a high correspondence between the Lary and UNCTAD list of labour intensive industries, the summary list compiled by Lary is included as Table 2.4. The last four product groups in the "Other light manufactures, excluding food" category, are only marginally labour intensive, and imports of these goods were a small proportion of total imports and US production. Although Lary considered that these product groups may have great potential for future exports from developing countries, he thought it likely that imports in the sub-groups were far more limited in range than the figures given for US manufacturing industry, and that the census of production data did not give a true picture of the labour intensity of actual exports.

Support for the UNCTAD view that labour intensity was more important than shown in the results of the study, is given by comparison of more recent figures of exports from developing countries to the eighteen developed countries with the trend value of exports in 1963 used in the original UNCTAD reports. Table 2.5 compares the derived 1963 figures with the average imports of the developed countries in 1970/1971. Many of the labour intensive industries shown in Table 2.2 are amongst those which have shown the fastest growth in their share of developed country markets.

Most notable has been the substantial rise in the share of clothing exports from developing countries, clothing being the second largest export industry of these countries; only exports of petroleum products to developed countries were of higher value. Other major increases in the share of developed country imports among the larger export industries are in telecommunications apparatus, plastic products, toys and sporting goods, footwear and in the other products category.

Table 2.1

Census of Production Data

United States 1967				
820e No.	Product Description	Wages and salaries per employes	Non-wage value added per employes	Average value added per establishment
		\$	\$	\$000
012	Dried, salted meat	7033	6714	518
013	Other preserved meat	6415	10000	1432
032	Preserved fish	4373	7082	566
052	Dried fruit	5214	8190	1173
053	Preserved fruit	4684	9127	1071
055	Preserved vegetables	4684	9127	1071
071.3	Coffee extracts	NA	NA	NA
072.3	Cocoa butter	6417	16940	5771
073	Chocolate	6417	16940	5771
099	Other food products	5698	17568	894
431	Oils, fats, waxes	7562	6625	420
243	Shaped wood	4735	3836	131
251	Pulp & waste paper	8276	14370	5196
266	Synthetic fibres	6658	13074	85544
332	Petroleum products	9020	34868	10706
512	Organic chemicals	8794	31118	4626
513	Inorganic chemicals; elements, oxides	7863	21810	1978
514	Other inorganic chemicals	7863	21810	1978
521	Tar, etc, from oil	7250	14938	1145
532	Dyeing & tanning extracts	4211	6316	444
541	Medicinal products	7429	29679	945
551	Essential oils	7371	16986	847
561	Manufactured fertilisers	5852	9710	1406
599	Other chemicals	6913	15026	392
611	Leather	6076	4257	625
629	Rubber products n.e.s.	7703	9437	7134
631	Veneers & plywood	5692	3474	933
632	Wood products n.e.s.	4987	3728	347
641	Paper, paperboard	7967	11158	5119
651	Yarn & thread	4255	3833	1382
652	Woven cotton	5015	3311	2584
653	Woven non-cotton fabrics	4090	3442	798
655	Special textile fabrics	4808	4671	455
656	Bags, sacks, liners	4052	4647	574
657	Carpets	4806	9806	966
661	Lime, cement, etc	7419	15326	3549
662	Clay products	5980	4423	1226
663	Mineral manufactures n.e.s.	5282	4487	118
665	Glassware	6297	7732	3694
671	Pig iron	8240	8770	29472
673	Iron & steel bars	8813	10360	28760
674	Iron & steel plates & sheets	8813	10360	28760
678	Iron & steel tubes & pipes	7767	8795	8231
681	Silver, platinum, etc.	6833	18333	1373
682.1	Unworked copper	7041	20068	7916
682.2	Worked copper	7299	10487	5674
684	Aluminium	7982	23196	28172
685	Lead	7000	14400	3567
686	Zinc	7136	7617	6639
687	Tin	8622	8587	75667
689	Other non-ferrous metals	8000	11548	2817

SIPC No.	Product Description	United States 1967		
		Wages and salaries per employee	Non-wage value added per employee	Average value added per establishment
		\$	\$	\$000
696	Cutlery	6169	15085	1892
697	Household base metal products	6394	10995	2234
698	Other metal products	6175	6457	499
724	Telecomm. apparatus	5573	4774	7938
812	Sanitary & light fittings, etc.	6548	8627	2494
821	Furniture	4890	4007	420
831	Travel goods, handbags, etc	4514	4178	559
841	Clothing	4271	3332	563
851	Footwear	4506	4141	2226
861	Scientific Instruments	8341	12051	2593
892	Printed matter	6364	10405	798
893	Plastic products	5628	6213	546
894	Toys & sporting goods	4663	4967	438
897	Jewellery	5113	5088	261
899	Other products *	4006	4302	181

* Other products group: U.S., includes baskets, brooms and brushes, umbrellas, artificial flowers, wigs.

Source : U.S. Census of Manufactures 1967,

United Kingdom 1969

SITC No.	Product Description	Wages and salaries per employee	Non-wage value added per employee	Average value added per establishment
		£	£	£000
012	Dried salted meat	2069	1504	1166
013	Other preserved meat	1670	2914	936
032	Preserved fish	1670	2914	936
052	Dried fruit	1759	1790	977
053	Preserved fruit	1759	1790	977
055	Preserved vegetables	1759	1790	977
071.3	Coffee extracts	2001	0323	4019
072.3	Cocoa butter	2174	2404	4509
073	Chocolate	2174	2404	4509
099	Other food products	1997	3262	2150
431	Oils, fats, waxes	2610	4600	730
243	Shaped wood	2292	2522	312
251	Pulp & waste paper	2292	2522	312
266	Synthetic fibres	3060	6641	15090
332	Petroleum products	3350	11097	10050
512	Organic chemicals	3223	6201	2063
513	Inorganic chemicals, elements, oxides	3084	5791	2140
514	Other inorganic chemicals	3084	5791	2140
521	Tar, etc, from oil	2652	3040	2202
532	Dyeing & tanning extracts	1017	3607	5699
541	Medicinal products	2525	5060	2901
551	Essential oils	3091	5993	2095
561	Manufactured fertilisers	3353	5465	2539
599	Other chemicals	3091	5993	2095
611	Leather	2250	2150	410
629	Rubber products n.e.s.	2604	2410	2069
631	Veneers & plywood	2292	2522	312
632	Wood products n.e.s.	2172	1450	307
641	Paper, paperboard	2670	2600	1939
651	Yarn, thread	1414	630	570
652	Woven cotton	1036	1133	403
653	Woven non-cotton fabrics	1675	1236	707
655	Special textile fabrics	1606	1656	402
656	Bags, sacks, linens	1430	990	210
657	Carpets	2230	1925	1279
661	Lime, cement, etc.	3014	4675	2119
662	Clay products	2540	1707	422
663	Mineral manufactures n.e.s.	2507	2955	536
665	Glassware	2020	1055	1517
671	Pig iron	2409	3175	1620
673	Iron & steel bars	2104	2021	492
674	Iron & steel plates & sheets	2015	2621	2702
670	Iron & steel tubes & pipes	2539	2310	2239
601	Silver, platinum, etc.	2716	4226	2196
602.1	Unworked copper	2032	4005	1013
602.2	Worked copper	2604	2507	1267
604	Aluminium	2611	3490	1243
605	Lead	2790	5146	1522
606	Zinc	2790	5146	1522
607	Tin	2790	5146	1522
609	Other non-ferrous metals	2726	7142	2359

United Kingdom 1968

SITC No.	Product Description	Wages and salaries per employee	Non-wage value added per employee	Average value added per establishment
		£	£	£000
696	Cutlery	1824	1344	312
697	Household base metal products	1970	1877	450
698	Other metal products	2114	1999	521
724	Telecomms. apparatus	1810	2011	1582
812	Sanitary & light fittings, etc.	1973	2376	2215
821	Furniture	2503	1817	498
831	Travel goods, handbags, etc	1697	1032	300
841	Clothing	1598	941	329
851	Footwear	1939	1195	509
861	Scientific Instruments	2462	2165	1337
892	Printed matter	2606	1908	461
893	Plastic products	2184	2126	969
894	Toys & sporting goods	1786	1646	677
897	Jewellery	2215	2335	1286
899	Other products *	1721	1754	223

*Other products includes basketwear, brooms and brushes, umbrellas, other dress industries.
 SOURCE: U.K. Census of Production, 1968.

TABLE 2.2
Top 20 Labour Intensive Industries

<u>Ranking in order of labour intensity</u>	<u>U.S. 1967</u>	<u>UK 1968</u>
1	<u>Woven cotton</u>	<u>Yarn and thread</u>
2	<u>Clothing</u>	<u>Clothing</u>
3	<u>Woven non-cotton</u>	<u>Bags, sacks and linens</u>
4	<u>Veneers and plywood</u>	<u>Plastic products</u>
5	<u>Wood products n.e.s.</u>	<u>Woven cotton</u>
6	<u>Yarn and thread</u>	<u>Footwear</u>
7	<u>Shaped wood</u>	<u>Woven non-cotton</u>
8	<u>Furniture</u>	Cutlery
9	<u>Footwear</u>	<u>Travel goods</u>
10	<u>Travel goods</u>	Dried salted meat
11	Leather	Other preserved meat and fish.
12	<u>Other products</u>	<u>Toys and sporting goods</u>
13	<u>Clay products</u>	<u>Other products</u>
14	<u>Bags, sacks & linens</u>	<u>Clay products</u>
15	Special textile fabrics.	Scientific instruments
16	Telecommunications apparatus.	<u>Furniture</u>
17	<u>Toys & Sporting goods</u>	Iron & steel plates
18	Jewellery	Household base metal products
19	Plastic products	<u>Wood products n.e.s.</u>
20	Dyeing and tanning extracts	<u>Shaped wood, pulp paper, veneers and plywood</u>

Note: The higher level of aggregation in UK statistics occasionally means that US product groups cannot be separately shown for the UK e.g. Shaped wood, pulp and paper, and veneers and plywood.

— appears in both lists.

Table 2.3 Further Analysis of Most Labour Intensive Industries

<u>U.S. Industries</u>		Product Description	<u>U.K. Industries</u>	
Wages and salaries per employes	Average value added per Establishment		Wages and salaries per employes	Average value per added establishment
\$	£000		\$	£000
5015	2584	Woven cotton	1836	403
4271	563	Clothing	1598	329
4090	798	Woven-non cotton	1675	707
5692	933	Veneers and ply-wood	2292	312
4987	347	Wood products n.e.c.	2172	307
4235	1382	Yarn and thread	1414	578
4735	131	Shaped wood	2292	312
4506	2226	Footwear	1939	509
4514	559	Travel goods	1697	300
4006	181	Other products	1721	223
4052	574	Bags, sacks, linens	1438	218
4808	455	Special textile fabrics	1606	482
5573	7328	Telecomms. apparatus	1810	1982
4663	438	Toys and sporting goods	1786	677
5628	546	Plastic products	2184	569
4890	420	Furniture	2503	458
6076	625	Leather	2258	418
5980	1226	Clay products	2540	422
5113	261	Jewellery	2215	1286
4211	444	Dying and tanning extract	1817	5659
6169	1892	Cutlery	1824	312
7033	518	Dried salted meat	2069	1166
6415	1432	Other preserved meat	1670	936
8341	2593	Scientific instruments	2462	1337
8813	28760	Iron & steel plates	2815	2782
6394	2234	Household base metal products	1970	458
6359	5513	Average over all product groups	2342	1862

**Table 2.4 Condensed List of Manufactures Selected as
Labour Intensive**

1. **Textiles, clothing and accessories**
 - Yarn and thread
 - Cotton fabrics, woven
 - Other woven fabrics, excl. jute products
 - Textile small wares and specialities
 - Carpets and other floor covering
 - Clothing and accessories, excl. goods of leather, rubber and plastic.

2. **Other light manufacture, excl. food**
 - Footwear and other leather, rubber and plastic goods.
 - Glassware, china and pottery
 - Furniture
 - Books and other printed matter
 - Games, toys, sporting goods, and musical instruments
 - Jewellery and silverware
 - Costume jewellery and notions
 - Optical goods, cameras, watches and instruments*
 - Cutlery, hardware, and other metal products*
 - Electrical apparatus and appliances*
 - Non-electrical machinery and equipment*

3. **Labour-intensive food manufactures**
 - Fish and fish products
 - Fruit and vegetables
 - Miscellaneous food products and cigars

4. **Labour-intensive industrial materials**
 - Products of jute and other coarse fibres
 - Leather and tanned or dressed furs
 - Lumber, plywood, and other simple wood products
 - Building materials of clay, stone, etc.

* marginal items

Source: Imports of Manufactures from Less Developed Countries - Hal B. Lary, National Bureau of Economic Research. New York, 1968

TABLE 2.5
Exports of Manufactures from Developing Countries
to 18 Developed Countries as percentage of total imports

No.		Trend share in 1963	Average 1970/71	% Change over period	Exports from developing countries 1971 /a
012	Dried, salted meats	1.5	1.2	-20.0	4.6
013	Other preserved meat	30.4	28.3	- 6.9	244.4
032	Preserved fish	15.2	17.8	+27.1	97.8
052	Dried fruit	13.1	12.0	-8.4	22.1
053	Preserved fruit	26.1	29.8	+14.2	278.1
055	Preserved vege- tables	27.4	25.5	- 6.9	166.3
071.3	Coffee extracts	17.7	NA	NA	NA
072.3	Coffee butter	39.4	30.0	+26.9	89.3
073	Chocolate	1.5	1.7	+13.3	4.9
099	Other food products	5.3	7.4	+39.6	19.4
431	Oils, fats and waxes	25.5	9.8	-61.6	16.9
243	Shaped wood	11.5	12.8	+11.3	327.0
251	Pulp and waste paper	0.6	1.3	+116.7	25.3
266	Synthetic fibres	0.8	1.3	+62.5	3.9
332	Petroleum products	47.8	43.2	-9.6	2342.3
512	Organic chemicals	3.3	3.4	+3.0	123.9
513	Inorganic chemicals; elements, oxides	15.0	21.3	+42.0	283.2
514	Other inorganic chemicals	2.2	2.4	+9.1	14.1
521	Tar etc. from oil	6.4	6.4	=	9.8
532	Dyeing and tan- ning extracts	36.5	26.6	-27.1	12.9
541	Medicinal products	4.1	4.4	+7.3	89.3
551	Essential oils	27.4	20.4	-25.5	62.0
561	Manufactured fertilisers	3.7	6.5	+75.7	57.4
599	Other chemicals	3.4	2.0	-41.2	38.7
611	Leather	24.5	31.4	+28.2	198.4
629	Rubber products R.O.S.	0.8	2.2	+175.0	27.0
631	Veneers & plywood	18.2	30.4	+67.0	356.8

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SITC No.		Trend share in 1963	Average 1970/71	% Change over period	Exports from developing countries 1971 in \$m
632	Wood product n.e.s.	7.6	14.3	+88.2	63.8
641	Paper & paperboard	0.5	0.4	-20.0	14.4
651	Yarn & thread	5.0	6.2	+24.0	156.1
652	Woven cotton	20.8	20.2	+35.6	314.9
653	Woven non-cotton fabrics	14.9	12.3	-17.4	363.0
655	Special textile fabrics	7.4	4.3	-54.3	41.0
656	Bags, sacks, linens	29.2	22.2	-24.0	103.1
657	Carpets	20.9	35.4	+12.1	249.0
661	Lime, cement, etc	4.7	5.1	+8.5	19.4
662	Clay products	2.8	2.6	-7.1	14.6
663	Mineral manufactures nes	1.5	1.6	+6.7	8.3
665	Glassware	2.1	3.0	+42.9	14.8
671	Pig iron	8.9	17.3	+94.3	140.7
673	Iron & steel bars	0.4	1.3	+225.0	27.3
674	Iron & steel plates & sheets	0.3	1.6	+433.3	68.3
678	Iron & steel tubes & pipes	1.6	1.9	+18.8	32.8
681	Silver, platinum etc	15.8	16.1	+1.9	112.3
682.1	Unworked copper	58.4	58.8	+0.7	1649.8
682.2	Worked copper	2.8	3.0	+7.1	19.8
684	Aluminium	3.5	6.8	+94.3	116.9
685	Lead	30.1	17.6	-41.5	43.8
686	Zinc	14.6	11.2	-30.4	29.6
687	Tin	67.1	83.2	+24.0	401.9
689	Other non-ferrous metals	25.2	23.4	-7.1	70.0
696	Cutlery	1.5	7.1	+373.3	18.6
697	Household base metal products	2.5	9.0	+260.0	37.8
698	Other metal products	1.7	1.9	+11.8	20.5
724	Telecommunications apparatus	2.3	10.2	+343.5	400.3
812	Sanitary & light fittings etc	4.5	4.7	+4.4	27.1
821	Furniture	8.9	5.6	-37.1	73.5
831	Travel goods, hand- bags etc	9.1	22.3	+145.1	77.8
841	Clothing	20.1	29.8	+48.3	1820.8
851	Footwear	8.0	13.0	+62.5	266.5

SITC No.		Trend share in 1963	Average 1970/71	% Change over period	Exports from developing countries 1971 \$m
061	Scientific instruments	0.9	1.4	+55.6	41.0
092	Printed matter	1.2	2.2	+83.3	32.1
093	Plastic products	3.6	11.7	+225.0	96.5
094	Toys & sporting goods	9.6	18.7	+94.8	260.2
097	Jewellery	6.7	12.7	+89.6	46.1
099	Other products	17.4	34.5	+98.3	202.8

Source : UN and OECD trade statistics.

3. TRADE PATTERNS AND POLICIES.

3.1. Penetration of Main Export Markets

For the purpose of analysing market penetration by manufactures exported from developing countries, the developed country markets are broken down as follows*.

EEC
EFTA
U.S.
Japan
Canada

Imports, in 1972, by these areas of manufactures from both the world as a whole and from developing countries are set out in tables 3.1 and 3.2 at the end of Section 3. Table 3.3 shows imports from developing countries as a percentage of total imports in each area, while table 3.4 shows the product groups in which market penetration by less developed countries is greater than 20 per cent above the average in each area.

The tables show that imports from developing countries held the highest share of total imports in the case of the United States (29.6 per cent). Japan was second with 22.5 per cent. There is then a considerable gap before reaching the developing countries' share of Canada's imports, which was 9.4 per cent. In EFTA and the EEC, the shares were 8.4 per cent and 7.8 per cent respectively.

Turning to the products from developing countries which fared better than the average, woven cotton, linens, travel goods and toys had a share more than 20 per cent above the average in each of the five areas. Another five product groups - leather, tanning extracts, veneers, food and drink and essential oils - were above this percentage share in four of the areas.

* Data on Australia and New Zealand for 1972 were not available at time of writing.

The list of most successful product groups were very similar for EFTA and for the EEC. Pig iron, and baskets, umbrellas, wigs, etc., achieved a higher percentage in the EEC, while toys and sporting goods did better in EFTA.

The major differences between Japan and the other areas were the high Japanese imports from developing countries of iron and steel plates, furniture and jewellery. Developing country exports were a particularly high percentage of total imports in the case of textile yarn, travel goods and clothing.

The Canadian market has the least number of product groups with a high share of total imports, although cutlery did better in Canada than elsewhere.

Within the developing countries' share of each market, there are differing geographic concentrations, both between and within market groupings. The United Kingdom's imports are still concentrated on Commonwealth countries, while France tends to purchase a high proportion of its imports from former French territories, especially in Africa. Japan purchases a great deal from Asia, especially Korea and Taiwan, while the share of the United States in Mexico's exports is overwhelmingly high.

An analysis of the imports of selected groups of manufactured products from developing countries per \$1,000 of gross national product in 1969 in a number of individual developed countries was carried out by Chenery and Hughes. The results are reproduced here as Table 3.5. The great variety both between products and countries suggests that the factors which determine the propensity to trade, and to import from developing countries, are several.

* Hollis B. Chenery and Helen Hughes: Industrialisation and Trade Trends: Some issues for the 1970's, in Prospect for Partnership, World Bank Publication 1973.

In addition to per capita income and size, trading policies and the attitude of relevant pressure groups need to be taken into account.

3.2 Main Centres of Production.

A high proportion of total manufactured exports from developing to developed countries is produced by comparatively few countries. Looking at the three major SITC groupings other than food, raw materials and chemicals (trade in chemicals tends very much to be the preserve of the developed countries) - that is, goods manufactured from materials, machinery and transport equipment, and miscellaneous manufactured goods - it can be seen that 19 developing countries account for 85 per cent of the total trade. The following table shows the leading countries.

Leading Developing Country Exporters to Developed Countries
in SITC Categories 6,7 and 8, 1972
(millions of U.S. dollars)

	<u>Total 6,7 and 8</u>	<u>SITC 6</u>	<u>SITC 7</u>	<u>SITC 8</u>
Hong Kong	2,383	318	343	1,722
Korea (South)	1,032	391	112	529
Mexico	802	271	353	178
India	695	619	13	63
South Africa	665	620	37	8
Portugal	598	313	112	173
Zambia	597	594	3	*
Taiwan	493	167	75	251
Chile	480	478	1	1
Zaire	423	422	1	*
Israel	418	291	31	96
Brazil	403	246	76	81
Malaysia	373	347	10	16
Singapore	356	43	220	93
China	333	207	3	123
Greece	312	202	21	89
Pakistan	235	203	5	27
Iran	220	211	4	5
Peru	206	204	1	1
Total (1)	<u>11,024</u>	<u>6,147</u>	<u>1,421</u>	<u>3,456</u>
Total Developing country exports to Developed Countries (2)	<u>12,965</u>	<u>6,586</u>	<u>2,104</u>	<u>4,275</u>
Ratio (1):(2) (%)	85.0	93.3	67.5	80.8

* Less than \$500,000.

Source: OECD: Statistics of Foreign Trade, Volume 1,
January- December, 1972.

One interesting point to note from the above table is that several of the countries are among the leaders because of their importance in category 6 - goods manufactured from materials. These are normally the countries which possess relatively abundant raw material supplies to which some value is added by processing prior to export. The importance of the presence of natural resources can be seen in the percentage of the total made up by goods in category 6:

India	89.7	per cent
South Africa	93.2	" "
Zambia	99.5	" "
Chile	99.6	" "
Zaire	99.8	" "
Malaysia	93.0	" "
Pakistan	86.4	" "
Iran	95.9	" "
Peru	99.0	" "

By contrast, the countries without a strong resource base tend to have their manufactures concentrated in categories 7 and 8.

Hong Kong	86.7	per cent.
Korea (South)	62.1	" "
Mexico	66.2	" "
Taiwan	66.1	" "
Singapore	87.9	" "

The above figures correspond well with Lary's* conclusions concerning the distribution of exports by developing countries of goods which are labour intensive according to the criterion of a low non-wage value added per employee.

* Hal B. Lary: op cit

He found that in 1965 Hong Kong alone supplied 28 per cent of total developed country imports of labour intensive manufactures from developing countries. Other developing countries of the Far East, notably South Korea and Taiwan, brought the share of that area to over two-thirds.

From the viewpoint of this study, the performance of these five countries is worth examining in more detail, as Mauritius is also without a major resource base. This is done by indicating the growth in the value of manufactured exports, changes in the proportion of manufactures in total exports to developed countries and the composition of exports

Growth in the value of exports of manufactures has been extremely high by international standards, as the following table shows:

Exports of Manufactures to Developed Countries
1967 and 1972, and Annual Average Rate of
Growth, 1967 - 1972

	<u>1967</u>	<u>1972</u>	<u>Annual Average</u> <u>Rate of Growth</u> <u>(%)</u>
Hong Kong	965.9	2,389.9	19.9
Korea (South)	148.2	1,039.9	47.6
Mexico	245.4	863.0	28.6
Taiwan	160.9	506.0	25.7
Singapore	17.3	359.3	83.4

Source: OECD: Statistics of Foreign Trade, 1967 and 1972.

Growth in exports other than of manufactures has been considerably less rapid so that the share of manufactured goods in the total exports of each country to developed countries has increased as follows:

	<u>1967</u>	<u>1972</u>
Hong Kong	95.9 per cent	97.4 per cent
Korea (South)	60.5 " "	80.1 " "
Mexico	16.0 " "	43.3 " "
Taiwan	40.7 " "	58.3 " "
Singapore	14.0 " "	60.3 " "

Source: As above.

Chenery and Hughes* have shown that as a country's manufacturing experience grows, the sophistication of its exports increases. Industrial goods may be conveniently classified as being characteristic of "early", "middle" and "late" stages of export. These stages reflect both relative factor intensities and such variables as entrepreneurship, technical and managerial skills and marketing ability. Using data compiled by the United Nations, Chenery and Hughes have calculated the proportions of "early", "middle" and "late" manufactures in total exports as follows:

	<u>Early</u>	<u>Middle</u>	<u>Late</u>
Korea (South) 1960	9.1	6.2	0.3
1969	22.9	15.9	35.9
Mexico 1960	6.7	4.5	2.6
1969	4.4	8.7	7.6
Taiwan 1960	22.2	19.4	12.4
1969	21.9	17.5	34.7
Singapore 1960	6.9	8.3	8.7
1969	8.7	6.9	13.2

Source: Chenery and Hughes: op. cit.

* Hollis B. Chenery and Helen Hughes: op. cit.

This tendency towards increased sophistication is supported by the detailed studies of country experiences in Section 5 as well as by the experiences of individual enterprises presented in the Appendix. It should be noted that this trend is not confined to the five countries selected as being most useful as a guide to the possibilities from Mauritius's point of view, but is general to most developing countries including those with large national resource endowments. The few exceptions to the trend - the most notable being Pakistan - probably throw doubt on the efficiency of the export incentive schemes adopted by these countries, as one of the aims of such schemes should be to improve the depth as well as the breadth of a country's export performance.

Turning to the detailed composition of exports, a similar picture emerges from each country as would be expected from the analysis presented in Section 2. The major export items are as follows:

<u>Hong Kong</u>	<u>Korea</u>	<u>Mexico</u>	<u>Taiwan</u>	<u>Singapore</u>
Clothing	Clothing	Electrical Machinery	Clothing	Electrical Machinery
Textiles	Plywood		Textiles	
Plastic goods	Textiles	Clothing	Plywood	Clothing
Electrical Machinery	Hair goods	Non-electrical machinery	Footwear	Plywood
Optical goods and instruments,	Electrical machinery		Plastic goods	Non-electrical Machinery
	Plastic goods	Textiles	Electrical machinery	Optical Goods and Instruments
Metal goods		Transport equipment		
		Non-ferrous metal		

Source: Published trade statistics of each country

Recent trade patterns and trends thus provide ample confirmation of the list of labour intensive industries developed in Section 2.

One interesting question which arises is why some developing countries have succeeded in exploiting this potential while others have not (though the number doing so, or attempting to do so, is increasing rapidly in the early 1970's). This question is considered in Section 5. In the rest of this Section, there is an examination of trends in trade policy and a discussion of future prospects for the growth in trade of manufactures from developing to developed countries.

3.3 Trends in Trade Policy.

3.31 General

The period since the Second World War has seen considerable movement in the direction of freer trade, particularly under the "Kennedy Round" and the more recent negotiations held under GATT auspices. Despite this, the extent to which developing countries have been assisted is very limited. The negotiations were confined to industrial goods and, even here, "sensitive" products such as textiles and clothing were excluded.

The number of developing countries favourably affected, and the impact on individual developing countries of previous and further reductions in tariffs on industrial goods, is likely to be increased by the trends in trade discussed in Section 3.2 above, especially the increase in the proportion of total developing country exports made up of manufactures, and the increasing sophistication of these manufactures. On the other hand, this will not benefit the least developed countries which still rely to a large extent on primary processed products or simple, labour-intensive manufactures.

Moreover, even among countries which do benefit, there is considerable scepticism concerning the impact of the GATT negotiations because of the limited role of tariffs in the overall determination of trade patterns.

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Non-tariff barriers proved considerably more important during the 1960's, and the indications are that this importance is unlikely to diminish. In the case of textiles, for example, tariffs proved no obstacle to efficient developing country producers, nor did they in the case of cutlery and footwear. Pressure groups in the developed countries have succeeded in bringing about quota restrictions, however, the severity of which is increased by having separate quotas for sub-product groups. This latter tendency has, if anything, assisted producers in the more advanced exporting countries. In Hong Kong, for example, quotas on cheaper textile products have led to upgrading, diversification of lines and investment by Hong Kong companies in other developing countries to take advantage of their quotas. However, this help to the more advanced countries must be set against the harm done to the less experienced. Several instances are cited in the Appendix of South Korean manufacturers attaining a comparative advantage in a particular consumer product, whether it be clothing, footwear or stainless steel flatware, investing in expanded production capacity and organising a marketing system, only to run up against quota arrangements, often quite suddenly. These quotas are not always formal instruments of Government policy. Sometimes they are arranged informally on a "voluntary" basis.

The quotas are more common and more severe in their application to consumer products than to components. Indeed, with regard to the latter, legislation has been introduced in the United States to make it easier to import certain components than it was previously (see Section 3.32 below). There are several reasons for this:

- in the case of consumer goods there is less effective political pressure in favour of trade liberalisation than for components, where it is often in the interests of business organisations,

- component imports are more difficult to identify,
- components are difficult to specify, especially where there is continual technological change as in electronics, and
- until recently, imports of components, despite their importance in the manufactured exports of a number of countries, have accounted for a relatively small part of the total market and have not significantly affected domestic production in importing countries. This is now beginning to change, especially in the U.S.

Before turning to trade policies in specific country areas, there are two further general trends which are worthy of comment - the growth of regional markets and the Generalized Preference Scheme (GPS).

From the point of view of developing countries wishing to promote exports of manufactures, the powerful tendency towards selective trade blocs, exemplified most clearly by the EEC, is a somewhat adverse influence. Potential gains of lower tariffs have to be set against trade polarization effects. For those countries fortunate enough to enjoy associate status with the EEC (and this group now includes Mauritius), the lack of evidence of any stimulation of manufactured exports up to 1973 should, however, be interpreted carefully. Most of the associated states are among the least developed countries and it is this, rather than lack of opportunity, which has caused the absence of rapid growth. Furthermore, there is evidence, too recent to analyse on an aggregate basis, that there may be a trend towards international sub-contracting and other instruments of export promotion in associate states, including Mauritius.

The GPS suffers from the same drawback as the "Kennedy Round" and GATT negotiations - tariffs are not really the point. It has been argued that a minor adjustment of exchange rates could have achieved the same result for the developing countries as the GPS.

3.32 The United States.

The most significant legalisation concerning imports of manufactures from developing countries is that related to items 806.30 and 807.00 of the Tariff Schedules of the United States. With regard to the former, articles of metal (except precious metal) that have been manufactured, or subjected to a process of manufacture, in the United States and exported for processing and returned to the United States for further processing, are subject to duty only on the value of the foreign processing. Under tariff item 807.00, imported articles assembled in foreign countries with fabricated components that have been manufactured in the United States are subject to duty upon the full value of the imported product less the value of the U.S. fabricated components contained therein. No further processing in the U.S. is required for an article under item 807.00. No imported article may be accorded partial exemption from duty under more than one of these tariff items.

This legislation became effective from 1956 in the case of item 806.30 and 1963 in the case of 807.00. According to a study by the U.S. Tariff Commission*, imports under the two items increased at a faster average annual rate between 1966 and 1969 than total dutiable imports. Because of its specialised nature, item 806.30 is of less interest from the viewpoint of this study, than item 807.00. The products that accounted for a significant share (81 per cent) of the total imports under this item in 1969 were as follows:-

* United States Tariff Commission: Economic Factors Affecting the Use of Items 807.00 and 806.30 of the Tariff Schedule of the United States, Washington, 1970.

<u>Product</u>	<u>Percentage of All 807 imports</u>
Semiconductors	6.4 per cent
Office machines and parts	5.9 " "
Radios and parts	3.1 " "
Toys and dolls	1.3 " "
Other electronic components and parts	5.3 " "
Television receivers	2.9 " "
Civil aircraft	5.9 " "
Garments	1.5 " "
Gloves	0.4 " "
Motor Vehicles	45.0 " "
Non-agricultural tractors	1.1 " "
Gas Turbine engines	1.0 " "
Scientific instruments	0.8 " "
Total	80.6 per cent

Source: United States Tariff Commission: op. cit.

Some of the products in this list correspond to those identified as being labour intensive in Section 2, and are heavily represented in the trade patterns discussed in Sections 3.1 and 3.2. Less developed countries, in fact, accounted for only 22 per cent of the value of all imports under item 807.00, but the proportion for specific products shows considerable variation:

Share of Developing Countries in U.S. Imports Under Item
807.00, 1969

Semiconductors	81.6 per cent
Office machines and parts	31.1 " "
Radios and parts	32.5 " "
Toys and dolls	97.3 " "
Other electronic components and parts	77.6 " "
Television receivers	84.2 " "
Civil aircraft	0.0 " "

Garments	90.5	per cent
Gloves	98.8	" "
Motor vehicles	0.0	" "
Non-agricultural tractors	0.0	" "
Gas turbine engines	0.0	" "
Scientific instruments	45.9	" "
Ceramic products	17.6	" "
Luggage	98.8	" "
Sporting goods	84.2	" "
Jewellery	77.3	" "

Source: A, above.

This list shows that where the developing countries have obtained a share of the market for the products included under this legislation it is normally a highly significant one, and the goods involved are all those previously identified as being labour intensive.

3.33 The EEC

The trade policies of the EEC concerning imports of manufactures from developing countries are highly complex and vary according to the status of the country and the commodity. It will not be possible here to do more than give an outline of the broad principles of policy. For the specific regulations concerning individual commodities it is necessary to refer to official Community documents.

Developing countries can be divided into two groups - those with Associate Status in the EEC and those without. Countries with Associate Status consist largely of former colonial territories or countries in the Mediterranean region such as Greece, Turkey, Malta, Portugal, Spain and Cyprus. Manufactured goods from Associate States enjoy the same privileges as goods traded between Member states provided that a certain proportion of the value originated within Associate of Member states. This proportion varies from product to product.

For developing countries as a whole, the EEC operates the GPS. The scheme provides for complete relief from import duty within tariff quotas and ceilings for almost all manufactures. Basically, the quantitative restrictions take 3 forms:

- (a) Quotas which are allocated according to Member states. After a Member state's quota is reached all imports must pay the full rate of duty.
- (b) The "butoir" by which goods of any one developing country may not take up more than a certain share of the Community tariff quota for the product in question.
- (c) Other industrial imports benefiting from GPS but not subject to quotas are subject to ceilings at the Community level. Imports under these ceilings are not allocated among Member states and the decision to impose a duty is taken at Community level. As in the case of the "butoirs," within the ceilings there are also inner ceilings on the amount of each item which may be imported from any one supplying country.

Imports from Associated states are not counted against the quotas and ceilings provided for under the GPS scheme.

The way in which these rules apply to individual products varies considerably. Particularly worthy of note is the case of textiles and textile products. The list of countries and territories enjoying GPS privileges on most manufactures extends to 153, while the "butoir" is 50 per cent. For cotton yarn, woven fabrics, stockings, and other cotton garments and linens, the number of beneficiary countries is 15 and the "butoir" is 30 per cent. Textiles are always difficult politically.

This is especially so in the EEC where they form about 12 per cent of total industrial output compared with only 6 per cent in the U.S. It is a labour intensive industry employing over 3 million persons in the Community. The industry is concentrated in poor regions which lack alternative employment opportunities, and has been in a condition of crisis and over-supply for some years.

During the 1970's other "problem" industries may arise. The speed with which this can happen should not be underestimated. In the U.S. it would have been difficult 10 years ago to have foreseen the substantial increase in the share of imports in the electronics industry, and the employment problems this has created. In the meantime, Mauritius may consider herself fortunate to enjoy Associate Status.

3.34 Japan

Japan's trade liberalisation began in earnest in the period 1960-1963, when it moved to GATT Article XI and IMF Article VIII status. From 1964 to 1969 there was a fall in the pace of liberalisation while residual import restrictions were maintained, with the result that several industries were still highly protected. From 1969 to 1972, after the accumulation of large international payments surpluses, there was another liberalisation phase intended mainly as an alternative to a revaluation of the yen. In 1969 there were 120 items under quota restriction but by April 1972 these were reduced to 33, only 8 of which were manufactures. Of these 8, 4 are of different types of leather, while the others are leather footwear, digital electronic computers, their machinery and parts, and integrated circuits.

Tariffs on finished consumer goods remain high, even after the Kennedy Round, although the average level of Japanese tariffs is not high by international standards.

One point worthy of note in the context of this study is that tariff barriers against some significant labour-intensive goods are still substantial. The tariff on cotton knitted underwear, for instance, was 24 per cent in 1972, while on artificial flowers and plywood they were 25 per cent and 17.5 per cent respectively.

Japan provides general preferences to developing countries as does the EEC. The benefits have so far been rather limited owing to the small range of commodities under the scheme, and to the fact that the initial quota ceiling (in 1971) was so small that it could be filled within two months. The Japanese authorities have since promised improvements on this front.

3.4. Future Prospects for Exports of Manufactures from Developing Countries.

The 1960's and early 1970's have seen very rapid growth in the exports of manufactured goods from developing to developed countries. Among the leaders in this trend have been small or medium size countries, often in the Far East, with small or virtually non-existent endowments of natural resources. Generally speaking, the larger developing countries, even those with a powerful resource base, have lagged behind. One exception to this is, of course, Mexico, where being on the border of the United States market was a considerable stimulating influence, and the evidence in recent years suggests that other large countries, notably Brazil, are beginning to follow suit. The crucial question from the point of view of this study, however, is what prospect do the smaller non-resource based countries have of continuing the rapid expansion of previous years?

Several experts and commentators in the field of international trade consider that the year 1973 was a watershed in the development of these countries and that future years will see a slowing down in the rate of growth. There are several reasons for this:

- (a) Rises in the price of fuel following the energy crisis which began with the war in the Middle East in October, 1973, have substantially increased transport costs. This has a sharp impact on the competitiveness of goods produced a long way from the market. The effect of increased transport costs is heightened by the fact that a considerable proportion of the goods are transported by air. For instance, in 1973 20 per cent of Hong Kong's exports (by value) were sent by air. The list of products which normally are sent by air is given in Section 6. During the middle and late 1960's, the Asian region was able to take advantage of the considerable amount of air cargo space available at almost marginal cost, due to the freighting of large quantities of goods from the U.S. to Vietnam, and the lack of return loads for these aircraft.

This traffic has diminished considerably since late 1972.

- (b) It is clear from the case studies in the Appendix that production centres have been hard hit by the critical raw material situation which has been prevalent in the world economy since 1972. Although the shortages will ease, it is unlikely that the world will return to the relative abundance of pre-1972 for the foreseeable future. This will affect some industrial activities more than others, but among the worst hit will be the high growth industries in Hong Kong, Korea and similar centres. One of the most serious "once and for all" changes that have occurred is petroleum-based raw materials - plastics, artificial fibres and synthetic rubber. These are vital materials for nearly all the individual growth industries, including textiles and clothing, gloves, travel and sports goods, hair goods, toys and dolls and even electronics (most electronics products are packaged in plastic). Relative shortages in these materials will, of course, affect these industries all over the world. For many years, however, countries in the Far East were able to buy from Japan large quantities of products from its petrochemical industry which were surplus to its domestic requirements. Because of their surplus nature these supplies were available at little more than marginal cost. Since 1973 various factors, chief among them being the crisis in petroleum supplies and the escalating pollution problems in Japan, have combined to turn this surplus into a shortage. Nor are petroleum-based materials the only ones likely to be in shorter supply in the years to come. Special steels required for die-making will be more difficult to obtain.

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The supply of logs for plywood and wood products will be adversely affected both by global demand and supply imbalance and by the increasing trend towards wood processing in the countries of origin (principally the Philippines, Indonesia, Thailand, Malaysia and Burma).

(c) Part of the response to this situation in exporting countries may adversely affect their competitiveness. Faced with actual or threatened shortages, petrochemical and heavy steel industries are being established in a number of centres. It remains to be seen whether these industries can supply local factories at a lower cost than imports. The danger is that as these plants require a substantial commitment of finance, normally backed by powerful overseas corporations, there will be a strong temptation to protect them against imports should they prove uncompetitive. The price for more secure supplies may therefore be significantly increased costs.

(d) Relative shortages have produced movements in prices which, although they will ease, are unlikely to revert to the pre-shortage level. Between December 1972 and December 1973, the average increase in the prices of raw materials imported into Hong Kong was of the order of 70 per cent. Furthermore, imported grain prices rose by about 65 per cent during the same period. This latter trend exerts a strong upward pressure on wage costs, particularly in countries which are not self-sufficient in food supplies. In the electronics industry wage rates for female operatives in the Far East have been increasing at an annual rate of about 25 per cent during the 6 months ending in February, 1974. Part of this is due to the effects of imported inflation on living standards.

- (e) While the fears of a major world recession of pre-1939 proportions may be exaggerated, the developed countries are, for a variety of reasons, likely to experience a slowing down in the rate of increase of their standard of living in the years to come. This will of itself reduce the rate of growth of demand for imported consumer goods.
- (f) The rise in oil prices means that several countries will find their already considerable external balance problems greatly exacerbated. This has already led to the restriction of imports in one country (Italy), an example that may well be followed by others. Although these restrictions are likely to be temporary, the effects of the energy crisis on the external balance of industrialised countries may act as an influence to curb the movement towards freer trade.
- (g) Even before the energy crisis, there were increasing signs of a resurgence of protectionist sentiment, especially in the United States. There is, for instance, growing opposition to imports under tariff items 806.30 and 807.00 (See Section 3.32 above). This is expressed formally in proposals for legislation to eliminate these duty privileges, as well as the double taxation agreements enjoyed by multinational corporations exporting to the U.S. It is also expressed by direct union pressure against the multinationals' home operations. Many companies have responded to this either by abandoning altogether plans to set up offshore operations, or by modifying such plans so as to continue parallel operations in the home country.

Although this kind of opposition to freer trade is far from new, there are grounds for viewing the current situation with some misgivings:

- Income disparities within the industrialised countries may be increased - unskilled workers are likely to be hardest hit by international subcontracting or by investment in offshore operations by multi-nationals,
- the moves for quantitative restrictions have started at lower levels of imports from developing countries than on previous occasions. In particular the opposition is stronger than to imports from other developed countries, on the ground of "unfair labour",
- the probable slowing down in the rate of growth of the developed economies will lead to downward pressure on the labour market which will exacerbate anxieties concerning employment, and
- even under conditions of full employment, there may be powerful reasons, as Streeten* has shown, for limiting the access of labour-intensive products from low income areas. The reasons are, firstly, that full employment policies aggravate inflation and balance of payments difficulties; and, secondly, full employment policies are frequently interpreted as meaning that particular groups of workers have their jobs guaranteed.

* Paul Streeten, Comment on Chenery and Hughes' paper in World Bank Publication cited above.

Against these political pressures must be set the fact that there is an important distinction between international subcontracting or investment and direct commercial exporting by producers in developing countries. With direct exporting, both labour and management lobby against imports but with other arrangements labour is on its own. This distinction is reflected in the degree of market penetration by different products before quotas are imposed.

(h) Alternative supply sources for labour-intensive goods are developing. The countries most commonly mentioned in this connection are the Philippines, Malaysia, Thailand and Indonesia. There are already significant differences in the stage of development reached by these countries, with Malaysia and the Philippines having gone some way towards organising their economics for export orientated manufacture. Most of the countries concerned have abundant supplies of labour available at substantially lower rates of pay than in established exporting areas (See Sections 1 and 20 of the Appendix for inter-country comparisons of 1973 wage rates in electronic components and clothing) Many of them also have large natural resource endowments which makes them attractive investment centres for multinational corporations.

These factors, then, clearly point to a slowing down in the expansion of labour-intensive manufactures from developing countries during the 1970's. They should not, however, lead to over-pessimistic conclusions. Growth will continue and though it will be at a slower rate, the base has expanded enormously. From the specific point of view of Mauritius, provided certain problems can be solved (See Sections 7 and 8 below) there are at least two reasons why the outlook is still good even though the Island is trying to join the export race after the first surge has passed.

Firstly, Mauritius is an Associate Member of the EEC which gives it several distinct advantages over most other developing areas. Several plants have already been established on the Island for that very reason. Secondly, Mauritius is small, which means that she will not be so hard hit as other areas, either from raw material shortages or from any impact she may make on markets in developed countries.

TABLE 5.1. IMPORTS BY DEVELOPED COUNTRIES FROM THE WORLD, 1972

(Millions of U.S. dollars)

SITC No.	EEC	EFTA	US	JAPAN	CANADA	TOTAL
0						
512	1,912.5	1,700.4	1,042.0	207.7	272.8	5,135.4
532	2,713.9	982.7	509.0	208.6	173.0	4,587.0
541	24.4	10.9	9.8	6.4	2.7	54.2
551	942.2	562.8	149.0	260.9	102.3	2,017.2
611	157.2	81.8	72.7	46.0	11.8	369.5
631	488.6	218.9	140.5	27.5	44.8	920.3
651	367.8	466.7	455.7	171.0	83.7	1,544.9
652	1,489.5	746.7	305.4	74.4	113.9	2,729.9
653	599.5	424.0	259.8	96.9	105.6	1,485.8
655	1,584.4	813.7	631.2	154.4	252.5	3,436.2
656	449.0	285.1	123.6	15.8	90.7	964.2
657	242.4	164.4	87.9	15.3	59.6	569.6
661	691.2	300.8	91.2	18.2	37.9	1,139.3
662	304.5	57.5	113.6	7.8	15.9	499.3
663	408.9	155.6	60.6	4.0	39.8	668.9
665	345.6	180.3	47.8	13.8	30.5	618.0
671	294.5	96.7	100.5	11.0	57.1	559.8
673	461.3	230.5	183.0	79.9	24.8	979.5
674	1,414.6	494.1	704.9	4.2	117.8	2,735.6
678	1,868.1	920.9	1,396.5	2.9	176.7	4,365.1
684	728.2	420.6	379.5	6.2	112.8	1,647.3
696	919.3	477.1	369.3	167.1	99.6	2,032.4
697	105.2	70.0	108.9	11.3	19.5	314.9
698	215.6	127.9	120.9	9.1	43.0	516.5
724	683.2	467.6	346.6	26.9	192.3	1,716.6
821	1,340.4	1,102.8	1,671.5	63.4	426.5	4,604.6
831	895.8	425.8	323.6	17.4	60.9	1,723.5
841	130.3	89.3	166.7	19.2	26.0	431.5
851	3,504.9	2,649.5	1,875.1	154.7	278.0	8,462.2
861	761.9	424.9	915.0	23.1	96.4	2,221.4
892	Scientific instruments	845.8	513.0	153.2	357.8	3,268.1
893	Printed matter	450.8	216.3	72.6	279.2	1,654.7
894	Articles of plastic	338.6	287.1	18.1	98.1	1,317.2
897	Toys & sporting goods	487.3	568.1	310.2	127.7	1,799.5
899	Jewellery	173.7	112.0	12.8	24.6	463.8
	Baskets, umbrellas, wigs, etc.	370.6	331.5	53.9	49.5	1,057.9

TABLE 3.2. IMPORTS BY DEVELOPED COUNTRIES FROM LESS DEVELOPED COUNTRIES 1972
(Millions of U.S. dollars)

SITC No.	EEC	EFTA	US	JAPAN	CANADA	TOTAL	PERCENTAGE OF TOTAL WORLD IMPORTS
0	361.2	253.1	323.7	79.5	43.8	1,061.4	20.7
512	38.3	21.8	34.6	11.4	1.3	107.4	2.3
532	6.9	1.9	4.3	0.6	0.5	14.2	26.4
541	28.6	11.5	39.1	12.1	3.8	95.1	4.7
551							
611	30.2	10.1	29.4	8.1	0.3	78.1	21.1
631	180.2	64.7	61.2	18.7	3.4	328.2	35.8
651	56.0	69.9	301.9	38.3	28.7	494.8	32.0
652	80.7	31.4	32.1	54.3	6.9	205.4	7.5
653	81.8	84.6	136.0	36.8	20.0	359.2	24.2
655	51.2	56.7	250.4	56.0	29.3	443.9	12.9
656	37.9	1.9	33.6	2.1	8.0	51.2	5.3
657	218.2	35.2	33.1	4.8	6.9	117.9	20.7
661	1.7	60.8	33.5	3.4	2.7	318.6	28.0
662		1.3	22.8	1.9	0.2	27.9	5.6
663	6.4	2.4	10.8	0.3	0.5	20.4	3.0
665	3.9	1.2	5.7	1.4	0.2	12.4	2.0
671	4.9	0.8	14.3	0.9	0.6	21.5	3.9
673	120.4	20.9	5.2	13.4	2.6	162.5	16.6
674	4.2	1.9	50.2	0.7	0.5	57.5	2.1
678	17.0	0.2	95.4	1.3	-	113.9	2.6
684	8.6	2.3	33.3	0.1	0.2	44.5	2.7
696	48.0	20.7	27.3	39.9	2.9	138.8	6.8
697	3.2	5.9	16.6	0.2	2.5	28.4	9.0
698	10.9	14.3	30.9	0.9	3.2	60.2	11.7
724	5.9	5.2	25.2	3.4	1.9	41.6	2.4
821	57.2	45.4	545.4	9.5	24.4	681.9	14.8
831	26.7	10.6	57.9	6.7	3.2	105.1	6.1
841	16.9	11.3	73.7	10.6	7.1	119.6	27.7
851	614.1	426.5	1,224.2	94.3	117.7	2,476.8	29.3
861	50.5	65.2	223.5	9.6	29.5	378.3	17.0
892	24.8	14.9	20.4	2.7	2.3	65.1	2.0
893	5.0	8.8	21.2	2.9	0.9	38.8	2.3
894	10.2	13.6	108.1	4.3	5.9	142.1	10.8
897	45.9	52.2	219.4	12.2	16.8	346.5	19.3
899	7.5	11.5	35.1	5.1	1.4	60.6	13.1
	42.0	23.2	196.8	22.8	4.2	289.0	27.3

Source : U.N. Publications.

TABLE 3.3 Imports to Developed Countries of Manufactures from Less Developed Countries as a Percentage of Total Imports 1972. (Millions of U.S. dollars)

SITC No.	EEC	EFTA	US	JAPAN	CANADA
0	18.9	14.9	31.1	38.3	16.1
512	1.4	2.2	6.8	5.4	0.8
532	28.3	17.4	43.9	9.4	18.5
541	3.0	2.0	26.2	4.6	3.7
551	19.2	12.3	40.4	17.6	2.5
611	36.9	29.6	43.6	68.0	7.6
631	15.2	15.0	66.2	22.4	34.3
651	5.4	4.2	10.5	73.0	6.1
652	13.6	20.0	52.3	38.0	18.9
653	3.2	7.0	39.7	36.3	11.6
655	1.2	0.7	27.2	13.3	8.8
656	15.6	21.4	37.7	31.4	11.6
657	31.6	20.2	36.7	18.7	7.1
661	0.6	2.3	20.1	24.4	1.3
662	1.6	1.5	17.8	7.5	1.3
663	1.1	0.7	11.9	10.1	0.7
665	1.7	.8	14.2	8.2	1.1
671	26.1	9.1	2.8	16.8	10.5
673	0.3	0.4	7.1	16.7	0.4
674	0.9	neg	6.8	44.8	-
678	1.2	0.5	8.8	1.6	0.2
684	5.2	4.3	7.4	23.9	2.9
696	3.0	8.4	15.2	1.8	12.8
697	5.1	11.2	25.6	9.9	7.4
698	0.9	1.1	7.3	12.6	1.0
724	4.3	4.1	32.6	15.0	5.7
821	3.0	2.5	17.9	38.5	5.3
831	13.0	12.7	44.2	55.2	27.3
841	17.5	16.1	65.3	61.0	42.3
851	6.6	15.3	24.4	41.6	30.6
861	1.8	1.8	4.0	1.8	0.6
892	0.8	2.0	9.8	4.0	0.3
894	9.4	17.0	38.6	39.3	13.2
897	4.3	8.2	31.3	39.8	5.7
899	11.3	9.2	59.4	42.3	8.5
893	1.8	4.0	37.7	23.8	6.0

Source: See Tables 3.1 and 3.2

TABLE 3.4

Product Groups in which Imports from Less Developed Countries as a percentage of Total Imports are Greater than 20 per cent above the Average

	EBC	EFTA	US	JAPAN	CANADA
Food and drink	x	x		x	x
Tanning extracts	x	x	x		x
Essential oils & resinoids	x	x	x		
Leather	x	x	x	x	
Veneers	x	x	x		x
Textile yarn				x	
Woven cotton	x	x	x	x	x
Other woven textiles	x	x	x	x	x
Linens, bags & sacks	x	x	x	x	x
Floor coverings	x	x	x		
Pig iron	x				
Iron & steel plates				x	
Cutlery					x
Furniture				x	
Travel goods	x	x	x	x	x
Clothing	x	x	x	x	x
Footwear	x	x	x	x	x
Articles of plastic			x		
Toys & sporting goods	x	x	x	x	x
Jewellery				x	
Baskets, umbrellas, wigs, etc.			x	x	

Source: See Tables 3.1 and 3.2

TABLE 3.5

IMPORTS OF SELECTED GROUPS OF MANUFACTURED PRODUCTS FROM DEVELOPING COUNTRIES
BY INDIVIDUAL DEVELOPED MARKET ECONOMY COUNTRIES
PER \$1,000 OF GROSS NATIONAL PRODUCT: 1969 (U.S. CENTS)

IMPORTING COUNTRY OR AREA	MANUFACTURED PRODUCTS													TOTAL
	FOOD	DRINK AND TOBACCO	WOOD AND FURNITURE	RUBBER	LEATHER AND FOOTWEAR	TEXTILES	CLOTHING	CHEMICALS	PAPER AND BOARD	NON-METALLIC	IRON AND STEEL	WORKED METALS	ENGINEERING AND METAL		MISCELLANEOUS LIGHT MANUFACTURING
Total 21 Developed Market-Economy Countries	44.5	9.3	37.5	1.4	17.9	55.3	59.4	22.3	2.3	3.3	10.7	9.3	39.5	35.0
EEC Total	62.8	30.6	43.0	1.3	31.4	56.2	51.4	31.6	5.4	3.4	20.0	23.2	24.5	16.8
Belgium-Luxembourg	53.7	7.3	69.5	0.6	16.8	66.6	14.9	21.8	4.7	2.0	13.0	26.3	21.0	18.5
Federal Republic of Germany	64.4	9.2	39.2	2.3	35.4	88.2	114.5	21.9	3.6	3.1	11.7	32.9	30.8	26.6
France	65.5	82.5	29.0	0.5	24.8	23.4	10.3	29.4	4.5	0.9	26.8	18.2	11.4	8.1
Italy	27.3	1.0	47.2	0.8	48.8	41.5	3.5	26.3	11.6	5.4	34.0	20.2	20.9	8.9
Netherlands	699.9	5.4	104.5	1.8	9.6	84.5	84.2	123.2	3.2	13.5	1.7	5.5	71.3	29.7
EFTA Total	93.2	10.2	61.5	3.6	41.3	98.5	114.2	47.1	3.4	2.1	4.9	17.1	50.1	48.5
Austria	40.8	2.0	30.2	3.8	25.1	57.9	46.1	25.4	2.8	5.1	24.0	16.5	43.8	19.5
Denmark	28.9	5.9	95.8	2.3	21.9	77.3	101.8	16.3	0.5	0.9	0.7	10.1	19.9	32.7
Finland	32.2	5.7	10.0	2.5	11.2	30.5	17.0	20.6	0.2	0.2	4.1	7.7	59.6	18.6
Norway	17.2	4.3	44.4	2.0	9.1	30.7	107.4	7.0	-	2.1	2.0	15.6	67.9	20.4
Portugal	250.2	0.7	43.5	0.6	12.6	46.4	9.6	27.8	0.4	12.3	3.5	0.6	36.3	22.2
Sweden	410.3	6.0	26.7	0.8	25.3	56.9	170.4	17.7	0.1	2.4	7.7	20.4	17.3	26.0
Switzerland	87.9	22.4	24.6	0.7	16.9	90.5	76.9	50.8	1.1	1.9	3.1	13.0	29.0	40.3
Iceland	175.0	..	..	..	..	38.6	56.7	..	..	..	..	..	..	..
United Kingdom	790.7	12.1	82.6	5.3	60.7	132.0	129.6	67.2	5.9	1.6	3.4	19.7	64.9	67.2
Australia	438.4	7.3	63.2	2.6	10.1	176.5	38.9	14.6	4.6	7.0	4.9	-	32.2	54.1
Canada	331.7	5.9	31.3	1.1	16.2	74.8	78.3	13.3	0.3	3.5	0.2	0.9	22.1	33.3
Ireland	552.5	8.9	143.0	..	4.7	118.5	10.6	79.8	..	..	..	..	29.8	55.9
Japan	196.0	2.0	23.0	0.4	8.3	30.9	10.2	21.6	2.3	0.5	25.0	11.7	12.1	12.7
New Zealand	746.2	11.9	25.4	4.6	18.5	521.2	12.9	13.7	0.1	0.9	14.6	0.3	61.0	27.6
United States	289.1	1.1	31.5	1.1	8.9	41.3	57.6	13.6	0.7	3.8	6.2	1.9	50.2	43.7

* Excludes pearls, gemstones, nonelectric power-generating machinery, ships and boats (except from Yugoslavia), silk, petroleum and related products and unworked nonferrous metals.

Source: Hughes and Conway, op. cit. from U.N. Trade in Manufactures of Developing Countries 1970 Review.

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4. THE SCOPE FOR SUBSTITUTION OF LABOUR INTENSIVE FOR CAPITAL INTENSIVE TECHNIQUES*

4.1 Introduction

In recent years there has been a considerable amount of literature on the choice and appropriateness of different manufacturing techniques for use in less developed countries. There has been research on both the theoretical and practical level to determine the choice of techniques available and the influences on the choices actually made. One clear conclusion to emerge from this literature is that the scope for different techniques, and in particular for differing degrees of substitution between capital and labour intensive processes, is enormously wide for a considerable range of manufactured products. Pickett, Forsyth and McBain**, when investigating alternative processes for the manufacture of sugar, discovered that there were 311,040 different ways in which sugar could be produced even under one of three alternative process categories. After allowing generously for the interdependence of many of the production variants, quantity and quality of output, and technical efficiency, there were still 4,096 possible combinations.

Another conclusion to emerge is that institutional factors affect the choice of technique in any given instance just as much, if not more than economic considerations such as factor prices. Institutional factors were not taken to mean institutions such as unions and governments which influence and "distort" factor prices. Rather the term refers to the social conditions which influence many engineering decisions. The research indicates that these are often not the best decisions either from the point of view of the developing country or from that of the enterprise's

*In the preparation of this Section the consultants were assisted by discussions with Angus Hone and Michael Sharpton (see acknowledgements in Section 1). They do not, of course, bear any responsibility for the views expressed.

**James Pickett, D.J.C. Forsyth, and N.S. McBain: The Choice of Technology, Economic Efficiency and Employment in Developing Countries, World Development, March 1974.

profits. One possible reason for this is that the social environment of the engineers is frequently that of a developed country where the central maxim is one of labour saving. Even many of the engineers who are nationals of developing countries have been trained in accordance with the professional traditions of industrialised nations. There are other plausible explanations including lack of knowledge about possible alternatives, the influence of parent companies, of machine suppliers, or of the market.

These general conclusions are well supported by the research carried out in this study. Considerable differences in relative capital intensity were found in practically every industry investigated, often varying with the size of establishment (the smaller ones tending to be more labour intensive). It was found that the influence of the market can be exaggerated. It is frequently said that more capital-intensive technologies have to be adapted to enable a country or firm to keep abreast of the standards required for exporting*. In fact much depends on the product. It is doubtless true that more automation is required to compete successfully in international markets in certain products. There is, however, a wide range of industries including clothing, footwear, toys and dolls, hair goods, and metal products where large firms employing the latest internationally known machinery exist side by side with small "back street operators" using much more labour intensive techniques, and both are successful exporters. There are some industries, such as clothing and electronics assembly, where the degree of possible mechanisation is limited, and where the labour intensive workshop will nearly always compete successfully with the factory-organised operation.

*Several empirical studies said to support this view are quoted in Frances Stewart: Technology and Employment in Less Developed Countries, World Development, March 1974.

4.2 Substitution Possibilities.

Probably the best way to approach substitution possibilities is not to start with the conventional theoretical model showing capital on one axis and labour on the other of a two-dimensional production function, but rather to consider an empirically determined factory situation, starting with very rigid conditions concerning the equipment, the design of the product, the production process and then gradually to relax each of these conditions.

Condition A : Fixed capital equipment, fixed production process and fixed product design.

Even under those rigid constraints scope for substitution exists :

- (a) The equipment may be worked for two or three shifts instead of one, and it may be worked during weekends and holidays instead of just during the normal working week. This influences the degree of capital intensity as measured by the relative amounts of each item in the value added as follows :
 - interest charges per unit of output diminish,
 - labour costs relative to interest charges rise as premia have to be paid for extra hours worked, maintenance and managerial requirements are increased, and the rate of replacement due to fatigue rises, and
 - depreciation due to obsolescence relative to machine fatigue is less likely, so that depreciation charges per unit of output fall.
- (b) The ratio of workers to machines may be varied without altering the production process. For example, there may be two workers, one to load or unload the machine and one to operate it; or one worker, who stops the machine while he carries out the loading or unloading operations.
- (c) The number of tasks performed by one machine may be varied. For example, in the production of a product requiring three separate toolings, it may be economic under certain conditions to employ 3 separate machines, although each one would be capable of performing all 3 tasks, rather than

- causing the machine to be idle while it is re-set.
- (d) Machine parts, or auxiliary parts (such as light bulbs) could be replaced wholesale at a fixed time, or one by one as they wear out.
 - (e) The percentage of the amount of final products tested may be varied, rejects may be disassembled and reworked, or scrap or waste may be re-processed.
 - (f) The raw material used may be more/less standardised and the number of workers employed to select raw material from purchased stock for use in the process may be decreased/increased.
 - (g) The speed at which the machines run may be varied within certain limits (too fast a speed may adversely affect quality, or too slow a speed may cause bad surface finish). This will usually have the effect of varying maintenance requirements and machine life for a given volume of output.

Condition B : Fixed production process, fixed product design but variable capital equipment.

- (a) The method of materials handling may be varied to involve higher or lesser degrees of of mechanisation. Fork lift trucks, conveyor belts and chutes may replace head-carrying, wheelbarrows or pails. Loading or unloading of machines may often be done either mechanically or manually.
- (b) Assembly and packaging of many products is a process which can be carried out with or without the assistance of powered machinery. According to Baernesen* one company in Mexico used three operators and no machine for a packaging operation that required one operator with a machine in the United States.
- (c) There is a considerable potential for substitution of labour for capital in the testing of a product.
- (d) Cleaning and finishing (including polishing) may be more or less mechanised. In general, there is wide scope for varying degrees of automation in many processes. Stone or metal may be cut by a hand tool or by an automatic machine. Automated welding, rather than welding with hand equipment, is a possibility.

*Donald W. Baernesen, The Border Industrialisation Programme of Mexico, Heath Lexington, 1971.

- (e) Production may be organised by a batch or a flow system. This is similar to point (a) except that it involves the final commodity in differing stages of completion rather than the raw material. According to the batch system, batches of product are transported manually from one part of the factory to another instead of the whole process being a continuous flow, organised on a conveyor belt system.
- (f) The use of older machinery involving lower capital, but higher maintenance, costs is another possibility for capital/labour substitution. Again second hand machinery may be used, in the full knowledge of the possibility that spares may have to be made in the factory's workshops.

Condition C : Fixed product design but variable capital equipment and production process.

From this point on, the number of possible combinations becomes so great that only examples can be given. There is, however, one general point worthy of mention at this stage - the importance of unit size. It is likely that a small workshop operator will use a different process for the production of the same good than that adopted by a factory manager. The consequences of unit size for relative factor intensities is discussed in more detail below.

Other examples of ways in which differing processes can effect the labour/capital ratio are as follows:

- (a) In metal working, threads may be put upon a cylinder of metal by a lathe and in a single point tool, a lathe and a die, thread milling (where a spinning tool cuts into the piece which is itself moved), or thread rolling (where rollers squeeze the thread onto the piece of metal). These processes involve progressively higher capital costs.
- (b) In jewellery manufacture, pieces may be cast into rough shape in a die, or completely hand shaped from a piece of metal.
- (c) In the manufacture of gears for motors, the process may be by extrusion (forcing through a die and

then cutting the extrusion off), grinding, shaping (similar to wood chiselling), rotation against a complex, moving cutting tool, or welding the gears onto a round piece of metal.

- (d) Shoes may be manufactured by a power press cutting of the upper leather, and machine lasting, or by hand cutting of uppers and hand lasting.

In each of the above examples, the alternative processes are not always complete technical substitutes for one another, but there is a range of quality over which they may be so considered.

Condition D : Variable product design, production process and capital equipment.

Once variations in both product design and quality are permitted, the possible combinations of labour and capital are increased still further. As Stewart* has pointed out, the production technique adopted is closely related to the nature of demand. Income distribution and the need to cater to international demand can, for certain products, help to determine the techniques which are used to produce them. In the case of cars and tractors "designed specially for the developing countries" it was found that the technology was more suitable for the factor endowments of the countries for which and in which the goods were manufactured. Generally applied, however, this can only be a successful part of a development strategy which is inward-looking to an insulated domestic market. For a country the size of Mauritius it is at least arguable that such a strategy is not practical and, in any case, the authorities there have chosen a deliberately outward-looking development programme. In such a context there must be some constraint concerning the quality of products manufactured. Even given this constraint, however, possible changes of design can have a complex impact on the amounts of capital and labour used. Widely differing processes and materials may be used. In a labour-scarce, capital abundant economy, a more expensive raw material may be chosen because it machines more easily and requires less labour per unit of output. In a capital scarce,

*Frances Stewart : Op. cit.

labour-abundant economy, a cheaper material may be economically used. Again, the replacement of natural materials such as wood and leather by artificial ones such as plastic may be a labour-saving device. If a natural material is both irregular and expensive (leather for instance) it is necessary to use labour-intensive selection and working procedures to avoid or reduce scrapping. Finally, products may be designed so as to involve more or less assembly work. In the United Kingdom there is a pocket calculating machine which is sold in knocked-down form for assembly by the consumer, while in the United States it is common to sell bicycles in partly unassembled form.

Labour and capital have so far been spoken of as if they were homogeneous entities. At the very least, however, the problem of factor intensities should be viewed as a three-dimensional one involving capital, skilled labour and other labour. In Section 1, when discussing the definition of capital intensity, the level of wages per employee was decided upon as an appropriate index of human, as opposed to physical, capital intensity. This is a most important consideration. Many of the labour-intensive alternatives discussed in this Section, in fact, require a high degree of skill among the labour force, in some cases higher than the capital-intensive technique. In particular, the use of older machinery, or labour intensive testing and finishing, require more skill than their relatively capital-intensive counterparts.

4.3. The Influence of Unit Size..

Research on a number of industries in Korea undertaken for this study indicates that capital intensity in the same industry varies considerably with size of establishment. Small establishments (employing less than 50 persons) were found to have a lower value added per employee than the larger ones. This was not borne out in each individual case study (see the Appendix) but was found to be true on an aggregate level.

Small firms in such centres as Korea and Hong Kong do not face the same economic environment as large ones, especially in the following respects:

- (a) They face different relative factor prices. Large firms tend to pay less interest on borrowing for both working and fixed capital, and a lower deposit is frequently required from them. On the other hand, in the Far East, low wage (and even unpaid) family labour is an important factor in the continued viability of many small enterprises.
- (b) They face different factor availabilities. Partly because of (a) and partly because of other institutional factors, small firms have more difficulty in obtaining capital. Skilled labour, also, is less available. Small firms can rarely afford to train, pay the market salary, or retain skilled workers to anything like the same extent as large ones.
- (c) Small firms normally find themselves in a more competitive situation than large firms. This means that they are less able to pass wage increases on in the form of higher prices, and this leads to downward pressure on wage rates so long as conditions of labour surplus exist.

- (d) Partly because of difficulties in being able to obtain and finance large stocks, small companies need to be more selective in their use of materials.
- (e) Small scale allows less machine specialisation, so that the same machine will probably perform different tasks (see above, Condition A (c)).
- (f) Many small firms in Korea or Hong Kong act as sub-contractors to larger companies. Operating on the same principle as international sub-contracting, large firms in developing countries tend to re-sub-contract the most labour intensive part of an already labour intensive process. Thus, large firms making dolls will sub-contract the making of the dolls' dresses and wigs; large electronics product manufacturers will sub-contract the production of simple components; and artificial flower factories will sub-contract flower assembly.
- (g) The sub-contracting nature of much of the work means that many of the small firms are not in direct competition with the larger ones. They do not, therefore, feel such strong pressure to mechanise or to amalgamate as do small establishments which are in competition.
- (h) The sub-contracting work is frequently highly variable. A firm has a relatively small role to play in the marketing of its product and there is a considerable amount of irregularity in the work. This tends to discourage investment in fixed capital stock.

(i) One particular situation in which most production processes tend to be labour intensive is for small runs or non-standard sizes. Short runs do not permit the economic amortisation of highly specialised machinery, and the use of less specialised equipment is relatively labour intensive. Large firms frequently sub-contract those parts of the production process which are difficult to organise in long, mechanical production runs.

(j) Large firms are frequently in the habit of selling their older machinery to their sub-contractors. This practice was also followed in Japan in the late 1940's and early 1950's and was encouraged by various official measures. This access to second-hand machinery has two effects. Firstly, it helps to offset some of the disadvantages to small firms of lack of access to the orthodox capital market. Secondly, the available capital is spread more widely in such a way that small firms are encouraged to use relatively labour intensive processes.

These factors suggest that unit size plays a considerable part in determining the degree of labour intensity with which a particular commodity is manufactured, and that this is reinforced when a large amount of sub-contracting takes place. It can be seen from the following table that this conclusion is borne out by an examination of the aggregate data collected as part of the census survey of manufacturing in Korea. Because of the aggregate nature of this information, the evidence should be regarded as strongly indicative rather than confirmatory.

SUMMARY

1. The measure of labour intensity that has been adopted for this report is the value added per employee, made up of wage costs per employee as a mark of skill content or human capital intensity, and non-wage value added as an index of physical capital intensity (Section 2.1)
2. Using this measure a list of labour intensive industries was prepared from Census of Production data in the United Kingdom and the United States (Section 2.2)
3. Trade patterns in manufactured goods between developing and developed countries were examined. The list of goods that emerged corresponded well with the list of labour intensive industries in Section 2.2 (Sections 3.1 and 3.2)
4. The most important countries exporting these goods to developed countries are Hong Kong, South Korea, Taiwan, Singapore and Mexico. Three of these countries are small, and four of them are not endowed with substantial natural resources. In this sense they are similar to Mauritius (Section 3.2)
5. Trends in trade policy provide only partial grounds for optimism when considering the prospects for manufactured exports from developing countries. Lower tariffs after the "Kennedy Round" and subsequent GATT negotiations have to be set against increasing trends towards protectionism by the use of non-tariff barriers (Section 3.3)

Relationship Between Unit Size and Labour Intensity
in Korean Manufacturing Industry, 1972

<u>Industry</u>	<u>Value Added per Employee</u> <u>(U.S. \$)</u>		
	<u>Small Estab-</u> <u>lishments*(1)</u>	<u>Large Estab-</u> <u>lishments*(2)</u>	<u>Ratio</u> <u>of 1:2</u>
Knitwear	744	1,490	0.499
Spinning	911	2,596	0.351
Weaving	1,053	2,306	0.457
Garments	933	1,225	0.762
Travel goods	632	679	0.931
Leather footwear	967	818	1.182
Plywood	747	3,422	0.218
Wooden furniture	771	1,149	0.671
Rattan furniture	765	1,160	0.659
Rubber footwear	837	1,183	0.708
Plastic products	891	3,575	0.249
Ceramic goods	608	1,144	0.531
Stainless steel flatware	795	1,048	0.759
Metal household ware	1,049	1,397	0.751
Electronic products and components	1,531	2,263	0.677
Electrical appliances	966	2,541	0.380
Electric wire and cable	2,005	3,456	0.580
Bicycle parts	840	1,938	0.433
Photographic and optical goods	918	1,856	0.495
Watches, clock and parts	1,377	1,094	1.259
Musical instruments	646	1,358	0.476
Sporting goods	584	1,404	0.416
Umbrellas and parasols	961	1,378	0.697
Hair goods	591	805	0.734
Toys	634	1,115	0.569
Total	22,756	42,400	0.537

*(1) Small establishments: less than 20 persons

(2) Large establishments: more than 200 persons.

Source: Economic Planning Board, Republic of Korea, Report on Mining and Manufacturing Survey, 1972.

In only two cases (leather footwear and watches and parts) were the small establishments more capital intensive than the larger ones, and one of these (watch making) is one in which mechanisation is necessarily very limited, and in which wages paid in small businesses are high. Industries with the greatest differences between large and small establishments are plywood, plastic products and cotton spinning.

These data suggest that government policy should be directed towards the encouragement of small scale establishments to enable them to participate in the growth of manufactured exports. This would have particular advantages in a geographically small country such as Mauritius where much of the unemployment and underemployment is rural. Many of these small enterprises in Japan and Korea, and even in Hong Kong, are situated in provincial areas and are appendages to agricultural households. Because of Mauritius's size and good road access to most parts of the island, internal transport would not be a serious problem.

There are, however, certain conditions which are present in countries where this phenomenon has occurred, and which should be borne in mind. These conditions are:

- (a) The presence of large concerns which are prepared to sub-contract parts of their manufacturing to small scale firms,
- (b) Little governmental intervention to change the manufacturing wage structure or employment practices by small family businesses.

- (c) An accessible market in second-hand machinery
- (d) A willingness on the part of small entrepreneurs to invest in manufacturing rather than services.
- (e) A well developed system of education (given the stage of development of the economy as a whole) which has an effective impact outside urban areas.

4.4. Examples of Substitution of Labour Intensive for Capital Intensive Manufacturing in Developing Countries.

As stated at the beginning of this Section, the choice of factor combinations is very great in a wide range of manufacturing activities. This was borne out by the subsequent discussion. Fixed technical coefficients and capital output ratios may have some use as economists' analytical tools, but they bear no relation at all to the choices actually facing production engineers in most factories.

During the course of the field work for this study, firms with foreign investment, or firms which were thought to have knowledge of production methods in developed countries, were asked if they had substituted labour intensive for capital intensive processes. The answers that were received are as follows:

Industry

Electronic components

Change of Method

The components are tested on an electronically controlled machine. In the U.S. the components are handled mechanically into a testing device which then sorts them automatically and places them into one of four chutes depending on the results of the test.

Industry

Change of Method

- Electronic components contd.. The process is computer controlled. In Korea the components are fitted manually into a socket on the testing machine, which then emits one of four different coloured lights according to the results of the test. The operative places the component into one of four boxes depending on the colour of the light.
- Spectacle frames Moulding, stamping and cutting of the complete article is mechanical and done from the same piece of material in a developed country. In a developing country the machine cutting is rougher and the pieces are finished and assembled by hand.
- Lens grinding This may be done by an automatic machine or by an operative with a hand tool.
- Travel goods Vinyl plastic pieces are measured and cut by hand rather than by machine.
- Carpets Tufting may be done manually with or without the use of hand tufting machines.
- Marble polishing This may be done manually or by a polishing machine.

Industry

Change of Method

Shoes

Leather uppers may be hand or machine cut, and the lasting may be automated or manual.

Jewellery

Pieces may be entirely hand worked or rough cast and hand finished.

Metal houseware

Goods may be shaped by power presses or by manual beating.

Decorative light bulbs

Colouring may be by hand or by automated dipping.

Electric irons

Less automated assembly.

Gloves

Sub-contracting to small family establishments for hand-knitting of component pieces.

Metal wrist watch bands

Manual rather than automatic link cutting.

Machine tools

Higher ratio of labour to machinery.

Wooden furniture

Hand tooled rather than machine tooled parts.

Source: Field interviews.

That the above list is not more extensive is an indicator not of the failure to adopt labour intensive techniques, but of the ignorance of many local managers of the more mechanised techniques that are used in industrialised countries.

4.5. Conclusions.

Factory engineers have to deal with a wide range of parameters which include scale of production, degree of labour skill, availability of equipment, material cost and availability, and precision or quality required. Considerable scope for the substitution of labour intensive for capital intensive methods exists, even under present conditions which are imperfect both in terms of knowledge and in terms of the rigidity of conditions which may be imposed on some entrepreneurs. The major barriers to the adoption of the most appropriate techniques are institutional rather than technical or economic.

5. INCENTIVES AND ACHIEVEMENTS IN SELECTED PRODUCTION CENTRES

5.1 Introduction

The trade patterns discussed in Section 3, and the possibilities for factor substitution considered in Section 4, suggest that there have been substantial possibilities for developing countries to exploit export opportunities in labour intensive manufacturing. Why is it, then, that some developing countries have succeeded in this field and not others? This is a complex question some of the ramifications of which go beyond the terms of reference of this study. In this Section some of the economic pre-conditions for success are set out, and the experiences of several countries which have either succeeded in developing, or are attempting to promote, exports of manufactured goods are studied. It should be made clear at this point that the pre-conditions for success are necessary rather than sufficient and, what is more, they take into account the specific problems of a small non-resource based economy such as that of Mauritius. They should not be interpreted as all that would be required for large, complex economies such as India's to launch themselves on to world markets.

The conditions required for success in becoming a centre for international subcontracting have been fully discussed by Sharpston*. Much of what he says applies with equal force to exporting through multinational investment or by local companies on a commercial basis, though there are other conditions, especially for the latter, which are noted later.

The most typical reason for international subcontracting is to take advantage of low labour costs in the production of a labour intensive product. If, as is the case in the Far East, certain grades of skilled and supervisory labour are available at lower rates than in developed countries then all the better.

* Michael Sharpston: International Subcontracting, forthcoming publication in the Oxford Economic Papers.

If not, then the availability of low-cost but trainable unskilled labour is a necessary criterion. The productivity of the labour may be expected to be low in the initial stages but the evidence suggests that it increases rapidly over time as the labour force gains in experience. Even where labour productivity is substantially below what would be expected in a developed country, the gap in wage costs may still be great enough to compensate a buyer or an investor for this and any other additional costs involved. It is worth noting in passing that this does not contradict the oft-repeated finding that total production costs, in many industries, are higher in developing than developed countries despite cheaper labour. The reason for this is usually the shortness of the production run as the majority of the plants investigated are geared to the domestic market. With export-orientated plants this does not apply.

As Sharpston points out, a commodity does not have to be particularly labour intensive to succeed as an export from a developing country. According to the criterion of non-wage value added per employee, there is great variety between successful industries, as is made clear from the case studies of individual enterprises in the Appendix. A country would be wrong, therefore, to shut its eyes to possibilities outside the range of industries normally defined as labour intensive, though it is in those industries that the greatest potential exists because, so far, their production processes have resisted mechanisation. Also, in electronics for example, there is a phase of production which requires a lot of labour, though it is "hidden" in the middle of a process which in total is both skill and capital intensive.

One important consideration which should be mentioned here is that of labour availability. Some processes, involving mass production and considerable capital equipment, also require large numbers of low-skilled workers. These may not be readily available in developed countries for various reasons.

In this connection it is interesting to note that a majority of the semiconductor manufacturers interviewed by the consultants cited labour availability as a more important reason than cost for locating a plant in a particular country. Availability does not simply mean mere numbers. The labour force must be trainable, educated if possible, and not widely dispersed. This factor of dispersion has been well noted by the authorities in Hong Kong and Singapore where the labour force is concentrated in special housing schemes near to production centres.

Turning from labour, the second most important consideration is "distance" costs. The most important element in distance costs is transport, and here the critical factors are normally weight and bulk. A manufactured item which takes up a lot of space or weighs a great deal in relation to its value is unlikely to be a much-traded commodity. For products which of themselves do not present transport problems, the essential requirement is for an efficient, reliable, external transport service by both sea and air which is not so costly as adversely to affect the competitiveness of the area in question.

Closely connected with the question of transport is that of facilities for handling cargo at the ports and airports of the country concerned. Many of the successful exporting countries have little or nothing in the way of materials, and their manufacturing relies to a large extent on imports. Good handling facilities are therefore required at both "ends" of the production process.

"Distance" costs other than transport concern mainly communication and executive travel time. The logistics of the production process from factory to final consumer are much more complex than if the whole operation were conducted in one country. This is clear, for example, in the relative difficulty of sample approval, product design and last-minute or on-going changes to the production process.

For these reasons, good telecommunication facilities are necessary as also are adequate air passenger transport links.

Another advantage of procurement inside one's own country rather than importing is that it is much easier to seek redress in the event of dissatisfaction. The exporting of poor quality goods by producers who have subsequently "disappeared" has been a serious problem in some Far Eastern centres and can significantly damage a country's reputation. For this reason, the role played by trading houses in a producing country in forging and maintaining links with buyers in the market countries can be a vital one. This is especially important in those cases where, for a variety of reasons, production is organised on a small scale with a large number of establishments. The trading companies in these circumstances would act as possibly the only link between manufacturer and buyer, whom the latter could more readily trust.

Language differences can cause problems, particularly in the case of direct investment or where a buyer is trying to communicate requirements by telecommunication. For these reasons, the trading links between centres of a common language are stronger.

Finally, distance affects the ease with which spare parts may be swiftly supplied or unexpected gaps in material stocks filled. This is partly a question of transport but also of the existence of supporting industries. The latter are not an essential requirement provided transport is adequate, but clearly the more supporting facilities a country has, the easier it will be to organise exporting on a continuing basis.

The third general category of requirements concerns the field of official policy, not so much in terms of incentives to encourage exports (extremely helpful though these often are), but in the avoidance of hindrances which may effectively increase "distance" costs, often to such an extent as to rule out a country as a potential exporter of significance.

6. In addition to these trends, the impact of the energy crisis and other adverse factors will almost certainly reduce the rate of growth of manufactured exports from developing countries below the high levels experienced since 1960. Despite this, the prospects for Mauritius are better than those for many other countries (Section 3.4).
7. The scope for substitution of labour intensive for capital intensive processes is found to be very wide throughout the range of relevant industries. Relative labour intensity is inverse to size of manufacturing establishments (Section 4).
8. An examination of the record of achievements and policies in certain manufacturing and exporting countries leads to the conclusion that the main requirements for developing countries to be successful exporters are:
- a relatively low cost , but trainable and industrious labour force,
 - good transport facilities and well developed communications, and
 - an absence of bureaucratic obstacles to trade and business enterprise. (Section 5)
- Other subsidiary reasons for past success, some of them specific to countries studied, are
- historical factors, especially the presence of entrepot trade, and substantial inflows of foreign finance (not necessarily directly into the industries concerned),

Bureaucratic obstacles to exporting and importing are obvious examples. In general, it would be fair to say that the nearer to free trade a country can get, the easier it will be to develop as an exporting centre. This is, of course, the rationale behind the establishment of Export Processing Zones (EPZs) in countries which for various reasons do not wish for free trade in the rest of their economies. It is, however, the case that the most successful countries have been those where the distinction between the EPZs and the rest of the economy is slight.

It is in most cases the responsibility of the Government to ensure adequate supplies of land, water and electricity. In addition the time taken to vet applications for investment or production licences, should be reduced to a minimum. In particular the number of Government departments concerned with investment approval should be limited to one if at all possible.

Political stability is an important consideration, especially where large amounts of foreign capital are required. Firms which consider it likely that their assets may be expropriated will either not invest at all or try to earn the repayment of their capital in the shortest possible time.

Among the most significant positive measures governments may take are those to encourage exporting by specifically local firms. Ways of doing this are officially backed trade promotion offices in market centres, subsidising credit and compensating for material wastage.

The countries which have had most success in exporting labour intensive manufactures are those which, to an important extent, fulfil the above requirements, or are so close to the market as to overcome distance costs, or both. The country case studies which follow in this Section confirm this.

5.2. Hong Kong.

5.21 Industrial Growth

Since 1960 the Hong Kong economy, and its industrial sector in particular, has grown exceptionally fast by international standards and has become the second most prosperous country in Asia after Japan. The following table shows the expansion of manufacturing exports, establishments and employment since 1959.

Growth of Manufacturing in Hong Kong 1959-1973

<u>Year</u>	<u>Exports (U.S. \$ Million)</u>	<u>No. of Establishments</u>	<u>Numbers Employed</u>
1959	373	4,689	205,726
1960	468	5,346	224,400
1961	480	5,987	248,888
1962	541	6,943	272,803
1963	625	7,989	326,182
1964	723	7,872	322,307
1965	821	8,646	341,094
1966	935	10,023	391,512
1967	1,094	10,811	417,241
1968	1,389	11,872	476,642
1969	1,731	14,333	529,894
1970	2,032	16,507	549,000
1971	2,254	19,402	605,367
1972	2,499	21,386	619,684
1973*	3,448	29,105	626,392

* Preliminary figures

Sources: (1) Federation of Hong Kong Industry
(2) Government of Hong Kong Departments of Census and Statistics and Labour.

The annual rate of growth of exports during the fifteen year period was 17.2 per cent, and that of employment was 8.3 per cent. The rate of growth of employment has slowed down since the base expanded, and was 7.0 per cent per year between 1967 and 1973. The rate of growth of export value has expanded, however, increasing to 21.1 per cent since 1967 despite the larger base.

This impressive rate of expansion has been achieved despite problems, both external and internal, which arose during the period. These included increasing quantitative restrictions imposed by importing countries, civil disturbances and a banking crisis in the Colony itself, and international currency upheavals which have raised the value of the Hong Kong dollar in international markets.

The most important manufacturing industries (in terms of percentage of exports and employment in 1972) were the following:

	<u>Percentage of Total Exports</u>	<u>Percentage of Total Employment</u>
Textiles and garments	50.3	42.6
Plastic goods	11.3	11.6
Electronics	11.8	8.0

Other significant product groups were electrical appliances, travel goods and footwear, metalware, hair goods and precision instruments (including watches, clocks and parts and optical goods).

5.22 Incentives

There are no tax holidays or special tax incentives in Hong Kong other than initial allowances. Deductions are allowable in respect of capital expenditure, usually in the form of an initial allowance of 20 per cent.

After this, there is an annual wear and tear allowance which varies from industry to industry.

Attractions to foreign investors have not, therefore, consisted of fiscal incentives but of elements in the economic environment, chief among which are:

- the virtual free trade status of the Colony,
- its low tax structure,
- its central location in the Far East,
- the absence of severe exchange control regulations,
- the excellent banking, insurance and shipping facilities which were established initially in response to the substantial entrepot trade,
- simplified business procedures, and
- the availability of an educated, productive but relatively low cost labour force.

5.23 Other Assistance to Industry

Industry in Hong Kong is served by a number of official and private organisations. The Federation of Hong Kong Industry maintains a Standards Centre and provides a consultancy and advisory service on the standard requirements of various countries. The Productivity Centre is responsible for providing various types of training in order to increase workers' productivity. This service is especially valuable for small and medium sized companies. On the marketing side, the Hong Kong Trade Development Council is responsible for promoting sales of Hong Kong products overseas and for attracting new investment to the Colony. It has a worldwide network of offices.

5.24 The Role of Foreign Investment

In statistical terms, the role of foreign investment has been very limited, and concentrated in the textile and electronics industries.

However, the value of investment does not fully reflect the impact of foreign participation as a catalyst in spreading technical knowledge and raising productivity.

At the end of 1972, the distribution of foreign investment was as follows:

<u>Industry</u>	<u>Investment* (U.S. \$ million)</u>	<u>No. of Establish- ments</u>	<u>Numbers Employed</u>
Textiles and clothing	54.8	68	12,673
Electronics	49.0	60	29,122
Food manufacture	21.6	7	1,115
Shipbreaking and steel rolling	7.4	4	660
Toys	7.4	9	9,241
Printing and publishing	6.0	5	910
Hair products	5.3	14	6,622
Watches, clocks and parts	4.7	13	4,032
Metal products	4.7	9	725
Electrical appliances	4.6	10	1,337
Optical goods	3.7	3	375
Chemical products	2.7	5	154
Shipbuilding and repair	2.2	4	1,141
Jade and jewellery	1.0	6	127
Plastic products	0.8	6	240
Other industries	20.5	26	1,497
Total	196.4	249	69,971

* Including joint ventures

Source: Hong Kong Trade Development Council: Industrial Investment in Hong Kong, 1973.

Overall, foreign investment accounted directly for 11 per cent of total manufacturing employment and about 12 per cent of the value of manufacturing exports in 1972. There has been a growth of 27 per cent in employment provided by firms with foreign investment since 1970, while total employment rose by 14 per cent.

Foreign investment concerns, therefore, have increased their share of total industrial employment.

A valuable role in Hong Kong's industrial development has also been played by foreign finance which has reached manufacturers through foreign controlled banks and other lending institutions in the Colony. This is difficult to identify statistically and is not included in the above table.

5.25 The Role of Trading Houses

One of the most important elements in the expansion of manufactured exports in Asia, in which Hong Kong has shared, has been the influence of trading houses, both locally and in market countries*. To consider the latter first, the role of the Japanese zaibatsu houses (Mitsubishi, Mitsui, Marubeni, Iida, Michinen and others) and of the large retail chains in North America and Europe (Sears Roebuck, J.C. Penney, Montgomery Ward, Marks and Spencer, C. and A. Modes and Kaufhof) has been a critical and rapidly expanding one. The zaibatsus are estimated to purchase more than U.S. \$1.4 billion worth of manufacturers from Asia per year, over two-thirds of which is re-exported to the U.S. and Europe. The American and European houses, in addition to purchasing from the zaibatsu, have started to establish offices in several centres in order to forge direct links with local traders and manufacturers. For a substantial proportion of goods traded, however, the sequence is still as follows:

Orders: Zaibatsu - local trader - local manufacturer.

Sales: Local manufacturer - local trader - zaibatsu - American or European retail house - consumer.

Sometimes two further links may be added to the chain, if large local manufacturers sub-contract to smaller firms, and if the American or European retail chains import through a wholesaler.

* See Angus Hone: Growth of Asia's Manufactured Exports, World Development, February, 1974.

The role of local trading companies in Asia is based on the saibatsu model. This is seen both as a means of dealing with large buyers on a more equal footing and as a way of securing the advantage of bulk buying of materials and other inputs. They also help to ensure the survival of the small scale manufacturing enterprise as an exporter. Frequently, there are financial and managerial links between the trading houses and the larger manufacturers. As well as these general houses, there are smaller trading companies which act as middle-men between manufacturers and the larger buyers. These smaller houses tend to specialise in particular products and one of their functions may be to ensure quality control. It is increasingly necessary for traders to become technically proficient. Foreign buyers place orders for "new" designs and products through the large buying houses or through their own offices but, frequently, neither of these are prepared to risk purchasing large batches from manufacturers until the product has been market tested. Taking this risk and providing the necessary finance to manufacturers is frequently the role of the smaller houses. Then, when the product is considered "safe", the large traders step in with the more substantial finance required for the production of bigger orders.

This latter role has been especially important in Hong Kong, where the Colony's industries have responded to rising overheads by moving into the production of more sophisticated items. These more positive aspects of the trading companies' activities should be set against the accusations of hoarding and speculating (see Appendix, Section 12). During periods of intense price fluctuation they help to assure buyers that all possible will be done to keep to the terms of a contract. They also provide buyers with a means of redress.

5.26 The Importance of Historical Background

Any country attempting to emulate, even partially, Hong Kong's experience should be aware of the special historical factors which played a vital role in the Colony's industrial development. Until the 1950s the economy depended very largely on the entrepot trade between China and the rest of the world, which brought about the rise of an excellent infrastructure of banking, shipping, insurance and storage services. The real rise of manufacturing began in 1949 and 1950. After the Revolution in China, many industrialists arrived in the Colony together with machinery, technical knowledge and capital. Then the outbreak of the Korean war brought the U.N. trade embargo on China and the need to find alternative sources of income to the entrepot trade. These two factors combined to launch a programme of rapid industrialisation in Hong Kong.

5.27 Future Prospects

In Section 3, various factors were considered which, it is believed, will cause exports of manufactures from Asia to expand less rapidly than during the period prior to 1973. Hong Kong will not only be affected by these trends but has certain other disadvantages to contend with. Land for industrial purposes is becoming extremely short in supply, and expensive, so that it is very difficult to obtain accommodation at all except in multi-storey factories. This severely limits the type of industrial activity that can be undertaken. All land in the Colony belongs to the Crown - land leases for industrial use are usually sold by the Government at public auctions. The average price for this land has been increasing since 1970 at an annual rate of between 15 and 112 per cent depending on the area.

Some industries in the Colony face a bleak future. These are normally the more labour intensive, less skill orientated activities such as footwear manufacture, which will find it increasingly difficult to compete with areas such as Korea or Taiwan which have lower labour and overhead costs.

The upgrading of Hong Kong's products which is already underway is currently limited by the lack of technicians and highly qualified management.

Industry and the authorities are responding to the situation by attempting to correct the imbalances in the education system, by seeking foreign investment which will raise production, more advanced industrialisation, and by developing industrial estates in less developed parts of the Colony.

It remains to be seen how successful the attempts to broaden the industrial base will be. Larger factories in the Hong Kong context raise problems of siting, worker housing and communications. These, and the increased equipment required per worker, will raise the cost of varying the average firm's output, and tie it more closely to particular products and processes. However, if the upgrading is successful there should be little difficulty in continuing to expand exports, though this will almost certainly be at a slower rate.

5.3 Korea

5.31 Industrial Growth

Largely due to the growth of manufacturing, Korea succeeded in reducing the official estimate of unemployment from 8.1 per cent in 1963 (the first year for which data are available) to 4.5 per cent in 1970. Employment in the primary sector has been declining since 1966, while that in the secondary sector doubled between 1963 and 1970.

Gross Domestic Product has been growing at an annual rate of about 10 per cent, while manufacturing output has been increasing at a rate of nearly 40 per cent.

The chief explanation for the growth in industrial production is the shift in commercial and official priorities from import substitution to export promotion. This had the effect of raising the proportion of manufactured goods in total exports from 19.4 per cent in 1962 to 81.8 per cent in 1972. The percentage of industrial output exported rose during the period 1964-1973 from 10.7 per cent to 54.4 per cent.

Growth of Manufacturing in Korea,

1964 - 1973

<u>Year</u>	<u>Output</u> <u>(U.S. \$ million)</u>	<u>Exports</u> <u>(U.S. \$ million)</u>	<u>Numbers</u> <u>Employed</u>
1964	547	59	631,000
1966	703	153	857,000
1970	1,842	635	1,260,000
1972	2,441	1,329	1,372,000
1973*	3,294	2,547	1,485,000

* Provisional estimate.

Source: Bank of Korea, Monthly Economic Statistics, January 1974.

The most important manufacturing industries, in terms of percentage of exports, were the following in 1972.

	<u>Percentage of total exports</u>
Textiles and garments	35.5
Plywood	11.6
Electronic and electrical products	9.4
Hair goods	5.6

- the availability of materials from Japan at low cost,
- the availability of low-cost air cargo space during the Vietnamese war, and
- a high level of social discipline especially with regard to industrial relations (Section 3.4 and 5)

9. The characteristics of selected manufacturing establishments in a number of developing countries, covering 21 industry groups and sub-groups were examined to determine:

- labour intensity (as measured by value added per employee),
- ownership and relationships with suppliers and buyers.
- use of land and demands on public utilities,
- consumption of fuel,
- use of supporting industries and services,
- transport requirements,
- employment, and
- reasons for choice of location (Section 6 and the Appendix)

10. The development of labour-intensive exporting industries in Mauritius is examined and future growth tentatively forecast. Special problems that have arisen to date and specific constraints to future development are outlined.

Other significant product groups were metal products and footwear. The structure of Korean industrial exports differs from that of Hong Kong in two important respects: the importance of plywood, and the relative insignificance of plastic products.

5.32 Incentives

Generous investment incentives and safeguards are offered, especially to foreign investors, to promote investment for export. A full list of incentives can be found in the Economic Planning Board Publication: "Investment Opportunities in Korea". The main features, together with comments upon them, are as follows:

a) Policy regarding imports of materials and equipment

Unlike the authorities in Singapore and Hong Kong who allow free importation of virtually all commodities, the Koreans impose controls on imports in order to save foreign exchange, but also take various measures to ensure that these controls do not hamper the competitiveness of exports. Most exporting companies are exempted from duty. There is also an arrangement to help firms, especially in the electronics industry, which re-export components and materials after processing. This is known as the "bonded process" system. While the imported components or materials are being processed import duties on them are retained by the authorities, but they are remitted when the goods are re-exported. This effectively rules out the possibility of selling the goods on the local market. In late 1973 some concessions were made to allow firms to sell a certain proportion of their output in Korea.

(b) Industrial Estates

(i) Free export zones At present there is only one - the Masan Free Export Zone on the Southern coast. The Zone has been created to accommodate foreign firms which wish to manufacture for export. The entire Zone is bonded, and many business regulations are eased or waived. Goods produced in the Zone are not normally allowed entry into the domestic market though there are exceptions. Exchange control on capital and profits is waived, while low cost export credits are available to foreign firms in the Zone on the same basis as to local firms outside it. The total size is 57 hectares, with expansion to 174 hectares planned for the end of 1975.

(ii) Export industrial estates. There are 5 of these estates with a total area of 330 hectares. They were created to accommodate medium and small size exporting firms, providing cheap infrastructure facilities. Foreign firms are eligible to locate in these estates, provided approval is obtained under the Foreign Capital Inducement Law.

(iii) Special co-operative industrial estates. These estates are sponsored by the Government but managed by private co-operatives of manufacturers of similar products.

(iv) Local industrial estates. Eleven estates, totalling 1,250 hectares, are available near provincial urban centres. They are open to foreign investors.

(v) Coastal industrial estates. These estates are designed as modern industrial estates with no customs privileges, but they are provided with adjacent port facilities. The total area they cover is 6,200 hectares. They are mainly for heavy industries such as oil refining, petrochemicals, steel and heavy machinery.

(vi) Special estates. The only one of these so far established is the Korean Electronics Industrial Estate Gumi covering 49 hectares. This is open to foreign electronics firms though few are as yet located there.

(c) Export Subsidies and Incentives

Subsidies to exporters consist of loans on preferential terms; relief from various corporation and other business taxes; and discounts on rail and electricity charges. Apart from these direct subsidies, various indirect incentives are provided. Exporters are authorized to import items otherwise prohibited or restricted for sale on the domestic market. Up to 20 per cent of raw materials imported for export production is allowed to be called "wastage" and can be sold on the domestic market. These materials are usually imported free of duty and are frequently commodities which are in short supply or of better quality than those normally available. Clearly, substantial profits can be obtained from this source which compensates firms for losses on exports. This powerful armoury of incentives has been criticized on two grounds: that they may lead to reprisals from countries importing Korean goods (they are a powerful weapon which may be used to justify restrictions), and that their cost to non-exporters and to the nation's economic welfare is too high in relation to the extra foreign exchange they bring.

The latter is a question beyond the scope of this study except to point out the danger that over-protection of export industries has social costs, although most of the discussions in economic literature is concentrated on the costs of import substitution to developing countries.

5.33 Additional Assistance

For the benefit of foreign investors, there is the Office of Investment Promotion which was established to provide a single centre capable of giving advice to investors and swiftly processing applications. Previously, investors were subjected to the need to make separate applications to different ministries. Since the establishment of the Office, this time-consuming process has been eliminated and investors normally have their applications processed within 30 days.

In order to assist with marketing, the Korea Trade Promotion Corporation (KOTRA) maintains a worldwide network of branch offices which publicise Korean exports and carry out market research. KOTRA is Government sponsored.

5.34 The Role of Foreign Investment

Watanabe* quotes data provided by the Economic Planning Board on foreign investment at the end of 1970 which states that foreign investment accounted for 13.3 per cent of total manufactured exports and for only 2.5 per cent of manufacturing employment. At the end of 1972 20.5 per cent of the total number of foreign investors in manufacturing were in electronics, 13.7 per cent in chemicals, 12.7 per cent in machinery, and 11.7 per cent in textiles and garments.

* Watanabe: Exports and Employment in the Republic of Korea, International Labour Review, 1972.

The remaining 41.4 per cent were spread fairly evenly over the other industries.

As in Hong Kong, the direct role of foreign investment can be seen to be small except in the electronic industry. Again, however, foreign investment did provide technical and managerial benefits which are not reflected in the statistics. Also, much technical assistance is provided by foreign companies which sub-contract to Korean firms. Most of this sub-contracting comes from the same sources as the investments - Japan, the U.S. and Hong Kong. The consultants were informed that a small but significant proportion of Korean investments were made by "Japanese" or "American" Koreans, these being individuals who had spent a substantial part of their lives outside Korea. There are no data available concerning this point. Also of significance was the large amount received in official loans and grants, especially from the U.S. and Japan. Between 1948 and 1970 Korea received more than \$5.7 billion in loans and grants, mainly from the U.S. After the normalisation of relations with Japan in the mid 1960s, a further \$1 billion has been received from this source. A great deal of this foreign exchange has been spent on imports of goods required for industrialisation. Finally, Korea has been the beneficiary of technical assistance from both official, national and multinational sources which have contributed to the development of certain industries. For example, the Fine Instruments Centre, which gives valuable assistance to the electronics and precision goods industries, has the technical backing of U.N.I.D.O.

5.35 The Role of Trading Houses

The role of the trading companies in Korea must be seen in the context of the official policy which is to increase the value of exports to U.S. \$10.1 billion by 1980 while at the same time effectively restricting the number of trading companies.

This means that those companies which are able to expand are virtually guaranteed a substantial and growing prosperity.

In order to qualify for a trading licence - for export or import - the firm must export at least a certain amount (at the end of 1973 this was \$300,000) during the first six months of the year in question. This lower limit is periodically raised and this has the effect of reducing the number of licence holders. In the last six months of 1973, the number of licenced trading houses was 1,183, a decrease of 65 over the previous six months. The system is, however, flexible. A firm which can produce a letter of credit for \$250,000 or more may be granted a licence immediately.

The key element in the system is the linking of exporting and importing. The latter is, in general, significantly more profitable, and trading companies try to attain the export minimum in order to be able to import. The policy of progressively raising the minimum exists for three reasons:

- (a) To increase the size of trading companies by merger or takeover, and to encourage the existing large companies which are thought better able to cope with the vagaries of international trade.
- (b) To protect the reputation of Korean products in overseas markets which, to some extent, had previously been undermined by small manufacturers and traders selling inferior goods at low prices.
- (c) To enable imports to be controlled more easily through fewer, larger companies.

Trading companies in Korea may be divided into five broad categories:

- (a) General, independent traders with no links with manufacturing companies. This group includes, the offices and representatives of foreign buyers.

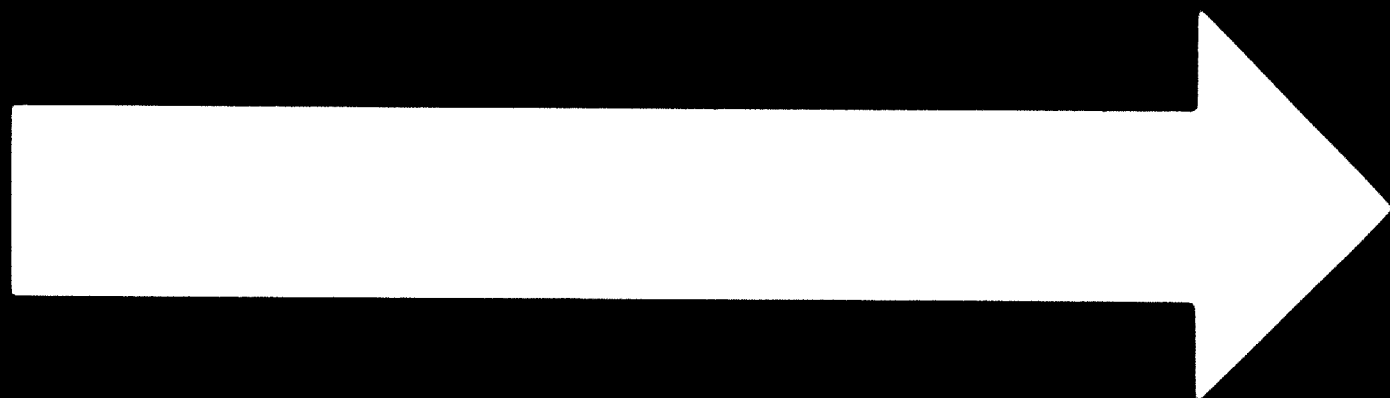
One Korean firm interviewed by the consultants bought manufactures for 6,000 retailers in Europe and North America, and regularly dealt with 12 Korean manufacturers. The company catered for the fashion market in garments, toys and sporting goods and also handled non-fashion lines such as plastic household goods. This company is primarily an exporter. Others in this group are really interested in importing. They handle the exports of smaller manufacturers whose volume is insufficient to qualify for a trading licence. Their service to the manufacturer normally consists of the placement of their seal on export documents, and they do not carry out any promotional or marketing work. The purpose of exporting is to amass sufficient letters of credit to enable them to import which is where they expect to make their profit.

(b) Traders who have facilities for manufacturing at least one of the items they handle. One large company, specialising in handicrafts, has its own brassware factory, but also handles the products of several sub-contractors.

(c) Traders affiliated to a manufacturing group, on the saibatsu model. An example of this type is the holding company for a large group, the members of which are also independent licence holders. The company is not the exclusive agent for the group's members.

(d) A combination of (b) and (c). One such company was originally set up to handle only the business of other members of the group. As the group expanded, this became too complex and the trading company became an independent licence holder while retaining part of its previous manufacturing activity. In the case of large groups on the (c) and (d) model, many manufacturers in the group continue to export through the holding company despite having their own licences.

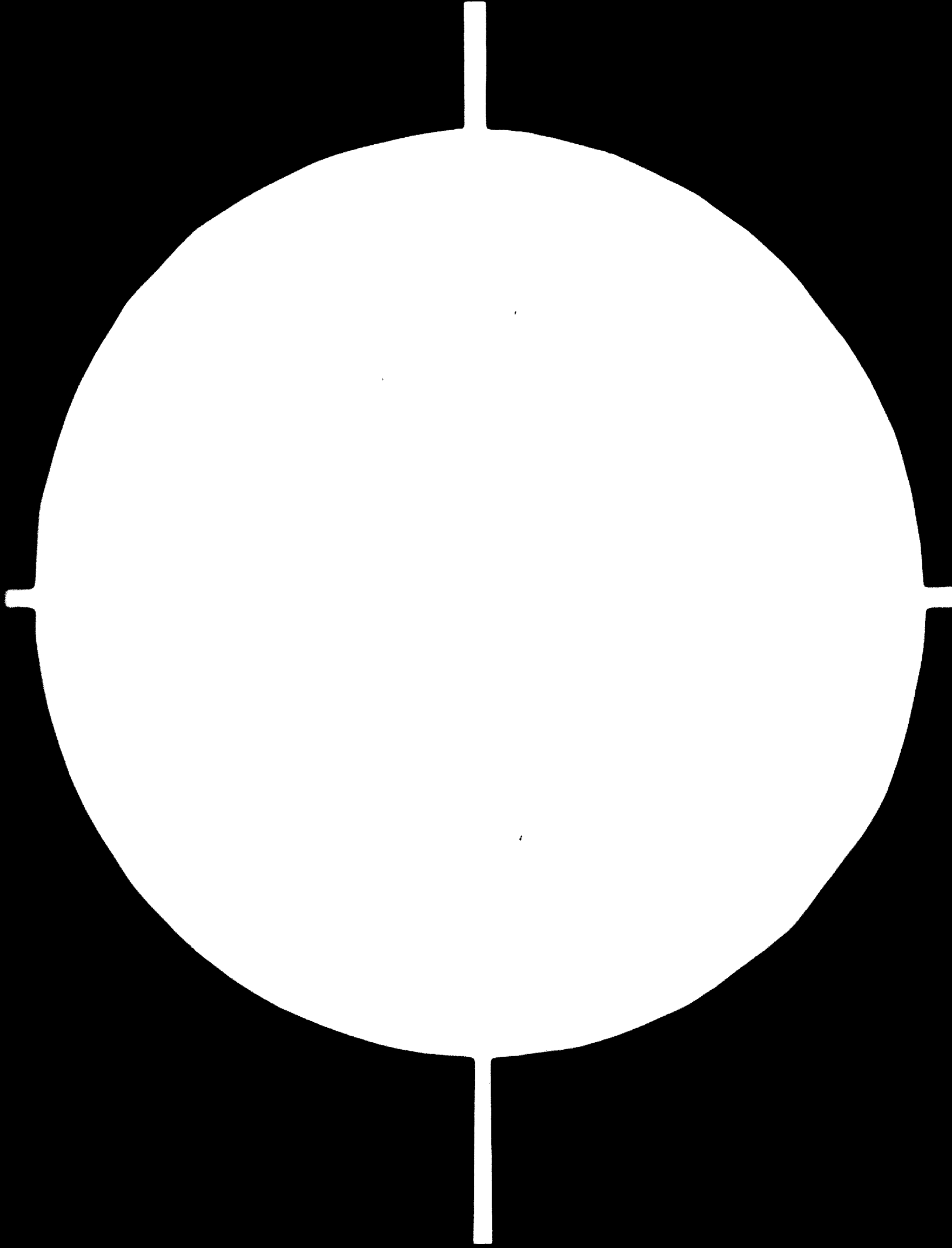
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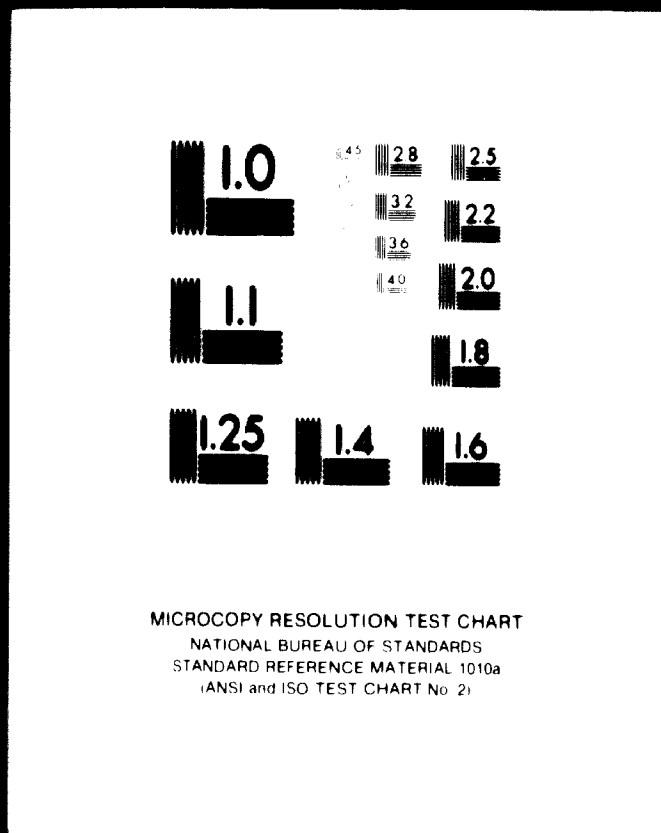
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5.5 Other Centres

Two other countries that have shared the success of Hong Kong, Korea and Singapore have been Taiwan and Mexico. In Taiwan's case, the scope for easy import substitution has become exhausted and the emphasis of policy was switched to export expansion. As in Korea, exchange entitlements were linked to export achievements and were fixed at a level in excess of material requirements. Port charges on exports were eliminated while those on imports were raised. Low cost loans were initiated to meet the needs of exporters for working capital. Tax exemption related to exports was expanded substantially. The establishment of export cartels which subsidised export sales were encouraged. The inflow of foreign capital was promoted by the establishment of export processing zones and other measures. Effective exchange rates governing import substitution and exports also underwent changes to stimulate the latter and discourage the former. Partly as a result of these policy measures, exports of goods other than rice and sugar (Taiwan's traditional export products) increased by 32 per cent per year between 1961 and 1970. During the same period manufacturing production increased by 17 per cent and real GNP by 10 per cent per year.

Mexico has benefited from its close proximity to the U.S. market, a factor which has offset higher labour costs than those found in Asia. Most of the labour intensive export industries are in fact located in the border area and were established in response to the Border Industrialisation Programme which was launched in 1965. By 1970, the number of firms operating in the Border Region had risen from almost zero to 219 and exports from U.S. \$7 million (in 1966) to \$150 million. The main reason why these industries were established was the availability of large supplies of relatively inexpensive labour located close to the U.S. Also significant was the regulation that under the Border Programme, duty free importation of all materials to be processed and assembled is permitted.

The Border Area is in effect an export processing zone insulated from the rest of the Mexican economy. The Area is divided into three sub-zones: the free trade zone at the western end of the border, 2 free ports (Nogates and Agun Prieta) and a bonded area which covers the rest of the relevant zone.

5.6 New Centres

A number of countries, especially in the Far East, but also elsewhere, are attempting to solve problems of unemployment and underemployment by initiating programmes of labour intensive manufacture for export. Typical of these countries are the Philippines, Malaysia, and, to a lesser extent as yet, Indonesia and Thailand. Most of these new centres, have several characteristics in common which will increase their attractiveness to investors and multinational buyers:

- (a) They offer a large supply of labour which is low cost even by the standards of developing countries.
- (b) They offer a package of incentives, similar in many ways to those discussed earlier in this Section, but which represent a dramatic switch in official attitudes to private investment, both national and foreign. In particular, efforts have been made to reduce the bureaucratic delays and frustrations associated with establishing a business and with exporting and importing.
- (c) They possess abundant endowments of raw materials such as timber, rubber and oil, which will substantially increase their attractiveness to investors in the coming decade.

The full effects of these factors have yet to be felt. In some areas, however, dramatic rates of expansion were being recorded by the end of 1973. In the Philippines, the number of firms registering with the Board of Investment increased at an annual rate of 26 per cent in the first six months of 1973, while export earnings increased by 48 per cent between January and May. The inflation rate is falling steadily. In Malaysia, employment in the electronics industry in the Penang Free Trade Zone had increased to 18,000 by the end of 1973, compared with virtually zero 18 months earlier. Investments, partly backed by Hong Kong interest, in the textile and garments industry, have already provided 7,650 new jobs, and employment is expected to increase to 25,350 by the end of 1975.

The Philippines and Malaysia are the most promising of the new centres. Behind them come Thailand and Indonesia where institutional barriers to trade expansion are still high. In the more distant future, South Vietnam may try to emulate the post-war experience of Korea, while India is establishing export processing zones. All these countries are likely to provide serious competition for Mauritius in the coming decade.

6. CHARACTERISTICS OF SELECTED MANUFACTURING INDUSTRIES

6.1 Introduction

During the course of this study, data have been obtained on selected labour intensive manufacturing industries and enterprises. Two methods were used to collect the data.

- (a) postal questionnaires and
- (b) visits to selected countries and interviews with companies and official organisations.

The detailed results of this research are set out in the Appendix, together with definitions of the terms used in the analysis. The purpose of this Section is to summarise the findings.

By far the greater part of usable information came from the visits and interviews. The postal questionnaires resulted in a very poor response of under 10 per cent in 3 months. While some of the returns are usable, together with the data collected at interviews, it would not have been possible to carry out the study had the consultants been relying solely on postal questionnaires.

The countries selected for visits - Singapore, Hong Kong and South Korea - are among those which have already succeeded in developing manufacturing industries for export. Usable replies to postal questionnaires were received from firms in Malaysia and Mexico. The industries selected were in accordance with those industries identified in Section 2 and 3 as being labour intensive and widely represented in trade between developed and developing countries. A full list of the industrial sectors covered is as follows:

- 1) Electronic components:
 - Semiconductors
 - Other components

- 2) **Electronic products:**
 - Radios
 - Television sets
 - Cassettes
 - Tape recorders
 - Electronic calculators
 - Digital clocks
 - Amplifiers
 - Telecommunication equipment

- 3) **Electrical appliances:**
 - Electric light bulbs
 - Battery-powered torches and parts
 - Household appliances
 - Plugs, sockets and switches
 - Electric wire and cable

- 4) **Domestic sewing machines**

- 5) **Stainless steel flatwear, including cutlery**

- 6) **Optical goods**
 - Cameras and parts
 - Binoculars and telescopes
 - Special lenses
 - Spectacle frames and lenses

- 7) **Footwear, leather, rubber and plastic**

- 8) **Gloves and leather garments**

- 9) **Handbags and travel goods, including wallets and purses**

- 10) **Umbrellas**

- 11) **Carpets and rugs**

- 12) **Plastic products:**
 Plastic toys and dolls
 Plastic household products
 Artificial flowers and foliage
- 13) **Hair goods, natural and synthetic**
- 14) **Watches and watch parts, including watch bands**
- 15) **Precision machinery and machine tools:**
 Miniature ball bearings
 Precision roller chains
 Twist drills
 Saw-doctoring machines
- 16) **Ceramic goods:**
 Tableware
 Other pottery
- 17) **Wood products:**
 Wooden furniture
 Rattan furniture and other goods
 Wooden toys and handicrafts
 Plywood
- 18) **Metal and mechanical toys**
- 19) **Metal household ware, mainly of aluminium**
- 20) **Textiles and clothing, of cotton, wool, silk and man-made fibre**
- 21) **Other industries:**
 Bicycle parts
 Jewellery
 Nylon zip assembly

Ship breaking and steel rolling
Musical instruments
Locks
Feather processing
Automobile parts
Hand tools
Metal valves
Marble goods

Usable data were obtained on 110 individual enterprises, and this was backed up by official data on the industries and companies concerned where available. While every effort was made to ensure the accuracy and relevance of the data, interviews always involve some arbitrariness. This applies especially to the selection of firms to be interviewed - a foreigner visiting a country for a short time tends to gravitate towards the larger companies. This tendency was partly compensated for in Korea, where very valuable assistance from the Medium Industry Bank made it possible to obtain information from smaller enterprises.

6.2. Labour Intensity

The ranking of the industries according to their labour intensity is as follows (the lower the total value added per employee, the greater the degree of labour intensity). In order to make these inter-industry comparisons, some adjustments have been made to the figures in the Appendix. Some industries include data from Korea which refer to 1972. In order to make these companies comparable with those which provided data for 1973, value added has been increased by 15 per cent. The consultants were advised that this was the approximate increase in wages and overheads that had taken place. The proportion of Korean data referring to 1972 is roughly the same for each industry, so this adjustment would not significantly affect the ranking.

Industrial Ranking by Value Added per Employee
in 1973

<u>Industry</u>	<u>Value Added per Employee (U.S.\$)</u>		
	<u>Non-wage value added</u>	<u>Wage Costs</u>	<u>Total</u>
Gloves	281	386	667
Stainless steel flatware	523	443	966
Nylon zips	450	600	1,050
Spectacle frames and lenses	259	852	1,111
Ceramic tableware	599	531	1,130
Garments (other than knitwear)	860	431	1,291
Electric light bulbs	579	755	1,335
Knitted outer garments	758	578	1,336
Silk fabrics	967	468	1,435
Musical instruments	1,066	387	1,453
Bicycle parts	925	538	1,463
Wooden furniture	899	565	1,464
Footwear	753	783	1,536
Handbags and travel goods	878	671	1,549
Hair goods	1,015	548	1,563
Metal and mechanical toys	608	1,057	1,665
Jewellery	963	731	1,694
Knitted under-garments	1,205	492	1,697
Woollen fabrics	999	716	1,715
Locks	937	842	1,779
Torches	486	1,296	1,782
Rainwear	525	1,284	1,809
Man-made fibres	1,319	577	1,896
Cotton fabrics	1,333	578	1,911
Bleaching, dyeing and finishing of textiles	1,406	528	1,934
Hand tools	1,259	787	2,046
Wooden handicrafts	1,187	869	2,056
Stocking and hose	1,537	524	2,061
Marble products	1,137	936	2,073
Silk spinning	1,654	541	2,195
Fabrics of man-made fibres	1,638	596	2,234
Carpets and rugs	1,490	804	2,294

	<u>Non-wage value added</u>	<u>Wage Costs</u>	<u>Total</u>
Artificial plastic foliage	1,375	947	2,322
Metal household ware	1,453	896	2,349
Fashion shirts	1,212	1,212	2,424
Umbrellas	1,840	739	2,759
Domestic sewing machines	2,361	707	3,068
Woollen spinning	2,608	559	3,167
Watches and watch parts	2,296	1,008	3,304
Ceramic ware other than tableware	2,770	594	3,364
Cotton spinning	2,729	663	3,392
Household electrical appliances	2,652	927	3,579
Rattan goods	1,777	1,920	3,697
Electronic products	3,086	870	3,956
Motor vehicle parts	2,865	1,128	3,993
Optical goods other than spectacles	3,250	1,140	4,390
Blended yarn	3,694	723	4,417
Plywood	4,088	648	4,736
Feather processing	4,542	853	5,395
Military garments and personnel equipment	3,472	2,040	5,512
Electronic components	5,178	1,198	6,376
Metal valves	5,358	1,145	6,503
Ship breaking and steel rolling	5,208	1,992	7,200
Electric wire and cables	8,424	1,117	9,541
Precision tools and machines	8,819	1,761	10,580
Leather fashion garments	12,936	1,584	14,520

Source: See Appendix.

The industries have also been ranked separately according to size of non-wage value added per employee and wage costs per employee. The Spearman rank correlation coefficient was calculated for these two rankings to determine what kind of relationship, if any, exists between physical and human capital intensity.

The coefficient was found to be 0.443, which is significant at the 99 per cent confidence level for an "n" of 56. Despite the often mentioned warning (discussed in Section 4) that labour-intensive industries tend to be more skill intensive, human capital intensity was found to be positively correlated with physical capital intensity. The significance of this should not be exaggerated, but it does suggest that developing countries, in adopting less mechanical techniques, are not likely to run into more serious skill constraints. It should also be noted that this result was obtained in a list of industries which includes the textile industry which tends to be more physically capital intensive than many labour intensive industries (though slightly less than the average for all industries), while at the same time paying wages substantially less than the average in other industries.

6.3 Ownership and Relationships with Suppliers and Buyers

In accordance with the findings discussed in Section 5, only a minority of the sample companies are foreign owned and these are concentrated in a few industries, as can be seen from the following list:

<u>Industry</u>	<u>Percentage of Companies Interviewed</u>		
	<u>Wholly local</u>	<u>Joint venture</u>	<u>Wholly foreign</u>
Electronic components	-	5.9	94.1
Electronic products	44.4	22.2	33.4
Electrical appliances	83.3	-	16.7
Domestic sewing machines	-	100.0	-
Stainless steel flatware	50.0	50.0	-
Optical goods	75.0	-	25.0
Footwear	75.0	12.5	12.5
Gloves and leather garments	-	50.0	50.0
Handbags and travel goods	100.0	-	-

(e) Manufacturers who export their own products directly. Some of these are individual manufacturing concerns which are large enough to obtain licences; others were originally trading companies which adopted a policy of taking over their sub-contractors until manufacturing became their most important activity. There is one very large group of the latter type which claims to be the largest exporter in Korea. There are 13 manufacturing sub-groups within it, and the trade business is completely centralised with the parent company handling design, promotion, marketing and sales through its international network.

Most of the holding companies are likely to be wholly locally owned. However, within the groups, joint ventures can play a crucial part. In company types (c) and (d), for example, certain members of a group may be restricted to selling exports through their joint venture partners despite affiliation with the group's trading or holding company. This can lead to confusion among buyers as the traders may list goods among their products which are not directly available.

The combination of this system of trading with some of the incentives to exporters described in Section 5.32 is open to the danger of encouraging a monopolistic market structure. The raising of the minimum export limit effectively reduces entry to the market. At the same time the large groups obtain a substantial proportion of import licences through the linking of exports with imports. Many of these groups also manufacture for export so that they qualify for the "wastage" incentive on imported raw materials. According to information given to the consultants, this has led to a situation in which a very small number of large groups effectively control the availability of such critical materials as logs, soda ash, glass, petroleum products, petrochemicals, certain plastics and artificial fibres.

	<u>Wholly local</u>	<u>Joint venture</u>	<u>Wholly foreign</u>
Umbrellas	100.0	-	-
Carpets and rugs	100.0	-	-
Plastic goods	75.0	-	100.0
Hair goods	100.0	-	-
Watches and watch parts	75.0	-	25.0
Precision tools and machines	-	25.0	75.0
Ceramic goods	100.0	-	-
Wood products	85.7	14.3	-
Metal and mechanical toys	80.0	20.0	-
Metal household ware	100.0	-	-
Textiles and garments	66.7	33.3	-
Other industries	33.3	33.3	33.3
Total	58.1	13.3	28.6

Sample Size: 105 companies.

Even though actual overseas ownership is relatively unimportant in the majority of industries, of more significance is the relationship between the local producer and the supplier of his materials and the purchaser of his output. In an export-oriented, non-resource based economy these will, of course, be foreign companies. Broadly speaking, there are three possible types of relationship between a producer and his suppliers and buyers:

- (a) An exclusive inter-company arrangement between the manufacturer and his parent company or joint venture partner whereby the latter supplies all materials and buys all output. This is common in the electronics components industry.
- (b) Sub-contracting. International sub-contracting may be defined in general terms as export sales of articles which are ordered in advance, where the buyer arranges the marketing, but where the buyer is not of the same company or associated with the same company as the producer.

The sub-contracting arrangement may or may not involve supply of materials, machinery, technical assistance or design specifications. It may be for components, for a process or for a whole product. The buyer may be a producer, a distributor or a consumer. The contract may be long or short term or for a single batch.

- (c) A purely commercial operation in which materials and finished goods are bought and sold directly by the producer.

Some companies operate under more than one of these systems. The following list of percentages therefore refer to the number of instances in which each type of relationship was found:

A. Purchase of Materials

<u>Industry</u>	<u>Percentage of Instances Encountered</u>		
	<u>Commercial</u>	<u>Sub-contract</u>	<u>Inter-company</u>
Electronic components	23.5	5.9	70.6
Electronic products	37.5	50.0	12.5
Electrical appliances	85.7	-	14.3
Domestic sewing machines	-	100.0	-
Stainless steel flatware	100.0	-	-
Optical goods	60.0	20.0	20.0
Footwear	100.0	-	-
Gloves and leather garments	100.0	-	-
Handbags and travel goods	100.0	-	-
Umbrellas	100.0	-	-
Carpets and rugs	66.7	33.3	-
Plastic goods	75.0	-	25.0
Hair goods	100.0	-	-
Watches and watch parts	75.0	25.0	-
Precision tools and machines	50.0	50.0	-

	<u>Commercial</u>	<u>Sub- Contract</u>	<u>Inter - company</u>
Ceramic goods	100.0	-	-
Wood products	100.0	-	-
Metal and mechanical toys	80.0	20.0	-
Metal household ware	75.0	-	25.0
Textiles and garments	66.7	33.3	-
Other industries	90.0	-	10.0
Total	70.0	8.0	22.0

Sample size: 100 instances.

B: Sales of exports

Electronic components	11.8	5.9	82.3
Electronic products	30.0	30.0	40.0
Electrical appliances	33.3	66.7	-
Domestic sewing machines	-	100.0	-
Stainless steel flatware	25.0	75.0	-
Optical goods	66.7	33.3	-
Footwear	60.0	20.0	20.0
Gloves and leather garments	50.0	-	50.0
Handbags and travel goods	25.0	75.0	-
Umbrellas	-	100.0	-
Carpets and rugs	33.3	66.7	-
Plastic goods	40.0	60.0	-
Hair goods	-	100.0	-
Watches and watch parts	50.0	50.0	-
Precision machines and tools	-	25.0	75.0
Ceramic goods	50.0	50.0	-
Wood products	57.1	42.9	-
Metal and mechanical toys	14.3	57.1	28.6
Metal household ware	50.0	50.0	-
Textiles and garments	33.3	33.3	33.3
Other industries	44.5	22.2	33.3
Total	32.5	41.2	26.3

Sample size: 114 instances.

The influence of inter-company relationships is strongest in the electronic components industry for both purchases and sales. In the case of sales it is also of significance in precision machines and tools. Sub-contracting is of major importance in consumer goods such as domestic sewing machines, travel goods, hair goods, toys and umbrellas where the influence of ordering by retail houses (see Section 5) is evident. Commercial relationships, generally speaking, are of much greater importance in the buying of materials than in exporting. This illustrates the extent to which marketing is a problem even to manufacturers in established centres. Even so, the percentage of instances of commercial selling is certainly greater than would be expected in less experienced centres than the ones visited.

6.4 Use of Land and Public Utilities

As shown in Section 7, the extent to which the infrastructure of Mauritius is capable of sustaining heavy new demands upon it in the short term is limited. This is especially so in regard to water supply, land for industrial purposes and, to a lesser extent, electricity supply. For this reason, the companies interviewed were asked to provide details of their consumption of water, land and electricity. To make inter-firm and inter-industry comparisons possible, the figures provided are divided by the number of workers to give consumption per employee.

Most companies were unable or unwilling to provide detailed estimates of the amount of water and electricity consumed. Many did, however, provide approximate figures for the cost of these items and, as far as possible, these have been converted to actual consumption by using the relevant charges.

Charges, however, vary with the amount consumed in a given period, and this causes difficulty in calculating the quantity consumed from cost figures. For these reasons the following estimates should be regarded as approximate guides rather than firm figures. The ranking of industries should not be affected unduly, however, as the same factors were present in practically every case.

For the amount of space used, there are reasons to believe that the figures are of much greater accuracy. Questions concerning space were asked only in Hong Kong and Singapore where there is a serious constraint on the amount of land available for industrial use as there in Mauritius. In Korea where space is less of a problem, industrialists are inclined to spread their factories over more land, so that the figures per employee would give a false impression of the amount of land and industry required. Textiles and garments are not included in this analysis as those industries are already well established in Mauritius and sufficient is known of their infrastructure requirements.

Consumption of Water, Electricity and Land
Per Employee

<u>Industry</u>	<u>Annual Consumption per Employee</u>		
	<u>Water (litres)</u>	<u>Electricity (kwh)</u>	<u>Land (sq. metres)</u>
Electronic components	53,225	5,576	6.5
Electronic products	41,300	3,229	9.5
Electrical appliances	54,600	4,976	12.5
Domestic sewing machines	82,000	6,550	N.A.
Stainless steel flatware	89,400	2,679	13.0
Optical goods	54,800	4,241	17.2
Footwear	44,720	3,115	11.8
Gloves and leather garments	28,500	N.A.	9.3
Handbags and travel goods	91,000	1,399	6.2

<u>Industry</u>	<u>Water (litres)</u>	<u>Electricity (kwh)</u>	<u>Land (sq. metres)</u>
Umbrellas	16,000	636	7.2
Carpets and rugs	174,133	6,375	21.8
Plastic products	68,200	5,672	39.0
Hair goods	170,200	1,485	6.1
Watches and watch parts	32,800	2,101	14.3
Precision machines and tools	189,200	14,433	64.0
Ceramic goods	26,500	6,532	11.6
Wood products: plywood	N.A.	13,332	N.A.
Wood products: other	44,000	1,852	N.A.
Metal and mechanical toys	90,600	2,654	19.6
Metal household ware	142,100	6,021	16.4
Bicycle parts	96,000	2,888	N.A.
Jewellery	29,800	1,676	N.A.
Musical instruments	26,151	2,510	N.A.
Locks	46,000	3,492	N.A.
Feather processing	N.A.	3,400	60.0
Motor vehicle parts	52,000	3,000	N.A.
Hand tools	105,000	3,177	N.A.
Marble products	35,400	1,759	123.0

N.A. = Not available

Source: See Appendix

Of the industries which consume more than a third above the mean of each item, only one (precision machines and tools) does so for all 3 items. Two industries do so for 2 items, and five for one item.

Industries Consuming More than One Third Above
the Mean Consumption of:

<u>Water</u>	<u>Electricity</u>	<u>Land</u>
Precision machines and tools.	Precision machines and tools.	Precision machines and tools.
Carpets and rugs.	Domestic sewing machines.	Plastic products.
Metal household goods.	Carpets and rugs.	Marble products.
Hair goods.	Metal household goods	Feather processing.
Hand tools.	Wood products: plywood	
	Ceramic goods.	

The factors that determine the consumption of utilities may be divided roughly into two categories: those inherent in the manufacturing process and those which result from other reasons. Thus, water consumption is high in the case of carpets and rugs and hair goods, because of the need to wash materials and products. Precision machines and tools production is capital intensive and requires a great deal of space to house machinery. A large volume of electricity is required for both operating machinery and for testing the products, while water consumption is heavy owing to the need to air-condition a large area. Air conditioning requirements are probably the most important among the second category of factors. The carpets and rugs industry is a high electricity consumer because of the relatively high degree of mechanisation adopted by the companies interviewed. In space consumption, storage plays a very important role which accounts for the presence of plastic and marble products in the list. Feather processing does not require a very great deal of storage space, but the company interviewed is a small employer, and may not be typical.

6.5. Fuel Consumption

In the light of recent events, it was decided to investigate consumption of fuel by each of the industries under review. The difficulty here is that fuel is not a homogeneous product and, to some extent is a substitute for electricity. In the case of Mauritius the latter is a less important consideration as most electricity must in fact be generated by other fuel consumption.

As a guide to the importance of fuel consumption in each industry, the proportion of total production cost spent on fuel purchases as given in the Korean Census of Manufacturing was used. In the context of recent trends in the relative price of petroleum products it should be noted that the percentages refer to 1972.

**Fuel Costs as Percentage of
Total Production Cost ***

Electronic components	1.6
Electronic products	0.8
Electrical appliances	0.8
Domestic sewing machines	1.4
Stainless steel flatware	1.4
Optical goods	2.5
Footwear	1.2
Gloves and leather garments	0.5
Handbags and travel goods	N.A.
Umbrellas	0.8
Carpets and rugs	3.6
Plastic products	1.5
Hair goods	1.2
Watches and watch parts	0.5
Precision machines and tools	N.A.
Ceramic goods	33.8
Plywood	2.1
Other wood products	1.8
Metal and mechanical toys	N.A.
Metal household ware	4.1
Bicycle parts	2.4
Jewellery	0.7
Musical instruments	2.0
Locks	N.A.
Feather processing	N.A.
Hand tools	4.3
Marble products	N.A.

* Sales minus value added.

Source: Economic Planning Board, Republic of Korea: Report on Mining and Manufacturing Survey, 1972.

For only one industry (ceramic goods) did fuel costs exceed 5 per cent of total production costs. This was probably due to the extensive use of kilns and furnaces required in the industry and to the relatively low cost of the major raw material. Industries (other than ceramics) consuming more than one-third above the mean (excluding ceramics) were as follows

- Optical goods
- Carpets and rugs
- Metal household ware
- Bicycle parts
- Hand tools

6.6. Supporting Industries

As the development of manufacturing for export progresses, the number of supporting industries in a country increases. In Hong Kong especially, but also in Singapore and Korea, a wide range of such industries are to be found. There is a distinction to be made, however, between industries which arise in response to the development of export enterprises, and those whose presence is so significant from the point of view of cost reduction as to influence the decision whether to establish an exporting industry or not.

Supporting industries may be particular to one industry or general. Among the latter, those which can be found in Hong Kong, Singapore and Korea include the following:

- Office furniture and lighting
- Building and construction
- Factory furniture and equipment other than specific machinery
- Air conditioning equipment
- Packaging goods
- Industrial clothing including gloves and boots.

Most of these items are difficult and expensive to transport and, therefore, purchasing from overseas is an unattractive option. Industrial clothing, as a branch of the garments industry, is almost certain to be present as garments are always among the first exporting industries to be established.

Supporting activities highly desirable for the following industries were found in one or more of the three centres visited.

Electronic components: industrial gases and metal and plastic caps for semiconductors. The amount of materials purchased locally by this industry is severely limited by the fact that U.S. companies, which form the majority of enterprises, are limited by re-entry legislation on the amount of local materials that may be imported into the U.S. under tariff item 807.00 (see Section 3.32 above). This does not apply to industrial gases which are not part of the final product. The gases must be of high quality. In Singapore, they are provided by other industries, but in Korea, despite the presence of a local industry, most companies manufacture their own.

Electronic products: moulding of plastic cases for packaging radios, tape recorders, etc, and also some simple components. In some cases companies purchase complex components (such as semiconductors) locally or manufacture their own. In many countries it is impossible for the local products industry to obtain complex components even though these are made locally. This is because the component companies produce exclusively for export, often under Government regulation or encouragement. These exporting companies also embody the latest technology in their products. Frequently, therefore, the policy (often associated with export processing zones) of confining foreign companies to export and allowing only local companies access to the domestic market, means that local manufacturers must rely on importing to obtain the most up-to-date components.

5.4 Singapore

5.41 Industrial Growth

As in the case of Hong Kong, the history of Singapore's development in recent years is one of change from entrepot trade to manufacturing. The drive to industrialise for export came in the mid 1960s as the break from Malaysia in 1965 heralded the end of any possibility of import substituting activity being able to absorb the unemployed. Instead of the market of Malaysia and Singapore combined, manufacturers were faced with a home market of Singapore alone, with a population of just over 2 million.

The development of manufacturing for export has been extremely rapid since 1967. The following table shows the importance of manufactures in total Singapore exports in 1967 and 1972.

Exports of Singapore to OECD Countries
1967 and 1972 (millions of U.S. dollars)

	<u>1967</u>	<u>1972</u>
Food and live animals	12.7	30.9
Beverages and tobacco	-	-
Crude materials except fuels	55.9	89.6
Fuels	31.1	91.1
Animal and vegetable oils	6.4	25.1
Chemicals	0.5	2.3
Manufactured goods from materials	9.0	43.2
Machinery and transport equipment	2.4	220.5
Other manufactures	5.4	93.3
Total	<u>123.4</u>	<u>596.0</u>
Manufacturers as percentage of total exports	13.6	59.9

Source: OECD: Statistics of foreign trade.

Electrical appliances: if there is a local torch industry, then this is always accompanied by another factory making bulbs. To supply the latter, glass tubes and bulbs, insulated wire, beading glass and plastic mouldings are normally manufactured locally.

Metal goods: cast iron, aluminium sheets and metal working hand tools are usually manufactured locally. Only in Hong Kong, however, do metal goods manufacturers rely almost exclusively on local supplies of aluminium sheeting.

Leather goods and footwear: the picture with regard to leather is varied. In Hong Kong, the local tanning industry supplies less than half the requirements of the footwear industry, while makers of leather garments rarely use locally tanned leather and only then after consultations with the buyer. In Korea, by contrast, the local tanning industry provides most of the industry's needs except for high-fashion leather garments. Some glove and shoe manufactures have their own tanneries.

Handbags and travel goods: most of the material for this industry consists of plastic which is normally imported. Accessories such as metal fittings and locks, as well as sponge material for padding, is produced locally.

Umbrellas: the materials used by manufacturers of umbrellas consist almost entirely of semi-finished components and articles - for example, shafts, ribs, handles and fabrics. Of these, fabrics, ribs, handles and other miscellaneous parts are normally manufactured locally, and are exported as well as sold to local umbrella factories.

Artificial flowers: in practically every case, the assembly of the flowers from the moulded plastic parts is not organised on a factory basis but is sub-contracted out to individual family establishments.

Ceramics: local deposits of high quality clay are an advantage but not a necessity.

Metal and mechanical toys: production on a large scale normally involves the sub-contracting of various items to local factories, whose output must be of a high standard if the toys are for export. The items most frequently sub-contracted include die stampings, rubber and metal parts, fabrics, miniature clothing, transistorized products (for talking dolls, for example) and synthetic miniature wigs.

Industries which rely for more than 75 per cent of requirements (by value) on imports include the following: electronic components, telecommunication equipment, television receivers, cassette recorders, calculators, wire and cable, domestic sewing machines, stainless steel flatware, optical goods, carpets and rugs, plastic products, hair goods, precision machinery and machine tools, wood products, jewellery, watches and watch parts, musical instruments, automobile parts, and marble goods.

One local input which varied considerably in its quality and availability was machine servicing. For industries requiring complex machinery there were normally mechanics in Hong Kong capable of carrying out both running and more involved repairs. This was less so in Singapore and Korea. Only in Hong Kong was the local purchase of machinery and equipment, and spare parts widespread. In Singapore, the growth of the precision machine tool industry means that more machinery will be available locally, but for most buyers of complex equipment it is still cheaper to import. In less experienced centres, such as Korea, it is necessary to import nearly all replacements to precision equipment while, on the maintenance side, there is considerable reliance on expatriates or technical assistance from overseas, especially in such industries as electronic components. This situation will, of course, change in the coming years. In the early phase of industrialisation, the lack of technical input facilities locally is not an insuperable barrier to development.

6.7 Transport Requirements

It is shown in Section 7 that the external transport situation facing Mauritius is capable of improvement and that this improvement would assist considerably in the successful establishment and development of labour-intensive industries for export. To help to determine transport requirements, the industries in this study are analysed in respect of both materials and finished goods - whether sea or air transport is mainly used and what, if any, are the special considerations.

Industry

Normal Mode of Transport

Containers Required for Finished products

Special considerations

Materials

Finished products

Electronic components	Air	Air	Yes	Small high value products also by air
Electronic products	Air	Sea		
Electrical appliances	Sea	Sea	Yes	
Domestic sewing machines	Sea	Sea	Yes	
Stainless steel flatware	Sea	Sea	Yes	
Optical goods	Sea	Air		
Footwear	Sea	Sea	Yes	
Gloves & leather garments	Sea	Air		
Handbags & travel goods	Sea	Sea	Yes	
Carpets & rugs	Sea	Air		
Plastic products	Sea	Sea	Yes	Low value goods by sea
Hair goods	Sea	Air		
Watches & watch parts	Air	Air		
Precision machines and tools	Sea	Air		
Ceramic goods	Sea	Sea	Yes	
Wood products: plywood	Sea	Sea		
Wood products: other	Sea	Sea	Yes	
Metal household ware	Sea	Sea	Yes	
Bicycle parts	Sea	Sea	No	
Jewellery	Air	Air		
Nylon zips	Sea	Air		
Musical instruments	Sea	Sea	No	
Feather processing	Sea	Sea	No	
Motor vehicle parts	Sea	Sea	Yes	
Hand tools	Sea	Sea	Yes	
Metal values	Sea	Sea	Yes	
Marble products	Sea	Sea	Yes	Sometimes difficult to get shipping space for materials

Source : See Appendix

Some commodities normally sent by sea where there are good container facilities can also be sent by air in the absence of such facilities. These products normally have an above average value in relation to their weight or volume.

6.8 Employment

Employment was investigated taking into account the problem of male unemployment in Mauritius and the shortage there of skilled industrial labour. Most of the employment created so far by the expansion of export processing industries on the Island has been for female labour (see Section 7). Yet there is a growing problem of unemployment and underemployment of male, unskilled workers. Labour intensive industries frequently employ a higher proportion of female workers than industry in general. There are three main reasons for this. Firstly, wage rates for female workers are normally lower than for male workers of similar grade and skills. Secondly, much of the work in these industries is of the type that can be done equally well by male and female operatives. Thirdly, factory managers claim that some of the work, for example in the electronics components industry, is carried out with a higher degree of efficiency by female than by male workers.

Despite the overall bias toward female employment in labour intensive industries, the proportion varies considerably from industry to industry.

<u>Industry</u>	<u>Proportion of Female Employees (per cent)</u>
Electronic components	83.3
Electronic products	60.1
Electrical appliances	56.5
Wire and cables	12.8
Domestic sewing machines	10.0
Stainless steel flatware	26.3
Optical goods	58.8
Footwear	45.2
Gloves	63.5
Leather garments	66.7
Handbags & travel goods	45.8
Carpets and rugs	74.7
Plastic products	50.3

<u>Industry</u>	<u>Proportion of Female Employees (per cent)</u>
Hair goods	91.7
Watches & watch parts	42.3
Precision machines & tools	24.5
Ceramic goods	32.7
Wood products: plywood	35.0
Wood products: other	18.0
Metal household ware	17.8
Textiles & garments*: textiles	69.1
garments	69.4
Bicycle parts	7.1
Jewellery	30.3
Nylon zips	87.3
Ship breaking & steel rolling	0.0
Musical instruments	32.2
Locks	14.2
Feather processing	25.0
Motor vehicle parts	30.0
Hand tools	9.5
Metal valves	0.0

* Taken from official figures in Hong Kong and Korea.

Source : See Appendix

Skills are always difficult to define. Clearly, a skill learnt "on the job" is extremely valuable yet no qualification exists for it and it may be highly specific. Firms in most of the above industries found that they were able to train the local labour force to a satisfactory standard within three months. In some cases, however, skill requirements were rather special and training had to take place either outside the factory or over a longer period of time (normally in excess of six months) inside the factory. It should be noted that this applies to operatives and not to specialised workers such as mechanics or maintenance personnel. Industries in which one of these special types of skill is required are the following : optical goods, leather fashion garments, carpets and rugs (hand-made, luxury carpets), watches and watch parts, precision machines and tools, specialised garments and equipment (e.g. military), rattan handicrafts, ship breaking, and jewellery craftwork. Other than the last (for which there is no separate information) wage costs in these industries are 78.4 per cent above the mean for the list of industries in

Section 6.1.

6.9 Reasons for Choice of Location

Executives in foreign companies were asked the principal reasons why their company had located its investment in the country in question. Because this could only be asked of foreign companies, the answers reflect most strongly the views of industries in which foreign investment is strongly represented. However, it is probable that most of the reasons given would be important to entrepreneurs in other industries as well.

Firms were asked to say which of the following original reasons for location were the most important (in order of priority): labour cost, labour availability, good port and airport facilities and external transport services, geographic location in relation to markets or sources of materials, adequate supporting industries and infrastructure, fiscal incentives (including freedom from import duties), stable and efficient administration, and other reasons. To analyse the replies a points system was devised giving the five most important reasons mentioned 5,4,3,2 and 1 points respectively according to their priority in each case.

<u>Reason</u>	<u>Priority Points Awarded</u>
Labour availability	60
Labour cost	50
Good port, airport and external transport services	44
Adequate supporting industries and infrastructure	41
Geographic location	37
Fiscal incentives	24
Other reasons	24
Stable, efficient administration	10

Labour availability means the presence in sufficient numbers of a willing, trainable labour force, and this was stated to be the most important factor behind decisions on where to locate.

The relative unimportance of items such as incentives and Government stability is partly a reflection of the fact that, at the time most of the relevant decisions were taken, there was little to choose in these respects between the main competing centres - Singapore, Korea, Hong Kong and Taiwan. The considerable significance of factors concerning labour is reinforced by the recent rapid industrial developments in countries such as Malaysia and the Philippines. On the other hand, the lack of substantial development to date in, for instance, Indonesia suggests that although a plentiful supply of low cost, trainable labour is a necessary condition, it is a far from sufficient one. The fact that good external transport facilities and services, and adequate supporting industries and infrastructure, are of considerable importance is particularly noteworthy.

6.9 Market Prospects and Other Factors

These vary so much from industry to industry, that they cannot be meaningfully analysed in the aggregate. A discussion of each separate industry is given in the Appendix.

7. LABOUR INTENSIVE INDUSTRIES IN MAURITIUS

7.1 Growth of Industries

Export processing enterprises have been developing at a very rapid rate in Mauritius and the information in this Section is based on interviews conducted in mid-1973 for a study sponsored by the UNCTAD. It is likely, therefore, that data concerning the number of firms and employment are already out of date, though this may be partly compensated for by information obtained on companies about to set up. The main purpose of this section is to indicate the nature of developments so far and to describe the special constraints and problems Mauritius is facing in fulfilling its development programme.

Mauritius established (at the end of 1970) a system of generous tax and other incentives designed to encourage local and foreign investment in export industries. The main features of the incentives are as follows:

- (i) exemption from import duty on capital goods, and on raw materials, components and semi-finished goods (except spirits, tobacco and petroleum)
- (ii) corporate income tax holiday for at least 10 years and up to 20 years depending on individual case
- (iii) exemption from income tax on dividends for 5 years
- (iv) free capital repatriation, profits and dividends remittance abroad to foreign investors.
- (v) favourable labour legislation for export enterprises
- (vi) guarantee against nationalisation

There are a large number of other incentives and advantages including electric power at lower rates, special credit facilities, provision of factory buildings for lease, exemption from registration fees on land and issue of residence permits to expatriate investors.

Progress has been encouraging. By May, 1973, only 2½ years after the scheme was announced, there were 22 companies employing about 2,800 people.

The following table shows the level of employment by industry among export enterprises at that date.

Export Enterprises: Employment by Industry

(May 1st, 1973)

<u>Industry</u>	<u>Number of Enterprises</u>	<u>Total</u>	<u>Employment</u>	
			<u>Men</u>	<u>Women</u>
Textiles and Clothing	9	2110	165	1945
Electronic Components	3	240	27	213
Food Industries	2	50	26	24
Furniture Industries	2	35	35	0
Other Industries	6	419	201	218
Total	22	2854	454	2400

Source: Field Interviews

This table illustrates the importance of the textile and clothing industries. They accounted for 73.9 per cent of total employment and 41 per cent of the number of companies. Next in importance was the electronic components industry accounting for 8.4 per cent of total employment. As both these industries are predominantly employers of female labour, it is hardly surprising to find that 84.1 per cent of all jobs in the export enterprises were accounted for by female workers.

During the same period, total industrial output (not including petroleum refining or rubber processing) rose from U.S. \$200.8 million to U.S. \$608.7 million, so that the proportion of manufacturing output exported to OECD countries rose from 8.4 per cent to 58.6 per cent. Since 1965 unemployment as a percentage of the labour force has fallen from 8.7 per cent to about 4 per cent.

The most important manufacturing industries (in terms of percentage of exports and employment in 1972) were the following:

	<u>Percentage of Total Manufactured Exports</u>	<u>Percentage of Total Employ- ment</u>
Electronics	42.8	17.6
Textiles and garments	12.9	19.8
Plywood	7.1	7.0

Other important product groups are shipbuilding and repair (which employed 12.3 per cent of the industrial labour force in 1972), food manufacture and printing and publishing.

As in Hong Kong, the entrepot trade continues to play an important part in the Singapore economy, though in rather a different way. Whereas China was the key to Hong Kong's development, Singapore is used as a distribution centre for the exports of OECD countries to South East Asia and as a collection centre for South East Asia's produce. The Republic has a large petroleum refining industry. Most of the "crude materials" and "animal and vegetable oils" are re-exports from neighbouring Malaysia and Indonesia, while the plywood industry is a product of Singapore's entrepot role for Asia's timber industry.

Textiles and electronic components are two of the main industries that have featured in the growth of other countries like Hong Kong, Singapore, South Korea and Taiwan, which have adopted a policy of industrialisation through the creation of export processing industries. In the light of the precedent set by other countries, therefore, this development in Mauritius was normal, and, indeed, predictable. In the case of two of the non-textile and electronics companies the utilisation of local raw materials (in both cases agricultural products) was the main factor in the choice of Mauritius as a location, and in the case of two further companies, the utilisation of a traditional local craft skill (in woodworking).

In examining the incentives offered, tax-free dividends were identified as crucial for the mobilising of local entrepreneurial resources, but foreign investors were attracted mainly by relatively low labour costs and by Mauritius's associate membership of the EEC. The incentives package is, however, regarded as an official endorsement of the role of private foreign capital.

Discussions with management, and an analysis of applications for Export Enterprise Certificates being processed by the Ministry of Commerce and Industry, formed the basis for the following tentative forecast of growth in employment up to 1982.

Export Enterprises: Employment Potential 1973-1982
(All figures rounded to nearest 50)

<u>Status of Company</u>	<u>1973</u>	<u>1974</u>	<u>1976</u>	<u>1982</u>
Existing Companies	2,850	8,250	11,900	18,000
Applications Approved	-	250	11,100	22,000
Allowance for Further Applications and Approvals	-	-	1,100	6,000
	<u>2,850</u>	<u>8,500</u>	<u>24,000</u>	<u>46,000</u>

In making these projections the following assumptions were made:

- (i) for existing companies that from 1976 to 1982 output rises at 12 per cent per annum and productivity at 5 per cent per annum,
- (ii) that the rate of growth of companies recently approved from 1976-1982 is broadly equivalent to the expected growth of existing companies between 1974 and 1980, and
- (iii) that one half of the applications pending, or of further applications in their place, become operational by 1982.

7.2 Transport

Turning to the specific transport requirements of the industries already established, the following table shows the method of import of raw materials and of export of finished products analysed by industry.

Export Enterprises: Method of Shipment of Products
(No. of Enterprises using each method)*

<u>Industry</u>	<u>Imports</u>		<u>Exports</u>	
	<u>Sea</u>	<u>Air</u>	<u>Sea</u>	<u>Air</u>
Textiles and Clothing	8	1	4	6
Electronic Components	1	2	0	3
Food Industries	0	0	2	0
Furniture Industries	1	1	0	2
Other Industries	2	2	2	5
Total	<u>12</u>	<u>6</u>	<u>8</u>	<u>16</u>

* Figures do not coincide with numbers of enterprises in each industry partly because some enterprises use mainly local raw materials and some use both air and sea for shipment.

Source: Field Interviews

It is interesting to see that whereas twice as many enterprises import by sea as by air, in the case of exports the proportions are precisely reversed. This is partly to be expected; the more highly fabricated a product is, the more likely it is to possess a value that enables it to withstand the higher costs of air transport. However, it is somewhat unusual for items such as cheaper textile products and furniture to be airfreighted on a significant scale. This is a reflection of the inadequacy of existing shipping services which, in turn, is partly a response to the small volume of exports other than sugar products sent from the Island.

The general view expressed by the management of the companies was that while the principal attraction of Mauritius is its relatively low cost labour resources, the principal drawback is its transport problems. This view was echoed by other businessmen interviewed by the consultants during the course of the present study. The main transport issue is one of cost, related to frequency and reliability. It was in fact found that concessionary sea freight rates from Mauritius to Europe were competitive with rates from the Far East, but that in order to meet delivery dates it was frequently necessary to use air transport.

Linked closely with the problem of availability of services is the condition of facilities at Port Louis, the Island's only port. The absence of container facilities is a serious problem. Ways in which cargo handling at the port might be improved are discussed in detail in the UNCTAD Report referred to above.

7.3. Other Constraints

There is at present a backlog of unsatisfied demand for industrial land and for the renting of industrial buildings. By the middle of 1973, this had reached serious proportions.

The waiting list for renting industrial buildings from the Development Bank had reached 12-15 months by May and it seemed likely to get longer rather than shorter by 1974. The situation as regards land for private development is equally serious. Land is theoretically available; in practice services, particularly water supply, are not (and in many cases cannot be) connected. This is frustrating for industrialists, and there is a danger that some foreign investors might be discouraged by the delay and abandon their expansion plans in Mauritius in favour of some other country.

Another bottleneck is the water supply. The recently formed Central Water Authority (CWA) inherited a situation rendered difficult by previous underinvestment, which was in turn the result of the inadequate finance of the local authorities which previously operated the system. The CWA estimate that the position will ease by mid 1975, but the consultants' forecasts of industrial growth suggest that the demand for water may exceed planned capacity by about 12 per cent at that date.

7.4. Company Attitudes Towards Mauritius

A number of companies were questioned during the course of this study on their attitude towards establishing a manufacturing operation in Mauritius. Considering that these interviews were conducted since the onset of the energy crisis with its implications for trade (see Section 3.4), the overall response was surprisingly positive and sympathetic. On many occasions, however, this was only after the consultants had explained the geographical position of Mauritius and its plans in some detail. The majority of executives were not aware of Mauritius's current drive towards the development of manufactured exports. A clear need for better publicity emerged.

This was particularly so in Hong Kong (despite the fact that some industrialists have already invested in Mauritius), which is probably the most promising single source for investment and sub-contracting for newer areas like Mauritius. Hong Kong businessmen are experienced operators in this type of activity and are making substantial investments and placing contracts in countries such as the Philippines and Malaysia, as costs in Hong Kong rise.

The major points in Mauritius's favour were the following:

- (a) the availability of low cost, trainable and industrious labour,
- (b) associate membership of the EEC (especially for textiles),
- (c) small size, making it less likely that success by the Island would provoke demands for quota restrictions, and
- (d) the overall package of incentives, especially exemption from duty on imported materials and equipment,

The major drawbacks were the following:

- (a) transport services, including the current state of the port facilities,
- (b) geographical location in relation to main markets,
- (c) poor communications with the rest of the world (many Hong Kong businessmen complained of having to fly via India),
- (d) dispersal of the labour force over a wide area, and
- (e) lack of supporting industries and services, including utilities.

8. IDENTIFICATION OF SUITABLE INDUSTRIES

8.1 Introduction

This Section reviews the list of industries set out in Section 6.2, in the light of current conditions in Mauritius which were described in Section 7. The main factors considered are:

- (a) General labour intensity in terms of fulfilling the primary objective of reaching employment targets for unskilled workers.**
- (b) The need to increase the percentage of males among workers in the new industries.**
- (c) The importance of external transport facilities and services.**
- (d) The demands made on public utilities and industrial land.**
- (e) Requirements for special, local supporting industries and services.**

8.2 General Labour Intensity

The industries which are more intensive than the mean in their use of relatively unskilled labour are as follows:

Gloves	Torches
Stainless steel flatware	Rainwear
Nylon zips	Man-made fibres
Spectacle frames and lenses	Cotton fabrics
Garments (other than knitwear)	Bleaching, dyeing and finishing of textiles.
Electric light bulbs	Hand tools
Knitted outer garments	Wooden handicrafts
Silk fabrics	Stocking and hose

Musical instruments	Marble products
Bicycle parts	Silk spinning
Wooden furniture and parts	Fabrics of man-made fibres
Footwear	Carpets and rugs
Handbags and travel goods	Plastic foliage and Flowers
Hair goods	Metal household ware
Metal and mechanical toys	Fashion shirts
Jewellery	Umbrellas
Knitted under-garments	Domestic sewing machines
Woolen fabrics	Ceramic tableware
Locks	

8.3 Employment of males

The industries which have a higher proportion of male employees than the mean are as follows:

Metal valves	Other ceramic goods
Ship breaking and steel rolling	Wooden furniture
Wire and cables	Wooden handicrafts
Domestic sewing machines	Bicycle parts
Stainless steel flatware	Jewellery
Precision machines and tools	Musical instruments
Ceramic table ware	Locks
Feather processing	Motor vehicle parts
Hand tools	

8.4. External Transport Requirements

The industries, the products of which are normally exported by air, are as follows:

Electronic components	Watches and watch parts
Optical goods	Precision machines and tools
Gloves	Jewellery
Leather fashion garments	Nylon zips

Luxury carpets and rugs
Hair goods

Some fashion garments

Provided the trade-off between cheaper labour costs and overheads on the one hand, and transport costs on the other, were sufficiently favourable, it is likely that the following goods could also be transported by air, though they are not normally so transported from the countries visited by the consultants.

Electronic products
Ceramic tableware
Umbrellas

Some electrical appliances
Wooden handicrafts
Plastic foliage

8.5. Consumption of Utilities

Industries, other than textiles and garments, consuming less than the mean consumption of water and electricity per employee are as follows:

<u>Water</u>	<u>Electricity</u>	<u>Both</u>
Electronic Components	Electronic products	Electronic products
Electronic products	Optical goods	Optical goods
Electrical appliances	Footwear	Footwear
Optical goods	Umbrellas	Umbrellas
Footwear	Watches & watch parts	Watches & Watch parts
Gloves	Wooden handicrafts	Wooden handicrafts
Leather garments	Wooden furniture	Wooden furniture
Umbrellas	Jewellery	Jewellery
Plastic products	Musical instruments	Musical instruments
Watches and watch parts	Bicycle parts	Locks
Ceramic goods	Locks	Marble products
Wooden handicrafts	Hand tools	
Wooden furniture	Marble products	
Jewellery	Stainless steel flatware	

Water

Electricity

Both

Musical instruments	Handbags and travel goods
Motor vehicle parts	Hair goods
Locks	Metal and mechanical toys
Marble products	

The sample of industries on which data concerning land use were obtained is smaller. However, the following seem particularly economic in their use of land.

Electronic components	Handbags and travel goods
Umbrellas	Hair goods

8.6. Supporting Industries

Other than items such as office and factory furniture, packaging materials, industrial clothing and similar goods, few of the industries have indispensable requirements for local-supporting industries or services. Those unlikely to establish themselves in the absence of such services are as follows:

<u>Industry</u>	<u>Supporting industry or service</u>
Electronic products	Plastic cases for consumer products
Electrical appliances	Glass tubes and bulbs, beading glass, plastic mouldings
Handbags and travel goods	Metal fittings and accessories
Artificial flowers	Cottage industry capability for assembly
Metal and mechanical toys	Sub-contracting for accessories

8.7. Implications for Mauritius

The list of industries which completely satisfies the requirements and problems of Mauritius, as governed by the current situation, is very small. The only industries (other than textiles and garments) which are highly labour intensive, employ a relatively high proportion of males, normally transport their goods by air, and impose relatively light demands on public utilities, are jewellery and wooden handicrafts. There are, however, several reasons why this does not mean that the Island has a very limited future as a centre of labour-intensive manufacture for export:

- (a) Some industries, for example electronic products, use considerable numbers of unskilled workers, even though the process may be relatively capital intensive within the list of labour intensive industries.
- (b) The requirements of industry in terms of transport, infrastructure and public utilities can be fulfilled provided that the necessary investments and institutional changes are made.
- (c) A high proportion of female participation is a characteristic of labour intensive industries as such. The experience of other centres, however, suggests that as labour-intensive industrialisation develops sufficient economic activity is generated to absorb male unemployment. This is especially so in small countries which do not have the problem of a very large unemployed or underemployed labour force.
- (d) The skills and experience of the labour force also increase with the degree of industrialisation. There are a large number of industries where skill requirements are relatively low and the Government may soon find itself anxious to encourage more capital and skill intensive activities in order to upgrade products and raise productivity.

5.42 Incentives

To encourage the establishment of new industries, the Government has instituted a scheme of "pioneer status" for certain companies. The principal privilege involved is one of relief from company and dividend taxes. In general, pioneer companies must allow for the deduction of depreciation allowances in computing tax-exempt profits. However, in certain cases (depending on the size of investment and the proportion held in Singapore) companies are given the advantage of postponing claims for capital allowances until the pioneer period of relief has passed. This period is normally five years.

In addition, there are specific export incentives. To qualify, companies must export at least U.S. \$40,000 or 20 per cent of sales whichever is the greater. Profits earned from the export of approved products are effectively taxed at 4 per cent or one-tenth of the normal company tax. The tax relief period is five years for an exporting company and eight years if the company also has pioneer status. If certain conditions concerning size of investment and the percentage held in Singapore are fulfilled, the relief period is extended to fifteen years.

As in Hong Kong, the general economic environment in itself acts as an attraction to foreign companies and as a stimulant to local industrial enterprises. There is no restriction on the remittance of profits or capital in the currency of the original investments. No import licence or quota restrictions exist for the majority of goods. Customs and exise duties, where they exist, are frequently waived with regard to machinery and materials imported for export production. Much has been done to control the activities of trade unions which were in the political forefront before independence. To upgrade skills in the labour force, the Government has accelerated the establishment of technical and vocational training in schools, and established adult training institutions.

This has already occurred in Hong Kong and Singapore.

- (e) Supporting industries are likely to develop quickly, especially if policies are followed which encourage small scale entrepreneurship. These activities will serve the function of providing the exporting industry with inputs, as well as carrying out sub-contracting work. Industries in which there is considerable scope for an increase in labour intensity brought about by sub-contracting to small scale enterprises include the following:

Plastic foliage	Electrical appliances
Toys	Bicycle parts
Wooden products	Optical goods
Footwear	Gloves
Umbrellas	Sporting goods
Electronics	Musical instruments
Ceramic goods	

Despite these considerations, there are a few industries on the list which should not, perhaps, be encouraged at this stage of Mauritius's development. They are:

- (a) relatively capital intensive, or
- (b) relatively skill intensive, or
- (c) consume considerably larger amounts of water, power and land than the average or,
- (d) require materials which may be difficult to transport because of their low value:weight ratio or because they come from a source which is poorly served by shipping services to the Island, or
- (e) require materials which are difficult to handle or may be difficult to obtain in future, or

(f) a combination of the above.

These industries are

Precision machines and tools

Plywood

Metal valves

Feather processing

Marble products

Steel rolling from scrapped ships

Complex mechanical toys

Electric wire and cables

Ceramic goods (depending on the availability of the raw material)

Leather fashion garments

Military garments and personnel equipment

Other than these, there are certain industries in which the skills of the labour force will need to be developed by specialised training. These include:

Optical goods other than spectacles

Watches and watch parts

Jewellery

Wooden handicrafts

Rattan goods

However, the experience of other centres suggests that the necessary skills for these industries can be learnt "on the job" provided sufficient staff can be brought in for this purpose. As far as the other industries on the list are concerned, there is no reason why Mauritius should not grow as a production centre, provided necessary policy measures are carried out, especially with regard to transport.

9. POLICY IMPLICATIONS OF LABOUR INTENSIVE INDUSTRIALISATION FOR EXPORT

9.1 Transport

Efficient and reliable external transport services are essential to any country wishing to develop as an exporting centre. This includes adequate port and airport facilities. Ways in which these facilities and services might be improved in Mauritius are described in detail in a Report entitled "External Transport and Economic Development in Mauritius" which was prepared by the consultants for the United Nations Conference on Trade and Development in 1973.

9.2 Marketing

67.5 per cent of exporting companies interviewed by the consultants marketed their products either through affiliated companies overseas, or through international sub-contracting arrangements. The proportion can be expected to be even higher in less experienced centres where local manufacturers have not yet had the chance to establish their own brand names abroad. Attempting to market a company's own products directly is a risky venture which should be undertaken only after a firm base of sub-contracting has been developed. Specialist organisations benefit from large economies of scale in marketing and after-sales service which are related to the total volume of sales rather than of just one product. This gives multiproduct buyers a distinct marketing advantage.

In the case of international sub-contracting or direct investment in the production of components, it would in many cases be impossible for a developing country manufacturer to market his goods directly as they must conform to the specifications of the manufacturer of the finished product.

At least in the early stages, therefore, manufacturers should rely on arrangements which permit access to markets more efficiently than by attempting direct sale. This is not incompatible with a desire to develop local small scale enterprise, as it is here that trading companies can play a vital role. Nevertheless, it would probably be worthwhile for the Government of Mauritius to

set up official promotion offices in such cities as London, New York, Paris, Tokyo and Hong Kong. In addition to promoting local manufactures these offices can also act as "salesmen" of Mauritius to prospective investors and buyers.

9.3 Incentives

As the number of countries wishing to develop labour intensive manufacturing for export grows, so does the danger of competition to attract investors and buyers. The point to be made here is not the oft-repeated one that tax holidays and similar incentives do not normally play a significant role in investment decisions. While this is true, provision of incentives are an accepted way of demonstrating a government's commitment to a certain strategy of development. The point rather is that it is possible to over-protect export industries just as much as import-substituting ones. The discussion of the Korean system in Section 5.3 shows up some of the possible dangers. Even a straight-forward flat subsidy on exports can lead to a situation in which the effective protection of exports increases as the proportion of the value processed locally falls.

Attempts to attract investors and buyers should be based on the principle of maximising a country's advantages as a potential location centre and minimising its disadvantages. Examples of this include avoidance of over-valuation of the currency, removal of bureaucratic obstacles to exporting, importing and setting up a business, and avoidance of legal minimum wage legislation which fixes wages at a level well above what the "market rate" would be.

9.4 Export Processing Zones

The virtues of export processing zones (EPZs) as such are often exaggerated. Although several of them have worked well in a number of small countries, the conditions inside zones are not very different from those outside. Among the most well known are the Border Zone in Mexico, the Kaohsiung Free Zone in Taiwan, and the Masan Free Export Zone in South Korea. Newer zones include the Marikina Free Trade Zone in the Philippines, Penang Export Processing Zone in Malaysia, and the Santa Cruz

Free Zone near Bombay.

Despite these developments it should be noted that EPZs have not, with the possible exception of Mexico, played a major role in a country's export drive. Kaohsiung contributes less than 10 per cent of Taiwan's exports, while Mason contributes less still to Korea's. It is often not the zone itself but the water, power, land, freighting and transporting facilities that go with it that are the real attraction.

There is, to date, no export processing zone as such in Mauritius. Instead there are bonded factories throughout the main urban belt on the Island. Export enterprises are not allowed to sell on the domestic market. Nor is there any reason why any kind of zone is needed. The goods manufactured by many of the factories are not those normally associated with contraband or security risks and for the small minority that are it would be more efficient to maintain the present system of individual factory checks rather than impose the constraints of an EPZ on all firms.

Other disadvantages of EPZs are that unless they include housing, they may increase journey times to work, and they can also facilitate the spread of dissent at times of industrial unrest.

9.5 Backward and Forward Linkages

The "spread" effects of export manufacturing depends partly on the nature of the operation and partly on the policy environment in which they are carried out. The assembly of semi-conductors or other highly specialised components has not led to many linkage developments, while the garments industry nearly always stimulates the establishment of an integrated textile industry. Sub-contracting of metal goods sometimes has very broad spread effects within the industrial sector.

Institutional factors, however, are more important. One of the reasons why semiconductors have only a limited linkage effect is because they are often manufactured for sale to America under the regulations of tariff items 807.00 in the United States (see Section 3.32). Indeed, Governments of the developing countries themselves may unwittingly limit linkage by forbidding the sale of

export items on the domestic market. In electronics, for instance, producers of radios and calculators often have to import the latest semi-conductor devices even if these are being made a few miles away. Some countries, such as Korea, have recently relaxed their regulations controlling sales to the domestic market in certain cases.

In other cases, international sub-contracting can bring about the development of mature, independent industries. In Hong Kong there are three companies which began as sub-contractors, but which now have such a thriving export business under their own brand names that they are the largest single producers of the goods in question in the world (binoculars, battery-operated torches and metal wrist watch bands). There are many other, less spectacular, examples.

9.6 Encouragement of Small Enterprises

One way in which the impact of exporting manufactures is spread through the economy in, for instance, Hong Kong and Korea is through the existence of a network of small manufacturers carrying out sub-contract work from trading companies and from larger manufacturers. For such a system to operate successfully there has to be a sufficient number of small scale entrepreneurs prepared to carry out the work, and the larger manufacturers must be prepared to use their services. The former is probably the primary and more difficult condition to fulfil, and there are several steps a Government can take to encourage it.

- (a) Concessionary finance could be made available, possibly through the creation of a small or medium industry bank.
- (b) Export credit guarantees could be established to provide insurance cover and reduce trading risks. This would benefit not only small or medium-sized enterprises but all firms which were not exporting through overseas affiliates.
- (c) Technical advice and consultancy services could be provided, backed by technicians hired through the international agencies.

- (d) There could be incentives to larger firms to sell their second-hand machinery to sub-contractors.
- (e) There should be as little official intervention as possible into wages and working conditions in small enterprises as is consistent with overall economic and social policy.

9.7 The Multinational Corporation

At the opposite end of the scale are the implications of the presence of multinational corporations which, even in areas with highly developed local enterprises, often play a vital part in export-led growth. There are particular problems for effective national control of subsidiaries of multinational corporations. The scope for manipulation of internal transfer prices is substantial. The U.S. Customs have complained about their inability to do more than take each firm's documentation on trust when assessing duty under item 807.00. A small developing country is unlikely to be better placed in this respect.

9.8 Sources of Materials

The problems of control of multinational companies arise mainly because of the pricing of supplies from one branch to another. Other problems can arise even where an exporter is an independent sub-contractor and relies on the buyer for material supplies. The case frequently arises in Korea of local companies having exclusive arrangements with Japanese buyers whereby the latter not only market their entire output but also supply some vital components or materials. This places local companies in a particularly weak position, especially in times of raw material shortage and high prices. Even if a higher price has to be paid, it is often preferable for companies to separate the organisations from which they buy and to which they sell. Here, the role of local trading houses can often compensate for the inability of small producers to buy in bulk.

9.9 The "Footloose" Nature of Exporters

Dependence on foreign market outlets, either through multinational companies or through international sub-contracting, carries the inevitable risk that production may suddenly be switched from one country to another. This would almost certainly occur as a result of a decision over which the Government of a developing country has no control, though it may be in response to a change in policy which that Government has made for social reasons - for instance, the raising of the minimum wage. If anything, sub-contracting is the more risky of the two arrangements. At least the multinational may feel some sense of responsibility for the employees it is depriving of jobs.

Sudden breaks of this sort are, however, rather rare phenomena. It is true that over time the structure of industries changes as sub-contracting demand moves from one country to another. For highly labour intensive, low skill industries such as cheaper knitted garments or footwear, demand moved from Hong Kong to Taiwan and Korea as wage rates and other costs increased in the former relative to the latter countries. Subsequently, production of these items is beginning to develop in the Philippines and Malaysia. However, this process has not as yet been the cause of economic decline or unemployment in the former countries. On the contrary, the shift in sub-contracting is often accompanied by an upgrading in industrial structure and the export of increasingly skill-intensive products from the former countries. This trend is to be welcomed as one of the fruits of labour-intensive manufacturing. Beginning with non-fashion garments, footwear, enamelware, assembly of transistors, and the production of stuffed toys, a country would hope to move on to textiles, fashion garments, electronic products, optical goods and mechanical toys. Eventually there may even be scope, as in Singapore, for the transfer of high technology, precision operations to developing countries.

A related lesser danger, which is more frequently found in reality, is that firms in developing countries are the first to feel the effects of a recession in the developed country markets. This is particularly acute in the consumption goods industries which are, of course, the first to be adversely affected by

recessions. These industries tend to be characterised by sub-contracting, with multinational operations concentrated in components. Unlike the fears of "foot-looseness", however, these are normally only temporary setbacks.

9.10 Technical Change

One danger which all labour intensive processes face is that they may be confronted with an economic, mechanised alternative. Furthermore, new products are developed which, although labour intensive themselves, are substitutes for two or three older products which were also labour intensive. An example of this is the use of the "single chip" L.S.I. in calculating machines which has halved the proportion of total costs accounted for by labour in the production of the component. On the other hand, automation for one particular product or process within a broader field need not necessarily cause more than minor adjustment problems, especially if a successful relationship has been established between buyer and seller. There are, in fact, very few examples of sub-contracting or multinational company arrangements ceasing altogether because of technical change.

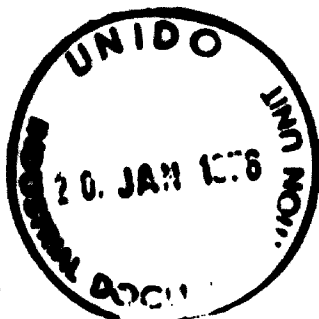
**LABOUR INTENSIVE
INDUSTRIES FOR
MAURITIUS**

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**APPENDIX: INDUSTRY
STUDIES**

**Prepared for
THE UNITED NATIONS
INDUSTRIAL DEVELOPMENT
ORGANISATION**

**By
MAXWELL STAMP ASSOCIATES
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JUNE, 1974

In terms of infrastructure, the general lack of obstacles to trade means that there has been no necessity to create export processing zones. Nevertheless, the authorities have played an important part in providing land and utilities for industry. The largest of these projects is the development of the Jurong Town complex, a self contained industrial and housing area which will eventually cover 5,670 hectares. By the end of 1973 there were over 500 factories and 10,000 low cost housing units on the estate. The population of Jurong is forecast to increase from about 50,000 in mid-1974 to 400,000 by the early 1980s. The complex includes a modern port facility, and facilities for the provision of cheap, reliable supplies of electricity and domestic and industrial water.

The purpose of Jurong is to cater for the heavier, more capital intensive industries that require to be housed in factory buildings. Other, smaller industrial estates have been established to encourage and diversify light manufacturing. These are normally in 'flatted' factory buildings and are located close to high density housing areas. This housing is in multi-storey blocks of flats often provided by the Government at low rents.

5.43 Other Assistance to Industry

An Export Promotion Centre has been established to assist manufacturers in channelling their products to the right markets at the right time and advising them upon tariffs, standards and specifications, quota restrictions and other matters in potential export markets. There is a network of offices in most major market centres.

5.44 The Change in Industrial Policy

During the 1960s economic incentives were geared towards the promotion of labour-intensive industries which would absorb the unemployed: textiles and garments, simple assembly of electronic components and artificial flowers are obvious examples.

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INTRODUCTION

The detailed results of the consultants' investigations into 21 industry groups and sub-groups are set out in this Appendix. The following definitions of terms have been used:

1. "Korea", unless stated otherwise, refers to South Korea (or the Republic of Korea).
2. All cash figures, unless stated otherwise, are in United States dollars and cents converted where necessary at the appropriate rate of exchange obtained from the IMF's "International Financial Statistics" or from banking sources.
3. Value added is equal to sales (or gross output where available) minus purchases of raw materials, fuel, electricity, water, sub-contracting services, and repairs and maintenance.
4. Net profit is profit available for appropriation before company tax.
5. The number of employees refers to the total wage and salaried staff other than directors.
6. Unless stated otherwise, wages include fringe benefits and overtime payments.

1. ELECTRONIC COMPONENTS

1.1. The Semiconductor Industry

1.11 Introduction

The semiconductor industry has two important characteristics among export manufactures of developing countries: it is one of the largest and most rapidly growing sectors and it is an activity in which multinational corporations are strongly represented. The trend towards offshore assembly of electronic components has been described by one expert as "a quiet revolution..... which may signal the beginning of a new era of international competition and economic development."¹ The components in question consist principally of semiconductor devices which can be used in a wide range of electronic products.

The industry began in the United States in the 1950s with the production of transistors and diodes. Already there have been three "generations" or new types of product in the industry, though products in all three groups are still being used. They are:

Group one: discrete semiconductors such as transistors, diodes and rectifiers.

Group two: integrated circuits (IC), developed in the early 1960's, which combine sets of discrete devices such as monolithic digital IC, linear IC.

Group three: large scale integration (LSI) combining hundreds of ICs utilizing either bipolar or metal oxide semiconductor processes.

These are used in three broad types of electronic product:

- military equipment such as radar, guidance systems,
- industrial and communications products such as telephones
- consumer goods such as television and radio sets.

1 Y.S. Chang: Economics of Offshore Assembly: The Case of Semiconductor Industry, United Nations Institute of Training and research, New York, 1971.

When the goal of full employment was achieved by 1972, the policy passed to a new phase of industrialisation. This lays much more emphasis on skill and technological content. The policy can be summed up under the following headings:

- (a) Wage policy - wage costs for medium and high technology industries are to be maintained at internationally competitive levels.
- (b) Manpower development - an intensification of official efforts to promote industrial training.
- (c) Foreign workers - the "open door" policy is maintained for expatriates who are highly skilled and whose expertise is difficult to obtain in Singapore. However, for less skilled expatriates, work permits are harder to obtain than previously.
- (d) Provision of venture capital - many of the firms which Singapore wishes to attract are highly specialised and, although technologically advanced, are likely to be smaller than the multinationals and less experienced in international investment. Such firms are encouraged by the Government being prepared to participate in up to 50 per cent of the equity, which the company has the option of buying back later in whole or in part (see, for example the account of the Rollei Group investment in Section 6 of the Appendix).
- (e) Incentives - pioneer status is now restricted to companies with the desired level of technology. One firm, making calculators, was given pioneer status on the complex manufacture of advanced calculators, but not on the assembly of semiconductors for the machines. Partly in response to this, the company is transferring the latter operation to Malaysia.

1.12 The Investors.

As already noted, the electronic components industry is one in which multinational companies are strongly represented although their role in the manufacture of exports from developing countries as a whole has been much exaggerated (see Section 5). This industry is still dominated by U.S. companies though European and Japanese firms are gaining in relative strength each year.

The three largest producers are Texas Instruments, Fairchild and Motorola, who between them are estimated to control about two-thirds of the U.S. market. In Europe, the dominant companies are Philips (Netherlands), SGS (Italy), Siemens (Germany), Sescosem (France) and Plessey (UK). There is also substantial investment by the large American corporations in Europe, especially Texas Instruments and Fairchild. Japanese semi-conductors are produced by companies associated with the large, well-known electronics groups such as Hitachi, Nippon Electronic, Matsushita and Toshiba.

In general, it is true that the technological gap between U.S. and non-U.S. producers for products in group 1 and 2 (see above) is very narrow, if indeed it exists at all for such items as transistors. Even in the group 3 area the gap between the U.S. and Japan may only be 2 or 3 years.

This phenomenon of a rapidly closing technological gap has significant implications for the pricing of the industry's products. As in the pharmaceuticals industry, there is a fairly predictable price reduction after a product has been on the market for a certain time, and firms other than the company which developed it learn to produce it. Two of the large U.S. companies interviewed by the consultants pointed out that in the early stages of a product's life low volume and high price are the hallmarks of the market. Then the Japanese, as well as European and other American firms, begin to manufacture any product which has established a substantial potential market.

In a later phase still there is more stable pricing owing to the fact that demand grows at a less rapid rate than early in the product's life. At times, where more than one company is developing a new product, the early price can be below cost in anticipation of future cost reduction through expanded volume and improved methods. The weight of the competitive effort rests on cost reduction with the aim of achieving or maintaining a substantial market share among relatively few survivors.

This central importance of cost reduction in the industry's market structure results from the relative shortness of a product's "life cycle" as a "new product" and the consequent need to establish a market share swiftly by pricing. This is the key to explaining the drive towards offshore assembly in recent years. Factor costs in the U.S., Europe and Japan relative to those in other production centres have become so high as to give firms with production capacity abroad a crucial advantage. Consequently, by 1971 every established American company was engaged in assembly activities in Asia, the Caribbean or Latin America, while the more important European companies were rapidly following suit.

The following table shows the location of the offshore facilities of the major companies mainly in Mexico and the Far East.

Location of Major Companies' Foreign Assembly Operations in Electronic Components Industry

<u>Company</u>	<u>Location</u>	<u>Employment</u>		<u>Year Started</u>
		<u>1971</u>	<u>1974</u>	
1. <u>U.S. Companies</u>				
Fairchild	Hong Kong	2,000	3,000	1961
	Korea	2,000	6,000	1964
	Singapore	1,500	3,600	1968
	Okinawa	200	200	1970
	Australia	-	250	1972
	Mexico	650	N.A.	1969
	Indonesia	-	500*	1974
		350	580	

Company	Location	Employment		Year Started
		1971	1974	
Motorola	Korea	2,800	4,500	1965
	Mexico	1,000	N.A.	1969
	Hong Kong	-	300	1972
	Malaysia	-	3,000	1973
Texas Instruments	Singapore	1,500	4,000	1969
	Taiwan	1,000	3,000	1970
	Malaysia	-	2,500	1973
National	Singapore	1,000	4,000	1968
	Indonesia	-	1,500	1974
	Thailand	-	2,000	1973
	Hong Kong	-	500	1970
	Malaysia	-	2,500	1973
Intersil	Singapore	100	400	1970
Intel	Malaysia	-	1,000	1973
Signetics	Korea	500	3,000	1965
Siliconix	Mexico	N.A.	N.A.	N.A.
	Dutch West Indies	N.A.	N.A.	N.A.
General Instruments	Scotland	N.A.	N.A.	1964
	Taiwan	2,500	3,000	1964
RCA	Taiwan	650	1,500	1967
	Singapore	600	-	1967
	Malaysia	-	1,500	1974
Continental Devices	Singapore	850	600	1969

<u>Company</u>	<u>Location</u>	<u>Employment</u>		<u>Year Started</u>
		<u>1971</u>	<u>1974</u>	
Litronix	Singapore	-	600	1972
	Malaysia	-	1,500	1973
	Mauritius	-	850	1973
			2,950	
Traneitron	Mexico	1,000	N.A.	1969
General Electric	Singapore	500	1,000	1970
Teledyne	Singapore	-	1,300	1971
	Hong Kong	-	1,600	1972
	Malaysia	-	400	1974
Monsanto	Indonesia	-	500	1973
	Malaysia	-	1,000	1973
Electronic Array	Singapore	100	1,000	1971
Hewlett Packard	Singapore	N.A.	1,700	1970
	Malaysia	-	800	1973
American Micro	Korea	-	2,500	1971
	Mexico	500	N.A.	1969
Aircor	Singapore	850	1,300	1970
	Mexico	211	N.A.	N.A.
I.T.T.	Taiwan	-	1,000	1972
Komy Corp.	Korea	N.A.	1,524	1961
Hahn American Inc.	Korea	N.A.	270	1969

<u>Company</u>	<u>Location</u>	<u>Employment</u>		<u>Year Started</u>
		<u>1971</u>	<u>1974</u>	
Industrial Electronics	Singapore	N.A.	1,200	N.A.
	Malaysia	-	300	1974
Monolithic Memories	Malaysia	-	208	1974
Advance Micro Devices	Malaysia	-	600	1973
Microsystems International	Malaysia	-	611	1973
Micro Electronics	Hong Kong	N.A.	400	N.A.
Integrated Electronics	Malaysia	-	400	1973
Mastek	Malaysia	-	750	1974
Hugle International	Malaysia	N.A.	N.A.	1974
Western Digital	Malaysia	N.A.	N.A.	1974
2. <u>Non-U.S. Companies</u>				
SGS - Ates	Singapore	500	2,000	1969
Siemens	Singapore	250	1,000	1969
	Malaysia	-	N.A.	1974
Philips	Taiwan	850	1,000	1969
	Australia	-	875	N.A.
	Hong Kong	-	850	1971
Carter	Hong Kong	3,000	2,000	1969
	Philippines	-	2,000	1973
	Malaysia	-	1,000	1973

Company	Location	Employment		Year Started
		1971	1974	
Hitachi	Malaysia	-	1,500	1973
Toshiba	Korea	N.A.	681	1969
	Malaysia	-	N.A.	1974
Tokyo Electronic	Korea	-	93	1972
	Malaysia	-	N.A.	1974
Sanyo	Korea	N.A.	853	1969
Matsushita	Malaysia	-	N.A.	1973
Nippon Electronics	Korea	N.A.	1,827	1969
Tyodo Electronics	Korea	N.A.	500	1970
Seiko Electronics	Malaysia	-	N.A.	1974
Naito Electronics	Malaysia	-	N.A.	1974
Towa Condenser	Korea	N.A.	195	1970
Shisuki Electrical	Korea	-	140	1972
Nichicon Capacitor	Malaysia	-	N.A.	1974
Kami Electronics	Korea	-	150	1972
Taiyo Yuden	Korea	-	313	1972
Kinoshida Takishi	Korea	-	N.A.	1973
Tanmura Seisakushu	Korea	-	N.A.	1973

Country	Location	Employment		Year Started
		1971	1974	
Denki-Onkyo	Korea	-	N.A.	1973
Gunba-Sankang	Korea	-	N.A.	1973
Simoda Electric	Korea	-	N.A.	1973

Notes:

N.A. Not Available

* Prospective - not in operation by February, 1974.

** Testing and finishing only.

Sources: For 1971 employment data: Y.S. Chang: Economics of Offshore Assembly: The Case of the Semiconductor Industry, Unitar, New York, 1971.

Other Data: Field interviews.

Note As far as American and European companies are concerned, this table does not present a complete picture of overseas operations. Due to time constraints it was not possible to obtain detailed information on plants in Europe and the Caribbean. Both U.S. and European companies have factories in Ireland, Portugal, Italy and Scotland which are located at least partly on the basis of relatively low labour costs in relation to nearness of market.

In the Caribbean, there are about 20 U.S. firms assembling at present with wages around \$4⁵ per hour. There are plans to increase this number to 36 over the next 12 months.

Apart from the direct investment recorded in the above table, there are many cases of American, European and Japanese firms subcontracting to local enterprises in low wage-cost centres. Among companies sub-contracting are the following:

CompanyArea

National

Mexico, Korea

Sprague

Mexico

Raytheon

Taiwan, Philippines

Hong Kong.

Several points emerge clearly from the table. Firstly, the growth in offshore operations has continued strongly in the two years since 1971. Comparing country totals of numbers employed where company data are available for both 1971 and the beginning of 1974 yields the following result:

<u>Country</u>	<u>Total Numbers Employed</u>	
	<u>1971</u>	<u>1974</u>
Singapore	7,750	17,800
Malaysia	-	18,003
Korea	5,300	16,588
Taiwan	5,000	9,500
Hong Kong	5,000	8,250
Indonesia, Thailand, Philippines and Mauritius	-	7,350
Total	23,050	77,491

The country with the lowest growth in employment has, predictably, been Hong Kong where labour costs are the highest. Recently, growth has fallen off in Singapore (see Section 1.33 below) as wage rates have risen there.

The second feature which emerges is the importance of new low labour cost centres, especially Malaysia. That country, as well as Indonesia, Thailand and the Philippines, has abundant supplies of cheap labour which together with the incentives offered, makes for effective competition with the earlier centres - Hong Kong, Singapore, Taiwan - where labour and other costs are rapidly rising.

The tendency is for companies in Singapore not only to carry out expansion in Malaysia, but also to transfer certain labour intensive operations there.

Thirdly the differing concentrations of investments are clearly shown. U.S. investment is very wide-spread with plants in every country in the area, while the Japanese tend to concentrate almost entirely in Korea and, more recently, Malaysia. Japanese electronics enterprises are widely represented in other centres but more in the production of parts and final products than in semiconductors. The following table summarises investment concentrations in 1971 and at the beginning of 1974.

Number of Foreign Enterprises in Each Production
Centre in Asia By Nationality of Investor, 1971
and 1974

	<u>U.S.</u>		<u>Japan</u>		<u>Other</u>		<u>Total</u>	
	<u>1971</u>	<u>1974</u>	<u>1971</u>	<u>1974</u>	<u>1971</u>	<u>1974</u>	<u>1971</u>	<u>1974</u>
Hong Kong	2	5	-	-	1	2	3	7
Taiwan	2	3	-	-	1	1	3	4
Singapore	12	12	-	-	2	2	14	14
Korea	6	6	5	14	-	-	11	20
Malaysia	-	17	-	7	-	2	-	26
Other centres	-	6	-	-	-	1	-	7
Total	22	49	5	21	4	8	31	78

Source: See above table.

Note: Several Japanese companies are manufacturing semi-conductors, especially in Taiwan, for use in final goods made at the same plants. The above figures do not include these companies.

The tendencies illustrated above are only partly a reflection of the absolute level of labour cost.

The location of offshore operations is also determined by the rate of increase of wages and the availability of labour supplies as well as by non-labour factors. In Taiwan, Hong Kong and, recently, Singapore, companies are experiencing difficulty in recruiting sufficient labour. Labour is relatively abundant in Korea, Malaysia and other new centres - e.g. the Philippines and Thailand. Absolute wage levels and rates of growth have been as follows:-

Average Hourly Earnings* (excluding overtime) of
Assembly Workers Employed in U.S. Semiconductor
Plants in Various Centres (\$)

	<u>1971</u>	<u>1974</u>	<u>Increase (%)</u>
Hong Kong	0.28	0.60	114
Taiwan	0.14	0.40	186
Singapore	0.29	0.57	97
Korea	0.26	0.40	54
Malaysia	-	0.37	-
Philippines	-	0.20	-
Mauritius	-	0.17	-

Sources:- (1) U.S. Tariff Commission: Economic Factors Affecting the use of Items 807.00 and 806.30 of the Tariff Schedule of the United States, Washington, 1970.

(2) Ching-Yuan Hin: Industrialisation in Taiwan, 1946-72, Praeger, 1974.

(3) Field Interview.

* Includes fringe benefits.

Unlike consumer or industrial electronics, joint ventures are not widely found. All the larger American and European firms interviewed by the consultants preferred to retain 100 per cent ownership where possible.

Companies wishing to establish more labour intensive operations are actively discouraged and politely informed that Malaysia would welcome them. Some companies who are not satisfying the authorities with their speed of upgrading are allegedly being threatened with removal of their incentives and privileges.

(f) The provision of export credit.

5.45 The Role of Foreign Investment

Foreign investment plays a much more important part in Singapore's production of manufacture for export than in that of Hong Kong or Korea. It was estimated in 1970 that foreign firms, including joint ventures, contributed nearly 50 per cent of the value of output, 62.5 per cent of the value added, 44 per cent of total employment and nearly 70 per cent of the exports of the manufacturing sector. Although more recent figures are not available it is almost certain that these proportions have increased, as the years since 1970 have seen substantial expansion in the electronics and precision industries where foreign investment is heavily committed. The following table gives some indication of the increase in commitments as well as showing the distribution of investment within manufacturing.

Industry	Gross Fixed Assets Attributable to Foreign Investors (U.S. \$ 000)		Percentage Breakdown in 1972
	1971	1972	
Food and beverages	16,341	20,617	6.1
Textiles and garments	17,998	44,265	13.0
Wood and cork products	9,170	25,902	7.6
Paper and paper products	7,220	9,495	2.8
Leather and rubber products	12,086	15,130	4.5
Basic industrial chemicals	17,148	26,910	7.9
Other chemical products	7,303	19,376	5.7
Non-metallic mineral products	10,758	12,178	3.6

There were three main reasons given for this:

- output in most cases is intended entirely for export, and in the absence of a home market the advantages of local contacts diminish sharply.

- the need to maintain an uninterrupted flow of supply, to sustain high standards of quality, and to quickly implement cost reducing improvements in production methods, requires a close degree of control by the parent enterprise, and

- for United States companies, the international operation is often governed by the tariff rules concerning items 807 and 806.30 of the U.S. Tariff Schedule. Briefly, the foreign operation is most advantageously viewed as an extension of the home country operation rather than as a separate company.

In spite of the widespread prevalence of foreign production, most investors retain some activity in the home country of the same type as that carried out abroad. This is to reduce the risk of disruption to the overall operation through the interruption of foreign supplies.

1.13 The Place of Foreign Operations in the Overall Production Process.....

The manufacture of electronic components of the type under consideration can be broken down into four main stages:

- (a) Mask-making: this consists of circuit design, then high resolution photography which reduces the design into overlays on a set of glass plates or masks.

(b) Wafer fabrication: thin silicon wafers are processed in batches of several hundred through a series of high temperature furnaces for diffusion, oxidation and layer growth. The wafers are then coated with photo-sensitive resin, imprinted with the masks, exposed and rinsed. This preparation or "doping" of the silicon wafer is the most complex, capital intensive, and technologically advanced part of the operation.

(c) Each of the wafers is then sliced into many, very small individual dice. Dice are examined microscopically to eliminate defective ones. Then, also under a microscope each die is bonded onto a metal frame through ultrasonic or thermo bonding. Leadwires, often of gold, are then attached to the die and to the metal frame in places corresponding to each of the device's connections. Each lead is spot welded. The operation is completed by placement of a metal cap.

(d) Testing of the devices then takes place on electrical machinery.

The stages of this process which are normally carried out in developing countries are (c) and, to a lesser extent, (d). The cost of the total operation is very dependent on the proportion of silicon that can be used in final assembly. Early in the life of a particular product, 5% yield is considered high, and silicon is an expensive material. As technology improves, the yield from a particular wafer goes up, the cost of stage (b) in the overall operation diminishes, and the relative importance of stages (c) and (d) increases. Once a product becomes established, therefore, the incentive to establish offshore facilities increases.

Wafer fabrication outside the investing company's own country is extremely rare.

In 1971, two companies expressed the intention of doing this in the hope of gaining some slight cost advantage over competitors. One of these, in Singapore, was one of the rare joint ventures. Since then, however, the company decided that it would be uneconomic to transfer the process. The local partners disagreed, and the company has now reverted to the status of wholly owned subsidiary. For the industry in general, it is unlikely that attitudes will change until one of the three major companies takes the lead. Some developing countries, such as Singapore, are anxious to have wafer fabrication take place locally. It is probable that the technological "spin-off" from this in terms of skill promotion would be high. Against this has to be set the fact that it is a sensitive, highly capital intensive and highly energy - intensive process.

Plans have been announced for the installation of wafer fabrication facilities in Malaysia, though this operation had not begun by March, 1974. In Taiwan also the authorities are anxious to fabricate locally to reduce dependence on imports for key components.

1.2 Other Components.

Other than semiconductors, there is a wide range of electronic components which are exported from developing countries without being incorporated in final products. Among the most important is the manufacture of electronic memory circuits for computers which requires a great deal of labour and is difficult to mechanise. It could be described as little more than darning with copper wire. Other components produced for export include the following:-

Printed Circuit Boards.

Cable harnesses.

Coils

Condensers

Yokes

Regulators.

The companies producing these commodities are subsidiaries of international firms such as IBM, Westinghouse, Arvin and Sanyo, and local companies often manufacturing under subcontract. Companies producing final products also manufacture their own components - this applies to a greater extent to this type of component than to semiconductor devices.

1.3 Country Studies.

1.31 Mexico.

1.311 The Industry.

Mexico was not an area visited by the consultants during the course of this study, and in the time available it has not been possible to obtain up-to-date information (apart from the company case study). Accordingly, most of the following information relates to the period 1970-1971.

The setting for the industry's rapid growth was the Border Industrialisation Programme (see Section 5.5) begun in 1965. Fairchild's were the first company to set up operations with a direct investment in 1968. By 1971 there were 5 U.S. companies employing about 3,400 people in total. In addition, the use of sub-contractors, both locally and U.S. owned, is very prevalent in Mexico - more so than in any other centre for the production of electronic components. In 1971, there were at least 15 such operations with a total employment of about 1,400. The number of employees per enterprise is considerably smaller (just under 100) in the case of the sub-contractors than in the case of direct investors (672). In general plant size in Mexico tends to be smaller than in the Far East for U.S. companies. The average number of employees per plant for American companies in Taiwan, Hong Kong, Korea and Singapore in 1971 was 1,114. By 1974 the average U.S. plant size in Asia has increased to 1,678 employees.

The best measure of the industry's output in Mexico is the amount exported to the U.S. under item 807.00 (see Section 3.32). This was \$23.6 million in 1969, or 16.25% of total Mexican exports to the U.S. under 807.00.

Mexico

1.312 Case Study Company (figures in U.S. dollars as at March, 1974)

1.	Products	Electronic capacitors
2.	Annual Sales	\$1,506,384
3.	Value Added	Local company is paid by parent for labour costs and local overheads only. Materials remain the property of the parent company

4.	Wages and employment	
	Number of clerical and supervisory workers (all expatriate)	122
	Number of operatives	640
	Total	762

	Average monthly wage (clerical and supervisory)	\$490
	Average monthly wage (operatives)	\$100
	Total annual wage cost	\$887,560

SWUSA \$800/1000

5. Non-wage value added \$618,824

6. Other production costs -

7.	Capital and assets	
	Fixed assets	\$ 50,000
	Current assets	\$1,600,000
	Total Assets	\$2,100,000

u. study with a stock

8. Ownership Wholly owned subsidiary of U.S. company.

9. Exports \$1,506,384

10. Sales and value added per employee \$1,977

11. Non wage value added per employee \$812

12. Fixed assets per employee \$66

All output is sold to the parent company in the U.S.

The operation is less mechanised than it would be in the U.S. There is less machinery per worker and more workers are employed to do the same task.

There is no adequately qualified salaried and technical staff available locally - hence the heavy use of expatriates for managerial, maintenance and supervisory posts.

The company is seriously considering moving to another location.

1.32 Hong Kong

1.321 The Industry.

The growth of the electronics industry as a whole in Hong Kong is well illustrated by the following figures:

	<u>End</u> <u>1968</u>	<u>Mid</u> <u>1971</u>	<u>End</u> <u>1972</u>	<u>End</u> <u>1973</u>
No. of establishments	109	314	305	390
Employment	30,607	46,175	49,772	56,070
Employees per establishment	281	147	163	144

There are no published records for the above establishments which indicate the numbers involved in component manufacture. The following is a rough estimate of the situation at the end of 1973 derived from information provided by the Department of Commerce and Industry and by manufacturers' associations. The figures include employees and establishments which are part of companies also producing final products.

	<u>Total No. of Establishments</u>	<u>No. of Companies</u>	<u>Employment</u>
Semiconductors	27	16	11,500
Components for Computers	31	19	7,700
Other parts and Components	116	70	4,349
Total	<u>174</u>	<u>105</u>	<u>23,549</u>

Source: Consultants' estimate based on information provided by the Department of Commerce and Industry and manufacturers' associations.

Aggregate sales figures for the electronics industry are not available after 1971, but for the components part of the industry, exports constitute approximately 75 per cent of the value of sales. Exports are available from the trade figures and show the remarkable growth of this industry in recent years.

Exports of Electronic Components from Hong Kong
1968, 1972 and 1973 (in U.S.\$thousands)

	<u>1968</u>	<u>1972</u>	<u>1973*</u>
Transistors and diodes	22,295	45,245	74,560
Components and parts for computers	2,180	45,281	74,838
Other parts and components	11,607	11,574	16,406
Total	<u>36,082</u>	<u>102,100</u>	<u>165,804</u>

* Preliminary figures.

Source: Hong Kong External Trade : Various Years.

On this basis, total sales in 1973 are estimated at \$221 million. Using this and the figures obtained above on establishments and number of employees, we obtain the following aggregate ratios for 1973 (in U.S. dollars):

Sales per establishment	\$1,270,115
Sales per employee	\$9,385
Employees per establishment	135

Foreign investment tends to be concentrated in the manufacture of semiconductors where, of the 16 companies recorded, 11 are wholly owned subsidiaries of non-Hong Kong enterprises. The other five are local companies working under subcontract. These local firms tend to concentrate on the less sophisticated type of semiconductor device. One large European group in Hong Kong which manufactures both semiconductors and transistor radios in the Colony purchases the simpler types of semiconductor from a local subcontractor.

For parts other than semiconductors, the picture is more mixed. Many parts are made by very small establishments operated on a family basis and under contract to the larger Hong Kong companies. Apart from these, the consultants estimate that 80 per cent of the total number of companies are locally owned.

1.322 Case Study Companies

COMPANY A (figures refer to 1973) Wholly owned European subsidiary.

1.	Products	Transistors and metal parts for radio
2.	Annual Sales	\$14,571,420
3.	Value Added	\$7,285,710
4.	Wages and employment	
	Number of employees	850
	Male	200
	Female	650
	Proportion of female workers	76.5%
	Average monthly wage	\$96
	Total annual wage cost	\$979,200

- | | | |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 5. | Non wage value added | \$6,306,510 |
| 6. | Other production costs | |
| | Raw materials and other direct costs | \$6,994,282 |
| | Electricity | \$291,428 |
| | Total | \$7,285,710 |
| 7. | Fixed Assets | |
| | Land and Buildings | \$320,571 |
| | Plant and Equipment | \$2,171,142 |
| | Total | <u>\$2,491,713</u> |
| 8. | Exports | All sales exported. |
| 9. | Sales per employee | \$17,143 |
| 10. | Value added per employee | \$8,571 |
| 11. | Non wage value added per employee | \$7,419 |
| 12. | Fixed assets per employee | \$2,931 |
| 13. | Plant and Equipment per employee | \$2,554 |
| 14. | Value added/Sales (%) | 50.0 |
| 15. | Wage costs/Sales (%) | 6.7 |
| 16. | All exports are sold to associated companies. The group also manufactures transistor radios in Hong Kong but the semiconductors which are produced are sophisticated and more suitable for use elsewhere in the Group's worldwide operations. | |
| 17. | Great satisfaction was expressed concerning the labour force - the speed of output was described as higher than in any of the Group's other plants in Asia. | |
| 18. | Raw materials are purchased from within the Group. | |
| 19. | Both materials and final output are transported by air. | |

20. No difficulty has been encountered with shortages of labour, materials or infrastructure requirements.
21. Electricity consumption: 6,476 kwh per employee per year.
Factory space 9,200 sq. metres or 11 sq. metres per employee

The production process used is the most advanced known to the Group. The introduction of more sophisticated methods has raised productivity from 4 persons to every one million units to 1.75 persons per million units. The use of such methods in Hong Kong was partly in response to rising labour costs but could only be contemplated because of the presence of skilled maintenance workers in the Colony.

COMPANY B (figures refer to 1973) Wholly owned subsidiary.

1. Products Electro-plating of electronic components and cutlery.

2. Annual Sales \$5,900,000

Electronic components	\$3,540,000
Cutlery	\$2,360,000

3. Value added \$1,964,700

4. Wages and employment

	Number	Average monthly wage
Skilled Workers	11	\$340
Unskilled workers	260	\$113

Total wage annual \$397,440 . . . bill

Number of male employees 110

Proportion of female workers 57.7%

5. Non-wage value added \$1,567,260

Industry	Gross Fixed Assets Attributable to Foreign Investors (U.S. \$000)		Percentage Breakdown in 1972
	1971	1972	
Basic metal industries	7,858	9,875	2.9
Metal products and mechanical engineering	13,770	28,445	8.4
Electrical products	9,845	22,208	6.5
Electronic products and parts	26,556	40,017	11.8
Transport equipment	21,190	31,690	9.3
Plastic products	5,279	8,284	2.5
Optical goods and scientific instruments	3,704	19,384	5.7
Miscellaneous	4,796	5,431	1.6
Total	191,022	339,207	100.0

Source: Singapore Trade and Industry, May, 1973.

One interesting point to note is that foreign investment is much more widely spread over the manufacturing sector as a whole than in Hong Kong or Korea where it is concentrated in electronics and textiles and garments.

In addition to these direct investments in manufacturing, Singapore industry has received finance from the many foreign banks which are established in the Republic in recognition of Singapore's role as the centre of the Asian dollar market.

The influence of trading houses is significant, though less so than in Hong Kong or Korea, owing to the more limited role of small and medium sized local manufacturers requiring marketing outlets and technical assistance.

6. Other production costs. Gold is the most significant material. Gold purchases account for 40% of sales.
7. Capital and assets. Previously operated on a small scale with a total area of 184 sq. metres but is now in new premises of 1,800 sq. metres with capital equipment of value \$2,000,000.
8. Exports. Direct exports are comparatively few and consist of plating, semiconductor and cutlery orders for other Asian centres, especially Taiwan, Philippines, Malaysia and Indonesia. Virtually all sales consist of indirect exports in the sense that work is done on exported items.
9. Sales per employee \$21,771
10. Value added per employee \$7,250
11. Non-wage value added per employee \$5,783
12. Plant and equipment per employee \$738
13. Value added/Sales 33.3%
14. Wage costs/Sales 6.7%
15. Transport requirements. Material purchases and export orders are all despatched by air.
16. Public utility requirements. Electricity consumption described as "average" but water consumption very heavy. Plant requires 500,000 gallons (2.4 million litres) of water per month. This amounts to 105,000 litres per employee per year. Factory space per worker: 6.64 sq. metres.

17. The manufacturing process is the same as it would be in a developed country. Previously, at the old premises, it was on a smaller scale and less mechanised.
18. The main attractions of Hong Kong were the low tax rates and the ease with which vital raw materials, especially gold, could be obtained.
19. The company was established in 1968 in response to the increasing production of semiconductor devices and stainless steel flatware production in Asia.
20. The company has to comply with Swiss electro-plating standards which are among the most demanding in the world. There is rigorous testing and inspection at every stage in the production process. Final quality control inspection is carried out by an X-ray process which checks the completed plating to the micro-inch.
21. A particular problem is gold which must be purchased on the open market. Cutlery is plated with 18 carat and colour-finished with 23 carat. For electronic components plating with 24 carat gold is required.

1.33 Singapore

1.331 The Industry.

As is generally the case in Singapore foreign investment plays a crucial role in the electronics components industry. A considerably higher proportion of companies than in Hong Kong have foreign financial participation. In the electronics industry as a whole foreign investment totalled \$45 million by mid 1973. The production of semiconductors, as elsewhere, is dominated by U.S. firms. There were 12 of these employing 20,700 people by early 1974. In addition, two European companies accounted for a further 3,000 employees.

There are about 28 companies engaged in the production of other electronic components. These can be broken down by ownership and product as follows:

<u>Company</u>	<u>Nationality</u>	<u>Product</u>
1	U.S.	Memory Stacks printed circuit boards core tooling
2	U.S.	Fractional hp motors and appliance controls
3	U.S.	Circuit breakers.
4	U.S.	Hermetic Motors.
5.	U.S.	Television components
6.	U.S.	Gold bonding wire
7.	U.S.	Insulation and acoustic panels
8.	U.S.	Microwave tubes, memory planes.
9.	U.S.	Printed circuit boards
10.	U.S.	Cable harness
11.	German	Capacitors, condensers
12.	German	Nickel Cadmium batteries
13.	Japanese	Printed Circuit Boards
14.	Japanese	Compressors.
15.	Japanese	Capacitors, filters ferrite products
16.	Australian	Frequency control products
17.	Israeli	Military communications equipment.
18.	Hong Kong	Telephone components
19.	Hong Kong	Printed circuit boards
20.	Hong Kong	Radio components
21.	Japanese	Antennae coil, printed circuit boards.

<u>Company</u>	<u>Nationality</u>	<u>Product</u>
22	U.S.	General Components
23	Local	Converters, transformers radio spares
24	Local	Electrolytic capacitors
25	Local	Metal chassis for test equipment
26	Local	Metal caps for electronic parts
27	Local	Radio Casing
28	Local	Plastic Parts
29	Local	Antennae and spares
Summary	U.S.	11
	European	2
	Japanese	4
	Hong Kong	3
	Other foreign	2
	Local	7
	Total	<u>29</u>

Several of the foreign companies have local participation.

1.332 Case Study Companies.

Interviews were conducted with 12 companies producing electronic components in Singapore. Of those which can be used, 4 manufacture semiconductor devices and 5 other components and parts. In the following tables, companies producing similar products are grouped together (figures in U.S. dollars refer to 1973)

<u>Group 1</u>	C O M P A N I E S			
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
1. Products	Integrated circuits, transistors	Integrated circuits	Integrated circuits transistors	Integrated circuits

<u>Group 1</u>	C O M P A N I E S			
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
2. Nationality	U.S.	U.S.	U.S.	European
3. Ownership	Wholly owned Subsidiary	Wholly owned Subsidiary	90% U.S. owned	Wholly owned Subsidiary
4. Annual Sales	\$36,304,000	\$30,600,000	\$6,000,000	\$41,500,000
5. Value Added	Companies A and B sell local labour and overheads as service to parent.			\$2,850,000 \$16,600,000
6. Numbers Employed				
Men:	800	360	20	400
Women:	3,200	3,240	380	1,600
Total:	4,000	3,600	400	2,000
7. Average monthly wage*	\$108	\$108	\$103	\$91
8. Total annual wage costs	\$5,184,000	\$4,665,600	\$494,400	\$2,184,000
9. Non-wage value added	\$31,120,000	\$25,934,400	\$2,355,600	\$14,416,000
10 Sales per employee	\$9,076	\$8,500	\$15,000	\$20,750
11 Value added per employee	\$9,076	\$8,500	\$7,125	\$8,300
12 Non-wage value added per employee	\$7,780	\$7,204	\$5,889	\$7,208
13 Size of fac- tory (sq. metres)	9,290	5,016	N.A.	10,219

<u>Group 1</u>	<u>C</u>	<u>O</u>	<u>M</u>	<u>P</u>	<u>A</u>	<u>N</u>	<u>I</u>	<u>E</u>	<u>S</u>
	<u>A</u>		<u>B</u>			<u>C</u>			<u>D</u>
14 Space per employee (sq. metres)	2,32		1.93			N.A.			5.11
15 Electricity consumption (kwh p.a.)	N.A.		N.A.			1,030,000			5,140,000
16 Electricity consumption per employee (kwh p.a.)	N.A.		N.A.			2,575			2,570
17 Water consumption (litres p.a.)	N.A.		N.A.			N.A.			108.9 million
18 Water consumption per employee (litres p.a.)	N.A.		N.A.			N.A.			54,400
19 Purchase of materials	Parent Company		Parent Company			Commercial			Parent Company
20 Main materials	Silicon dice, gold wires, metal caps, industrial gases.								
21 Transport:									
Raw materials:	Air		Air			Air			Air
Final products:	Air		Air			Air			Air
22 Exports	Same group		Same group			80% same group, 20% commercial			Same group
	All sales		All sales			All sales			All sales
23 Shortages and bottle-necks in Singapore	None		Labour			None			Labour

Group 1**C O M P A N I E S****A****B****C****D****24 Supplies purchased locally**

Industrial gases
Office Furniture etc. Cotton gloves
Plastic Cannistors
Some tool repairs and parts

Industrial Gases
Office Furniture etc. Gold wire

Industrial Gases
Office Furniture etc. Some tool repairs and parts
Plastic Cannistors
Gold wire
Metal caps

Industrial Gases
Office Furniture etc. Some tool repairs and parts
Metal caps

25 Backward integration (wafer fabrication) considered**No.****No.****No.****No.****26 Reasons for locating in Singapore (in order of priority)**

1.Labour Availability

1.Labour Availability

1.Labour Cost

1.Labour Availability

2.Good telephone and telex communications

2.Geographic location

2.Tax incentives

2.Labour Costs

3.Availability of good quality local supplies

3.Co-operative Government

3.Provision of factory buildings and sources

3.Good Communications

4.High Quality Labour

4.Labour Availability

5.Freedom from trade controls

27 Expansion

Companies A and B likely to expand elsewhere because of labour shortage. Company B to establish testing facility in Singapore

No

expansion intentions. Malaysia.

Intends to expand in*** Includes fringe benefits.**

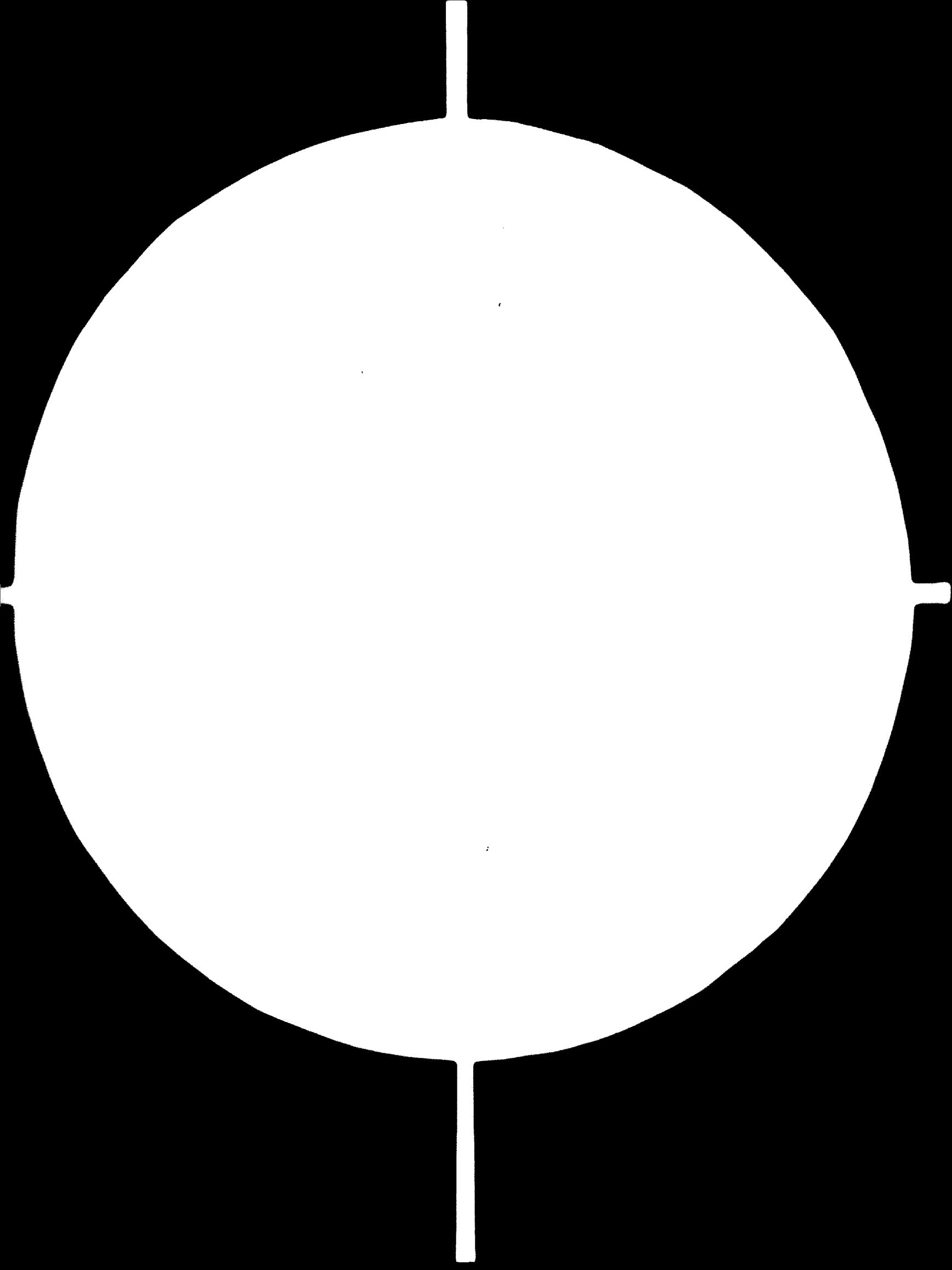
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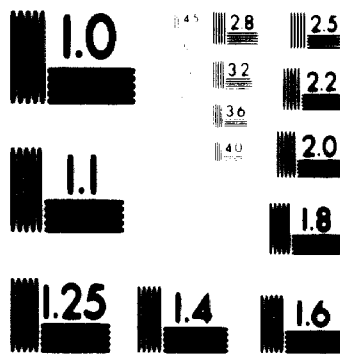
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

24 x
F

9. Non-wage value added: \$624,600
10. Sales per employee: \$19,615
11. Value added per employee: \$5,885
12. Non-wage value added per employee: \$4,805
13. Size of factory: 2,500 sq. meters
14. Space per employee: 19.23 sq. metres (4.17 sq. metres when in full operation)
15. Electricity consumption (kwh per annum) 1,285,714
16. Electricity consumption per employee (kwh p.a.) 9,890
17. Water consumption (litres p.a.) 2.7 million
18. Water consumption per employee (litres p.a.) 20,800
19. Purchase of materials: Mainly parent company, but a little commercially.
20. Main materials: Nickel wire mesh, chemical powder, steel, plastics.
21. Transport: Materials: Sea and Air
Final products: Air
22. Exports: All sales exported to parent company
23. Shortages and bottlenecks in Singapore: None
24. Supplies purchased locally: Potassium hydroxide, relatively simple toolmaking, packaging and furniture.
25. Backward integration: already as much as possible within the group's expertise.

26. **Reasons for locating in Singapore (in order of priority)**

1. **Geographical location - competition with Japanese**
2. **Good port and airport facilities**
3. **Presence of local back-up industries**
4. **Fiscal incentives.**

27. **Expansion: Will expand present production line to about 600 employees.**

COMPANY J

1. **Product: Condensers and other radio parts**
2. **Nationality: European**
3. **Ownership: Wholly owned subsidiary**
4. **Annual sales: \$1,860,000**
5. **Value added: \$930,000**
6. **Numbers employed:**

Men	50
Women	300
Total	350
7. **Average monthly wage* \$118**
8. **Total annual wage costs: \$495,600**
9. **Non-wage value added \$434,400**
10. **Sales per employee: \$5,314**
11. **Value added per employee: \$2,657**

12. Non wage value added per employee \$1,241
13. Size of factory: 800 sq. metres.
14. Space per employee: 2.29 sq. metres
15. Electricity consumption (kwh p.a.) 857,143
16. Electricity consumption per employee (kwh p.a.): 2,449
17. Water consumption: negligible
18. Water consumption per employee: negligible
19. Purchase of materials: parent company
20. Main materials: N.A.
21. Transport: Materials: Sea
 Final products Sea
22. Exports: All export sales to parent company. About 15% of sales sold locally.
23. Shortages and bottlenecks in Singapore: None
24. Supplies purchased locally: furniture, packaging materials.
25. Backward integration: already as much as possible within the group's expertise.
26. Reasons for locating in Singapore (in order of priority)
 1. Labour Cost.
 2. Good port facilities
 3. Good public utility services
 4. Efficient administration
27. Expansion: Will expand number of radio parts manufactured as well as existing lines.

Sources Field Interviews

Note: * Includes fringe benefits.

Summary of Singapore Case Studies

Number of Companies	10
Number of wholly owned subsidiaries	10
Average employment:	1,478
Average sales per employee	\$15,268
Average value added per employee	\$7,358
Average non-wage value added per employee	\$6,054
Average non-wage value added per employee apart from Company E	\$4,692
Average space per employee (sq. metres)	6.01
Average electricity consumption per employee (kwh p.a.)	4,496
Average water consumption per employee (litres p.a.)	53,225
Average water consumption per employee apart from Company D (cubic metres p.a.)	11.37

Transport: Materials: Air 8 companies, Sea 4 companies
Final products: Air 8 companies; Sea 2 companies.

Purchase of materials: Commercial: 3 companies; from parent company: 5 companies; commercially and from parent company: 1 company; sub-contract: 1 company.

Export sales: Commercial: 2 companies; to parent company 8 companies.

Reasons for locating in Singapore

Most important reasons:

Availability of labour	7 companies
Cost of labour	4 companies (2 placed it as equally important with availability)

Geographic location	1 company
Second most important reason	
Good port and airport facilities	3 companies
Good communications	2 companies
Good public utility services	1 company.
Geographic location	1 company
Labour cost	1 company
Fiscal incentives	1 company
High standard of labour force	1 company

It is clear from this list of reasons that availability of trainable labour is the main factor behind decisions to site factories in Singapore. Although the industry is not particularly labour intensive (the non-wage value added is comparatively high) it does use large numbers of workers (the average employment per company is also comparatively high). The situation in Singapore has changed radically between 1970/71 and 1974. All the companies in the sample were in operation by 1971 and in early 1974 5 of the 10 interviewed complained of lack of labour availability. This is leading to two tendencies:

- an upgrading of manufacturing in Singapore towards more sophisticated products, e.g. composition resistors and coil forms and concentration on less labour intensive stages in the production of semiconductor devices, e.g. testing and inspection, and
- a shifting of the more routine and labour intensive assembly work to Malaysia

1.34. Malaysia.

1.341 The Industry.

Due to the decreasing availability and increasing cost of labour, as well as higher overheads, in established centres such as Singapore, a number of new centres are coming into prominence for the manufacture of electronic components for the markets of Europe, North America and Japan. Of these new centres, the one with by far the most spectacular growth during 1973 was Malaysia. The availability of trainable labour is the main explanatory factor, though the policies followed by the Malaysian Government have been significant (see Section 5.6).

The situation in Malaysia at the beginning of 1974 was as follows :

1. Projects Actually in Operation

<u>Nationality of Inventor</u>	<u>Products</u>	<u>Estimated Employment</u>
U.S	Semiconductors	2,500
U.S	Semiconductors	3,000
U.S	Semiconductors	2,500
U.S	Semiconductors	1,000
U.S	Semiconductors	1,500
U.S	Semiconductors	1,000
U.S	Semiconductors	800
U.S	Semiconductors	300
U.S	Semiconductors	1,202
U.S	Semiconductors	400
European	Semiconductors	1,000
Japanese	Semiconductors	1,500
Japanese	Semiconductors	N.A
U.S	Printed circuit boards	N.A
Japanese	Electrolytic Capacitors	N.A
Japanese	Transformers, coils, antennae	N.A
Japanese	Transformers, T.V parts	N.A
Japanese	Switches, relays	N.A
Hong Kong	Tuning capacitors, antennae coils	N.A
Japanese	Telecommunication equipment	N.A

Japanese	Transformers, tuning capacitors, switches	N.A
2. Projects Approved but not in Operation by January 1974		
U.S	Semiconductors	
U.S	Semiconductors	
U.S	Semiconductors	
U.S	Semiconductors	
U.S	Semiconductors	
U.S	Semiconductors	
European	Semiconductors	
Japanese	Semiconductors	
Japanese	Semiconductors	
Japanese	Semiconductors	
Japanese	Semiconductors	
Japanese	Semiconductors	
U.S	Printed circuit boards	
Japanese	Switches and relays	
European	Transformers, printed circuit boards and other parts for radio and T.V.	
Japanese	Polyester capacitors	
Hong Kong	Radio Parts	
U.S	Memory stacks	
Malaysian	Polyester capacitors	
Japanese	Polyester capacitors	
European	Printed circuit boards, quartz crystals	
Japanese	Tuning capacitors, transformers, coils, tuners, magnetic heads, keyboards, switches	
U.S	Fractional horsepower motors	
Hong Kong	Processed lead frames	
U.S	Gold wire for banding	
Malaysian	Terminal cases, switches, clips and press buttons.	

Summary :

	<u>Projects in Operation</u>			<u>Projects Approved (not in operation, Jan '74)</u>			<u>Grand Total</u>
	<u>Semi-conductors</u>	<u>Other</u>	<u>Total</u>	<u>Semi-conductors</u>	<u>Other</u>	<u>Total</u>	
U.S	10	1	11	6	4	10	21
European	1	-	1	1	2	3	4
Japanese	2	6	8	5	4	9	17
Other	-	1	1	-	3	3	4
Total	13	8	21	12	13	25	46

Source : Malaysia High Commission, London.

1.342 Case Study Companies

	C O M P A N I E S		
	A	B	C
1. Products	Integrated circuits	Integrated circuits	Integrated circuits
2. Nationality	U.S	U.S	U.S
3. Ownership	Wholly-owned subsidiary	Wholly-owned subsidiary	Wholly-owned subsidiary
4. Annual sales	₹2,433,900	₹1,800,000	₹436,800
5. Value added	All three companies sell local labour and overheads as a service to parent company.		
6. Numbers employed			
Men:	72	100	70
of which skilled :	(48)	(60)	(43)
Women:	538	500	138
of which skilled :	(12)	(100)	(12)
Total :	610	600	208
7. Average monthly wage*	₹57	₹83	₹72
8. Total Annual wage cost	₹417,240	₹597,600	₹179,712
9. Non-wage value added	₹2,016,660 - 44	₹1,202,400	₹257,088

10. Fixed assets	₹832,374	₹870,00	₹429,195
11. Value added per employee	₹3,990	₹3,000	₹2,100
12. Non-wage value added per employee	₹3,306	₹2,004	₹1,236
13. Fixed assets per employee	₹1,365	₹1,450	₹2,063
14. Purchase of materials	Parent company	Parent company	Parent company
15. Main materials	Silicon dice, industrial gases	Parent company, gold wire	Parent company metal caps
16. Problems in Malaysia	1. Lack of skilled labour 2. Labour unrest	None	None-company just starting
17. Local borrowing	None	₹84,000	₹146,300
18. Overall dept: equity ratio	0.60	2.16	2.60

Note * Includes fringe benefits

Sources Postal questionnaire

The low value added per employee obtained in Malaysia as compared to Singapore and Hong Kong is a reflection mainly of the lack of experience in that country both of the labour force in general and in the electronics industry in particular.

1.35 Korea
 1.351 The Industry

The Korean electronics industry began in the late 1950's with the production of tube-type radio receivers for the local market. By 1964 telephones and switchboards and gramophones were added to the range of products, but import substitution was the key to the industry's growth.

The production of components for export did not begin to get underway on any large scale until the mid-1960's when the multinational semiconductor companies started to arrive. By the end of 1972, both foreign and local companies were contributing to a large and rapidly growing industry as the following table shows:

Production of Electronic Components in South Korea 1970 - 1972 (in thousands of U.S. dollars)

	<u>1970</u>	<u>1971</u>	<u>1972</u>
Resistors (variable)	726	1,238	2,140
Resistors (carbon)	613	721	734
Variable capacitors	765	1,049	1,723
Other capacitors	2,654	2,491	4,794
Coils, yokes and transformers	1,496	2,002	3,081
Memory crystals	2,573	3,997	9,058
Diodes	788	390	367
Transistors	12,666	20,068	28,722
Integrated circuits (including LSI)	18,085	32,582	52,777
Receiving and display tubes	1,705	4,483	7,883
Telephone parts	3,064	3,723	6,906
Switches	62	362	491
Plugs and connectors	16	177	223
Antennae	385	640	389
Printed circuit boards	38	243	471
Ferrite core and relays	742	1,079	2,479
Tuners	2	783	877
Accumulators	55	286	232
Total	46,435	76,071	123,347

Group 2

COMPANY E

1. Product: Flash tubes, transistors and integrated circuits.
2. Nationality: European
3. Ownership: Wholly owned subsidiary
4. Annual Sales: \$30,000,000 consisting of 70 million transistors, 5 million integrated circuits and 2½ million flash tubes.
5. Value added: \$15,000,000.
6. Numbers employed:

Men	170
Women	830
<hr style="width: 50px; margin: 0 auto;"/>	
Total	1,000
7. Average monthly wage* \$115.15
8. Total annual wage costs: \$1,381,800
9. Non-wage value added: \$13,618,200
10. Sales per employee \$30,000
11. Value added per employee \$15,000
12. Non-wage value added per employee \$13,618
13. Size of factory: 5,109 sq. metres.
14. Space per employee: 5.11 sq. metres.
15. Electricity consumption (kwh per annum): 2,057,000
16. Electricity consumption per employee (kwh p.a.) 2,057

Percentage increase of 1972 over 1970 = 366%

Source: Fine Instrument Centre, Seoul: Korea Electronics Industry Data Book

In common with other producing centres in Asia, the most important sub-sector of the industry is the production of semiconductor devices, accounting for two-thirds of output in both 1970 and 1972.

In total, 84 per cent of the industry's output is exported. The detailed breakdown of exports is shown in the following table.

Exports of Electronic Components from South Korea 1970-1972 (in thousands of U.S. dollars)

	1970	1971	1972	Exports as Percentage of Sales in 1972
Resistors (variable)	278	1,016	1,879	87.8
Resistors (other)	219	291	539	73.4
Variable capacitors	541	1,141	1,886	109.5
Other capacitors	1,301	830	2,003	41.8
Coils, yokes and transformers	39	563	3,284	106.6
Memory	2,347	3,165	8,391	92.6
Diodes	740	355	188	51.2
Transistors	12,909	17,003	25,824	89.9
Integrated circuits*	17,736	29,776	49,648	94.1
Receiving and display tubes	311	1,622	1,250	15.9
Speakers and telephone parts etc.	1,569	2,153	6,406	92.8
Switches	-	268	447	91.0
Ferrite cores	-	6	-	-
Printed circuit boards	-	42	181	38.4
Tuners	186	360	396	45.1
Other parts and components	6,973	11,877	1,010	N.A.
Total	45,149	70,468	103,332	83.8

Percentage increase of 1972 over 1970 = 328.9%

Note: * Including LSI (Large Scale Integration)

Source Fine Instruments Centre, Seoul: Korean Electronics Industry Data Book.

The most important export markets are the U.S. for semiconductor devices and Japan for other components.

Main Export Markets for Korean Electronic Components in 1972 (thousands of U.S. dollars)

	U.S.	% of total	Japan	% of total	Hong Kong	% of total	Europe	% of total
Resistors (variable)	32	1.7	654	34.8	1,002	53.3	-	-
Resistors (other)	21	3.9	518	96.1	-	-	-	-
Capacitors (variable)	-	-	613	32.5	1,273	67.5	-	-
Capacitors (other)	39	1.9	1,223	61.1	462	23.1	211	10.5
Coils, yokes & transformers	8	0.2	2,515	76.6	-	-	40	1.2
Memory	8,202	98.6	89	1.1	-	-	-	-
Diodes	3	1.6	185	98.4	-	-	-	-
Transistors	17,350	67.2	3,297	12.8	5,177	20.0	-	-
Integrated Circuits*	39,019	78.6	3,039	6.1	2,130	4.3	943	1.9
Receiving and display tubes	5	0.4	1,245	99.6	-	-	-	-
Speakers and telephone parts etc.	2,586	40.4	772	12.0	2,103	32.8	-	-
Switches	36	8.1	411	91.9	-	-	-	-
Tuners	26	6.6	358	90.4	9	2.3	-	-
Printed circuit boards	70	38.7	111	61.3	-	-	-	-
Total components	67,483	65.3	15,639	15.1	12,898	12.5	1,914	1.8

Note* Including LSI (large Scale Integration)

Source Fine Instruments Centre, Seoul: Korea Electronics Industry Data Book.

The trade patterns in the electronics components industry are a reflection of the sources of investment finance, and of international subcontracting agreements with local companies. As in most Asian industrial exporting centres the role of direct investment by multinational companies is a minority one, except in the case of semiconductors. Nearly all of the local companies that export, however, sell directly or indirectly at least part of their output under international subcontract, in most cases to Japanese companies but also to firms in the United States.

The ownership structure of the industry and the amounts invested by the middle of 1973 are shown in the following tables:

Number of Companies in the Korean Electronic Components Industry by Nationality of Investment, 1973

	<u>U.S.</u>		<u>Japan</u>		<u>Local</u>	<u>Total</u>
	<u>Joint Venture</u>	<u>Wholly Owned</u>	<u>Joint Venture</u>	<u>Wholly Owned</u>		
Resistors	-	-	3	-	8	11
Capacitors	-	-	3	6	20	29
Coils, yokes & transformers	-	-	4	9	19	32
Memories	-	2	-	-	-	2
Diodes	-	1	-	1	2	4
Transistors	1	3	2	2	1	9
Integrated circuits*	1	6	-	2	1	10
Receiving and displaying tubes	-	-	3	1	-	4
Speakers, telephone parts etc.	-	2	3	4	25	34
Switches	2	-	1	2	5	10
Printed circuit boards	-	-	1	1	3	5
Tuners	-	-	2	1	4	7
Other components**	2	5	4	10	82	103
Total	<u>6</u>	<u>19</u>	<u>26</u>	<u>39</u>	<u>170</u>	<u>260</u>

Notes * Including LSI (Large Scale Integration)

** The main products are: Antennae, plastic and metal products and parts, rectifiers, terminal boxes, and plugs and connectors.

Source: Compiled from data provided by the Fine Instruments Centre, Seoul.

Equity Investment in the Korean Electronics Components Industry by Product and Nationality mid 1973
(In thousands of U.S. dollars)

	<u>U.S.</u>	<u>Japanese</u>	<u>Local</u>	<u>Total</u>
Resistors	-	359	561	920
Capacitors	-	2,307	1,266	3,573
Coils, yokes and transformers	-	6,678	1,768	8,446
Memories	2,034	-	-	2,034
Diodes	500	630	65	1,195
Transistors	6,140	3,111	1,073	10,324
Integrated circuits	13,870	3,318	996	18,184
Receiving and displaying tubes	-	2,485	1,988	4,473
Speakers, telephone parts etc.	995	1,761	1,897	4,653
Switches	37	320	154	511
Printed circuit boards	-	107	271	378
Tuners	-	1,882	540	2,422
Other components	1,040	4,298	3,983	9,321
Total	<u>24,616</u>	<u>27,256</u>	<u>14,562</u>	<u>66,434</u>
Average investment per firm	985	419	72	256

Notes* Includes investment in joint ventures.

Source: Compiled from data provided by the Fine Instruments Centre, Seoul.

Several points of general interest can be noted from these tables:

- as mentioned earlier, only a minority of the companies involved are foreign investors, and wholly owned subsidiaries are a smaller minority. A similar situation obtains in Hong Kong, though not in Singapore or Malaysia.

- although U.S. companies accounted for only 11 per cent of the number of companies, they were responsible for 38 per cent of the amount of investment in the industry. The larger size of the American companies is mainly accounted for by the nature of the products in which these companies dominate the market - memory planes and semiconductor devices. These are commodities where scale economics are especially important, as can be seen from the Singapore experience where value added per employee is higher for larger companies (though experience of operation and level of head office expertise are also significant and,

- ^{Further} the relative preference of the Japanese for joint ventures is clearly shown - 40 per cent of the enterprises having Japanese capital were joint ventures, compared with 24 per cent of the U.S. backed enterprises.

The tables also illustrate the potential the electronics industry has to act as a spur to local enterprise, particularly in the less sophisticated component products. As will be seen, local companies are also important in Asia in the production of final electronics products, but these tend on the whole to be larger companies and the links with foreign investors are close. In the production of less sophisticated components, however, the Korean and Hong Kong experience shows that there is much scope for the development of a large number of local enterprises, many of them operating on quite a small scale.

To illustrate the characteristics of these companies more closely, the following list of a sample of 29 representative firms has been compiled from information provided by the Fine Instruments Centre in Seoul. Each line refers to a single company.

<u>Product</u>	<u>Investment Capital (\$ 000)</u>	<u>Sales (\$000)</u>	<u>Employ- ment</u>	<u>Sales per Employee (\$)</u>
Plastic and metal parts	143	61	85	718
" " "	204	112	95	1,179
" " "	132	N.A.	280	N.A.
" " "	135	N.A.	89	N.A.
" " "	27	130	78	1,667
" " "	108	395	158	2,500
" " "	54	171	172	994
Plugs and jacks	27	63	29	2,172
" " "	43	122	74	1,649
" " "	8	N.A.	21	N.A.
" " "	135	491	239	2,054
" " "	81	119	58	2,052
" " "	13	N.A.	57	N.A.
Antenna	21	54	29	1,862
"	27	N.A.	40	N.A.
"	13	30	19	1,579
"	168	261	78	3,346
"	13	101	23	4,391
Terminal boxes	16	88	25	3,520
" "	27	142	21	6,761
" "	54	220	74	2,973
" "	21	100	16	6,250
" "	16	69	11	6,273

	<u>Investment Capital (\$000)</u>	<u>Sales (\$000)</u>	<u>Employ- ment</u>	<u>Sales per Employee (\$)</u>
Coils, yokes, transformers	81	401	70	5,729
" " "	40	429	154	2,786
" " "	176	338	83	4,072
" " "	204	112	95	1,179
" " "	81	120	80	1,500
" " "	82	55	42	1,310

Average capital investment \$74,000

Average Sales \$174,000

Average employment 79

Average sales per employee \$2,203

The majority of the above companies do not export directly; they have been set up as a result of the backward linkages created by the electronic products industry. They sell their output either to other electronics manufacturers in Korea or as spares to wholesalers. There is another group of local companies producing a different product range who do export directly, normally under sub-contract to Japanese buyers. The main products involved are components such as capacitors and resistors. These are produced for the local market by smaller companies with similar characteristics to those in the previous list, but those who export tend to be larger. A typical sample follows:

<u>Product</u>	<u>Investment Capital (\$000)</u>	<u>Sales (\$000)</u>	<u>Employ- ment</u>	<u>Sales per Employee</u>
Capacitors	67	187	157	1,191
"	27	208	165	1,261
"	389	782	246	3,179
"	27	N.A.	176	N.A.
"	82	628	478	1,314
Resistors	87	172	93	1,849
"	27	1,793	696	2,576
"	108	768	229	2,569
Transistors	81	453	294	1,541
Diodes	92	1,497	263	5,962
Integrated circuits	405	10,275	1,121	9,166

Average capital investment: \$126,545
Average Sales \$1,676,300 (excluding last company: \$720,900)
Average employment: 362
Average sales per employee: \$4,631 (excluding last company: \$2,575)

Altogether, employment in the Korean electronics components industry in mid 1973 is estimated at 44,736, made up as follows:-

U.S. companies*	13,513	(540 per company)
Japanese companies*	14,620	(225 per company)
Local companies	16,603	(98 per company)
Total	44,736	(172 per company)

* Including joint venture.

The industry continued to grow rapidly throughout 1973, although only very tentative estimates of employment at the end of that year are so far available. In the manufacture of semiconductors, employment has increased by over 50 per cent. Such prolific employment creation is a substantial factor in a "labour surplus" economy such as Korea and should be set against criticisms frequently levied at this type of industrial development.

It is the case that certain multinational operations, particularly in semiconductors, create very few local linkages. This applies to American companies who are unable to buy components locally owing to the tariff regulations concerning entry of their goods into the United States (see following Section and Section 3.32). On the other hand, these companies are the largest single employers in the industry (sometimes in the economy). For the electronics industry in general, the large number of local enterprises in both Korea and Hong Kong (and reportedly in Taiwan also) bear witness to the existence of important linkage effects.

1.352 Case Study Company (figures in U.S. dollars refer to 1973/4).

1. Products: Integrated circuits, transistors, diodes
2. Nationality: U.S.
3. Ownership: wholly owned subsidiary
4. Annual sales: \$47,600,000
5. Value added: the company sells local labour and overheads as a service to the parent company
6. Numbers employed:

(a)	Transistors and diodes	2,500
(b)	Integrated circuits	<u>3,500</u>
	Total	6,000

95% of all employees are female.

The labour force was highly praised as being the most efficient in Asia. Because of the availability of large numbers of workers, due to an untapped, rural, female labour force, the company could afford the luxury of being rigorous in its selection of employees.

7. Average monthly wage: \$83.33
8. Total annual wage bill \$6,000,000
9. Non-wage value added: \$41,600,000
10. Sales and value added per employee \$7,933
11. Non-wage value added per employee \$6,933
12. Size of factory: N.A.

17. Water consumption (litres p.a.): 32.7 million
18. Water consumption per employee (litres p.a.) 32,700
19. Purchase of materials: Parent Company
20. Main materials: lead frames, silicon dice, gold wire, plastic
21. Transport: Materials Air
 Finished product Air
22. Exports: All sales exported for use by parent and associated companies.
23. Shortages and bottlenecks in Singapore: Labour
24. Essential supplies purchased locally: industrial gases, simple repairs and spare parts, office furniture, cotton gloves, cleansing agents.
25. Backward integration: not wafer fabrication but plastic moulding, and galvanising of lead frames.
26. Reasons for locating in Singapore (in order of priority):
 1. Labour availability
 2. Good communications
 3. Good air transport service and airport facilities.
 4. Labour cost
 5. Efficiency of local administration
 6. Freedom from trade controls and exchange controls
 7. Political stability
27. Expansion not contemplated at this stage.

1.4. Industry Evaluation.

1. Employment. Average non-wage value added per employee: \$5,178

Industry not particularly labour intensive but requires large numbers.

Percentage of males among operatives :

Mexico	9.9
Hong Kong	32.9
Singapore	15.1
Malaysia	20.7
Korea	5.0

2. Transport requirements. For semiconductors and other small, lightweight and high value components, air transport is required.
3. Nature of the market. The demand for electronic components is a derived demand, depending on that for final electronics products. There is almost unanimous agreement within the industry that its future growth prospects are highly promising. For semiconductor devices a recent industry forecast gave the following prospective growth figures for the total world market (in billions of U.S. dollars):

<u>1973</u>	<u>1976</u>	<u>1980</u>
2.9	3.9	6.2

Annual rate of growth 1973-1980: 11.5 per cent.

Source: Electronics News, New York, May, 1973.

During this period, it is anticipated that the U.S., which dominates the market with a share of 57% in 1973, will decline in relative importance to 38% of the market in 1980.

Europe's share will rise from 20% to 25%; Japan's from 20% to 31%, and that of other countries from 3% to 6%. This forecast may be taken as an indicator of demand for the electronics industry as a whole as semiconductor devices are its key.

For the developing countries such as Mauritius, however, who may wish to act as a location for some of the more labour intensive processes within the industry, there is one important characteristic which has already been noted. This is the tendency for rapid technological change. As noted above, in semiconductors alone there have been three "generations" of products between the early 1950's and the early 1970's. Research and development work is continually going on, not only to develop "new" products but to improve techniques of producing existing ones. Productivity in the most labour intensive part of the process - the bonding of the dice to the lead frame - is increasing by between 2½ and 5 per cent per year. Furthermore it is possible that wire bonding may become mechanised by the end of this decade. The process is as yet in its early stages and is unlikely to be able to compete with the labour intensive operation for at least 4-5 years. But for the longer term future it is something which should be borne in mind.

In addition, there are the following criticisms which have been levied against the use of the international electronics components industry as a means of creating employment in developing countries.

- (a) The basis on which many international companies operate impedes the development of local support industries through backward linkages. U.S. companies, in order to avail themselves of certain tariff concessions when the goods re-enter the U.S. market, must use materials and intermediate goods made in the United States. One company, operating in Korea, said they would have been pleased to use a metal cap for transistors that was produced by a local firm.

This would have meant, however that full duty would have to be paid on the whole transistor when it entered the U.S. market, instead of duty only on the value added outside the U.S.

(b) There is a similar lack of forward linkages to stimulate the development of the local final electronics products industry. This lack arises because most of the foreign companies which dominate the production of the vital components are completely export orientated. Decisions concerning the location of component plants by international companies are not made because of the existence of a local industry producing final products but are based on the internal economics of the company.

(c) Research and development is concentrated in the U.S., European and Japanese companies. This, coupled with the export orientation of the companies' overseas operations, means that local producers of final products, unless they are also linked to the multinational companies have to import the components embodying the latest technology even though they are produced in their own country. This situation is sometimes compounded by Government regulations insisting that foreign investing firms, especially those located in free trade zones, export all of their output. Such regulations existed, for instance, in Korea but were relaxed slightly in mid 1973. Such relaxation, however, is unlikely to increase more than marginally the components available locally.

This dilemma is pointedly illustrated by one example chosen from Korea. A local company, producing electrolytic capacitors under sub-contract to a Japanese buyer, sold all its output to Japan. The buyer then re-sold some of these capacitors to a Korean joint venture in which it was a partner producing a final electronics product.

The consultants were informed that the transaction was concluded at substantial profit to the Japanese company.

- (d) The nature of international operations, especially in the semiconductor industry, means that a local government has virtually no control over where the industry's profit is made or over their country's share of the value added from the wafer fabrication stage onward. One American company operating in Asia gave the consultants the following approximate cost breakdown from the etching stage of the process onward:

A. Transistors (U.S. dollars per 1,000 units refer to late 1973)

Cost of silicon dice	6.0
Cost of other materials	12.0
Cost of Asian labour	2.5
Overheads of Asian company	19.0
Total cost up to time of leaving Asian company	39.5
Final selling price in U.S.	90.0
Value added:	
(i) in Asian country	21.5
(ii) outside Asian country	68.5
Ratio of (ii) to (i):	3.19

B. Integrated circuits (U.S. dollars per 1,000 units)

Cost of silicon dice	57.0
Cost of other materials	53.0
Cost of Asian labour	5.0
Overheads of Asian company	33.0
Total cost up to time of leaving Asian country	148.0
Final selling price in U.S.	450.0

Value added

(i) In Asian country ,	38.0
(ii) outside Asian country	302.0

Ratio of (ii) to (i): 7.95

The gap between the "value" when leaving the assembly plant and the final selling price varies according to the sophistication of the product and the share which the company has of the total market. Greater competition from other producers closes the gap. The point here is not to emphasise the size of the gap, large though it often is, but to illustrate that the country in which assembly takes place is often powerless to increase its share of the total value added.

- (e) Another point of crucial importance which does not concern semiconductors alone is the control of raw material supply. Local companies producing under sub-contract, as well as joint ventures, are vulnerable to hard bargaining on the part of a foreign partner if that company is also the supplier of a vital part or material. In the case of Japanese firms in Asia this situation frequently obtains.

Against these criticisms must be levied the argument discussed in detail above in the section on the Korean experience. They may be summarised as follows:

- (a) The electronics industry is an extensive employer of labour.
- (b) In the production of less sophisticated components backward linkages are created and local enterprise is stimulated.

(c) Joint ventures and international subcontracting arrangements can and do lead to an infusion of expertise into the local economy which can be used as a base for the development of a local industry. Illustrations of this come from Hong Kong and Taiwan where completely local production of transistors and even some integrated circuits is commencing.

4. Fuel, electricity and water: Fuel consumption, except for industrial gases, is negligible.

Average electricity consumption: 53,225 litres per employee per year.

Average water consumption: 26 cubic meters per employee per year.

5. Average space per employee: 6.53 square metres.

6. Support industries:

Industrial gases.
Cotton gloves.
Office and factory furniture
Plastic laminators
Tool repair
Bonding wire (depending on operation)
Metal caps (depending on operation)
Ceramic, plastic and metal packaging.

2. ELECTRONICS PRODUCTS

The production of electronics products in developing countries normally begins with the manufacture of consumer products such as radios, and industrial products such as telephones and switchboards, for the home market. However, the use of a number of centres, especially in Asia, for the manufacture of electronic components for export to industrialised countries has been accompanied and followed by the production of final products in those countries, also for export. Judging by the criterion of non-wage value added per employee, the production of final products is more labour intensive than that of components. This means that producers in industrialised countries have an incentive to manufacture in low cost labour areas. For the indigenous producer the higher unit value of output obtaining in the production of final goods provides an incentive to integrate forwards from components. Producers of components and final products are by no means always the same companies. In the United States, some of the larger semiconductor firms are moving successfully into production of some final products, especially calculators, but the market is still dominated by a different set of companies. In Japan, the same groups dominate both markets, while in Europe the picture is mixed. As far as local companies are concerned, the small companies making unsophisticated components are not normally involved in production of final products, but the larger groups are often concerned in both sub-sectors.

The trend towards locating abroad by companies in developed countries means that the electronics industry does not have to rely on the local market as has been the case in a number of developing countries.

The range of products involved may be roughly divided into two groups - consumer and industrial - though the two can overlap. The main items are the following:

Consumer: radios, television sets, amplifiers, tape recorders, gramophones, musical instruments and electronic calculators.

Industrial: telephones and exchange equipment, other communications equipment, alarm devices, direction finders, fish finders.

The location of production centres depends on the level of technology required to produce an item which is, of course, closely related to the length of time it has been commercially manufactured. Thus at the end of 1973 very few simple transistor radios or black and white television sets were being made in the US while few colour TVs were being manufactured outside Europe, North America and Japan.

2.1 Singapore

2.11 The Industry

Production of electronic and electrical goods has grown with remarkable rapidity in Singapore. From about \$17 million in 1968, the value of output is estimated to have risen to \$240 million by 1972. Most of this has been destined for export markets.

The consultants were able to identify 22 companies manufacturing electronics products at the beginning of 1974. Of these 7 were purely local companies and 15 were subsidiaries of foreign companies or joint ventures. Singapore has now become a major world supplier of radios and television sets. General Electric of the US have established a major presence there as have Philips and Sanyo. General Electric have established 7 factories: 5 producing components and employing 3,800 in total; one making radios and phonograph cartridges, employing 3,000; and one manufacturing household electrical appliances, employing 750. Materials are obtained from the cheapest source but the Singapore output is all sold to other companies within the group. Most of it in fact is for the US market though some components are sold elsewhere in Asia. One of the component plants is manufacturing parts for television sets, and the company is seriously considering the assembly of black and white sets in Singapore. This too will be for the US market. The development policy of the Singapore operation is first to build up capacity and expertise based on the US market and then in addition to try and market elsewhere. The company is trying to reduce dependence on imported parts as much as possible. The main reasons for choosing Singapore as the group's main offshore export-oriented operation were the following (in order of priority):

1. Labour cost.
2. Confidence in the policies and intentions of the Administration.
3. Fiscal incentives.

Powerful arguments against full assembly of television sets in Singapore were the transport cost plus the desirability of carrying out manufacture near to the market for reasons of quality control and design specifications.

The Philips investment in Singapore comprises three factories and an industrial complex. The factories produce automatic telephone exchanges, precision machine parts and household electrical appliances. The complex consists of 3 plants manufacturing cassette recorders, radio sets and television sets. The output is aimed at the European and Asian markets.

Sanyo industries had, at the end of 1973, one plant making about 70,000 radios and 25,000 tape recorders per month, as well as some household appliances, with a workforce of 860. The company has plans to more than double capacity by moving to a new 12,000 m² factory and increasing employment to 1,800. The products are exported to the US, Canada and the EEC.

Japan and Hong Kong are the dominant foreign investors in this industry. Other than Sanyo there are 4 Japanese companies, one of which (Hitachi) has plans for the production of colour television sets in Singapore. The Hong Kong companies, and most of the local firms, are mainly engaged in the production of radios and cassettes.

Other electronic equipment, such as calculators and digital clocks, are also manufactured in Singapore. The US company, Hewlett-Packard, has in Singapore its only overseas plant manufacturing the complex HP 35 and 80 calculators. There is also an entirely local calculator producer which is exporting both desk top and pocket calculators. This company, Digitron Equipments Ltd., has annual sales of about \$5 million. The distinguishing feature of the company is that all the components are either manufactured by the company themselves or are purchased from other local manufacturers. This makes it highly unusual within the Asian electronics industry.

2.12 Case Study Companies

Figures in US dollars refer to 1973.

	C O M P A N I E S		
	A	B	C
1. Products	TV assembly, cassettes, radio cassettes, cartridge players transistor radios	Assembling & testing hand-held and desk top calculators, manufacture of components for calculators - integrated circuits and light-emitting diodes, magnetic devices, transformers and battery chargers	Electronic digital clocks
2. Nationality	Singaporean	US	joint venture between
3. Ownership	Wholly local	Wholly owned subsidiary	Singapore and Hong Kong
4. Annual Sales	\$15,560,000	\$35,520,000	\$500,000
5. Value added	\$6,224,000	\$18,900,000	\$300,000
6. Numbers employed			
Men	280	170	25
Women	<u>420</u>	<u>1,530</u>	<u>60</u>
Total	700	1,700	85
7. Average monthly wage*	100	105	103
8. Total annual wage cost	\$840,000	\$2,142,000	\$105,060
9. Non-wage value added	\$5,384,000	\$16,758,000	\$194,940
10. Net profit	\$1,140,000	N.A	N.A
11. Sales per employee	\$22,229	\$20,894	\$5,882
12. value added per employee	\$8,891	\$11,118	\$3,529
13. Non-wage value added per employee	\$7,691	\$9,858	\$2,293
14. Fixed assets	\$1,094,500	N.A	N.A

Group 3

COMPANY F

1. Products: Fixed carbon composition resistors and coil forms.
2. Nationality: U.S.
3. Ownership: Wholly owned subsidiary
4. Annual sales: \$13,000,000
5. Value added: \$8,320,000
6. Numbers employed:

Men	195
Women	1,105
<hr style="width: 50px; margin: 0 auto;"/>	
Total 1,300	
7. Average monthly wage* \$136
8. Total annual wage costs: \$2,121,600
9. Non-wage value added: \$6,198,400
10. Sales per employee \$10,000
11. Value added per employee \$6,400
12. Non-wage value added per employee: \$4,768
13. Size of factory: 14,306 sq. metres.
14. Space per employee: 11 sq. metres.
15. Electricity consumption (kwh p.a.) : 9,670,380
16. Electricity consumption per employee (kwh p.a.): 7,439

15. Plant and equipment at cost	\$307,000	N.A.	N.A.
16. Fixed assets per employee	\$1,564	N.A.	N.A.
17. Plant and equipment per employee	\$439	N.A.	N.A.
18. Size of factory (sq.metres)	8,093	11,600	806
19. Space per employee (sq.metres)	11.6	6.8	9.5
20. Electricity consumption (kwh per annum)	1,542,857	12,000,000	214,286
21. Electricity consumption per employee	2,204 kwh p.a.	7,058 kwh p.a.	2,521 kwh p.a.
22. Water consumption (litres per annum)	40.8 million	Negligible	Negligible
23. Water consumption per employee	58,256 litres p.a.	N.A.	N.A.
24. Purchase of materials	Imports mostly under sub-contract to international buyers	Parent company	Commercial, mostly imported from Japan
25. Main materials	Electronic components (some bought locally). Picture tubes (from Taiwan). Plastic and wooden cabinets (mostly local)	Plastic, silicon, gold wire, lead frames, germanium	Electric components
26. Transport			
Raw materials	Sea	Air	Air
Final products	Sea	Air	Air
27. Export sales	The company sells under its own brand name as well as other brand names under sub-contract. Nearly all sales exported. Main markets: Europe and Africa.	The company supplies the group's world wide markets except in the US.	Commercial All sales exported

28. Shortages and bottlenecks in Singapore	Skilled labour	None	None
29. Supplies purchased locally	Some components - tries to ensure as high a local content as possible to qualify for General Preference. Some machinery spares. Packaging material. Furniture.	Industrial gases. Printed circuit boards. Simple repairs. Though precision tools of right quality available, they are twice the cost of imports from US. Packaging material. Furniture	Packaging, furniture, simple machine parts.
30. Backward linkage considered	Yes: capacitors for TV receivers; transformers; wooden cabinets.	No	Yes with electronic components but lack expertise.
31. Reasons for locating in Singapore	Not applicable	1. Labour availability 2. Labour cost 3. Fiscal incentives unimportant - pioneer status granted on calculators but not components	1. Labour cost 2. Good air service 3. Free port status 4. Tax incentives
32. Expansion	Yes: constructing new 7 storey factory and planning to increase employment to 1,700. Will introduce colour TV assembly. There are associated companies in Indonesia and Malaysia.	No. There will be continued use of Singapore for testing and other skilled work, but routine assembly will be concentrated in the Group's plant in Malaysia.	Yes. Expansion of existing lines as well as production of electrical appliances and toys.

N.A = Not Available

Source: Field interviews

2.2 Malaysia

2.21 The Industry

The new but rapidly growing Malaysian electronics industry is concentrated mainly in the production of component parts. There are, however, a number of projects to produce final products as follows:

1. Projects Actually in Operation

<u>Nationality of Investor</u>	<u>Products</u>
Singaporean	Television, radios, amplifiers, household appliances
Hong Kong	Calculators, car radios
Hong Kong	Radios, car radios
US	Radios, car radios
Japanese	Telecommunication equipment
Malaysian	Radios
Hong Kong	Car radios

2. Projects Approved but not in operation by January, 1974

<u>Nationality of Investor</u>	<u>Products</u>
Japanese	Calculators
"	"
"	"
"	"
European	Radio, TV, tape recorders
Japanese	Calculators, radio, tape recorders, amplifiers
Singaporean	Radios
European	Radios, TV, tape recorders
Hong Kong	Calculators
European	Radios, cassettes
Malaysian	Radios
Japanese	Radios, gramophones, tape recorders, TVs
Hong Kong	TVs, tape recorders, amplifiers

3. Summary

	<u>Projects in Operation</u>	<u>Not yet in Operation</u>	<u>Grand Total</u>
US	1	-	1
European	-	3	3
Japanese	1	6	7
Hong Kong	3	2	5
Singaporean	1	1	2
Malaysian	<u>1</u>	<u>1</u>	<u>2</u>
Total	7	13	20

Source: Malaysian High Commission, London

2.22 Case Study Company (figures in US dollars refer to 1973).

1. Products: Transistor radios
2. Nationality: US
3. Ownership: Wholly owned subsidiary
4. Annual sales: \$1,428,000
5. Value added: \$422,000
6. Number employed: Men 75
(of whom skilled 75)
Women 377
(of whom skilled 87)
Total 452
7. Average monthly wage: \$57
8. Total annual wage cost: \$309,168
9. Non-wage value added: \$112,832
10. Sales per employee: \$3,159
11. Value added per employee: \$933
12. Non-wage value added per employee: \$250
13. Fixed assets: \$1,200,000
14. Fixed assets per employee: \$2,655
15. All sales exported to associated companies in Europe
16. Shortages and bottlenecks in Malaysia: None

Source: Postal questionnaire

2.3 Hong Kong

2.31 The Industry

The range of electronic products manufactured in Hong Kong includes black and white television sets, radio sets of various types, pocket and desk top calculators, gramophones and tape recorders. The number of enterprises involved (in mid 1973) was as follows:

Radio sets	100
Television sets	2
Calculators	12
Other products	<u>8</u>
Total	122

Of these companies, only 18 have been in operation for more than 8 years. Most of the companies are locally owned, though firms with foreign participation or with international subcontracting arrangements tend to be the largest. Of the 122 companies 37 are foreign owned or joint ventures.

Aggregate sales figures are not available after 1971, but it is estimated that exports account for 95 per cent of total sales. Exports during recent years have been as follows:

Exports of Electronic Products from Hong Kong 1968 - 1973 (US\$000).

	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973*</u>
Radios	53,934	77,377	90,000	116,721	150,656	186,066
Annual rate of growth, 1968-1973:	28.1 per cent					
T.V. sets	23	1,967	1,311	1,400	1,100	N.A.
Tape recorders	Neg.	Neg.	66	984	3,279	N.A.
Calculators	Neg.	Neg.	Neg.	164	3,492	N.A.
Total	<u>53,957</u>	<u>79,344</u>	<u>91,377</u>	<u>119,105</u>	<u>158,275</u>	<u>N.A.</u>

Source: Hong Kong External Trade: Various years.

It can be seen from the table that though the production of radio sets continues to dominate the industry, the relative share of calculators and tape recorders is increasing rapidly.

The consultants estimate that the total number of establishments at the end of 1973 was 216 and total employment 32,500. Many of these establishments are very small, often family affairs, employing less than 5 persons, though more than 95% of output is produced by companies employing more than 50 persons. There are 7 large companies employing more than 1,000, two of which employ more than 2,000.

Despite employing more workers, there is less capital investment in finished products than in components. According to information supplied by the Department of Commerce and Industry, the average value per employee of fixed assets at original cost was \$857 in components in 1971 compared with \$294 in finished products.

Of the industry's employment, 76 per cent was female at the end of 1973, compared with 79 per cent in 1971. Approximately 95 per cent of the labour force are operatives or general workers and 5 per cent are technicians, craftsmen and administrative personnel.

The principal materials and components, if not purchased locally, are imported mainly from Japan, the US and the UK. Again because of the trade structure within the industry, there is much reliance on imports even if the product in question is made in Hong Kong. For the industry as a whole, material purchase accounts for 78 per cent of production cost and 71 per cent of sales.

The main export markets are the US, UK, West Germany and Japan. Larger companies tend to export directly while smaller firms sell through trading companies.

The final products sector of the industry is recognised to be weaker and less soundly based than the components sector. There are more small companies, there is very fierce competition and insufficient attention paid to research, quality control and improvement of productivity.

More recently, these problems have been exacerbated by the scarcity and rising costs of materials and components. These have been compounded by heavy reliance on imports and by the proliferation of small establishments. Larger firms with scheduled investments have not been so severely affected by the

sharp rise in material prices as they are protected by contract arrangements with suppliers. They also, however, were suffering from the general shortage prevalent at the beginning of 1974, and the reluctance of some Japanese suppliers of vital components to commit themselves to medium term contracts. During the year November 1972 to November 1973, the prices of imported components have increased by about 30 per cent.

The response of the local industry to these trends has been to "up-grade" the value of production both by improving the quality of the dominant existing line (radios), but more importantly by the introduction of higher value lines such as cassettes, electronic calculators and digital clocks and watches.

As far as cassettes are concerned, the larger companies were by the end of 1973 moving from a pure assembly operation into the manufacture of parts, and also beginning to challenge the dominance of the Japanese in radio-cassettes. A prominent local manufacturer thought it would take two-three years before local technology could produce all elements in a radio cassette, but the industry is aiming to achieve that goal. At present, the industry is dominated by five manufacturers. Average employment is about 70 persons producing a total of about 60,000 units per month. Companies sell abroad, mostly in Europe, under their own brand names, and also under sub-contract labels. This variety in output can be achieved inexpensively by using the same inner mechanism for all models and designing different plastic exteriors.

The growth of calculator exports has been remarkably fast. From a relatively insignificant \$164,000 in 1971, exports rose to \$3,279,000 in 1972, and in the first six months of 1973 were \$6,693,000. This growth was accompanied by the rise of a substantial number of small scale manufacturers, many of whom soon found it very difficult to compete in an atmosphere of rapidly changing technology. Hand-held calculators of increasing sophistication were being developed, including the print out calculator at the expensive end of the market. In 1971 and 1972, the design of the average model was fairly simple, relying on transistors or integrated circuits. Once large scale integrated circuits (LSI) were introduced (see Section 1 above), it became necessary to rely on a few large scale suppliers, mostly in the

United States. Supply contracts were awarded on a long term basis, which gave an important advantage to larger companies in Hong Kong for two reasons. First, these were the companies with an ability to project sales on a longer term basis, and swiftly to market new models in response to sudden changes in market conditions. Secondly, smaller companies were reliant on trading companies for orders and thus had no way of determining their future needs for components. Another factor operating against the small manufacturers was the simpler models on which they concentrated being produced in increasing numbers in such centres as Taiwan and Korea where labour costs are substantially lower than in Hong Kong.

Because of these trends, there were by the end of September, 1973, 11 major manufacturers of calculators in the Colony. Typical of these firms, the majority of which are locally owned, is one with an output of 20,000 models per month employing a labour force of 300. It is an assembly operation with the electronic components imported and the plastic casing sub-contracted locally. Long production runs are not possible. A new model needs to be introduced approximately every six months. Very strict quality control is essential, and this firm averages less than 1 per cent returns. Local producers are concerned about the fact that large US firms such as Texas Instruments are now marketing their own models successfully. One effect of the introduction of LSI has been to reduce the number of individual components in a calculator, and thus the labour cost element in assembly. This reduces the advantage which Hong Kong firms have over companies assembling nearer to the main market areas in Europe and the US.

2.32 Case Study Company (figures in US dollars refer to 1973)

1. Products: Transistor radios
2. Nationality: US
3. Ownership: Wholly-owned subsidiary
4. Annual sales: \$16,684,000
5. Value added: \$4,754,900
6. Numbers employed: Men 240
 Women 1,360
 Total 1,600
7. Average monthly wage*: \$118
8. Total annual wage cost: \$2,265,600

9. Non-wage value added: \$2,489,300
10. Sales per employee: \$10,427
11. Value added per employee: \$2,972
12. Non-wage value added per employee: \$1,556
13. Size of factory: 16,165 sq. metres
14. Space per employee: 10.1 sq. metres
15. Electricity consumption: 3,336,800 kwh per annum
16. Electricity consumption per employee: 2,085 kwh per annum
17. Purchase of materials: commercial
18. Transport: Materials: 50% Sea
Final products: Sea
19. Exports: All sales exported, partly commercially, partly to sales organisations within the same group. Main markets are in Europe.
20. Shortages and bottlenecks in Hong Kong: labour
21. Supplies purchased locally: moulded plastic cases (sub-contracted to a local firm), resistors, condensers, coils and other components, packaging material, cleaning agents, machinery spares.
22. Backward linkages: No - high quality components available from other companies.
23. Reasons for locating in Hong Kong (order of priority)
 1. Labour availability
 2. Good port facilities (especially containers) and shipping service to Europe.
 3. Good back-up industries.
24. Expansion: No - because labour costs in Hong Kong are now too high. Company has set up plant in Malaysia but the Hong Kong operation will continue. Despite higher labour costs, Hong Kong is more profitable owing to greater efficiency. The Malaysian plant is supplied with components from Hong Kong, mostly by air.

Notes: *Includes fringe benefits

Source: Field interviews

2.4 Korea

2.41 The Industry

During the early stages of the electronics industry's export growth period, components were the leaders and accounted for by far the larger part of total electronics exports. As late as 1971, components accounted for 82 per cent of the total. Since then, in line with official policy, the share of final products has started to rise dramatically. From 17 per cent in 1971, it increased to 26 per cent in 1972 and is estimated to have risen to 43 per cent in 1973. It is the aim of Government policy to increase this still further until the 1972 ratios are reversed. One difficulty in achieving this aim is presented by the large foreign corporations which tend to be concentrated in the components sector.

The production of final products since 1970 is shown in the following table:

Production of Electronic Products in South Korea 1970-1972
(in thousands of US dollars)

	<u>1970</u>	<u>1971</u>	<u>1972</u>
Radios	8,575	8,496	13,440
Television receivers	21,171	23,124	35,672
Tape recorders	869	4,248	8,043
Gramophones	197	69	518
Amplifiers and turn-tables	248	442	1,256
Musical instruments	43	30	298
Telephone sets	3,763	3,177	2,752
Telephone exchange equipment	10,036	10,610	14,554
Other communications equipment	1,698	3,602	4,250
Fish finders and radar equipment	330	86	62
Electronic calculators	-	118	2,297
Other electronic products	<u>1,039</u>	<u>1,018</u>	<u>1,710</u>
Total	47,969	55,040	84,852

Percentage increase of 1972 over 1970: 76.9 per cent.

Source: Fine Instruments Centre, Seoul; Korea Electronics Data Book.

17. Water consumption: N.A.
18. Water consumption per employee: N.A. Water consumption is "heavy" and the firm is to use water from the roof of the building to cut costs.
19. Purchase of materials: Commercial
20. Main Materials: There are 4,280 separate parts, but the main ones are copper wire, silicon, carbon, graphite and silicon resins.
21. Transport: Materials Sea
 Final products Sea
22. Exports: Commercial; about 90% of sales. Main Markets: Taiwan, Japan, Hong Kong, and Europe.
23. Shortages and bottlenecks in Singapore: Labour
24. Essential supplies purchased locally: acetane, furniture
Would like to buy more locally but inputs of right quality not available. Have to carry high stocks. The company, started in 1970, is one of the first to "upgrade" Singaporean manufacturing by vertical integration instead of routine electronics assembly work. One of the main problems arising from this has been lack of machine maintenance to the required standard. Consequently, a larger number of spares have to be carried as stocks than would be the case in a location with a greater skill base.
25. Backward integration: None considered.
26. Reasons for locating in Singapore: (in order of priority)
1. Labour availability
 2. Good infrastructure and public utility services
 3. Good banking structure
 4. Adequate patent protection
 5. Geographical location
 6. Fiscal incentives

As in Hong Kong, the most rapid rate of growth in recent years has been concentrated in high value items such as calculators and cassette recorders, though, in general, Korean industry produces a more basic range of models. The first cassette shipments were made in 1969 and exports in 1973 were estimated at \$2 million. For calculators, 1972 was the first year in which there was a serious attempt to break into the international market.

In total, 44 per cent of the industry's output is exported, though the proportion varies considerably from product to product. The detailed breakdown of exports is shown in the following table:

Exports of Electronic Products from Korea, 1970-1972
(in thousands of US dollars)

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>Exports as Percentage of sales in 1972</u>
Radios	5,230	4,033	10,416	77.5
Televisions	3,084	3,250	8,165	22.9
Tape recorders	647	3,476	7,660	95.2
Gramophones	-	-	216	41.7
Amplifiers	12	263	1,456	115.9
Telephone sets	-	-	350	12.7
Telephone exchange equipment	124	211	1,038	7.3
Electronic calculators	-	93	1,894	82.5
Other products	<u>11</u>	<u>4,888</u>	<u>5,915</u>	<u>93.6</u>
Total	9,108	16,214	37,130	43.8

Percentage increase of 1972 over 1970: 307.7

Source: Fine Instruments Centre, Seoul; Korea Electronics Industry Data Book.

The pattern of exports from Korea is the opposite of the one from Hong Kong. In Hong Kong a smaller proportion of components is exported than final products. The reasons for this are the existence of a substantial domestic market in Korea and the fact that the link between local components production and the manufacture of final products is weaker in the case of Korea.

As for components, the most important single market is the US, though Europe rather than Japan holds second place.

Main Export Markets for Korean Electronics
Products in 1972 (thousands of US dollars)

	<u>US</u>	<u>Perce- tage of total</u>	<u>Japan</u>	<u>Perce- tage of total</u>	<u>Canada</u>	<u>Perce- tage of total</u>	<u>Europe</u>	<u>Perce- tage of total</u>
Radios	6,458	62.0	1,156	11.1	656	6.3	1,635	15.7
Televisions	3,755	46.0	2,302	28.2	285	3.5	1,344	16.5
Tape recorders	3,458	45.1	1,245	16.3	94	1.2	2,558	33.4
Gramophones	216	100.0	-	-	-	-	-	-
Amplifiers	1,231	84.5	214	14.7	11	0.8	-	-
Telephone sets	293	83.7	30	8.6	27	7.7	-	-
Telephone exchange equipment	-	-	-	-	-	-	858	81.1
Electronic calculators	1,148	60.6	221	11.7	-	-	455	24.0
Other Products	<u>4,844</u>	<u>81.9</u>	<u>1,002</u>	<u>16.9</u>	<u>2</u>	<u>-</u>	<u>11</u>	<u>0.2</u>
Total	17,945	48.3	6,170	16.6	1,075	2.9	6,861	18.5

Source: Fine Instruments Centre, Seoul: Korea Electronics Industry Data Book.

It is not possible to analyse the ownership structure of the industry by different products as, with the exceptions of telephone and exchange equipment and a few small local firms specialising in basic transistor radios, nearly all companies produce more than one product. Local investment represents a considerably higher proportion of the total than in the components sector. On the other hand, the average size of firm is larger and the links with the international market closer and stronger.

Ownership, Investment and Employment in the Korean
Electronics Industry, mid 1973

	<u>No. of Companies</u>	<u>Equity Investment (\$000)</u>	<u>Employment</u>
Local companies	29	23,373	15,372
Average per company		806	530
Joint ventures (US)	4	910	731
Average per company		227	183
Joint ventures (Japanese)	10	10,627	7,322
Average per company		1,063	732
Joint ventures (Hong Kong)	3	748	1,352
Average per company		249	451
Joint venture. (European)	<u>1</u>	<u>841</u>	<u>1,683</u>
Sub-total (Joint ventures)	18	24,051	11,088
Average per company		<u>1,336</u>	<u>616</u>
Total	<u>47</u>	<u>47,424</u>	<u>26,460</u>
Average per company		1,009	563

Source: Compiled from data provided by the Fine Instruments Centre, Seoul.

The locally owned portion of the sector is dominated by three large groups: Gold Star, Sam Sung and Taihan. The Gold Star Group is part of the wider Lucky Chemicals Group which includes part ownership of the largest plastics manufacturer in Korea, the largest electric cable company, and the second largest oil refinery. The electronics activities of the Group consist of two locally owned companies producing consumer electronics goods, a local firm making diodes and transistors, and a share in three joint ventures, one making telephones and exchange equipment, one making speakers, and another manufacturing tuners, capacitors and other components. The Group's total sales and employment in electronics for 1972 were \$48 million and 7,300 respectively. Of these sales figures \$13 million, or 27 per cent, were exports. The Sam Sung Group in electronics consists of 3 companies, 2 locally owned and one joint venture. In 1972 Group sales were \$18.3 million (\$12 million exports or 67 per cent), and employment was 5,000. The third major group is part of the Taihan organisation with sales in 1972 of \$13 million (\$4 million or 31 per cent exported) and employment of 3,450. The three Groups accounted for 54 per cent of total employment in the electronics

products industry and 53 per cent of the output produced by the wholly Korean-owned companies in the industry.

The prominence of these Groups should not, however, give a distorted view of the strength of the local industry. A considerable part of the Groups' strength, especially that of Gold Star and Taihan, derives from selling more than half their output to a heavily protected home market. Furthermore, as noted above (see Section 1 on electronic components), the industry is for various reasons heavily dependent on imports for the supply of vital components. There is also the problem of quality control. It is the aim of nearly every Korean exporter of electronics products to obtain the American Underwriters' Laboratory stamp of approval, which is the most widely known indicator that a product has reached the required standards of safety and quality. Few Korean products yet have the UL stamp, one difficulty being that the Western concept of the synonymity of safety and quality in a product is gaining only slow acceptance in the Korean domestic market.

Another difficulty facing local manufacturers, even large ones, is that of access to the consumer. Many of their export operations are carried out under sub-contract to foreign buyers who may well manufacture themselves. They re-sell the goods under their own brand-names often re-exporting them to a third country. This is a practice frequently associated with Japanese buyers, and is particularly acute in the more advanced and high-value products of the industry. Illustrations from the cases of calculators and cassette recorders will serve the point. There are five major producers of cassettes in Korea. Of these, two are closely tied in with Japanese partners or buyers who have the responsibility of marketing the entire output. Two companies have a similar arrangement with their American partners. The remaining independent company has tried to market alone, and an earlier technical assistance agreement with a Japanese firm is no longer in operation. However, it too has found it necessary to sign an exclusive agreement with a European importing house. Frequently, the foreign partners or buyers are also the suppliers of vital components and of technical assistance. In the case of calculators there are also 5 major manufacturers. Four of these are carrying out

assembly operations for Japanese partners or buyers. The other, with a US partner, is allowed a greater degree of independence. One of the companies withdrew from an agreement with a Japanese buyer and thus out of the calculator field owing to the very small profit margins that were allowed. In each instance the Japanese supply the LSI chips, some technical assistance and control all the marketing. The size of the local companies is no protection for them as their total output is broken down into several different products and they remain weak, both from a technical and a marketing viewpoint, in the production of higher value lines for the international market.

2.42 Case Study Companies (figures in US dollars refer to 1972)

	C O M P A N I E S		C O M P A N I E S	
	A	B	C	D
1. Products	1 million radios, 400,000 B/W TV sets 80,000 tape recorders 250,000 other pieces	480,000 radios, 360,000 B/W TV sets 120,000 tape recorders 1,200,000 other pieces	Radio assembly	240,000 digital clocks 120,000 car radios 80,000 other pieces
2. Nationality	Korean	Joint Venture 50% Korean	Korean	Korean
3. Ownership	Wholly local	50% Japanese	Wholly local	Wholly local
4. Annual sales	\$30,869,750	\$10,873,000	\$1,830,000	\$2,343,244
5. Value added	\$12,882,871	\$4,281,420	\$191,000	\$763,664
6. Numbers employed				
Men	1,538	N.A	N.A	N.A
Women	1,829	N.A	N.A	N.A
Total	3,367	2,372	318	530
7. Average monthly wage*	\$51	\$59	\$38	\$41
8. Total annual wage cost	\$2,060,604	\$1,679,376	\$145,008	\$260,760
9. Non-wage value added	\$10,822,267	\$2,602,044	\$45,992	\$502,904

	A	B	C	D
10. Net profit	\$1,185,930	\$245,946	Loss: (\$80,456)	\$351,351
11. Fixed assets	\$761,000	\$1,821,608	\$470,000	\$1,456,757
12. Plant and equipment	\$540,528	\$746,859	\$192,000	\$597,270
13. Sales per employee	\$9,168	\$4,584	\$5,755	\$4,421
14. Value added per employee	\$3,826	\$1,805	\$601	\$1,441
15. Non-wage value added per employee	\$3,214	\$1,097	\$145	\$949
16. Fixed assets per employee	\$226	\$768	\$1,478	\$2,749
17. Plant and equipment per employee	\$161	\$315	\$604	\$1,127
18. Net profit/sales	3.8%	2.3%	Loss: (4.4%)	15.0%
19. Wage cost/sales	6.7%	15.4%	7.9%	11.1%
20. Value added/sales	41.7%	39.4%	10.4%	32.6%
21. Electricity consumption (kwh per annum)	N.A	N.A	N.A	N.A
22. Electricity consumption per employee	N.A	N.A	N.A	N.A
23. Water consumption (m ³ per annum)	N.A	N.A	N.A	N.A
24. Water consumption per employee	N.A	N.A	N.A	N.A
25. Purchase of materials	Partly under sub-contract and partly commercial	Mostly from Japanese partner	Purchased from foreign buyer, complains of high price	Foreign parts bought under sub-contract, local bought commercially
26. Transport Materials Final products	60% Sea 90% Sea	N.A N.A	50% Sea Sea	N.A N.A
27. Export sales	\$8,400,000 or 27.2% of sales. Exports are mostly sub-contract but there are also some under firm's (cont. over)	\$9,955,000 or 91.6% of sales	All sales exported under sub-contract. Faced intense competition from other local (cont. over)	\$1,756,000 or 74.9% of sales

	A	B	C	D
27. Export sales (Continued)	brand name. Company has offices in New York and Tokyo.		suppliers. Pays 0.3% of sales for technical assistance.	
28. Shortages and bottlenecks	Skilled labour, components	None	Testing instruments	None
29. Supplies purchased locally	Some components. Packaging, furniture, cabinets, plastic parts etc.	Packaging, furniture etc.	Packaging, furniture etc.	Some components. Packaging, furniture etc.
30. Backward linkage	Within the Group as a whole to increase local purchases of components, now about 70% of value (but advanced components imported).	Local components normally purchased within the Group	None	
31. Reasons for locating in Korea	Not applicable	1. Labour cost 2. Geo- graphic, position in relation to Japan 3. Availab- ility of local enter- prises	Not applicable	Not applicable
32. Expansion	Same lines	Same lines	Same lines. Would like to market independently.	N.A

Notes: N.A = Not available

* Including fringe benefits (if any).

Sources: Field interviews

COMPANY E

1. Products: telephone exchange equipment, telephone sets, watt hour metres.
2. Nationality: Joint venture
3. Ownership: 61 per cent Korean and Japanese; 39 per cent European.
4. Annual sales:

Telephone sets	\$1,000,000
Automatic exchange equipment	\$7,130,000
Manual exchange equipment	\$2,617,000
Watt hour metres and other items	<u>\$1,385,000</u>
Total	<u>\$12,132,000</u>
5. Value added: \$5,437,000.
6. Numbers employed:

Men	813
Women	<u>1,087</u>
Total	1,900
7. Average monthly wage*: \$78
8. Total annual wage cost: \$1,778,400
9. Non-wage value added: \$3,658,600
- 10 Sales per employee: \$6,385
- 11 Value added per employee: \$2,862
- 12 Non-wage value added per employee: \$1,926
- 13 Value added/Sales: 44.8%
- 14 Wage costs/Sales: 14.7%
- 15 Net profit: \$1,340,571
- 16 Net profit/Sales: 11.0%
- 17 Fixed assets: \$3,546,026
- 18 Fixed assets per employee: \$1,866
- 19 Electricity consumption: 4,322,900 kwh p.a.
- 20 Electricity consumption per employee: 2,275 kwh p.a.
- 21 Water consumption: 46.4 million litres p.a.
- 22 Water consumption: per employee: 24,421 litres p.a.
- 23 Exports: \$1,227,300 or 10.1% of sales. Commercial
- 24 Purchase of materials: Commercial
- 25 Transport: Materials: Sea
Final products: Sea

Note* Including fringe benefits

Source: Field interview

2.5 Industry Evaluation

1. Employment: Average non-wage value added per employee: \$2,966. Percentage of males among operatives: 39.9%.
2. Transport requirements: Normally sea for final products, but mostly air for materials.
3. Nature of the market. Consumer electronics shows every sign of being a major growth industry during the 1970s. In all the advanced nations there is a growing demand for television and radio sets and what are sometimes demeaningly referred to as "transistorised toys" - pocket calculators, cassette recorders, video cassettes, stereo and quadrophonic hi fi. In terms of international trade, most of these products are ideal. They tend to be light in weight and possess a high value: weight ratio. Those components and parts which cannot be easily manufactured can be imported conveniently by air.

It is a market in which there is constant technical change and innovation. For a manufacturing centre with little experience, however, it is always possible to concentrate on relatively long runs of the basic type of model - for example, single band transistor radios.

It is unlikely that technical change will reduce the labour content in final assembly very significantly, though it can reduce the percentage of total value accounted for by labour. The case of calculators illustrates this. The use of "single chip" LSI as the central component reduces the percentage of labour in the cost of the component by half. (From about 3% with I.C. to 1½% with LSI). But there are still a large number of other components to be fitted together. In addition to the case and keyboard, such a machine requires a power supply and a display, together with a number of transistors, diodes, resistors and capacitors. Also most LSIs at present require at least one other I.C. to be used with them in order to provide a clock or series of pulses which perform a synchronising role.

Although this cannot be avoided in the case of foreign investors, it would be better if local manufacturers were to avoid relying on the foreign buyer as a source of components.

The development of an electronics products industry should be accompanied by expansion of component production and the Government should provide incentives to maximise the linkage between the two.

4. Fuel, electricity and water. Fuel consumption negligible. Average electricity consumption per employee: 3,229 kwh p.a. Average water consumption per employee: 105,550
5. Average space per employee: 9.5 sq. metres.
6. Supporting industries:

Electronic components
Plastic moulding
Office and factory furniture
Tool repair

3. ELECTRICAL APPLIANCES.

This industry covers a wide range of products. The study concentrates on those products where low labour cost centres have succeeded in exporting in significant quantities mostly to the industrialised countries. The most significant among such products are the following: electric light bulbs, including bulbs for decorative purposes; battery powered torches; light fittings; household appliances such as electric irons; plugs, sockets and switches; electric wire and cable; transformers, battery chargers and other parts.

3.1 Singapore

3.1.1 The Industry

The latest aggregate information available on the industry is for 1971. In that year output was U.S. \$4.6 million and employment 2,419. There was 43 companies, of whom 21 were foreign or joint ventures and 22 were locally owned. Exports in 1971 were \$1.8 million 39.1% of sales. The rate of growth of exports in recent years can be seen in the following table.

Exports of Electrical Appliances from Singapore
to O.E.C.D. Countries, 1967, 1971, 1972

(thousands of U.S. dollars)

	<u>1967</u>	<u>1971</u>	<u>1972</u>
Industrial appliances	Negligible	1,400	4,000
Domestic appliances	258	400	2,500
	<u>258</u>	<u>1,800</u>	<u>6,500</u>

Source : O.E.C.D: Statistics of Foreign Trade.

27. Expansion: None contemplated at present.

Group 3 Other Components
COMPANY G

1. Products: Transformers, printed circuit boards, cable harnesses, relays.

2. Nationality: Japanese

3. Ownership: Joint venture between 2 Japanese companies

4. Annual sales: \$6,750,000

5. Value added: \$2,700,000

6. Number employed: Men 50
 Women 450
 Total 500

7. Average monthly wage: \$104

8. Total annual wage costs: \$624,000

9. Non-wage value added: \$2,076,000

10. Sales per employee: \$13,500

11. Value added per employee: \$5,400

12. Non-wage value added per employee: \$4,152

13. Size of factory: 1,672 sq. metres

14. Space per employee: 3.34 sq. metres

15-18 Electricity and water consumption N.A.

3.12 Case Study Company (figures in U.S. dollars refer to 1973).

1. Products: Electric lamps, ceiling fans, fluorescent fittings, paper and polystyrene capacitors, electric irons.
2. Nationality: European
3. Ownership: Wholly owned subsidiary
4. Annual sales: \$4,200,000
5. Value added: \$2,100,000
6. Numbers employed: Men 79
Women 301
Total 380
7. Average monthly wage: \$62
8. Total annual wage cost: \$282,720
9. Non-wage value added: \$1,817,280
10. Sales per employee: \$11,053
11. Value added per employee \$5,526
12. Non-wage value added per employee: \$4,782
13. Size of factory 5,109 square metres.
14. Space per employee 13.4 square metres.
15. Electricity consumption: 477,756 kwh p.a.
16. " " per employee: 1,257 kwh p.a.
17. Water consumption: 3.9 million litres per annum.
18. " " per employee 10,300 litres p.a.
19. Purchase of materials: from parent or associated companies for lamps, ceiling fans, fluorescent fittings and capacitors; commercial, for electric irons.
20. Main materials: glass, filaments, copper wire, caps, cast iron.
21. Export sales: 75% of total sales; main markets are in South East Asia. Company originally set up to serve the local market of Malaysia and Singapore. However, the splitting away of Singapore from the Malaysian Federation has led to the establishment of export markets. The parent company has ceded the South East Asian region to the Singapore firm.
22. Shortages and bottlenecks in Singapore: Labour
23. Supplies purchased locally: plastics, packaging, furniture, simple repairs.
24. Backward linkages considered: No because scale economies do not permit it. For current product lines, have adapted techniques to use more labour, especially in assembly of irons which is far less automated than in Europe.

25. Reasons for siting in Singapore (in order of priority)

1. Provision of adequate land and industrial infrastructure.
2. Geographic position - nearness to market
3. Good, disciplined labour force (now completely absorbed).

26. Expansion - yes, same lines.

Source: Field interview

3.2 Hong Kong

3.21 The Industry

Between 1971 and 1973, the number of establishments in the electrical appliances industry rose from 348 to 371 and total employment fell from 13,818 to 12,751, a decrease of 8 per cent. For analysis purposes, it is convenient to divide the industry into three parts: torches and flashlights, bulbs and decoration lights, and other appliances.

3.211 Torches and Flashlights

The manufacture of torches is one of the older established industries in Hong Kong, and in recent years has been suffering a slight decline as costs have increased in relation to those in other source areas. The pattern of industrial growth since 1960 can be seen in the following table. Exports account for 97 per cent of sales so that export figures are a close indicator of output.

Exports, Number of Establishments and Employment
in the Hong Kong Torch Industry 1960-1973

	<u>Exports (US \$million)</u>	<u>No. of Establishments</u>	<u>Employment</u>
1960	7.3	38	6,415
1965	8.3	45	5,511
1969	10.6	42	3,932
1971	11.6	45	3,332
1972	11.0	45	2,912
1973	12.8	43	2,480

Sources: 1. Federation of Hong Kong Industries: Annual Reports 1969-72.

2. Government of Hong Kong. Census and Statistics Department: 1971 Census of Manufacturing Establishments.

The table clearly indicates the increase that has taken place in both concentration and productivity in the industry over the 12 year period. Export sales per establishment rose from HK\$1.2 million in 1960 to HK\$1.5 million in 1972, while the value of sales per employee rose from HK\$7,015 to HK\$23,008.

The variation in the sizes of establishments is very wide. In 1971 there were 22 establishments employing less than 20 people, but these accounted for only 2.7 per cent of the total number employed. There were 25 establishments with annual sales of less than HK\$500,000 (US\$82,000), but these firms accounted for only 3.5 per cent of the industry's total sales.

The main export markets are in Europe and North America, though sales are very widespread with Hong Kong torches being sold in more than 150 countries.

Illustrative of recent trends is the decision of one major Hong Kong manufacturer to re-locate in Taiwan. The reasons given were lower wage costs and the incentives offered to foreign investors by the Taiwanese authorities.

Increases in the cost of raw materials have been particularly acute in this industry. In January, 1974, prices for metals were 150 per cent higher than a year earlier, while plastics were 500 per cent higher. For example, the London copper quotation was £1,050 per ton in December, 1973 while in January of the same year it was £450. Aluminium ingots rose during the same period by 64 per cent. The zinc price rose from £160 to £900 per ton.

Despite these enormous increases accompanying the rise in labour costs, industry representatives were optimistic. Hong Kong is to some extent showing its ability to adapt to adverse circumstances. The decline in employment has taken place in the medium size companies. The larger firms have upgraded their lines and do not concentrate production in one type of product. There has been a substantial switch from plastic to metal cases following the increase in the price of plastic resins. The largest firm in the Colony recorded a 35 per cent increase in the value of turnover during 1973, and exports as a whole increased by about 14 per cent if the "battery operated lantern" category is added to the figures for torches alone.

A Case Study Company (figures in U.S. dollars refer to 1973)

1. Products: Torches
2. Nationality: Hong Kong
3. Ownership: Wholly locally owned.
4. Annual sales: \$7,480,000 (25 million pieces)
5. Value added \$3,920,000
6. Numbers employed: Men 660
Women $\frac{1,540}{2,200}$
7. Average monthly wage*: \$108
8. Total annual wage cost: \$2,851,200
9. Non-wage value added: \$1,068,800
10. Sales per employee: \$3,400
11. Value added per employee: \$1,782
12. Non-wage value added per employee: \$486
13. Value added / sales : 52.4%
14. Wage costs / sales : 38.1%
15. Size of factory : 27,870 sq. metres.
16. Space per employee : 12.7 sq. metres.
17. Electricity consumption : 7,200,000 kWh per annum.
18. " " per employee 3,273 kWh per annum.
19. Material purchases : Commercial.
20. Main materials: Aluminium, steel, zinc, copper, glass, plastics. Main sources: Canada, U.K, Japan.
21. Export sales : Commercial and some sub-contract lines. Virtually all sales exported. Main market: U.S.
22. Transport : Materials : sea
Final products : sea
23. Shortages and bottlenecks in Hong Kong: None
24. Supplies purchased locally : bulbs, machinery spares, packaging.
25. Backward linkage considered: yes - aim is to become completely self-sufficient. Aims to produce all components except batteries.
26. Reasons for siting in Hong Kong: Not applicable.
27. Expansion : yes - existing lines.

* Including fringe benefits.

Source: Field interview.

3.212. Bulbs and Decorative Lights.

Three types of bulb are manufactured in Hong Kong: torch bulbs, filament bulbs and decorative light bulbs. The process of manufacturing is very similar for the three types, indeed it is identical for torch and filament bulbs, and is highly labour intensive. It consists of the following stages:

- (a) Glass moulding.
- (b) Beading - fixing the position of two copper wires by a glass bead.
- (c) Filament fixing - connecting the upper ends of the two copper wires by a tungsten filament.
- (d) Bulbing - inserting the beaded copper wires into the glass bulb.
- (e) Air exhausting and sealing.
- (f) Capping - fitting the bulb into a brass cap.
- (g) Lead soldering.
- (h) Paint spraying (decorative bulbs only).
- (i) Testing.
- (j) Packing.

The industry is again one of the older-established ones in Hong Kong whose growth has been cut back in recent years by competition from areas offering lower wage costs. Exports grew consistently throughout the 1960's from HK\$12 million in 1960 to HK\$30 million in 1970. Since then there has been a sharp fall, especially in decorative bulbs. Exports of these fell from HK\$18 million to HK\$17 million in 1971. This was chiefly due to a fall of HK\$2.5 million exports to the U.S. This fall was partly compensated for by an increase in exports to the U.K. Complaints had been received from both Europe and North America concerning the safety of Hong Kong Christmas tree light sets, and this was doubtless influential in the fall of U.S. sales. However, a considerable effort was made to improve quality standards and five Hong Kong manufacturers received licences from the U.K. entitling them to use the "Kite" safety mark of the British Standards Institute. This enabled a further increase in British sales in 1972, but that year also witnessed a drastic drop from HK\$5.7 million to HK\$523,325 in sales to the U.S. Overall exports fell to HK\$12.7 million. The main factor causing the decline was the large U.S. buyers switching from Hong Kong to Taiwan and Korea where labour costs are substantially lower.

During this period, torch and filament bulb exports rose slightly from HK\$21 million in 1970 to HK\$21.3 million in 1972.

- B. A Case Study Company (figures in U.S. dollars refer to 1973)
1. Products : Torch and filament bulbs, Christmas tree light bulbs.
 2. Nationality : Hong Kong
 3. Ownership : Wholly Hong Kong
 4. Annual sales : \$870,000
 5. Value added : \$583,000
 6. Numbers employed :

Men	189
Women	<u>161</u>
Total	350
 7. Average monthly wage * \$108
 8. Total annual wage cost : \$453,600
 9. Non-wage value added : \$129,400
 10. Value of plant and machinery (at cost) : \$47,333
 11. Total fixed assets : \$80,364
 12. Sales per employee : \$2,486
 13. Value added per employee : \$1,666
 14. Non-wage value added per employee : \$370
 15. Fixed assets per employee : \$230
 16. Plant and machinery (at cost) per employee : \$135
 17. Size of factory : 1,393 sq. metres.
 18. Space per employee : 4.0 sq. metres.
 19. Purchase of materials : Commercial
 20. Main materials : Glass bulbs and tubes, copper wire, tungsten filament, brass caps, lead, polystyrene, polyethylene, P.V.C. electric wires, brass sheet, tin sheet, tungsten wire, plastic decorative parts, aluminium and tin wire baskets.
 21. Export sales: All sales exported. Exports directly. About half the output is under sub-contract to buyers. The rest is by specific contract order.
 22. Transport :

Materials :	Sea
Final Products:	Sea
 23. Value added / sales : 67%
 24. Wage costs / sales : 52%
 25. Supplies purchased locally : virtually all machinery and equipment. The industry relies heavily on local support facilities for the manufacture of glass tubes and bulbs, brass caps, P.V.C., electric wires, plastic decorative parts, tin wire, beading glass and baskets.

Note * Includes fringe benefits

Source: Compiled from information provided by the Government of Hong Kong, Department of Commerce and Industry.

3.213. Other Appliances

The most up to date aggregate information on this industry is for 1971. At that time, there were 137 companies manufacturing the following products:

<u>Product</u>	<u>No. of Companies</u>	<u>Sales (HK\$)</u> (000)	<u>Exports</u> (HK\$000)
Fans	14	28,688	21,448
Table and desk lamps	8	4,099	3,031
Decorative lighting sets	30	24,182	22,140
Miscellaneous household articles	10	3,181	1,166
Plugs, sockets, switches etc.	34	27,603	23,143
Transformers	8	7,267	4,890
Electric cable and wire	5	22,500	470
Battery chargers	3	1,063	1,063
Air pumps	4	688	641
Others	<u>21</u>	<u>22,098</u>	<u>14,642</u>
	137	141,369	92,643
U.S. \$		23,175	15,187

Exports as percentage of sales : 65.5%

Sales per company \$169,161.

Data have been made available to the consultants which enable the following table to be set out for the other appliances industry as a whole.

Electrical Appliances Industry in Hong Kong, 1971
(figures in U.S. dollars)

1. Products : see above table
2. Ownership : 136 companies are wholly Hong Kong owned, and one company is foreign owned. Of the Hong Kong companies, one has a licensing arrangement whereby the whole of its output is purchased by a European manufacturer and sold under the latter's brand name.
3. Annual sales : \$23,175,000
4. Value added : Cost of materials and components : \$13,000,000
 Work sub-contracted \$ 450,000
 Total \$13,450,000
 Value added : \$9,725,000
5. Numbers employed :

	<u>Men</u>	<u>Women</u>	<u>Total</u>	<u>Average monthly wage \$</u>
Management	353	77	430	187
Technicians	142	2	144	123
Supervisors	247	39	286	111
Craftsmen	1,224	384	1,608	102
Operatives	1,210	1,868	3,078	65
Other workers	356	507	863	58
Apprentices	<u>156</u>	<u>13</u>	<u>169</u>	<u>40</u>
Total	3,688	2,890	6,578	84
Average wage excluding management and technicians				75.5
6. Total annual wage cost: \$6,609,216
7. Non-wage value added: \$3,115,784
8. Total production cost : \$18,374,000
 Overheads \$ 3,402,000
 Net profit \$ 1,399,000
9. Total fixed assets: \$7,188,000
10. Plant and machinery at cost : \$3,148,000
11. Sales per employee : \$3,527 (\$3,888) **
12. Value added per employee : \$1,480 (\$1,632) **
13. Non-wage value added per employee: \$474 (\$522) **
14. Fixed assets per employee : \$1,094
15. Plant and machinery at cost per employee : \$479
16. Value added / Sales : 42.0%
17. Wage costs / Sales: 28.5%

18. Profit /Sales : 6.0%
19. Total space occupied : 124,000 sq. metres
20. Space per employee : 18.86 sq. metres
21. Electricity consumption:21,705,000 kWh:per annum
22. Electricity consumption:per employee 3,344 kWh:per annum
23. Water consumption 187.5 million litres p.a.
24. Water consumption per employee : 28,500 litres p.a.
25. Purchase of materials : Nearly all commercial. Over 75 per cent are imported.
26. Main materials : Brass sheet and rods, copper plate and bars, tinplate, steel sheet, tube and wire, aluminium sheet and wire, copper wire, insulated copper wire, fuse wire, cables, leads, power cords, plastic moulding powder, bakelite powder, natural rubber, filament, tungsten, glass tubes, ceramic bridges, mica sheets. Most important source of materials : Japan.
27. Exports: 15,187. The growth of exports was very rapid during the early part of the '60s. The value of exports rose by 113 per cent between 1960 and 1965. Between 1965 and 1971, however, the proportional increase was much less - only 25 per cent. The reasons for this slowing down differ according to the product in question. Very broadly, the industry may be divided into two categories : goods aimed at the European and North American markets, e.g. table lamps, and miscellaneous household appliances, and goods aimed at the Asian, African and Middle Eastern markets, e.g. fans and air conditioners. Many of the traditional markets for the latter products developed their own manufacturing facilities during the sixties with accompanying measures to restrict imports. Exports of electric fans were lower in 1971 than in 1967, though in 1972 there was a recovery to show an increase of 14 per cent on the 1967 figure. The picture is more varied with regard to products for the European and American markets. In some of the more basic lines Hong Kong increasingly felt the pressure of competition from Taiwan and Korea. The Colony's manufacturers have succeeded in maintaining exports and in some instances recorded substantial increases by diversifying into new or higher value lines such as electrical equipment for vehicles and domestic electric heating appliances.

Important considerations for this type of product are safety specifications and quality control. Not all buyers insist that products comply with international safety standards, but all companies which exported directly did manufacture in compliance with such standards. Those who exported through traders, however, did not in the majority of cases possess details of safety regulations though they did claim fully to understand them.

Only 28 per cent of the companies in the industry possessed internationally recognised safety certificates. The main reason given for this was that obtaining such certificates increased costs and reduced ready marketability. 42 per cent of the companies had effective quality control.

Design is another significant factor. Irrespective of size, it is helpful if inexperienced establishments have detailed design specifications from buyers. In Hong Kong 20 per cent of the firms were manufacturing exclusively according to customers' designs. As a company becomes experienced, it may attempt to impress buyers with its own designs.

28 Transport requirements: Materials : sea

Final products: mostly sea

29 81 per cent of the companies in the industry have no plans to diversify or expand existing lines. 3 per cent wish to diversify and 17 per cent to expand existing lines.

Source: Compiled from data provided by the Government of Hong Kong, Department of Commerce and Industry.

19. Purchase of materials: from U.S. computer company who sub-contract Company G's work.
20. Main materials: transistors, diodes, copper wire, magnetic wire.
21. Transport: Materials Sea and air
 Final products Air
22. Exports: all sales exported to U.S. computer company.
23. Shortages and bottlenecks in Singapore: petroleum based solvents and plastics (this was world-wide at the time of the interview)
24. Supplies purchased locally: very little owing to higher cost.
25. Backward integration: None considered.
26. Reasons for locating in Singapore: (in order of priority)
 1. Labour availability and cost.
 2. Good quality labour - easily trainable.
 3. No language barrier.
27. Expansion: None contemplated.

COMPANY H

1. Products: Memory stacks, printed circuit board assembly, core memory tooling.
2. Nationality: U.S.
3. Ownership: Wholly owned subsidiary
4. Annual sales: \$31,390,000

3.3 Korea

3.31 The Industry

Aggregate figures for the Korean Electrical appliances industry in 1972 are as follows :-

	<u>Number of Establishments</u>	<u>Exports (\$000)</u>	<u>Sales (\$000)</u>
Refrigerators	5	54.6	1,275
Washing machines	2	0.7	235
Electric irons	12	N.A	689
Electric fans	9	0.5	3,523
Electric mixers	4	N.A	196
Electric heaters (domestic)	2	11.5	123
Electric meters	1	N.A	136
Hair dressing instruments	1	0.5	2
Torches	5	N.A	679
Air conditioners	4	N.A	1,427
Other miscellaneous appliances	3	N.A	834
Electric wire & power cables	44	821.4	38,342
Torch bulbs	4	N.A	90
Decorative light bulbs	18	N.A	6,506
Other bulbs and lights	67	5,807.6	10,617
Electric accumulators	25	N.A	5,863
Other appliances and supplies	12	212.0	3,159
	<u>218</u>	<u>6,908.8</u>	<u>73,696</u>

Source : 1) Economic Planning Board, Report on Mining and Manufacturing Survey, 1972.

2) Office of Customs Administration; Statistical Year-Book of Foreign Trade.

Exports, at 9.4% of total sales, were a substantially lower proportion of sales than in Hong Kong, although there was considerable variation according to product.

Employment in the industry in 1972 was as follows :

Household appliances	2,717
Electric wire and cable	2,726
Accumulators	1,023
Bulbs and other lights	5,645
Other appliances and supplies	<u>1,470</u>
Total	13,581

3.32 Case Study Companies

Data on 4 companies in this industry were collected in Korea. 3 manufacturing decorative lighting and other bulbs and one electric power cables. The latter company is presented separately. Figures are in U.S. dollars and refer to 1972.

	<u>C</u> <u>A</u>	O	M	P	<u>A</u> <u>N</u>	N	I	<u>E</u> <u>C</u>	S
1. Products	Christmas tree light bulbs				Christmas tree light bulbs			Domestic light bulbs	
2. Nationality	Korean				Korean			Korean	
3. Ownership	Wholly local				Wholly local			Wholly local	
4. Annual sales	\$1,135,135				\$37,838			\$999,400	
5. Value added	\$ 89,270				\$19,501			\$401,671	
6. Numbers Employed									
Men	34				NA			NA	
Women	<u>26</u>				<u>NA</u>			<u>NA</u>	
Total	60				35			350	
7. Average monthly wage	\$49				\$28			\$ 49	
8. Total annual wage cost	\$35,280				\$11,760			\$205,800	
9. Non-wage value added	\$53,990				\$ 7,741			\$195,871	
10. Net profit	\$27,192				\$ 6,487			\$ 48,084	
11. Fixed assets	\$43,243				\$20,331			\$179,040	
12. Plant and machinery	\$13,514				\$ 5,405			\$ 62,875	
13. Sales per employee	\$18,919				\$ 1,081			\$ 2,855	
14. Value added per employee	\$ 1,488				\$ 557			\$ 1,148	
15. Non-wage value added per employee	\$ 900				\$ 231			\$ 560	
16. Fixed assets per employee	\$ 721				\$ 581			\$ 512	
17. Plant and machinery per employee	\$ 225				\$ 154			\$ 180	
18. Value added/sales	7.9%				51.5%			40.2%	
19. Wage costs/sales	3.1%				31.1%			20.6%	

20. Profit/sales 2.4% 17.1% 4.8%

21. Purchase of materials : Company A : 50% of materials and components are purchased abroad. The company buys directly rather than through traders. Complaints were made about the quality of local components and delay in delivery of foreign purchases.

Company B : All materials purchased through a trading company. Manager estimates 80% of materials imported. Complaints made of delay in delivery and lack of credit.

Company C : All materials purchased directly. About 40% imported. Complaints of delays in delivery of foreign materials and shortages of locally produced components.

22. Exports : Company A : All sales exported directly. Output is produced to order from foreign buyer who also provides detailed specifications. There is effective independent quality control.

Company B : Production is on a sub-contract basis by direct order from the foreign buyer. The buyer provides specifications and there is effective quality control. There is intense competition among Korean Companies and buyers change sources rapidly if prices rise. The manager says the company carries very small overheads but despite this he must absorb substantial material cost increases. He pointed out that the local industry was very inexperienced compared to Taiwan and, more especially, Hong Kong. He frankly described Korean products as inferior in quality to those elsewhere but substantially cheaper.

Company C : All output produced on direct order from overseas buyer. The buyer in question is Japanese and may well re-sell the products in a third country. The company is now establishing its own contacts abroad. There is effective quality control. Considers products equal in quality but cheaper in price than those from Hong Kong.

25. Water consumption: 73.3 million litres per annum.
26. Water consumption per employee: 125,000 litres per annum.

Source: Field Interview.

3.4 Industry Evaluation

1. Employment:

Average non-wage value added per employee - \$1,869
(excluding wire and cables) - \$1,104

Proportion of men among labour force - 50.8%
(excluding wire and cables) - 43.5%

Skill requirements - about 38% of the workforce needs
to be at least semi-skilled.

Average of skilled technicians and supervisors - 13%

2. Transport requirements: Materials: Mostly Sea
Final products: Mostly Sea

3. Nature of the market: Depends a very great deal on
large buyers often representing retail chains.
Safety certificates and quality control essential.
Buyers tend to respond rapidly to cost changes
switching to other sources, either in the same
country or elsewhere.

4. Average electricity consumption per employee: 4,967
kwh p.a. (without electric cables) 1,958 kwh per annum.

5. Average water consumption per employee: 54,600 litres p.a.

6. Average space per employee: 12.5 sq. metres.

7. Supporting Industries: plastics, machinery manufacture and repair, glass tubes and bulbs, brass caps, PVC wires.

4. DOMESTIC SEWING MACHINES

The largest share of the total world market for sewing machines has been supplied by Japan since the late 1950s. Its annual production of about 4 million units with a total value of about \$180 million is still unsurpassed elsewhere. Its home market, however, is only about 1.2 million units per year so that the industry must sell about three-quarters of its output abroad in order to survive. A number of trends in recent years have combined to cause severe problems for the industry especially at the more basic end of the market.

- (a) The U.S. is by far the most important foreign customer, accounting for 1.9 million units in 1971 and 1.7 million units in 1972. Sewing machines have been hit by the fact that the yen was appreciating in value against the dollar until mid 1973, and by the desire of the U.S. to reduce its adverse trade balance with Japan. After the 10.5 per cent drop in sales in 1972, preliminary figures for the first half of 1973 showed even bigger falls. By April of that year, the industry was beginning to cut back capacity by about 10 per cent, and cheaper lines ceased production altogether.
- (b) Costs in Japan, especially labour and overheads, rose very sharply from 1971 through 1973 and the competitive edge of Japanese manufacturers over local companies in North America and Europe has been eroded.
- (c) A number of other centres in the Far East have started seriously to challenge Japan in the cheaper lines. By the end of 1973 there was virtually no planned production of low speed home-use sewing machines.

The Japanese industry, dominated by 5 large companies, has responded to this in a variety of ways. There has been a great deal of diversification into knitting machines and other home appliances as well as an up-grading of models. One company established a joint venture in West Germany with a major German competitor to produce under the latter's brand name for the German and European market.

Rising transport costs lent further encouragement for a similar operation by another Japanese firm in North America. This time the manufacturing base is Mexico. The most significant Japanese response from the viewpoint of this study has been the relocation of production facilities in centres of low-cost labour even though these are distant from the main markets. Taiwan and Korea are two examples so far.

4.1 Korea

4.11 The Industry

The basic statistics for the sewing machine industry in 1972 are as follows (in thousands of U.S. dollars):

Total sales (ex-factory)	\$2,745
of which	
Domestic machines and spares	\$2,001
Industrial machines and spares	\$ 744
Number of establishments	23
Total employment	740

Source: Economic Planning Board : Report on Mining and Manufacturing Survey, 1972.

The rapid growth in the export of sewing machines has been a phenomenon of the years since 1970. Prior to that date, export was on a modest scale (about \$50,000 per year) mainly by local companies operating on a sub-contract basis. In 1971 exports rose by 72 per cent to \$776,000 and by 203 per cent in 1972 to \$2.35 million. Preliminary estimates for 1973 suggest a further 155 per cent increase to about \$6 million. Up to the end of 1972 the industry, and especially exporting, was dominated by one company with Japanese backing. By mid 1973 there were two more Japanese joint ventures, one in domestic and the other in industrial machines. Both Korean partners recorded negligible exports in 1972, but estimate that they have totalled \$1.25 million in 1973.

In addition there are two wholly Korean firms both of which have experienced a substantial increase in overseas orders in 1973. One of these manufactures straight stitch models for markets in South East Asia and the Middle East. By the end of the year, the company had developed a zig zag model for export to the U.S. and Europe. The other company has concentrated much more on the domestic market, but has now taken a decision to move into industrial lines for export. To assist in this the company is soon to establish either a technical agreement or a joint venture with a Japanese or U.S. company.

4.12 Case study Company (figures in U.S. dollars refer to 1972)

1. Products: Domestic and industrial sewing machines
2. Nationality: Korean / Japanese
3. Ownership: 50% joint venture
4. Annual sales (ex-factory): \$2,108,300
5. Value added: \$ 702,600
6. Numbers employed:

Men	205
Women	<u>24</u>
Total	229
7. Average monthly wage: \$59
8. Total annual wage cost: \$162,132
9. Non-wage value added: \$540,568
10. Sales per employee: \$9,206
11. Value added per employee: \$3,068
12. Non-wage value added per employee: \$2,361
13. Value added /sales: 33.3%
14. Wage costs /sales: 7.7%
15. Purchases of materials: \$1,281,000 (61% of sales). About 70% of parts are imported from Japan. Most of these are supplied by the Japanese partner. Price increases during 1972 have been severe - parts by 30 - 40 per cent and steel by 100 per cent. Only a part of this can be passed on. Some lines are exported at a loss of \$3-\$6 per unit, though there is a system by which the firm can be compensated, by tax allowances on profits made on domestic sales. Most of the firm's output of industrial machines is sold locally.

16. Exports: The factory produces about 17,000 units of domestic machines per month and between 90 and 95 per cent of this output is exported. The firm exported just under \$2 million f.o.b in 1972 and anticipates that this will have doubled in 1973.

All sales from the factory are bought by the joint venture holding company. This then sells exclusively at a mark-up of between 40 and 75 per cent (depending on the model) to the Japanese partner which then channels the machines to the final overseas market. This exclusive arrangement is part of the technical agreement between the two companies.

17. Transport requirements: Sea for both materials and final products. The factory is located near to a port with adequate container facilities.
18. Electricity consumption : 1,500,000 kwh per annum
19. " " per employee : 6,550 kwh per annum
20. Water consumption : 28.1 million litres per annum
21. " " per employee : 122,700 litres per annum

Source: Field interview.

4.2 Industry Evaluation

1. Employment: Non-wage value added per employee : \$2,361
Proportion of men among employees : 90%
2. Transport requirements . Sea, preferably with container facilities.
3. Nature of the market. Japanese domination likely to continue in high value lines, so that developing countries tend to concentrate on low speed, less sophisticated models. In this area the industry is developing rapidly in Korea and Taiwan. The previous importance of Japan in all types of sewing machines means that she has effective control over market outlets as well as considerable expertise on the technical side. This is exploited to the full, particularly as Japanese companies supply vital components to overseas operatives. Significantly, in Korea, the proportion of parts obtained locally by Korean companies is much higher than for companies with Japanese interests (about 75 per cent as against 10-30 per cent). Despite this, these companies still rely on Japan for the more advanced components, and it is normally necessary to enter into at least a technical agreement if a company wishes to produce more sophisticated models than the simpler type of straight stitch slow speed machine. Another factor causing pressure to form joint ventures is that a purely local company might have difficulty in obtaining parts.

5. Value added \$7,847,000
6. Numbers employed: Men 135
 Women 1,365

 Total 1,500
7. Average monthly wage* \$113
8. Total annual wage cost \$2,034,000
9. Non-wage value added \$5,813,000
10. Sales per employee \$20,927
11. Value added per employee \$5,231
12. Non-wage value added per employee \$3,875
13. Size of factory: 5,574 sq. metres.
14. Space per employee: 3.72 sq. metres.
- 15-18 Electricity and water consumption: N.A.
19. Purchase of materials: Commercial
20. Main materials: resistors, diodes, transistors, cleansing agents.
21. Transport: Materials Air
 Final products Air
22. Exports: all sales exported to parent company.
23. Shortages and bottlenecks in Singapore: labour, space.

Such a company would almost certainly be producing less sophisticated models and as these are being phased out in Japan itself parts are being produced in progressively less volume. In the longer term, this provides a stimulus for the development of local back-up industries and concomitant expertise.

4. Electricity consumption per employee : 6,550 kwh per annum
5. Water " " " : 122,700 litres per annum

5. STAINLESS STEEL FLATWARE

The production of stainless steel flatware is an industry which has grown rapidly in low labour cost areas. Most of the output consists of tableware - spoons, knives and forks - though the industry also produces pocket knives, razor blades and blades for various types of machinery and hand tools.

5.1 Korea

5.1.1 The Industry

The details of the Korean stainless steel flatware industry in 1972 were as follows:

	<u>US\$</u>
Gross output	10,765,536
Sales	10,435,512
Exports	8,100,000
Value added	4,013,077
Labour costs	1,644,035
Non-wage value added	2,369,042
Employment (No.)	4,183
Number of establishments	62
Non-wage value added per employee	566
Average value added per establishment	64,727
Labour costs per employee	393

Source: Economic Planning Board, Republic of Korea, Report on Mining and Manufacturing Survey, 1972.

The output of the industry is dominated by tableware - (knives, spoons and forks) as the following table shows:

Output Breakdown of the Stainless Steel Flatware

<u>Industry, 1972</u>	<u>US\$000</u>
Knives, forks and spoons	6,739
Other cutlery	2,647
Razor blades	438
Cutlery for hairdressers	146
Pocket knives	77
Saw blades	44
Machine cutlery	169
Scissors	<u>174</u>
Total	10,434

Source: Ibid

Of the 62 establishments 4 are large factories employing over 500 workers. These 4 account for 85 per cent of the industry's output and 77 per cent of employment.

5.1.2 Markets

The dominant market remains the United States, though its importance has declined since 1970. The first separately recorded exports were in 1965 when Korea sold \$231,000 worth of tableware to the US. Really rapid growth began in 1968 with exports of \$1.4 million. This followed the lifting of import quotas by the US Administration in 1967. Exports doubled in 1969, and were nearly \$4 million in 1970. In February, 1971, new quotas were imposed by the US authorities, and exports in that year were \$4.5 million as against a target of \$6 million. The imposition of the new quotas aroused considerable concern in the industry not only in Korea but in other source areas. Nominally, at least part of their purpose was to protect US producers against competition from low wage cost areas. There is, however, a strong feeling that the chief purpose was in reality to raise revenue for the Treasury - several of the largest buyers in the US are also that country's most powerful producers of stainless steel tableware. Under the new regime the quotas for the main source countries are as follows (for knives, spoons and forks):

Japan	11.0 million dozen per annum
Taiwan	2.1 million dozen per annum
Korea	1.6 million dozen per annum
Hong Kong	0.5 million dozen per annum

In 1973, the price of Korean exports was such that it was estimated that 80 per cent of sales were outside the quota.

Respective in-quota and out-quota duties on individual items are as follows:

	<u>In-quota</u>	<u>Out-quota</u>
Knives and forks with no nickel and less than 10% manganese	1 cent per item + 12.5 per cent and valorem	.....
knives and forks with nickel and more than 10% manganese	1 cent per item + 17.5 per cent ad valorem	Average 2 cents per item + 45 per cent ad valorem
Spoons	17 per cent as valorem	40 per cent ad valorem

The initial impact of the re-imposition of US quotas on the Korean industry was severe. Employment fell and the number of bankruptcies rose during 1971. One large company, with exports of over \$1.5 million, was taken over by another group in March, 1972.

However, a combination of factors have enabled the Korean industry not merely to survive but to benefit from the new restrictions. In the first place, after the lifting of the first set of American quotas in 1967, the industry's response was one which is all too familiar in Asian source economies: a rapidly growing market emerges and a large number of companies either start manufacturing or switch to the line concerned without having the necessary technical or financial backing for a sustained operation. When exports doubled in 1969, so did the number of manufacturers. The industry, during the lean period in 1971, underwent a major reorganisation so that by the middle of 1972, there were six major manufacturers (4 of them large scale), with a substantial amount of sub-contracting to small establishments by both traders and the large producers. Even the large company that was taken as a case study was reported to have internal problems.

The second benefit from the restrictions has been to reduce Korea's dependence on the US market. The proportion of Korean exports going to the US was 87 per cent in 1969, 94 per cent in 1970 and 95 per cent in 1971. In 1972 the percentage was 74 per cent. This is still high, but does indicate an effort to penetrate new markets.

In the third place, the imposition of the quotas should be seen in the context of the general desire of the US to reduce imports from Japan. Japan, on the basis of her past record, has a substantially higher quota than other exporters but until 1973 did not make any real effort to exceed her quota. Even in 1973, marketing efforts were concentrated at the high quality end. In the meantime, however, the market has continued to grow rapidly, and lower costs have enabled Korea to break through the tariff barrier and sell to the new market which the Japanese have not seriously competed for. The average c.i.f. price for Japanese flatware at the end of 1973 was approximately double the Korean level. In 1972, exports rose from \$4.5 million to \$8.2 million, and again to \$8.7 million in the first 6 months of 1973. The original industry target for 1973 was \$10 million, subsequently raised to \$13 million.

Company A is a wholly owned Korean company with a single proprietor. Company B is a joint venture with a Japanese firm, the latter holding a minority of the shares.

Part of the reason for the small firm's relative profitability is the fact that it does not export directly and has substantially lower overheads. The whole of output was sold to trading companies by specific order, so that the company was unaware of whether the wholesaler exported the items or sold them on the local market.

The greater part of raw materials is imported, directly by the larger company (Company B) and through a trader by the smaller company. Both companies illustrate a weakness typical of much of Korean industry - a virtual dependence on Japan for vital raw materials - in this case stainless steel sheet. In both cases materials were purchased on a commercial basis, though company B's connections with Japan probably help to ensure supplies. There were several complaints by both companies concerning raw materials. First, on price, this has increased sharply as follows:

Price of Korean Imports of Stainless Steel
Sheet from Japan (US\$ per tonne).

November	1971	350
March	1972	420
October	1972	440
April	1973	535
August	1973	580
November	1973	610

Annual rate of increase November 1971-November 1973: 32 per cent

Sources: 1. Interview
2. 'The Importer', October 1973

Secondly, on delivery, during the two years ending in February, 1974, Korean firms have become concerned with the increasing reluctance of Japanese suppliers to take new orders, and with their slowness in delivering existing ones. This is related to the world-wide shortage of steel, more acutely felt in Japan owing to the absence of local mineral resources on a large scale.

The output of the larger company was marketed in the United States by importing houses who sold to the buyers of retail outlets. As already indicated, the small company sold to local traders. Company A complained of delays in receiving payment from wholesalers. No separate quality control personnel operated in Company A. Both companies reported satisfaction with their existing plant and equipment. Company B received technical advice from its Japanese associate, but Company A received no technical assistance.

5.2 Hong Kong

5.21 The Industry

The details of the Hong Kong stainless steel flatware industry in 1971 were as follows:

	<u>US\$</u>
Sales	5,895,902
Exports	4,918,033
Employment (No.)	2,711
No. of establishments	45

The industry suffered a severe blow after the re-introduction of quotas by the US in February, 1971. The US is the second most important market for Hong Kong flatware with 19 per cent of the total (the largest is the United Kingdom with 46 per cent). The drop in exports in 1971 was \$2 million from \$7 million in 1970. The industry rallied in 1972 with exports rising to \$5.4 million, while in the first 11 months of 1973, the improvement continued with sales of \$6.6 million.

Between 1971 and the end of 1973, the number of establishments in the industry had fallen from 45 to 43, and employment from 2,711 to 2,436.

5.3 Industry Evaluation

1. Employment

Average non-wage value added per employee: \$455

Industry highly labour intensive
Percentage of males among operatives

Korea 76.9

Hong Kong 68.2

Average 72.5

Skill requirement: number of skilled or supervisory workers about 2 per cent of the total number of operatives.

2. Transport requirements

Sea transport for both materials and output owing to low value: weight ratio. Despite shortages and rising prices of Japanese steel, Koreans did not find it worth while to switch to US as transport costs ruled out any advantage from dollar devaluation against the yen.

3. Nature of market

Normally long production runs possible with severe short term fashion changes unlikely.

4. Fuel, electricity and water requirements

Fuel: 0.9 per cent of sales and 326 litres per employee per year.

Electricity: 1.9 per cent of sales and 2,679 kwh per employee per year.

Water: 0.5 per cent of sales or 89,400 litres per employee per year.

5. Space requirements (Hong Kong)

13 sq. metres per employee.

6. Supporting industries

Hand tools.

6. OPTICAL GOODS

The range of products manufactured by this industry includes the following: cameras and parts thereof, binoculars and telescopes, special lenses for microscopes, survey and other precision instruments, and spectacle frames and lenses.

6.1 Singapore

6.11 The Industry

There are 4 companies producing spectacle frames and lenses, mostly for the export market. In addition, companies 3 manufacture special lenses of various kinds. Spectacles tend to be the province of locally-owned firms, but other optical goods are dominated by foreign investment. The most significant recent investment was by the German Rollei Group in 1971 and 1972. This company manufactures cameras, lenses, projectors, flashlights and batteries for cameras and other precision instruments. Mainly due to Japanese competition, the Rollei Group was making heavy losses in 1971 with a total turnover of \$46 million. The Singapore Government considered the Group to be in the right kind of industry for its switch to more capital and skill intensive manufacturing (see Section 5.4). The company, due to its financial position, was certainly open to persuasion, though some doubts (ill-founded in the event) were expressed elsewhere as to whether such a high precision industry could be moved to South East Asia on such a scale.

In addition to the normal incentives of Pioneer Status (see Section 5.4) the Development Bank of Singapore made a US\$6 million investment in the Rollei Group of companies in Singapore. It holds 25 per cent of the equity in Rollei Singapore and Rollei Optical (total paid up capital US\$23.2 million), while its interest in the Singapore Camera Factory Ltd. is 20 per cent. In addition, the Bank had, by the end of 1973, acquired a 5 per cent interest in Rollei Braunschweig, the parent company, purchasing the shares at a 200 per cent premium.

By mid 1973, annual turnover had risen by 168 per cent to \$124 million, over a third of which was contributed by the Singapore operators. One fear - that the opening of the Singapore company would lead to a loss of jobs in Germany - has not yet been

24. Supplies purchased locally: Gases, simple machine parts, electronic components when possible but it is comparatively rare that a producer is able to sell on the local market, given the relationship common in the industry between parent and subsidiary companies.
25. Backward integration: Not considered.
26. Reasons for locating in Singapore (in order of priority):
 1. Availability and cost of labour.
 2. Good air service and airport facilities.
 3. Fiscal incentives.
 4. Freedom from trade controls
27. Expansion: Unlikely because of technological changes: core memories are being replaced by semiconductor memories which are more compact.

COMPANY I

1. Products: Nickel Cadmium batteries
2. Nationality: European
3. Ownership: Wholly owned subsidiary
4. Annual sales: \$2,550,000
5. Value added: \$765,000
6. Numbers employed:

Men	20
Women	110
Total	<u>130</u>
7. Average monthly wage: \$90
8. Total annual wage costs \$140,400

realised. On the contrary, the revival of the Group has led to the creation of 1,200 new jobs in Germany according to a company spokesman.

The operation in Singapore consists at present of five factories: two for cameras, one for aluminium die-casting, one for electronic flash guns, and one for high quality lenses, prisms, shutters and viewfinders. Total employment by the end February, 1974 was 5,300 and is expected to rise to 7,000 by December. The proportion of women among factory workers is about 65 per cent. The factories, which cover a total area of about 10,200 m², are located well within the high population-density residential areas of Singapore and one plant is situated in a "problem" area largely populated by Malays.

The company is well satisfied with the quality of the Singapore labour force which has enabled a loss to be turned into a profit of \$82,500 within a year. There is still disquiet in Germany, however, concerning the effect on jobs there. To help reassure labour organisations, the Group has so far kept operations going in both countries on a parallel basis. For example, one of the new camera models will be 65 per cent manufactured in Germany and 35 per cent in Singapore. If, however, the Singapore labour force continues to perform well, it is questionable how long this will continue.

The Rollei experience shows that there is a great deal of promise for developing countries with a good trainable labour force in the optical goods industry. Not only other European, but also Japanese companies may soon be searching for centres to which they can sub-contract and even transfer operations. The industry, as well as being a substantial employer, is also skill intensive. In the case of Rollei it was economic for the company to institute training courses to transfer the necessary skills.

6.12 Case Study Companies (figures in U.S. dollars refer to 1973).

C O M P A N I E S

A

B.

1. Products	Mechanical and optical parts for microscopes and survey instruments	Spectacle frames and lenses
2. Nationality	European	Singaporean
3. Ownership	Wholly owned subsidiary	Wholly local (previously joint venture with Hong Kong)
4. Annual Sales	\$1,750,000	\$300,000
5. Value added	\$1,225,000	\$200,000
6. Numbers employed:		
Men	80	3
Women	120	177
Total	200	180
7. Average monthly wage*	\$112	\$71
8. Total annual wage cost	\$268,800	\$153,360
9. Non-wage value added	\$956,200	\$46,640
10 Sales per employee	\$8,750	\$1,667
11 Value added per employee	\$6,125	\$1,111
12 Non-wage value added per employee	\$4,781	\$259
13 Value added/sales	70.0%	66.7%
14 Wage costs/sales	15.4%	51.1%
15 Size of factory	5,000 sq.metres	2,000 sq.metres
16 Space per employee	25 sq.metres	11.1 sq.metres
17 Electricity consumption	1,200,000 kwh p.a.	342,900 kwh p.a.
18 Electricity consumption per employee	6,000 kwh p.a.	1,905 kwh p.a.
19 Water consumption	Negligible	Negligible
20 Purchase of materials	Parent company	Commercial
21 Main materials	Brass, special aluminium and steel, optical glass	Plastic, metal parts, optical glass

22 Exports	All sales exported now on a commercial basis. Goods previously sold via parent company so that quality could be re-checked. No longer necessary. Main market: U.S.A.	65% of sales exported, all on commercial basis. Main markets: US , Europe and South East Asia.
23 Transport requirements: Materials Final products	Sea Air	Sea Mostly air
24 Supplies purchased locally	Simple small tools, packaging	Plastic polishing cloth, simple repairs, packaging
25 Shortages and bottlenecks in Singapore	None	Labour
26 Reasons for locating	<ol style="list-style-type: none"> 1. Availability of trainable labour situation in home country became critical after limitations on entry of foreign workers. 2. Good port and airport facilities 3. Competent administration 	<ol style="list-style-type: none"> 1. Lower cost of labour than in Hong Kong. 2. Geographic position in relation to Malaysia and other South East Asian markets.

* Including fringe benefits

Source: Field interviews

6.2 Hong Kong

6.21 The Industry

The latest aggregate figures available are for 1971. In that year, output in the optical goods industry was HK\$78.1 million (US\$12.8 million), there were 65 establishments and total employment was 4,115. It is, by Hong Kong standards, a relatively new industry, with export sales becoming significant in the mid 1960s. Over 90 per cent of sales are exported, and the industry's growth is illustrated in the following table:

Exports of Optical Goods from Hong Kong, 1960-1973

(U.S. \$ thousands)

	<u>1960</u>	<u>1965</u>	<u>1969</u>	<u>1971</u>	<u>1972</u>	<u>1973*</u>
Cameras	555	1,224	5,819	6,721	8,754	12,224
Binoculars and telescopes	180	1,388	1,962	1,770	2,115	3,110
Electrical and other flash units	-	-	-	803	1,557	N.A
Spectacles & spectacle frames	N.A	N.A	824	1,525	1,443	N.A
Other	<u>245</u>	<u>979</u>	<u>1,286</u>	<u>1,967</u>	<u>1,541</u>	<u>8,031</u>
Total	980	3,591	9,891	12,786	15,410	23,365

Notes: * Preliminary estimates

**Includes cine projectors, lenses and photographic accessories.

N.A = Not available separately

Source: Hong Kong External Trade Figures, various years.

Most of the smaller establishments (i.e. those employing less than 100 persons) were concentrated in the spectacle and spectacle frame sector. In 1971, there were 59 such establishments, with total sales of US\$2.1 million, and employing 910 persons.

6.22 Case Study Company (figures in US dollars refer to 1973)

1. Products: Cameras, binoculars, telescopes and photographic accessories.
2. Nationality: Hong Kong.
3. Ownership: Wholly local.
4. Annual sales: \$20,000,000.
5. Value added: \$13,400,000.
6. Numbers employed: Men 1,513
Women 1,487
Total 3,000
7. Average monthly wage: \$104
8. Total annual wage costs: \$3,744,000
9. Non-wage value added: \$9,656,000

10. Sales per employee: \$6,667.
11. Value added per employee: \$4,467.
12. Non-wage value added per employee: \$3,219.
13. Value added/sales: 66.7%.
14. Wage costs/sales: 18.7%.
15. Size of factory: 46,450 sq.metres
16. Space per employee: 15.5 sq.metres
17. Electricity consumption: 11,800,000 kwh per annum.
18. Electricity consumption per employee: 3,933 kwh per annum.
19. Water consumption: Substantial owing to requirements of metal plating and lense grinding.
20. Purchase of materials: Commercial. Main sources: Japan, UK (for glass), Australia.
21. Main materials: Optical glass, electronic components, metals, plastic.
22. Exports: Partly sub-contract to European (especially in binoculars) and Japanese companies, but also commercial selling under own brand name. The production of cameras concentrated on the mass consumption type, and in the lower price range, has succeeded in competition with Japanese and German cameras. The most noteworthy export achievement is the sale of cameras to Japan. This market was penetrated to a significant extent in 1970, and has grown since. The main export market is the United States which accounted for 42 per cent of total exports in 1972.

The company claims to be the largest manufacturer of binoculars in the world. Output reached a peak in 1966 when \$3.2 million were exported. There was, however, over-production in Japan in the same year, and rather than engage in a "price war" with Japanese manufacturers, both decided to voluntarily limit output to a certain proportion of the total market. After remaining stable for some years, exports rose sharply in both 1972 and 1973.

For both products, the proportion of the company's own brand name has been increasing, while sub-contracting was the key to growth in the early years. Since then sales have been promoted largely by the personal energy of the management, by participating successfully in specialised trade fairs and going out to the markets to sell the products.

23. Transport requirements: Materials: Sea
Final products: Air and sea 50% each.
24. Supplies purchased locally: machinery, injection moulding, packaging, cotton gloves, furniture.
25. Shortages and bottlenecks in Hong Kong: None.
26. Skill requirements: 200 or 7 per cent of labour force.

Source: Field interview.

6.3 Korea

6.31 The Industry

The basic statistics for the industry in 1972 are as follows (in thousands of US dollars).

Output (ex-factory)	4,764
of which Prisms	173
Cameras	335
Binoculars	2,547
Spectacles	226
Lenses	488
Frames	795
Other	200
Number of establishments	22
Number of employees	1,986
Exports	3,842

Sources: (1) Economic Planning Board: Report on Census of Mining and Manufacturing, 1972.

(2) Office of Customs Administration: Statistical Yearbook of Foreign Trade, 1972.

As in Hong Kong and Singapore, the production of more sophisticated items such as cameras and binoculars is dominated by one company. Smaller firms tend to concentrate on the production of spectacle frames and lenses. There were 18 establishments of this latter type in 1972, producing \$1,371,000 and employing 758 persons.

6.32 Case Study Company (figures in US dollars refer to 1972).

1. Products: Binoculars, cameras and lenses.

2. Nationality: Korean.

3. Ownership: Wholly local.

4. Annual sales: Cameras \$330,500
Binoculars \$2,546,500
Accessories \$76,300
Total \$2,913,300

5. Value added: \$1,980,000

6. Numbers employed: Men 642
Women 241
Total 883

7. Average monthly wage: \$60

8. Total annual wage cost: \$635,760

9. Non-wage value added: \$1,344,240.
10. Sales per employee: \$3,299.
11. Value added per employee: \$2,242.
12. Non-wage value added per employee: \$1,522.
13. Electricity consumption: 4,529,000 kwh per annum.
14. Electricity consumption per employee: 5,129 kwh per annum.
15. Water consumption: 48.4 million litres p.a.
16. Water consumption per employee: 54,800 litres p.a.
17. Purchase of materials: part sub-contract and part commercial.
18. Exports: Nearly all sales exported. Most of the output of cameras is sold to Japan under sub-contract. Binocular sales are world-wide on a part commercial, part sub-contract basis.
19. Supplies purchased locally: cotton gloves, some simple machine parts, packaging. For the manufacture of binoculars, there is a little sub-contracting of plastic parts (about 0.1 per cent of sales value).
20. Transport requirements: Sea for materials, half sea and half air for final products.
21. Value added/sales: 68.0%.
22. Wage costs/sales: 21.8%.

Sources: (1) Field interview.

(2) Economic Planning Board: Report on Mining and Manufacturing Survey, 1972.

6.4 Industry Evaluation

1. Employment: Average non-wage value added per employee: \$2,445.
Proportion of men among employees: 41.2%.
2. Transport: Materials by sea, but final products could be transported by air.
3. Nature of the market: Very high growth potential, especially in cameras. Cost trends in Japan suggest that the near future will see a similar trend to that evident in other industries, e.g. sewing machines: an increasing proportion of Japanese production located in low labour cost areas. Skill content, even at the lower end of the market is reasonably high so that foreign investment or a technical agreement would be necessary. There is considerable potential reward for aggressive marketing to establish a new brand name.
4. Average electricity consumption per employee: 4,241 kwh p.a.
5. Average water consumption per employee: 54,800 litres p.a.
6. Average space consumption per employee 17.2 sq.metres.

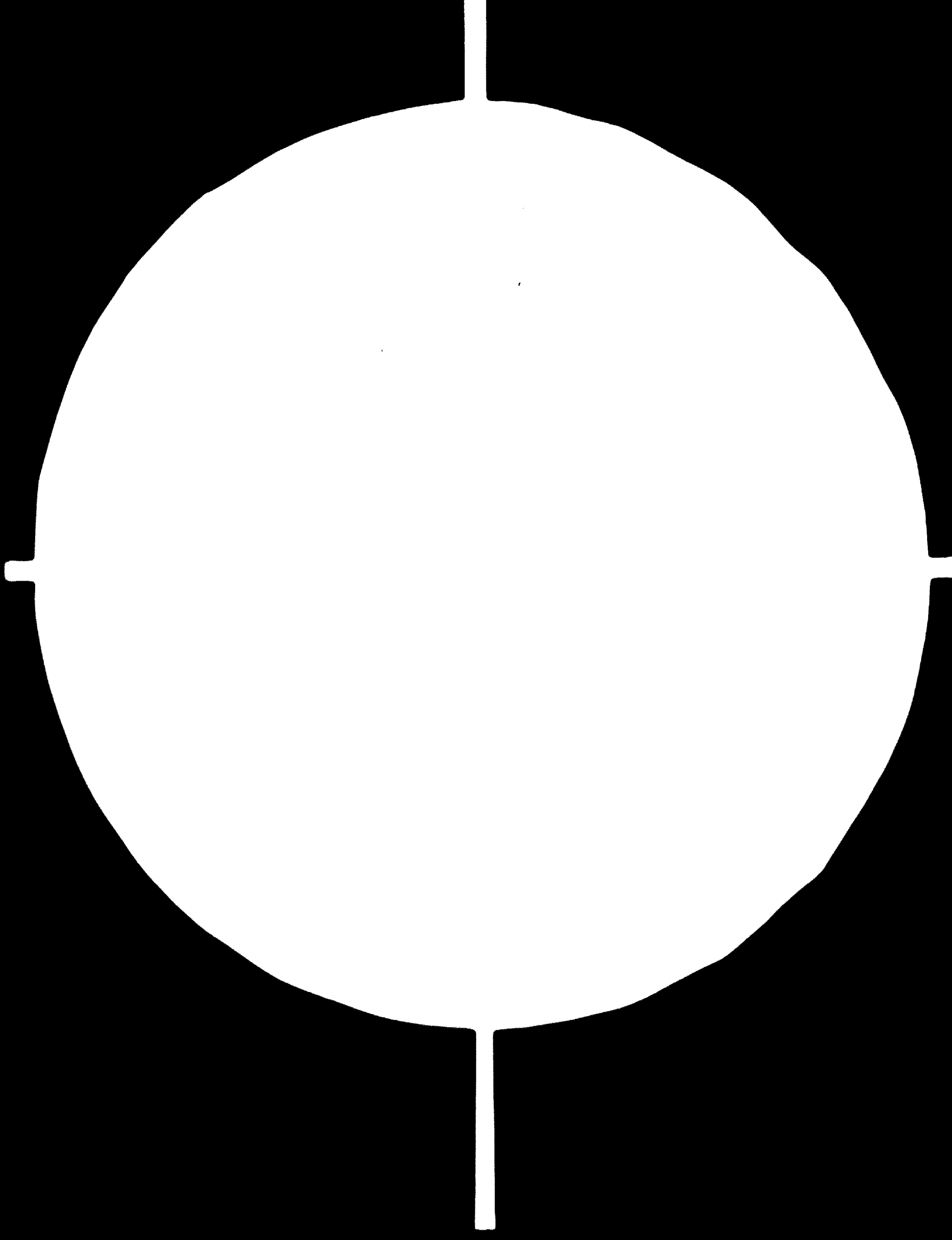
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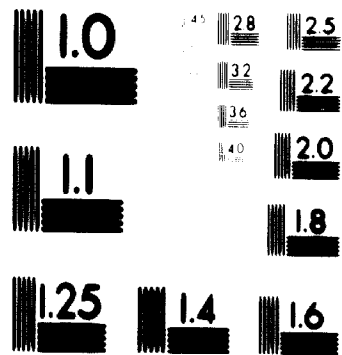
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

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26. Purchase of Materials

Practically all the leather is bought by the companies in the sample from local tanneries. The leather tanning industry, which employed 774 persons in 1972, developed partly in response to the needs of the footwear industry. Most manufacturers spoke highly of the quality of local tanning. Plastics are divided roughly equally between imports (mainly from Japan) and local supplies. Natural rubber comes from Singapore, Malaysia and Indonesia. Synthetic rubber and chemicals are purchased from the US and Japan. By late 1973, a synthetic rubber plant was in operation in Korea but the cost was \$100 per tonne more than the imported product. In any case, it will take some years before demand can be satisfied locally. All firms complained of the increases in the cost of materials. Natural rubber, for example, rose from \$300 to \$620 per tonne during the 13 months ending June, 1973, while synthetic rubber in November 1973 was being landed at \$420 a tonne as against \$200 per tonne in mid 1972. These material costs are, however, affecting all sources and may even benefit Korean industry with its cheaper labour costs.

Complaints were made about the quality of local plastics.

Average percentage of material purchases imported: 64

The competition in the market is such that less than half the increase in material costs can be passed on to the buyer. One manufacturer stated that during the year ending June, 1973, the price of his products had increased by 15-20 per cent, whereas material costs had increased by 70 per cent.

27. Transport requirements: Sea for materials and final products.

Source: Field interviews.

7.3 Industry Evaluation

1. Employment:

Average non-wage value added per employee: \$655.

Proportion of men among employees: 54.8%.

- #### 2. Transport Requirements:
- Sea for both materials and final products. For fashion lines, if sea transport facilities are inadequate, there may be cost problems caused by higher air freight.
- #### 3. Nature of the market:
- Because this industry is highly labour intensive, it is liable to decline rapidly once a country's wage differential exceeds a certain amount. The experience of Hong Kong clearly indicates this. Once a country reaches this stage, which in other senses seems a desirable one, it is necessary to upgrade production. This normally means moving from manufacture of cheaper "black and brown" leathers and canvas/rubber sports shoes to fashion lines. In order to achieve this, the industry must be highly capitalised and preferably concentrated in large companies which are able to sustain at least some long runs. The reason for this is that each line requires investment in different lasts. On the one hand, there are dangers of concentrating too much on one market, as the Hong Kong experience illustrates. On the other hand, different countries have different requirements and the satisfaction of several markets requires substantial new investments in order to keep abreast of fashion changes.

Thus, while the industry can flourish in the hands of small businessmen in the early stages, when low labour costs mean that there can be concentration on cheaper lines, in order to upgrade production it will almost certainly be necessary to increase the degree of capitalisation. To establish the base for this, markets in non-fashion lines need to be established. These lines consist mostly of the following:

- cheap leather shoes,
- sports shoes and boots,
- work shoes and boots,
- plastic footwear, and
- slippers and house footwear

4. Average electricity consumption per employee: 3,115 kwh p.a.
5. Average water consumption per employee: 44,720 litres p.a.
6. Average space per employee (Hong Kong): 11.8 sq.metres
7. Supporting industries: The most important local industries supplying an exporting footwear industry are textiles, leather tanning and plastic. Textiles are normally well established in such an economy, and this will soon be the case in Mauritius. Plastics can if necessary be imported, though they are unlikely to be available in the same quantity as in the past. Both Hong Kong and Korea have, until 1973, been able to import large quantities of "surplus" Japanese plastic at virtually marginal cost. Tanned leather, also, can be imported, but manufacturers may then need to carry larger stocks and there could also be problems of quality control. Both Hong Kong and Korea import and manufacture finished leather. In the case of Korea, 58% of requirements were made locally. The technical problems associated with leather tanning are worthy of mention in the Mauritian context. A fairly large volume of water is required, and the process produces a substantial effluent. On the scale necessary to support a local footwear industry, however, this is unlikely to be a significant factor.

8. GLOVES AND LEATHER GARMENTS

8.1 Introduction

8.11 Gloves.

The nature of the glove market has changed considerably in recent years. Fashion gloves, once a year-round part of most wardrobes, are now more stylish versions of standard winter gloves and mittens. The primary function is to give warmth and the fashion role has become largely secondary. Leather prices had risen so high by the end of 1973, that the material has ceased to be used except for very expensive lines. Prices of other materials have also risen sharply. The effect of these changes has been to cause a swing in the industry away from dress gloves into non-fashion lines and working gloves.

8.12 Leather Garments

Cost increases in Europe have led to an increase in buying in Asia during 1973. This has been of particular assistance to relatively new producers such as Korea and Taiwan. Hong Kong is responding to the new competition mainly by trading up.

8.2 Hong Kong

8.21 Gloves

Although no aggregate sale figures for the glove industry exist except for the year 1971, exports form about 95 per cent of total sales and can therefore be used as an indication of the industry's growth. The basic statistics are as follows:-

The Hong Kong Glove Industry, 1960-1973

	<u>1960</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u> *
Export sales (in thousands of US\$)	93	192	237	264	284	434
Number of establishments	NA	146	280	280	N.A	279
Employment	NA	12,451	N.A	11,335	N.A.	11,039

Notes (see over)

Notes N.A. = Not available.

* = Preliminary estimates.

- Sources
- (1) Government of Hong Kong, Census of Industrial Production, 1971.
 - (2) Hong Kong External Trade Statistics : Various Years
 - (3) Information on the glove industry supplied by the Department of Commerce and Industry, Government of Hong Kong.

Very sharp increases were recorded in output up to 1970, and then growth slowed down for the next 2 years, to surge forward again in 1973 (according to preliminary figures). The growth in the number of establishments and persons employed stopped in 1970 and there has been a considerable increase in productivity.

Part of the increase in productivity has come about because of a change from the more embroidered "craft-conscious" fashion lines to the more long run type of glove. Sales of knit gloves fell 30 per cent in 1972. Another factor has been the increased seasonality of the market. One factory, which previously employed 450 workers, now employs only 130 and they are relatively highly skilled. Most piecework, sub-assembly and 70 per cent of finished glove sewing is subcontracted out. According to the Department of Commerce and Industry, as much as 30 per cent of the output of dress gloves is produced in single proprietor establishments employing less than 10 persons. Another dress glove manufacturer complained that nearly all his U.S. customers had by November, 1973, moved to Taiwan where labour is now almost as skilled as in Hong Kong and much less expensive. Most of the major dress glove producers had by the end of 1973 reverted to subcontracting to the small establishments which characterised the industry in the mid 1960's. Dress glove production is, after all, not ideally suited to factory methods. Knit gloves, for instance, go through 30 stages of handling. Workers need constantly to change between perhaps as many as 35 different styles marketed by one firm.

It is simpler to contract out the bulk of the piece work to cottage industry and employ a few highly skilled personnel in the factory to cut, stitch and apply finishing touches.

8.22. Leather Garments

This is one of the lesser known but most successful industries of the Colony. In June, 1973, there were only 13 establishments employing 639 workers. The product, however, is a high value one and ideally suited to Hong Kong's current situation of increased cost and increased quality. Exports in the first 6 months of 1973 totalled US\$13.5 million, about twice as much as during the corresponding period of 1972. Even after allowing for the increased price of the material, this is a considerable achievement. The upgrading was continuing in early 1974. The leading producer of cheaper lines was gradually phasing out and transferring his operation to Taiwan, while manufacturers of expensive fashion lines aiming at the European and American markets were expecting an upsurge of orders in 1974.

8.23 Case Study Company (figures in U.S. dollars refer to 1973)

1. Products: Leather garments
2. Nationality: European / Hong Kong
3. Ownership: Wholly owned subsidiary of a trading company which is partly Hong Kong and partly European owned.
4. Annual sales : \$2,970,000
5. Value added: \$2,178,000
6. Numbers employed: Men : 50
Women: 100
Total 150
Labour force highly skilled with excellent productivity.
7. Average monthly wage: \$ 132
8. Total annual wage cost : \$237,600
9. Non-wage value added : \$1,940,400
10. Sales per employee : \$19,800
11. Value added per employee : \$14,520
12. Non-wage value added per employee : \$12,936
13. Electricity and water consumption: Negligible.
14. Size of factory : 1,400 sq.metres.

- 15 Space per employee : 9.3 sq.metres.
16. Transport : Materials : Sea. .
Final Products : Air.
- 17 Purchase of material : Commercial. Most of the leather comes from Australia and the U.S. Locally tanned leather is used only when the customer makes a request with such short notice that overseas leather cannot be obtained in time. Also, the buyer must agree to the use of Hong Kong tanned leather.
- 18 Exports : Commercial : 80 per cent of output goes to the U.S. with the remainder equally divided among Australia, Japan and Europe. The company has maintained itself in the cheaper lines by opening a trading office in Korea which passes on orders to manufacturers there. There is at present no intention to transfer operations as it would take several years before the labour force could be trained up to Hong Kong levels.

The company has its own highly successful design department.

The gap between ex-factory price and final retail selling price is of the order of 150 per cent.

In addition to trade exhibitions, sending of samples etc. much selling is done to buyers who visit Hong Kong. This is a very important advantage of being located in the Colony.

8.3 Korea

8.31 Leather Garments

These are comparatively new items for Korea. So far the industry has concentrated on less expensive items. The average f.o.b. price for a jacket was about \$28 in January 1974 compared with between \$40 and \$50 from Hong Kong. Exports in 1973 rose 60 per cent despite limitations on material supply caused by the U.S. restriction on beef prices (this led to a number of American slaughter houses being closed and the consequent shortage put up landed rawhide prices by 25 per cent in three months). Most of the larger companies embrace both tanning and sewing facilities. One company, employing 1,800 persons, exported \$15 million worth in 1973.

8.32 Gloves

The basic statistics of the Korean glove industry in 1972 are as follows (in thousands of U.S. dollars):

Ex-factory sales	6,567
Exports f.o.b.	6,728
Number of establishments	26
Number employed	2,101

Korea's strongest item is work gloves, and gloves for other special purposes such as sports. These categories accounted for 68 per cent of total exports in 1972. A number of companies do make dress gloves though only in small quantities. The largest item is in vinyl gloves where the two major companies exported just over \$1 millions worth in 1973. Firms are very sensitive to changes in the relative prices of dress gloves and other types. Dress gloves are more costly to produce, and the reduction in price differential led a third company to switch to sports items in mid 1973. The most important market for gloves of all types is the U.S. which accounted for 85 per cent of exports in 1972.

8.33 Case Study Company (figures in U.S. dollars refer to 1972)

1. Products : Industrial working gloves
2. Nationality: U.S.
3. Ownership: Wholly owned subsidiary
4. Annual sales : \$606,444
5. Value added: \$230,448
6. Numbers employed:

Men	145
Women	<u>252</u>
Total	397
7. Average monthly wage : \$28
8. Total annual wage cost : \$133,392
9. Non-wage value added : \$97,056
10. Sales per employee : \$1,528
11. Value added per employee : \$580
12. Non-wage value added per employee : \$244
13. Value added /sales : 38.0%

14. Wage costs /sales: 22.0%
15. Electricity consumption : 359,000 kwh per annum
16. " " per employee : 904 kwh per annum
17. Water consumption: 11.3 million litres p.a.
18. " " per employee : 28,500 litres p.a.
19. Transport requirements : Materials : Sea
Final products : Sea (containers)
20. Purchase of materials : Commercial. Has own tannery
(employs 294 persons). Rawhide from Australia. Cotton
fabric purchased locally.
21. Exports: All sales exported to U.S. through parent
company.

8.4 Industry Evaluation.

A separate industry evaluation is unnecessary as there is only one case study for each sub-sector.

9. HANDBAGS AND TRAVEL GOODS

9.1 Hong Kong

9.1.1 The Industry

The goods manufactured by this industry include handbags, trunks, suitcases, travel bags, wallets and purses. The growth of the industry is shown in the following table.

	<u>Exports (U.S \$000)</u>	<u>Establishments</u>	<u>Employment</u>
1960	3,268		
1965	7,513		
1969	23,575		
1970	28,906		
1971	37,377	423	7,276
1972	49,344		
1973	78,740	481	7,317

Annual rate of growth 1960-1973: 28 per cent

Sources. Government of Hong Kong: External Trade Statistics
Labour Department
Department of Commerce and
Industry.

9.1.2 Case Study Company (figures in U.S. dollars refer to (1973)).

1. Products: Soft lined suitcases, travel bags for airlines, other travel bags.
2. Nationality: Hong Kong
3. Ownership: Wholly local,
4. Annual sales: \$690,000
5. Value added: \$345,000
6. Number employed: Men 50
Women 100
Total 150
7. Average monthly wage: \$102
8. Total annual wage cost: \$183,600
9. Non wage value added: \$161,400
10. Sales per employee: \$4,600
11. Value added per employee: \$2,300

7. FOOTWEAR

The footwear industry is of special interest to this study. It is highly labour intensive and the experiences in Hong Kong and Korea in recent years give clear indications of the consequences of international differentials in wage rates.

7.1 Hong Kong

The Department of Commerce and Industry of the Hong Kong Government has made a great deal of detailed information on the footwear industry available to the consultants. This permits the setting out of data on an industry-wide basis. The following cash figures are in US dollars, and refer to the year ending June, 1972.

1. Total number of companies at beginning of 1973: 271; 63 companies were established before 1960, 72 between 1960 and 1965, 110 between 1965 and 1970, and 26 between 1970 and the end of 1972. The total amount of capital invested was \$18 million, or \$66,421 per firm. All but two of the firms were wholly Hong Kong owned. The two exceptions were joint ventures with a total capital investment of \$285,000. 152 of the companies were sole proprietorships. Despite being 56 per cent of the total, these small factories represented only 13.5 per cent of the capital invested.

2. Annual sales: \$42,859,180

of which: textile uppers and rubber soles	\$15,246,230
wholly plastic footwear	8,986,000
wholly plastic house footwear	4,660,800
other house footwear	2,031,300
wholly rubber footwear	2,045,400
leather uppers and rubber soles	3,567,400
leather uppers and leather soles	144,300
other footwear	4,826,600
parts and accessories	1,351,150

3. Value added: \$20,933,980.

12. Non - wage value added per employee: \$1,076
13. Electricity consumption: 236,200 kwh per annum
14. " " per employee: 1,575 kwh per annum
15. Water consumption: Negligible.
16. Size of factory: 929 sq.metres.
17. Space per employee: 6.2 sq.metres.
18. Purchase of materials: commercial.Canvas, nylon and PVC come from Japan. Sponge material is obtained locally or from Taiwan
19. Sales: All exported, all by direct order from the buyer. Speciality line is bags for airline companies distributed world wide. Could produce twice as much with no additional investment.
20. Transport: Materials : sea
Final products: air (about 50%)
21. Shortages and bottlenecks in Hong Kong: PVC material difficult to obtain.
22. General: industry is very flexible concerning the degree of substitution between capital and labour especially at the cutting stage.

Source: Field interview

9.2 Korea

9.21 The Industry

The basic statistics for the industry in 1972 are as follows (in thousands of U.S. dollars).

Ex factory sales		8,046
of which: Trunks	2,396	
Bags	3,546	
School bags	178	
Briefcases	9	
Handbags	1,723	
Wallets and other pocket cases	194	
Exports f.o.b.		9,980
Number of establishments		47
Employment		2,326

Sources: (1) Economic Planing Board: Report on Mining and Manufacturing Survey, 1972

(2) Office of Customs Administration: Statistical Yearbook of Foreign Trade, 1972.

9.22 Case Study Companies (figure in U.S. dollars refer to 1972).

	C	O	M	P	A	N	I	E	S
	A			B			C		
1. Products	Plastic travel bags			Vinyl handbags and purses			Handbags		
2. Nationality	Korean			Korean			Korean		
3. Ownership	Wholly local			Wholly local			Wholly local		
4. Annual sales	\$63,698			\$138,452			\$810,754		
5. Value added	\$39,135			\$57,603			\$261,063		
6. Numbers employed									
Men	17			41			149		
Women	8			30			109		
Total	25			71			258		
7. Average monthly wage	\$ 47			\$ 37			\$ 28		
8. Total annual wage cost	\$14,100			\$31,524			\$86,688		
9. Non-wage value added	\$25,035			\$26,079			\$174,375		
10. Net profit	\$15,602			\$ 1,403			\$ 35,132		
11. Fixed assets	\$24,542			\$141,295			\$148,638		
12. Plant and machinery	\$14,047			\$42,032			\$60,942		
13. Sales per employee	\$ 2,548			\$ 1,950			\$ 3,142		
14. Value added per employee	\$ 1,565			\$ 811			\$ 1,012		
15. Non-wage value added per employee	\$ 1,001			\$ 444			\$ 676		
16. Fixed assets per employee	\$ 982			\$ 1,990			\$ 576		

17. Plant and machinery per employee	\$ 562	\$ 592	\$ 236
18. Value added/sales	61.4%	41.6%	32.2%
19. Wage costs/sales	22.1%	22.8%	10.7%
20. Profit/sales	24.5%	1.0%	4.3%
21. Electricity consumption	12,400 kwh p.a.	24,000kwh p.a.	822,000 kwh p.a.
22. Electricity consumption per employee	496 kwh p.a.	338 kwh p.a.	3,186 kwh p.a.
23. Water consumption per employee p.a.	0.6 million litres	1.1 million litres	38.2 million litres . .
24. Water consumption per	24,000 litres	100,000 litres	148,000 litres
25. Purchase of materials	Commercial. All purchased from local wholesaler. Complained of speculative hoarding by traders.	Commercial. All purchased from local manufacturer. At times short of materials.	Commercial. 50% imported from Japan.
26. Sales	Produces as subcontractor to large company. Does not know if products exported or not. Complained of acute competition but business profitable.	Supplies trading companies by direct order, competition among manufacturers very acute. Lacks sufficient market information to export directly	Exports by order from overseas buyer. Exports ex-factory 1972 \$683,000 (84% of sales).

27. Transport requirements: Sea for both materials and final products
Source: Field interviews.

9.3 Industry Evaluation

1. Employment: Average non-wage value added per employee: \$799
Proportion of men among operatives: 54.2%
2. Transport requirements: sea for materials; mostly sea for final products.
3. Nature of the market: Market dominated by large buyers for retail chains. Handbags, because of larger number of fittings and higher degree of decoration, tend to be more labour intensive. The industry is liable to changes in fashion but these are unlikely to necessitate major changes in the production process.
4. Average electricity consumption per employee: 1,399 kwh p.a.
5. " water " " " : 91,000 litres p.a.
6. " space per employee (Hong Kong) : 6.2 sq.metres.

10. UMBRELLAS

10.1 Hong Kong

10.11 The Industry

Data have been provided by the Department of Commerce and Industry for the umbrella industry as a whole. Unfortunately it relates to 1969. Data on sales, number of establishments and employment are available for 1973 and this has been combined with statistical relationships calculated from the 1969 data to present what is probably a reasonably accurate and up to date picture of the industry (figures are in U.S. dollars and refer to 1973 unless otherwise specified).

1. Number of establishments : 69 (5 manufacturing umbrella parts and 64 producing umbrellas).
2. Age of industry: 26 establishments were started before 1960 and 34 before 1965. Since 1969, the number of establishments has declined from 77 to 69.
3. Ownership : There is no foreign participation in the industry. All except one of the companies are either single proprietorships or partnerships. The industry is characterised by small to medium scale operation in all factories.
4. Annual sales: 1969: \$9,924,000; 1973: \$17,717,000
Average sales per factory have risen from \$128,883 to \$256,768.
5. Value added : \$6,762,600
6. Numbers employed (1973): Men 524
Women 909
Total 1,433 (1969 : 1,911)
In addition, about 600 casual outworkers are employed for the sewing of umbrella covers.
7. Average monthly wage : \$84 (including casual outworkers)
8. Total annual wage cost: \$2,049,264
9. Non-wage value added : \$4,713,336.
10. Net profit (on manufacturing operation only) : \$2,903,816
11. Fixed assets : \$383,000

12. Machinery (at cost) : \$335,000. The amount of equipment employed by the industry is very small. In 1969 it was reported that, of the factories producing umbrellas as opposed to parts, over half had no investment in machinery at all - the operation consisted purely of hand assembly on a bench using simple tools.
- 13 Sales per employee (the employment figure used in this and in the following ratios includes casual outworkers estimated at 600) : \$8,715.
- 14 Value added per employee : \$3,326
15. Non-wage value added per employee : \$2,318
16. Fixed assets per employee : \$188
- 17 Machinery (at cost) per employee : \$165
18. Value added /sales : 38.2%
19. Wage cost /sales : 11.6%
20. Ex-factory profit / sales : 16.4%
21. Space required: 14,650 sq.metres.
22. Space per employee : 7.2 sq.metres.
- 23 Purchase of materials : The materials used by manufacturers of umbrellas consist almost entirely of semi- finished components and manufactured articles, e.g. shafts, ribs, handles, cotton, nylon and other fabrics. Umbrella shafts, man made fibres and P.V.C. sheeting are mostly imported, and cotton fabrics, ribs, handles and other miscellaneous parts are manufactured locally. About 75 per cent of materials are imported.
For umbrella parts, the main materials are sheet metal, iron wire and plastic moulding compounds. These are all imported,mainly from Japan and Europe. Parts manufacturers also use imported umbrella shafts which they affix to ribs they themselves produce to form complete frames. 97 per cent of materials are imported.
Among the main sources for imported umbrella parts are Japan (45 per cent) China (27 per cent) and Taiwan (32 per cent). Taiwan emerged as a source country since the mid 1960s.

24. Export sales: Nearly all sales are exported. Firms produce to order mostly from local traders who act as intermediaries with foreign buyers. The growth of exports since 1964 is as follows (in thousands of U.S. dollars):

1964	2,783
1969	8,089
1973	16,493

Average annual rate of growth, 1964-1973 : 22 per cent.
Main export markets are the U.S. and the E.E.C. Small quantities of parts are exported to Africa and South East Asia.

25 Transport requirements : Sea for both materials and final products.

Sources: Compiled from information provided by the Departments of Commerce and Industry, Census and Statistics, and Labour of the Government of Hong Kong.

10.2 Korea

10.21 The Industry.

The basic statistics of the umbrella industry in 1972 are as follows (in thousands of U.S. dollars):

Ex-factory sales		2,970
of which:		
	Umbrellas	508
	Parasols	1,374
	Beach Parasole	2
	Metal ribs	818
	Other parts	268
Exports f.o.b.		1,479
Number of establishments		33
Number employed		1,225

Sources: Economic Planning Board: Report on Mining and Manufacturing Survey, 1972.

Office of Customs Administration : Statistical Yearbook of Foreign Trade, 1972.

The largest company in the industry (responsible for 21 per cent of sales) produces parts (mainly ribs) which are mostly exported directly rather than used by the manufacturers of umbrellas. These are generally small companies with an average output and employment of \$74,000 and 30 respectively. The three largest firms are Japanese subsidiaries with average sales of \$360,000 and average employment of 130. These companies are located in the Masan Free Zone (see Section 5.3) and are favoured by the incentives offered to foreign owned establishments located there. In contrast, Korean manufacturers must, according to one of them, bear the full brunt of rising material costs.

10.22 Case Study Company (figures in U.S. dollars refer to 1972).

1. Products: Metal ribs and other parts for umbrellas.
2. Nationality : Korean
3. Ownership : Wholly local
4. Annual sales : \$610,970
5. Value added : \$410,951
6. Numbers employed :

Men	132
Women	<u>126</u>
Total	258
7. Average monthly wage : \$34
8. Total annual wage cost : \$105,264
9. Non-wage value added : \$305,687
10. Sales per employee : \$2,368
11. Value added per employee : \$1,593
12. Non-wage value added per employee : \$1,185
13. Electricity consumption : 164,000 kwh per annum
14. " " per employee : 636 kwh per annum
15. Water consumption : 4.1 million litres per annum.
16. Water consumption per employee : 16,000 litres per annum.
17. Purchase of materials : Commercial, nearly all from Japan.
18. Export sales : 80 per cent of sales are exported, mostly to Japan and the U.S. The remainder are used by local umbrella manufacturers. The factory produces to order.

In 1973 it was estimated that exports had risen to \$700,000. The prominent buyers for the industry are Japanese, though the U.S. is the most important final market (51 per cent of exports in 1972).

19. Transport requirements : Sea for both materials and final products.

Source: Field interview

10.3. Industry Evaluation

1. Employment: Average non-wage value added per employee: \$1,751

Proportion of men among employees : 43.9%

2. Transport: Sea for both materials and final products.
3. Nature of the market: Production appears to be dominated by small companies in both centres which were examined. Very little investment is required. The consequent industrial structure depends a great deal on trading companies as export outlets. Demand is subject to fashion but not in a way which requires fundamental or expensive changes in production methods. The processes for the manufacture of umbrella parts and umbrellas are different and in a majority of cases not combined within the same establishment. In both Hong Kong and Korea, however, there was very little difference in the non-wage value added per employee between umbrella parts manufacture and umbrella manufacture.
4. Average electricity consumption per employee : 636 kwh per annum
5. Average water consumption per employee : 16,000 litres p.a.
6. Space per employee (Hong Kong) : 7.2 sq.metres.

11. CARPETS AND RUGS

11.1 Hong Kong.

11.11 The Industry.

1973 was a boom year for the Hong Kong carpet industry, especially in the hand-made rather than machine-made lines. Substantial domestic sales, following from the increase in building activity, have been the base from which increased exports have been launched. Up to 1973, 1969 was the peak year for the industry's exports with overseas sales of U.S \$2.2 million. Exports in 1970, 1971 and 1972 were under \$2million per year, but preliminary figures suggest that 1973 will show figures almost double those of 1969.

At the end of 1972, there were 8 carpet manufacturers in the Colony. Of them, 4 were operating on a small scale with less than 20 employees per firm. The experiences of the remaining 4 firms are discussed as follows :

Company A is the case study company and is discussed below.

Company B is of the view that low taxation and high productivity in Hong Kong offset the disadvantages of higher overheads and labour costs than in the main competitor, Taiwan. This is particularly true for hand-made items, and in late 1972 the company switched production from machine to hand-made units. Total employment is 120 and the company takes three months to train a worker. Wool is bought from New Zealand on a long term contract basis, so that the company does not need to carry large inventories to overcome supply shortages.

Company C, employing 70 persons, manufactures exclusively for the local market and primarily for the tourist trade. Price increases in raw materials are making it difficult to break into export markets.

Company D, after manufacturing in Hong Kong for 11 years, relocated production in Taiwan as competitiveness was being eroded. The main problem was the amount of space required for carpet manufacture (see case study below), and rapid increases in rent. Labour costs are less of a factor. All items are hand made, and despite a reduction of 50 per cent in local labour costs the operation required a transfer of considerable numbers of Hong Kong supervisors for training and management purposes.

4. Numbers employed:

	<u>Men</u>	<u>Women</u>	<u>Total</u>	<u>Monthly wage</u>
Administrative	744	202	946	\$127
Technicians	24	-	24	143
Supervisors	455	77	532	125
Craftsmen	225	51	276	135
Operatives (semi-skilled)	4,210	4,454	8,664	110
Operatives (unskilled)	106	134	240	77
Other workers	571	478	1,049	74
Apprentices	<u>8</u>	<u>9</u>	<u>17</u>	<u>60</u>
Total	6,343	5,405	11,748	\$ 109

5. Total annual wage cost: \$15,330,000

Fringe benefits 260,200

Total \$ 15,590,200

6. Non-wage value added: \$5,343,780.

7. Net profit: \$2,632,500.

8. Fixed assets (at cost): \$8,325,400.

9. Plant and machinery (at cost): \$4,827,000.

10. Sales per employee: \$3,648.

11. Value added per employee: \$1,782.

12. Non-wage value added per employee: \$455.

13. Fixed assets per employee: \$709.

14. Plant and machinery per employee: \$411.

15. Value added/sales: 48.8%.

16. Wage costs/sales: 35.8%.

17. Profit/sales: 6.1%.

18. Space occupied: 139,000 sq.metres.

19. Space per employee: 11.83 sq.metres.

20. Electricity consumption: 51,733,000 kwh per annum.

21. Electricity consumption per employee: 4,400 kwh per annum.

22. Water consumption: 369.3 million litres per annum.

23. Water consumption per employee: 31,400 litres per annum.

24. Rent/sales: 2.7%.

11.12 Case Study Company (figures in U.S dollars refer to 1973).

1. Products: Hand made carpets for export, and the local market.
2. Nationality : Hong Kong.
3. Ownership: Subsidiary of Hong Kong trading company. There are associated companies in Indonesia, Malaysia, the Philippines, Singapore and Thailand. The Hong Kong operation concentrates on high quality items.
4. Annual Sales : \$3,300,000.
5. Value added : \$1,815,000.
6. Numbers employed : Men 210 Workers take about 4
 Women 490 months to train.

 Total 700
7. Average monthly wage : \$132.
8. Total annual wage cost : \$1,108,800.
9. Non-wage value added : \$706,200.
10. Sales per employee: \$4,714.
11. Value added per employee: \$2,593.
12. Non-wage value added per employee: \$1,009.
13. Value added / sales: 55.0%.
14. Wage costs / sales : 33.6%.
15. Electricity consumption is high but not necessarily representative of what would occur if more space were available. After washing, the carpets must be dried in electric ovens, but in other countries, associated companies dry the carpets in the open air.
16. Water consumption : Heavy : 109,1 million litres per annum.
18. Water consumption per employee : 155,900 litres per annum.
19. Space per employee : 21.8 sq.metres.
20. Purchase of materials : Commercial wool is the prime material and is purchased from the U.K. and New Zealand. Requirements are for about a million pounds (454,000 kilograms) per year.
21. Sales : 40% of sales are local. This is expected to continue as Hong Kong living standards rise. The exports are very wide spread - the U.S. is the biggest customer with 15% of the total. All output is produced to order. The company employs its own designers who consult with the client before manufacture begins. Many of the orders are of a high prestige nature.
22. Transport : Materials: Sea

Final products : Air.

23. Supplies purchased locally : Some machinery, dyeing and packing materials.
24. General : The process used is fairly mechanical. Small hand machines are used for weaving, cutting and knitting. If the operations were to be done without these machines, as it was previously in Hong Kong, then approximately 1,200 workers would be required to produce the same output.

Source: Field interview.

11.2. Korea.

11.21. The Industry.

The Korean industry is very much younger than its Hong Kong counterpart. Exports did not begin until the late 1960s, and since then the industry has shown steady growth, with exports dominated by two companies.

Basic statistics for 1972 are as follows (in thousands of U.S. dollars) .

Ex-factory sales	1,139
Exports f.o.b.	422
Number of establishments	7
Number employed	609

Sources : (1) Economic Planning Board: Report on Mining and Manufacturing Survey 1972.

(2) Office of Customs Administration : Statistical Yearbook of Foreign Trade, 1972.

The factor which enabled the industry to enter the export markets was the sharp increase in domestic demand, following the rise in the number of Western-Style homes. Traditional Korean houses rely on under-floor heating. With the increasing standard of living more and more of the local population are living in Western houses. These normally have a form of heating which leaves the floor cold - hence the growing demand for carpets.

11.22 Case Study Companies (Figures in U.S. dollars refer to 1972).

	C	O	M	P	A	N	I	E	S
	A					B			
1. Products	Carpets					Carpets			
2. Ownership and Nationality.	Korean					Korean			

	A	B
3. Annual Sales	\$921,527	\$45,000
4. Value added	\$602,373	\$21,927
5. Numbers employed Men	110	2
Women	355	7
Total	465	9
6. Average monthly Wage:	\$32	\$28
7. Total annual Wage Cost	\$178,560	\$83,024
8. Non - wage value added	\$423,813	\$18,903
9. Sales per employee:	\$1,982	\$5,000
10. Value added per employee:	\$1,295	\$2,436
11. Non-wage value added per employee:	\$911	\$2,100
12. Value added / Sales:	65.4%	48.7%
13. Wage cost / Sales:	19.4%	6.7%
14. Electricity consumption (kwh p.a)	626,062	45,262
15. Electricity Consumption (kwh p.a)	1,346	5,029
16. Water consumption (litres p.a.)	20.6 million	2.9 million
17. Water consumption per employee (litres p.a.)	44,300	322,200
18. Materials : Nearly all raw materials and machinery are imported from Japan. All manufacturers were by the beginning of 1974 complaining of the difficulty in obtaining raw materials.		
19. Sales : The main export market is the U.S. (68 per cent of total exports in 1972), but most sales are channelled through		

Japanese buyers. Manufacturers complained of a 40 per cent sales tax on local sales (carpets are classified as a luxury).

20. Transport requirements: Materials : Sea

Final Products: Mostly Sea.

Source : Field interviews.

11.3 Industry Evaluation.

1. Employment: Average non-wage value added per employee: \$1,340

. Proportion of men among employees: 25.3%.

2. Transport requirements : Materials : Sea.

Final Products : Depends on value. High value wool carpets by air; lower value machined carpets made from artificial fibres by sea.

3. Nature of the market : Very varied. There are at least two separate markets, one for high value carpets and the other for low value ones. In attempting to penetrate either, an industry is assisted by having a rapidly growing domestic market. The growth is directly related to the level of building activity. For low value carpets, a greater degree of mechanisation is possible than for high value ones. Educated and dextrous labour can be relatively easily trained. There is, however, a need for expertise in management and market contacts which is very scarce. The most promising source of this is the Hong Kong case study company which already has several overseas operations associated with it.

4. Average electricity consumption per employee (kwh p.a.): 6375.

5. Average water consumption per employee (litres p.a.): 174,133.

6. Space per employee : 21.8 sq.metres.

12. PLASTIC PRODUCTS

12.1 Introduction.

Plastic goods, comprising toys, flowers and foliage, and household items, have for some time been one of the most important exported manufactures of Asia to the developed countries. In 1973 a series of dramatic events occurred on the supply side, mainly concerning raw materials, which have seriously altered the future growth prospects of the industry.

12.2 Hong Kong.

12.21 The Industry to the End of 1972.

In terms of number of factories, employment and value of exports, the industry is the second most important in the Colony, the first being textiles and clothing. During the early part of the 1960s, the industry's largest export item was artificial flowers and foliage, but by the mid sixties, toys and dolls assumed the ascendancy which it has held since. The growth of the industry from 1960 to the end of 1972 is shown in the following table

Growth of Hong Kong Plastics Products Industry 1960-1972

	<u>Exports</u> (in thousands of U.S dollars)	<u>No. of</u> <u>Establishments</u>	<u>Employment</u>
<u>A Industry as a Whole</u>			
1960	44,728	369	15,236
1965	102,188	1,232	43,140
1969	200,962	1,981	68,690
1971	250,328	2,593	69,276
1972	281,475	NA	NA

Annual average rate of growth of exports 1960-1972 : 16.5 per cent.

Percentage growth in employment 1960-1971 : 455 per cent.

Percentage growth in exports 1960-1971 : 529 per cent.

	<u>Exports</u> (in thousands of U.S dollars)	<u>No. of Establishments</u>	<u>Employment</u>
<u>B. Toys and Dolls</u>			
1960	16,324	158	6,499
1965	52,400	409	16,910
1969	117,214	780	34,144
1971	169,016	1,152	36,786
1972	185,738	1,152	37,046

Annual average rate of growth of exports, 1960-1972 : 22.5 per cent.

Percentage growth in employment, 1960-1972 : 470 per cent.

Percentage growth in exports, 1960-1972 : 1,038 per cent.

C Plastic Flowers and Foliage

1960	24,323	65	5,403
1965	43,422	326	14,927
1969	60,338	378	17,997
1971	57,869	501	12,264
1972	59,836	476	12,877

Annual average rate of growth of exports, 1960-1972 : 7.2 per cent.

Percentage growth in employment, 1960-1972 : 138 per cent.

Percentage growth in exports, 1960-1972 : 146 per cent.

D Other Plastic Products

1960	4,081	146	3,334
1965	6,366	497	11,303
1969	23,410	823	16,549
1971	23,443	940	19,613
1972	35,901	NA	NA

Annual average rate of growth of exports, 1960-1972 : 20 per cent.

Percentage growth in employment, 1960-1971: 488 per cent.

Percentage growth in exports, 1960-1971 : 474 per cent.

Note N.A = Not available.

Sources : (1) Hong Kong External Trade Figures : Various Years.

(2) Department of Labour, Government of Hong Kong.

(3) Information provided by the Federation of Hong Kong Industries.

One noteworthy point which is clear from the table is that other than plastic toys and dolls the industry has not shown the increases in the value of exports per employee characteristic of many of the Colony's industries.

12.22 The Raw Materials Supply Crisis of 1973.

On the face of it, 1973 was a highly successful year for the Hong Kong Plastics industry. Although employment fell by 1,323 in toys and dolls and by 2,010 in artificial flowers and foliage, the value of exports of both these commodities rose sharply to \$238,090,000 and \$86,752,000 respectively in the first 11 months of the year alone. For other plastic products employment at the end of 1973 was 23,970, 4,357 higher than two years previously. Export sales showed the smallest increase to \$36,988,000. Despite this impressive growth in the value of sales, sources within the industry estimate that much of this consisted of raw material price increases being passed on. Even after allowing for the inevitable exaggeration of such internal estimates, it seems that the volume of exports actually fell by about 15 per cent. If this estimate is correct it means that manufacturers succeeded in passing on about one-third of the increase in their material costs.

More than the increases in price, however, the industry claims to have been severely hit by the lack of availability of materials. In 1972, Japanese suppliers accounted for about 60 per cent of the volume of polystyrene imported into Hong Kong. The U.S. provided about 20 per cent and the rest was shared among EEC Countries, Canada, Korea and Taiwan. The trade figures are, however, deceptive as Hong Kong is used as a major trans-shipment centre for the rest of South East Asia, and even further afield. Of the polystyrene consumed by the local industry, it is estimated that as much as 80 per cent comes from Japan. For various reasons the shortfall in supplies from this source during the first 6 months of 1973 was of the order of 30 per cent. Just as the situation began to ease in the Autumn, the Middle East war occurred in October and made prospects for 1974 appear bleak.

At the time of writing the prime causes of the shortage during the earlier part of 1973 are still a matter of controversy among industrialists in the Colony. The chief reason will almost certainly be among the following :

(a) Changes in the Japanese supply situation.

For several years the Hong Kong plastics industry, in common with that of other Asian countries, relied on supplies of polystyrene, polyethylene, and PVC from Japan which were evidently the surplus produce of that country's huge petrochemical industry. Because they were a surplus, the Japanese were consistently able to underbid rivals from Western Europe and North America, and sell the supplies at virtually marginal cost. At the beginning of 1973 it should perhaps have been clear that the end of this state of affairs was in sight. Even Japanese toymakers found that suppliers were unable to offer them more than 70 per cent of estimated requirements. The specific factors bringing about this situation were the following ;

(i) By the middle of the year, the oil shortage predicted by some Japanese economists was in evidence. Stocks had fallen to about 2 months requirements.

(ii) Pollution had come of age as a major political factor. Benzene, one of the principal hydrocarbons used to manufacture plastics, was increasingly demanded as an aromatic additive to replace lead in gasoline. Further, there was mounting public pressure against 16 of the 17 PVC manufacturers who use mercury as an agent during the final stages of PVC synthesis. The plants have been instructed to change to another method within 3 years, and in the meantime their output is being strictly regulated.

(iii) A major fire occurred in May at a plant responsible for about 8 per cent of the total Japanese output of ethylene, which is processed into an important ingredient of polystyrene.

The result of these events and trends was that Japanese exports for the third quarter of the year were 33 per cent less than had been estimated at the beginning of 1973. This estimate was in itself a shortfall compared with what might have been expected from the trend of earlier years.

(b) Lack of foresight by Hong Kong manufacturers.

Partly because of the structure of the industry, the carrying of substantial inventories is not a practical possibility for many firms. However, even large companies and traders can justifiably be accused of lack of foresight.

Japanese commentators were warning of the impending shortage in late 1972, and yet purchases of raw materials fell off significantly during the winter in accordance with the normal pattern of previous years (the main buying period is the spring and early summer for the manufacture of orders for the following Christmas season in Europe and North America). The situation at that particular time was not eased by the fact that the Hong Kong stock exchange was enjoying a bull market, and many local businessmen used working capital and letters of credit for the 1973 production year to invest in stocks and shares.

(c) Hoarding and speculation by Hong Kong traders and larger manufacturers.

One major plastics manufacturer estimates that only 20 per cent of the industry's raw material supply is imported directly by producers. The rest is imported by trading companies. The extent to which there has been hoarding and speculation is a matter of dispute. It is almost certain, however, that there was some degree of this. Officials at the Department of Commerce and Industry took the situation sufficiently seriously to organise a pooling of resources among smaller manufacturers to prevent traders being able to sell to the highest bidder. The fact that the shortage was world-wide also meant that holders of stocks in the Colony were able to re-sell abroad, often at a substantial profit. Again the extent to which this actually took place is debated, but the value of re-exports of plastic materials in the first 11 months of 1973 rose 110 per cent compared with the same period a year earlier. Re-exports as a whole rose 57 per cent.

By the late Autumn, supplies were beginning to recover as the Japanese began to draw from the overseas petrochemical complexes in which they had invested, and the U.S. was being tapped for the first time as a major alternative. This was reflected in Hong Kong landed prices. By mid October, polystyrene had fallen from the July level of \$47. per lb. to \$37 per lb. and polyethylene from \$31.5. to \$27.6. The crisis following the October war in the Middle East more than

reversed the situation. By mid December, 1973, landed prices for polystyrene were \$67 per lb. and for polyethylene \$45.3 per lb. Efforts made by the powerful Chinese Manufacturers' Association to secure longer term supplies were in vain.

The implications of the situation for the local industry are serious. As noted above, employment fell in the artificial flowers and toy divisions by 2,333 during the course of 1973. Official statistics for the period since the more recent oil crisis are not available at the time of writing, but it is estimated within the industry that another 77 plants have ceased operation. The outlook for 1974 is that many other smaller establishments will have difficulty in maintaining operations.

This sequence of events has been described in detail because it is not peculiar to Hong Kong nor indeed to the plastics industry. It illustrates very clearly the vulnerability of import-export manufacturing to shortages in materials. The relative shortage of petroleum products is likely to continue for some years and this affects not only plastic but textiles and electronics.

12.23 Case Study Companies (figures in U.S dollars refer to 1973).

	C O M P A N I E S		
	A	B	C
1. Products	Plastic household products	Plastic Christmas trees	Artificial flowers and foliage
2. Nationality and ownership	Hong Kong	Kong Kong	Hong Kong
3. Annual sales	\$4,134,000	\$3,937,000	\$1,181,000
4. Value added	\$1,653,600	\$1,968,500	\$767,650
5. Numbers employed:			
Men:	360	300	100
Women:	240	80	100
Total:	600	380	200
6. Average monthly wage *	\$123	\$180	\$91

25. Purchase of materials: The industry's major suppliers of rubber and rubber sheets are Singapore and Malaysia. Suppliers of synthetic rubber include Japan, Canada and the US. Japan is the main supplier of plastic materials. Cork and cork sheets are imported from Portugal, while the US, Japan and West Germany are major suppliers of chemicals. Sole leather bellies and bards come from Australia, while upper leathers are imported from Australia, US, Thailand, Japan, Indonesia, New Zealand, Taiwan and China.
26. Supplies purchased locally: Moulded rubber heels and soles, textiles for uppers, textiles for linings, cardboard, china clay.
27. Exports: During the early to middle years of the 1960s the rate of growth of exports was 13.2 per cent per year. From 1969 onwards, growth slowed down until 1972, when exports fell for the first time.

Exports of Footwear 1960 - 1973 (\$ million)

	<u>Plastic Footwear</u>	<u>Leather Footwear</u>	<u>Other Footwear</u>	<u>Total</u>
1960	10	14	90	114
1965	45	7	99	151
1966	51	13	120	184
1967	69	12	138	219
1968	88	14	169	271
1969	91	17	187	295
1970	113	18	171	302
1971	160	17	174	351
1972	127	13	164	304
1973*	N.A	N.A	N.A	266

N.A = not available separately

* Preliminary estimate

The main reason for the decline which started in 1972 and continued even more strongly in 1973 is increasing competition from Taiwan and Korea. The success of this competition does stem from the fact that these countries have lower wage costs in this highly labour intensive industry. The Hong Kong ind-

	A	B	C
7. Total annual wage cost	¥885,600	¥820,800	¥218,400 (334,886**)
8. Non-wage value added	¥768,000	¥1,147,700	¥549,250 (432,764**)
9. Sales per employee	¥6,890	¥10,360	¥5,905 (984**)
10. Value added per employee	¥2,756	¥5,180	¥3,838 (640**)
11. Non-wage value added per employee	¥1,280	¥3,020	¥2,746 (361**)
12. Value added / sales	40.0%	50.0%	65.0%
13. Wage cost / sales	21.4%	20.8%	18.5% (28.4%**)
14. Size of factory	18,580m ²	32,515m ²	2,415m ²
15. Space per employee	31.0m ²	85.6m ²	12.1m ²
16. Electricity consumption	3,000,000 kwh p.a	2,000,000 kwh p.a	1,650,000 kwh p.a
17. Electricity consumption per employee	5,000 kwh p.a	5,263 kwh p.a	8,250 kwh p.a
18. Water consumption	N.A	N.A	13.6 million litres p.a
19. Water consumption per employee	N.A	N.A	68,200 litres p.a

20. Purchase of materials. All companies purchase materials on a commercial basis. For companies A and C, Japan is the major source. Company B imports from the U.S. Firms B and C manufacture their own moulds, while company A has its moulds manufactured in Hong Kong.

21.Sales. Company A exports both under sub-contract and commercially. The sub contract work is done mainly for buyers in the U.S (mostly retail chains) and consists of higher value items, easier to transport, e.g. light fittings, chandeliers, plastic bead curtains. The other sales are aimed mainly at markets in Africa and the Middle East and often consist of the bulkier household items.

Company B produces to order from U.S retail chain buyers. It is one of the few companies in Hong Kong which complies with anticipated U.S regulations concerning safety against fire. The plastic mixture contains a flame retarder which can add about a third to the cost of the tree. The trees are boxed and packed into containers for shipment to the U.S.

Company C sells by piece rather than weight and does not aim for the mass market. The company employs an American designer. Moulds are extremely expensive and Hong Kong can only continue to compete with cheaper labour sources by offering high quality designs.

22.Transport requirements : Companies A and B : sea for both materials and final products. Company C imports materials by sea, but exports mainly by air.

Notes N.A = Not available

* Includes fringe benefits.

** Included casual assembly workers. The factory operation consists of stamping out the shapes with moulds, trimming and packing. The assembly of the flowers takes place outside the factory mostly in the private homes of casual workers; for this reason any estimate of the numbers involved and the payment per head can only be approximate. Industry sources estimated that for a company of the size of firm C, about 250 heads of household would be involved on a fairly regular basis. Payment was by piece rate but would be approximately HK\$8 per day. The actual number of workers involved would be about 4 times the number of actual payees,

so in this case about 1,000.

Source : Field interviews.

12.3 Singapore

12.31 Case Study Company (Figures in U.S dollars refer to 1973).

1. Products : Plastic artificial flowers.
2. Nationality : Hong Kong / Singapore.
3. Ownership : Joint Venture.
4. Annual Sales : \$1,500,000.
5. Value added : \$975,000.
6. Numbers employed : 210 in the factory (About 1,100 outside). Of the factory workers, 90% are women.
7. Average monthly wage^{*} : \$84.
8. Total annual wage cost \$211,680 (\$362,302**).
9. Non-wage value added : \$763,320 (\$612,698**).
10. Sales per employee; \$7,143 (\$1,145**).
11. Value added per employee : \$4,643 (\$744**).
12. Non wage value added per employee: \$3,635 (\$583**).
13. Size of factory : 5,853m² (space requirements high because of storage.)
14. Space per employee : 28 sq.metres.
15. Electricity consumption : 877,000 kwh per annum.
16. Electricity consumption : (per employee) : 4,176 kwh p.a.
17. Purchase of materials : Most materials are purchased from Hong Kong head office. Hong Kong also supplies plastic moulds. Uses about 80 tonnes per year.
18. Sales Exports nearly all to U.S and Canada. Orders are channelled through Hong Kong.
19. Value added / sales : 65%.
20. Wage costs / sales : 14.1% (24.2%^{**}) .
21. Transport requirements : sea for both materials and final products.

Notes : *Includes fringe benefits.

** Includes casual workers outside factory. See Hong Kong case study companies above for explanation. The daily wage rate for each casual worker in Singapore is estimated at S\$1.1 or U.S \$46.

Source : Field interviews.

12.4 Industry Evaluation.

1. Employment : Average non-wage value added per employee:
Including casual workers : \$1,311
Not including casual workers : \$2,670
Proportion of men among employees : 49.7%
2. Transport requirements : Materials : Sea
Final products : Mostly sea
(air for high value items).
3. Nature of the market: Supply of raw materials is likely to continue to be more important than demand considerations. For toys and dolls and for a part of the output of artificial foliage, the demand is seasonal with manufacturing for the Christmas season taking place in the period May -October. The market is relatively price elastic and it may be that the recent oil crisis has seriously curtailed growth prospects. Effects on the demand for toys, dolls and Christmas decorations are not clear as last Christmas orders were placed before the impact of the crisis..
4. Average electricity consumption per employee : 5,672 kwh p.a.
5. Average water consumption per employee: 68,200 litres p.a.
6. Average space per employee ; 39 sq.metres.

13. HAIR GOODS

13.1 Introduction.

The hair goods industry - the production of artificial wigs, eyelashes and facial hair from synthetic materials or human hair - is a labour intensive industry at one time prominent in two of the developing countries manufacturing for export to developed countries. The experience of this industry in Hong Kong and Korea illustrates its attractions and pitfalls for a developing country wishing to utilize surplus labour.

13.2 Hong Kong.

The development of the industry in Hong Kong during the 1960s shows a rate of growth followed by a rate of decline unprecedented even by Hong Kong standards.

The Hair Goods Industry in Hong Kong, 1964-1973.

	<u>Value of Exports</u> (in thousands of U.S. Dollars.)	<u>Number of</u> <u>Establishments</u>	<u>Employment</u>
1964	1,405	4	484
1965	11,760	13	640
1966	11,597	41	1,601
1967	32,177	88	6,383
1968	52,425	151	12,133
1969	106,663	202	16,220
1970	154,769	422	30,990
1971	86,393	342	19,869
1972	36,787	194	9,433
1973*	21,668	131	2,871

Notes* Preliminary figures

Employment figures are end of year totals.

Sources : (1) Hong Kong External Trade Statistics, Various Years.

(2) Labour Department, Government of Hong Kong.

(3) Information provided by the Federation of Hong Kong Industries.

The above table suggests that the decline began in 1971. A closer examination of the year 1970, however, shows that it was then that the tide began to turn.

	<u>Number of establishments</u>	<u>Employment</u>
March, 1970	372	28,878
June, 1970	429	39,184
September, 1970	478	38,871
December, 1970	422	30,990

Sources : as above.

The reasons for the decline are largely external, and any industry, however well organised, would have been unable to cope with the changes in market conditions which occurred. Briefly, the market ceased to be one of a popular product growing in demand for every day use and became one of a special product for occasional use. The decline in the fashion element meant that the advantage in what was left of the market swung away from a relatively expensive labour source like Hong Kong to a relatively cheap one such as Korea.

The main detailed reasons for the decline were the following :

- (a) A shift in consumer preference from human hair to synthetic wigs occurred in 1969/1970. This was largely because synthetic wigs have comparative advantages in price, durability and easy maintenance. The hair style, once fixed, will remain permanent in spite of repeated washing and cleaning. A greater variety of colours and styles is also permitted. At the time of this shift, 71 per cent of Hong Kong factories were wholly or chiefly engaged in the manufacture of human hair wigs.
- (b) The change in tastes created an imbalance in the demand and supply of synthetic wigs. Manufacturers in both Hong Kong and Korea were unable to adjust production rapidly enough to meet the influx of orders. Quality synthetic materials were in short supply. This led to a situation where large quantities of poor quality products were turned out in both countries made from unsatisfactory synthetic fibres. Importers in the three main market countries (U.S, U.K. West Germany) showed a surprising lack of discrimination and this resulted in many complaints from retail distributors and consumers.
- (c) The change to synthetic products also meant a greater comparative advantage for Korea over Hong Kong. Although

- processes for both natural and synthetic wigs are almost equally labour intensive, the skill and technical knowledge content of the latter is significantly less.
- (d) Because of the prevalence of low quality products, sales began to drop and importers were forced to dump their excessive stocks on an already saturated market.
- (e) Although there is a reasonably stable demand for high quality women's wigs (both synthetic and natural) and an increasing demand for men's wigs, it is unlikely that the popular demand of the 1960s will return for some time because:
- (i) the demand for high quality women's wigs and men's wigs is a demand for a special product rather than one for everyday use,
 - (ii) the health implications of regular use of wigs was increasingly questioned,
 - (iii) fashions in hair styles and in appearance generally among young people have for the past two years favoured simplicity,
 - (iv) where complicated styles or colourings are required, these can be provided by hairdressers with a much higher degree of skill than previously, and
 - (v) the market shows no sign of recovering from the impact of the dumping of low quality products in 1970, especially from Korea.
- (f) Unlike other commodity groups which are affected by changes in fashion - for example, clothing and cosmetics - hair goods are neither necessities, nor is there a basic demand which remains even though styles may change. Virtually the entire industry is subject to fashion. In view of this any prediction of future trends is hazardous as is well illustrated by the forecasts which were being made both in industry and Government in Hong Kong in early 1971. There was talk then of the situation "improving when excessive stocks will be depleted by the spring (of 1971)" and "the supply of (synthetic fibre) doubled". However, should fashions change again and wigs come once more into popular use, it is very possible that this demand will be largely for synthetic wigs, and it is unlikely that the volume of trade in natural wigs will reach the level of the mid 1960s.

The following statistical relationships of the Hong Kong industry can be calculated from data provided by the Department of Commerce and Industry (figures in U.S. dollars)

1. Non - wage value added per employee: \$974.
2. Space per employee: 6.1 sq. metres.
3. Sources of material : Human hair: China (43%) and Indonesia (39%). Synthetic fibre for synthetic wigs: Japan(52%), U.S (34%), U.K. (8%). Factories which manufacture human hair wigs for the U.S must obtain their raw hair either by direct import or through hair importers registered with the Department of Commerce and Industry's Comprehensive Certificate of Origin Department.

13.3 Korea.

13.31 The Industry.

The basic statistics for the Korean hair goods industry in 1972 are as follows (in thousands of U.S. dollars):

Ex-factory sales	61,178
Exports	73,876
Number of establishments	169
Number employed	38,792

Sources (1) Economic Planning Board, Report on Mining and Manufacturing Survey, 1972.

(2) Office of Customs Administration, Statistical Yearbook of Foreign Trade, 1972.

According to reports received in Korea in mid 1973, the problem of unregistered manufacturers supplying indiscriminate buyers with sub-standard goods is still in existence despite efforts by the Korean authorities to regulate the industry and limit the number of registered exporters to 51. It appears that organisations such as the Korean Hairgoods Businessmen's Association in New York have not had the success hoped for. The problem is more acute in the sale of eyelashes, in which Korea has a virtual world monopoly, than in wigs. The export of substantial quantities by non-registered manufacturers and traders is very difficult to control owing to the small size and light weight of the product.

If safeguarding the market by relying on the efforts of official and semi official trade associations proves less than

fully effective, manufacturers can form exclusivity agreements with foreign buyers. In this way the manufacturer is sure of a steady market and the customer is less likely to be supplied with an inferior article.

13.32 Case Study Companies (figures in U.S dollars refer to 1972).

	C O M P A N I E S			
	A	B	C	D
1. Products	Wigs (synthetic)	Wigs (synthetic)	Eyelashes	Wigs (synthetic)
2. Ownership and nationality	Korean	Korean	Korean	Korean
3. Annual Sales	\$50,541	\$199,418	\$189,189	\$594,595
4. Value added	\$31,495	\$90,729	\$108,595	\$292,125
6. Numbers employed				
Men	2	5	3	19
Women	26	31	82	201
Total	<u>28</u>	<u>36</u>	<u>85</u>	<u>220</u>
7. Average monthly wage	\$50	\$43	\$59	\$39
8. Total annual wage cost.	\$16,800	\$18,576	\$60,180	\$102,960
9. Non-wage value added	\$14,969	\$72,153	\$48,415	\$189,165
10. Net profit	\$7,008	\$14,816	\$14,865	\$35,135
11. Fixed assets	\$55,946	\$14,595	\$8,135	\$72,973
12. Plant and machinery	\$22,162	\$4,054	\$6,703	\$30,284
13. Sales per employee	\$1,805	\$5,539	\$2,226	\$2,703
14. Value added per employee	\$1,125	\$2,520	\$1,278	\$1,328
15. Non-wage value added per employee	\$525	\$2,004	\$570	\$468
16. Fixed assets per employee	\$1,998	\$405	\$96	\$332

	A	B	C	D
17. Plant and machinery per person	\$791	\$113	\$79	\$138
18. Value added/sales	62.3%	45.5%	57.4%	49.1%
19. Wage costs/sales	33.2%	9.3%	31.8%	17.3%
20. Profit/sales	13.9%	7.1%	7.9%	5.9%
21. Electricity consumption	55,000 kwh p.a	NA	80,000 kwh p.a	250,000 kwh p.a
22. Electricity consumption per employee	1,964 kwh p.a	NA	1,356 kwh. p.a	1,136 kwh p.a
23. Water consumption	3.8 million litres p.a.	NA	14.4 million litres p.a.	45.2 million litres p.a.
24. Water consumption per employee	135,700 litres p.a	NA	169,400 litres p.a	205,400 litres p.a

25. Material purchases : Company A : Materials purchased through trade with 10 days credit. Complained of shortage of supplies. Company B : Materials purchased through local trader. Problem caused by very little or no credit. Company C : All materials purchased through local trader. There were no problems reported.

Company D : Buys direct from overseas manufacturer of synthetic fibre. These manufacturers are increasingly adopting the practice of selling only through selected agents or to selected wig manufacturers rather than directly to every firm. This clearly gives an advantage to the larger companies able to carry higher inventories.

26. Sales : Company A : All output is produced to order and sold to a large trading company. This latter company provides both technical assistance and is responsible for quality control. Sometimes orders are given beyond the firm's capacity and it is necessary to sub-contract. There are in Korea, not very many small companies employing less than 10 persons capable of taking sub-contract orders. Prices are very flexible and can vary widely from order to

industry suffers, however, from a number of potentially avoidable disadvantages which have prevented it from effectively responding to this challenge:

- a) Many of the companies have a high percentage of their export sales concentrated in one particular market. 44 firms, or 17 per cent of the total, sell at least 90 per cent of their output in one country; and 151 firms, or 59 per cent of the total, sell at least 50 per cent of their output in one market. This high degree of concentration makes the industry especially vulnerable to changes in taste, legislation concerning tariffs, and other factors which affect the market.
- b) The procedure adopted by many Hong Kong industries facing challenge from new areas is to upgrade the quality of their products. The extent to which the footwear industry has been able to do this is limited by lack of effective quality control. Only 20 companies (8 per cent) had independent quality control within their organisations.
- c) There is very little advertising or promotion of Hong Kong products overseas. 12 per cent of the firms reported placing advertisements in trade journals and newspapers sold overseas, and products of only 5 per cent of the factories were displayed overseas at trade fairs and other promotional activities. This is partly due to the attitude, still prevailing to some extent in overseas markets, which correlates Hong Kong with poor quality and the "cheap" end of the market.
- d) The export boom of the 1960s failed to bring about any significant change in production methods or in the degree of capitalisation of the industry. The industry began as a small workshop craftsman's affair, and so to a large extent it has remained. Over half the companies are small scale (employing less than 20 persons) and 88 per cent of the firms employ less than 100 persons. The industry appears to have a lesser degree of investment in machinery than most Hong Kong industries. This relative undercapitalisation means that the majority of factories lack the resources for improvement in production management.

order.

Company B : All output is produced to order from an overseas buyer. The firm has effective quality control. Again prices were mentioned as a problem with the possibility of a sharp drop from one order to the next.

Company C : All output produced to order from overseas buyer. There is effective quality control. The competition is extremely severe and buyers bargain with several companies before placing an order.

Company D : Has exclusive arrangement with U.S. company. Latter buys the whole of output and is responsible for marketing. Company D is responsible only for manufacturing and procurement of fibre.

27. Transport requirements : Materials mainly by sea and final products mainly by air. Materials could, if necessary, also be transported by air fairly economically.

Source : Field interviews.

13.4 Industry Evaluation

1. Employment : Average non-wage value added per employee \$908. Proportion of men among employees : 8.3%.

2. Transport requirements : Sea or air for materials, air for final products.

3. Nature of the market : See discussion of Hong Kong experience for details of trends in the 1960s and 1970s. Manufacture, especially of eyelashes, can take place on a small scale; market entry is easy and control of production and sales by a trade association is difficult. Prices can fluctuate very widely and there are large gaps between the prices of high quality and low quality items. In the case of wigs in Korea, there is some attempt at control by having a posted minimum price of \$2 for synthetic wigs. The success of this measure had not been tested at the time of writing as the market price has yet to fall to the level of the posted price. Eyelashes are very difficult to control. The Korea Eyelashes Exporters' Association has tried strictly to enforce a check price as well as formulating six other measures designed to stabilize the industry, reduce costs and promote mergers. The difficulty with the Association's measures is lack of effective enforcement. What is required

in addition is for the Government to back the Association and impose fines and retract business permits of firms who sold abroad, or attempted to sell abroad, at less than the posted price.

Although it is unlikely that the growth and sales value of the mid 1960s (Hong Kong) and 1970 (Korea) will be reached again, the market does promise a prospect of reasonably steady growth especially in high quality women's wigs, men's wigs, and eyelashes. There is a growing market in Japan. This is because the Japanese industry is increasingly less able to compete with imports for cost reasons. The run-down of the Japanese industry during the 12 months to February, 1974, together with the continued decline in Hong Kong, has meant that Korean manufacturers have not in general suffered from material shortages. The supply of materials is, however, closely controlled by less than 10 American, Japanese and European companies. Korean manufacturers complained of the high prices, one firm alleging that fibre was being sold by Japan at 2.5 times cost.

A future threat to the market may well come from Mainland China. China is a major source of material for natural wigs, but currently cannot match Korean quality in natural or synthetic goods. One factor which may prevent the Chinese from entering the market as a serious force is that designs change swiftly. When a new design appears it is necessary to have the product marketed within 2 weeks. A ponderous decision making process may not be able to cope with this. It is probably only a matter of time, however, before China becomes a contender for the more limited long production run items.

4. Average electricity consumption per employee : 1,485 kwh.
p.a.

5. Average water consumption per employee : 170,200 litres p.a.

6. Average space per employee : 6.1 sq. metres.

14. WATCHES AND WATCH PARTS

14.1 Hong Kong

14.11 The Industry

The watch industry can be divided into 3 types of manufacturing operation: watch assembly, watch parts, and watch straps and bands.

The industry as a whole developed very strongly during the second half of the 1960s as the following table shows:

Watch Industry Exports from Hong Kong, 1964 - 1973

(in thousands of US dollars)

	<u>Watches and Clocks</u>	<u>Watch Cases and Parts</u>	<u>Watch Bands</u>	<u>Total</u>
1964	*	898	3,918	4,816
1965	*	1,078	4,406	5,484
1966	2,922	800	5,549	9,271
1967	5,224	1,339	7,181	13,744
1968	8,358	1,679	8,675	18,712
1969	14,046	2,390	11,210	27,646
1970	16,913	4,080	14,172	35,165
1971	20,787	5,361	14,377	40,525
1972	25,869	5,754	15,475	47,098

The total number of establishments and the numbers employed in 1971 and 1973 were as follows:

	<u>Watches and Clocks</u>	<u>Watch Cases and Parts</u>	<u>Watch Bands</u>	<u>Total</u>
Number of establishments:				
1971	*	123	159	282
1973	13	131	195	339
Employment:				
1971	*	6,096	6,513	12,609
1973	1,746	4,141	5,938	11,825

Average annual rate of growth of exports 1964-1972: 32.5%.

Notes: *Separate figures not available; watches and clocks included together with cases and parts.

Sources: 1) Hong Kong External Trade Statistics; Various Years.

2) Department of Labour, Government of Hong Kong.

For the industry as a whole, ownership is concentrated in local hands. Of the 339 establishments (182 companies) one per cent are wholly foreign-owned and 2 per cent are joint ventures with Swiss, West German or US capital.

14.12 Watch Assembly

The watch parts and accessories section of the industry is dealt with in the case study below. As far as watch and clock assembly is concerned, data have been provided by the Department of Commerce and Industry which enable the following characteristics of the industry to be examined:

1. Ownership, size and age: of the 13 watch assembly plants, 60 per cent are single proprietorships, and the rest are joint stock companies. All except one employ less than 20 persons. 17 per cent were established before 1960, and 43 per cent before 1965.
2. Non-wage value added per employee: US\$927.
3. Proportion of men among employees: 47.6 per cent.
4. Investment in plant and machinery per worker: US\$449.
5. Main materials and sources:

Materials

Sources

Watch movements

Switzerland, West Germany, France, U.S.S.R.

Watch cases

Hong Kong, US, West Germany.

Dials

Hong Kong, Japan.

Watch bands

Hong Kong.

Other parts

Switzerland, Hong Kong.

6. Electricity consumption per employee: 5,119 kwh per annum.
7. Average monthly wage (mid 1973): US\$172.
8. Sales: About 95 per cent of output is exported. Nearly all sales are produced to order so it is unnecessary to hold stocks. The main export markets for Hong Kong-assembled

watches and clocks are the US, Japan, Panama and the Trucial States. The majority of the factories in the industry export their products through local export houses. Some factories send catalogues to buyers in an attempt to promote sales, while one company has established an overseas office.

9. Transport requirements: The great majority of parts and final products are transported by air.
10. Space requirements: 7.0 sq. metres per employee.
11. Special considerations: The operation consists primarily of the assembly of complete movements into locally manufactured cases. In more recent years there has been an increase in the assembly of watch movements from imported parts. Complete watch movements are not manufactured on any scale in Hong Kong. This is a relatively capital intensive and highly skill-intensive process.

Watch assembly requires dust-free surroundings with strict humidity control - most of the factories are located in office-type or domestic buildings.

The Federation of Hong Kong Industries has been of assistance to the watch assembly industry by offering testing and certification services. These include an agreement dating back to 1966 with the Federation of Swiss Watch Manufacturers whereby watch cases certified as tested by the former can be exported to Switzerland for use by the latter.

Hong Kong is a major international distribution centre for watches and watch parts. This role arises from the fact that there is virtual free trade combined with excellent service facilities and international communications. In the first 11 months of 1973, 19,137,000 watches or assembled watch movements worth US\$148,642,000 were imported into Hong Kong. Of these, 4,430,000 pieces (worth US\$67.5 million) were re-exported and an unknown quantity sold to foreign purchasers visiting the Colony. A trade of this proportion is an obvious stimulant to the development of a local manufacturing industry. Hong Kong's free trade status also facilitates the easy importation of precious stones and metals required for watch manufacture.

14.13 Watch Parts and Accessories

14.131 The Industry

This part of the industry, comprising the manufacture of wrist watch bands, dials, cases and crowns consisted of 131 establishments employing 4,141 persons at the end of 1973. 45 of the factories employ less than 20 persons each and 118 (or 90 per cent of the total) employ less than 100. 63 per cent of the plants were established before 1965. Total investment in machinery and equipment per worker is \$345, less than in the case of watch assembly probably because of the absence of expensive testing equipment.

14.132 Case Study Company

The industry is in fact dominated by the Stelux Group to an extent which makes it impossible to retain anonymity. The company was started in 1963 to manufacture metal wrist watch bands, mainly under sub-contract to the Swiss watch industry. From that base it has grown to be the largest metal wrist watch band manufacturer in the world, and has branched out both in Hong Kong and abroad into the production of other accessories and of watches themselves. It is a promising potential source of investment for a country attempting to develop its industry.

According to an interview with one of the Group's senior executives, output of wrist watch bands was about US\$12 million in 1973, and value added about \$8 million. Employment was about 2,600, 1,800 of whom were women. Annual wage costs totalled \$4 million, giving a non-wage value added per employee of \$1,538. Electricity consumption per employee was 1,557 kwh in 1973, while water consumption was 31,600 litres per employee. Factory space is about 37,200 m² or 14.3 m² per employee. The Group has steadily increased the degree of automation for the manufacture of bands. Its own engineers developed automatic link cutting machines capable of cutting and milling profiles of a wide variety of shapes and sizes. Some of the less automated machinery for the production of less complex designs is still in excellent condition though hardly used at present. The final component is normally hand assembled.

In addition to wrist watch bands, the company manufactures dials, and during 1972 acquired control of Hong Kong's largest watch case manufacturer. This firm sells both to the Stelux Group and to other customers. Employment in 1973 was 400, mostly skilled machine operators. Value added in watch case manufacture is about 55 per cent of sales in Hong Kong, and non-wage value added per employee is estimated at US\$1,566.

The Stelux Group has integrated both backwards and forwards in the watch business. In 1972, it branched into the assembly of completed watches sold principally under its own brand name. There is a 50 per cent interest in a Japanese manufacturer of stainless steel of the type required for watch bracelets. The process is fully patented and output in mid 1973 was completely absorbed by other members of the Group. In addition the Group has substantial interests in a watch case manufacturing plant in Singapore (a joint venture with Seiko of Japan) and a British jewellery factory.

Stelux market all types of product both under their own brand name and under sub-contract to overseas brands. To facilitate marketing, the Group has followed the policy of acquiring agencies and trading companies in market countries. There are wholly-owned subsidiaries in Switzerland and the UK and a 50 per cent share in the Stelux distribution in Japan. During the year ending in March 1973 the Group profit before tax was 20.3 per cent of net assets.

14.2 Korea

14.2.1 The Industry

The basic statistics for the Korean watch and clock industry for 1972 are as follows (figures in thousands of US dollars):

Ex-factory sales		22,414
of which		
Pocket watches	929	
Wrist watches	12,092	
Table clocks	1,253	
Wall clocks	3,834	
Clock or watch cases	1,104	
Watch bands	735	
Other parts	2,467	

Exports fob		2,772
of which		
Watches	1,638	
Clocks	376	
Assembled watch and clock movements	253	
Cases	318	
Other parts	87	
Number of establishments		45
Numbers employed		3,760

- Sources: (1) Economic Planning Board: Report on Mining and Manufacturing Survey, 1972.
- (2) Office of Customs Administration: Statistical Yearbook of Foreign Trade, 1972.

The above table shows that the home market is much more significant to the industry than exports. 44 per cent of exports were channelled through Hong Kong. Although the industry as a whole is much smaller than its Hong Kong counterpart, clock production is higher and the export of special models of clocks, such as gothic style or grandfather, was well on the way by late 1973.

14.22 Case Study Companies (figures in US dollar refer to 1972)

	C O M P A N I E S	
	A	B
1. Products	Watch cases and dials	Wrist watch assembly
2. Ownership and nationality	Korean	Korean
3. Annual sales	\$198,205	\$2,683,411
4. Value added	\$80,835	\$918,153
5. Numbers employed:		
Men	123	177
Women	67	87
Total	190	264
6. Average monthly wage	\$38	\$89
7. Total annual wage cost	\$86,640	\$281,952
8. Non-wage value added	Negative	\$636,201
9. Net profit	-\$34,796	\$488,687
10. Fixed assets	\$148,165	\$220,387
11. Plant and machinery	\$38,901	\$138,517
12. Sales per employee	\$1,043	\$10,164
13. Value added per employee	\$425	\$3,478

	A	B
14. Non-wage value added per employee	Negative	\$2,410
15. Fixed assets per employee	\$780	\$835
16. Plant and machinery per employee	\$310	\$525
17. Value added/sales	40.8%	34.2%
18. Profit/sales	Negative	18.2%
19. Wage cost/sales	43.7%	10.5%
20. Electricity consumption (kwh p.a.)	278,000	280,000
21. Electricity consumption per employee (kwh p.a.)	1,463	1,061
22. Water consumption per annum	4.4 million	2.8 million
23. Water consumption per employee p.a.	23,200 litres	43,700 litres
24. Material purchases: <u>Company A</u> : About 10 per cent are imported directly, the rest being purchased either through a trader or from a local manufacturer after some processing. The latter are often of a poor quality. <u>Company B</u> : Company imports 32 per cent of moving parts directly and the rest through a trading company. There are no problems and 30 day credit is available.		
25. Sales: <u>Company A</u> : 80% of sales are exported directly according to order. Exports are to Switzerland where a Swiss firm has sub-contracted the production of cases and dials. The company purchased \$6,000 worth of technical assistance from the Swiss buyer in 1972. They are also training a technician in Switzerland. The line is currently unprofitable because of low labour productivity and fierce international competition. <u>Company B</u> : All output is sold in Korea for the local market. Korean manufacturers are effectively protected against foreign competition. Demand is buoyant and increasing rapidly as living standards rise. The company has no intention of attempting to export.		

Source: Field interview

14.3 Singapore

14.31 Case Study Company (figures in US dollars refer to 1973)

1. Products: Watch cases
2. Ownership and nationality: 70% Swiss and 30% U.S.
3. Annual sales: \$2,000,000
4. Value added: \$1,300,000
5. Numbers employed: Men 180
Women 50
Total 230

6. Average monthly wage: \$93
7. Total annual wage costs: \$256,680
8. Non-wage value added: \$1,043,320
9. Sales per employee: \$8,696
10. Value added per employee: \$5,652
11. Non-wage value added per employee: \$4,536
12. Value added/sales: 65%
13. Wage costs/sales: 1.3%
14. Electricity consumption: 300,000 kwh per annum
15. Electricity consumption per employee: 1,304 kwh per annum.
16. Water consumption: N.A.
17. Water consumption per employee: N.A.
18. Size of factory: 15,793 sq. metres.
19. Space per employee: 68.7 sq. metres.
20. Purchase of materials: Commercial
21. Main materials: Steel brass, small parts
22. Sales: All sales exported to associated company in Switzerland for watch assembly
23. Transport requirements: Materials: Mostly sea
Final products: Air
24. Reasons for locating in Singapore (in order of priority):
 - (a) Labour cost - many Swiss firms are feeling an increasing need to locate some parts of the manufacturing process abroad in the face of Japanese competition.
 - (b) Good port and airport facilities.
25. Expansion plans: Intend to assemble complete case including crown glass and gasket.

Source: Field interview

14.4 Industry Evaluation

1. Employment: Average non-wage value added per employee: \$2,195
Proportion of men among employees: 57.7%
2. Transport requirements: Watch assembly; Both materials and finished goods by air.
Parts and accessories; Materials mostly by sea; final products by air.
3. Nature of the market: The industry is most likely to flourish in a country which has the following conditions;

e) The industry has displayed a conservative outlook which has not responded quickly enough to changes in design and taste. 73 per cent of the companies relied on the buyer to provide design specifications, while 85 per cent relied solely on the buyer as a means of up-to-date information on overseas market trends. Any problems this caused were compounded by the fact that 62 per cent exported through local traders rather than directly. No company, not even the few large ones, had at the beginning of 1973 their own branch office or their own agency abroad.

These potentially avoidable problems of the industry have been increased by others beyond its control:

- f) The years 1972 and 1973 have seen unprecedented price increases in the cost of raw materials accompanied by severe shortages of some vital inputs. Most of the small firms must import through traders and are vulnerable to traders selling to the highest bidder keen to build up stocks, or indulging in speculation. Further, because they also export through traders in the majority of cases, they are unable to plan for long runs which would enable them to contract a longer term supply of materials. Long runs are not encouraged by the fact that most firms manufacture more than one type of footwear (contrast Korean case study companies below).
- g) The entry of the UK (Hong Kong's largest single market) into the EEC has caused problems. From the beginning of 1974 Hong Kong footwear will have to face an 8 per cent duty, while Korean footwear (which already has a price advantage of about 27 per cent) will enter duty free owing to Korea's developing country status. Furthermore the 40 per cent tariff previously imposed on Italian footwear no longer applies, while Spain and Portugal have geographic advantages. In 1972, the UK accounted for 45 per cent of Hong Kong exports, and an estimated 43 per cent in 1973.

Source: Compiled from information provided by the Department of Commerce and Industry of the Hong Kong Government.

- (a) Free trade, including freedom to import precious metals and stones
- (b) Proximity to a major market area
- (c) Good air communications
- (d) A dextrous, trainable labour force.

These considerations apply particularly to the assembly of finished watches for export. The production of parts and accessories for export is less demanding.

- 4. Average electricity consumption per employee: 2,101 kwh p.a.
- 5. Average water consumption per employee: 32,800 litres p.a.
- 6. Average space per employee: 30.0 sq. metres.

15. PRECISION MACHINERY, MACHINE PARTS AND TOOLS : SOME SINGAPORE CASE STUDIES.

15.1 Introduction.

In line with Government policy (see Section 5.4), Singapore is emerging as a centre for the production of more capital intensive, precision industries requiring a higher degree of skill from the workforce than is normally associated with the more "traditional" labour intensive industries such as clothing, electronic components and hair goods. Some of these new industries in Singapore have already been considered under earlier headings such as optical goods and watches and watch parts. This section will be concentrating on machine tools and parts for precision machinery.

A list of the principal investors and the products manufactured as of mid-1973 is as follows :

<u>Investor</u>	<u>Nationality</u>	<u>Products</u>
A	U.S.	Precision stampings, carbide tools and dies.
B	U.S.	Precision steel balls.
C	U.S.	Dies, coolers, crumblers and roller shells.
D	U.S.	Plastic processing machinery.
E	U.S.	Machine tools.
F	U.S.	Precision roller chains.
G	U.S.	Precision tools and dies.
H	U.S.	Tool joints, drilling systems.
I	U.S.	Cast alloy steel crashing balls.
J	European	Cold heading machinery.
K	European	Chrome and nickel plating, precision grinding.

L	Japanese	Precision steel and carbide tools and dies.
M	Japanese	Precision miniature steel balls for bearings.
N	Indian	Precision tools and dies.

15.2 Case Study Companies (figures in U.S. dollars refer to 1973).

	C O M P A N I E S			
	A	B	C	D
1. Products	Precision miniature balls for bearings	Precision roller chains	Twist drills	Saw-doctoring machines
2. Nationality	U.S.	U.S.	Joint venture	European
3. Ownership	Wholly owned subsidiary	Wholly owned subsidiary	40% Australian	Wholly owned subsidiary
4. Annual sales	\$725,000*	\$4,000,000	\$622,406	\$700,000
5. Value added	\$536,500	\$2,800,000	\$373,444	\$525,000
6. Numbers employed:				
Men	43	135	39	34
Women	22	125	6	1
Total	65	260	45	35
7. Average monthly wage (with fringe benefits)	\$127	\$172	\$118	\$170
8. Total average wage cost	\$99,060	\$536,640	\$63,720	\$71,400
9. Non-wage value added	\$437,440	\$2,263,360	\$309,724	\$453,600

10. Sales per employee	\$11,154	\$15,385	\$13,831	\$20,000
11. Value added per employee	\$8,254	\$10,769	\$8,299	\$15,000
12. Non-wage value added per employee	\$6,730	\$8,705	\$6,883	\$12,960
13. Size of factory	4,645m ²	7,900m ²	1,000m ²	4,645m ²
14. Space per employee	71m ²	30m ²	22m ²	133m ²
15. Electricity consumption (kwh p.a)	1,896,000	2,400,000	NA	171,500
16. Electricity consumption per employee	29,169	9,231	NA	4,900
17. Water consumption	14.4 million litres p.a	40.8 million litres p.a	NA	Negligible
18. Water consumption per employee	785 litres p.a	45 litres p.a	NA	NA
19. Value added/sales	74%	70%	60%	75%
20. Wage costs/sales	13.7%	13.4%	10.2%	10.2%
21. Purchase of materials	Commercial	Commercial	Same Group	Same Group
22. Main materials	Steel alloy grinding wheels. Main sources: U.S and Japan.	Steel, plastics. Main sources: Japan (85%), U.S EEC	Steel rods for high speed drills.	Steel rods.

23. Sales	All sales exported and sold to parent company. Will possibly start selling commercially later.	All sales exported. 75% to same group 25% as commercial. Commercial sales growing.	All sales exported commercially though parent company negotiates contracts.	All sales exported to same group, mostly to Europe, a few to South East Asia.
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24. Transport Requirements :				
Materials :	Sea	Sea	Sea	Sea
Final products :	Air	Sea	Air	Sea
	Because of high value sometimes difficult to insure for sea passage.	8-10 containers per month with about 18,000 kilos per container.		

25. Supplies purchased locally	A few simple repairs.	Simple tools and repairs.	Grinding wheels, some simple machine parts.	Cast iron, machine repairs.
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26. Shortages and bottleneck in Singapore	Labour	Skilled Labour	Labour	Skilled Labour
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27. Reasons for locating in Singapore (in order of priority)	1. Good port and airport facilities. 2. Geographic location in relation to potential market.	1. Government incentives. 2. Good port. 3. Geographic location in relation to Japanese materials. 4. Efficient administration.	1. Good port and airport with good services. 2. Freedom from duty on imports. 3. Geographic location. 4. Official	1. Geographic location in relation to servicing of wood processing machinery 2. Good port facilities
--------------------------------------------------------------	-------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------

	1972	1972	1971	1971
28. Year commenced	1972	1972	1971	1971
29. Manufacturing process:	Same as in U.S.	Same as in U.S.	More manually operated: 2 instead of 1 men per machine.	encouragement of training of skills. Much more manual. In Europe half the manpower per machine.
30. Plans for Expansion	Yes, same lines	Yes, same lines and new products	Yes, same lines and other cutting tools	Yes, Out-put to be expanded five fold

Note * Consultants' estimate from other information given by company.

Source : Field interviews.

15.3 Industry Evaluation

1. Employment : Average non-wage value added per employee: \$8,819. Average proportion of men among employees: 75.5%.
2. Transport requirements : Mostly sea for materials. Final products tend to be high value and normally could be transported by air if necessary.
3. Nature of the market: Singapore has had more success in developing this type of manufacture than any other country in Asia with the possible exception of Hong Kong. There are a number of special reasons for this. In the first place, it is an extension of Singapore's traditional role as the distribution and servicing centre for capital equipment for the rest of South East Asia. Secondly, the authorities, as explained elsewhere in this Report, are anxious to secure industries with a high technology content and the incentives offered are generous. Thirdly, in order to secure investments from smaller European, American and Japanese firms with a high level of technology, the Ministry of Finance is prepared to put up 50 per cent of the capital with the option for the firm to buy back at least a substantial proportion later. Fourthly, the training of

workers is expensive and lengthy, and the Government will help to finance this under certain conditions. Each of the sample companies sends at least one worker abroad for training for at least 6 months. Another firm, not in the sample, sent four supervisors abroad for 6 months each and has a four year apprenticeship scheme for other workers. Finally, a number of the companies who are there to manufacture precision tools and dies, were established previously to give on the spot service to customers in the electronics components industry which is located on a large scale in Singapore and Malaysia.

This type of industry is relatively capital intensive and neither cost nor availability of labour were mentioned by the sample companies as reasons for locating in Singapore. It is also a relatively heavy consumer of space and utilities. A country would be unlikely to consider attracting this kind of investment until it had gone some way along the path of industrialisation for export.

4. Average electricity consumption per employee : 14,433 kwh p.a.
5. Average water consumption per employee : 189,200 litres p.a.
6. Average space per employee : 64.sq. metres.

16. CERAMIC TABLEWARE AND OTHER POTTERY

16.1. Introduction.

The manufacture of pottery, china and earthenware has long been one of the skills of the Far East. As it is also highly labour intensive, it was to be expected that it would emerge as a significant export industry. The presence of raw material in exploitable quantities is an advantage but not a strict necessity.

16.2. Hong Kong

Data for the years 1971 and 1973 are as follows:

	1971	1973
Output (U.S. \$000)	929	N.A.
Exports (U.S.\$000)	865	2,620
Number of establishments	33	43
Number employed	584	424

- Sources:
- (1) Hong Kong External Trade Figures, 1971, 1973
 - (2) Labour Department, Government of Hong Kong
 - (3) Census and Statistics Department, Government of Hong Kong.

16.3 Korea

16.31 The Industry

Basic statistics for the ceramic tableware, kitchenware and other pottery for 1972 are as follows:

Ex-factory sales (U.S. \$000)	8,548
of which:	
Kitchenware	2,779
Tableware	103
Pottery	2,496
Sanitary ware	2,546
Industrial ware	18
Other	606

Exports Fob (U.S. \$000)	1,000
of which:	
porcelain and china household ware	747
other ceramic household ware	79
other	174
Employment	6,230
of which:	
tableware and kitchenware	2,511
other pottery and ceramic waree	3,719
Number of Establishments	345
of which:	
tableware and kitchenware	47
other pottery and ceramic waree	298

- Sources:
- (1) Economic Planning Board: Report on Mining and Manufacturing Survey, 1972.
 - (2) Office of Customs Administration: Statistical Yearbook of Foreign Trade, 1972.

For the development of a ceramics industry Korea has the considerable advantage of possessing very substantial reserves of good quality raw material for making Grade A porcelain, as well as traditional pottery making skills dating back many centuries. To take advantage of these, the authorities attempted in the mid 1960's to establish a Ceramics Industrial Centre and called upon a large number of enterprises to cooperate. The centre would have been a base on which to build a large scale export industry. There were, however, various problems, the main one being that high quality pottery manufacture was still very much the preserve of skilled individual craftsmen. There was no native technology available for mass production up to export quality.

By 1973, however, the situation had changed. The two largest companies entered the international market seriously for the first time in 1972, and Korean trading companies are now offering the products of smaller manufacturers. The prospects for the industry in the 1970's are excellent.

16.32 Case Study Companies (figures in U.S. dollars refer to 1972)

	C O M P A N I E - S <i>Spread out.</i>			
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
1. Products	Ceramic table ware	Ceramic table ware	Ceramic table ware and pottery	Ceramic Sanitary ware
2. Ownership and Nationality	Korean	Korean	Korean	Korean
3. Annual Sales	\$99,993	\$1,919,919	\$807,000	\$2,854,054
4. Value Added	\$40,531	\$1,017,365	\$571,830	\$1,901,085
5. Numbers employed:				
Men	29	230	417	413
Women	14	249	142	237
Total	<u>43</u>	<u>479</u>	<u>559</u>	<u>650</u>
6. Average monthly wage	\$47	\$33	\$30	\$43
7. Total annual wage cost.	\$24,252	\$110,484	\$201,240	\$335,400
8. Non-wage value added.	\$16,279	\$906,881	\$370,590	\$1,565,685
9. Net Profit	\$ 1,946	(\$286,486)*	\$ 54,054	\$94,595
10 Fixed Assets	\$54,050	\$4,775,676	\$359,460	\$1,997,297
11 Plant and machinery	\$27,025	\$1,981,900	\$154,568	\$958,703
12 Electricity consumption (kwh p.a.)	326,208	4,430,000	1,862,000	5,641,000

* Loss

7.2 Korea

7.21 The Industry

The basic statistics of the Korean footwear industry for 1972 are as follows (in thousands of US dollars)

	<u>Leather Footwear</u>	<u>Plastic Footwear</u>	<u>Rubber Footwear</u>	<u>Total</u>
Ex-factory sales	29,121	15,100	88,903	133,124
Exports f.o.b.	9,469	6,338	39,357	55,146
Number of establishments	252*	15	46	313
Numbers employed	7,754	2,300	27,829	37,883

Note: *Includes 193 establishments employing less than 10 persons with total sales of \$2.2 million and total employment of 1,154.

- Sources: 1) Economic Planning Board: Report on Mining and Manufacturing Survey, 1972.
2) Office of Customs Administration: Statistical Yearbook of Foreign Trade.

Despite the large number of establishments, exports sales are produced mainly by 15 large companies. In order to break into export markets on a large scale (in 1970 and 1971), firms operated on very low profit margins - indeed, the consultants were informed that in 1971 only 2 of the 15 made a profit. The situation improved in 1972 but largely due to an upswing in domestic sales which enabled manufacturers to cover export margins.

In 1973 a crisis similar to that in the stainless steel flatware industry (see Section 5 above) arose with the imposition of quotas by the US. Both industries display an unfortunate characteristic of much of Korean import-export industries - heavy reliance on one country (normally Japan) for imported materials, and equally heavy reliance on one country (normally the US or Japan) for exports. In the case of footwear, the US accounted for 74 per cent of exports in 1972. The quotas, announced in July, 1973, were not as severe in relation to past sales as in the case of flatware though this industry is growing faster. They are summarised as follows:

C O M P A N I E S

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
13. Electricity Consumption per employee	7,586	15,878	3,331	8,678
14. Water consumption (litres p.a.)	0.9 million	16.6 million	7.0 million	24.7 million
15. Water consumption per employee (litres p.a.)	20,900	34,700	12,500	38,000
16. Sales per employee	\$2,325	\$6,881	\$1,444	\$4,391
17. Value added per employee	\$ 943	\$3,646	\$1,023	\$2,925
18. Non-wage value added per employee	\$ 379	\$3,250	\$ 663	\$2,409
19. Fixed assets per employee	\$1,257	\$17,117	\$643	\$3,073
20. Plant and machinery per employee	\$ 628	\$ 7,104	\$277	\$1,475
21. Value Added/Sales	40.5%	53.0%	70.9%	66.6%
22. Wage Costs/Sales	24.2%	5.7%	24.9%	11.7%
23. Profit/Sales	1.9%	(14.9%)	6.7%	3.3%

24. Purchase of materials: Company A 75% purchased locally, the rest mainly chemicals and tools, imported through local trader. There are no problems of quality or supply. 90 day credit is available for local purchases.

Company B The company had just completed a considerable expansion of production facilities and had acquired large stocks of high quality material all obtained locally.

Company C All purchases local except a few chemicals.

Company D As for company C.

25 Sales:

Company A: All output sold to local wholesalers with 90 days credit. There is frequent delay in payment for goods delivered. Intends to try exporting directly in 1974 or 1975.

Company B: In 1972 exports were \$267,000 or 14 per cent of total sales. After a recent expansion the company intends to export in earnest. Production capacity has been raised to 420,000 pieces per month and the export target is \$2 million. The company has a selection of 50 of its own designs, but is prepared to produce foreign customers' designs to order.

Company C: Exports in 1972 were \$45,000 only. In 1973, the company were thinking of only doubling that owing to commitments on the domestic market. However a contract was awarded by a major international airline for one million entree plates for airline meals. This alone will have increased export receipts by \$200,000.

Company D: Although mainly aimed at the domestic market, the company did export \$86,000 in 1972, chiefly to Japan. The difficulty with this type of article for international trade is that the value weight ratio tends to be low, which is not the case with tableware.

Source: Field interviews.

16.4 Industry Evaluation.

In this evaluation, Company B of the Korean sample is excluded. The reason for this is that the firm had just embarked on major capital expenditures which distorted such variables as non-wage value added per employee.

1. **Employment: Average non-wage value added per employee:**
Tableware: \$521
Other Ware: \$2,409

Proportion of men among employees: Tableware 71.0%
Other Ware 63.5%

2. **Transport requirements:** If materials are not available locally, they must be imported by sea. The final products are normally exported by sea in containers.
3. **Industry evaluation:** There is a large and growing popular market for ceramic ware. If the skills are available to produce to a buyer's design specifications then market outlets should not be a problem. One difficulty may be sources of investment.
4. **Average electricity consumption per employee:**
6,532 kwh p.a.
5. **Average water consumption per employee:** 26,500 litres.
6. **Average space per employee (Hong Kong)** 11.6 sq. metres
7. **Special factor:** The industry is a very heavy consumer of fuel. For the Korean companies, fuel costs averaged at 1972 fuel prices, 18.2 per cent of ex-factory sales in the case of tableware and 16.5 per cent in the case of other ceramic ware.

17. WOODEN PRODUCTS INCLUDING RATTAN AND HANDICRAFTS.

17.1 Introduction

Wood products have for several years been among the most important export industries of Asia. Very broadly, the industry can be divided into 3 parts: processed wood for re-export (especially plywood), wooden furniture and wooden toys and handicrafts (the latter two categories also including rattan or cane products). Until recently, unprocessed logs were exported from the countries of origin (mainly the Philippines, Malaysia, Indonesia, Thailand and Burma) turned into plywood and wooden products at the first destination (normally Singapore, Korea or Taiwan) and re-exported to the country of final destination (U.S., Europe and Japan). The most significant development likely to affect the industry in the 1970's is the gradual reduction of the export of unprocessed logs from the main source countries, and the encouragement by the authorities there of the development of local sawmills, plywood plants and other timber processing facilities. Action has already been taken in Malaysia, the Philippines and Thailand. Although agreements have been reached between the Governments of Taiwan, Korea and Indonesia to co-operate in developing the latter's timber resources so as to keep the former countries' industries supplied with raw material, prices have risen sharply. In any case, it can only be a matter of time before Indonesia also cuts back on raw log exports.

On the other hand, the speed with which this can be done should not be overestimated and there should be enough raw material to sustain Korean, Taiwanese and Singaporean activity for some years to come. There are two main reasons for this. In the first place, the source countries rely for substantial proportions of total foreign exchange receipts on log exports and restriction is likely to be gradual enough to enable the growth of the local processing industry to keep pace. Secondly, established centres of production, especially Korea for plywood, have built up a solid reputation which cannot be emulated swiftly by new entrants to the market.

17.2 Hong Kong

17.21 The Industry

Hong Kong differs from the other 3 export processing centres in Asia (Korea, Taiwan and Singapore) in that there is little sawmilling (except for local requirements) and virtually no plywood export. Hong Kong purchases small quantities of wood to satisfy the needs of the Colony's furniture and wood products industry. Nevertheless, Hong Kong has felt the shortage. Supplies of teak for furniture and handicrafts have been small, irregular and late during 1973, and this has meant that companies have had to hold larger stocks. After gradual bans on raw log exports were imposed in the Philippines and Malaysia, sales suffered seriously for 2 or 3 months until an Indonesian substitute of similar quality was found.

In general, however, the three years ending in 1973 have been successful for the industry as a whole, and its relatively small raw material requirements have been mostly satisfied. The following table shows the position of the industry at the end of 1970 and of 1973.

Hong Kong Wooden Furniture and Products Industry, 1970 and 1973

		<u>Number of Establish- ments</u>	<u>Employment</u>	<u>Exports</u> (Thousands of U.S. Dollars)
Wooden Furniture:	1970	717	5,685	5,286
	1973	933	6,596	15,354
Other wood products:	1970	314	2,543	4,129
	1973	461	2,510	5,512
Rattan furniture:	1970	114	869	3,799
	1973	78	804	10,433
Other rattan products:	1970	232	2,831	13,049
	1973	196	2,315	10,236

table cont. over

table continued

		<u>Number of Establish- ments</u>	<u>Employment</u>	<u>Exports</u> (Thousands of U.S. Dollars)
Total:	1970	1,377	11,928	26,263
	1973	1,668	12,225	41,535

- Sources:
- (1) Hong Kong External Trade Figures, 1973.
 - (2) Census and Statistics Department, Government of Hong Kong.
 - (3) Labour Department, Government of Hong Kong.

The rattan furniture section of the industry has enjoyed a boom in exports despite a decline in the number of establishments and persons employed. Most manufacturers were reporting further sales increases in the early part of 1974, mainly aimed at consumers in North America and Western Europe. One serious problem facing the industry, however, is scarcity of skilled labour. Traditionally the activity has been carried on in small workshop establishments with every part hand made and hand woven together. "Producers" of rattan furniture have for many years been mainly trading companies whose role it was to establish and maintain contacts with overseas buyers. The staff of these companies were occupied on original furniture design or the construction of a prototype from a customer's specification. The actual production of the furniture was subcontracted out to small "cottage-type" establishments. The completed goods were then bought by the trading company, who inspected, finished, packed and despatched overseas. As has been the case in many of Hong Kong's industries, this small scale structure has manufactured a product of very high quality which has established the Colony's reputation as one of the foremost producers of high standard rattan furniture in the world.

This industrial structure is becoming increasingly threatened by the changing social and economic circumstances in the Colony, in particular even greater degrees of industrial concentration and rising factory wage rates. In late 1973 it was reported that the median age for skilled framers and weavers was 46, an extremely high level by Hong Kong standards. Younger workers are demonstrating reluctance to accept three year apprenticeships for a skill which is not normally exercised in a factory environment. Further, payment is on a piece-rate basis and is likely to become fixed after a worker reaches a certain plateau of ability. In many ways, this makes the industry a promising one for a country with a trainable surplus labour force, provided skilled foremen and supervisors can be brought in from overseas during the early years.

Despite these trends in Hong Kong, exporters have been reluctant to invest in substantial factory space and begin some mechanisation of operations. One of the few significant exporters to do so is used for the following case study.

Case Study Company (figures in U.S. dollars refer to 1973)

1. Products: Rattan furniture.
2. Ownership and Nationality: Hong Kong
3. Annual Sales: \$1,180,000
4. Value Added: \$554,600*
5. Numbers employed: Men: 136
Women: 14
Total: 150
6. Average monthly wage: \$160 (based on a monthly wage of HK \$1,500 for framers, HK \$1,200 for weavers, and HK \$560 for general workers).
7. Total annual wage cost: \$288,000
8. Non-wage value added: \$266,600

9. Investment in equipment: \$197,000
10. Size of factories: 4,590 sq. metres
11. Space per employee: 30.6 sq. metres
12. Sales per employee: \$7,867
13. Value added per employee: \$3,697
14. Non-wage value added per employee: \$1,777
15. Equipment per employee: \$1,313
16. Purchase of materials: Mostly from China. No problems with supplies.
17. Sales: Over three-quarters of sales exported. Main markets were the U.S. and Europe. Competition from other rattan manufacturers in Asia was not severe, largely owing to Hong Kong's superior quality. In the Philippines, for example, it is the custom to use nail joints rather than wooden pegged ones. More severe competition is presented by wicker ware manufacturers in Eastern Europe. A high quality willow chair was retailed in the U.S. in July, 1973, at \$38.95 compared with a cost (ex factory) of \$21 and a retail price of \$40 for a rattan chair.
18. Transport requirements: sea for both materials and final products.

Note * Consultants' estimate.

Source (1) Field interview
(2) Information provided by the Hong Kong office of "Asian Sources" publication.

17.3 Korea

17.31 Plywood

17.311 The Industry

The plywood industry has for several years been one of Korea's most important export industries. The U.S. is by far the largest market, taking 92 per cent of the total value in 1972.

The growth of exports in recent years has been as follows
(figures in thousands of U.S. dollars)

1966	29,880
1967	36,418
1968	65,590
1969	76,162
1970	91,746
1971	124,275
1972	153,623
1973 (first 10 months)	220,879

Annual average rate of growth, 1966-1972: 31.5%

Sources (1) Office of Customs Administration, Statistical Yearbook of Foreign Trade, 1966-1972.

(2) Bank of Korea, Monthly Economic Statistics, January, 1974.

In 1972, the industry consisted of 79 establishments employing 21,203 workers. In addition there were 970 saw-mills employing 11,015 workers.

Case Study Companies (figures in U.S. dollars refer to 1973)

	C O M P A N I E S	
	A	B
1. Products	Plywood	Plywood
2. Nationality and Ownership	Korean	Korean
3. Annual Sales	\$69,424,000	\$10,635,135
4. Value Added	\$20,750,834	\$3,339,432
5. Number employed: Men	N.A.	511
Women	N.A.	274
	<hr/> 5,210	<hr/> 785

C O M P A N I E S

	<u>A</u>	<u>B</u>
6. Average monthly wage	\$54	\$40
7. Total annual wage cost	\$3,376,080	\$376,800
8. Non-wage value added	\$17,374,754	\$2,962,632
9. Net profit	\$8,013,513	(\$129,730)
10 Fixed Assets	\$10,067,568	\$3,627,027
11 Sales per employee	\$13,325	\$13,548
12 Value added per employee	\$3,983	\$4,254
13 Non-wage value added per employee	\$3,335	\$3,774
14 Fixed assets per employee	\$1,932	\$4,620
15 Value added/Sales	29.9%	31.4%
16 Net Profit/Sales	11.5%	(1.2%)
17 Wage Costs/Sales	4.9%	3.5%
18 Electricity consumption (kwh p.a.)	69,306,000	N.A.
19 Electricity consumption per employee (kwh p.a.)	13,302	N.A.
20. Water consumption	Negligible in relation to output	
21 Purchase of materials. Wood comes via local saw mills, principally from Indonesia and the Philippines.		

22 Sales: Company A Exports in 1972: \$50.8 million, mainly to the U.S. The U.S. plywood importers have offices in Seoul who frequently act as intermediaries, though the company does have a representative in the U.S. A large part of the demand is for private housing, though this is now threatened by rising costs.

Company B Exports \$2.5 million or 24 per cent of output. The local market is increasing rapidly with the increase in Western-style housebuilding.

23 Transport requirements: the import of materials is done by chartering vessels. Exported plywood may be carried on liner vessels but with a bulk item, like Korea's, chartering is a much cheaper solution.

Sources : Field interviews.

Korean Footwear Case Study Companies (figures in US dollars refer to 1972)

	C	O	M	P	A	N	E	S
	A	B	C	D	E	F	G	
1. Products	Plastic footwear	Leather, plastic and rubber footwear	Rubber footwear	Rubber footwear	Rubber footwear	Leather footwear	Leather footwear	
2. Nationality	Korean	Korean	Korean	Korean	Korean/Japanese	U.S.	Korean	
3. Ownership	Wholly local	Wholly local	Wholly local-single proprietor	Wholly local-single proprietor	Joint venture	Wholly owned subsidiary	Wholly local	
4. Annual sales	\$363,403	\$5,733,340	\$33,785	\$113,013	\$319,224	\$148,069	\$143,557	
5. Value added	\$178,228	\$1,165,014	\$20,000	\$59,522	\$198,318	\$86,783	\$93,569	
6. Numbers employed: Men	121	687	7	46	55	41	24	
Women	59	513	8	48	60	28	18	
Total	180	1,200	15	94	115	69	42	
7. Average monthly wage	\$50	\$38	\$67	\$41	\$75	\$43	\$49	
8. Total annual wage cost	\$108,000	\$547,200	\$12,060	\$46,248	\$103,500	\$35,604	\$24,696	
9. Non-wage value added	\$70,228	\$617,814	\$7,940	\$13,274	\$94,818	\$51,179	\$68,873	
10. Net profit	\$17,367	\$272,954	\$4,054	\$2,648	\$20,485	N.A.	\$29,065	
11. Fixed assets	\$356,042	\$1,405,004	\$33,781	\$119,808	\$36,948	N.A.	\$10,414	
12. Plant and machinery	\$93,215	\$576,051	\$8,108	\$78,924	\$11,010	N.A.	\$7,670	
13. Sales per employee	\$2,019	\$4,778	\$2,252	\$1,202	\$2,776	\$2,146	\$3,418	
14. Value added per employee	\$990	\$971	\$1,333	\$633	\$1,725	\$1,258	\$2,228	
15. Non-wage value added per employee								
16. Fixed assets per employee	\$390	\$515	\$529	\$141	\$825	\$742	\$1,640	
17. Plant per employee	\$1,978	\$1,170	\$2,252	\$1,275	\$321	N.A.	\$248	
18. Value added/sales	\$518	\$480	\$340	\$840	\$96	N.A.	\$183	
19. Wage cost/sales	49.0%	20.3%	59.2%	52.7%	62.1%	58.6%	65.2%	
20. Profit/sales	29.7%	9.5%	35.7%	40.9%	32.4%	24.0%	17.2%	
21. Electricity consumption (kwh per annum)	4.8%	4.8%	12.0%	2.3%	6.4%	N.A.	20.2%	
22. Electricity consumption per employee	N.A.	3,093,436	76,000	245,400	332,800	N.A.	48,000	
23. Water consumption (kwh per annum)	N.A.	2,578	5,067	2,611	2,894	N.A.	1,143	
24. Water consumption (litre p.a.)	N.A.	45.7 million	1.1 million	3.6 million	4.9 million	N.A.	N.A.	
Water consumption per employee (litre p.a.)	N.A.	38,000	73,300	38,300	42,600	N.A.	N.A.	

17.32 Other Wood Products.

17.321 The Industry

The basic statistics for the wood products industry for 1972 are as follows (figures in thousands of U.S. dollars)

A. Wooden Furniture	
Ex factory sales (\$000)	16,349
Number of establishments	815
Number employed	8,776
B. Other wood products (including household utensils and handicrafts)	
Ex factory sales (\$000)	3,019
Number of establishments	112
Number employed	1,694

Source: Economic Planning Board: Report on Mining and Manufacturing Survey, 1972.

Unfortunately the Korean trade statistics do not offer a breakdown of furniture by type of material. Exports of other wooden products in 1972 were £4.3 million. Exports of furniture were put at about \$11 million by a Korean industrialist.

17.322 Case Study Companies (figures in U.S. dollars refer to 1972)

	C	O	M	P	A	N	I	E	S
	<u>A</u>		<u>B</u>		<u>C</u>		<u>D</u>		
1. Products	Wooden furniture		Wooden Furniture		Wooden Handicrafts		Wooden furniture		
2. Nationality	Korean		Korean		Korean		Joint Venture.		

	C O M P A N I E S			
	A	B	C	D
3. Ownership	Local	Local	Local	Japanese/ Korean
4. Annual Sales	\$22,972	\$102,695	\$61,888	\$716,216
5. Value Added	\$13,938	\$41,834	\$41,133	\$343,784
6. Numbers employed				
Men	N.A.	N.A.	14	302
Women	N.A.	N.A.	9	18
Total	<u>15</u>	<u>23</u>	<u>23</u>	<u>320</u>
7. Average monthly wage	\$43	\$37	\$63	\$43
8. Total annual wage costs.	\$7,740	\$10,212	\$17,388	\$165,120
9. Non-wage value added	\$6,198	\$31,622	\$23,745	\$178,664
10 Net profit	\$3,243	\$8,648	\$14,567	\$59,460
11 Fixed assets	\$45,943	\$23,782	\$42,429	\$245,946
12 Plant and equipment	\$4,594	\$16,215	\$16,756	N.A.
13 Sales per employee	\$1,531	\$4,465	\$2,691	\$2,238
14 Value Added per employee	\$929	\$1,819	\$1,788	\$1,074
15 Non-wage value added per employee	\$413	\$1,375	\$1,032	\$558
16 Fixed assets per employee	\$3,063	\$1,034	\$1,844	\$769
17 Plant and equipment per employee	\$306	\$705	\$729	N.A.
18 Value added/Sales	60.7%	40.7%	66.5%	48.0%
19 Wage costs/Sales	33.7%	9.9%	28.1%	23.0%
20 Profit/Sales	14.1%	8.4%	23.5%	8.3%

C O M P A N I E S

A B C D

21	Electricity consumption (kwh p.a.)	16,000	72,000	35,500	500,000
22	Water consumption (litres p.a.)	0.6 million	0.4 million	1.7million	14.3 million
23	Electricity consumption per employee (kwh p.a.)	1,067	3,130	1,543	1,562
24	Water consumption per employer (litresp.a)	40,000	17,400	73,900	44,700

25 Purchase of material: Company A 53% of materials are purchased from local processor. The rest is imported through a trading company. Because of small size it cannot carry large stocks and is sometimes adversely affected by shortages.

Company B Obtains 38% from abroad and the rest locally. The problem with local supplies is that wholesalers tend to hoard stocks especially during a time of rising prices. The problem is even worse with imports. Most of the broking for the small Korean buyers is done by Japanese houses and the company considers that the traders have taken unfair advantage of the current price and supply situation. One particular wood has risen in price over the past 12 months by 280 per cent. Other woods, also obtained through Japanese brokers, were rising during the last six months of 1973 at an annual rate of 275 per cent. The brokers do, however, give fairly generous credit periods - 60 days in the case of this company.

Company C This company obtains all its wood directly from local suppliers. There is a problem in that the major mills combine to form an effective cartel.

Company D Obtains about half its material through Japanese brokers. Claims that there is no connection between these brokers and joint venture partner who is a furniture manufacturer. Says that the supply position has eased since Governmental level consultations between Korea and Indonesia took place. By mid-1973, Korean firms were developing about 140,000 hectares in Indonesia, and the Korean Government has proposed that another 2 million be developed during the next five years. Korea has in general done relatively little buying from Malaysia and the Philippines who are now cutting back on exports (see above). The Korean Government has also been of great assistance to the smaller firms in the industry by setting aside \$10 million as a loan fund for importing logs. There is also a programme to develop extensive forests in Korea.

26 Sales: Company A In 1972 the company exported about \$10,000 or nearly 50 per cent of total sales. This was all by specific order. There is no effective independent quality control. The owner found that foreign buyers, through the Korean trading companies, were cautious at first of the low prices at which he offered his goods.

Company B Exports consist of about a quarter of total sales. There is no effective quality control. Competition to secure contracts for exports is very severe. Suffers from a shortage of skilled labour.

Company C Exports about 20% of sales, all by order from a trading company. There is no effective quality control. Competition in export markets very severe.

Company D Exports in 1972 only \$184,000 or 26% of sales. Will try and expand. Very fierce competition from Taiwan in U.S. market. The most success has been in items with traditional Korean-style designs. One contract in the U.S. was lost purely because of price considerations.

27 Transport: Sea for materials and final products.

Source: Field interviews.

17.4 Industry Evaluation.

1. Employment

Average non-wage value added per employee:

Furniture and handicrafts: \$1,031

Plywood: \$3,554

Proportion of men among employees:

Furniture and handicrafts: 82.0%

Plywood 65%

2. Transport Requirements: Mostly sea for both materials and final products, though highly priced handicraft items may be despatched by air.

3. Nature of the market: For a relatively new entrant to the market, plywood is probably not a promising industry. Although fairly labour intensive, established centres such as Korea and Taiwan are unlikely to concede much of their strong hold over the market. Even more important, on the supply side, source countries are beginning to encourage the development of their own wood processing industries. To remain a major plywood producer, firms may have to consider operating joint ventures in source countries. Japan, Taiwan and Korea are all engaging in this.

The furniture and handicraft lines are much more promising for a small country such as Mauritius. Value added tends to be much higher in relation to sales than in the case of primary wood processing (average of 53 per cent as against 31 per cent) Also, this part of the industry is more labour intensive according to both non-wage value added per employee and fixed assets per employee criteria.

Although furniture and handicrafts are more vulnerable to the dictates of fashion, it is relatively easy to switch lines using the same factors of production. This is shown by the Hong Kong experience where rattan furniture makers shift easily into other rattan items and vice versa. The industry is also one that can be comparatively easily organised on a small scale.

4. Average electricity consumption per employee:

Plywood	13,332 kwh p.a.
Furniture and handicrafts	1,825 kwh p.a.

5. Average water consumption per employee:

Furniture and handicrafts:	44,000 litres
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6. Space per employee: Furniture and handicrafts: 30.6 sq. metres

18. METAL AND MECHANICAL TOYS

Plastic toys have already been covered under the Section dealing with plastic goods. This Section considers metal and mechanical toys, the production of which is normally more sophisticated. A metal toy industry can be expected to follow from the successful development of plastic toy production.

18.1 Hong Kong

18.11 The Industry

The metal and mechanical toy industry in Hong Kong is currently in the enviable position of being able to produce toys of a sophistication beyond the present capacity of any other Asian country except Japan at prices considerably below those of Japanese manufacturers. This situation is likely to remain in force up to about 1978. By then Korea and Taiwan should be mounting an effective challenge.

The industry is dominated by 8 large manufacturers, 4 of them associated with overseas companies, and the others selling both under their own brand names and also manufacturing large orders sub-contracted to overseas clients. In addition, there are many small establishments which are generally undercapitalised and trade through exporting companies. These small factories rely a great deal on the trading companies for finance of machinery and raw materials.

18.12 Case Study Companies (figures in U.S. dollars refer to 1973)

C O M P A N I E S

	<u>A</u>	<u>B</u>
1. Products	Metal, mechanical, plastic and stuffed toys.	Mechanical Toys
2. Nationality	Hong Kong/U.S.	Hong Kong

C O M P A N I E S

	<u>A</u>	<u>B</u>
3. Ownership	Joint Venture	Local
4. Annual Sales	\$12,100,000	\$7,546,000
5. Value added	\$5,747,500	\$3,773,000
6. Numbers employed:		
Men	750	660
Women	1,750	990
	<u>2,500</u>	<u>1,650</u>
7. Average monthly wage	\$121	\$117
8. Total annual wage costs	\$3,630,000	\$2,316,600
9. Non-wage value added	\$2,117,500	\$1,456,400
10 Sales per employee	\$4,840	\$4,573
11 Value added per employee	\$2,299	\$2,287
12 Non-wage value added per employee	\$847	\$883
13 Electricity consumption (kwh p.a.)	4,300,000	6,000,000
14 Electricity consumption per employee (Kwh p.a.)	1,720	3,636
15 Water consumption (litres p.a.)	N.A.	218.2 million
16 Water consumption per employee (litres p.a.)	N.A.	132,200
17 Size of factory	27,870sq. metres	46,450 sq. metres
18 Space per employee	11.1sq. metres	28.2 sq. metres
19 Purchase of materials	Commercial,Main Sources: Australia, U.S. Japan	Commercial,Main Sources: Canada, Japan

- (a) Good external transportation and communications facilities.
- (b) Presence of high standard supporting industries, including die stamping, rubber and metal parts, injection moulding, textiles and miniature clothing.
- (c) Easy availability of all raw materials - Hong Kong is the "warehouse of Asia".
- (d) Presence of tool making facilities.

Source: Field Interviews:

18.2 Korea

18.21 The Industry

The metal and mechanical toy industry is a comparatively recent development in Korea. About 5 years ago it was at a primitive level, the most abundant raw material being salvaged tin cans from U.S. military camps. Recently, technical assistance and direct investment from overseas (especially Japan and the U.S.) have given the industry the stimulus it required to develop. In 1968 exports were \$400,000. In 1972 they were \$1.2 million, and the target for 1973 was \$3 million. Preliminary indications suggest that this had been exceeded. The main reason for this growth is the fact that some of the larger manufacturers of simple stuffed toys are switching to more sophisticated items. As Korea develops and wage rates rise relative to those in countries such as the Philippines, Korea will start to lose its competitive edge in the manufacture of simple items. Furthermore there is a fear among the larger producers and trading companies that Government intervention in the industry to encourage small scale production in rural areas may be against their interests.

	<u>Quota Limitation on Korean Exports, 1973</u>	<u>Actual Exports to US in 1972</u>
Rubber footwear	7,813,000 pairs	10,634,786 pairs
Other footwear (except leather)	23,020,000 pairs	20,371,322 pairs
Total	30,833,000 pairs	31,006,108 pairs

Sources: 1) Office of Customs Administration, Statistical Yearbook of Foreign Trade, 1972.

2) Asian Sources, September 1973.

Any exports above the quota must pay full duty upon entering the US. The fact that slippers were unexpectedly included in the quotas came as a shock to the Korean industry, as did the decision to make the quotas retroactive to 1st January, 1973.

7.2 2 Case Study Companies

Owing to the relatively large number of case study companies, the statistical data is presented in a separate table, and the points of discussion are presented in the text that follows. The numbers follow on from the table.

25. Exports: Three of the seven companies are exporting; they are companies A (74% of sales), B (50% of sales) and F (all sales). Company F exports all sales to its US parent company, Company A exports commercially (though on buyer's design specifications) while Company B exports partly under sub-contract and partly commercially. The current preoccupation among exporters is the imposition of US quotas which is discussed above. One of the ways in which the industry is trying to overcome this is by attempting to penetrate the Japanese market. This did apparently meet with success in 1973 despite the continued imposition of a 12 per cent duty. In view of the fact that the Japanese footwear industry is being run down, a lifting of this restriction can be expected within the next 2 or 3 years.

Three of the four companies with no exports in 1972 were expecting to export by late 1974.

The essence of the official plan is to boost toy exports to \$100 million by 1980 and at the same time to use the industry as an instrument in its policy to reduce large scale migration from the countryside to the cities. Low interest loans have been provided through the Medium Industries Bank and other banks, and the Government has helped to set up a toy manufacturers' area within one of the Export Industrial Zones. There are also more than 20 toy factories already established under the "Saemaul Movement". This movement is a project of the President whereby industries, geared to the export market while being essentially small scale, may be established in rural areas. Some of the medium and large scale companies fear that they may be undercut by this competition. They are also apprehensive of a repeat of the wig industry's experience in 1970 when official encouragement of small scale manufacture led to considerable over-supply. Another factor encouraging the trend to more sophisticated items is the substantial rise in the cost of raw materials, especially plastics, since 1972. This has led manufacturers to look for ways of increasing value added.

18.22 Case Study Companies (figures in U.S. dollars refer to 1972)

	C O M P A N I E S		
	<u>A</u>	<u>B</u>	<u>C</u>
1. Products	Metal toys	Metal toys	Metal and mechanical toys and dolls.
2. Ownership and Nationality	Korean	Korean	Korean
3. Annual Sales	\$127,018	\$300,773	\$4,955,400
4. Value Added	\$86,101	\$160,531	\$1,488,260
5. Numbers			
Employed Men:	27	48	482
Women:	43	117	937
Total:	70	165	1,419

C O M P A N I E S

A B C

6. Average monthly wage	\$79	\$49	\$48
7. Total annual wage cost	\$66,360	\$97,020	\$817,344
8. Non-wage value added	\$19,741	\$63,511	\$670,916
9. Net Profit	\$13,513	\$36,967	N.A.
10 Fixed assets	\$171,740	\$116,270	N.A.
11 Plant and equipment	\$80,859	\$52,542	N.A.
12 Sales per employee	\$1,815	\$1,823	\$3,492
13 Value added per employee	\$1,230	\$973	\$1,049
14 Non-wage value added per employee	\$282	\$385	\$473
15 Fixed assets per employee	\$2,453	\$705	N.A.
16 Plant and equipment per employee	\$1,155	\$318	N.A.
17 Value Added/Sales	67.8%	53.4%	30.0%
18 Wage cost/Sales	52.2%	32.3%	16.5%
19 Profit/Sales	10.6%	12.3%	N.A.
20 Electricity consumption (kwh p.a.)	109,000	119,000	8,000,000
21 Electricity consumption per employee (k.w.h. p.a.)	1,557	721	5,638
22 Water consumption (litres p.a.)	5.4 million	5.9 million	166.2 million
23 Water consumption per employee (litres p.a.)	77,143	35,758	117,125

24 Purchase of materials: Company A Buys most materials locally. Problems of delay in delivery of some parts ordered from overseas.

Company B About 15% of the value of materials is purchased from a local manufacturer. The company has a binding technical assistance and marketing agreement with a Japanese firm, and many vital parts are obtained from this source including gear boxes and electric motors.

Company C Basic materials such as plastic and metal can be obtained from local traders; dies and moulds must be imported from Japan or the U.S. As far as components are concerned the company tries to make most of its own, but sometimes needs to import more sophisticated items.

25. Sales: Company A Had just started to export in 1972 when \$400 worth were sold abroad. Has expanded considerably in 1973. Produces to order from Korean trading company which has direct links with buyers. Has found difficulty in keeping prices down to what the market seems to require.

Company B Under the technical assistance agreement with Japanese firm, the latter has exclusive marketing rights over the entire output, all of which is sold abroad by order from Japan. The difficulty with breaking away from this agreement would be scarcities of vital material and skilled labour especially for development and design work. As far as local sources of materials are concerned, they are often of good quality but out of date in an industry in which technology changes rapidly. Reliance on imports sometimes leads to costly delays in delivery of export orders.

Company C The company has a marketing agreement whereby a large part of output, consisting of model trucks, is exported under a well known international brand name. Exports of this item, accounting for 80 per cent of the company's total exports, amounted to \$800,000 in 1972.

However, the company also manufactures a significant number of battery operated trucks and cars under its own brand name. In developing these products, the home market, of which the firm has by far the largest share, is of considerable assistance. Despite this, differences between home and overseas markets are considerable, one important feature of the latter being safety regulations especially in the U.S. For this reason, the company prefers to rely on foreign technical assistance for developing export products, rather than its own research and development.

26. Transport requirements: Materials: Sea
Final products: Sea (containers)

Sources: Field interviews.

18.3 Industry Evaluation

1. Employment:

Average non-wage value added per employee: \$574

Proportion of men among employees: 34.3%

2. Transport Requirements: Sea for materials; final products could be transported by air, but value:weight ratio not particularly high. Goods despatched from Hong Kong and Korea by container.
3. Nature of the market: An export-orientated toy industry normally starts with fairly simple stuffed toys which are labour intensive but not skill intensive, and the production of which can easily be organised on a small scale. As living standards and the level of wages rise, together with the cost of materials, manufacturers tend to switch to more sophisticated items with a relatively higher value added. Labour costs and other costs are rising rapidly in both Hong Kong and Japan who are the leading producers of metal/mechanical toys in the world.

In the more sophisticated items these countries are likely to keep their advantage for some years to come owing to the continuing development of support industries, and the well developed market contacts and reputations of Japanese and Hong Kong sources. There are, however, likely to be openings in the less sophisticated items. Compared with stuffed and simple plastic toys, skill requirements are high, though the industry is still very labour intensive. The skills are of a kind which can be easily diffused into other sections of the economy.

The toy market is influenced by fashions and even Hong Kong is unable to compete very successfully in "craze" items which are promoted by intensive advertising especially on T.V. These "crases" are transitory and fashions do not change very rapidly in the rest of the market.

4. Average electricity consumption per employee: 2,654 kwh p.a.
5. Average water consumption per employee: 90,600 litres p.a.
6. Average space per employee (Hong Kong): 19.6 sq. metres.

19. METAL HOUSEHOLD WARE (MAINLY OF ALUMINIUM)

19.1 Introduction

This industry covers a wide variety of products including tableware, kitchenware, ashtrays, motor vehicle accessories and camping goods. Expansion has been rapid in Hong Kong, Taiwan and Korea since the mid 1960s, but recent sharp rises in the price of aluminium have slowed growth down and led manufacturers to search for more profitable higher-grade items such as cookware, rather than concentrating on less sophisticated items such as ashtrays.

19.2 Hong Kong

19.21 The Industry

The aluminium ware industry's growth has partly offset the decline of enamelware production. The main markets for enamelware were in Africa and the Middle East, and these nations have developed their own industries, in some cases with Hong Kong investment and technical assistance. During the first half of the 1960s, the aluminium ware industry was steady rather than rapidly growing, and expansion in earnest began in 1966. The progress of the industry since then is outlined in the following table:

	<u>Exports (US\$000)</u>	<u>Number of Establishments</u>	<u>Employment</u>
1966	2,285		
1969	4,451		
1970	5,286	67	2,428
1971	6,066		
1972	7,082		
1973	9,055	89	2,912

Sources: Government of Hong Kong; Census and Statistics Department
Labour Department.

The structure of the industry is familiar to Hong Kong. 70, or almost 80 per cent, of the establishments are small scale employing less than 20 persons and with an average output of less than \$15,000 per year.

19.22 Case Study Company (figures in US dollars refer to 1973)

1. Products: Aluminium wares especially frying pans, hinges for suitcases, ashtrays.
2. Ownership and nationality: Hong Kong
3. Annual sales: \$6,720,000
4. Value added: \$1,680,000
5. Numbers employed: Men 400
Women 100
Total 500
6. Average monthly wage*: \$102
7. Total annual wage costs: \$612,000
8. Non-wage value added: \$1,068,000
9. Sales per employee: \$13,440
10. Value added per employee: \$3,360
11. Non-wage value added per employee: \$2,136
12. Size of factory: 14,864 sq. metres
13. Space per employee: 29.7 sq. metres
14. Electricity consumption: 1.56 million kwh per annum
15. Electricity consumption per employee: 3,120 kwh per annum
16. Water consumption: N.A.
17. Purchase of materials: All aluminium sheets are purchased from another Hong Kong company within the same group. This employs 250 persons and has an output of 700 tonnes per month. Of this, the company purchases about 25 per cent, the rest being exported to the US and Europe.
18. Sales: Exports total about 1,800 tonnes per annum, mostly to the US and Europe. The company does not view prospects in the US market with optimism. The Americans seem more attracted by cheaper lines, while the firm wishes to upgrade its products in the face of competition from other Asian source areas, especially Taiwan and Korea. Because of its connections with one of the Colony's largest suppliers of aluminium sheet, there has been no shortages problem, though the price had risen by 91 per cent during the year ending in January 1974. This had adversely affected orders. Most of the increase in turnover last year was in value rather than volume, and the progress of the industry in 1973 is exaggerated by expressing it in US dollars owing to the rise of the Hong Kong dollar against the American currency. In Hong Kong dollar terms, output rose by 7 per cent only in value and actually declined slightly in volume. Most of the firm's cookware is of the non-stick variety which is new to Hong Kong.

The major problem facing the company and the industry as a whole is rising freight costs. Cookware and other aluminium holloware uses a considerable amount of shipping space.

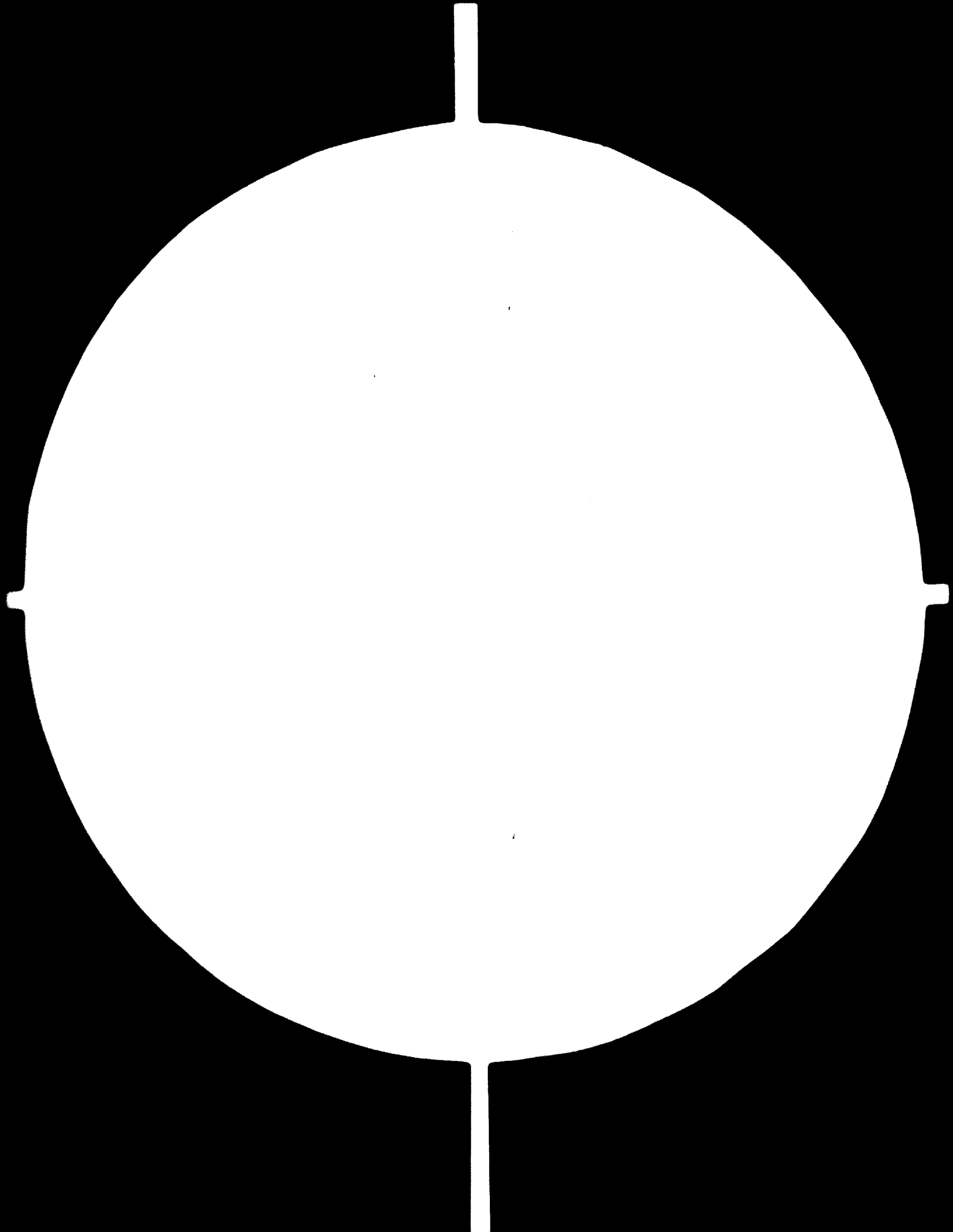
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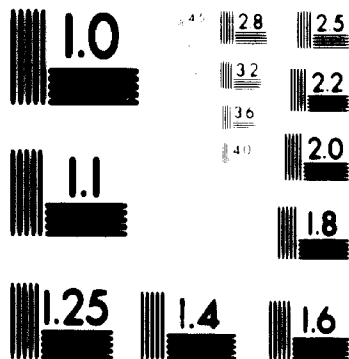
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

24 x F

<u>Year</u>	<u>No. of looms</u>	<u>Output (million m²)</u>	<u>Exports (million m²)</u>
1960	18,300	385	181
1965	21,200	535	240
1969	23,200	640	263
1970	23,700	713	263
1971	24,900	731	301
1972	25,000	649	273

Source: Federation of Hong Kong Industries.

As with spinning, cotton weaving mills began to increase the production of cotton/synthetic fibres after 1965. Exports rose from 0.5 million square metres in 1964 to 115 million square metres in 1972.

In 1972, the industry experienced some difficulties due to the inflow, beginning in 1971, of large quantities of cheap Pakistani yarn. The free trade nature of the Hong Kong economy meant that there was no protection at all for local manufacturers. The import of Pakistani yarn rose by 61.4 per cent in 1974, and again by 17 per cent in 1972 to reach 60 million kilos. The average price of imported yarn from Pakistan in 1972 was US\$75 per kilo with the bulk of imports in the coarser grades which were arriving at a landed price of US\$71 per kilo. This was not a great deal more than the price for imported raw cotton from Pakistan (one of the principal cheaper sources of supply) which averaged US\$ 61 per kilo. This margin of \$10 per kilo was not enough for many local manufacturers. Production of yarn fell both in 1971 and 1972, from 148.9 million kilos in 1970 to 115.5 million kilos in 1972.

Dyeing and finishing also developed rapidly during the 1960's, both in quantity and in quality. The number of mills doubled, while employment trebled between 1960 and 1969.

There is a distinct improvement in quality, pace being kept with new developments such as permanent press finishing and the finishing of cotton/synthetic fabrics. A number of mills failed in the early part of 1971, due to overexpansion in the previous year, but in 1972 the situation had steadied, so that by the end of that year dyeing and finishing provided employment for 13,600 persons compared with 3,900 in 1960.

The development of the woollen industry- both spinning and knitting - proceeded strongly during the 1960's, but has fallen back in recent years. The following table summarises the changes since 1960.

<u>Year</u>	<u>No. of Mills</u>	<u>Employment (No.)</u>	<u>Production of Wool Yarn (million kilos)</u>
1960	2	754	1.7
1965	7	2,492	7.9
1969	13	4,150	11.0
1970	12	4,416	12.1
1971	16	3,360	9.5
1972	11	3,396	10.0

Source: Federation of Hong Kong Industries.

The main cause of the recent decline in this section of the industry was the fall-off in exports of woollen knitted garments in the face of competition from other low-cost labour centres, especially Korea.

Turning to garments, the main market before 1964 was the United Kingdom, but this has since been superseded by the U.S. which in 1972 accounted for 35 per cent of total exports. In 1972 also, West Germany overtook the U.K. for second place, purchasing 19 per cent of the total compared with the latter's 18 per cent. The development of the garment industry can be broken down as follows:

(All figures in millions of U.S. dollars)

Year	E Garments from Woven Fabrics	X Cotton and Synthetic Knitwear	P O R T S Woollen Knitwear
1960*	113	27	*
1965	153	29	78
1969	345	93	138
1970	390	129	135
1971	475	204	131
1972	521	249	140

* Includes all knitted garments under cotton and synthetic knitwear.

Source: Federation of Hong Kong Industries.

The final section of the industry is clothing accessories. This includes gloves, which are dealt with in another Section of this study, socks, stockings, brassiers and corsets. Total exports were as follows (in millions of U.S. dollars)

1960	25
1969	55
1970	62
1971	86
1972	92

Source: Federation of Hong Kong Industries.

It is likely that 1974 will see the beginning of a difficult period for the Hong Kong industry. On the one hand, raw materials are increasingly scarce and expensive. On the other hand, labour costs are rising rapidly in the Colony, making it difficult or impossible for Hong Kong to compete with its Asian neighbours in the cheaper lines.

Wage rates in the Hong Kong garment industry have been increasing at an annual rate of 12.7 per cent between 1968 and 1973 to reach an average monthly remuneration of US\$101 at the end of the second quarter of 1973. Average monthly remunerations in mid 1973 (including fringe benefits) for sewing machine operatives in a number of low cost labour countries is shown in the following table:

	<u>U.S. dollars per month</u>
Mexico	151
Hong Kong	101
Singapore	91
Taiwan	65
Korea	35
Philippines	30
Thailand	26
Mauritius	23
Indonesia	22

- Sources:
- (1) Various official publications.
 - (2) Field Interviews.
 - (3) "Asian Sources" various months, 1973 and 1974.

The Hong Kong industry has responded to this situation in two ways. On the supply side, there is increasing domination by the large integrated companies such as Textile Alliance Ltd., and Winsor Industrial Corporation Ltd. Small establishments, which relied for a substantial part of their business on sub-contracting from the large groups, are suffering from the increasing tendency towards self-containment on the latter's behalf. They are also hit by the current unwillingness of piece good suppliers to give credit.

One of the advantages of the large groups over their smaller competitors is that they have spread their operations over a number of countries. The largest group in the industry in Hong Kong, Textile Alliance Ltd., had the following operations planned for 1973:

<u>Commodity</u>	<u>Location</u>	<u>Quantity</u>	
Polyester fibre	Malaysia	80 tonnes per day	(-)
Yarn	Hong Kong	50,000 spindles	(50,000)
	Malaysia	100,000 "	(30,000)
	Thailand	140,000 "	(70,000)
	Taiwan	35,000 "	(30,000)
	Indonesia	20,000 "	(-)
	Nigeria	30,000 "	(10,000)
Cloth looms	Hong Kong	300 looms	(300)
	Malaysia	2,250 "	(1,000)
	Thailand	3,500 "	(2,000)
	Taiwan	444 "	(444)
	Indonesia	500 "	(-)
	Nigeria	900 "	(360)
Dyeing and finishing	Hong Kong	9 million metres/ month	(9 million)
	Thailand	8 million metres/ month	(3 million)
Polyester Nylon	Hong Kong	455,000 Kilos/ month	(455,000)
	Thailand	91,000 Kilos/ month	(-)
	Singapore	68,000 Kilos/ month	(68,000)
Knitting	Hong Kong	455,000 Kilos/ month	(455,000)
	Thailand	91,000 Kilos/ month	(-)
	Singapore	114,000 kilos month	(114,000)
Garment Sewing	Hong Kong	1,800 machines	(1,800)
	Taiwan	2,100 "	(1,500)
	Thailand	1,600 "	(1,600)
	Mauritius	1,400 "	(400)
	Malaysia	800 "	(400)
	Singapore	600 "	(600)

Figures in parentheses indicate capacity already installed by March, 1973.

Source: Textile Alliance Ltd. Annual Report and Accounts 1972/73.

One very interesting feature to note is that the proposed expansion is very much concentrated in the lower wage areas. Capacity in the high wage countries of Hong Kong, Singapore and Taiwan is to be increased by only 0.5 per cent, while the corresponding increase in other centres is to be 376 per cent.

The plans of this company may be taken as fairly typical of the larger groups in the Hong Kong textile industry. A contract for straightforward long run white shirts may be negotiated in Hong Kong, but the agreement would be likely to include a clause allowing the firm to manufacture the shirts elsewhere at one of its overseas subsidiaries. If, on the other hand, the buyer is looking for a prestige fashion item, then this is likely to be made in Hong Kong. Well made Hong Kong garments are, in 1974, recognised as comparable to those made in Italy and Ireland, besides which they still have a distinct price advantage. Factories in the Colony are adapting to the shorter production runs essential to the fashion trade. In the case of one medium sized firm, 40 per cent of output was, by the end of 1973, on a one month order to delivery basis, compared with less than 10 per cent 3 years previously.

20.22 Case Study Companies (figures in U.S. dollars refer to 1973)

	C O M P A N I E S		
	<u>A</u>	<u>B</u>	<u>C</u>
1. Products	Outer garments including rain-wear	Military Garments and other personnel equipment	Garments
2. Nationality and ownership	Hong Kong/ European joint venture	Hong Kong	Hong Kong

C O M P A N I E S

	<u>A</u>	<u>B</u>	<u>C</u>
3. Annual Sales	\$1,206,000	\$3,937,000	\$12,120,000
4. Value added	\$ 542,700	\$2,755,900	\$ 3,636,000
5. Numbers employed:			
Men	120	300	150
Women	180	200	1,350
Total	<u>300</u>	<u>500</u>	<u>1,500</u>
6. Average monthly wage	\$107	\$170	\$101
7. Total annual wage cost	\$385,200	\$1,020,000	\$1,818,000
8. Non-wage value added	\$157,500	\$1,735,900	\$1,818,000
9. Sales per employee	\$4,020	\$7,874	\$8,080
10 Value added per employee	\$1,809	\$5,512	\$2,424
11 Non-wage value added per employee	\$525	\$3,472	\$1,212
12 Size of factory (sq.metres)	3,150	8,100	9,000
13 Space per employee (sq.metres)	10.5	16.2	6.0
14 Electricity consumption (kwh per annum)	1.3 million	4.7 million	N.A.
15 Electricity consumption per employee (kwh per annum)	4,333	9,400	N.A.

C O M P A N I E S

A B C

16 Purchase of materials	Commercial. 60% of fabrics bought locally rest from Indonesia, Thailand, Philippines.	Commercial. Mostly from Europe and Japan.	Mostly from other firms in same group.
17 Sales	All sub-contract or to European partner. Sub-contracts cheaper lines to Korean associate.	By direct government order.	Exports world wide on commercial basis.
18 Transport requirements	Sea for materials and finished products.	Sea for materials. Both air and sea for finished products.	Sea for materials Fashion items sent by air.
19 Value added/ Sales	45.0%	70.0%	30.0%
20 Wage Costs/ Sales	31.9%	25.9%	15.0%

Source: Field interviews.

Each of the above companies reported that their operations were highly mechanised - as much if not more so than they would be in European garment factories. There is a firm limit to the degree to which garment making can be mechanised.

20.3 Korea

The growth of the Korean textile industry since the mid 1960's has been even more spectacular than that of Hong Kong, as the following table shows:

Exports of the Korean Textile and Garments
Industry, 1966-1973 (millions of U.S. dollars)

	<u>Yarn and Thread</u>	<u>Cotton Fabrics</u>	<u>Other Fabrics</u>	<u>Clothing from fabrics</u>	<u>Knitwear</u>	<u>Total</u>
1966	3	10	18	14	15	60
1967	3	13	27	23	15	81
1968	4	13	35	42	49	143
1969	6	19	36	58	64	183
1970	14	26	39	89	72	240
1971	42	31	57	129	98	357
1972	44	35	88	151	154	472
1973*	64	44	229	239	103	679
Annual average rate of growth 1966-72	56%	23%	68.5%	49%	47%	41%

* First 10 months only.

Source Bank of Korea, Monthly Economic Statistics, January 1974.

A more detailed view of the industry in 1972 is as follows:

	<u>Output (\$000)</u>	<u>Exports (\$000)</u>	<u>Exports/ Output (%)</u>	<u>Employment</u>
Cotton spinning	91,922	16,794	18.3	12,236
Woollen spinning	12,662	4,417	34.9	2,558
Man-made fabrics	119,826	18,077	15.1	26,173
Silk spinning	76,579	2,299	3.0	13,527
Blended yarn	99,844	2,032	2.0	14,014
Other yarn & thread	3,291	200		723
Total yard and thread.	404,124	43,819	10.8	69,231

	<u>Output (\$000)</u>	<u>Exports (\$000)</u>	<u>Exports/ Output (%)</u>	<u>Employment</u>
Cotton fabrics	133,156	34,770	26.1	28,532
Silk fabrics	19,940	9,695	48.6	5,848
Woollen fabrics	41,524	9,377	22.6	9,948
Fabrics of man- made fibres	117,036	67,377	57.6	25,880
Other fabrics	5,884	2,111	35.9	1,062
Total fabrics	317,540	123,330	38.8	71,270
Bleaching, dyeing and finishing	64,135	-	-	11,496
Stocking and hose	38,423	24,400	63.5	5,892
Mittens and gloves	5,328	2,806	52.7	2,858
Outer garments	320,492	233,843	73.0	109,453
Other garments	52,941	42,948	81.1	16,743
Headwear	918	850	92.6	505
Total garments	418,102	304,847	72.9	135,451
Total for industry	1,203,901	471,996	39.2	287,448

Sources: (1) Economic Planning Board: Report on Mining and Manufacturing Survey, 1972.

(2) Office of Customs Administration: Statistical Yearbook of Foreign Trade, 1972.

The survey of the Economic Planning Board does permit certain ratios and statistical relationships for the industry in 1972, which are presented in the accompanying table.

19. Transport requirements: Sea for both materials and finished goods.

Notes: *Including fringe benefits

N.A. = Not available

Source: Field interview

19.3 Korea

19.31 The Industry

The basic statistics for the aluminium products industry in 1972 are as follows:

Ex factory output (\$000)		7,299
of which:		
aluminium vats	1,242	
aluminium rice bowls	297	
aluminium frying pans	429	
aluminium kettles	262	
aluminium plates	11	
aluminium wash basins	297	
other aluminium household utensils	2,466	
pressed aluminium machine parts	64	
other aluminium products	2,231	
Exports fob (\$000)		1,710
of which:		
bobbins for sewing machines and textile machinery	1,116	
domestic utensils	555	
other aluminium products	39	
Number of establishments		101
Number employed		3,184

Sources: (1) Economic Planning Board, Report on Survey of Mining and Manufacturing, 1972.

(2) Office of Customs Administration, Statistical Yearbook of Foreign Trade, 1972.

The industry is remarkably similar in size and structure to that of Hong Kong, except for two important considerations. First, the Hong Kong industry is much more export oriented (70 per cent of sales exported as against 23 per cent in Korea). Second, in Hong Kong goods of a greater degree of sophistication

The proportion of men among employees in the Korean industry is as follows:-

Spinning	26.5 per cent
Weaving	29.5 per cent
Bleaching, dyeing and finishing	47.9 per cent
Knitted garments	34.4 per cent
Other garments	30.6 per cent

	No. of establishments	Total wage cost (\$000)	Value Added (\$000)	Non-wage value added (\$000)	Sales per employee (\$)	Value added per employee (\$)	Non-wage value added per employee (\$)	Value Added/Sales (%)	Wage Cost/Sales (%)
Cotton spinning	28	7,070	36,101	29,031	7,512	2,950	2,373	39.3	7.7
Woollen spinning	29	1,243	7,044	5,801	3,314	2,754	2,268	55.6	9.8
Man-made fibres	46	13,137	43,167	30,030	4,578	1,649	1,147	36.0	11.0
Silk spinning	76	6,368	25,823	19,455	5,661	1,909	1,438	33.7	8.3
Blended yarn	132	8,828	53,835	45,007	7,125	3,841	3,212	53.9	8.8
Cotton fabrics	441	14,354	47,427	33,073	4,667	1,662	1,159	35.6	10.8
Silk fabrics	70	2,381	7,300	4,919	3,410	1,248	841	36.6	11.9
Woollen fabrics	45	6,188	14,830	8,642	4,174	1,491	869	35.7	14.9
Fabrics of man-made fibre	585	13,423	50,275	36,852	4,522	1,943	1,424	43.0	11.5
Bleaching, dyeing and finishing	197	5,285	19,341	14,056	5,579	1,682	1,223	30.2	8.2
Stocking and hose	104	2,685	10,561	7,876	6,521	1,792	1,337	27.5	7.0
Knitted underwear	187	3,937	13,581	9,644	3,979	1,476	1,048	37.1	10.7
Other knitwear	406	20,316	46,562	26,426	2,208	1,162	659	52.6	23.0
Other wearing apparel	2,976	29,773	89,049	59,276	3,174	1,123	748	35.4	11.8

Source: Economic Planning Board Report on Mining and Manufacturing Survey, 1972.

21 OTHER INDUSTRIES

21.1 Introduction

During the course of the field work, data was collected on a number of manufacturing establishments in Singapore, Hong Kong and Korea which either do not conveniently fit under a particular industry heading, or are isolated in the sense that no further case study material could be collected. The data on these case studies are presented in this Section of the Appendix. The industries and the countries in which they occur are as follows :

<u>Industry</u>	<u>Country</u>
Bicycle parts	Korea
Jewellery	Hong Kong, Korea
Nylon zip assembly	Singapore
Ship breasting and steel rolling	Hong Kong
Musical instruments	Korea
Locks	Korea
Feather processing	Singapore
Automobile parts	Singapore
Hand Tools	Korea
Metal valves	Korea
Marble goods	Singapore

All cash figures are in U.S dollars.

21.2 Bicycle Parts : Korea

1. Ownership and Nationality of Company : Korea.
2. Annual sales: \$259,459.
3. Value added: \$124,696.
4. Numbers employed : Men 91
Women 7
Total 98
5. Average monthly wage : \$39.
6. Total annual wage cost : \$45,864.
7. Non-wage value added : \$78,832.
8. Net profit : \$11,892.
9. Fixed assets : \$156,757.
10. Plant and machinery : \$54,054.
11. Electricity consumption : 283,000 kwh per annum.

12. Electricity consumption per employee : 2,888 kwh p.a.
13. Water consumption : 9.4 million litres p.a.
14. Water consumption per employee : 96,000 litres p.a.
15. Sales per employee : \$2,648.
16. Value added per employee: \$1,272.
17. Non-wage value added per employee \$804.
18. Fixed assets per employee : \$1,600.
19. Plant and machinery per employee : \$552.
20. Value added / sales: 48.1%.
21. Wage costs / sales: 17.7%.
22. Profit / Sales: 4.6%.
23. Purchase of materials: Half of materials are imported through local traders. . . Complaints of delay in delivery and shortage of local materials.
24. Sales: All output in 1972 sold on the local market but some small exports in 1973 sold through a trading company. Will try to export in 1974.
25. Transport requirements: Sea for both materials and finished goods.

Source : Field interview.

21.3 Jewellery: Hong Kong, Korea

21.31 Hong Kong

The company produces high quality jewellery by a casting process. Items are cast in a mould and trimmed and finished by hand. Output is about 10,000 pieces per month which would require 1,200 skilled jewellers without the casting. The labour is highly skilled, and the plant only employs about 120. The process consists of casting, trimming, final shaping, setting of stones and polishing. The process can be applied to rings, necklaces, earrings, pendants and brooches. The value of output depends primarily on the material used. Labour cost would be about U.S. \$23.7 for a ring made entirely by hand (3 days work for a skilled jeweller on a daily rate of HK\$40 or U.S.\$7.9). Labour cost for a cast ring would be about HK \$12 (U.S.\$2.4). The end product would not, of course, be worth the same but with the process used in this plant (unique in Hong Kong), it is still a high quality item. The overheads of the factory and adjacent

offices came to about HK \$24 (U.S \$4.7) per ring. These overheads cover rent and utilities, depreciation on the casting and other equipment, the wages of the skilled jewellers who fashion the prototype from a design drawing or photograph, profit and other overheads. Value added per item is thus HK \$32 (U.S. \$6.3), after making an allowance of HK \$4 for consumption of electricity, water and materials other than the metal and stones. For a plant such as this is, producing 10,000 items per month, total value added would be of the order of HK \$3.84 million per year (U.S. \$756,000) and non-wage value added per employee would be of the order of HK \$20,000 (U.S. \$3,937). For an entirely hand-made process, assuming that the ex-factory prices were raised to cover the additional cost of the labour and no more, and that overheads fell to about a quarter of those for the casting factory, total value added would be about HK \$15.12 million (U.S. \$3 million); and non-wage value added per employee HK \$600 (U.S. \$118).

The production of output on this scale using an entirely hand made process, would be very difficult to organise. Each one of the 1,200 workers would have to be a skilled craftsman and training requirements would be formidable. The casting process, or something similar to it, is probably essential for a country with relatively little experience of jewellery craft, and who wishes to produce jewellery in volume for export. Using a casting method for a given proportion of output the amount being hand made could be increased as the training programme progressed. The main requirements for such an operation would be as follows :

- close links with a company or person who has a well established reputation for jewellery craftsmanship in the international market,
- skilled labour for making prototypes and for training workers who finish the castings,
- freedom of trade in precious metals and stones,
- good air communications,
- good security facilities, especially at the airport,

- space requirements would be about $1m^2$ per employee.

Source : Field Interview

21.32 Korea

1. Products : Necklaces.
2. Ownership : Joint venture between Korean and Japanese companies.
3. Annual sales : \$ 403,332.
4. Value added : \$276,851.
5. Numbers employed : Men : 131
Women : 57
Total 188
6. Average monthly wage : \$53.
7. Total annual wage cost : \$119,568.
8. Non-wage value added : \$157,283.
9. Sales per employee \$2,145.
10. Value added per employee \$1,473.
11. Non-wage value added per employee: \$837.
12. Value added / sales : 68.6%.
13. Wage costs / sales : 29.6%.
14. Electricity consumption : 315,000 kwh per annum.
15. Electricity consumption per employee : 1,676 kwh per annum.
16. Water consumption : 5.6 million litres per annum.
17. Water consumption per employee : 29,787 litres per annum.
18. Material purchases : Mostly local.
19. Sales : Nearly all sales are exported to Japanese partner.
20. Transport requirements : Air for finished products.

Source : Field interview.

21.4 Nylon Zips : Singapore

1. Products : Assembly of nylon zips.
2. Ownership and Nationality : Joint venture between Japanese and European firms.
3. Annual sales (all cash figures are in U.S dollars) : \$165,000.
4. Value added : \$57,750.
5. Numbers employed : Men 7
Women 48
Total 55

6. Average monthly wage : \$50.
7. Total annual wage costs : \$33,000.
8. Non-wage value added : \$24,750.
9. Sales per employee : \$3,000.
10. Value added per employee : \$1,050.
11. Non-wage value added per employee: \$450.
12. Value added / sales : 35.0%.
13. Wage costs / sales : 20.0%.
14. Electricity and water consumption : Negligible.
15. Size of factory 279 sq metres.
16. Space per employee : 5.1 sq. metres.
17. Purchase of materials : Nylon and made-up zips, from Europe, purchased through parent company.
18. Sales: Mainly local to the Singapore textile industry, but some exports (about 30% of sales) to Indonesia and Malaysia.
19. Transport requirements : Materials by sea.
Finished by air.
20. Expansion : Will start to assemble zips for the European market. The production of the nylon chain is capital intensive, but the assembly of the final zip is labour intensive.

Source : Field interview.

- 21.5 Ship Breaking and Steel rolling, Hong Kong
1. Products : Steel round bars (80 per cent), flat, angle, square bars, window sections. The industry relies mostly on scrap and re-rollable materials, some of which are purchased from the local ship-breaking industry and some of which are imported.
 2. Ownership: Joint venture between Hong Kong and Japanese company.
 3. Annual sales : The industry has been in a state of depression for 2 or 3 years owing mainly to competition from areas such as Korea and Taiwan which have lower labour costs. All figures refer to the Industry's situation before the depression set in.
Sales : U.S. \$3,100,000.
 4. Value added : \$1,116,000.

such as non-stick pans are being manufactured on a much larger scale than in Korea. In Korea, as in Hong Kong, there are a large number of small workshop type establishments. 69 factories, or nearly 70 per cent of the total, employ less than 50 workers, and these firms have average sales of about \$26,000 per year.

Exports are dominated by the sale of aluminium bobbins to Japan under a joint venture agreement. Domestic utensils and other products are dominated by the US (68.5 per cent) and Japan (20.2 per cent).

Towards the end of 1973, the aluminium supply situation had become critical. The local aluminium sheet industry produces only about 45 per cent of the industry's total requirements and prices of imported material had by October risen to levels which were driving many small firms out of business.

19.32 Case Study Companies (figures in US dollars refer to 1972)

	C O M P A N I E S		
	A	B	C
1. Products	Aluminium table ware and other products	Aluminium table ware and automobile accessories	Aluminium camping & household ware
2. Ownership and Nationality	Korean	Korean	Korean
3. Annual sales	\$653,047	\$340,530	\$1,792,265
4. Value added	\$473,723	\$132,280	\$844,395
5. Numbers employed:			
Men	133	123	504
Women	38	17	103
Total	171	140	607
6. Average monthly wage	\$61	\$52	\$58
7. Total annual wage costs	\$125,172	\$87,360	\$422,472
8. Non-wage value added	\$348,551	\$64,920	\$421,923
9. Net profit	\$192,703	\$26,318	N.A
10 Fixed assets	\$394,526	\$193,227	N.A
11 Plant and equipment	\$195,913	\$94,844	N.A
12 Electricity consumption (kwh p.a)	1,140,000	N.A	5,000,000
13 Electricity consumption per employee (kwh p.a)	6,670		8,273

15. Electricity consumption per employee: 5,400 kwh p.a.
16. Water consumption: Negligible.
17. Size of factory: 4,800 sq. metres.
18. Space per employee: 60 sq. metres.
19. Purchase of materials. Mostly bought locally or from Malaysia and Indonesia. Requirements are about 120 tonnes per month.
20. Sales: All output sold abroad on commercial basis. Main markets: U.S, Canada, Japan, EEC. Processing reduces weight of feathers, so output is about 80 tonnes per month.
21. Transport requirements: Sea for both materials and finished goods.
22. Manufacturing process: The process used in Singapore is a highly mechanised one - the feathers are graded by machine. This could be done by hand, but would be rather uneconomic.

Source : Field interview.

21.9 Motor Vehicle Parts : Singapore

1. Products: Radiators, flexible hoses, coupling and swivel fittings.
2. Nationality and ownership: Wholly owned subsidiary of Indian company.
3. Annual sales : U.S \$1,452,000 (all cash figures in U.S. dollars)
4. Value added: \$798,600.
5. Number employed : Men 140
Women 60
Total 200
6. Average monthly wage: \$94.
7. Total annual wage costs: \$225,600.
8. Non-wage value added : \$573,000.
9. Sales per employee : \$7,260.
10. Value added per employee \$3,993.
11. Non wage value added per employee \$2,865.
12. Electricity consumption: 1,000,000 kwh per annum.
13. Electricity consumption per employee: 5,000 kwh p.a.
14. Water consumption: 10.4 million litres per annum.
15. Water consumption per employee : 52,000 litres p.a.
16. Purchase of materials: Commercial. Main sources: Europe, Australia, Japan. Average annual requirements: Brass sheeting: 120 tonnes; copper:

- 100 tonnes; steel (special sheets) 100 tonnes p.a;
other materials: 370 tonnes per annum.
17. Sales : 90% of sales are exported directly to the U.S, EEC and Middle East. The plant was established because cost and efficiency problems in India made export from there almost impossible. The main factor was the difficulty in obtaining imported materials and the consequent necessity to rely on Indian steel and copper.
18. Transport requirements: Sea for both materials and finished goods.
19. Value added/sales: 55.0%.
20. Wage costs / sales : 15.5%.
- Source : Field interview.
- 21.10 Hand Tools : Korea
1. Products: Hand tools for workshop use.
 2. Ownership: Joint venture between European and Korean company.
 3. Annual sales : U.S. \$505,762. (all cash figures in U.S. dollars)
 4. Value added : \$355,760.
 5. Number employed: Men 181
Women 19

Total 200
 6. Average monthly wage: \$57.
 7. Total annual wage cost: \$136,800.
 8. Non-wage value added : \$218,960.
 9. Fixed assets : \$345,946.
 11. Plant and machinery: \$95,145.
 12. Sales per employee: \$2,529.
 13. Value added per employee: \$1,779.
 14. Non-wage value added per employee: \$1,095.
 15. Fixed assets per employee : \$1,730.
 16. Plant and machinery per employee: \$476.
 17. Value added / sales: 70.3%.
 18. Wage costs / sales : 27.0%.
 19. Profit / sales : 4.8%.
 20. Electricity consumption: 635,500 kwh p.a.
 21. Electricity consumption per employee: 3,177 kwh p.a.
 22. Water consumption: 21 million litres p.a.
 23. Water consumption per employee: 105,000 litres. p.a.

24. Purchase of materials: Commercial.
25. Sales: Exports in 1972 about \$50,000.
26. Transport requirements: Sea for materials and finished goods.

Source : Field interview.

21.11 Metal Valves : Korea

1. Products: Valves for industrial machinery.
2. Nationality and ownership: Wholly owned subsidiary of U.S. company.
3. Annual sales: U.S \$377,000. (all cash figures in U.S. dollars)
4. Value added : \$226,200.
5. Number employed: Men 40
Women --

Total 40
6. Average monthly wage: \$83.
7. Total annual wage cost: \$39,840.
8. Non-wage added: \$186,360.
9. Fixed assets: \$21,622.
10. Net profit: \$18,919.
11. Sales per employee: \$9,425.
12. Value added per employee: \$5,655.
13. Non-wage value added per employee: \$4,659.
14. Fixed assets per employee: \$540.
15. Value added / sales: 60.0%.
16. Wage costs / sales: 10.6%.
17. Profit / sales: 5.0%.
18. Materials : Mainly cast iron. Having great difficulty in obtaining cast iron supplies of the right quality. There is an effective embargo on cast iron exports from the U.S and in any case the cost of imported cast iron has increased substantially following the effects of the energy crisis on shipping rates. The metal used to make the valves must be well cast and local machinery does not seem capable of producing cast iron of the necessary quality.
19. Sales : The original purpose of setting up the factory in Korea was to enable the Group to compete in the South East Asian markets with the Japanese.

This aim has not yet been achieved mainly owing to the difficulties outlined in 18 above. Instead the Korean operation is making the most labour intensive parts of the complete valve which are then exported to the parent company in the U.S. There is also a difficulty here in that the impossibility of obtaining U.S cast iron, means that the exports cannot qualify for preferential treatment.

20. Transport requirements: Sea for both materials and finished products.

Source : Field interview.

21.12 Marble Products : Singapore.

1. Products : Marble products primarily for domestic use.

2. Ownership: Wholly Singaporean.

3. Annual sales: U.S \$607,000. (all cash figures in U.S. dollars)

4. Value added: \$404,232.

5. Numbers employed : Men 166.

Women 29

Total 195

6. Average monthly wage: \$78.

7. Total annual wage cost: \$182,520.

8. Non-wage value added: \$221,712.

9. Sales per employee: \$3,113.

10. Value added per employee: \$2,073.

11. Non-wage value added per employee: \$1,137.

12. Value added/sales: 66.7%.

13. Wage costs/sales : 30.1%.

14. Electricity consumption: 343,000 kwh p.a.

15. Electricity consumption per employee: 1,759 kwh pa.

16. Water consumption: 6.9 million litres per annum.

17. Water consumption per employee : 35,385 litres p.a.

18. Size of factory: 24,000m² (large requirements for storage).

19. Space per employee: 123 m².

20. Purchase of materials: Marble comes mainly from Thailand, Taiwan and Italy. Requirements are about 2,000 tonnes p. a. Sometimes has difficulty in

obtaining shipping space.

21. Sales : About 60% of total sales are exported.

Marble slabs go to Malaysia and Indonesia. Handcrafts are sold world wide, but especially to the U.S.

Shipping costs are expensive in relation to the value of the products - with insurance, the cost to the U. S. is about 20% of the landed value.

22. Transport requirements: Sea for both materials and finished goods.

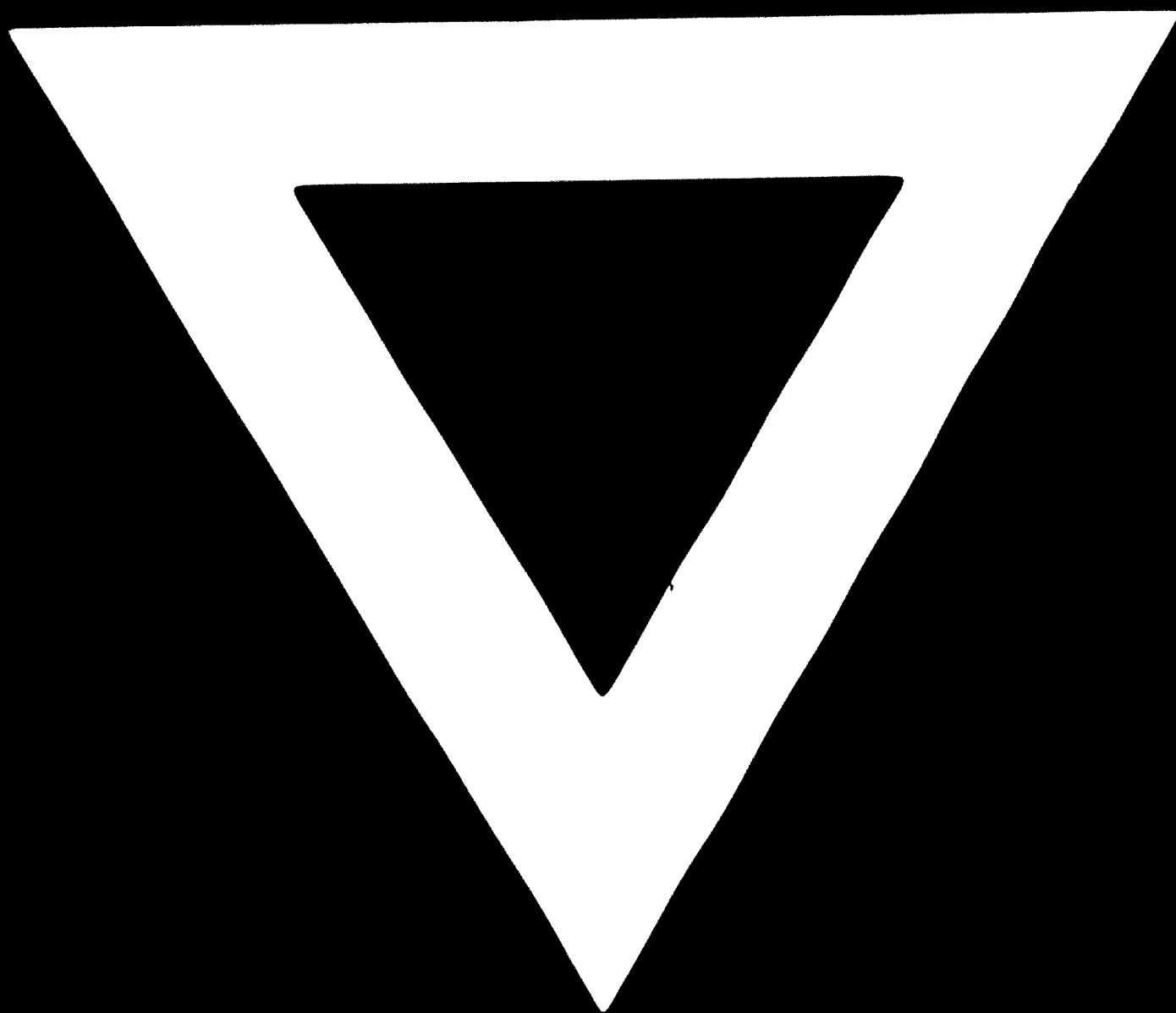
23. Manufacturing process: Less mechanised in Singapore than in Italy mainly in two ways:

(a) Cutting by steel blade instead of diamond cutting is slower and requires more finishing.

(b) Polishing is done more manually.

Source: Field Interview.

B-623



85.01.31

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14. Water consumption (litres p.a.)	27.4 million	N.A.	75.3 million
15. Water consumption per employee (litres p.a.)	13,450		25,535
16. Sales per employee	\$3,819	\$2,432	\$2,953
17. Value added per employee	\$2,770	\$1,088	\$1,391
18. Non-wage value added per employee	\$2,038	\$464	\$695
19. Fixed assets per employee	\$2,307	\$1,380	N.A.
20. Plant and equipment per employee	\$1,146	\$678	N.A.
21. Value added/sales	72.5%	44.7%	47.1%
22. Wage costs/sales	19.2%	25.6%	23.5%
23. Profit/sales	29.5%	7.7%	N.A.

24. Purchase of materials: Company A All materials purchased in 1972 from local aluminium supplier. Suffered problem of shortage in 1973.

Company B Tries to obtain all materials locally if possible.

Company C Finds that local production cannot satisfy requirements but is experiencing great difficulty in obtaining supplies.

25. Sales: Company A Does not export directly, but sells half its output to wholesaler by direct order and thinks this is probably at least partly sold overseas. Local and international competition very severe, and considers company lacks the technical expertise to enter export market directly.

Company B Exports a little through a trading company, but the bulk of output is purchased by the Government.

Company C Previously supplied the bulk of the nation's exports of aluminium camping equipment, but stopped quoting in export markets in June, 1973 because of high price and short supply of aluminium sheeting.

26. Transport requirements: Sea for both finished goods and materials.

Source: Field interviews

19.4 Industry Evaluation

1. Employment:

Average non-wage value added per employee: \$1,333.

Proportion of men among employees: 82.2 per cent.

2. Transport requirements: Sea for both materials and finished goods.
3. Nature of the market: The industry has been badly hit during 1973 by shortages in the primary raw material. Prior to that, although a minor industry, it was growing at a rate of about 20 per cent per year in Hong Kong. One difficulty, other than the question of material supplies, is transport - the goods take up a great deal of space and the charge would be on a volume basis. For this reason it is difficult for distant source areas to compete at the lower end of the market. A country should, if it can, avoid relying too much on brokers in one country for material supplies. Part of the reason why Korea has suffered so much on the materials side is heavy reliance on Japanese trading companies. Over 80 per cent of aluminium ingots, sheets and bars were imported from Japan in 1972.
4. Average electricity consumption per employee: 6,021 kwh p.a.
5. Average water consumption per employee: 142,100 litres p.a.
6. Average space per employee (Hong Kong industry figure): 16.4 sq. metres.

20. THE TEXTILE AND GARMENTS INDUSTRY

20.1 Introduction

In the Main Report it is shown that the textile and clothing industry was already well established as the largest employer and leading growth industry among the export processing enterprises set up in Mauritius, by mid 1973. For this reason less attention has been paid to the industry in this study than its importance would otherwise have warranted. It always appears in any list of labour intensive industries, it is nearly always one of the first industries to be developed in any country embarking on a path of industrialisation; and it is prominent in the list of manufactured goods exported by developing countries to developed countries. For these reasons, even though it is already identified as a suitable labour intensive industry for Mauritius, it was felt that the textile and clothing industry could not be ignored. Accordingly, in this Section of the study, a review of the textile industries of Hong Kong and Korea (two of the countries visited by the consultants in the course of field work for the study) is presented.

20.2 Hong Kong

20.21 The Industry

The textile industry is the most important manufacturing activity in Hong Kong, accounting for about half of total domestic exports throughout the 1960s and early 1970s. Further, in 1973, the industry accounted for about 42 per cent of total employment in manufacturing.

The industry's development began in the late 1940s and 1950s as Hong Kong emerged as a source area for less expensive garments retailed through popular chain stores in Europe and North America. From this base, the industry asserted itself as a leading world producer of high quality, as well as cheaper garments, and has maintained its importance in the Colony's industrial structure by keeping well abreast of changing world trends. In 1967 recognition of Hong Kong's place as a fashion garment centre came with the first of the Ready to Wear Festivals.

Held in January of each year, these festivals are attended by spring fashion buyers from all over the world, and result in a substantial increase in orders for the local garment industry.

The following table shows the growth of the industry as a whole and specifically of garment manufacture.

The Textile and Clothing Industry in Hong Kong, 1960 - 1973

<u>Year</u>	<u>Value of Exports (US \$millions)</u>	<u>Number of Establishments</u>	<u>Employment (000)</u>
<u>A. Industry as a whole</u>			
1960	255	1,579	107
1965	426	2,300	153
1969	817	4,181	225
1970	927	4,839	238
1971	1,125	5,853	258
1972	1,257	6,474	264
1973 *	1,889	6,773	267

Rate of growth of exports, 1960 - 1973 (annual average): 16.6%.

Percentage increase of exports, 1960 - 1973 640.8%

Percentage increase of employment, 1960 - 1973 149.5%.

B. Garments

1960	165	999	53
1965	289	1,505	87
1969	631	3,022	145
1970	716	3,690	161
1971	896	4,599	182
1972	1,002	5,111	187
1973 *	1,453	5,135	181

Rate of growth of exports, 1960-1973 (annual average): 18.1%.

Percentage increase of exports, 1960-1973 : 780.6%.

Percentage increase of employment, 1960-1973: 241.5%.

* Preliminary figures.

Sources (1) Federation of Hong Kong Industry.

(2) Government of Hong Kong; Census and
Statistics Department, Labour Department

According to the 1971 Census of Manufacturing Establishments, the garments section of the industry exported about 90 per cent of total sales, while the textiles section exported about 35 per cent, the remainder being used by the garments manufacturers. In the garments section, 3,909 establishments, or 85 per cent of the total, employed less than 50 persons per factory and had an annual output per factory of less than U.S. \$165,000. 72.5 per cent employed less than 20 persons and had an annual output per factory of less than U.S. \$80,000. In the textiles section, also, 85 per cent of the factories employed less than 50 persons, while the percentage employing less than 20 was 69 per cent. In garments, there were 35 large establishments employing more than 500 persons, and these accounted for 23 per cent of total output. In textiles, there were 34 such establishments, and they accounted for 62 per cent of all sales.

In cotton spinning, installed production capacity increased by about 65 per cent during the 1960s, while the volume of output rose by 83 per cent. There has been an increase in the proportion of yarn used by the local industry. In 1960, 20 per cent (by weight) of the total production of cotton yarn was exported, while in 1972 this was 6.7 per cent. Since the mid 1960s, the industry has developed towards the spinning of blended yarn of cotton and synthetic fibre. Blended yarn production rose from about 360,000 kilos in 1964 to 28.8 million kilos in 1972. The number of spindles capable of producing blended yarn has risen to over 400,000 by 1972.

The cotton weaving section of the industry increased its volume of output by 6.8 per cent between 1960-1972, while the number of looms rose by 37 per cent. The following table shows the development of this section of the industry.

<u>Year</u>	<u>No. of looms</u>	<u>Output (million m²)</u>	<u>Exports (million m²)</u>
1960	18,300	385	181
1965	21,200	535	240
1969	23,200	640	263
1970	23,700	713	263
1971	24,900	731	301
1972	25,000	649	273

Source: Federation of Hong Kong Industries.

As with spinning, cotton weaving mills began to increase the production of cotton/synthetic fibres after 1965. Exports rose from 0.5 million square metres in 1964 to 115 million square metres in 1972.

In 1972, the industry experienced some difficulties due to the inflow, beginning in 1971, of large quantities of cheap Pakistani yarn. The free trade nature of the Hong Kong economy meant that there was no protection at all for local manufacturers. The import of Pakistani yarn rose by 61.4 per cent in 1974, and again by 17 per cent in 1972 to reach 60 million kilos. The average price of imported yarn from Pakistan in 1972 was US\$75 per kilo with the bulk of imports in the coarser grades which were arriving at a landed price of US\$71 per kilo. This was not a great deal more than the price for imported raw cotton from Pakistan (one of the principal cheaper sources of supply) which averaged US\$ 61 per kilo. This margin of \$10 per kilo was not enough for many local manufacturers. Production of yarn fell both in 1971 and 1972, from 148.9 million kilos in 1970 to 115.5 million kilos in 1972.

Dyeing and finishing also developed rapidly during the 1960's, both in quantity and in quality. The number of mills doubled, while employment trebled between 1960 and 1969.