OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as "developed", "industrialized" and "developing" are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org
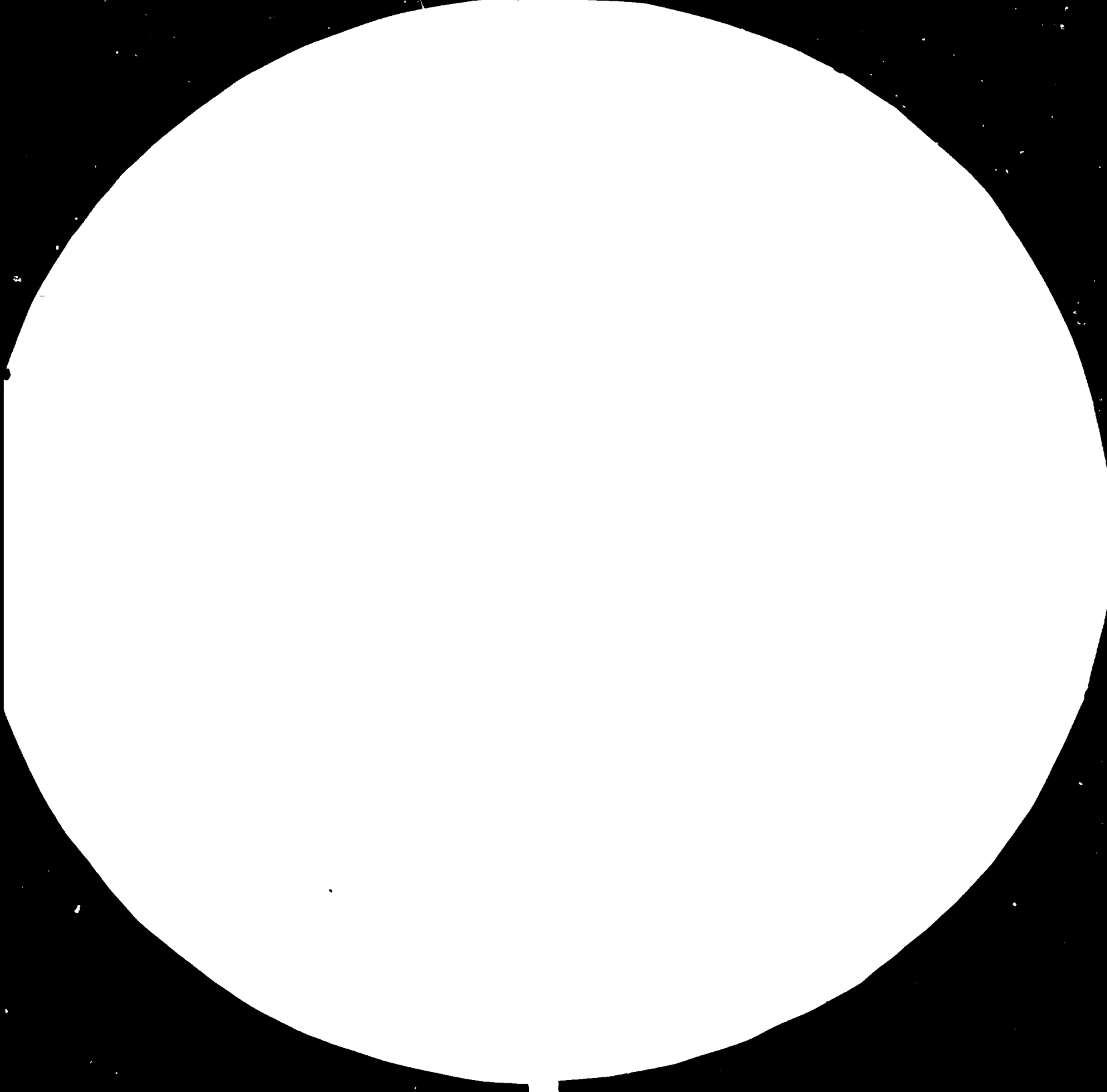
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

TRACY MURRAY

WORLD PATTERNS OF INTERNATIONAL COMPARATIVE ADVANTAGE,

1. Introduction

14921

1-A. Overview of the Issues

The pattern of world production, consumption and trade is
changing rapidly in response to a large number of domestic and
international stimuli. These changes are evidenced by somewhat
rapid expansion of productive capacity or by large operating
losses incurred by industrial firms. In some cases expansion
occurs in a given industry in some countries while firms in the
same industry are incurring large losses in other countries.
This would be the case if economic climates were changing such
that the optimal location of an industry changes from one country
or region of the world to another. There are other cases in
which industrial expansion occurs in one segment of an industry
but declines in another segment of the same industry.

Many people have argued that the emergence of the
multinational corporation has produced a combination of both of
these events. For example, a multinational corporation might
establish an off-shore facility to assemble components (produced
in the home country) into a final good to be exported from the
off-shore affiliate. Thus, industrial activity in the country of
the affiliate expands, as does industrial activity in the
components sector in the home country, while the final goods
sector in the home country incurs losses due to import

5407

competition. The increased use of industrial subcontracting by firms, and especially off-shore subcontracting, would also produce similar results. Other examples might include a technological innovation in one country that generates industrial expansion at the expense of industries located in other countries that did not benefit from the technological innovation.

As a result of these kinds of changes private industry and government must continually adapt their economic policies to keep abreast of a changing international economy. Appropriate responses might be of a positive nature to take advantage of the opportunities as they arise. Alternatively, they might be of a defensive nature to minimize the impact of adverse developments. To manage effectively policy-makers (both private and government) must be knowledgeable about the economic forces that impact on their industries. And to react in a timely fashion, they must be able to anticipate such changes and their consequences.

The purpose of this chapter is to analyze the determinants of international comparative advantage and their linkage to the pattern of international trade. The objective is to derive implications for the optimal international location of industrial activity. Special attention will be devoted to international industrial interdependence among nations especially as items move through processing stages from industrial raw material to final manufactured goods. Tentatively, the study will examine data covering the following industries: cotton and man-made fibre textiles and apparel, crude steel and steel products, electronic components and consumer electronic products, and wood and wood products.

1-8. The Concept of Comparative Advantage

The law of comparative advantage demonstrates that trade benefits all trading partners simultaneously. Each country gains by specializing in those products in which the country enjoys a comparative advantage and exchanging (exporting) those products for other products in which the country does not have a comparative advantage. While the concept of comparative advantage and its implications are well understood, the use of this concept is seldom used to guide business and government decision-makers.

The problem is that comparative advantage is based on a relationship among prices that would prevail in the absence of trade. But since trade itself influences prices, we cannot observe pre-trade prices and, therefore, we cannot directly measure comparative advantage. Thus, an alternative technique is required that indirectly draws implications about comparative advantage using post-trade observations.

The relationship we wish to identify is the international pattern of comparative advantage. This pattern is ultimately determined by economic conditions in the various trading countries, which in turn determines the pattern of international trade, production and consumption among the countries. In a simple diagram we have

$$D ==========> CA ==========> T,P,C$$

where   CA represents the theoretical pattern of comparative
        advantage as reflected by non-observable pre-trade
        relative prices,

D represents the underlying determinants of CA such as a country's endowments of particular factors of production that are central to a given industrial sector, and T,P,C represents observable trade, production and consumption flows in a post-trade situation.

The question, we are addressing is: "Is it possible to identify the product or products in which a particular country enjoys a comparative advantage?" We know that a country that has a comparative advantage for a particular product will be an exporter of the product; thus, the existence of exports is an indication of comparative advantage. Similarly, the existence of imports is an indication of comparative disadvantage. In essence the existence of comparative advantage (disadvantage) can be identified by examining international trade flows.

Unfortunately, the existence (or absence) of comparative advantage is not sufficient information to guide investment decisions -- since investment predates production which predates exports. Instead, decision-makers must have an understanding of the elements that underlie comparative advantage. In order to study the determinants of comparative advantage we must know not only the existence of comparative advantage but also the degree (or magnitude) of comparative advantage.

For reasons to be discussed in the following section, simple observations on T,P,C are not adequate for measuring CA, instead measures constructed from T, P and C (and possibly other post-trade variables) will be used; we refer to such measures as indices of "revealed comparative advantage" (RCA). Thus, the diagram becomes

D ==========> CA ==========> T,P,C ==========> RCA.

where   RCA is an observable index that reveals comparative

advantage.

2. Measuring Comparative Advantage

2-A. Overview of Measurement Problems

The primary problem in measuring comparative advantage deals

with the availability of the required data. We have already

discussed the impossibility of deriving indices based on pre-

trade prices. And since post-trade prices are heavily influenced

by trade flows themselves, post-trade prices yield little useful

information for identifying the underlying pattern of comparative

advantage. Consequently, we are left with the difficult task of

imputing the pattern of comparative advantage on the basis of

other post-trade variables.

Theoretically, we could observe the pattern of comparative

advantage as follows. A country that enjoys a comparative

advantage in a particular product will specialize in the

production of the product and export it. Thus, the existence of

exports indicates a de facto comparative advantage in the

exported product(s). Similarly a country will despecialize in

products for which it does not have a comparative advantage;

production will decline and consumption will be satisfied in part

by imports. Thus, imports indicate a de facto comparative

disadvantage.

However, such observations provide information only on the

existence (or non-existence) of comparative advantage, it does not indicate which of many countries would have the greater degree of comparative advantage. A first approach in solving this latter problem might be to examine the magnitude of each country's exports or imports; those countries with the larger export (import) flows would be identified as having the greater degree of comparative advantage (disadvantage). This approach might be reasonable if all countries were of the same economic size. However, in reality countries are of grossly differing sizes. Thus, it is possible that a large country with a relatively minor cost advantage (i.e., a small degree of comparative advantage) would be a large exporter relative to a smaller country that enjoys a larger cost advantage.

What is needed is an indicator of cost advantage (or disadvantage for countries having a comparative disadvantage) rather than simply using the volumes of exports (or imports) as the measure. But measures of cost advantage require data on domestic costs that would prevail in the absence of trade; since actual costs are incurred in the presence of trade this approach is as intractable as the use of pre-trade prices.

Another alternative would be to construct indices of trade flows that "adjust for country size". Two indices immediately come to mind:

    1. relate exports to domestic production and

    2. relate imports to domestic consumption.

The first of these measures would indicate the degree of comparative advantage and the second, the degree of comparative disadvantage.

While such an approach might solve the problem of "standardizing" for differing country sizes, other data problems abound. For example, trade statistics are not available for each and every product that is imported or exported. Instead trade statistics generally measure product categories. As a result, most countries are both importers and exporters of the same "measured" product; in many cases a country would be an exporter of one particular article and an exporter of a different article with both articles being included in a given measured product category. In such cases crude indices of comparative advantage might reveal that a country would have a comparative advantage and a comparative disadvantage in the same product category. Thus, in addition to standardizing for country size, it may be appropriate to account for two-way trade (such trade is often referred to as intra-industry trade). The most common approach is to use net exports (or net imports) to adjust for intra-industry trade flows. If the country has a greater comparative advantage in one article than it has a comparative disadvantage in another, its export of the first article should exceed its imports of the second and net exports would be positive. Similarly, negative net exports (i.e., net imports) would imply a greater degree of comparative disadvantage.

To illustrate the problems in standardizing for country size and for intra-industry trade, consider the following example based on actual trade data. Japan and Sweden both export and import iron and steel; data on production, trade and consumption for both countries are listed below (in thousands of metric tons for 1980):

	JAPAN	SWEDEN
Production	107535	4283
+ Imports	1165	1981
= New Supply	108700	6264
- Exports	29693	2125
= Consumption	79007	4139

For Japan exports exceed imports which means that Japan also produces more steel than it consumes. This also implies that Japan enjoys a net comparative advantage in iron and steel; i.e., Japan has a greater comparative advantage in the articles that it exports than comparative disadvantage in the articles imported. The data for Sweden reveal a similar relationship; i.e., Sweden also enjoys a net comparative advantage in iron and steel. But which country enjoys the greater degree of comparative advantage? Obviously, to answer this question the data must be made comparable, i.e., the data must be standardized. Several different indices have been mentioned, namely

1. the ratio of exports to production (RXP),

2. the ratio of imports to consumption (RMC),

3. the ratio of net exports to production (RTP), and

4. the ratio of net exports to consumption (RTC)./1/

But since the relationship between net exports and production or consumption is essentially a relationship between production and

----

1 The ratio of net imports to consumption is equal to the negative of the ratio of net exports to consumption. Since both ratios provide the same information we have chosen that index for which a positive value indicates a comparative advantage.

consumption, a fifth index can be specified, namely

    5. the ratio of production to consumption (RPC).

These five indices imply the following regarding comparative

advantage; the degree of comparative advantage is higher

    1. the higher the value of RXP,

    2. the lower the value of RMC,

    3. the higher the value of RTP,

    4. the higher the value of RTC, and

    5. the higher the value of RPC.

Based on the above data, these indices are presented below for

Japan and Sweden (in percentages);

RATIO	JAPAN	SWEDEN
Exports to Production (RXP)	28	50
Imports to Consumption (RMC)	1	48
Net Exports to Production (RTP)	27	3
Net Exports of Consumption (RTC)	36	3
Production to Consumption (RPC)	136	103

Indices 1 and 2 indicate that Sweden has as greater degree of

comparative advantage in iron and steel than Japan. However,

indices 3, 4 and 5 indicate the reverse.

These calculations raise a very serious issue. All five

indices are based on the most basic interpretation of the concept

of comparative advantage. Yet when they are applied to actual

data on trade, production and consumption an inconsistency

occurred. Two logical reasons may be offered for this

inconsistency. First, the level of aggregation in the data is so

large that the true pattern of comparative advantage might be hidden. Japan has a comparative advantage across the entire product spectrum of the industry as evidenced by the high level of exports and the very low level of imports. On the other hand Sweden has specialized in the production of the more sophisticated steel products; to satisfy the needs for raw material Sweden imports crude iron and steel (rather than iron ore and coal as is the case in Japan). Thus, the inconsistency across indices masks the fact that Sweden enjoys a comparative advantage at the higher stages of processing only.

The second rationale for the inconsistency raises an especially troublesome problem. Due to government policies in support of an industry (such as subsidies to stimulate production or protectionism to limit import competition) it is possible that trade flows are not fully consistent with the underlying pattern of comparative advantage that would prevail in a free trade world. It may be that the government of Japan has, through policy measures, limited imports sufficiently to produce the very low ratio of imports to consumption that was observed.

To summarize, we have two possible explanations for the inconsistency across indices of comparative advantage, namely the high level of aggregation contained in the data and the possibility that government policies may distort trade flows.

These possibilities are well known. Researchers have attempted to minimize the first problem by using data for more narrowly defined product categories. The major problem with this solution is that most countries use different industry classifications for compiling production statistics than they use

for trade statistics. This produces the so-called concordance problem. In many cases it is possible to obtain comparable data for production, imports and exports only by combining products into highly aggregated categories. If one wishes to study comparative advantage for narrowly defined products, it is often necessary to construct indices that are based purely on trade data, hereafter referred to as trade-only measures.

The measurement problems associated with trade distortions due to possible government policies has been dealt with in two ways. First, some scholars select indices that do not incorporate imports. They implicitly assume that government policies do not create comparative advantage and, thus, the existence of exports is a valid indicator of comparative advantage. On the other hand, governments commonly resort to tariff and nontariff measures to limit imports, hence indices that incorporate imports are prone to bias./2/

Other researchers contend that governments which support a particular industry through import limitations also tend to subsidize production directly or indirectly through subsidized research and development, plant construction, credit allocations, tax incentives, etc. Such investigators favor indices based on net trade flows./3/ Some might acknowledge the government's role in a nation's economy and argue that government policy is simply a part of the determinant of comparative advantage.

----

2 For example; Balassa (1977).

3 Donges and Riedel (1977).

One last issue that must be addressed before we turn to an empirical examination of indices of comparative advantage, namely the appropriate sample of data for constructing indices of comparative advantage. A truly general index would provide valid indications of the international pattern of comparative advantage across countries and across products. But such an index would have to be standardized for variations in country size as well as for variations in product significance. On the other hand if we limit our sample, for example, to product-specific observations across countries we need only standardize for country size. Leamer (1974) in fact argues that the fundamental theories of trade explain product-specific trade flows across countries and not country-specific trade flows across products. We will adopt this interpretation notwithstanding the numerous studies in the literature that use country-specific data./4/

Recognizing the difficulties inherent in measuring comparative advantage, we now turn to an examination of a number of such attempts as reported in the literature.

2-B. Empirical_Examination_of_RCA_Measures

Indices of comparative advantage are used to indicate the extent to which a particular country enjoys a comparative advantage in a particular product. A comparison of indices across countries should indicate which countries enjoy the

----

4 See for example Hufbauer (1970), Baldwin (1971) and Branson and Junz (1971).

greater (lesser) degree of comparative advantage. Since theory

does not specify the precise functional form of a "valid" RCA

index any empirical examination of alternative measures must be,

at least to some degree, subjective. Our approach will be to

examine the consistency of alternative indices to each other.

Such an examination will not result in the specification of the

"true" index. Certainly, if any two indices yield significantly

inconsistent indications of the international pattern of

comparative advantage, both cannot be valid indices.

Unfortunately, we might not be able to conclude which is the

valid index. At best our results may lead to the rejection of

one or more popular indices as invalid.

The consistency tests will cover two classes of indices,

namely trade-cum-production (consumption) indices and trade-only

indices.

2-B1. Trade-cum-production indi

The trade-cum-production (con   class of indices will

examine two categories. First, the types of indices discussed

above, namely:

1. the ratio of exports to production (RXP),

2. the ratio of imports to consumption (RMP),

3. the ratio of trade (exports - imports) to production

    (RTP), and

4. the ratio of production to consumption (RPC)./5/

----

5 Since the ratio of trade to consumption is a linear function of
the ratio of production to consumption, it has been omitted
from further analysis. Note from the trade identity that
$$P + M - X = C$$

deviations are offset by consumption deviations such that actual trade flows seem to be inconsistent with the production and/or consumption deviations.

As a preliminary step in our examination of these measures, we have calculated the above indices using a sample of 25 commodities with a total of 812 country-commodity observations (data for 1980). The industrial sectors covered by our sample are electronics, iron and steel, textiles and wood and wood products. Simple correlation coefficients were calculated for each commodity for alternative pairs of RCA indices. These pair-wise correlation coefficients were then averaged across commodities to yield the figures reported in Table 1.

TABLE 1

Pair-wise Correlations of RCA Indices

	RXP	RMC	RTP	RPC	RTEP	RDPEP
RMC	.44*					
RTP	.11	-.59				
RPC	.37	-.41	.66			
RTEP	.37	-.29	.44	.66		
RDPEP	-.02*	-.37	.26	.29	.30	
RDCEP	-.21	-.29*	.09*	.02*	-.04	.89*

Source: See Appendix.

* The sign of the correlation is inconsistent with the a priori hypothesized relationship between the two variables.

Note: We are not concerned with levels of statistical significance such as "coefficients being significantly different from zero." Our consistency tests are heuristic in that we are interested in the degree to which one pair-wise correlation departs from unity more than (or less than) another pair-wise correlation.

The results of these calculations reveal the problems which researchers have long faced in their attempts to measure comparative advantage, namely theory suggests alternative indices that are inconsistent with each other. The more interesting results to us include:

-- One of the most theoretically appealing indices (RXP) is the most inconsistent when compared with the other six indices; the relationship even has the wrong sign in two cases, though it is approximately zero in one of these cases.

-- Given the inconsistencies associated with RXP, it is
   surprising that the theoretically parallel index (RMC) is
   as consistent with the other indices as it is.

-- The indices using deviations of actual from expected
   production and consumption are highly inconsistent with
   the other five indices. Note that the correlation
   between these two indices is much higher than that
   between any other two but with the wrong sign. We
   conclude from this that in cases where a country has a
   seemingly strong comparative advantage based on high
   levels of production, this advantage is significantly
   eroded by a similarly high propensity to consume (or use)
   the product. Thus, production is mainly to satisfy
   domestic markets.

Given these results our first impression is to conclude that
the indices of comparative advantage based on one side of the
market only (i.e., imports, exports, production deviations or
consumption deviations) are not valid indicators of comparative
advantage. Valid indices must incorporate net trade flows and/or
production and consumptions variables; such measures from our
list include RTP, RPC and RTEP. And these three indices are more
highly cross-correlated among themselves than were t; other
indices.

But before reaching such a conclusion it should be noted
that we have implicitly assumed in our consistency tests that
each of the indices of comparative advantage is a measure that
quantifies the commodity-specific comparative advantage enjoyed
by one country relative to that enjoyed by any other country.

That is to say that for any two countries and a given commodity, the difference in the values taken by a given index of comparative advantage for the two countries actually quantifies the magnitude of the difference in the degree of comparative advantage enjoyed by the two countries. This implicit assumption seems quite strong.

Assume for the moment that there exists a "true" measure of comparative advantage. Any monotonic transformation of this measure would correctly indicate the existence of comparative advantage (vs. comparative disadvantage) and would correctly rank countries by degree of comparative advantage. However, it would be perfectly correlated with the "true" measure only if the transformation were linear.

The issue we are raising is whether the indices of comparative advantage should be examined as alternative measures of comparative advantage and therefore useful in quantifying the difference in the degree of comparative advantage enjoyed by various countries. Or should we instead suggest more modest objectives. One alternative is to consider our indices as simply providing a demarkation between countries that enjoy a comparative advantage in a particular commodity vs. those countries that have a comparative disadvantage. Such indicators will be referred to as dichotomous indices. A second alternative is to consider our indices as indicators of the degree of comparative advantage enjoyed by a given country relative to another without drawing implications regarding magnitudes. Such indicators would provide commodity-specific rankings of countries by degree of comparative advantage. Such indicators will be

referred to as ordinal indices. These two alternatives will be examined in turn.

RCA indices as dichotomous measures: The dichotomous test examines the various indices of comparative advantage to determine the consistency with which they distinguish between countries that enjoy a comparative advantage and countries that do not. The tests themselves involve the counting of cases in which different indices are inconsistent; i.e., one index indicates a particular country enjoys a comparative advantage for a given product and the second index indicates a comparative disadvantage.

The alternative indices under examination indicate comparative advantage as follows:

$$RXP > 0,$$
$$RMC = 0,$$
$$RTP > 0,$$
$$RPC > 1,$$
$$RTEP > 0,$$
$$RDPEP > 0,$$
$$RDCEP < 0.$$

RXP and RMC were not tested because the results based on real world data would be extremely difficult to interpret. Consistency between these two indices requires (RXP>0 and RMC=0) or (RXP=0 and RMC>0) -- a result that is seldom observed. When both are positive (neither can be negative) we can not theoretically distinguish between comparative advantage and

comparative disadvantage./8/

Three indices (RTP, RPC and RTEP) are pair-wise perfectly
consistent. The first and third indices are consistent because
their common numerator (net exports) is the determining variable
given that their denominators cannot be negative; the second
index is greater than unity if and only if net exports are
positive because of the trade identity. Thus, these indices do
not need to be tested.

The remaining two indices (RDPEP and RDCEP) must be tested
— pair-wise and with the other indices (except RXP and RMC which
could not be tested). Because of the perfect consistency among
RTP, RPC and RTEP we have only three pair-wise tests to conduct:
(1) RDPEP vs. (RTP, RPC and RTEP), (2) RDCEP vs. (RTP, RPC and
RTEP) and (3) RDPEP vs. RDCEP.

The consistency measure for these three tests indicates the
percentage of observations that are pair-wise consistent; our
results are reported in Table 2.

----

8 If our data base provided a complete coverage of countries with
no (or insignificantly few) missing observations we might
assume that the mean value of these indices was the demarkation
line between comparative advantage and comparative
disadvantage. However, such data sets do not exist.

TABLE 2

Consistency Measures of Dichotomous RCA Indices

==

	(RTP, RPC and RTEP)	RDPEP
RDPEP	.83	
RDCEP	.75	.57

Source: See Appendix.

Given that RTP, RPC and RTEP are definitionally perfectly consistent it is encouraging to find that these test indices are highly consistent with the other two indices. Such consistency implies that it is possible to distinguish between countries that enjoy comparative advantage and those that do not based on indices constructed from post-trade observations. We are somewhat concerned by the low degree of consistency between RDPEP and RDCEP but again that reflects the strong relationship between production and consumption.

RCA indices as ordinal measures: The ordinal tests address the question: Do the alternative indices consistently rank countries by the degree of comparative advantage? Table 2 presents the pair-wise rank correlation coefficients for the alternative RCA indices. The various indices were examined pair-wise using rank correlation coefficients. These correlations were calculated for each product-specific sample across countries and then averaged over the 25 products in our total sample. The

results are reported in Table 3.

TABLE 3

Spearman Rank Correlations of RCA Indices

==

	RXP	RMC	RTP	RPC	RTEP	RDPEP
RMC	.30*					
RTP	.41	-.54				
RPC	.41	-.54	1.00			
RTEP	.44	-.49	.93	.93		
RDPEP	-.06*	-.56	.47	.47	.3€	
RDCEP	-.26	-.44*	.13*	.14*	.04*	.86*

Source: See Appendix.

* The sign of the correlation is inconsistent with theory.

With the exception of the three definitionally similar
indices (RTP, RPC and RTEP) the rank correlations reveal a high
degree of pair-wise inconsistency among the RCA indices.
Moderate rank consistency was observed between the three similar
indices (RTP, RPC and RTEP) and RDPEP, RMC and RXP. However, for
these three latter indices the pair-wise rank correlations vary
widely from .30 with the wrong sign (RXP vs. RMC) to independence
(-0.6 for RDPEP vs. RXP) to -.56 with the correct sign (RDPEP vs.
RMC). The index RDCEP is inconsistent in five of six pair-wise
comparisons. Note again the high correlation (with wrong sign)
between RDPEP and RDCEP.

To summarize the consistency tests on trade-cum-production (consumption) indices of comparative advantage, we feel that any index based on either demand phenomenon or supply phenomenon (but not both) is inadequate as a general index. This conclusion results from two major pieces of evidence:

1. both the normal and rank correlations between RXP and RMC have the wrong sign, and

2. both the normal and rank correlations between RDPEP and RDCEP are high and have the wrong sign.

On the other hand, the three indices based on net trade (RTP, RPC and RTEP) were uniformly consistent as quantitative measures of comparative advantage, very highly consistent as ordinal indices of comparative advantage and perfectly consistent as dichotomous indices. All three of these indices have strong theoretical appeal as well since all three were derived from the trade identity.

2-B2. Trade-only indices

Before turning to the general consistency tests for trade-only indices we feel it might be useful to examine the consistency of trade-only indices with trade-cum-production (consumption) indices using the same sample as above. Because of data limitations only two of the standard trade-only indices could be examined; namely

1. the ratio of exports to imports (RXM) and

2. the ratio of net exports to average total trade (RNX)./9/

----

9 The ratio of net exports is defined as
$$RNX = (X-M) / ((X+M)/2).$$

Regarding the dichotomous test these two indices indicate comparative advantage when RXM>1 and RNX>0, respectively. Theoretically they are perfectly consistent, i.e., RXM>1 if and only if RNX>0. Moreover, they are theoretically perfectly consistent with three of the trade-cum-production (consumption) indices, namely RTP, RPC and RTEP. Thus, information regarding the consistency of these trade-only indices with the other trade-cum-production (consumption) indices can be imputed from Table 2.

Regarding the ordinal consistency tests the rank correlations are presented in Table 4. Since RNX and RXM are monotonically related the rank correlation between these two indices is 1.00. Moreover, the rank correlation between either of these indices and the other RCA indices will be the same. As expected RNX and RXM are highly correlated with the three definitionally similar indices (RTP, RPC and RTEP). The pairwise correlations between RNX and RXM versus the other RCA indices is moderate with the correct sign except for the index RDCEP (which is near zero with the wrong sign).

TABLE 4

Spearman Rank Correlations of RCA Indices

==

	RXP	RMC	RTC	RPC	RTEP	RDPEP	RDCEP	RXM
RXM	.56	-.48	.82	.82	.83	.37	.09*	
RNX	.56	-.48	.82	.82	.83	.37	.09*	1.00

Source: See Appendix.

* The sign of the correlation is inconsistent with theory.

Finally, we also calculated normal Pearson correlations for comparison with our earlier results; see Table 5. The linear correlation between RXM and RNX is only moderate yet they are monotonically related. This is due to the fact that RNX is a bounded index ranging between -2 (comparative disadvantage) and +2 (comparative advantage) whereas RXM ranges from 0 to infinity with unity being the demarkation between comparative advantage and comparative disadvantage. Of these two indices RNX is more closely correlated with the other RCA indices; RNX correlates with the three definitionally similar indices (RTP, RPC and RTEP) roughly as they pair-wise correlate with each other.

Based on all of the evidence presented so far, we judge the trade-only index RNX to be relatively consistent with the three definitionally similar trade-cum-production (consumption) indices.

TABLE 5

Pearson Correlations of RCA Indices

==

	RXP	RMC	RPC	RPC	RTEP	RDPEP	RDCEP	RXM
RXM	.15	-.22	.22	.38	.43	.24	.11*	
RNX	.40	-.36	.51	.61	.61	.25	.04*	.49

Source: See Appendix.

* The sign of the correlation is inconsistent with theory.

We now turn to our general testing of trade-only indices of comparative advantage. The major advantage of these indices (as compared to trade-cum-production (consumption) indices) is that data are more readily available especially for more narrowly defined product categories. The major disadvantage with trade-only indices is the difficulty in correctly standardizing the indices for country size and product significance. Nevertheless, in many situations trade-only indices are all that can be observed.

We will examine three popular trade-only indices as follows:/10/

$$RNXik = Tik / ((Xik + Mik)/2) \qquad (7)$$

$$BALik = Xik / E(Xik) \qquad (8)$$

$$D\text{-}Rik = ((RNXik / RNXim) - 1) * (sign\ Tik) \qquad (9)$$

----

10 For RNX see UNIDO (1982B), for BAL see Balassa (1965) and for D-R, Donges and Riedel (1977).

where   T is net trade (X-M), i is the country, k the commodity

and m is the summation across all manufactured products.
RNX is jointly standardized for product significance and country
size by using the country's total trade in the product (defined
as the average of exports and imports). BAL is an export-only
index relating the country's export performance to world exports
of manufactured products./11/ D-R is a variation of BAL that
incorporates imports into the index./12/ Instead of using world
trade to standardize for product significance and country size
(as does BAL), D-R standardize using the country's total trade in
manufactured products.

International trade data are reported across commodities and
across countries using the Standard International Trade
Classification (SITC) commodity categories. These data are
consistently reported at various levels of aggregation. We will
report tests conducted using three different levels of product
aggregation, ranging from the more narrowly defined 5-digit SITC
categories to the more aggregated 3-digit SITC categories. We
now turn to the three consistency tests for the trade-only RCA
indices.

----

11 In the BAL index above E(Xik)=Xwk*(Xim/Xwm) and represents
   the expected level of exports that would exist if the
   country's exports of the product were in proportion to world
   exports of the product with the proportion coefficient being
   the country's share of world exports of all manufactured
   products combined; w indicates the summation across all
   countries to represent world exports.

12 The other terms in the D-R index adjust the "comparative
   advantage neutral" value of the index to be zero; comparative
   advantage is indicated by D-R > 0 and comparative disadvantage
   by D-R < 0.

<u>RCA indices as dichotomous measures</u>:   The three trade-only
indices indicate comparative advantage as follows:

$$RNX > 0,$$
$$BAL > 1, \text{ and}$$
$$D-R > 0.$$

The dichotomous test is based on a simple counting of country-
commodity observations in which two trade-only indices yield
consistent indications of the existence of comparative advantage
or comparative disadvantage. Thus, we have three tests -- RNX
vs. BAL, RNX vs. D-R and BAL vs. D-R. The results, by level of
aggregation are reported in Table 6.

     The results reveal a high degree of pair-wise consistency
among the three trade-only RCA indices, especially for RNX vs. D-
R. The consistency is slightly higher for more aggregated
commodity categories but even at the 5-digit level the
consistency is quite high.

TABLE 6

Dichotomous Consistency Tests of Trade-only RCA Indices

SITC	RNX vs. BAL	RNX vs. D-R	BAL vs. D-R
5-digit	.82	.93	.83
4-digit	.83	.93	.85
3-digit	.87	.93	.88

Source: See Appendix.

Note: The data are in quantity units and represent two-year averages (1979-80) covering 21 3-digit SITC categories (122 4-digit and 176 5-digit categories) drawn from four industries -- electronics, iron and steel, textiles and wood and wood products. The total number of observations is 1343, 5488 and 6315, respectively for 3-digit, 4-digit and 5-digit SITC categories.

RCA indices as ordinal measures: The ordinal tests are based on product-specific rankings of countries by degree of comparative advantage. Pair-wise rank correlation coefficients were calculated for each commodity (across countries) at a specific level of aggregation and then averaged across commodities. Table 7 reports the averages of these coefficients by level of aggregation.

TABLE 7

Spearman Rank Correlations of Trade-only RCA Indices

==

SITC	RNX vs. BAL	RNX vs. D-R	BAL vs. D-R
5-digit	.79	.56	.50
4-digit	.79	.47	.45
3-digit	.87	.45	.48

Source: See Appendix.

These results ontain one aspect worthy of special emphasis, namely the highest consistency is between BAL and RNX. This was surprising for several reasons. First, there is a high degree of similarity between the definition of RNX and D-R (RNX is the numerator of D-R). Second, the dichotomous consistency between RNX and D-R was higher than that between RNX and BAL (though BAL and RNX were highly consistent). Third, BAL is an export based index that does not incorporate import considerations. Our earlier tests of trade-cum-production (consumption) indices revealed relatively low consistency among one-sided indices (RXP, RMC, RDPEP and RDCEP).

Nevertheless, BAL is highly consistent with RNX. This result may be due to the fact that trade data permit index calculations using more narrowly defined commodity categories than were available for testing the trade-cum-production (consumption) indices.

RCA_indices_as_cardinal_measures: Finally, we also calculated the Pearson product-moment correlations to examine the consistency of the trade-only RCA indices as cardinal measures of the degree of comparative advantage. These correlations were calculated using product-specific samples across countries for each level of commodity aggregation; the coefficients were then averaged across products for each level of aggregation. The results are reported in Table 8.

TABLE 8

Pearson Correlations of Trade-only RCA Indices

SITC	RNX vs. BAL	RNX vs. D-R	BAL vs. D-R
5-digit	.56	.48	.28
4-digit	.57	.42	.25
3-digit	.59	.34	.23

Source: See Appendix.

These results are similar to those reported earlier regarding the trade-cum-production (consumption) indices. As cardinal measures the RCA indices are not very consistent. One aspect of these results, however, is interesting. The consistency between between RNX and the other trade-only RCA indices is related to the level of aggregation of the products examined, but in different directions. RNX and BAL are more consistent when the commodities are more highly aggregated

whereas RNX and D-R are more consistent for more narrowly defined commodities. This tendency was also present in the dichotomous and ordinal consistency tests among these three RCA indices.

2-C. Summary

We have been unable to identify a single index or group of indices that can be considered a "valid" cardinal measure of comparative advantage. We have, however, found several indices that consistently indicate the existence of comparative advantage (disadvantage), i.e., indices as dichotomous measures of comparative advantage. In addition, we found significant consistency for indices that rank countries by degree of comparative advantage, i.e., so-called ordinal measures.

Our results would suggest the following standards for selecting appropriate indices of comparative advantage in future empirical work.

1. If data are available for trade-cum-production (consumption) indices, select indices that incorporate both production and consumption (exports and imports) considerations.

2. If trade-only indices are to be used, the Balassa-type index (i.e., an export-only index) may be suitable. However, such indices are likely to be less suitable the more narrowly defined the product categories. In such cases we would suggest an index incorporating net trade rather than exports only.

We will apply these guidelines in the next section to

examine the patterns of international comparative advantage in four industrial sectors: electronics, iron and steel, textiles and apparel and wood and wood products. In particular, we will select the ratio of production to consumption (RPC) as the primary trade-cum-production (consumption) index and the ratio of net exports (RNX) as the primary trade-only index.

3. International Pattern of Comparative Advantage

As previously mentioned, it is literally impossible to observe or otherwise identify the international pattern of comparative advantage. However, since there is an undeniable linkage between comparative advantage and trade performance, we can impute the pattern of comparative advantage based on indicators of trade performance.

The previous section of this chapter examined a number of indices of trade performance and concluded that while we might not be able to measure comparative advantage in a cardinal or quantitative sense we can identify the existence of comparative advantage (vs. comparative disadvantage) and we can, to a significant degree, rank countries by their degree of comparative advantage.

This section will report an analysis of the international pattern of comparative advantage in four industrial sectors, namely textiles and apparel, iron and steel products, wood and wood products and consumer electronics. This analysis is based on an extensive set of data covering production, consumption, exports and imports by sector. This information is not uniformly reported by all countries nor is it available for subsectors of

these industrial branches. Thus, the analysis will be
accompanied by a parallel examination of more detailed trade-only
data. Unfortunately, these two examinations (one based on trade-
cum-production data and the second on trade-only data) will
analyze industrial sectors that are not perfectly consistent.
For example, we intend to analyze the textile and apparel sector
covering cotton and man-made fibre items. The trade-cum-
production data are available for two textile and apparel
sectors, namely textiles (including many items other than cotton
and man-made fibre items) and apparel (including all fibres).
The textile sector data are significantly impacted by non-cotton
natural fibres and, therefore, could not be included in our
initial analysis./13/ The apparel sector also includes data for
other natural fibres (such as wool and silk), however, this
sector is dominated by cotton and man-made fibre items. Thus, we
can draw significant implications about the pattern of
comparative advantage in the cotton and man-made apparel sector
from data covering the more aggregated apparel sector without
fear of significant bias.

A comparison of the coverage for the trade-cum-production
data with that for the trade-only data is given below.

---

13 We will examine the textiles sector using trade-only
    relationships below.

Sector	Trade-cum-production	Trade-only
Textiles and apparel	Apparel (ISIC 322)	Textiles (SITC 263,266,651,652, 653.5-.6)
Iron and steel	Iron and steel (ISIC 371)	Iron and steel (SITC 67)
Wood and wood products	Wood and wood products (ISIC 331)	Wood and wood products (SITC 243,631,632)
Electronics	Electronics (ISIC 383)	Consumer electronics (SITC 724.1-.2,729.3)

Briefly, the iron and steel products and the wood and wood products sectors are essentially consistent (i.e., ISIC 371 = SITC 67 and ISIC 331 = SITC 243,631,632). The electronics sector (ISIC 383) includes consumer electronics (SITC 724.1-.2,729.3) plus other electronics items. Finally, apparel and textiles are non-overlapping sectors, with textiles being a critical input for the apparel industry.

We now turn to an analysis of the pattern of comparative advantage beginning with trade-cum-production relationships.

3-A. Comparative advantage and trade-cum-production indices.

Data on production, consumption, exports and imports are reported for the major trading countries in Table 3-1 by industrial sector./14/ Two categories of RCA indices are also

---

14 See Annex I for a more complete reporting by country. Data is very spotty for the socialist countries of Eastern Europe; consequently, these countries have been excluded from the analysis.

reported, one category reports dichotomous, ordinal and cardinal measures based on the ratio of production to consumption and a second based on the ratio of net exports. The countries have been divided into two groups, one group containing countries that enjoy a comparative advantage and the second for countries with a comparative disadvantage. The major findings are reported by sector.

Apparel: Data are available for a total of 55 developed and developing countries (hereafter DMECs and LDCs, respectively), however 19 of these countries failed to report production and consumption data. Nevertheless, since some of the countries with incomplete data are major exporters or importers, they are included in the analysis. Of these 55 countries, over one-half (29) have been identified as having a comparative advantage in the apparel sector.

Two-thirds of the exports reported by all countries identified as having a comparative advantage in apparel are accounted for by just three countries -- Italy, Hong Kong and Korea. No other country accounts for as much as 5 percent of this group's exports. Interestingly, this heavy concentration of exports involves two very different types of exporters, namely the high income Italy and the relatively labor abundant countries of Hong Kong and Korea. This suggests that the world wide apparel industry is, in fact, two industries -- one based on high fashion with relatively high per unit profit margins and a second based on low costs of production.

On the import side, two countries (USA and Germany) account for almost one-half of the imports of all countries identified as

having a comparative disadvantage in the apparel sector. The
major world market for apparel is very definitely in the USA,
Japan and the EC (excluding Italy) which in total account for
over 75 percent of the total imports of all of the countries
included in our analysis (including countries that enjoy a
comparative advantage).

In relating trade to the domestic economy an interesting
anomaly can be observed. The major exporting countries have
developed their industries on the basis of export markets as
production far exceeds domestic consumption. On the other hand,
the major importing countries satisfy the major share of domestic
consumption by domestic production rather than imports. On the
average, for all countries having a comparative disadvantage in
apparel, over 80 percent of consumption is satisfied by domestic
production. One might question the extent to which this is due
to excessive import constraints imposed under the GATT multi-
fibre arrangement.

Iron and steel: Of the 68 countries included in our
analysis of the iron and steel products sector, 16 have been
identified as having a comparative advantage in the sector. The
dominant exporting country is Japan which alone accounts for 28
percent of the total exports of all countries in this CA group;
moreover, Japan accounts for 46 percent of this group's net
exports (exports in excess of imports). The other major
exporting countries in terms of the volume of exports (as
compared with degree of comparative advantage) are EC member
states (Belgium, France and Germany); these three countries
account for almost one-half of the total exports of all countries

having a comparative advantage and 36 percent of the net exports of these countries. The other 12 countries identified as having a comparative advantage supply only 25 percent of the CA group's exports and only 18 percent of the net exports.

On the import side, the major two markets are the USA and the United Kingdom who together account for almost one-third of the imports of all countries identified as having a comparative disadvantage. The other major comparative disadvantage countries listed in Table 3-1 together account for only 22 percent of the imports of the CD group; thus the remaining 42 countries account for just under one-half of CD country imports indicating that the world's import market for iron and steel products is widely diversified across countries.

The relationship between trade and the domestic economy in the iron and steel sector is quite different than that for the apparel industry. Most countries that have a comparative advantage in iron and steel products exploit their comparative advantage only as an extension of their domestic market. Even Japan, the world's largest exporter, consumes in excess of 80 percent of domestic production. On the average for all countries that have a comparative advantage in the iron and steel sector, production exceeds consumption by only 18 percent. Only Belgium produces substantially more that it consumes domestically.

For those countries that have a comparative disadvantage, most satisfy the bulk of their domestic needs through domestic production. On average for this group of countries, domestic production is 91 percent of domestic consumption. There are exceptions, however, such as Algeria, Indonesia and Saudia

Arabia, who depend heavily on imports to satisfy their domestic needs for iron and steel products.

Wood and wood production: Of the 56 countries included in our analysis of the wood and wood products sector, 25 are identified as having a comparative advantage. Essentially two groups of countries dominate the sector — the northern countries of Austria, Canada, Finland and Sweden and the Asian countries of ASEAN and Korea. The northern countries, especially Canada, produce coniferous wood products for the housing and construction industry with lesser amounts of hardwoods for furniture and other wood products. The ASEAN countries dominate in finishing woods (mahogany, teak, etc.) for decorative panelling, furniture and other wood products.

These two groups of countries provide 65 percent (northern) and 22 percent (Asian) of the total exports of the comparative advantage countries. Thus, the other 15 countries that are identified as having a comparative advantage in the wood and wood products sector supply only 13 percent of the CA group's exports.

Import markets for wood and wood products are dominated by the EC, USA and Japan; these countries account for 84 percent of the imports into countries having a comparative disadvantage in the sector.

In relating trade to the domestic economies we again observe the anomaly that the countries that have a comparative advantage produce for export markets whereas the comparative disadvantage countries use imports to supplement domestic production. On average, the CA countries produce 50 percent more than domestic consumption compared with the CD countries importing only 12

percent of consumption. And two of the major markets, the USA and Japan, import 6 percent and 7 percent of their domestic consumption, respectively. A significant portion of this trade is undoubtedly related to the different types of wood and wood products that are domestically available.

Electronics. Of the 54 countries included in our analysis of the electronics sector, only seven are identified as having a comparative advantage. And Japan accounts for 46 percent of the exports and 80 percent of the net exports of these seven countries. The other CA countries include EC member states (Belgium, Germany and the Netherlands), Sweden and two developing countries (Korea and Singapore).

The import markets are widely diversified with the USA and the other EC member states accounting for just over one-half of the CD countries' imports; the other 39 countries account for the remaining half of CD country imports.

Finally, upon comparing trade to domestic production and consumption we find a slightly different picture than for the other three industrial sectors. As was the case in the iron and steel sector, those countries that are identified as having a comparative advantage serve export markets as an extension of domestic production for domestic consumption. Even Japan, the world's dominant exporter, has net exports of only 25 percent of domestic production.

On the import side, two patterns emerge. The developed countries augment domestic consumption through imports rather than depend upon imports. Generally, more than 70 percent of

consumption is satisfied through domestic production./15/ In contrast, the developing countries, especially the less advanced developing countries, depend heavily on imports to satisfy domestic consumption.

The above analysis was based on trade-cum-production data that included numerous countries for which complete data was not available. Another problem was that the industry definitions were occasionally different than the desired definition — electronics covered more that just consumer electronic products and textiles could not be analyzed at all because of a gross mismatch with cotton and man-made fibres. We now turn to an analysis of the pattern of comparative advantage based on import and export data only.

----

15 Actual imports are somewhat higher due to intra-industry trade (i.e., the exportation of some electronic items and the importation of other electronic items).

TABLE 3-1
Pattern of International Comparative Advantage
Based on Trade-cum-production Indices: (1979-80 $Million)

Country/a/	Prod	Cons	Exp	Imp	RPC/b/			RNX/b/		
					D	O	C	D	O	C
Countries with CA in Apparel (ISIC=322)										
ITALY	6603	2883	4368	649	CA	6	2.29	CA	22	0.74
HONG KON	4517	743	4308	534	CA	3	6.08	CA	21	0.78
YUGOSLAV	1996	1685	334	23	CA	14	1.18	CA	14	0.87
FINLAND	912	460	636	183	CA	9	1.99	CA	25	0.55
SINGAFOR	367	95	396	123	CA	4	3.87	CA	26	0.53
KOREA RE	.	.	2791	13	CA	.	.	CA	3	0.99
INDIA	.	.	563	0	CA	.	.	CA	1	1.00
PORTUGAL	.	.	556	11	CA	.	.	CA	9	0.96
GREECE	.	.	354	33	CA	.	.	CA	17	0.83
SPAIN	.	.	298	124	CA	.	.	CA	27	0.41
Other(19)	.	.	2860	294	.	.	.	CA	18	0.81
Other(11)	7420	6105	1403	88	CA	13	1.26	CA	14	0.88
TOTAL(29)	.	.	17464	1987	.	.	.	CA	20	0.80
TOTAL(16)	21815	11972	11445	1600	CA	10	1.82	CA	22	0.75
Countries with CD in Apparel										
USA	36150	41692	1010	6551	CD	23	0.87	CD	48	-0.73
JAPAN	10587	11799	415	1627	CD	21	0.90	CD	43	-0.59
GERMANY	9930	14903	2714	7687	CD	32	0.67	CD	40	-0.48
UNITED K	6824	7818	1680	2674	CD	23	0.87	CD	33	-0.23
BELGIUM	1464	2215	934	1684	CD	33	0.66	CD	37	-0.29
NETHERLA	1327	3263	810	2746	CD	34	0.41	CD	41	-0.54
SWEDEN	499	1444	268	1213	CD	35	0.35	CD	46	-0.64
NORWAY	248	827	60	638	CD	36	0.30	CD	49	-0.83
SWITZERL	.	.	331	1349	CD	.	.	CD	44	-0.61
SAUDI AR	.	.	11	594	CD	.	.	CD	53	-0.96
Other(16)	.	.	3626	5968	.	.	.	CD	35	-0.24
Other(10)	18394	20185	3357	5148	CD	21	0.91	CD	33	-0.21
TOTAL(26)	.	.	11859	32731	.	.	.	CD	40	-0.47
TOTAL(20)	85423	104146	11248	29968	CD	27	0.82	CD	40	-0.45

Notes at end of table.

TABLE 3-1 (continued)

Country/a/	Prod	Cons	Exp	Imp	RPC/b/			RNX/b/		
					D	O	C	D	O	C

Countries with CA in Iron and Steel (ISIC=371)

Country/a/	Prod	Cons	Exp	Imp	RPC/b/			RNX/b/		
					D	O	C	D	O	C
JAPAN	76373	62251	15047	925	CA	5	1.23	CA	1	0.88
GERMANY	39912	35240	11458	6785	CA	6	1.13	CA	8	0.26
FRANCE	22632	20830	7049	5247	CA	8	1.09	CA	13	0.15
SPAIN	15064	13924	1876	737	CA	9	1.08	CA	4	0.44
BRAZIL	7144	6860	834	551	CA	11	1.04	CA	11	0.20
BELGIUM	5499	852	6487	1840	CA	1	6.46	CA	3	0.56
KOREA RE	4403	4003	1473	1073	CA	7	1.10	CA	12	0.16
SWEDEN	4174	3343	2229	1397	CA	4	1.25	CA	10	0.23
SOUTH AF	3887	2812	1345	270	CA	2	1.38	CA	2	0.67
AUSTRIA	3748	2724	1719	696	CA	2	1.38	CA	5	0.42
Other(6)	.	.	3750	3139	.	.	.	CA	14	0.09
Other(4)	14410	13932	3523	3044	CA	12	1.03	CA	14	0.07
TOTAL(16)	.	.	53267	22660	.	.	.	CA	7	0.40
TOTAL(14)	197246	166771	53040	22565	CA	5	1.18	CA	7	0.40

Countries with CD in Iron and Steel

Country/a/	Prod	Cons	Exp	Imp	RPC/b/			RNX/b/		
					D	O	C	D	O	C
UNITED K	16755	17193	2591	3029	CD	16	0.97	CD	19	-0.08
USA	81300	87096	2747	8542	CD	18	0.93	CD	24	-0.51
YUGOSLAV	5863	6596	238	971	CD	21	0.89	CD	29	-0.61
MEXICO	4688	5566	132	1009	CD	22	0.84	CD	34	-0.77
VENEZUEL	1130	1732	84	685	CD	25	0.65	CD	35	-0.78
INDONESI	245	1008	34	797	CD	37	0.24	CD	45	-0.92
SAUDI AR	.	.	13	1858	CD	.	.	CD	57	-0.99
SWITZERL	.	.	393	1199	CD	.	.	CD	24	-0.51
INDIA	.	.	123	809	CD	.	.	CD	32	-0.74
ALGERIA	.	.	20	799	CD	.	.	CD	50	-0.95
Other(42)	.	.	7349	16576	.	.	.	CD	21	-0.39
Other(26)	30415	35896	9330	12220	CD	22	0.85	CD	19	-0.10
TOTAL(52)	.	.	13724	36274	.	.	.	CD	22	-0.46
TOTAL(32)	140396	155087	12565	27253	CD	20	0.91	CD	21	-0.37

Notes at end of table.

TABLE 3-1 (continued)

Country/a/	Prod	Cons	Exp	Imp	RPC/b/			RNX/b/		
					D	O	C	D	O	C
Countries with CA in Wood and Wood Products (ISIC=331)										
CANADA	7769	4490	3743	464	CA	8	1.73	CA	12	0.78
SWEDEN	4673	3438	1552	317	CA	11	1.36	CA	14	0.66
BRAZIL	3006	2715	329	38	CA	14	1.11	CA	11	0.79
FINLAND	2677	1087	1653	63	CA	4	2.46	CA	6	0.93
YUGOSLAV	2310	1992	408	90	CA	12	1.16	CA	15	0.64
KOREA RE	1349	821	558	31	CA	9	1.64	CA	9	0.89
PHILIPPI	599	196	405	2	CA	3	3.06	CA	1	0.99
SINGAPOR	357	113	521	277	CA	2	3.15	CA	20	0.31
AUSTRIA	•	•	1063	267	CA	•	•	CA	16	0.60
MALAYSIA	•	•	837	22	CA	•	•	CA	3	0.95
Other(15)	•	•	1268	192	•	•	•	CA	12	0.74
Other(13)	4116	3097	1147	128	CA	11	1.33	CA	11	0.80
TOTAL(25)	•	•	12337	1763	•	•	•	CA	12	0.74
TOTAL(21)	26856	17949	10316	1410	CA	10	1.50	CA	12	0.76
Countries with CD in Wood and Wood Products										
USA	35250	37538	1857	4144	CD	23	0.94	CD	34	-0.38
EC	26664	34079	3311	10968	CD	12	0.78	CD	26	-0.54
JAPAN	26643	28651	174	2182	CD	24	0.93	CD	46	-0.85
SAUDI AR	•	•	11	643	CD	•	•	CD	50	-0.97
SWITZERL	•	•	128	373	CD	•	•	CD	37	-0.49
ALGERIA	•	•	3	231	CD	•	•	CD	51	-0.98
EGYPT	•	•	0	203	CD	•	•	CD	54	-1.00
Other(25)	•	•	898	1936	•	•	•	CD	34	-0.37
Other(20)	5269	6141	429	1059	CD	28	0.85	CD	35	-0.42
TOTAL(31)	•	•	6282	20680	•	•	•	CD	39	-0.54
TOTAL(22)	93826	106409	5771	18353	CD	27	0.88	CD	38	-0.52

Notes at end of table.

TABLE 3-1 (continued)

Country/a/	Prod	Cons	Exp	Imp	RPC/b/			RNX/b/		
					D	O	C	D	O	C
Countries with CA in Electronics (ISIC=383)										
JAPAN	46884	34708	13547	1371	CA	1	1.35	CA	1	0.82
KOREA RE	3198	2636	1585	1024	CA	4	1.21	CA	2	0.22
SWEDEN	2073	1702	1298	928	CA	3	1.22	CA	3	0.17
SINGAPOR	2053	1594	2321	1861	CA	2	1.29	CA	4	0.11
GERMANY	•	•	6202	5004	CA	•	•	CA	4	0.11
NETHERLA	•	•	2626	2309	CA	•	•	CA	6	0.06
BELGIUM	•	•	1529	1362	CA	•	•	CA	6	0.06
Other(0)	•	•	0	0	•	•	•	•	•	•
Other(0)	0	0	0	0	•	•	•	•	•	•
TOTAL(7)	•	•	29108	13859	•	•	•	CA	2	0.36
TOTAL(4)	54208	40640	18751	5184	CA	1	1.33	CA	1	0.57
Countries with CD in Electronics										
USA	71100	73795	8061	10756	CD	7	0.96	CD	13	-0.14
UNITED K	12217	12580	2670	3033	CD	6	0.97	CD	10	-0.06
CANADA	2628	3721	731	1824	CD	15	0.71	CD	22	-0.43
AUSTRALI	874	1514	48	688	CD	20	0.58	CD	37	-0.87
ARGENTIN	334	796	20	482	CD	25	0.42	CD	42	-0.92
VENEZUEL	158	566	1	409	CD	27	0.28	CD	49	-0.99
ITALY	•	•	1348	2287	CD	•	•	CD	19	-0.26
SAUDI AR	•	•	16	1226	CD	•	•	CD	44	-0.97
SPAIN	•	•	184	750	CD	•	•	CD	28	-0.61
BRAZIL	•	•	207	583	CD	•	•	CD	24	-0.48
Other(37)	•	•	7646	12869	•	•	•	CD	18	-0.25
Other(18)	14775	17183	2891	5302	CD	9	0.86	CD	20	-0.29
TOTAL(47)	•	•	20932	34907	•	•	•	CD	19	-0.26
TOTAL(24)	102086	110155	14422	22494	CD	7	0.93	CD	16	-0.22

Source: UNIDO secretariat calculations.

a The numbers in parentheses indicate the number of countries in the "other" categories (first for all countries for which data are available and second for only those countries for which complete data are available) and in the "TOTAL" categories.

b The columns are "D" for dichotomous measure, "O" for ordinal measure and "C" for cardinal measure. The ordinal rankings include all countries for which data are available; see Annex I.

3-8. Comparative advantage and trade-only indices.

Before turning to a detailed examination of comparative advantage by country we will first briefly review the pattern of trade for selected country groups. Aggregated exports and imports are reported in Table 3-2 together with two trade-only RCA indices -- the ratio of net exports and the Balassa index. The country coverage is limited to the DMECs and those LDCs that report data to the U.N. Statistical Offices./16/

In the textile sector there is only one aggregated group of countries that are identified as having a comparative disadvantage on the basis of the RNX index, namely the DMECs other than the USA, EC and Japan. The Balassa index indicates that the USA and Japan also have a comparative disadvantage even though their net exports are positive./17/ The developing countries are consistently identified (on the basis of both indices) as having a comparative advantage in this sector.

This pattern of world trade in textiles is significantly different from what one might anticipate given our analysis of the apparel industry above. However, one must recognize that the

---

16 Note that in the aggregate DMECs+LDCs exports do not equal imports. This reflects the fact that the country coverage is not complete.

17 Recall that the Balassa index is an export-only index; the low value of the index reveals, for example, that USA exports of textiles relative to USA exports of all manufactures is less than the relative export performance of other countries (on average). This is probably due to the fact that the USA is more competitive in exporting other manufactured products and thus has a relatively low share of textile exports. The same explanation would apply to Japan.

textile industry is very different from the apparel industry.
The apparel industry involves the design and manufacture (i.e.,
cutting and sewing) of garments whereas the textile industry
today is dominated by the processing of cotton and man-made
fibres into cotton and synthetic fabrics (often blends of cotton
and synthetic materials). Man-made fibres are an end product of
the petro-chemical industry and are certainly not associated with
labor-intensive production technologies as is common in the
apparel industry. As a result the modern textile industry
includes highly sophisticated production technologies that often
occur in capital-intensive plants located in high-wage countries;
such production facilities are consistent with the international
pattern of comparative advantage.

The pattern of trade in iron and steel, as reported in Table
3-2, is entirely consistent with our previous examination based
on trade-cum-production relationships. In a nutshell, the USA
and the developing countries, including the more advanced
developing countries, are the major comparative disadvantage
countries with Japan and some EC member states enjoying a
comparative advantage. Such aggregations often mask contrary
trends in individual countries. For example, the developing
countries of Brazil and Korea are emerging comparative advantage
countries; similarly the EC member states enjoy very different
degrees of international competitiveness in the ir.   .nd steel
sector ranging from highly efficient to quite inefficient.   In
fact, the apparent degree of comparative advantage indicated for
the EC may be due, in large part, to state industrial subsidies
that generate over-production, and therefore, excessive exports.

Probably the more correct interpretation of the world-wide steel industry is to consider it in a state of adjustment with the new pattern of international comparative advantage yet to emerge.

International trade in wood and wood products is as earlier presented. This is a resource based industry with the major exporters being those countries with the natural resource endowments. The major exception to expectations is probably the USA which has tremendous forest resources yet is a large net importer of wood products. The USA is, however, the world's second largest exporter; thus, the USA imports may reflect a demand for wood types that are generally not available in the USA.

The pattern of trade can generally be described as exports from the resource endowed countries (Austria, Canada, Finland and Sweden in the north and ASEAN and Korea in Asia) and imports into the resource scarce countries (the EC, Japan and numerous other countries with smaller domestic markets).

International trade in consumer electronics is similar to our earlier examination, but with one major difference. The major comparative advantage countries include Japan and the Asian NICs but not selected EC countries whose comparative advantage in electronics does not include consumer electronic products. The major comparative disadvantage countries include the USA, the other developed countries (including EC member states) and the other developing countries.

TABLE 3-2
Pattern of International Comparative Advantage
(Trade-only Indices: 1979-80 $MILLION)

Group	Exports	Imports	RNX	BAL
Textiles				
DMECs+LDCs	47498	40634	0.08	0.92
DMECs	36184	34015	0.03	0.75
USA	3403	2414	0.17	0.53
EC	22482	21643	0.02	0.92
JAPAN	4552	1844	0.42	0.91
DMEC Other	5747	8114	-0.17	0.72
LDCs	11085	6364	0.27	1.75
NICs	4653	1751	0.45	1.08
LDC Other	6432	4613	0.16	.
Iron and Steel Products				
DMECs+LDCs	65033	56381	0.07	0.88
DMECs	60871	41572	0.19	0.95
USA	2727	8184	-0.50	0.31
EC	33076	23247	0.17	1.00
JAPAN	14784	896	0.89	2.21
DMEC Other	10284	9244	0.05	1.10
LDCs	3751	14429	-0.59	0.54
NICs	2986	4438	-0.20	0.91
LDC Other	765	9991	-0.86	.
Wood and Wood Products				
DMECs+LDCs	18541	20890	-0.06	0.90
DMECs	14477	19093	-0.14	0.77
USA	1832	4023	-0.37	0.72
EC	3175	10340	-0.53	0.34
JAPAN	159	2137	-0.86	0.08
DMEC Other	9311	2593	0.56	2.58
LDCs	4064	1797	0.39	1.53
NICs	2244	685	0.53	1.11
LDC Other	1820	1112	0.24	.
Consumer Electronics				
DMECs+LDCs	28471	26846	0.03	0.97
DMECs	21197	20688	0.01	1.05
USA	4033	6902	-0.26	1.06
EC	6933	10284	-0.19	0.48
JAPAN	9350	803	0.84	3.18
DMEC Other	881	2698	-0.51	0.20
LDCs	7274	6158	0.08	0.54
NICs	6044	4138	0.19	0.77
LDC Other	1230	2020	-0.24	.

Source: UNIDO secretariat calculations.

With this brief review of the pattern of international trade we will next turn to a more detailed analysis of these four sectors. There are two important differences between our previous analysis using trade-cum-production relationships. First, trade data are reported for more narrowly defined product sectors than is the case for production data. Thus, we are able to observe trade flows that more accurately reflect the industry or sector we wish to study. To repeat, the industries of interest are cotton and man-made textiles and apparel, iron and steel products, wood and wood products, and consumer electronics.

The second difference is that more countries report data on trade than report data on production. Our sample of countries in the earlier trade-cum-production analysis averaged 58 countries per sector; in the following trade-only analysis we have a country coverage averaging 98 countries per sector. Noting that the socialist countries of Eastern Europe have been removed from the sample, the 98 countries that remain constitute a rather complete coverage of world trade among the DMECs and LDCs.

We now turn to our analysis of the pattern of comparative advantage by sector.

Textiles: Data are available for 103 countries; of these countries we can identify 27 as having a comparative advantage in the textiles sector. The 10 major CA countries listed in Table 3-3 account for 79 percent of this group's exports and 83 percent of their net exports. The major CA countries include four DMECs (Japan, Italy, USA and Belgium) and six developing countries (three in Asia, India, Pakistan and Brazil). Interestingly, Hong

Kong, the major developing country apparel exporting country, is not among the countries that have a comparative advantage in textiles./18/ In fact, Hong Kong is the single largest net importer of textiles and is among the countries identified as having a comparative disadvantage in this sector.

The other major CD countries include EC member states (Germany, France and the United Kingdom), other DMEC countries, Saudi Arabia and Singapore. The 66 unlisted countries identified as having a comparative disadvantage in textiles (see Annex II) account for slightly more that 25 percent of this group's total imports and slightly more than one-third of the net imports. Thus, on the import side of the world market, there is a large diversification across countries.

A final aspect that should be noted is the extent to which countries are both importers and exporters of textiles, so-called intra-industry or two-way trade. Much of this type of trade is due to the high degree of aggregation used to define the textiles industry; for example, particular countries export some textiles items and import other textile items. Nevertheless, those countries that are identified as having a comparative advantage tend to export far more textiles than they import. In contrast, those countries identified as having a comparative disadvantage are still substantial exporters; their exports are, on average, over 60 percent as large as their imports. These countries

---

18 The BAL index of comparative advantage contradicts the RNX index for Hong Kong, Japan and the USA. See footnote 17 above for an explanation of this apparent inconsistency for Japan and the USA. The reverse reasoning applies to Hong Kong.

account for almost 40 percent of combined DMEC and LDC exports
and slightly more than 70 percent of world imports (excluding the
socialist countries of Eastern Europe).

In the iron and steel sector we identified only 15 countries
as having an overall comparative advantage (from a total sample
of 93 countries). The major CA countries include Japan, some
western european countries, Korea and South Africa. These
countries are the dominant exporters, supplying over 70 percent
of the world's exports (excluding the socialist countries of
Eastern Europe).

In contrast, imports are widely diversified. In fact, the
CA countries account for one-third of the combined DMEC and LDC
imports. And the 1^n major countries identified as having a
comparative disadvantage import the same volume as the 10 major
countries having a comparative advantage. Clearly the iron and
steel industry is characterized by substantial intra-industry
trade. In terms of import volumes, the major markets are the
USA, western europe and China.M.

Trade in the wood and wood products sector is somewhat
different than that in the textiles or iron and steel sectors.
In particular, those countries identified as having a comparative
advantage in this sector are the dominant exporters but with a
much smaller incidence of intra-industry trade. Their imports
are only 14 percent as large as their exports -- compared with
figures in excess of 40 percent for the textiles and iron and
steel sectors.

The aggregate incidence of intra-industry trade is more
normal for those countries identified as having a comparative

disadvantage in the wood and wood products sector. However, if the EC and the USA are excluded, the incidence of intra-industry trade for the CD countries is similar to that of the CA countries. It is clear that the international location of this industry is heavily influenced by raw material supplier, i.e., it is natural resource determined.

The consumer electronics industry is the most concentrated of any of the industries included in this examination. Only 10 countries are identified as having a comparative advantage in this sector. Surprisingly, the USA and EC member states are not among the CA countries. The CA group is thoroughly dominated by one country, Japan, and includes only three other major exporters -- Singapore, China.T and Korea. The other 6 CA countries contribute only 1 percent of the net exports of this group. Japan alone accounts for 63 percent of the CA group's total exports and 80 percent of the net exports.

The import market for consumer electronics is similarly concentrated with the EC and the USA accounting for over 60 percent of world imports (excluding the socialist countries of Eastern Europe). These countries, however, also have substantial exports in this sector./19/

Three countries should be identified as comparative

---

19 Interestingly, the BAL index of comparative advantage places the USA among the comparative advantage group. Thus, USA exports of consumer electronics relative the USA exports of manufactures in general are higher than the world pattern. Since production is often aimed at domestic consumption, this result could reflect a very high propensity to consume electronic products.

advantage "neutral" namely Belgium, Hong Kong and Malaysia./20/ These countries have total imports and exports of $3 billion each (1979-80).

Throughout the above analysis there has been a high degree of consistency between the primary trade flows (i.e., exports from CA countries and imports into CD countries) and the indices of comparative advantage (i.e., RNX and BAL). We are, however, somewhat uneasy about the other trade flows (imports into CA countries and exports from CD countries). As an attempt to shed more light on this issue with a view to a better understanding of the pattern of international comparative advantage we have disaggregated the trade flows into more narrowly defined product categories. In particular, we have attempted to identify trade in intermediate products as they move through the various stages of processing from raw material to final products. The following section reports our analysis of the pattern of comparative advantage by stage of processing.

---

20 Belgium was identified as having a comparative advantage since the RNX index is 0.02. Hong Kong and Malaysia are included among the CD group.

<div align="center">

TABLE 3-3
Pattern of International Comparative Advantage
(Trade-only Indices: 1979-80 $Million)

</div>

Countries/a/	Exp	Imp	RNX/b/			BAL/b/		
			D	O	C	D	O	C
Countries with CA in Textiles:								
JAPAN	5102	1654	CA	12	0.51	CD	44	0.91
ITALY	4109	2615	CA	18	0.22	CA	31	1.32
USA	3625	2541	CA	21	0.18	CD	62	0.53
BELGIUM	3548	2320	CA	19	0.21	CA	27	1.52
CHINA.M	2377	561	CA	9	0.62	.	.	.
KOREA RE	2197	409	CA	5	0.69	CA	12	3.04
CHINA.T	1667	295	CA	4	0.70	.	.	.
INDIA	1141	72	CA	1	0.88	CA	6	5.11
PAKISTAN	876	202	CA	8	0.63	CA	3	8.87
BRAZIL	654	78	CA	2	0.79	CA	34	1.20
Other (17)	6547	3545	CA	17	0.30	.	.	.
TOTAL	31843	14292	CA	14	0.38	.	.	.
Countries with CD in Textiles:								
GERMANY	6255	6810	CD	31	-0.04	CD	50	0.82
FRANCE	3410	4099	CD	36	-0.09	CD	52	0.80
UNITED K	3109	3552	CD	35	-0.07	CD	49	0.83
HONG KON	909	2966	CD	54	-0.53	CA	25	1.64
SAUDI AR	13	1337	CD	97	-0.98	CD	86	0.11
CANADA	306	1281	CD	59	-0.61	CD	83	0.15
AUSTRALI	133	1103	CD	70	-0.78	CD	77	0.29
SWEDEN	417	967	CD	46	-0.40	CD	75	0.32
SINGAPOR	367	847	CD	46	-0.40	CD	56	0.64
FINLAND	196	616	CD	51	-0.52	CD	74	0.33
Other (66)	5815	10888	CD	42	-0.30	.	.	.
TOTAL	20930	34466	CD	40	-0.24	.	.	.

Notes at end of table.

TABLE 3-3 (continued)

Countries/a/	Exp	Imp	RNX/b/			BAL/b/		
			D	O	C	D	O	C
Countries with CA in ron and Steel:								
JAPAN	154'	894	CA	2	0.89	CA	5	2.21
GERMANY	11' .	6732	CA	9	0.26	CA	17	1.13
FRANCE	7 0	5372	CA	15	0.15	CA	13	1.24
BELGIUM	ι0	1863	CA	5	0.55	CA	6	2.14
SWEDEN	. ∠76	1418	CA	11	0.23	CA	12	1.37
SPAIN	1945	808	CA	6	0.41	CA	8	1.81
AUSTRIA	1677	726	CA	7	0.40	CA	7	1.83
KOREA RE	1649	987	CA	10	0.25	CA	10	1.55
SOUTH AF	1229	326	CA	4	0.58	CA	3	4.59
Other (5)	3809	2707	CA	7	0.17	•	•	•
TOTAL	54526	22132	CA	6	0.42	•	•	•
Countries with CD in Iron and Steel:								
USA	3116	8153	CD	25	-0.45	CD	37	0.31
UNITED K	2289	3364	CD	21	-0.19	CD	30	0.53
CHINA.M	250	2065	CD	43	-0.78	•	•	•
SWITZERL	398	1317	CD	28	-0.54	CD	39	0.25
CHINA.T	335	1092	CD	27	-0.53	•	•	•
MEXICO	124	1002	CD	43	-0.78	CD	22	0.71
YUGOSLAV	229	970	CD	32	-0.62	CD	27	0.56
DENMARK	341	911	CD	26	-0.46	CD	34	0.42
SINGAPOR	212	867	CD	30	-0.61	CD	41	0.24
INDIA	85	841	CD	50	-0.82	CD	32	0.44
Other (68)	8961	23132	CD	25	-0.44	•	•	•
TOTAL	16340	43714	CD	26	-0.46	•	•	•

Notes at end of table.

TABLE 3-3 (continued)

Countries/a/	Exp	Imp	RNX/b/			BAL/b/		
			D	O	C	D	O	C
Countries with CA in Wood and Wood Products:						CA	16	5.25
CANADA	3510	417	CA	20	0.79	CA	16	5.25
FINLAND	1875	67	CA	13	0.93	CA	10	7.94
SWEDEN	1596	341	CA	27	0.65	CA	19	3.27
AUSTRIA	1158	287	CA	29	0.60	CA	17	3.94
MALAYSIA	841	22	CA	10	0.95	CA	9	8.68
CHINA.T	781	62	CA	16	0.85	•	•	•
SINGAPOR	522	277	CA	34	0.31	CA	23	2.34
KOREA RE	485	36	CA	15	0.86	CA	25	2.15
YUGOSLAV	441	80	CA	23	0.69	CA	20	3.26
PHILIPPI	368	1	CA	2	0.99	CA	11	7.80
Other (31)	2190	352	CA	22	0.72	•	•	•
TOTAL	13767	1942	CA	22	0.75	•	•	•
Countries with CD in Wood and Wood Products:								
EC	3394	11108	CD	57	-0.53	•	•	•
USA	2002	3496	CD	48	-0.27	CD	44	0.72
JAPAN	152	2393	CD	71	-0.88	CD	82	0.08
SAUDI AR	17	683	CD	78	-0.95	CD	69	0.2G
SWITZERL	124	398	CD	56	-0.52	CD	61	0.28
SPAIN	191	345	CD	49	-0.29	CD	46	0.60
ALGERIA	0	299	CD	95	-1.00	CD	103	0.00
NORWAY	141	285	CD	51	-0.34	CD	41	0.91
EGYPT	0	266	CD	95	-1.00	CD	92	0.02
HONG KON	11	170	CD	70	-0.87	CD	86	0.05
Other (44)	444	1581	CD	59	-0.56	•	•	•
TOTAL	6476	21025	CD	57	-0.53	•	•	•

Notes at end of table.

TABLE 3-3 (continued)

Countries/a/	Exp	Imp	RNX/b/			BAL/b/		
			D	O	C	D	O	C
Countries with CA in Consumer Electronics								
JAPAN	10759	839	CA	1	0.86	CA	5	3.18
SINGAPOR	2200	1638	CA	7	0.15	CA	2	5.82
CHINA.T	1684	544	CA	2	0.51	•	•	•
KOREA RE	1355	659	CA	4	0.35	CA	4	3.36
Other (6)	1172	1043	CA	9	0.06	•	•	•
TOTAL	17170	4723	CA	2	0.57	•	•	•
Countries with CD in Consumer Electronics								
EC	7389	11444	CD	22	-0.22	•	•	•
USA	4592	7394	CD	17	-0.23	CA	9	1.06
SAUDI AR	13	583	CD	51	-0.96	CD	35	0.13
SWITZERL	159	577	CD	29	-0.57	CD	28	0.23
SWEDEN	156	569	CD	29	-0.57	CD	31	0.22
SPAIN	43	447	CD	40	-0.82	CD	38	0.10
ARGENTIN	3	416	CD	55	-0.98	CD	45	0.04
AUSTRALI	6	372	CD	53	-0.97	CD	52	0.02
VENEZUEL	1	293	CD	66	-0.99	CD	71	0.00
CHINA.M	39	212	CD	33	-0.69	•	•	•
Other (53)	2173	3738	CD	18	-0.26	•	•	•
TOTAL	14574	26045	CD	18	-0.28	•	•	•

Source: UNIDO secretariat calculations.

a The numbers in parentheses indicate the number of countries in the "other" category.

b The columns are "D" for dichotomous measure, "O" for ordinal measure and "C" for cardinal measure. The ordinal rankings include all countries for which data is available; see Annex II.

3-C. Comparative Advantage by Stage of Processing

International trade is not the result of a simple pattern of comparative advantage by which some countries enjoy a comparative advantage and export products from one or more sectors and other countries export products from other sectors. International

trade is not simply a country processing indigenous raw materials into final goods for domestic consumption and export. Instead it is a highly interdependent process whereby some countries produce and export raw materials to other countries who process those materials into higher stage intermediate products for export to third countries for yet further processing. Eventually a final product emerges for final consumers throughout the world. The degree of this interdependence, the number of stages and the international location of the various stages differs from industrial sector to sector. And in some cases more than one stage of processing will occur in the same country; production efficiencies may dictate that subsequent processing stages occur in the same plant.

The international location of a particular stage of processing will depend upon a host of factors including countries' factor endowments, factor requirements for efficient processing, transportation costs at various stages, industrial infrastructure and other industrial linkages, the presence of markets for the output, government policies that stimulate or discourage domestic processing, and so on. One country may enjoy a comparative advantage for a particular process on the basis of one set of factors and a second country on the basis of a very different set of factors, with both countries being internationally competitive.

To many people, international trade in manufactured products is considered as a threat to their economic livelihood. Many consider importing or foreign investment as surrogates for exporting jobs. In reality, efficient production is of benefit

to consumers throughout the world. And efficient production requires the integration of processing activities throughout the world. Each stage of processing should occur where the economic environment is most consistent with efficiency. This does not mean the export of jobs thought it may mean a restructuring of employment opportunities in particular countries. Jobs will be lost in those stages of processing that can be accomplished more efficiently in other countries. However, jobs will be gained in those stages of processing in which the home country has a comparative advantage. By the nature of comparative advantage, no country can have a comparative disadvantage in all sectors, and thus, job creation that is consistent with international efficiency will occur in all countries.

Such international interdependence in industrial processing provides beneficial returns to all countries and should not be looked upon as an economic threat. International interdependence should not be taken to mean dependence or subservience; it is not exploitation. Instead it represents international cooperation for the benefit of all.

This issue of interdependence is examined in the four industrial sectors that have been analyzed above. This examination should be considered as an exploratory exercise rather than a definitive test of the interdependence hypothesis. It is an extension of the analysis of international comparative advantage in industrial sectors that has been reported by the secretariat in the last three issues of the Survey of Industrial Development.

This examination consists of our first attempt to compile

statistics on international trade by stage of processing. Our data are not as refined as they might become with more insight and experience with this analysis. In the present exercise we have identified four stages of processing for three of the sectors under investigation (textiles and apparel, iron and steel and wood and wood products) and two stages for the fourth sector (consumer electronics). Our analytical methodology is not refined to the point where we can present neat statistical summaries that demonstrate the major conclusions.

Before examining country specific data we will present the pattern of world trade in the four sectors by stage of processing, see Table 3-4. We wish to draw the reader's attention to any changes in the international pattern of comparative advantage that occurs at different stages of processing within each industrial sector. The data are presented by stage of processing using the following definitions.

Sector	Stage
Textiles and apparel	Stage 1: cotton and man-made fibres
	Stage 2: cotton and man-made yarns
	Stage 3: cotton and man-made fabrics
	Stage 4: cotton and man-made apparel
Iron and steel	Stage 1: pig iron
	Stage 2: ingots
	Stage 3: bars, rods, shapes, plates, etc.
	Stage 4: selected steel products in the transportation and machinery sectors
Wood and wood products	Stage 1: rough saw-logs
	Stage 2: sawn, shaped and simply worked wood
	Stage 3: veneer and plywood
	Stage 4: manufactures of wood
Consumer electronics	Stage 1: transistors and other components
	Stage 2: TV and radio receivers and recorders

In the textiles and apparel sector these summary statistics reveal a rather significant though expected pattern. The USA is the major comparative advantage country at the first stage of processing. This is based on an advantage in the petro-chemical based man-made fibre industry. The USA does not trade much at stage 2, instead it processes the fibres into yarn and continues processing the yarns into fabrics (probably in unified plants). Thus, the USA has a strong competitive position in fibres and fabrics. But at the final stage, apparel, the USA is very definitely at a comparative disadvantage. Japan is an importer of fibres (probably mostly cotton fibres), an exporter of fabrics and an importer of apparel. On the other hand, the LDCs and especially the NICs are significant importers of fibres and exporters of apparel.

In the iron and steel sector there is little trade at the first stage of processing; and the pattern of comparative advantage remains relatively consistent across the other three stages. Japan is a consistently dominant exporter across stages and the LDCs are consistent importers, with the NICs having a slightly lower degree of comparative disadvantage. The pattern of comparative advantage seems to switch only for the USA which has a comparative disadvantage in steel and an advantage in steel products.

The wood and wood products sector contains a wide diversity of experience ranging from consistent comparative disadvantage countries (Japan and EC member states) to consistent comparative advantage for some countries in the DMEC Other and the LDC Other groups. Other countries demonstrate dramatic changes in their

situations. The USA is a dominant exporter of rough saw-logs and an importer of wood products from stage 2 up. The NICs import saw-logs and export wood products, primarily veneers and plywoods.

In the consumer electronics sector Japan is the only major country with an indicated comparative advantage in stage 1. It is interesting to note that there is only one comparative disadvantage group, namely Other DMECs. Most country groups fall near the comparative advantage "neutral" line. On the other hand, in stage 2 there is a dramatic difference across country groups from Japan and the NICs with a large degree of comparative advantage to the other countries with definite degrees of comparative disadvantage.

TABLE 3-4
Comparative Advantage by Stage of Processing
(1979-80 $MILLION)

Group Name	Exports	Imports	RNX	BAL
Textiles: Stage 1				
DMECs+LDCs	8609	9175	-0.03	2.31
DMECs	6455	5920	0.04	1.30
USA	3281	65	0.96	2.75
EC	1788	2919	-0.24	0.44
Japan	592	1369	-0.40	0.65
DMECs Other	795	1567	-0.33	0.61
LDCs	2153	3255	-0.20	7.68
NICs	259	1097	-0.62	4.41
LDCs Other	1894	2158	-0.07	.
Textiles: Stage 2				
DMECs+LDCs	10144	8074	0.11	1.03
DMECs	7781	6951	0.06	0.76
USA	616	138	0.63	0.45
EC	4927	4791	0.01	0.98
Japan	776	312	0.35	0.74
DMECs Other	1460	1649	-0.06	0.94
LDCs	2363	1124	0.36	2.63
NICs	1242	272	0.64	1.57
LDCs Other	1121	852	0.14	.
Textiles: Stage 3				
DMECs+LDCs	16252	13046	0.11	0.92
DMECs	12023	10581	0.06	0.78
USA	1328	852	0.22	0.59
EC	6625	6779	-0.01	0.79
Japan	2665	399	0.74	1.54
DMECs Other	1404	2551	-0.29	0.45
LDCs	4229	2466	0.26	1.70
NICs	1865	930	0.33	0.91
LDCs Other	2364	1536	0.21	.
Textiles: Stage 4				
DMECs+LDCs	25634	30441	-0.09	0.69
DMECs	16961	28842	-0.26	0.51
USA	874	5846	-0.74	0.22
EC	12376	16751	-0.15	0.89
Japan	393	1425	-0.57	0.13
DMECs Other	3319	4820	-0.18	0.64
LDCs	8672	1598	0.69	1.64
NICs	5075	234	0.91	1.29
LDCs Other	3597	1364	0.45	.

TABLE 3-4 (continued)

Group Name	Exports	Imports	RNX	BAL
Iron and Steel: Stage 1				
DMECs+LDCs	541	635	-0.08	1.44
DMECs	475	547	-0.07	0.77
USA	9	71	-0.77	0.10
EC	252	322	-0.12	0.81
Japan	5	98	-0.91	0.07
DMECs Other	209	56	0.58	3.06
LDCs	66	88	-0.14	13.25
NICs	21	28	-0.14	13.81
LDCs Other	45	60	-0.14	.
Iron and Steel: Stage 2				
DMECs+LDCs	7210	6423	0.06	0.84
DMECs	6714	5075	0.14	0.87
USA	171	225	-0.13	0.18
EC	4314	3733	0.07	1.11
Japan	1441	153	0.81	1.95
DMECs Other	787	964	-0.10	0.88
LDCs	495	1348	-0.46	0.61
NICs	458	998	-0.37	0.94
LDCs Other	37	350	-0.81	.
Iron and Steel: Stage 3				
DMECs+LDCs	53144	44516	0.09	0.87
DMECs	50450	32711	0.21	0.96
USA	1838	7455	-0.60	0.26
EC	27378	17284	0.23	1.02
Japan	13272	294	0.96	2.43
DMECs Other	7962	7677	0.02	1.04
LDCs	2694	11806	-0.63	0.43
NICs	2188	3339	-0.21	0.77
LDCs Other	506	8467	-0.89	.
Iron and Steel: Stage 4				
DMECs+LDCs	267187	227386	0.08	.
DMECs	259656	185942	0.17	.
USA	47452	38976	0.10	.
EC	137697	88013	0.22	.
Japan	37163	3913	0.81	.
DMECs Other	37344	55039	-0.19	.
LDCs	7531	41445	-0.69	.
NICs	5260	14015	-0.45	.
LDCs Other	2271	27430	-0.85	.

TABLE 3-4 (continued)

==

Group Name	Exports	Imports	RNX	BAL
Wood and Wood Products: Stage 1				
DMECs+LDCs	3723	9302	−0.43	2.30
DMECs	2300	7920	−0.55	0.88
USA	1666	27	0.97	2.28
EC	271	1432	−0.68	0.11
Japan	5	5897	−1.00	0.01
DMECs Other	358	564	−0.22	0.31
LDCs	1423	1382	0.01	12.58
NICs	21	1311	−0.97	0.02
LDCs Other	1402	71	0.90	.
Wood and Wood Products: Stage 2				
DMECs+LDCs	10923	13272	−0.10	0.95
DMECs	9297	12481	−0.15	0.80
USA	1145	2729	−0.41	0.75
EC	986	6982	−0.75	0.18
Japan	47	1180	−0.92	0.04
DMECs Other	7120	1590	0.63	3.11
LDCs	1625	791	0.35	1.76
NICs	686	421	0.24	0.77
LDCs Other	939	370	0.43	.
Wood and Wood Products: Stage 3				
DMECs+LDCs	4154	4478	−0.04	0.88
DMECs	2708	4088	−0.20	0.75
USA	445	748	−0.25	0.79
EC	962	2054	−0.36	0.44
Japan	76	818	−0.83	0.18
DMECs Other	1224	468	0.45	1.92
LDCs	1446	390	0.57	1.58
NICs	1090	214	0.67	1.85
LDCs Other	356	176	0.34	.
Wood and Wood Products: Stage 4				
DMECs+LDCs	3233	2671	0.10	0.83
DMECs	2472	2497	0.00	0.74
USA	242	546	−0.39	0.56
EC	1227	1304	−0.03	0.79
Japan	36	139	−0.59	0.11
DMECs Other	967	507	0.31	1.64
LDCs	761	174	0.63	1.25
NICs	468	50	0.81	1.45
LDCs Other	293	124	0.41	.

TABLE 3-4 (continued)

```
================================================================
```

Group Name	Exports	Imports	RNX	BAL
Consumer Electronics: Stage 1				
DMECs+LDCs	12369	13385	-0.04	1.16
DMECs	8914	9503	-0.03	1.20
USA	3362	3207	0.02	2.03
EC	3363	4651	-0.16	0.57
Japan	1993	676	0.49	1.56
DMECs Other	196	969	-0.66	0.11
LDCs	3455	3882	-0.06	0.55
NICs	2412	2934	-0.10	0.86
LDCs Other	1043	948	0.05	.
Consumer Electronics: Stage 2				
DMECs+LDCs	16100	13349	0.09	0.88
DMECs	12283	11185	0.05	0.95
USA	672	3696	-0.69	0.31
EC	3570	5633	-0.22	0.41
Japan	7357	127	0.97	4.43
DMECs Other	684	1728	-0.43	0.27
LDCs	3817	2165	0.28	0.45
NICs	3633	1204	0.50	0.79
LDCs Other	184	961	-0.68	.

Source: UNIDO secretariat calculations.

We now turn to a more detailed country specific examination
of the pattern of comparative advantage by stage of processing.
This examination will treat each of the four industrial sectors
in turn and will be based on data reported in Annex III; data for
selected countries are reproduced in Table 3-5 for illustration.

Textiles and apparel: The textiles and apparel industry is
probably the most complex to analyze among the four sectors under
examination. It encompasses two very different production
processes -- industrial textiles and labor-intensive apparel --

and two very different materials -- industrial man-made materials and natural cotton. The pattern of comparative advantage by stage of processing reflects these different factors.

At stage 1 (fibres) world exports originate mainly in three groups of countries — first, the USA; second, cotton producing developing countries in the middle east, the subcontinent and central America; and third, the EC and Japan. This third group of countries, however, consists of large net importing countries that are identified among the countries having a comparative disadvantage. The other major comparative disadvantage countries include China.M, the NICs in Asia and other DMECs.

By stage 2 the pattern of comparative advantage changes to a more neutral position. The RCA indicators identify USA, Japan and the NICs in Asia as the major CA countries, yet the volume of trade of the USA and Japan is quite modest. Only the Asian NICs are significant exporters, in particular China.T and Korea; Hong Kong is a major net importer.

The evolution continues into stage 3 with a declining competitive position for the USA (which still enjoys a comparative advantage) and an increasingly competitive situation for Japan (which is now a very large net exporter). The Asian NICs continue to enjoy a comparative advantage though they have not increased their net exports (compared with stage 2); instead they process fabrics into apparel.

In stage 4 we observe the USA to have the largest degree of comparative disadvantage followed closely in ranking by Japan. With the exception of Italy, the EC member states are also in this situation. The highly competitive countries include the

NICs in Asia (especially China.T, Kong Kong and Korea) and
numerous other LDCs, many of which do not export in large
volumes.

Iron and steel products: As mentioned before, there is
relatively little international trade in the stage 1 product, pig
iron. In the other three stages, Japan is the dominant net
exporting country. The EC is also indicated as having a
comparative advantage in these stages, however, there is
substantial intra-industry trade, much of which is intra-EC
trade. France, Germany and Italy are net exporters of products
in the higher stages; the Netherlands is a net importer in these
same stages; and Belgium and the United Kingdom have trading
patterns that mirror each other (Belgium enjoys a comparative
advantage in stages 2 and 3 and has a disadvantage in stage 4
with the United Kingdom just the opposite). The USA has a
comparative disadvantage at stage 3 and an advantage in stage 4.
The developing countries are large net importers in stages 3 and
4, especially the less advanced developing countries. The
significant lone exception is that Korea has a comparative
advantage in stage 3.

Wood and wood products: International trade in wood and
wood products is a good example of the benefits of international
cooperation in industrial processing. A reasonable picture of
world trade in this sector can be gleaned from the trade data
available to us -- though some details are missing.

The major exporter of saw-logs is the USA; most of these

exports are destined for Japan to be sawn into construction materials and used in the Japanese housing industry./21/ We also observe significant exports of the basic raw material by Indonesia and Malaysia. The major exporters of stage 2 products are the northern DMECs of Austria, Canada, Finland and Sweden who export sawn wood products rather than rough saw-logs.

The processing distinction between stage 2 and stage 3 is really not one of a sequential relationship; stage 2 output does not go on to stage 3 as an input. Stage 2 products are saw-mill products whereas stage 3 involves veneers and plywoods. Both types of products would be used in the construction and furniture industries. Some of the trade in this sector would be motivated by the characteristics of the wood types available in the northern countries of Europe and America in comparison with tropical woods available in Asia. The major exporting countries are the predictable northern countries and the surprising Asian countries of China.T, Korea and Singapore. These latter countries are major importers of raw materials and exporters of veneers and plywoods.

At the final stage we make two observations. First, the volume of trade is much smaller than the earlier stages, in dramatic contrast to the other three sectors included in our examination. Second, China.T is the dominant comparative advantage country yet has only a relatively small share of world

----

21 It should be noted that total stage 1 imports far exceed stage 1 exports; the implication is that the socialist countries of Eastern Europe are large net exporters of rough saw-logs.

trade.

Consumer electronics: Our analysis of consumer electronics contains only two stages, namely transistors and other components and radios, TVs and recorders. There are some interesting aspects of this trade other than the dominant position of Japan. For example, the USA is comparative advantage "neutral" at stage 1 and highly noncompetitive at stage 2. The NICs perform as expected, having a comparative disadvantage at stage 1 and a comparative advantage at stage 2. Obviously, the NICs import components and process these into consumer electronic products.

The real surprise is the reverse situation for the other LDCs, i.e., as a group they have a comparative advantage in components and a disadvantage in consumer electronic products. However, upon closer examination the entire stage 1 advantage is explained by exports from Malaysia. Apparently; there is an industrial complementarity in Asia with stage 1 plants located in particular Asian countries to supply various components to the region's stage 2 processors. This permits the stage 1 plants to reach efficient scales of operation which would not be possible if each country attempted to domestically produce the components it needed for its stage 2 industries. For the five countries in the region (China.T, Hong Kong, Korea, Malaysia and Singapore) total exports of components were $3.5 billion (1979-80) compared with total imports of $3.8 billion. Thus, the Asian consumer electronics industry seems to reflect the theme of this section; i.e., it demonstrates the advantages of industrial cooperation and international interdependence.

TABLE 3-5
Comparative Advantage by Stage of Processing
(1979-80 $million)

Country	Stage	Exp	Imp	RNX/a/			BAL/a/		
				D	O	C	D	O	C
			Textiles						
BELGIUM	TX1	55	297	CD	49	-0.69	CD	66	0.14
BELGIUM	TX2	478	730	CD	30	-0.21	CD	26	0.98
BELGIUM	TX3	873	620	CA	19	0.17	CA	35	1.12
BELGIUM	TX4	967	1723	CD	45	-0.28	CD	51	0.68
CHINA.M	TX1	14	1616	CD	62	-0.98	•	•	•
CHINA.M	TX2	194	232	CD	27	-0.09	•	•	•
CHINA.M	TX3	937	194	CA	9	0.66	•	•	•
CHINA.M	TX4	1363	12	CA	8	0.98	•	•	•
CHINA.T	TX1	91	426	CD	47	-0.65	•	•	•
CHINA.T	TX2	445	43	CA	2	0.82	•	•	•
CHINA.T	TX3	681	171	CA	11	0.60	•	•	•
CHINA.T	TX4	2271	3	CA	1	1.00	•	•	•
GERMANY	TX1	725	676	CA	33	0.03	CD	46	0.51
GERMANY	TX2	1647	1391	CA	18	0.08	CA	25	1.02
GERMANY	TX3	2042	1566	CA	23	0.13	CD	43	0.80
GERMANY	TX4	2687	7251	CD	50	-0.46	CD	54	0.56
HONG KON	TX1	9	420	CD	57	-0.96	CD	69	0.09
HONG KON	TX2	66	615	CD	44	-0.81	CD	36	0.63
HONG KON	TX3	563	1298	CD	38	-0.40	CA	16	2.96
HONG KON	TX4	4333	620	CA	26	0.75	CA	4	12.50
ITALY	TX1	252	831	CD	44	-0.54	CD	50	0.42
ITALY	TX2	899	628	CA	17	0.18	CA	20	1.31
ITALY	TX3	1235	932	CA	22	0.14	CA	32	1.20
ITALY	TX4	4345	704	CA	27	0.72	CA	26	2.21
JAPAN	TX1	659	1401	CD	40	-0.36	CD	41	0.65
JAPAN	TX2	896	318	CA	11	0.48	CD	33	0.74
JAPAN	TX3	2916	361	CA	7	0.78	CA	24	1.54
JAPAN	TX4	462	1317	CD	51	-0.48	CD	77	0.13
KOREA RE	TX1	44	643	CD	55	-0.87	CD	58	0.21
KOREA RE	TX2	524	98	CA	7	0.69	CA	6	3.22
KOREA RE	TX3	956	194	CA	9	0.66	CA	10	3.73
KOREA RE	TX4	2507	10	CA	5	0.99	CA	10	6.11
SWITZERL	TX1	58	179	CD	42	-0.51	CD	54	0.30
SWITZERL	TX2	426	153	CA	12	0.47	CA	12	1.75
SWITZERL	TX3	464	283	CA	16	0.24	CA	33	1.19
SWITZERL	TX4	324	1288	CD	55	-0.60	CD	60	0.44
USA	TX1	3712	67	CA	5	0.96	CA	29	2.75
USA	TX2	676	146	CA	9	0.64	CD	38	0.45
USA	TX3	1398	896	CA	17	0.22	CD	51	0.59
USA	TX4	986	6204	CD	59	-0.73	CD	74	0.22

TABLE 3-5 (continued)

Country	Stage	Exp	Imp	RNX/a/			BAL/a/		
				D	D	C	D	D	C
			Iron and Steel						
AUSTRIA	ISI	0	17	CD	21	-0.99	CD	40	0.00
AUSTRIA	IS2	145	54	CA	8	0.45	CA	6	1.59
AUSTRIA	IS3	1357	588	CA	7	0.40	CA	6	1.77
AUSTRIA	IS4	2698	4556	CD	17	-0.26	•	•	•
BELGIUM	ISI	3	21	CD	13	-0.74	CD	22	0.13
BELGIUM	IS2	1045	394	CA	8	0.45	CA	1	3.28
BELGIUM	IS3	5186	1286	CA	4	0.60	CA	4	2.10
BELGIUM	IS4	9845	11543	CD	14	-0.08	•	•	•
BRAZIL	ISI	119	0	CA	1	1.00	CA	2	17.48
BRAZIL	IS2	64	57	CA	14	0.06	CD	14	0.95
BRAZIL	IS3	534	577	CD	16	-0.04	CD	16	0.78
BRAZIL	IS4	2371	2591	CD	12	-0.04	•	•	•
CANADA	ISI	95	0	CA	3	0.99	CA	6	2.64
CANADA	IS2	74	32	CA	10	0.39	CD	25	0.19
CANADA	IS3	1380	1180	CA	13	0.08	CD	19	0.61
CANADA	IS4	12934	19709	CD	15	-0.21	•	•	•
ITALY	ISI	1	141	CD	21	-0.99	CD	33	0.03
ITALY	IS2	259	1171	CD	21	-0.64	CD	20	0.53
ITALY	IS3	3450	2489	CA	12	0.16	CD	12	0.97
ITALY	IS4	17951	13539	CA	7	0.14	•	•	•
KOREA RE	ISI	22	1	CA	4	0.88	CA	11	1.41
KOREA RE	IS2	302	486	CD	18	-0.23	CA	2	2.58
KOREA RE	IS3	1334	496	CA	6	0.46	CA	7	1.52
KOREA RE	IS4	473	2427	CD	28	-0.67	•	•	•
SPAIN	ISI	5	11	CD	12	-0.39	CD	14	0.79
SPAIN	IS2	158	211	CD	17	-0.14	CD	13	1.00
SPAIN	IS3	1696	531	CA	5	0.52	CA	5	1.95
SPAIN	IS4	3932	3675	CA	10	0.03	•	•	•
SWITZERL	ISI	0	18	CD	19	-0.98	CD	37	0.01
SWITZERL	IS2	9	57	CD	23	-0.74	CD	31	0.06
SWITZERL	IS3	399	1225	CD	22	-0.51	CD	29	0.31
SWITZERL	IS4	6450	5623	CA	9	0.07	•	•	•
UNITED K	ISI	6	40	CD	13	-0.74	CD	24	0.10
UNITED K	IS2	136	380	CD	20	-0.47	CD	22	0.30
UNITED K	IS3	1978	2752	CD	17	-0.16	CD	20	0.57
UNITED K	IS4	24699	18399	CA	5	0.15	•	•	•
USA	ISI	8	71	CD	17	-0.80	CD	24	0.10
USA	IS2	249	200	CA	13	0.11	CD	27	0.18
USA	IS3	1971	7535	CD	27	-0.59	CD	32	0.26
USA	IS4	51132	40766	CA	8	0.11	•	•	•

TABLE 3-5 (continued)

```
==========================================================================
```

Country	Stage	Exp	Imp		RNX/a/			BAL/a/	
				D	O	C	D	O	C

```
--------------------------------------------------------------------------
```

			Wood	and Wood	Products				
AUSTRIA	WD1	89	126	CD	15	-0.17	CD	20	0.96
AUSTRIA	WD2	878	166	CA	19	0.68	CA	17	4.98
AUSTRIA	WD3	158	37	CA	15	0.62	CA	20	2.35
AUSTRIA	WD4	121	85	CA	24	0.18	CA	11	2.44
CANADA	WD1	58	56	CA	13	0.01	CD	29	0.26
CANADA	WD2	2976	273	CA	13	0.83	CA	15	7.46
CANADA	WD3	203	70	CA	18	0.49	CA	30	1.17
CANADA	WD4	331	74	CA	14	0.63	CA	10	2.81
CHINA.T	WD1	9	384	CD	27	-0.95	•	•	•
CHINA.T	WD2	65	45	CA	24	0.18	•	•	•
CHINA.T	WD3	367	15	CA	8	0.92	•	•	•
CHINA.T	WD4	349	2	CA	1	0.99	•	•	•
DENMARK	WD1	6	10	CD	17	-0.29	CD	36	0.08
DENMARK	WD2	51	324	CD	34	-0.73	CD	45	0.33
DENMARK	WD3	40	82	CD	30	-0.34	CD	36	0.69
DENMARK	WD4	194	47	CA	15	0.61	CA	5	4.43
ITALY	WD1	1	600	CD	30	-1.00	CD	59	0.00
ITALY	WD2	83	1543	CD	38	-0.90	CD	60	0.11
ITALY	WD3	151	168	CD	23	-0.05	CD	39	0.56
ITALY	WD4	288	81	CA	19	0.56	CA	26	1.32
KOREA RE	WD1	0	860	CD	30	-1.00	CD	51	0.01
KOREA RE	WD2	83	16	CA	19	0.68	CD	37	0.64
KOREA RE	WD3	354	17	CA	9	0.91	CA	9	7.20
KOREA RE	WD4	49	3	CA	8	0.88	CA	33	1.08
SINGAPOR	WD1	5	36	CD	24	-0.74	CD	35	0.09
SINGAPOR	WD2	278	173	CA	23	0.23	CA	24	2.17
SINGAPOR	WD3	221	92	CA	20	0.41	CA	13	4.31
SINGAPOR	WD4	23	12	CA	23	0.32	CD	50	0.43
SPAIN	WD1	1	164	CD	29	-0.99	CD	47	0.02
SPAIN	WD2	41	320	CD	35	-0.77	CD	52	0.18
SPAIN	WD3	73	5	CA	11	0.87	CA	32	1.05
SPAIN	WD4	77	21	CA	18	0.58	CA	19	1.52
SWEDEN	WD1	10	42	CD	20	-0.61	CD	36	0.08
SWEDEN	WD2	1295	120	CA	13	0.83	CA	18	4.39
SWEDEN	WD3	101	147	CD	27	-0.18	CD	33	0.97
SWEDEN	WD4	199	74	CA	21	0.46	CA	13	2.33
USA	WD1	1581	22	CA	8	0.97	CA	15	2.28
USA	WD2	1183	2308	CD	26	-0.32	CD	36	0.75
USA	WD3	542	651	CD	24	-0.09	CD	35	0.79
USA	WD4	277	537	CD	30	-0.32	CD	41	0.56

```
--------------------------------------------------------------------------
```

TABLE 3-5 (continued)

Country	Stage	Exp	Imp	RNX/a/			BAL/a/		
				D	O	C	D	O	C

Consumer Electronics

Country	Stage	Exp	Imp	D	O	C	D	O	C
BRAZIL	CE1	64	273	CD	23	-0.62	CD	19	0.37
BRAZIL	CE2	100	29	CA	4	0.55	CD	17	0.53
CHINA.T	CE1	481	459	CA	7	0.02	.	.	.
CHINA.T	CE2	1204	85	CA	2	0.87	.	.	.
GERMANY	CE1	1218	1814	CD	14	-0.20	CD	16	0.59
GERMANY	CE2	1651	1708	CD	12	-0.02	CD	15	0.65
HONG KON	CE1	295	697	CD	18	-0.41	CA	6	2.06
HONG KON	CE2	882	495	CA	7	0.28	CA	1	4.59
JAPAN	CE1	2307	713	CA	2	0.53	CA	8	1.56
JAPAN	CE2	8452	126	CA	1	0.97	CA	2	4.43
KOREA RE	CE1	517	527	CD	10	-0.01	CA	4	3.02
KOREA RE	CE2	838	132	CA	3	0.73	CA	4	3.62
MALAYSIA	CE1	1053	971	CA	6	0.04	CA	1	15.07
MALAYSIA	CE2	49	132	CD	17	-0.45	CD	17	0.53
NETHERLA	CE1	560	499	CA	5	0.06	CD	11	0.87
NETHERLA	CE2	410	795	CD	15	-0.32	CD	16	0.60
SINGAPOR	CE1	1187	1178	CD	9	0.00	CA	2	8.04
SINGAPOR	CE2	1013	461	CA	6	0.37	CA	3	4.11
USA	CE1	3800	3653	CA	7	0.02	CA	7	2.03
USA	CE2	791	3741	CD	25	-0.65	CD	23	0.31

Source: UNIDO secretariat calculations. These data do not correspond perfectly with those for the branch totals in Tables 3-1 and 3-3 above. Apparel in Table 3-1 corresponds quite closely with the data for Textiles: Stage 4, but the other three stages for textiles do not correspond well with the branch totals in Table 3-3. Iron and Steel sector corresponds quite closely with the data for Iron and Steel: Stages 1, 2 and 3. The data for Wood and Wood Products sector corresponds quite well with those for Wood and Wood Products: Stages 2, 3 and 4. Consumer Electronics data corresponds quite closely with the data for the sector totals in Table 3-3 but not in Table 3-1.

a The numbers reflect the stage of processing with "1" indicating the most basic input and higher numbers indicating higher stages of processing. See the text for a more precise definition of the stages.

b The columns are "D" for dichotomous measure, "O" for ordinal measure and "C" for cardinal measure. The ordinal rankings include all countries for which data is available; see Annex III.

4. Summary and Conclusions

This chapter addresses two distinct though related questions. First, can the pattern of international comparative advantage be identified on the basis of statistical evidence? Second, is there a mutuality of benefit among countries to be derived from international industrial cooperation? Both of these questions were answered in the affirmative -- though both answers must be qualified somewhat.

We were able to identify the pattern of comparative advantage in terms of the existence of comparative advantage (or disadvantage) and we were able to rank countries by their degree of comparative advantage. The rankings are by no means perfect but we do have confidence that few countries would be grossly misranked. Finally, we were not able to design a cardinal measure that can be used to quantify a country's degree of comparative advantage.

In answering the first question we identified two categories of preferred indices of comparative advantage -- one based on trade-cum-production relationships and a second based on trade-only data. In both cases we suggest the index incorporate production and consumption factors and/or export and import factors. One must be very careful in using any index that is one sided, i.e., based on production and exports or based on consumption and imports.

The preferred indices of comparative advantage were then applied to four industrial sectors (textiles and apparel, iron and steel, wood and wood products, and consumer electronics) with the view of identifying the pattern of international comparative

advantage. These four sectors cover a wide diversity of experience including, highly protected industries (textiles), free trade (wood), mature and standardized products (steel), high tech (electronics), raw material based (wood), labor-intensive (apparel), capital-intensive (man-made fibres), etc. The end result was a reasonable picture of the pattern of comparative advantage, again with some qualifications.

The second question deals with the issue of industrial interdependence. In essence we examined the hypothesis that industrialization involves processing activities rather than producing final goods. Instead of a country using indigenous raw materials to make final goods we find that countries that are endowed with natural raw materials find that their comparative advantage lies in the extraction and simple processing of these materials into intermediate products which are exported. Other countries import these intermediate products for processing into higher staged intermediate products which are in turn exported. Eventually a final good emerges for this chain of processing.

We examined this hypothesis using the experiences of the four industrial sectors included in our earlier analysis of indices of comparative advantage. We identified the pattern of comparative advantage by stage of processing in these sectors to reveal many anticipated and a few surprising results. To briefly review these results, we found the following:

1. the textile fibre stage is dominated by cotton producing LDCs and by capital-intensive petro-chemical plants, mainly in the USA;

2. the apparel industry is dominated by the Asian NICs;

3. the pattern of comparative advantage in the steel
   industry is uniform across stages of processing with the
   DMECs, especially Japan, having the advantage;

4. the wood and wood products industry is a natural raw
   material based industry heavily influenced by Austria,
   Canada, Finland, Sweden and the USA in the north and the
   Asian countries of Indonesia and Malaysia;

5. several Asian NICs successfully process imported wood
   into higher staged products, including China.T, Korea and
   Singapore;

6. the major exporting country in the consumer electronics
   industry, at all stages, is Japan; and

7. the Asian NICs have an integrated electronics industry
   with some countries heavily involved in stage 1
   processing and others in stage 2 (with some countries in
   both stages).

It is interesting that five of these seven points involve Japan
and/or the Asian NICs. One point is clear, namely that these
countries are efficient processors of imported materials into
higher staged goods. A corollary is that these countries have
benefitted from industrial interdependence. More importantly,
these countries have rationalized their industrial structures to
this interdependence. These countries are very definitely not
simply importers of raw materials and exporters of final goods.
For example, Hong Kong supplies 17 percent of the world's
(excluding the socialists countries of Eastern Europe) apparel
exports yet is a net importer of textiles at all stages. And
Japan is a net importer of textile fibres and apparel (the first

and fourth stages), yet is a net exporter of products in the two intermediate stages.

This suggests a policy conclusion that industrial interdependence among countries generates mutual benefits. Governments should recognize the advantages of such interdependence and consider policies that promote or otherwise take advantage of such opportunities for gain.

A final note. The reader must be cautioned that the analysis, and especially the data transformations reported in this study, is the result of an on-going research effort. The work on measuring comparative advantage began several years ago; progress reports have been included in the more recent issues of the Survey of Industrial Development. On the other hand, the work on industrial interdependence is a new effort and should be judged accordingly. The initial results are very encouraging. Future efforts along this line of analysis should contribute to a better understanding of the industrial process and should suggest avenues by which developing countries can better integrate their industrial sectors into the world economy.

SOURCES AND SELECTED REFERENCES

Balassa, B., 1965, "Trade liberalisation and "revealed" comparative advantage," The Manchester School of Economic and Social Studies, May, pp. 99-123.

_____, 1969, "Country size and trade patterns: A comment," American Economic Review, March, pp. 201-204.

_____, 1977, "'Revealed' comparative advantage revisited: an analysis of relative export shares of the industrial countries, 1953-1971," The Manchester School of Economic and Social Studies, _____, pp. 327-344.

_____, 1979, "The changing pattern of comparative advantage in manufactured goods," The Review of Economics and Statistics, May, pp. 259-266.

Baldwin, R., 1971, "Determinants of the commodity structure of U.S. trade," American Economic Review, March, pp. 126-146.

_____, 1979, "Determinants of trade and foreign investment, further evidence, The Review of Economics and Statistics, February, pp. 40-48.

Bowen, H., 1983A, "On the theoretical interpretation of indices of trade intensity and revealed comparative advantage," Weltwirtschaftliches Archiv, April, pp. ___-___.

_____, 1983B, "Changes in the international distribution of resources and their impact on United States comparative advantage," Review of Economics and Statistics, August, pp. ___-___.

_____, 1983C, "The conceptual basis of empirical studies of trade in manufactured commodities: a constructive critique," The Manchester School of Economic and Social Studies, September, pp. 209-234.

Branson, W. and H. Junz, 1971, "Trends in U.S. trade and comparative advantage, Brookings Papers on Economic Activity, No. 2, pp. 285-346.

Deardorff, A., 1978, " The general validity of the Heckscher-Ohlin theorem," American Economic Review, December, pp. 683-694.

_____, 1979, "Weak links in the chain of comparative advantage," Journal of International Economics, May, pp. 197-209.

_____, 1980, "The general validity of the law of comparative advantage," Journal of Political Economy, October, pp. 941-957.

_____, 1982, "The general validity of the Heckscher-Ohlin theorem," American Economic Review, September, pp. 683-694.

_____, 1984, "Testing trade theories and predicting trade flows," in R. Jones and P. Kenen (ed.), Handbook of International Economics, Vol. I, (_____: Elsevier Science Publishers B.V.), pp. 467-517.

Donges, J. and J. Riedel, 1977 "The expansion of manufactured exports in developing countries: an empirical assessment of supply and demand issues," Weltwirtschaftliches Archiv, Heft 1, pp. 58-87.

Drabicki, J. and A. Takayama, 1979, "An antinomy in the theory of comparative advantage," Journal of International Economics, May, pp. 211-223.

Harkness, J., 1978, "Factor abundance and comparative advantage," American Economic Review, December, pp. 784-800.

_____, 1983, "The factor-proportions model with many nations, goods and factors: theory and evidence," Review of Economic Studies, May, pp. 298-305.

Harkness, J. and J. Kyle, 1975, "Factors influencing United States comparative advantage," Journal of International Economics, _____, pp. 153-165.

Helpman, E., 1984, "The factor content of foreign trade," Economic Journal, March, pp. 84-94.

Hillman, A., 1980, "Observations on the relation between 'revealed comparative advantage' and comparative advantage as indicated by pre-trade relative prices," Weltwirtschaftliches Archiv, Heft 2, pp. 315-321.

Hufbauer, G., 1970, "Factor endowments, national size and changing technology: Their impact on the commodity composition of trade in manufactured goods," in R. Vernon (ed.), The Technology Factor in International Trade, (New York: Columbia University Press), pp. 145-232.

Leamer, E., 1974, "The commodity composition of international trade in manufactures: an empirical analysis," Oxford Economic Papers, November, pp. 350-374.

Melvin, J., 1968, "Production and trade with two factors and three goods," American Economic Review, December, pp. 1249-1268.

UNIDO, 1982A, Changing Patterns of Trade in World Industry, an Empirical Study on Revealed Comparative Advantage, (New York: United Nations).

_____, 1982B, <u>World Industry in 1980</u>, (New York: United Nations), Chapter II.

_____, 1984, <u>Industry in a Changing World</u>, (New York: United Nations), Chapter XII.

Stern, R. and K. Maskus, 1981, "Determinants of the structure of U.S. foreign trade, 1958-76," <u>Journal of International Economics</u>, May, pp. 207-224.

Vanek, U., 1968, "The factor proportions theory: The n-factor case," <u>Kyklos</u>, October, pp. 749-756.

DATA APPENDIX

Consumption is defined to be production plus imports less exports. Production data were taken from United Nations, Yearbook of Industrial Statistics, Commodity Production, Vol. II (New York, United Nations). The same source provides a concordance between ISIC, rev. 1 and SITC, rev. 1 which was used to select the matching trade statistics. The quantities of imports and exports were compiled from United Nations trade publications and the corresponding trade tapes. Information was sometimes reported according to two different units of measurement (e.g., cubic metres rather than metric tons in the case of sawn wood) and conversion factors provided in the Yearbook of Industrial Statistics were applied. Finally, the value of a trade flow was occasionally reported without corresponding information on the quantity of exports and/or imports. In these cases all partner country data (both value and quantities) were aggregated to derive a measure of the unit value. This figure was then used to estimate the quantity of the trade flow. For further details, see UNIDO, Handbook of Industrial Statistics, 1984 (New York, United Nations).

```
*********************************************************************
BSYSTEM     TM24138      3/19/85     10:47:47  G.M.T.   WAS THE ORIGIN

DEST: REMOTE5   FILE: 0310  NAME: ANNEXR       LISTING        DIST: MURRAY    RECS:

*********************************************************************
```

ANNEX I

Comparative Advantage in Apparel (ISIC=322)
(Trade-cum-production Indices: 1979-80 $Million)

Country	Prod	Cons	Exp	Imp	RPC			RNX		
					D	O	C	D	O	C
INDIA	•	•	563	0	CA	•	•	CA	1	1.00
TURKEY	221	106	115	0	CA	8	2.08	CA	1	1.00
KOREA RE	•	•	2791	13	CA	•	•	CA	3	0.99
SRI LANK	•	•	90	1	CA	•	•	CA	4	0.98
PAKISTAN	•	•	91	1	CA	•	•	CA	4	0.98
PHILIPPI	390	146	247	3	CA	5	2.67	CA	4	0.98
THAILAND	•	•	237	3	CA	•	•	CA	4	0.98
MOROCCO	112	12	101	1	CA	2	9.14	CA	8	0.97
MACAU	•	•	364	7	CA	•	•	CA	9	0.96
PERU	106	56	51	1	CA	10	1.88	CA	9	0.96
PORTUGAL	•	•	556	11	CA	•	•	CA	9	0.96
URUGUAY	377	260	120	3	CA	12	1.45	CA	9	0.96
INDONESI	•	•	82	3	CA	•	•	CA	13	0.94
MALTA	185	11	188	13	CA	1	17.30	CA	14	0.87
YUGOSLAV	1996	1685	334	23	CA	14	1.18	CA	14	0.87
ISRAEL	595	382	231	18	CA	11	1.56	CA	16	0.86
GREECE	•	•	354	33	CA	•	•	CA	17	0.83
BRAZIL	4379	4262	129	13	CA	16	1.03	CA	18	0.82
CYPRUS	121	55	73	7	CA	7	2.18	CA	18	0.82
COLOMBIA	497	397	114	14	CA	13	1.25	CA	20	0.79
HONG KON	4517	743	4308	534	CA	3	6.08	CA	21	0.78
ITALY	6603	2883	4368	649	CA	6	2.29	CA	22	0.74
MALAYSIA	•	•	127	29	CA	•	•	CA	23	0.63
TUNISIA	•	•	308	70	CA	•	•	CA	23	0.63
FINLAND	912	460	636	183	CA	9	1.99	CA	25	0.55
SINGAPOR	367	95	396	123	CA	4	3.87	CA	26	0.53
SPAIN	•	•	298	124	CA	•	•	CA	27	0.41
NEW ZEAL	437	419	34	15	CA	15	1.04	CA	28	0.37
ARGENTIN	•	•	158	92	CA	•	•	CA	29	0.26
COSTA RI	82	83	14	16	CD	17	0.98	CD	30	-0.05
FRANCE	8571	8792	2129	2350	CD	19	0.97	CD	30	-0.05
DENMARK	403	531	343	471	CD	39	0.76	CD	32	-0.16
AUSTRIA	1030	1353	554	877	CD	30	0.76	CD	33	-0.23
UNITED K	6824	7818	1680	2674	CD	23	0.87	CD	33	-0.23
MEXICO	1280	1306	41	67	CD	17	0.98	CD	35	-0.24
SOUTH AF	856	889	50	83	CD	20	0.96	CD	36	-0.25
BELGIUM	1464	2215	934	1684	CD	33	0.66	CD	37	-0.29
IRELAND	•	•	198	360	CD	•	•	CD	37	-0.29
CTY 590	51	64	10	23	CD	29	0.79	CD	39	-0.42
GERMANY	9930	14903	2714	7687	CD	32	0.67	CD	40	-0.48
NETHERLA	1327	3263	810	2746	CD	34	0.41	CD	41	-0.54

Country	Prod	Cons	Exp	Imp	RPC			RNX		
					D	O	C	D	O	C
CANADA	3474	3984	191	700	CD	23	0.87	CD	42	-0.57
JAPAN	10587	11799	415	1627	CD	21	0.90	CO	43	-0.59
KENYA	51	57	2	8	CD	21	0.90	CD	44	-0.61
SWITZERL	•	•	331	1349	CD	•	•	CD	44	-0.61
SWEDEN	499	1444	268	1213	CD	35	0.35	CD	46	-0.64
KUWAIT	•	•	68	329	CD	•	•	CD	47	-0.66
USA	36150	41692	1010	6551	CD	23	0.87	CD	48	-0.73
NORWAY	248	827	60	638	CD	36	0.30	CD	49	-0.83
AUSTRALI	1656	1954	22	320	CD	26	0.85	CD	50	-0.87
NETH. AN	•	•	2	68	CD	•	•	CD	51	-0.94
CHILE	230	285	1	56	CD	27	0.81	CD	52	-0.95
SAUDI AR	•	•	11	594	CD	•	•	CD	53	-0.96
NIGERIA	•	•	1	63	CD	•	•	CD	54	-0.97
VENEZUEL	710	887	0	177	CD	28	0.80	CD	55	-1.00

Comparative Advantage in Iron and Steel (ISIC=371)
(Trade-cum-production Indices: 1979-80 $Million)

==

Country	Prod	Cons	Exp	Imp	RPC			RNX		
					D	O	C	D	O	C
JAPAN	76373	62251	15047	925	CA	5	1.23	CA	1	0.88
SOUTH AF	3887	2812	1345	270	CA	2	1.38	CA	2	0.67
BELGIUM	5499	852	6487	1840	CA	1	6.46	CA	3	0.56
SPAIN	15064	13924	1876	737	CA	9	1.08	CA	4	0.44
AUSTRIA	3748	2724	1719	696	CA	2	1.38	CA	5	0.42
QUATAR	•	•	114	47	CA	•	•	CA	5	0.42
DOM. REP	•	•	113	48	CA	•	•	CA	7	0.40
GERMANY	39912	35240	11458	6785	CA	6	1.13	CA	8	0.26
AUSTRALI	4742	4492	651	400	CA	10	1.06	CA	9	0.24
SWEDEN	4174	3343	2229	1397	CA	4	1.25	CA	10	0.23
BRAZIL	7144	6860	834	551	CA	11	1.04	CA	11	0.20
KOREA RE	4403	4003	1473	1073	CA	7	1.10	CA	12	0.16
FRANCE	22632	20830	7049	5247	CA	8	1.09	CA	13	0.15
CANADA	6735	6573	1593	1431	CA	12	1.02	CA	14	0.05
FINLAND	1794	1751	536	494	CA	12	1.02	CA	15	0.04
NORWAY	1139	1116	743	719	CA	12	1.02	CA	16	0.02
ITALY	21184	21194	3722	3733	CD	15	1.00	CD	17	0.00
NETHERLA	2509	2633	2149	2273	CD	17	0.95	CD	18	-0.03
UNITED K	16755	17193	2591	3029	CD	16	0.97	CD	19	-0.08
GREECE	•	•	275	468	CD	•	•	CD	20	-0.26
CHILE	650	702	34	86	CD	18	0.93	CD	21	-0.44
DENMARK	376	938	330	892	CD	34	0.40	CD	22	-0.46
ARGENTIN	•	•	173	485	CD	•	•	CD	23	-0.47
SWITZERL	•	•	393	1199	CD	•	•	CD	24	-0.51
USA	81300	87096	2747	8542	CD	18	0.93	CD	24	-0.51
PORTUGAL	574	822	94	341	CD	24	0.70	CD	26	-0.57
BAHRAIN	•	•	13	51	CD	•	•	CD	27	-0.59
SINGAPOR	140	739	196	795	CD	41	0.19	CD	28	-0.60
YUGOSLAV	5863	6596	238	971	CD	21	0.89	CD	29	-0.61
COSTA RI	21	87	14	80	CD	37	0.24	CD	30	-0.70
NEW ZEAL	313	553	46	287	CD	28	0.57	CD	31	-0.72
INDIA	•	•	123	809	CD	•	•	CD	32	-0.74
PERU	370	461	16	108	CD	23	0.80	CD	32	-0.74
MEXICO	4688	5566	132	1009	CD	22	0.84	CD	34	-0.77
GUATEMAL	•	•	10	80	CD	•	•	CD	35	-0.78
KUWAIT	•	•	39	311	CD	•	•	CD	35	-0.78
VENEZUEL	1130	1732	84	685	CD	25	0.65	CD	35	-0.78
IRELAND	•	•	29	304	CD	•	•	CD	38	-0.82
URUGUAY	58	120	7	68	CD	30	0.49	CD	38	-0.82
PHILIPPI	446	866	43	463	CD	29	0.51	CD	40	-0.83
TURKEY	2373	2643	28	298	CD	20	0.90	CD	40	-0.83
ISRAEL	247	555	25	333	CD	31	0.44	CD	42	-0.86
THAILAND	•	•	36	524	CD	•	•	CD	43	-0.87
KENYA	87	199	7	119	CD	31	0.44	CD	44	-0.89
INDONESI	245	1008	34	797	CD	37	0.24	CD	45	-0.92

Country	Prod	Cons	Exp	Imp	RPC			RNX		
					D	O	C	D	O	C
EGYPT	.	.	13	329	CD	.	.	CD	45	-0.92
JORDAN	58	208	6	156	CD	36	0.28	CD	47	-0.93
MALAYSIA	.	.	17	545	CD	.	.	CD	48	-0.94
OMAN	.	.	2	54	CD	.	.	CD	48	-0.94
ALGERIA	.	.	20	799	CD	.	.	CD	50	-0.95
IVORY CO	14	119	3	108	CD	43	0.12	CD	50	-0.95
COLOMBIA	389	643	5	258	CD	26	0.61	CD	52	-0.96
HONG KON	155	789	10	643	CD	40	0.20	CD	53	-0.97
TRINIDAD	.	.	2	116	CD	.	.	CD	53	-0.97
CYPRUS	0	57	0	57	CD	45	0.00	CD	55	-0.98
TUNISIA	134	322	2	190	CD	33	0.42	CD	55	-0.98
CAMEROON	.	.	0	85	CD	.	.	CD	57	-0.99
ECUADOR	95	243	1	149	CD	35	0.39	CD	57	-0.99
CTY 590	10	57	0	48	CD	42	0.17	CD	57	-0.99
SAUDI AR	.	.	13	1858	CD	.	.	CD	57	-0.99
YEMEN	.	.	1	89	CD	.	.	CD	57	-0.99
BANGLADE	165	283	0	118	CD	27	0.58	CD	62	-1.00
BRUNEI	.	.	0	59	CD	.	.	CD	62	-1.00
SRI LANK	18	82	0	65	CD	39	0.22	CD	62	-1.00
MOROCCO	29	275	0	246	CD	44	0.10	CD	62	-1.00
NIGERIA	.	.	0	588	CD	.	.	CD	62	-1.00
PAKISTAN	.	.	0	268	CD	.	.	CD	62	-1.00
SYRIA	0	306	1	306	CD	45	0.00	CD	62	-1.00

Comparative Advantage in Wood and Wood Products (ISIC=331)
(Trade-cum-production Indices: 1979-80 $Million)

===

Country	Prod	Cons	Exp	Imp	RPC D	RPC O	RPC C	RNX D	RNX O	RNX C
PHILIPPI	599	196	405	2	CA	3	3.06	CA	1	0.99
INDONESI	447	141	310	3	CA	1	3.17	CA	2	0.98
HONDURAS	•	•	50	1	CA	•	•	CA	3	0.95
IVORY CO	211	130	83	2	CA	10	1.62	CA	3	0.95
MALAYSIA	•	•	837	22	CA	•	•	CA	3	0.95
FINLAND	2677	1087	1653	63	CA	4	2.46	CA	6	0.93
CHILE	259	136	128	6	CA	6	1.90	CA	7	0.91
ECUADOR	53	28	26	1	CA	7	1.89	CA	7	0.91
KOREA RE	1349	821	558	31	CA	9	1.64	CA	9	0.89
PORTUGAL	704	336	390	22	CA	5	2.10	CA	9	0.89
BRAZIL	3006	2715	329	38	CA	14	1.11	CA	11	0.79
CANADA	7769	4490	3743	464	CA	8	1.73	CA	12	0.78
NEW ZEAL	729	644	107	21	CA	13	1.13	CA	13	0.67
SWEDEN	4673	3438	1552	317	CA	11	1.36	CA	14	0.66
YUGOSLAV	2310	1992	408	90	CA	12	1.16	CA	15	0.64
AUSTRIA	•	•	1063	267	CA	•	•	CA	16	0.60
COSTA RI	67	62	7	2	CA	15	1.09	CA	16	0.60
GABON	100	94	8	3	CA	16	1.06	CA	18	0.54
PERU	183	175	14	6	CA	18	1.04	CA	19	0.38
SINGAPOR	357	113	521	277	CA	2	3.15	CA	20	0.31
COLOMBIA	92	86	12	7	CA	16	1.06	CA	21	0.30
TURKEY	350	349	4	2	CA	20	1.01	CA	22	0.29
KENYA	52	50	5	3	CA	18	1.04	CA	23	0.25
THAILAND	•	•	71	63	CA	•	•	CA	24	0.06
MEXICO	869	866	53	50	CD	21	1.00	CA	25	0.03
SPAIN	•	•	250	322	CD	•	•	CD	26	-0.13
AUSTRALI	2250	2358	199	307	CD	22	0.95	CD	27	-0.21
KUWAIT	•	•	79	124	CD	•	•	CD	28	-0.22
BELGIUM	326	705	427	805	CD	40	0.46	CD	29	-0.31
DENMARK	552	779	254	481	CD	34	0.71	CD	29	-0.31
SOUTH AF	432	474	45	87	CD	26	0.91	CD	31	-0.32
NORWAY	1642	1773	132	263	CD	24	0.93	CD	32	-0.33
FRANCE	5502	6243	679	1420	CD	27	0.88	CD	33	-0.35
USA	35250	37538	1857	4144	CD	23	0.94	CD	34	-0.38
JORDAN	29	58	18	47	CD	38	0.51	CD	35	-0.44
GERMANY	9678	11310	910	2542	CD	28	0.86	CD	36	-0.47
SWITZERL	•	•	128	373	CD	•	•	CD	37	-0.49
ITALY	3143	4259	525	1641	CD	32	0.74	CD	38	-0.52
CYPRUS	33	52	7	26	CD	36	0.64	CD	39	-0.56
MOROCCO	123	174	16	67	CD	34	0.71	CD	40	-0.61
GREECE	•	•	21	92	CD	•	•	CD	41	-0.63
ISRAEL	244	304	18	78	CD	30	0.80	CD	41	-0.63
NETHERLA	1411	2476	271	1335	CD	37	0.57	CD	43	-0.66
HONG KON	154	304	26	177	CD	38	0.51	CD	44	-0.74
IRELAND	•	•	18	190	CD	•	•	CD	45	-0.82

Country	Prod	Cons	Exp	Imp	RPC D	O	C	RNX D	O	C
JAPAN	26643	28651	174	2182	CD	24	0.93	CD	46	-0.85
UNITED K	6052	8307	206	2462	CD	33	0.73	CD	46	-0.85
TUNISIA	32	92	4	64	CD	42	0.35	CD	48	-0.88
SYRIA	38	101	3	66	CD	41	0.37	CD	49	-0.92
SAUDI AR	•	•	11	643	CD	•	•	CD	50	-0.97
ALGERIA	•	•	3	231	CD	•	•	CD	51	-0.98
URUGUAY	74	90	0	16	CD	29	0.83	CD	51	-0.98
ARGENTIN	•	•	1	149	CD	•	•	CD	53	-0.99
EGYPT	•	•	0	203	CD	•	•	CD	54	-1.00
VENEZUEL	217	280	0	63	CD	31	0.77	CD	54	-1.00
YEMEN	1	81	0	80	CD	43	0.01	CD	54	-1.00

Comparative Advantage in Electronics (ISIC=383)
(Trade-cum-production Indices: 1979-80 $Million)

===

Country	Prod	Cons	Exp	Imp	RPC			RNX		
					D	O	C	D	O	C
JAPAN	46884	34708	13547	1371	CA	1	1.35	CA	1	0.82
KOREA RE	3198	2636	1585	1024	CA	4	1.21	CA	2	0.22
SWEDEN	2073	1702	1298	928	CA	3	1.22	CA	3	0.17
GERMANY	•	•	6202	5004	CA	•	•	CA	4	0.11
SINGAPOR	2053	1594	2321	1861	CA	2	1.29	CA	4	0.11
BELGIUM	•	•	1529	1362	CA	•	•	CA	6	0.06
NETHERLA	•	•	2326	2309	CA	•	•	CA	6	0.06
MALAYSIA	•	•	1053	1118	CD	•	•	CD	8	-0.03
PORTUGAL	332	345	153	166	CD	7	0.96	CD	9	-0.04
FRANCE	•	•	2570	2884	CD	•	•	CD	10	-0.06
UNITED K	12217	12580	2670	3033	CD	6	0.97	CD	10	-0.06
HONG KON	1731	1984	1237	1490	CD	9	0.87	CD	12	-0.09
DENMARK	498	616	377	496	CD	10	0.81	CD	13	-0.14
USA	71100	73795	8061	10756	CD	7	0.96	CD	13	-0.14
SWITZERL	•	•	697	935	CD	•	•	CD	15	-0.15
IRELAND	•	•	192	292	CD	•	•	CD	16	-0.21
AUSTRIA	919	1128	344	553	CD	10	0.81	CD	17	-0.23
FINLAND	443	591	225	373	CD	14	0.75	CD	18	-0.25
ISRAEL	8115	8212	140	237	CD	5	0.99	CD	19	-0.26
ITALY	•	•	1348	2287	CD	•	•	CD	19	-0.26
INDONESI	245	354	89	197	CD	16	0.69	CD	21	-0.38
CANADA	2628	3721	731	1824	CD	15	0.71	CD	22	-0.43
YUGOSLAV	712	941	132	361	CD	13	0.76	CD	23	-0.46
BRAZIL	•	•	207	583	CD	•	•	CD	24	-0.48
PHILIPPI	•	•	46	134	CD	•	•	CD	25	-0.49
NORWAY	527	837	143	453	CD	18	0.63	CD	26	-0.52
THAILAND	•	•	47	182	CD	•	•	CD	27	-0.59
KUWAIT	•	•	70	292	CD	•	•	CD	28	-0.61
SPAIN	•	•	184	750	CD	•	•	CD	28	-0.61
INDIA	•	•	17	90	CD	•	•	CD	30	-0.68
TUNISIA	40	92	10	62	CD	24	0.43	CD	31	-0.73
COSTA RI	35	77	6	48	CD	22	0.46	CD	32	-0.77
GREECE	•	•	25	190	CD	•	•	CD	32	-0.77
NEW ZEAL	•	•	11	98	CD	•	•	CD	34	-0.81
URUGUAY	39	65	2	28	CD	19	0.61	CD	35	-0.84
MEXICO	651	951	24	325	CD	17	0.68	CD	36	-0.86
AUSTRALI	874	1514	48	688	CD	20	0.58	CD	37	-0.87
IVORY CO	•	•	4	63	CD	•	•	CD	38	-0.89
SYRIA	•	•	3	55	CD	•	•	CD	39	-0.90
SOUTH AF	•	•	18	377	CD	•	•	CD	40	-0.91
TURKEY	262	332	4	74	CD	12	0.79	CD	40	-0.91
ARGENTIN	334	796	20	482	CD	25	0.42	CD	42	-0.92
PAKISTAN	•	•	1	50	CD	•	•	CD	43	-0.96
BAHRAIN	•	•	1	54	CD	•	•	CD	44	-0.97
COLOMBIA	98	211	2	115	CD	22	0.46	CD	44	-0.97

Country	Prod	Cons	Exp	Imp	RPC			RNX		
					D	O	C	D	O	C
SAUDI AR	.	.	16	1226	CD	.	.	CD	44	-0.97
CHILE	31	238	2	210	CD	28	0.13	CD	47	-0.98
PERU	76	138	1	63	CD	21	0.55	CD	47	-0.98
ECUADOR	21	71	0	51	CD	26	0.29	CD	49	-0.99
EGYPT	.	.	0	99	CD	.	.	CD	49	-0.99
VENEZUEL	158	566	1	409	CD	27	0.28	CD	49	-0.99
ALGERIA	.	.	0	238	CD	.	.	CD	52	-1.00
KENYA	.	.	0	51	CD	.	.	CD	52	-1.00
NIGERIA	.	.	0	365	CD	.	.	CD	52	-1.00

Source: UNIDO secretariat calculations.

ANNEX II

Comparative Advantage in Textiles
(Trade-only Indices: 1979-80 $Million)

Country	Exports	Imports	D	RNX O	C	D	BAL O	C
INDIA	1141	72	CA	1	0.88	CA	6	5.11
BRAZIL	654	78	CA	2	0.79	CA	34	1.20
PERU	153	21	CA	3	0.76	CA	24	1.72
CHINA.T	1667	295	CA	4	0.70	•	•	•
KOREA RE	2197	409	CA	5	0.69	CA	12	3.04
EGYPT	259	49	CA	6	0.68	CA	4	5.60
BANGLADE	414	92	CA	7	0.64	CA	2	16.55
PAKISTAN	876	202	CA	8	0.63	CA	3	8.87
CHINA.M	2377	561	CA	9	0.62	•	•	•
TURKEY	343	80	CA	9	0.62	CA	5	5.56
JAPAN	5102	1654	CA	12	0.51	CD	44	0.91
GREECE	468	175	CA	13	0.46	CA	14	2.56
COLOMBIA	135	61	CA	14	0.38	CA	13	2.65
SPAIN	697	354	CA	15	0.33	CD	47	0.88
PORTUGAL	594	306	CA	16	0.32	CA	9	3.61
THAILAND	330	174	CA	17	0.31	CA	15	2.35
ITALY	4109	2615	CA	18	0.22	CA	31	1.32
BELGIUM	3548	2320	CA	19	0.21	CA	27	1.52
GUATEMAL	64	44	CA	21	0.18	CA	21	1.89
USA	3625	2541	CA	21	0.18	CD	62	0.53
SWITZERL	1516	1128	CA	23	0.15	CA	32	1.30
URUGUAY	43	32	CA	23	0.15	CA	37	1.14
MEXICO	114	86	CA	25	0.14	CD	46	0.89
YUGOSLAV	379	336	CA	26	0.06	CA	39	1.03
ISRAEL	188	172	CA	27	0.05	CA	35	1.17
EL SALVA	63	63	CD	28	0.00	CA	10	3.34
IRELAND	443	446	CD	28	0.00	CA	28	1.45
NETHERLA	2257	2248	CD	28	0.00	CD	45	0.90
GERMANY	6255	6810	CD	31	-0.04	CD	50	0.82
MOROCCO	122	131	CD	31	-0.04	CA	11	3.17
AUSTRIA	1060	1164	CD	33	-0.05	CA	28	1.45
UNITED K	3109	3552	CD	35	-0.07	CD	49	0.83
FRANCE	3410	4099	CD	36	-0.09	CD	52	0.80
TANZANIA	31	39	CD	37	-0.12	CA	7	4.05
MALAWI	12	17	CD	38	-0.17	CA	19	1.91
IVORY CO	55	80	CD	39	-0.18	CA	26	1.61
DENMARK	421	677	CD	40	-0.23	CD	54	0.69
NEPAL	21	38	CD	41	-0.28	CA	1	18.85
COSTA RI	33	61	CD	42	-0.30	CA	28	1.45
MALAYSIA	161	298	CD	42	-0.30	CD	62	0.53
PHILIPPI	74	149	CD	44	-0.33	CD	65	0.52
ECUADOR	14	31	CD	45	-0.38	CD	62	0.53
SINGAPOR	367	847	CD	46	-0.40	CD	56	0.64
SWEDEN	417	967	CD	46	-0.40	CD	75	0.32

HAITI	6	15	CD	48	-0.41	CA	20	1.90
HONDURAS	14	36	CC	49	-0.45	CA	38	1.06
MACAU	47	142	CD	50	-0.50	CA	22	1.84
FINLAND	196	616	CD	51	-0.52	CD	74	0.33
SOUTH AF	144	462	CD	51	-0.52	CD	55	0.65
SYRIA	42	131	CD	51	-0.52	CA	15	2.35
HONG KON	909	2966	CD	54	-0.53	CA	25	1.64
NEW ZEAL	100	324	CD	54	-0.53	CD	57	0.59
MADAGASC	7	23	CD	56	-0.55	CA	17	2.20
NORWAY	120	480	CD	58	-0.60	CD	76	0.30
CANADA	306	1281	CD	59	-0.61	CD	83	0.15
TUNISIA	54	242	CD	60	-0.63	CA	33	1.28
INDONESI	46	217	CD	61	-0.65	CD	69	0.44
KUWAIT	72	391	CD	62	-0.69	CD	77	0.29
SENEGAL	5	28	CD	62	-0.69	CD	73	0.34
CAMEROON	12	71	CD	64	-0.71	CA	36	1.16
NIGER	5	33	CD	65	-0.72	CA	8	3.64
ARGENTIN	36	230	CD	66	-0.73	CD	83	0.15
ICELAND	5	37	CD	67	-0.74	CD	71	0.35
KENYA	6	41	CD	67	-0.74	CD	82	0.16
UPPER VO	1	10	CD	69	-0.75	CD	42	0.92
AUSTRALI	133	1103	CD	70	-0.78	CD	77	0.29
MALTA	17	145	CD	71	-0.79	CD	41	0.97
CONGO	2	19	CD	72	-0.80	CD	40	1.00
NICARAGU	6	53	CD	72	-0.80	CD	58	0.58
CYPRUS	11	105	CD	74	-0.82	CD	59	0.57
JORDAN	7	84	CD	75	-0.84	CD	42	0.92
BARBADOS	1	20	CD	77	-0.88	CD	79	0.19
TOGO	4	68	CD	77	-0.88	CA	23	1.80
TRINIDAD	4	70	CD	77	-0.88	CD	94	0.05
GUYANA	1	15	CD	80	-0.91	CD	89	0.10
CHILE	6	157	CD	81	-0.92	CD	95	0.04
GHANA	1	24	CD	81	-0.92	CD	86	0.11
OMAN	3	59	CD	81	-0.92	CD	61	0.54
LIBERIA	1	19	CD	84	-0.93	CD	71	0.35
SUDAN	4	93	CD	84	-0.93	CD	81	0.18
JAMAICA	1	36	CD	86	-0.94	CD	92	0.07
SRI LANK	3	129	CD	87	-0.95	CD	89	0.10
BOLIVIA	0	16	CD	88	-0.96	CD	99	0.02
PARAGUAY	0	10	CD	88	-0.96	CD	99	0.02
YEMEN	1	59	CD	88	-0.96	CA	18	2.00
NETH. AN	0	16	CD	93	-0.97	CD	109	0.00
VENEZUEL	2	157	CD	93	-0.97	CD	103	0.01
BAHRAIN	1	55	CD	97	-0.98	CD	103	0.01
ETHIOPIA	0	20	CD	97	-0.98	CD	79	0.19
MARTINIQ	0	13	CD	97	-0.98	CD	96	0.03
SAUDI AR	13	1337	CD	97	-0.98	CD	86	0.11
DOM. REP	0	29	CD	106	-0.99	CD	103	0.01
ALGERIA	0	351	CD	107	-1.00	CD	103	0.01
FIJI	0	24	CD	107	-1.00	CD	109	0.00
NIGERIA	0	341	CD	107	-1.00	CD	99	0.02
ZAMBIA	0	42	CD	107	-1.00	CD	109	0.00

Comparative Advantage in Iron and Steel
(Trade-only Indices: 1979-80 $Million)

===

Country	Exports	Imports	RNX D	RNX O	RNX C	BAL D	BAL O	BAL C
JAPAN	15454	894	CA	2	0.89	CA	5	2.21
SOUTH AF	1229	326	CA	4	0.58	CA	3	4.59
BELGIUM	6410	1863	CA	5	0.55	CA	6	2.14
SPAIN	1945	808	CA	6	0.41	CA	8	1.81
AUSTRIA	1677	726	CA	7	0.40	CA	7	1.83
DOM. REP	102	56	CA	8	0.29	CA	4	4.17
GERMANY	11551	6732	CA	9	0.26	CA	17	1.13
KOREA RE	1649	987	CA	10	0.25	CA	10	1.55
SWEDEN	2276	1418	CA	11	0.23	CA	12	1.37
AUSTRALI	657	426	CA	12	0.21	CA	16	1.15
BRAZIL	882	580	CA	12	0.21	CA	15	1.16
CANADA	1779	1280	CA	14	0.16	CD	24	0.64
FRANCE	7290	5372	CA	15	0.15	CA	13	1.24
FINLAND	534	560	CD	17	-0.02	CD	21	0.75
ITALY	3768	4104	CD	18	-0.04	CD	20	0.87
NETHERLA	2122	2369	CD	19	-0.05	CD	24	0.64
NORWAY	740	823	CD	19	-0.05	CA	11	1.47
UNITED K	2289	3364	CD	21	-0.19	CD	30	0.53
GREECE	298	546	CD	22	-0.29	CA	13	1.24
ICELAND	17	34	CD	24	-0.34	CD	23	0.69
USA	3116	8153	CD	25	-0.45	CD	37	0.31
DENMARK	341	911	CD	26	-0.46	CD	34	0.42
CHINA.T	335	1092	CD	27	-0.53	.	.	.
SWITZERL	398	1317	CD	28	-0.54	CD	39	0.25
JAMAICA	5	21	CD	29	-0.59	CD	54	0.15
ARGENTIN	144	595	CD	30	-0.61	CD	26	0.61
SINGAPOR	212	867	CD	30	-0.61	CD	41	0.24
YUGOSLAV	229	970	CD	32	-0.62	CD	27	0.56
COSTA RI	17	79	CD	33	-0.64	CD	27	0.56
PORTUGAL	90	403	CD	33	-0.64	CD	32	0.44
CHILE	20	92	CD	35	-0.65	CD	51	0.16
VENEZUEL	113	679	CD	36	-0.71	CD	41	0.24
TOGO	2	10	CD	37	-0.72	CD	60	0.12
NEW ZEAL	41	284	CD	38	-0.75	CD	46	0.22
PERU	20	140	CD	38	-0.75	CD	55	0.13
GUATEMAL	11	83	CD	40	-0.77	CD	41	0.24
ISRAEL	38	294	CD	40	-0.77	CD	55	0.13
KUWAIT	41	311	CD	40	-0.77	CD	55	0.13
CHINA.M	250	2065	CD	43	-0.78	.	.	.
EL SALVA	4	30	CD	43	-0.78	CD	38	0.28
MEXICO	124	1002	CD	43	-0.78	CD	22	0.71
BAHRAIN	7	62	CD	46	-0.79	CD	62	0.09
IRELAND	33	279	CD	46	-0.79	CD	65	0.07
PHILIPPI	49	429	CD	48	-0.80	CD	39	0.25
URUGUAY	8	67	CD	48	-0.80	CD	51	0.16
INDIA	85	841	CD	50	-0.82	CD	32	0.44
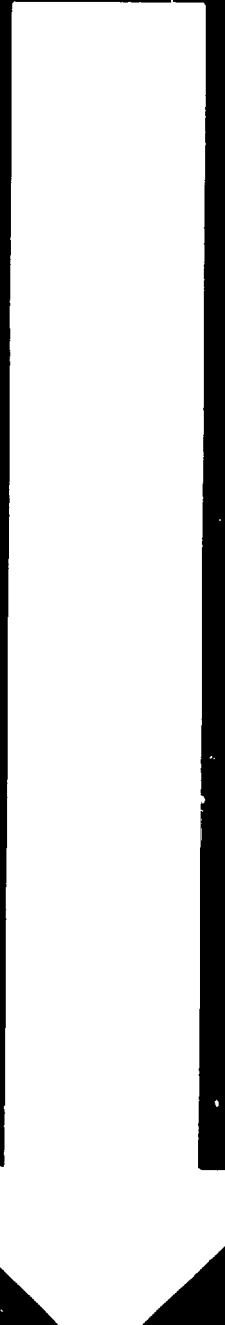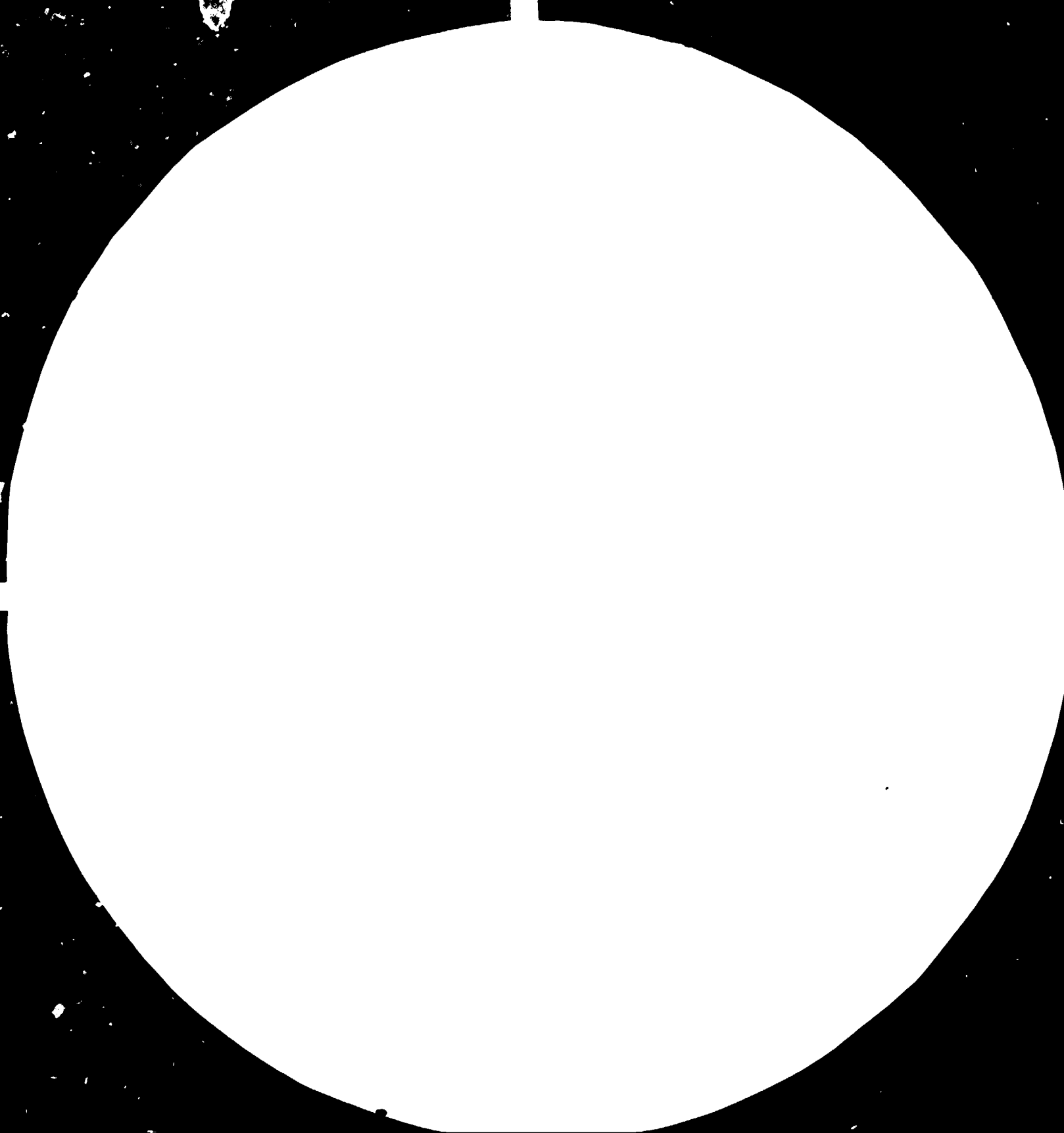
MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS

STANDARD REFERENCE MATERIAL 1010a

(ANSI and ISO TEST CHART No. 2)

THAILAND	50	522	CD	51	−0.83	CD	50	0.18
BARBADOS	2	18	CD	52	−0.85	CD	55	0.13
TURKEY	28	341	CD	52	−0.85	CD	35	0.35
NICARAGU	2	34	CD	54	−0.87	CD	55	0.13
KENYA	7	136	CD	55	−0.90	CD	51	0.16
UPPER VO	1	16	CD	56	−0.91	CD	49	0.19
HONDURAS	2	43	CD	57	−0.92	CD	60	0.12
EGYPT	16	381	CD	57	−0.92	CD	46	0.22
JORDAN	5	139	CD	59	−0.93	CD	27	0.56
ALGERIA	23	818	CD	60	−0.95	CD	36	0.34
IVORY CO	3	106	CD	60	−0.95	CD	66	0.06
MALAYSIA	17	627	CD	60	−0.95	CD	67	0.05
INDONESI	19	967	CD	63	−0.96	CD	45	0.23
OMAN	1	64	CD	63	−0.96	CD	41	0.24
TRINIDAD	2	128	CD	63	−0.96	CD	84	0.01
TANZANIA	1	42	CD	63	−0.96	CD	63	0.08
FIJI	0	25	CD	68	−0.97	CD	71	0.03
HONG KON	10	687	CD	68	−0.97	CD	84	0.01
SENEGAL	0	24	CD	68	−0.97	CD	74	0.02
CYPRUS	0	49	CD	72	−0.98	CD	74	0.02
GUYANA	0	10	CD	72	−0.98	CD	84	0.01
NIGER	0	18	CD	72	−0.98	CD	63	0.08
TUNISIA	2	202	CD	72	−0.98	CD	71	0.03
YEMEN	1	114	CD	72	−0.98	CD	31	0.47
COLOMBIA	1	281	CD	77	−0.99	CD	74	0.02
ECUADOR	0	146	CD	77	−0.99	CD	74	0.02
MADAGASC	0	43	CD	77	−0.99	CD	69	0.04
NETH. AN	0	16	CD	77	−0.99	CD	93	0.00
SAUDI AR	8	1860	CD	77	−0.99	CD	67	0.05
BRUNEI	0	72	CD	84	−1.00	CD	93	0.00
CAMEROON	0	82	CD	84	−1.00	CD	74	0.02
SRI LANK	0	71	CD	84	−1.00	CD	93	0.00
CONGO	0	32	CD	84	−1.00	CD	84	0.01
GHANA	0	22	CD	84	−1.00	CD	93	0.00
LIBERIA	0	10	CD	84	−1.00	CD	84	0.01
MALAWI	0	26	CD	84	−1.00	CD	84	0.01
MALTA	0	26	CD	84	−1.00	CD	84	0.01
MARTINIQ	0	25	CD	84	−1.00	CD	74	0.02
MOROCCO	0	244	CD	84	−1.00	CD	84	0.01
NIGERIA	0	586	CD	84	−1.00	CD	74	0.02
PAKISTAN	0	264	CD	84	−1.00	CD	93	0.00
SYRIA	1	304	CD	84	−1.00	CD	74	0.02
ZAMBIA	0	33	CD	84	−1.00	CD	93	0.00

Comparative Advantage in Wood and Wood Products
(Trade-only Indices: 1979-80 $Million)

==

Country	Exports	Imports	D	RNX O	C	D	BAL O	C
PARAGUAY	42	0	CA	1	1.00	CA	6	11.56
CENT.AF.	6	0	CA	2	0.99	CA	3	19.24
INDONESI	327	2	CA	2	0.99	CA	14	6.98
PHILIPPI	368	1	CA	2	0.99	CA	11	7.80
BOLIVIA	22	0	CA	5	0.97	CA	18	3.73
CONGO	28	0	CA	5	0.97	CA	1	39.66
GHANA	25	0	CA	5	0.97	CA	12	7.37
CHILE	140	3	CA	8	0.96	CA	24	2.18
IVORY CO	83	2	CA	8	0.96	CA	15	6.06
ECUADOR	30	1	CA	10	0.95	CA	21	2.58
MALAYSIA	841	22	CA	10	0.95	CA	9	8.68
HONDURAS	40	1	CA	12	0.94	CA	5	12.27
FINLAND	1875	67	CA	13	0.93	CA	10	7.94
PORTUGAL	164	9	CA	14	0.90	CA	22	2.35
KOREA RE	485	36	CA	15	0.86	CA	25	2.15
CHINA.T	781	62	CA	16	0.85	•	•	•
BRAZIL	383	42	CA	18	0.80	CA	27	1.58
CAMEROON	55	6	CA	18	0.80	CA	7	10.94
CANADA	3510	417	CA	20	0.79	CA	16	5.25
NEW ZEAL	129	17	CA	21	0.77	CA	26	1.81
CHINA.M	68	12	CA	23	0.69	•	•	•
INDIA	19	4	CA	23	0.69	CD	67	0.24
YUGOSLAV	441	80	CA	23	0.69	CA	20	3.26
SWEDEN	1596	341	CA	27	0.65	CA	19	3.27
AUSTRIA	1158	287	CA	29	0.60	CA	17	3.94
SINGAPOR	522	277	CA	34	0.31	CA	23	2.34
PERU	13	8	CA	36	0.24	CD	52	0.41
THAILAND	67	48	CA	39	0.17	CA	29	1.24
COLOMBIA	11	8	CA	40	0.15	CD	45	0.64
MEXICO	50	48	CA	41	0.02	CD	37	0.98
AUSTRALI	247	305	CD	42	-0.11	CA	30	1.20
KUWAIT	83	126	CD	44	-0.21	CD	39	0.96
DENMARK	285	452	CD	45	-0.23	CA	33	1.11
BELGIUM	461	793	CD	47	-0.26	CD	49	0.49
USA	2002	3496	CD	48	-0.27	CD	44	0.72
SPAIN	191	345	CD	49	-0.29	CD	46	0.60
NORWAY	141	285	CD	51	-0.34	CD	41	0.91
SOUTH AF	49	100	CD	51	-0.34	CD	47	0.57
FRANCE	690	1455	CD	53	-0.36	CD	52	0.41
JORDAN	19	42	CD	54	-0.38	CA	13	7.33
GERMANY	916	2644	CD	55	-0.49	CD	60	0.30
SWITZERL	124	398	CD	56	-0.52	CD	61	0.28
ISRAEL	23	74	CD	57	-0.53	CD	56	0.35
ITALY	522	1792	CD	59	-0.55	CD	51	0.42
CYPRUS	7	26	CD	60	-0.60	CA	32	1.15
GREECE	22	90	CD	60	-0.60	CD	58	0.34

NETHERLA	276	1334	CD	62	−0.66	CD	62	0.27
SRI LANK	2	13	CD	63	−0.73	CD	72	0.17
IRELAND	19	188	CD	66	−0.82	CD	74	0.16
UNITED K	203	2360	CD	68	−0.84	CD	75	0.13
HONG KON	11	170	CD	70	−0.87	CD	86	0.05
JAPAN	152	2393	CD	71	−0.88	CD	82	0.08
MOROCCO	4	77	CD	72	−0.89	CD	62	0.27
SYRIA	3	66	CD	75	−0.92	CD	55	0.38
MALTA	0	20	CD	78	−0.95	CD	89	0.04
PAKISTAN	0	12	CD	78	−0.95	CD	96	0.01
SAUDI AR	17	683	CD	78	−0.95	CD	69	0.20
TUNISIA	1	74	CD	81	−0.96	CD	82	0.08
URUGUAY	0	19	CD	83	−0.97	CD	96	0.01
BAHRAIN	0	16	CD	86	−0.98	CD	103	0.00
MARTINIQ	0	14	CD	90	−0.99	CD	76	0.11
OMAN	0	38	CD	90	−0.99	CD	79	0.09
YEMEN	0	88	CD	90	−0.99	CD	48	0.53
ALGERIA	0	299	CD	95	−1.00	CD	103	0.00
ARGENTIN	0	174	CD	95	−1.00	CD	96	0.01
BARBADOS	0	14	CD	95	−1.00	CD	96	0.01
DOM. REP	0	19	CD	95	−1.00	CD	103	0.00
ICELAND	0	42	CD	95	−1.00	CD	103	0.00
NIGERIA	0	36	CD	95	−1.00	CD	92	0.02
TRINIDAD	0	58	CD	95	−1.00	CD	103	0.00
EGYPT	0	266	CD	95	−1.00	CD	92	0.02
VENEZUEL	0	59	CD	95	−1.00	CD	103	0.00

Comparative Advantage in Consumer Electronics
(Trade-only Indices: 1979-80 $Million)

Country	Exports	Imports	RNX			BAL		
			D	O	C	G	O	C
JAPAN	10759	839	CA	1	0.86	CA	5	3.18
CHINA.T	1684	544	CA	2	0.51	.	.	.
KOREA RE	1355	659	CA	4	0.35	CA	4	3.36
PHILIPPI	53	35	CA	5	0.20	CD	19	0.49
PORTUGAL	139	93	CA	5	0.20	CA	7	1.25
SINGAPOR	2200	1638	CA	7	0.15	CA	2	5.82
INDONESI	91	71	CA	8	0.12	CA	8	1.22
AUSTRIA	175	161	CA	9	0.04	CD	24	0.42
BELGIUM	706	680	CA	10	0.02	CD	15	0.54
MALAYSIA	1103	1103	CD	11	0.00	CA	1	6.85
HONG KON	1177	1192	CD	12	-0.01	CA	3	3.49
GERMANY	2869	3521	CD	13	-0.10	CD	13	0.62
IRELAND	128	155	CD	13	-0.10	CD	14	0.58
NETHERLA	970	1294	CD	15	-0.14	CD	11	0.72
FINLAND	150	207	CD	16	-0.16	CD	23	0.43
USA	4592	7394	CD	17	-0.23	CA	9	1.06
CYPRUS	12	21	CD	18	-0.28	CD	10	0.94
ISRAEL	41	76	CD	19	-0.29	CD	17	0.51
UNITED K	1106	1998	CD	19	-0.29	CD	20	0.47
BRAZIL	164	303	CD	21	-0.30	CD	21	0.46
BARBADOS	7	14	CD	22	-0.34	CA	6	1.57
FRANCE	940	1924	CD	22	-0.34	CD	25	0.38
DENMARK	93	206	CD	24	-0.38	CD	27	0.26
ITALY	577	1598	CD	26	-0.47	CD	26	0.28
KUWAIT	74	223	CD	27	-0.50	CD	18	0.50
YUGOSLAV	46	142	CD	28	-0.51	CD	28	0.23
SWEDEN	156	569	CD	29	-0.57	CD	31	0.22
SWITZERL	159	577	CD	29	-0.57	CD	28	0.23
TUNISIA	5	24	CD	32	-0.67	CD	28	0.23
CHINA.M	39	212	CD	33	-0.69	.	.	.
THAILAND	8	44	CD	34	-0.70	CD	42	0.06
URUGUAY	3	16	CD	35	-0.72	CD	37	0.11
INDIA	5	29	CD	36	-0.73	CD	48	0.03
MEXICO	14	98	CD	37	-0.75	CD	32	0.20
NORWAY	21	186	CD	38	-0.80	CD	40	0.09
OMAN	2	18	CD	40	-0.82	CD	16	0.52
SPAIN	43	447	CD	40	-0.82	CD	38	0.10
TURKEY	1	16	CD	43	-0.86	CD	45	0.04
NEW ZEAL	2	40	CD	48	-0.93	CD	48	0.03
SAUDI AR	13	583	CD	51	-0.96	CD	35	0.13
AUSTRALI	6	372	CD	53	-0.97	CD	52	0.02
CHILE	2	155	CD	53	-0.97	CD	60	0.01
ARGENTIN	3	416	CD	55	-0.98	CC	45	0.04
BAHRAIN	0	23	CD	55	-0.98	CD	71	0.00
PAKISTAN	0	15	CD	55	-0.98	CD	71	0.00
SOUTH AF	2	160	CD	55	-0.98	CD	52	0.02

ALGERIA	0	22	CD	66	−0.99	CD	71	0.00
COLOMBIA	0	19	CD	66	−0.99	CD	71	0.00
GREECE	0	68	CD	66	−0.99	CD	60	0.01
PERU	0	31	CD	66	−0.99	CD	71	0.00
SYRIA	0	11	CD	66	−0.99	CD	71	0.00
VENEZUEL	1	283	CD	66	−0.99	CD	71	0.00
YEMEN	0	21	CD	66	−0.99	CD	34	0.16
SRI LANK	0	11	CD	79	−1.00	CD	71	0.00
JORDAN	0	19	CD	79	−1.00	CD	71	0.00
KENYA	0	14	CD	79	−1.00	CD	71	0.00

Source: UNIDO secretariat calculations.

ANNEX III
Comparative Advantage by Stage of Processing:
(Textiles and Apparel: 1979-80 $Million)

Country	Stage	Exp	Imp	RNX/s/			BAL/a/		
				D	O	C	D	O	C
ARGENTIN	TX1	128	50	CA	22	0.44	CA	30	2.62
ARGENTIN	TX2	24	23	CA	22	0.02	CD	44	0.38
ARGENTIN	TX3	5	115	CD	62	-0.92	CD	76	0.06
ARGENTIN	TX4	29	149	CD	57	-0.67	CD	72	0.24
AUSTRALI	TX1	114	55	CA	24	0.35	CA	36	1.07
AUSTRALI	TX2	5	191	CD	54	-0.95	CD	65	0.06
AUSTRALI	TX3	9	420	CD	65	-0.96	CD	75	0.07
AUSTRALI	TX4	13	306	CD	64	-0.92	CD	91	0.05
AUSTRIA	TX1	195	97	CA	25	0.34	CA	34	1.46
AUSTRIA	TX2	207	316	CD	30	-0.21	CA	19	1.34
AUSTRIA	TX3	313	288	CA	25	0.04	CA	30	1.31
AUSTRIA	TX4	410	593	CD	42	-0.18	CD	41	0.92
BANGLADE	TX1	0	89	CD	64	-0.99	CD	58	0.21
BANGLADE	TX2	2	45	CD	48	-0.93	CD	52	0.21
BANGLADE	TX3	0	40	CD	75	-1.00	CD	87	0.01
BARBADOS	TX4	22	16	CA	37	0.16	CA	9	6.37
BELGIUM	TX1	55	297	CD	49	-0.69	CD	66	0.14
BELGIUM	TX2	478	730	CD	30	-0.21	CD	26	0.98
BELGIUM	TX3	873	620	CA	19	0.17	CA	35	1.12
BELGIUM	TX4	967	1723	CD	45	-0.28	CD	51	0.68
BRAZIL	TX1	28	29	CD	34	-0.02	CD	61	0.20
BRAZIL	TX2	222	29	CA	6	0.77	CA	11	1.86
BRAZIL	TX3	153	12	CA	6	0.85	CD	39	0.86
BRAZIL	TX4	104	6	CA	17	0.89	CD	67	0.30
CAMEROON	TX1	43	1	CA	4	0.98	CA	14	15.96
CAMEROON	TX3	12	41	CD	44	-0.55	CA	15	3.00
CAMEROON	TX4	0	10	CD	68	-0.96	CD	75	0.14
CANADA	TX1	58	187	CD	43	-0.53	CD	64	0.15
CANADA	TX2	50	223	CD	39	-0.63	CD	59	0.11
CANADA	TX3	15	420	CD	63	-0.93	CD	85	0.02
CANADA	TX4	84	626	CD	60	-0.76	CD	90	0.06
CHILE	TX1	0	47	CD	65	-1.00	CD	89	0.00
CHILE	TX2	4	11	CD	36	-0.47	CD	59	0.11
CHILE	TX3	1	79	CD	67	-0.97	CD	83	0.03
CHILE	TX4	1	65	CD	68	-0.96	CD	99	0.01
CHINA.M	TX1	14	1616	CD	62	-0.98	CD	•	•
CHINA.M	TX2	194	232	CD	27	-0.09	CD	•	•
CHINA.M	TX3	937	194	CA	9	0.66	CD	•	•
CHINA.M	TX4	1363	12	CA	8	0.98	CD	•	•
CHINA.T	TX1	91	426	CD	47	-0.65	CD	•	•
CHINA.T	TX2	445	43	CA	2	0.82	CD	•	•
CHINA.T	TX3	681	171	CA	11	0.60	CD	•	•
CHINA.T	TX4	2271	3	CA	1	1.00	CD	•	•

COLOMBIA	TX1	83	26	CA	21	0.52	CA	21	6.72
COLOMBIA	TX2	41	14	CA	10	0.49	CA	5	3.78
COLOMBIA	TX3	56	27	CA	13	0.34	CA	14	3.10
COLOMBIA	TX4	83	11	CA	25	0.76	CA	20	2.70
CYPRUS	TX2	0	13	CD	57	−0.98	CD	67	0.03
CYPRUS	TX3	5	53	CD	52	−0.81	CD	41	0.83
CYPRUS	TX4	81	7	CA	22	0.83	CA	8	7.25
DENMARK	TX1	11	23	CD	36	−0.34	CD	67	0.10
DENMARK	TX2	53	197	CD	38	−0.58	CD	40	0.41
DENMARK	TX3	80	183	CO	37	−0.39	CD	56	0.39
DENMARK	TX4	337	451	CD	41	−0.15	CD	42	0.86
EGYPT	TX1	445	13	CA	8	0.94	CA	7	49.55
EGYPT	TX2	195	17	CA	1	0.84	CA	1	19.44
EGYPT	TX3	52	1	CA	3	0.95	CA	12	3.43
EGYPT	TX4	21	2	CA	23	0.79	CD	50	0.70
EL SALVA	TX1	87	9	CA	14	0.81	CA	12	25.68
EL SALVA	TX2	11	1	CA	5	0.79	CA	8	2.72
EL SALVA	TX3	23	22	CA	26	0.03	CA	11	3.67
EL SA VA	TX4	30	18	CA	34	0.25	CA	23	2.47
FINLAND	TX1	70	57	CA	29	0.10	CD	42	0.60
FINLAND	TX2	21	133	CD	42	−0.73	CD	53	0.18
FINLAND	TX3	45	224	CD	49	−0.67	CD	61	0.23
FINLAND	TX4	650	197	CA	31	0.54	CA	32	1.78
FRANCE	TX1	295	616	CD	38	−0.35	CD	52	0.38
FRANCE	TX2	777	808	CD	25	−0.02	CD	28	0.85
FRANCE	TX3	1127	1380	CD	33	−0.10	CD	44	0.79
FRANCE	TX4	2138	2397	CD	40	−0.06	CD	44	0.79
GERMANY	TX1	725	676	CA	33	0.03	CD	46	0.51
GERMANY	TX2	1647	1391	CA	18	0.08	CA	25	1.02
GERMANY	TX3	2042	1566	CA	23	0.13	CD	43	0.80
GERMANY	TX4	2687	7251	CD	50	−0.46	CD	54	0.56
GREECE	TX1	48	179	CD	46	−0.58	CA	32	1.67
GREECE	TX2	339	34	CA	2	0.82	CA	4	8.50
GREECE	TX3	53	47	CA	24	0.06	CD	?6	0.88
GREECE	TX4	386	29	CA	19	0.86	CA	17	3.36
GUATEMAL	TX1	173	14	CA	12	0.85	CA	10	33.81
GUATEMAL	TX3	32	12	CA	12	0.46	CA	18	2.80
GUATEMAL	TX4	16	16	CD	39	−0.01	CD	43	0.80
HONG KON	TX1	9	420	CD	57	−0.96	CD	69	0.09
HONG KON	TX2	66	615	CD	44	−0.81	CD	36	0.63
HONG KON	TX3	563	1298	CD	38	−0.40	CA	16	2.96
HONG KON	TX4	4333	620	CA	26	0.75	CA	4	12.50
INDIA	TX1	177	111	CA	28	0.23	CA	28	3.46
INDIA	TX2	33	53	CD	33	−0.24	CD	35	0.70
INDIA	TX3	391	1	CA	1	1.00	CA	4	5.36
INDIA	TX4	572	0	CA	1	1.00	CA	15	4.31
INDONESI	TX1	0	286	CD	65	−1.00	CD	80	0.00
INDONESI	TX2	3	84	CD	48	−0.93	CD	55	0.15
INDONESI	TX3	29	75	CD	42	−0.44	CD	40	0.84
INDONESI	TX4	98	2	CA	11	0.96	CA	38	1.16
IRELAND	TX1	61	56	CA	32	0.05	CA	37	1.01
IRELAND	TX2	86	106	CD	28	−0.10	CA	16	1.49
IRELAND	TX3	175	127	CA	20	0.16	CA	25	1.49
IRELAND	TX4	199	396	CD	48	−0.33	CA	40	1.10
ISRAEL	TX1	106	23	CA	19	0.65	CA	25	4.43

ISRAEL	TX2	63	53	CA	18	0.08	CA	10	2.09
ISRAEL	TX3	25	55	CD	36	-0.37	CD	55	0.42
ISRAEL	TX4	236	13	CA	16	0.90	CA	21	2.64
ITALY	TX1	252	831	CD	44	-0.54	CD	50	0.42
ITALY	TX2	899	628	CA	17	0.18	CA	20	1.31
ITALY	TX3	1235	932	CA	22	0.14	CA	32	1.20
ITALY	TX4	4345	704	CA	27	0.72	CA	26	2.21
JAPAN	TX1	659	1401	CD	40	-0.36	CD	41	0.65
JAPAN	TX2	896	318	CA	11	0.48	CD	33	0.74
JAPAN	TX3	2916	361	CA	7	0.78	CA	24	1.54
JAPAN	TX4	462	1317	CD	51	-0.48	CD	77	0.13
JORDAN	TX2	1	14	CU	46	-0.86	CA	23	1.06
JORDAN	TX3	1	41	CD	65	-0.96	CD	65	0.19
JORDAN	TX4	10	37	CD	54	-0.59	CA	29	1.88
KOREA RE	TX1	44	643	CD	55	-0.87	CD	58	0.21
KOREA RE	TX2	524	98	CA	7	0.69	CA	6	3.22
KOREA RE	TX3	956	194	CA	9	0.66	CA	10	3.73
KOREA RE	TX4	2507	10	CA	5	0.39	CA	10	6.11
MALAYSIA	TX1	40	67	CD	35	-0.25	CD	46	0.51
MALAYSIA	TX2	23	34	CD	29	-0.20	CD	43	0.39
MALAYSIA	TX3	125	171	CD	34	-0.15	CA	34	1.14
MALAYSIA	TX4	124	32	CA	30	0.58	CD	49	0.75
MALTA	TX2	6	13	CD	34	-0.36	CA	18	1.43
MALTA	TX3	0	97	CD	71	-0.99	CB	65	0.19
MALTA	TX4	176	13	CA	19	0.86	CA	3	15.88
MEXICO	TX1	320	16	CA	11	0.91	CA	16	14.54
MEXICO	TX2	44	21	CA	15	0.35	CA	14	1.64
MEXICO	TX3	16	17	CD	31	-0.03	CD	57	0.36
MEXICO	TX4	34	66	CD	47	-0.32	CD	59	0.45
MOROCCO	TX1	9	82	CD	53	-0.81	CD	43	0.58
MOROCCO	TX2	14	66	CD	40	-0.65	CA	15	1.52
MOROCCO	TX3	17	32	CD	35	-0.30	CA	27	1.35
MOROCCO	TX4	102	1	CA	8	0.98	CA	16	4.14
NETHERLA	TX1	66	138	CD	38	-0.35	CD	63	0.16
NETHERLA	TX2	544	472	CA	20	0.07	CA	24	1.05
NETHERLA	TX3	612	580	CA	26	0.03	CD	48	0.72
NETHERLA	TX4	779	2689	CD	52	-0.55	CD	58	0.49
NEW ZEAL	TX1	0	12	CD	58	-0.97	CD	78	0.01
NEW ZEAL	TX2	5	43	CD	44	-0.81	CD	56	0.13
NEW ZEAL	TX3	1	161	CD	71	-0.99	CD	85	0.02
NEW ZEAL	TX4	27	17	CA	36	0.22	CD	68	0.28
NICARAGU	TX1	31	1	CA	9	0.92	CA	9	34.33
NICARAGU	TX3	2	30	CD	54	-0.85	CD	46	0.77
NICARAGU	TX4	1	21	CD	65	-0.94	CD	86	0.08
NORWAY	TX1	33	18	CA	26	0.30	CD	49	0.47
NORWAY	TX2	10	80	CD	43	-0.77	CD	56	0.13
NORWAY	TX3	26	125	CD	48	-0.65	CD	67	0.18
NORWAY	TX4	68	647	CD	61	-0.81	CD	69	0.27
PAKISTAN	TX1	467	59	CA	16	0.78	CA	15	14.82
PAKISTAN	TX2	212	137	CA	16	0.22	CA	3	11.08
PAKISTAN	TX3	300	4	CA	2	0.98	CA	1	8.56
PAKISTAN	TX4	81	0	CA	1	1.00	CA	36	1.27
PERU	TX1	79	10	CA	16	0.78	CA	25	4.43
PERU	TX2	58	6	CA	4	0.81	CA	9	2.67
PERU	TX3	47	3	CA	4	0.89	CA	22	1.62

PERU	TX4	20	1	CA	15	0.92	CD	55	0.54
PHILIPPI	TX1	1	112	CD	62	-0.99	CD	74	0.03
PHILIPPI	TX2	14	16	CD	26	-0.06	CD	44	0.38
PHILIPPI	TX3	7	82	CD	54	-0.85	CD	69	0.17
PHILIPPI	TX4	276	2	CA	5	0.99	CA	18	3.22
PORTUGAL	TX1	4	314	CD	58	-0.97	CD	64	0.15
PORTUGAL	TX2	90	140	CD	32	-0.22	CA	7	2.73
PORTUGAL	TX3	185	97	CA	14	0.31	CA	13	3.37
PORTUGAL	TX4	630	13	CA	11	0.96	CA	11	5.62
SAUDI AR	TX2	0	11	CD	48	-0.93	CD	71	0.01
SAUDI AR	TX3	5	638	CD	69	-0.98	CD	70	0.16
SAUDI AR	TX4	9	651	CD	71	-0.97	CD	77	0.13
SINGAPOR	TX1	25	63	CD	41	-0.44	CD	57	0.22
SINGAPOR	TX2	87	84	CA	22	0.02	CD	32	0.77
SINGAPOR	TX3	199	484	CD	40	-0.42	CD	36	0.99
SINGAPOR	TX4	422	136	CA	32	0.51	CA	39	1.13
SOUTH AF	TX1	8	115	CD	55	-0.87	CD	55	0.29
SOUTH AF	TX2	38	92	CD	35	-0.41	CD	30	0.81
SOUTH AF	TX3	8	166	CD	59	-0.91	CD	71	0.12
SOUTH AF	TX4	49	93	CD	46	-0.31	CD	63	0.37
SPAIN	TX1	76	259	CD	44	-0.54	CD	46	0.51
SPAIN	TX2	209	76	CA	12	0.47	CA	21	1.17
SPAIN	TX3	103	96	CA	26	0.03	CD	54	0.43
SPAIN	TX4	220	136	CA	35	0.24	CD	57	0.50
SRI LANK	TX2	0	14	CD	52	-0.94	CD	62	0.07
SRI LANK	TX3	0	97	CD	71	-0.99	CD	79	0.05
SRI LANK	TX4	109	1	CA	5	0.99	CA	12	5.01
SWEDEN	TX1	46	37	CA	29	0.10	CD	58	0.21
SWEDEN	TX2	36	188	CD	41	-0.68	CD	56	0.13
SWEDEN	TX3	95	239	CD	41	-0.43	CD	62	0.22
SWEDEN	TX4	270	1221	CD	56	-0.64	CD	66	0.34
SWITZERL	TX1	58	179	CD	42	-0.51	CD	54	0.30
SWITZERL	TX2	426	153	CA	12	0.47	CA	12	1.75
SWITZERL	TX3	464	283	CA	16	0.24	CA	33	1.19
SWITZERL	TX4	324	1288	CD	55	-0.60	CD	60	0.44
SYRIA	TX1	198	4	CA	5	0.96	CA	5	64.45
SYRIA	TX2	1	59	CD	54	-0.95	CD	41	0.40
SYRIA	TX3	28	18	CA	18	0.20	CA	7	4.42
SYRIA	TX4	24	5	CA	28	0.65	CA	25	2.28
THAILAND	TX1	21	148	CD	52	-0.75	CD	45	0.52
THAILAND	TX2	51	20	CA	14	0.44	CA	17	1.45
THAILAND	TX3	176	101	CA	15	0.27	CA	8	3.95
THAILAND	TX4	244	2	CA	8	0.98	CA	24	2.39
TUNISIA	TX1	0	28	CD	65	-1.00	CD	76	0.02
TUNISIA	TX2	0	68	CD	58	-0.99	CD	62	0.07
TUNISIA	TX3	29	109	CD	46	-0.58	CA	21	1.87
TUNISIA	TX4	334	74	CA	29	0.64	CA	5	12.47
TURKEY	TX1	339	28	CA	13	0.84	CA	11	25.92
TURKEY	TX2	198	42	CA	8	0.65	CA	2	17.22
TURKEY	TX3	29	2	CA	4	0.89	CA	31	1.29
TURKEY	TX4	82	0	CA	1	1.00	CA	31	1.85
UNITED K	TX1	455	371	CA	29	0.10	CD	40	0.66
UNITED K	TX2	703	706	CD	24	0.00	CD	27	0.89
UNITED K	TX3	581	1390	CD	39	-0.41	CD	53	0.45
UNITED K	TX4	1774	2647	CD	44	-0.20	CD	47	0.76

URUGUAY	TX1	0	22	CD	58	-0.97	CD	67	0.10
URUGUAY	TX3	3	12	CD	44	-0.55	CD	60	0.24
URUGUAY	TX4	44	4	CA	21	0.84	CA	28	2.09
USA	TX1	3712	67	CA	5	0.96	CA	29	2.75
USA	TX2	676	146	CA	9	0.64	CD	38	0.45
USA	TX3	1398	896	CA	17	0.22	CD	51	0.59
USA	TX4	986	6204	CD	59	-0.73	CD	74	0.22
VENEZUEL	TX1	0	19	CD	58	-0.97	CD	80	0.00
VENEZUEL	TX2	1	18	CD	46	-0.86	CD	71	0.01
VENEZUEL	TX3	1	46	CD	69	-0.98	CD	87	0.01
VENEZUEL	TX4	0	190	CD	77	-1.00	CD	106	0.00
YUGOSLAV	TX1	55	283	CD	48	-0.68	CD	38	0.89
YUGOSLAV	TX2	112	98	CA	21	0.06	CA	13	1.68
YUGOSLAV	TX3	89	106	CD	32	-0.09	CD	47	0.74
YUGOSLAV	TX4	345	21	CA	18	0.88	CA	33	1.44

Comparative Advantage by Stage of Processing:
Iron and Steel (1979-80 $Million)

===

Country	Stage	Exp	Imp	RNX/a/			BAL/a/		
				D	O	C	D	O	C
ALGERIA	IS1	22	3	CA	6	0.74	CA	1	25.69
ALGERIA	IS2	1	191	CD	31	-0.99	CD	19	0.61
ALGERIA	IS3	0	610	CD	75	-1.00	CD	76	0.01
ALGERIA	IS4	1	2619	CD	92	-1.00	CD	•	•
ARGENTIN	IS2	31	212	CD	23	-0.74	CA	9	1.39
ARGENTIN	IS3	113	362	CD	24	-0.53	CD	24	0.55
ARGENTIN	IS4	396	2501	CD	30	-0.73	CD	•	•
AUSTRALI	IS1	72	0	CA	1	1.00	CA	3	13.24
AUSTRALI	IS2	138	11	CA	3	0.85	CA	3	2.24
AUSTRALI	IS3	451	382	CA	13	0.08	CD	13	0.93
AUSTRALI	IS4	575	4594	CD	32	-0.78	CD	•	•
AUSTRIA	IS1	0	17	CD	21	-0.99	CD	40	0.00
AUSTRIA	IS2	145	54	CA	8	0.45	CA	6	1.59
AUSTRIA	IS3	1357	588	CA	7	0.40	CA	6	1.77
AUSTRIA	IS4	2698	4556	CD	17	-0.26	CD	•	•
BAHRAIN	IS2	0	20	CD	31	-0.99	CD	52	0.00
BAHRAIN	IS3	1	13	CD	46	-0.85	CD	76	0.01
BAHRAIN	IS4	34	276	CD	32	-0.78	CD	•	•
BELGIUM	IS1	3	21	CD	13	-0.74	CD	22	0.13
BELGIUM	IS2	1045	394	CA	8	0.45	CA	1	3.28
BELGIUM	IS3	5186	1286	CA	4	0.60	CA	4	2.10
BELGIUM	IS4	9845	11543	CD	14	-0.08	CD	•	•
BRAZIL	IS1	119	0	CA	1	1.00	CA	2	17.48
BRAZIL	IS2	64	57	CA	14	0.06	CD	14	0.95
BRAZIL	IS3	534	577	CD	16	-0.04	CD	16	0.78
BRAZIL	IS4	2371	2591	CD	12	-0.04	CD	•	•
CANADA	IS1	95	0	CA	3	0.99	CA	6	2.64
CANADA	IS2	74	32	CA	10	0.39	CD	25	0.19
CANADA	IS3	1380	1180	CA	13	0.08	CD	19	0.61
CANADA	IS4	12934	19709	CD	15	-0.21	CD	•	•
CHILE	IS3	4	69	CD	49	-0.90	CD	63	0.03
CHILE	IS4	30	1076	CD	60	-0.95	CD	•	•
CHINA.M	IS1	49	33	CA	10	0.20	CD	•	•
CHINA.M	IS2	19	44	CD	19	-0.39	CD	•	•
CHINA.M	IS3	159	1955	CD	46	-0.85	CD	•	•
CHINA.M	IS4	223	2523	CD	37	-0.84	CD	•	•
CHINA.T	IS1	2	15	CD	15	-0.75	CD	•	•
CHINA.T	IS2	43	242	CD	22	-0.70	CD	•	•
CHINA.T	IS3	263	823	CD	23	-0.52	CD	•	•
CHINA.T	IS4	994	2586	CD	21	-0.44	CD	•	•
COLOMBIA	IS2	0	15	CD	36	-1.00	CD	52	0.00
COLOMBIA	IS3	1	253	CD	70	-0.99	CD	68	0.02
COLOMBIA	IS4	63	1219	CD	43	-0.90	CD	•	•
DENMARK	IS2	1	37	CD	29	-0.93	CD	33	0.05
DENMARK	IS3	313	855	CD	21	-0.46	CD	26	0.47
DENMARK	IS4	2274	2350	CD	11	-0.02	CD	•	•

EGYPT	IS3	16	348	CD	52	-0.91	CD	32	0.26
EGYPT	IS4	0	967	CD	92	-1.00	CD	.	.
FINLAND	IS2	49	2	CA	1	0.92	CD	18	0.64
FINLAND	IS3	469	491	CD	15	-0.02	CD	15	0.80
FINLAND	IS4	1272	2630	CD	19	-0.35	CD	.	.
FRANCE	IS1	56	90	CD	11	-0.23	CA	13	1.02
FRANCE	IS2	1054	939	CA	14	0.06	CA	6	1.59
FRANCE	IS3	5725	3911	CA	11	0.19	CA	9	1.18
FRANCE	IS4	24970	18587	CA	5	0.15	CD	.	.
GERMANY	IS1	195	49	CA	7	0.60	CA	10	1.75
GERMANY	IS2	1326	742	CA	11	0.28	CA	11	1.16
GERMANY	IS3	9809	5156	CA	8	0.31	CA	10	1.17
GERMANY	IS4	59437	19731	CA	2	0.50	CD	.	.
GREECE	IS2	21	200	CD	26	-0.81	CA	4	1.99
GREECE	IS3	202	332	CD	20	-0.24	CD	14	0.81
GREECE	IS4	44	1332	CD	55	-0.94	CD	.	.
HONG KON	IS3	10	638	CD	61	-0.97	CD	68	0.02
HONG KON	IS4	516	2067	CD	25	-0.60	CD	.	.
INDIA	IS2	3	61	CD	28	-0.92	CD	25	0.19
INDIA	IS3	79	793	CD	43	-0.82	CD	27	0.40
INDIA	IS4	355	973	CD	23	-0.47	CD	.	.
INDONESI	IS2	0	71	CD	36	-1.00	CD	52	0.00
INDONESI	IS3	9	782	CD	64	-0.98	CD	36	0.23
INDONESI	IS4	8	2625	CD	83	-0.99	CD	.	.
IRELAND	IS2	1	10	CD	25	-0.79	CD	39	0.02
IRELAND	IS3	32	263	CD	39	-0.78	CD	57	0.08
IRELAND	IS4	1028	1974	CD	18	-0.32	CD	.	.
ISRAEL	IS3	37	277	CD	36	-0.76	CD	45	0.16
ISRAEL	IS4	247	1016	CD	26	-0.61	CD	.	.
ITALY	IS1	1	141	CD	21	-0.99	CD	33	0.03
ITALY	IS2	259	1171	CD	21	-0.64	CD	20	0.53
ITALY	IS3	3450	2489	CA	12	0.16	CD	12	0.97
ITALY	IS4	17951	13539	CA	7	0.14	CD	.	.
IVORY CO	IS3	3	94	CD	55	-0.94	CD	57	0.08
IVORY CO	IS4	35	475	CD	40	-0.86	CD	.	.
JAPAN	IS1	1	116	CD	19	-0.98	CD	27	0.07
JAPAN	IS2	1393	140	CA	4	0.82	CA	5	1.95
JAPAN	IS3	14024	274	CA	1	0.96	CA	3	2.43
JAPAN	IS4	41984	4154	CA	1	0.82	CD	.	.
JORDAN	IS2	0	18	CD	36	-1.00	CD	47	0.01
JORDAN	IS3	5	120	CD	54	-0.92	CD	18	0.65
JORDAN	IS4	2	444	CD	83	-0.99	CD	.	.
KENYA	IS2	0	11	CD	36	-1.00	CD	39	0.02
KENYA	IS3	7	125	CD	49	-0.90	CD	42	0.18
KENYA	IS4	3	522	CD	83	-0.99	CD	.	.
KOREA RE	IS1	22	1	CA	4	0.88	CA	11	1.41
KOREA RE	IS2	302	486	CD	18	-0.23	CA	2	2.58
KOREA RE	IS3	1334	496	CA	6	0.46	CA	7	1.52
KOREA RE	IS4	473	2427	CD	28	-0.67	CD	.	.
KUWAIT	IS3	24	233	CD	42	-0.81	CD	54	0.11
KUWAIT	IS4	353	1470	CD	26	-0.61	CD	.	.
MALAYSIA	IS2	0	70	CD	36	-1.00	CD	52	0.00
MALAYSIA	IS3	13	541	CD	56	-0.95	CD	60	0.05
MALAYSIA	IS4	106	2132	CD	43	-0.90	CD	.	.
MEXICO	IS2	1	252	CD	36	-1.00	CD	36	0.03

MEXICO	IS3	108	739	CO	33	-0.74	CD	17	0.7.
MEXICO	IS4	463	4300	CD	35	-0.81	CD	.	.
MOROCCO	IS3	0	232	CD	75	-1.00	CD	87	0.0\
MOROCCO	IS4	9	646	CD	70	-0.97	CD	.	.
NETHERLA	IS1	1	11	CD	16	-0.77	CD	27	0.07
NETHERLA	IS2	538	95	CA	6	0.70	CA	8	1.51
NETHERLA	IS3	1559	2194	CO	18	-0.17	CD	22	0.56
NETHERLA	IS4	5645	8720	CD	15	-0.21	CD	.	.
NEW ZEAL	IS3	39	281	CD	35	-0.75	CD	34	0.25
NEW ZEAL	IS4	86	1013	CD	37	-0.84	CD	.	.
NIGERIA	IS3	0	526	CD	75	-1.00	CD	63	0.03
NIGERIA	IS4	2	2482	CD	92	-1.00	CD	.	.
NORWAY	IS1	22	2	CA	5	0.81	CA	5	4.44
NORWAY	IS2	50	48	CA	16	0.02	CD	15	0.90
NORWAY	IS3	235	758	CD	24	-0.53	CD	25	0.54
NORWAY	IS4	858	2810	CD	24	-0.53	CD	.	.
OMAN	IS3	0	25	CD	59	-0.96	CD	51	0.12
OMAN	IS4	86	472	CD	29	-0.69	CD	.	.
PAKISTAN	IS3	3	237	CD	64	-0.98	CD	68	0.02
PAKISTAN	IS4	3	662	CD	83	-0.99	CD	.	.
PERU	IS2	0	14	CD	36	-1.00	CD	52	0.00
PERU	IS3	19	127	CD	33	-0.74	CD	45	0.16
PERU	IS4	17	717	CD	60	-0.95	CD	.	.
PHILIPPI	IS3	34	285	CD	40	-0.79	CD	38	0.22
PHILIPPI	IS4	42	1241	CD	54	-0.93	CD	.	.
PORTUGAL	IS2	0	84	CD	31	-0.99	CD	31	0.06
PORTUGAL	IS3	57	315	CD	31	-0.69	CD	30	0.29
PORTUGAL	IS4	234	1616	CD	31	-0.75	CD	.	.
SAUDI AR	IS1	0	10	CD	18	-0.95	CD	21	0.15
SAUDI AR	IS2	0	40	CD	31	-0.99	CD	47	0.01
SAUDI AR	IS3	4	1244	CD	70	-0.99	CD	63	
SAUDI AR	IS4	375	7385	CD	43	-0.90	CD	.	
SINGAPOR	IS2	3	33	CD	27	-0.82	CD	35	
SINGAPOR	IS3	204	800	CD	27	-0.59	CD	30	..29
SINGAPOR	IS4	1267	2938	CD	20	-0.40	CD	.	.
SOUTH AF	IS1	16	5	CA	8	0.49	CA	4	5.25
SOUTH AF	IS2	27	3	CA	5	0.78	CD	17	0.79
SOUTH AF	IS3	688	360	CA	8	0.31	CA	2	3.17
SOUTH AF	IS4	354	4856	CD	40	-0.86	CD	.	.
SPAIN	IS1	5	11	CD	12	-0.39	CD	14	0.79
SPAIN	IS2	158	211	CD	17	-0.14	CD	13	1.00
SPAIN	IS3	1696	531	CA	5	0.52	CA	5	1.95
SPAIN	IS4	3932	3675	CA	10	0.03	CD	.	.
SWEDEN	IS1	25	9	CA	8	0.49	CA	12	1.28
SWEDEN	IS2	141	91	CA	12	0.21	CD	16	0.87
SWEDEN	IS3	1987	1151	CA	10	0.27	CA	8	1.42
SWEDEN	IS4	8545	5715	CA	3	0.20	CD	.	.
SWITZERL	IS1	0	18	CD	19	-0.98	CD	37	0.01
SWITZERL	IS2	9	57	CD	23	-0.74	CD	31	0.06
SWITZERL	IS3	399	1225	CD	22	-0.51	CD	29	0.31
SWITZERL	IS4	6450	5623	CA	9	0.07	CD	.	.
SYRIA	IS2	0	46	CD	36	-1.00	CD	39	0.02
SYRIA	IS3	0	250	CD	75	-1.00	CD	76	0.01
SYRIA	IS4	13	450	CD	55	-0.94	CD	.	.
THAILAND	IS2	0	151	CD	36	-1.00	CD	47	0.01

THAILAND	IS3	44	368	CD	40	-0.79	CD	39	0.20
THAILAND	IS4	36	1199	CD	55	-0.94	CD	•	•
TRINIDAD	IS3	1	118	CD	70	-0.99	CD	76	0.01
TRINIDAD	IS4	8	511	CD	70	-0.97	CD	•	•
TUNISIA	IS3	2	199	CD	64	-0.98	CD	63	0.03
TUNISIA	IS4	8	488	CD	70	-0.97	CD	•	•
TURKEY	IS2	0	53	CD	31	-0.99	CD	39	0.02
TURKEY	IS3	6	270	CD	56	-0.95	CD	59	0.07
TURKEY	IS4	60	963	CD	42	-0.88	CD	•	•
UNITED K	IS1	6	40	CD	13	-0.74	CD	24	0.10
UNITED K	IS2	136	380	CD	20	-0.47	CD	22	0.30
UNITED K	IS3	1978	2752	CD	17	-0.16	CD	20	0.57
UNITED K	IS4	24699	18399	CA	5	0.15	CD	•	•
USA	IS1	8	71	CD	17	-0.80	CD	24	0.10
USA	IS2	249	200	CA	13	0.11	CD	27	0.18
USA	IS3	1971	7535	CD	27	-0.59	CD	32	0.26
USA	IS4	51152	40766	CA	8	0.11	CD	•	•
VENEZUEL	IS2	0	198	CD	36	-1.00	CD	39	0.02
VENEZUEL	IS3	79	459	CD	32	-0.71	CD	40	0.19
VENEZUEL	IS4	46	3146	CD	70	-0.97	CD	•	•
YUGOSLAV	IS2	7	285	CD	30	-0.96	CD	30	0.13
YUGOSLAV	IS3	130	653	CD	30	-0.67	CD	28	0.38
YUGOSLAV	IS4	1150	3055	CD	22	-0.45	CD	•	•

Comparative Advantage by Stage of Processing:
Wood and Wood Products   (1979-80 $Million)

==

Country	Stage	Exp	Imp	RNX/a/			BAL/a/		
				D	O	C	D	O	C
ALGERIA	WD4	0	49	CD	41	-1.00	CD	101	0.00
ARGENTIN	WD2	0	150	CD	51	-1.00	CD	83	0.00
ARGENTIN	WD4	0	16	CD	40	-0.99	CD	94	0.02
AUSTRALI	WD2	21	227	CD	37	-0.83	CD	50	0.21
AUSTRALI	WD3	223	44	CA	13	0.67	CA	12	4.79
AUSTRALI	WD4	2	33	CD	36	-0.88	CD	84	0.07
AUSTRIA	WD1	89	126	CD	15	-0.17	CD	20	0.96
AUSTRIA	WD2	878	166	CA	19	0.68	CA	17	4.98
AUSTRIA	WD3	158	37	CA	15	0.62	CA	20	2.35
AUSTRIA	WD4	121	85	CA	24	0.18	CA	11	2.44
BELGIUM	WD1	51	86	CD	16	-0.26	CD	32	0.18
BELGIUM	WD2	130	464	CD	29	-0.56	CD	49	0.23
BELGIUM	WD3	268	126	CA	21	0.36	CA	27	1.29
BELGIUM	WD4	64	203	CD	32	-0.52	CD	53	0.40
BRAZIL	WD2	246	39	CA	16	0.73	CA	26	1.72
BRAZIL	WD3	93	0	CA	3	0.99	CA	25	1.44
BRAZIL	WD4	43	2	CA	6	0.91	CA	28	1.29
CANADA	WD1	58	56	CA	13	0.01	CD	29	0.26
CANADA	WD2	2976	273	CA	13	0.83	CA	15	7.46
CANADA	WD3	203	70	CA	18	0.49	CA	30	1.17
CANADA	WD4	331	74	CA	14	0.63	CA	10	2.81
CHINA.M	WD1	15	100	CD	24	-0.74	CD	.	.
CHINA.M	WD2	14	4	CA	22	0.58	CD	.	.
CHINA.M	WD3	14	6	CA	19	0.43	CD	.	.
CHINA.M	WD4	40	3	CA	9	0.85	CD	.	.
CHINA.T	WD1	9	384	CD	27	-0.95	CD	.	.
CHINA.T	WD2	65	45	CA	24	0.18	CD	.	.
CHINA.T	WD3	367	15	CA	8	0.92	CD	.	.
CHINA.T	WD4	349	2	CA	1	0.99	CD	.	.
DENMARK	WD1	6	10	CD	17	-0.29	CD	36	0.08
DENMARK	WD2	51	324	CD	34	-0.73	CD	45	0.33
DENMARK	WD3	40	82	CD	30	-0.34	CD	36	0.69
DENMARK	WD4	194	47	CA	15	0.61	CA	5	4.43
FINLAND	WD1	52	30	CA	11	0.27	CD	22	0.65
FINLAND	WD2	1340	28	CA	10	0.96	CA	12	9.35
FINLAND	WD3	404	8	CA	5	0.96	CA	8	8.05
FINLAND	WD4	131	31	CA	15	0.61	CA	9	3.02
FRANCE	WD1	148	392	CD	18	-0.45	CD	28	0.30
FRANCE	WD2	305	958	CD	27	-0.52	CD	46	0.30
FRANCE	WD3	202	265	CD	25	-0.13	CD	42	0.53
FRANCE	WD4	182	232	CD	25	-0.12	CD	38	0.63
GERMANY	WD1	75	406	CD	21	-0.69	CD	36	0.08
GERMANY	WD2	334	1666	CD	32	-0.67	CD	52	0.18
GERMANY	WD3	248	492	CD	29	-0.33	CD	46	0.37
GERMANY	WD4	334	486	CD	27	-0.19	CD	37	0.65
GREECE	WD1	0	75	CD	30	-1.00	CD	59	0.00

GREECE	WD2	2	81	CD	41	-0.95	CD	69	0.06
GREECE	WD3	19	3	CA	12	0.76	CA	28	1.26
HONG KON	WD2	0	32	CD	51	-1.00	CD	83	0.00
HONG KON	WD3	2	108	CD	38	-0.97	CD	70	0.02
HONG KON	WD4	10	30	CD	31	-0.51	CD	62	0.26
INDONESI	WD1	1515	0	CA	1	1.00	CA	4	118.14
INDONESI	WD2	258	0	CA	1	1.00	CA	11	9.50
INDONESI	WD3	64	1	CA	4	0.97	CA	11	5.12
IRELAND	WD2	6	117	CD	38	-0.90	CD	65	0.08
IRELAND	WD3	2	36	CD	37	-0.91	CD	64	0.08
IRELAND	WD4	10	35	CD	33	-0.54	CD	45	0.52
ISRAEL	WD1	0	29	CD	30	-1.00	CD	59	0.00
ISRAEL	WD2	0	54	CD	47	-0.99	CD	83	0.00
ISRAEL	WD3	22	5	CA	14	0.65	CA	23	1.49
ISRAEL	WD4	1	16	CD	37	-0.91	CD	80	0.08
ITALY	WD1	1	600	CD	30	-1.00	CD	59	0.00
ITALY	WD2	83	1543	CD	38	-0.90	CD	60	0.11
ITALY	WD3	151	168	CD	23	-0.05	CD	39	0.56
ITALY	WD4	288	81	CA	19	0.56	CA	26	1.32
JAPAN	WD1	3	5591	CD	30	-1.00	CD	51	0.01
JAPAN	WD2	44	1254	CD	40	-0.93	CD	72	0.04
JAPAN	WD3	68	1002	CD	35	-0.87	CD	56	0.18
JAPAN	WD4	40	138	CD	24	-0.55	CD	75	0.11
JORDAN	WD2	0	21	CD	51	-1.00	CD	80	0.01
JORDAN	WD3	0	13	CD	39	-0.99	CD	53	0.19
JORDAN	WD4	19	8	CA	22	0.42	CA	1	42.61
KOREA RE	WD1	0	860	CD	30	-1.00	CD	51	0.01
KOREA RE	WD2	83	16	CA	19	0.68	CD	37	0.64
KOREA RE	WD3	354	17	CA	9	0.91	CA	9	7.20
KOREA RE	WD4	49	3	CA	8	0.88	CA	33	1.08
KUWAIT	WD2	14	51	CD	30	-0.57	CD	44	0.35
KUWAIT	WD3	5	52	CD	34	-0.84	CD	51	0.25
KUWAIT	WD4	64	23	CA	20	0.47	CA	7	4.02
MALAYSIA	WD1	1202	1	CA	1	1.00	CA	10	44.85
MALAYSIA	WD2	634	13	CA	10	0.96	CA	10	10.80
MALAYSIA	WD3	175	6	CA	6	0.94	CA	7	8.29
MALAYSIA	WD4	32	4	CA	11	0.80	CA	17	1.88
MEXICO	WD2	1	29	CD	43	-0.96	CD	76	0.02
MEXICO	WD3	22	12	CA	22	0.28	CA	22	2.02
MEXICO	WD4	27	7	CA	17	0.59	CA	8	3.19
NETHERLA	WD1	9	50	CD	23	-0.71	CD	43	0.03
NETHERLA	WD2	102	834	CD	36	-0.78	CD	55	0.16
NETHERLA	WD3	54	333	CD	32	-0.72	CD	50	0.26
NETHERLA	WD4	121	168	CD	26	-0.16	CD	36	0.69
NEW ZEAL	WD1	64	1	CA	7	0.98	CA	13	3.77
NEW ZEAL	WD2	70	12	CA	17	0.70	CA	28	1.61
NEW ZEAL	WD3	42	2	CA	9	0.91	CA	17	2.78
NEW ZEAL	WD4	17	3	CA	12	0.74	CA	30	1.28
NORWAY	WD1	17	10	CA	12	0.23	CD	27	0.33
NORWAY	WD2	83	143	CD	25	-0.26	CD	32	0.91
NORWAY	WD3	20	71	CD	31	-0.56	CD	42	0.53
NORWAY	WD4	38	71	CD	29	-0.30	CA	21	1.44
PHILIPPI	WD1	92	0	CA	6	0.99	CA	12	8.42
PHILIPPI	WD2	217	0	CA	1	1.00	CA	14	7.71
PHILIPPI	WD3	119	0	CA	1	1.00	CA	5	11.12

PHILIPPI	WD4	32	1	CA	3	0.96	CA	6	4.09
PORTUGAL	WD1	2	65	CD	26	-0.94	CD	39	0.07
PORTUGAL	WD2	131	6	CA	12	0.91	CA	21	3.09
PORTUGAL	WD3	16	1	CA	7	0.93	CA	31	1.09
PORTUGAL	WD4	17	2	CA	10	0.83	CA	23	1.40
SAUDI AR	WD1	0	38	CD	28	-0.98	CD	43	0.03
SAUDI AR	WD2	3	290	CD	45	-0.98	CD	69	0.06
SAUDI AR	WD3	12	182	CD	36	-0.88	CD	40	0.55
SAUDI AR	WD4	2	212	CD	38	-0.98	CD	65	0.21
SINGAPOR	WD1	5	36	CD	24	-0.74	CD	35	0.09
SINGAPOR	WD2	278	173	CA	23	0.23	CA	24	2.17
SINGAPOR	WD3	221	92	CA	20	0.41	CA	13	4.31
SINGAPOR	WD4	23	12	CA	23	0.32	CD	50	0.43
SOUTH AF	WD1	2	13	CD	21	-0.69	CD	34	0.15
SOUTH AF	WD2	15	87	CD	33	-0.70	CD	43	0.36
SOUTH AF	WD3	27	6	CA	15	0.62	CA	29	1.20
SPAIN	WD1	1	164	CD	29	-0.99	CD	47	0.02
SPAIN	WD2	41	320	CD	35	-0.77	CD	52	0.18
SPAIN	WD3	73	5	CA	11	0.87	CA	32	1.05
SPAIN	WD4	77	22	CA	18	0.58	CA	19	1.52
SWEDEN	WD1	10	42	CD	20	-0.61	CD	36	0.08
SWEDEN	WD2	1295	120	CA	13	0.83	CA	18	4.39
SWEDEN	WD3	101	147	CD	27	-0.18	CD	33	0.97
SWEDEN	WD4	199	74	CA	21	0.46	CA	13	2.33
SWITZERL	WD1	76	39	CA	10	0.32	CD	23	0.52
SWITZERL	WD2	46	178	CD	31	-0.59	CD	55	0.16
SWITZERL	WD3	54	98	CD	28	-0.29	CD	41	0.54
SWITZERL	WD4	25	122	CD	35	-0.66	CD	56	0.34
UNITED K	WD1	9	34	CD	19	-0.60	CD	47	0.02
UNITED K	WD2	35	1573	CD	43	-0.96	CD	72	0.04
UNITED K	WD3	57	612	CD	33	-0.83	CD	59	0.16
UNITED K	WD4	110	174	CD	28	-0.23	CD	49	0.45
USA	WD1	1581	22	CA	8	0.97	CA	15	2.28
USA	WD2	1183	2308	CD	26	-0.32	CD	36	0.75
USA	WD3	542	651	CD	24	-0.09	CD	35	0.79
USA	WD4	277	537	CD	30	-0.32	CD	41	0.56
YEMEN	WD2	0	50	CD	47	-0.99	CD	34	0.82
YEMEN	WD3	0	24	CD	41	-1.00	CD	56	0.18
YEMEN	WD4	0	14	CD	41	-1.00	CD	60	0.27
YUGOSLAV	WD1	34	35	CD	14	-0.02	CD	21	0.93
YUGOSLAV	WD2	342	66	CA	19	0.68	CA	19	4.30
YUGOSLAV	WD3	43	12	CA	17	0.57	CA	26	1.38
YUGOSLAV	WD4	56	2	CA	4	0.94	CA	15	2.07

Comparative Advantage by Stage of Processing:
Consumer Electronics (1979-80 $Million)

==

Country	Stage	Exp	Imp	RNX/a/			BAL/a/		
				D	O	C	D	O	C
ARGENTIN	CE1	2	91	CD	33	-0.97	CD	31	0.03
ARGENTIN	CE2	2	325	CD	41	-0.99	CD	46	0.04
AUSTRALI	CE1	4	91	CD	31	-0.92	CD	31	0.03
AUSTRALI	CE2	2	281	CD	41	-0.99	CD	57	0.01
AUSTRIA	CE2	175	161	CA	11	0.04	CD	12	0.74
BELGIUM	CE1	80	247	CD	20	-0.51	CD	24	0.19
BELGIUM	CE2	626	433	CA	9	0.18	CD	10	0.82
BRAZIL	CE1	64	273	CD	23	-0.62	CD	19	0.37
BRAZIL	CE2	100	29	CA	4	0.55	CD	17	0.53
CHILE	CE2	2	149	CD	36	-0.97	CD	51	0.02
CHINA.M	CE1	2	27	CD	27	-0.85	CD	.	.
CHINA.M	CE2	37	185	CD	25	-0.67	CD	.	.
CHINA.T	CE1	481	459	CA	7	0.02	CD	.	.
CHINA.T	CE2	1204	85	CA	2	0.87	CD	.	.
DENMARK	CE1	5	72	CD	28	-0.88	CD	31	0.03
DENMARK	CE2	88	134	CD	13	-0.21	CD	19	0.43
FINLAND	CE1	12	96	CD	25	-0.77	CD	26	0.06
FINLAND	CE2	138	110	CA	10	0.11	CD	13	0.71
FRANCE	CE1	753	945	CD	12	-0.11	CD	14	0.67
FRANCE	CE2	187	979	CD	28	-0.68	CD	33	0.15
GERMANY	CE1	1218	1814	CD	14	-0.20	CD	16	0.59
GERMANY	CE2	1651	1708	CD	12	-0.02	CD	15	0.65
GREECE	CE1	0	26	CD	38	-1.00	CD	39	0.01
GREECE	CE2	0	L	CD	41	-0.99	CD	57	0.01
HONG KON	CE1	295	697	CD	18	-0.41	CA	6	2.06
HONG KON	CE2	882	495	CA	7	0.28	CA	1	4.59
INDONESI	CE1	91	15	CA	1	0.72	CA	5	2.80
INDONESI	CE2	0	57	CD	37	-0.98	CD	57	0.01
IRELAND	CE1	103	77	CA	4	0.15	CA	10	1.03
IRELAND	CE2	25	78	CD	22	-0.52	CD	25	0.24
ISRAEL	CE1	2	50	CD	29	-0.91	CD	28	0.05
ISRAEL	CE2	39	25	CA	8	0.21	CD	9	0.85
ITALY	CE1	325	733	CD	17	-0.39	CD	18	0.38
ITALY	CE2	252	865	CD	23	-0.55	CD	29	0.21
JAPAN	CE1	2307	713	CA	2	0.53	CA	8	1.56
JAPAN	CE2	8452	126	CA	1	0.97	CA	2	4.43
KOREA RE	CE1	517	527	CD	10	-0.01	CA	4	3.02
KOREA RE	CE2	838	132	CA	3	0.73	CA	4	3.62
KUWAIT	CE2	74	222	CD	21	-0.50	CD	8	0.89
MALAYSIA	CE1	1053	971	CA	6	0.04	CA	1	15.07
MALAYSIA	CE2	49	132	CD	17	-0.45	CD	17	0.53
MEXICO	CE1	12	45	CD	21	-0.58	CD	17	0.39
MEXICO	CE2	2	53	CD	34	-0.92	CD	41	0.06
NETHERLA	CE1	560	499	CA	5	0.06	CD	11	0.87
NETHERLA	CE2	410	795	CD	15	-0.32	CD	16	0.60
NEW ZEAL	CE1	0	27	CD	35	-0.99	CD	49	0.00

NEW ZEAL	CE2	1	13	CD	32	−0.80	CD	43	0.05
NORWAY	CE1	1	47	CD	32	−0.95	CD	39	0.01
NORWAY	CE2	20	139	CD	30	−0.75	CD	33	0.15
PORTUGAL	CE1	61	54	CD	11	−0.03	CA	9	1.22
PORTUGAL	CE2	79	28	CA	5	0.47	CA	6	1.28
SAUDI AR	CE2	13	573	CD	35	−0.96	CD	27	0.22
SINGAPOR	CE1	1187	1178	CD	9	0.00	CA	2	8.04
SINGAPOR	CE2	1013	461	CA	6	0.37	CA	3	4.11
SOUTH AF	CE1	1	58	CD	34	−0.98	CD	35	0.02
SOUTH AF	CE2	1	102	CD	37	−0.98	CD	51	0.02
SPAIN	CE1	9	183	CD	29	−0.91	CD	28	0.05
SPAIN	CE2	34	264	CD	31	−0.77	CD	35	0.13
SWEDEN	CE1	31	233	CD	24	−0.76	CD	25	0.09
SWEDEN	CE2	125	336	CD	19	−0.46	CD	22	0.33
SWITZERL	CE1	81	180	CD	16	−0.38	CD	21	0.27
SWITZERL	CE2	78	398	CD	26	−0.67	CD	29	0.21
THAILAND	CE1	0	25	CD	38	−1.00	CD	49	0.00
THAILAND	CE2	8	18	CD	16	−0.40	CD	37	0.11
UNITED K	CE1	685	862	CD	12	−0.11	CD	15	0.62
UNITED K	CE2	421	1136	CD	19	−0.46	CD	21	0.34
USA	CE1	3800	3653	CA	7	0.02	CA	7	2.03
USA	CE2	791	3741	CD	25	−0.65	CD	23	0.31
VENEZUEL	CE2	1	274	CD	41	−0.99	CD	57	0.01
YUGOSLAV	CE1	18	70	CD	21	−0.58	CD	23	0.22
YUGOSLAV	CE2	27	72	CD	17	−0.45	CD	26	0.23

Source: UNIDO secretariat calculations.