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Explanatory notes

References to dollars ($) are to United States dollars, unless otherwise stated.

The term "billion" signifies a thousand million.

Two dots indicate that data are not available or are not separately reported.

Besides the common abbreviations, symbols and terms, the following have been used in this report:

GDP	gross domestic product
GNP	gross national product
ISIC	International Standard Industrial Classification of All Economic Activities
MVA	manufacturing value added
n.e.s.	not elsewhere specified
SITC	Standard International Trade Classification

INTERNATIONAL TRANSPORT COSTS AND INDUSTRIAL DEVELOPMENT
IN THE LEAST DEVELOPED AFRICAN COUNTRIES

Ian Livingstone*

A. Small economic size

Small economic size is a result of small population and low
income per capita. Thirteen least developed countries have popula-
tions of less than 2 million, nine of them in Africa, and ten less
than 1 million, eight in Africa (see tables 1 and 2). Twelve
African countries had gross national products (GNP) (in 1981) below
$1 billion, while the combined GNP of the 26 was $38.4 billion,
less than that of Algeria or of Greece.** Per capita GNP is also
extremely low, less than $400 in all but five of the 36 countries.
The share of manufacturing value added was low: for 14 out of
18 countries for which a figure is available, the percentage lies
between 4 and 9 per cent. From table 3, which compares 1980
figures with those for 1970, it can be seen that manufacturing
value added (MVA) per capita at constant 1970 prices fell from
$8 to $7 for the African least developed countries, while the share
of MVA in gross domestic product (GDP) at factor cost fell from
8.7 per cent to 7.3 per cent. Eight of the countries contained
significant semi-arid lands.

Small economic size may affect transport directly or indi-
rectly. The indirect effect is that the small size of their
domestic market severely restricts scope for even the elsewhere
much criticized import-substituting industrialization and increases
the need to look towards the export of manufactures, where the
transport factor becomes critical. Table 4 indicates a relation-
ship between economic size and the degree of openness of an
economy. There may be direct costs associated with small size.
First, the low level of incomes may be insufficient to develop
transport infrastructure to an adequate level, while, secondly,
such facilities as are developed may be expensive relative to the
small amount of trade passing through. In other words, there may
be economies of scale in the provision of transport facilities.

**Precise calculation of economic size is not required in the
calculations or discussion here. However as pointed out for
instance by Hazlewood [1] the size of the market depends not only
on GDP but on the proportion of the population located near to
established communications: GDP is an imperfect measure of this
size because of the eroding effect of distance from the centre of
manufacturing.

Table 1. Basic data for 10 non-African least developed countries

Country	1981 population (millions)	1981 GNP per capita (dollars)	1981 GNP (billions of dollars)	1970-1980 real GNP per capita growth rate (percentage)	1981 share of MVA in GDP (percentage)
Afghanistan	16.3	..	..	1.4	..
Bangladesh	90.7	140	12.8	0	8
Bhutan	1.3	80	0.1	0	..
Democratic Yemen	2.0	460	0.9	10.7	14
Haiti	5.1	300	1.5	1.8	..
Lao People's Democratic Republic	1.5	80	0.3	..	..
Maldives	0.2	..	..	..	..
Nepal	15.0	150	2.3	-0.3	..
Samoa	0.2	..	..	..	..
Yemen	7.3	460	3.3	6.1	6

Table 2. Basic data for 26 African least developed countries

Country	1981 population (millions)	1981 GNP per capita (dollars)	1981 GNP (millions of dollars)	1970-1980 real GNP per capita growth rate (percentage)	1981 share of MVA in GDP (percentage)
Benin	3.6	320	1 140	1.2	7
Botswana	0.9	1 010	940	9.0	..
Burkina Faso	6.3	240	1 490	1.6	12
Burundi	4.2	230	990	1.5	9
Cape Verde	0.3	340	100	5.5	..
Central African Republic	2.4	320	770	-0.2	6
Chad	4.5	110	490	-3.6	4 a/
Comoros	0.4	320	110	-2.4	..
Djibouti	0.4	480	180	..	..
Equatorial Guinea	0.3	180	62	..	..
Ethiopia	31.8	140	4 530	0.6	11
Gambia	0.6	370	220	3.1	..
Guinea	5.6	300	1 660	0.4	4 b/
Guinea-Bissau	0.8	190	150	..	..
Lesotho	1.4	540	740	8.6	5 b/
Malawi	6.2	200	1 250	2.8	13 b/
Mali	6.9	190	1 340	2.3	6
Niger	5.7	330	1 890	-0.8	8
Rwanda	5.3	250	1 340	1.7	16
Sao Tome and Principe	0.1	370	40	-0.2	..
Sierra Leone	3.6	320	1 140	-1.1	6
Somalia	4.4	280	1 240	1.1	3 a/
Sudan	19.2	380	7 390	0.9	6

Table 2 (continued)

Country	1981 population (millions)	1981 GNP per capita (dollars)	1981 GNP (millions of dollars)	1970-1980 real GNP per capita growth rate (percentage)	1981 share of MVA in GDP (percentage)
Togo	2.7	380	1 010	0.9	9
Uganda	13.0	220	2 890	-4.1	9 b/
United Republic of Tanzania	19.1	280	5 260	1.1	7

Notes: Population: four countries have populations exceeding 10 million; eight countries have populations of less than 1 million (combined population - 149.7 million).

Gross national product per capita: three countries are in the range $480-$1,010; 12 countries are below $300 (average - $260).

Gross national product: three countries are in the range 4.5-7.4 billion dollars; twelve countries are below $1 billion (combined GNP of $38.4 billion is less than that of Algeria or Greece).

Gross national product per capita growth: three countries are in the range 5.5-9.0 per cent; seven countries have negative growth.

Share of manufacturing value added in gross domestic product: 1980-1981 shares range from 4 to 16 per cent.

a/ 1960.

b/ 1980.

Table 3. Data on manufacturing value added

Country and economic grouping	Manufacturing value added per capita (dollars)			Share of MVA in GDP at factor cost (percentage)			Country share in MVA of African developing countries (percentage)		
	1970	1980 (constant)	1980 (current)	1970	1980 (constant)	1980 (current)	1970	1980 (constant)	1980 (current)
Main oil-exporting countries	14	26	92	5.2	6.4	5.0	18.46	28.34	35.09
Algeria	30	43	135	11.2	11.1	8.1	7.48	8.57	9.53
Gabon	23	121	456	4.1	10.2	7.7	0.21	0.72	0.97
Libyan Arab Jamahiriya	32	144	271	1.8	5.6	2.2	1.91	4.60	3.10
Nigeria	9	17	72	4.4	5.2	5.0	9.58	14.46	21.49
Least developed countries	8	7	25	8.7	8.1	7.3	15.16	11.24	13.74
Benin	7	6	14	8.4	6.3	5.2	0.35	0.19	0.19
Botswana	10	6	68	7.8	10.3	6.9	0.11	0.22	0.21
Burkina Faso	6	7	21	10.9	14.6	13 9	0.58	0.51	0.55
Burundi	4	6	19	6.8	7.8	1.	0.28	0.26	0.32
Cape Verde	5	5	17	5.2	5.9	5.6	0.02	0.02	0.02
Central African . public	13	13	41	13.1	14.0	14.0	0.44	0.30	0.36
Chad	4	4	19	5.5	5.2	9.1	0.30	0.18	0.34
Comoros	6	2	10	6.7	4.7	5.3	0.03	0.02	0.02
Ethiopia	7	7	13	9.6	9.7	10.6	3.11	2.43	1.63
Gambia	6	3	9	5.1	2.6	2.6	0.05	0.02	0.02
Guinea	5	5	10	2.9	3.0	3.1	0.33	0.25	0.20
Guinea-Bissau	1	1	4	1.1	1.1	1.8	0.01	0.01	0.01
Lesotho	2	5	11	2.7	5.0	4.9	0.03	0.07	0.06
Malawi	10	16	36	15.4	16.1	15.7	0.85	1.04	0.85
Mali	5	5	22	10.5	10.8	13.2	0.50	0.34	0.57
Niger	6	6	21	6.0	5.7	5.3	0.43	0.33	0.44
Rwanda	2	10	28	3.5	12.2	12.8	0.13	0.53	0.52
Somalia	5	7	29	6.5	8.2	8.6	0.26	0.27	0.41
Sudan	14	10	32	10.2	7.1	7.0	3.56	2.02	2.29
Uganda	9	4	57	7.5	4.8	4.8	1.05	0.63	3.03
United Republic of Tanzania	9	8	25	10.1	7.8	7.9	2.14	1.59	1.70

Table 4. Relationship of GDP size to the imports-GDP ratio, 1983, for 62 developing countries

Size of countries in sample	Number of countries	Average GDP (billions of dollars)	Total GDP (billions of dollars)	Unweighted M:GDP (percentage)	Weighted M:GDP (percentage)
Small GDP < $5 billion	30	2.5	74	29.9	28.0
Medium $5 billion < GDP < $50 billion	25	21.4	534	23.9	24.4
Large GDP > $50 billion	7	127.9	895	13.7	11.9

Source: World Development Report 1985 (Washington, D.C., World Bank, 1985), appendix, tables 3 and 9.

Note: M = value of imports. In some cases data are for 1982. Numerous countries were not included because of insufficient data. Countries with a population of less than one million were not included in the data, and the imports-to-GDP ratio may be even higher for the smallest countries.

Beyond this, thirdly, there may be both administrative and actual financial costs associated with the infrequency and unreliability of the service. Because least developed countries are of small economic size they are of minor potential as trading partners, and international transport facilities will not have been developed with them in mind. Even islands and coastal countries with access to the sea may be given a wide berth by the shipping liner conferences because they are insufficiently profitable to merit becoming regular ports of call. Because of this factor, small size may produce an additional element of "remoteness" which is independent of actual geographical distance. Remoteness is considered by Srinivasan [2], for example, as a factor independent of small size. Many islands in particular are remote in terms of geographical distance from markets and trade routes, but mini-States such as Guinea-Bissau are geographically less distant than, say, Nigeria but, because of their economic size, more remote in terms of being served by shipping. For all these reasons, it is plausible to test for an effect of economic size on international transport costs.

The expectation that small economic size would affect transport costs is expressed in an UNCTAD report which states the following:

> "Since economies of scale apply to transport as to other sectors of the economy, it is to be expected that the LDCs would face higher transport costs than developing countries in general. Other reasons why freight factors are likely to be higher on imports from LDCs are that these countries generally export goods with lower value to weight ratio than other countries and that they may have inferior transport facilities." ([3], p. 76)

1. Landlocked least developed countries

In addition to this potential disadvantage of small economic size, a further 15 least developed countries are landlocked, including 11 of the 26 African countries. This leads to additional costs of distance because of the additional loading and other transfer costs involved and the heavier costs of overland transport as compared with movement by ship; because of costs associated with poorly developed transport infrastructure in the transit country, resulting from that country's own poverty or lack of economic interest in developing infrastructure for the benefit of transit trade of more importance to its neighbour; and, thirdly, because of costs associated with delays, irregularites and uncertainties (including the possibility of theft) in the shipment of goods, particularly where there are political problems in the transit country, all outside the control of the landlocked country. A separate empirical question, therefore, is the quantitative size of this second handicap and its implications.

As will be seen again later, it is not so much being landlocked that is the problem, but being landlocked by other very poor countries, such that important potential markets lie outside the

ring of surrounding countries. Being surrounded, like Switzerland, by high-income countries that provide good immediate markets is positively advantageous.

B. Some statistical evidence on the effects of small economic size

McFarland has provided some statistical evidence of the effects of the level of development on transport costs, using import data of the United States of America which, giving relatively reliable f.o.b. and c.i.f. figures for imports from different destinations, allows one to calculate the transport cost element. Table 5 gives weighted average freight factors by country category and product category. This shows that the freight factor is greater for advanced and middle developing countries than for developed and greater still for the least developed. Indeed, the difference is much more significant in the latter case, the former not being very large. In the case of the least developed countries, substantial differences exist for both agricultural and manufactured products, compared with the middle group of countries, and for mining products as well, compared with developed countries and advanced developing countries. One of the characteristics of the least developed countries as a category is their small economic size.

Table 5. Weighted average freight factors by level of development and product category, 1981
(Percentage)

Country group	All products	Manufactured products	Agricultural products	Mining products
Developed countries	5.2	5.3	9.7	12.0
Advanced developing countries	6.5	7.3	11.0	16.6
Middle developing countries	6.5	6.5	11.8	22.4
Least developed countries	9.3	10.9	17.1	24.4

Source: H. McFarland, Transportation Costs for U.S. Imports from Developed and Developing Countries (Washington, D.C., International Trade Commission, 1983).

Note: The freight factor is the ratio of international transport costs to the free-alongside-ship value of the product being shipped.

The same study finds that the transport disadvantage of least developed countries has been increasing. Since 1965 the freight factor for United States imports from all overseas sources declined from 10 per cent to 4.5 per cent in 1981, in part for reasons of technical innovation in transport. Since the percentage fall was greater for manufactured products the prices of which rose relative to those of non-petroleum raw materials, this benefited the least developed countries least.

The data above are classified only by level of development, and not specifically by size. Moreover, as noted in the UNCTAD quotation reproduced earlier, one important reason for the larger freight factor in the trade of developing countries is the bulkier, lower-valued commodities which they export. While higher transport costs increase the likelihood of their dependence on such products, this dependence in turn increases the transport margin. Table 5 allows for this to some extent, by providing separate data for different categories of product, each of which provides evidence of increasing costs. But these categories are highly aggregated, and leave open the possibility of different "baskets" of goods within each category in part producing the divergence of freight factor.

For these two reasons, it was considered worthwhile to re-examine the United States import data for 1980 for a selection of 26 specific commodities and for more heterogeneous groupings of countries. The 26 representative commodities are listed in the annex.

Table 6 summarizes the results, with details for individual countries given in the annex (table 14). The percentage freight factor is negligible in the case of adjacent countries (Canada and Mexico), suggesting that c.i.f. and f.o.b. values are calculated at the border rather than at actual production centres within the countries concerned, which is misleading with regard to the advantage of, for example, Mexico over Panama. The data does not suggest that small economic size is a particular disadvantage. The freight factor for small Central American and Caribbean countries, for instance, is 4.7, compared with 5.8 for European and 5.0 for large Latin American countries. This result may in part reflect the advantage of proximity, although the importance of coffee and sugar, with high value relative to bulk, despite their being agricultural products, is probably the more important explanation. Similarly, the transport factor is not very different as between large and small African countries. Interestingly, the freight factor is significantly higher for East Asian selected developing countries and areas (7.3), compared with African and Central American countries. Their obvious success, nevertheless, in manufacturing for export suggests that a transport disadvantage can be overcome if other conditions are favourable. On the other hand, given the advantage of proximity, small size should not be a factor holding back export-oriented development in Central America, at least to the extent that these calculations are meaningful.

Table 6. Freight factors in United States imports, 1980,
calculated for regional groupings based on 26 selected
representative commodities

Regional groupings	Freight factor (percentage excess of c.i.f. over f.o.b. values)	Mean of ratios a/
Adjacent countries b/	0.2	0.185
European countries and Japan c/	5.8	0.975
Landlocked European countries d/	6.6	1.003
European/Mediterranean islands e/	8.4	1.131
Latin American countries f/	5.0	1.251
Landlocked Latin American countries g/	4.7	0.958
Small Central American and Caribbean countries n/	4.5	0.938
East Asian selected developing countries and areas i/	7.3	1.145
Low-income Asian countries j/	9.7	1.667
Australia, New Zealand, South Africa	7.3	1.445
Larger African countries k/	5.9	1.237
Small African countries, not landlocked l/	6.0	1.338
Small African countries, landlocked m/	5.3	1.137

a/ Mean of ratios = mean of ratios of country freight factor
for product to the factor for the product as a whole.

b/ Canada, Mexico.

c/ Denmark, France, Germany, Federal Republic of, Italy,
Japan, Netherlands, Poland, Portugal, Spain, Sweden and United
Kingdom of Great Britain and Northern Ireland.

d/ Austria, Hungary, Switzerland.

e/ Cyprus, Iceland, Malta.

f/ Argentina, Brazil, Chile, Colombia, Ecuador, Peru, Uruguay.

g/ Paraguay.

h/ Bahamas, Costa Rica, Dominican Republic, Guatemala, Guyana,
Haiti, Honduras, Jamaica, Nicaragua, Panama, Salvador, Trinidad and
Tobago.

i/ China (Taiwan Province), Hong Kong, Indonesia, Malaysia,
Philippines, Republic of Korea, Singapore.

j/ Bangladesh, China, India, Pakistan, Papua New Guinea,
Sri Lanka.

k/ Kenya, Nigeria, Zaire.

l/ Cameroon, Congo, Côte d'Ivoire, Ethiopia, Ghana, Guinea,
Liberia, Mozambique, Mauritius, Sierra Leone, Senegal, United
Republic of Tanzania.

m/ Burundi, Malawi, Swaziland, Uganda, Zimbabwe.

The major weakness of the data lies in the dependence of the calculated freight factors on the commodities actually traded. The most important such commodities are listed in the annex (table 14). In many cases these are the high-valued (relative to weight) agricultural products such as coffee, sugar and cocoa.

This may also in part expl·in why those countries which are landlocked do not have very much higher freight factors: the European landlocked countries show a percentage of 6.6 compared with 5.8 for the non-landlocked, Paraguay has a low value (thanks to coffee) of 4.7, and the landlocked African countries actually have a lower value than the non-landlocked.

To counteract at least in part the effect of actual traded consignments, for each commodity traded the ratio of the individual country's freight factor to the product freight factor for all the trading countries is also calculated. A high value would then show a transport disadvantage facing the country in question compared with other countries exporting the same product to the United States. The second column in the tables gives the mean, unweighted, of such ratios for all the products in the list of 26 which the country exports to the United States.

The value for European countries, below 1.0, suggests that this could be taken as a reference point. The value for East Asian selected developing countries and areas is not much above 1.0, suggesting that, after all, their disadvantage is not so great when traded product composition is taken into account. The low value for small Central American and Caribbean countries does not indicate a disadvantage from small economic size, though even then these ratios, not covering all potentially traded products, are not independent of actual traded product composition.

C. Direct valuations of transport costs from selected African countries

Ultimately, the only means of overcoming this problem is to obtain direct figures for cost of shipping. This has been done for four selected products using quotations made by regular shippers to the Crown Agents, for shipment from the United Kingdom to Africa. The commodities selected were enamelware, leather footwear, cotton clothing and machinery. These vary widely in respect of their value in relation to bulk, which is revealed to be a major influence on costs of shipment per freight tonne, a freight tonne being determined either by weight or by cubic capacity as one cubic metre. The assumption made here is that the pattern of transport costs from the United Kingdom to Africa can serve as an indicator of that in the reverse direction for potential manufactured exports.

The precise figures used for ex works values of one freight
tonne of each product are not too important, so long as realistic
and representative values are taken. The figures used in the first
three cases were calculated as means from a sample of five or six
invoices of shipments by a Birmingham-based shipping agent.
Because machinery varies so widely in nature from consignment to
consignment, in this case an ex works value of £4,500 was taken as
realistic in relation to that obtained for cotton clothing. The
detailed breakdown of transport charges is derived from actual quo-
tations made to the Crown Agents in November 1985. It must be
stressed that quotations given by shippers are volatile, varying
between shippers and between regular and non-regular customers,
cargos and places, as well as from week to week, so that it is dif-
ficult to state precisely what is the cost of shipment of a par-
ticular product from A to P. It may be the case also that the
Crown Agents, as a major customer, are offered more favourable quo-
tations. There are also differences as between containerized and
non-containerized cargo (the data here refer to container cargo).
Nevertheless the structure of charges shown here is likely to
represent a realistic picture for these representative products at
the end of 1985.

The cost breakdown Birmingham-Mombasa is presented in
table 7. Those for other destinations can be consulted in the
annex (table 15(a)-(g)). Birmingham was selected as a representa-
tive industrial centre in the United Kingdom in the light of its
central situation. The data shows that the percentage oncost (over
the ex works value) from Birmingham to the United Kingdom port is
as great as (or more than) the ocean freight to the African port.
Costs of shipment (including transfer costs) per mile may also be
greater within the United Kingdom than over longer distances within
Africa. Insurance is not a particularly large item, here adding
about one per cent to cost.

The freight factors calculated for the four representative
products to different African destinations are summarized in
table 8. The destinations have been selected to provide a compar-
ison between countries of smaller and larger economic size, land-
locked and non-landlocked, on both sides of the continent. The
upper part of the table gives the percentage oncost to the
destination over the Birmingham ex works value, and the lower part
gives the ratio of these freight factors to that for cotton
clothing, used as a reference point.

The size of the freight factors compared with those calculated
by McFarland in table 5 should first be considered. The freight
factors of 13.4 per cent and 9.8 per cent Birmingham-Mombasa, for
instance, are high in relation to the 5.3 per cent in table 5 for
manufactured products imported by the United States from developed
countries or the 6.5 per cent from middle developing countries, and
consistent with or greater than the 10.9 per cent for least

Table 7. Estimated total distribution costs for one freight tonne of cargo, Birmingham-Mombasa

Item	Enamelware (pounds sterling)	(percentage)	Leather footwear (pounds sterling)	(percentage)	Cotton clothing (pounds sterling)	(percentage)	Machinery (pounds sterling)	(percentage)
Primary packed, ex works Birmingham	1 150	100	2 430	100	3 000	100	4 500	100
Packing into strong wooden crates	69		69		69		69	
Collection and delivery to Liverpool	24.60		24.60		24.60		24.60	
Port charges	20		20		20		20	
f.o.b. Liverpool	1 263.60	109.9	2 543.60	104.7	3 113.60	103.8	4 613.60	102.5
Ocean freight, net of currency/bunker adjustment factors, including loading	96.19	8.4	128.24	5.3	83.36	2.8	115.42	2.6
Cost and freight, Mombasa	1 359.79		2 671.84		3 196.96		4 729.02	
Wharfage (1.5 per cent) c.i.f. Mombasa	20.62		40.52		48.48		7.72	
Port costs	11.00	3.6	11.00	2.5	11.00	2.3	11.00	2.1
Delivery to store	10.00		10.00		10.00		10.00	
Insurance (0.7775 per cent)	11.99	1.0	23.38	1.0	27.94	0.9	41.24	0.9
c.i.f. Mombasa store	1 413.40	122.9	2 756.74	113.4	3 294.38	109.8	4 862.98	108.0

Note: Percentages are of ex works values.

Table 8. Summary of freight factors for different destinations for four representative products, end 1985

Destination	Enamelware		Leather footwear		Cotton clothing		Machinery	
	Percentage oncosts over ex works values							
Mombasa	22.9	(11.9)	13.4	(8.4)	9.8	(5.8)	8.0	(5.4)
Dar-es-Salaam	22.9	(11.9)	13.4	(8.4)	9.8	(5.8)	8.0	(5.4)
Moshi	27.0	(15.6)	15.4	(10.2)	11.4	(7.3)	9.1	(6.4)
Mwanza	28.8	(17.2)	16.2	(11.0)	12.1	(8.0)	10.0	(6.9)
Banjul	20.3	(9.5)	11.2	(6.2)	9.3	(5.4)	6.6	(3.9)
Accra/Tema	25.8	(14.5)	13.5	(8.4)	10.8	(6.7)	7.9	(5.3)
Lagos	22.5	(11.5)	12.2	(7.2)	10.2	(6.2)	7.1	(4.4)
Ouagadougou via Abidjan	35.9	(23.7)	17.7	(12.5)	14.6	(10.5)	10.2	(7.5)
Bujumbura via Mombasa	40.5	(27.9)	22.7	(17.2)	17.6	(13.3)	13.8	(11.1)
Blantyre via Durban	32.8	(20.9)	17.3	(12.0)	14.8	(10.6)	10.8	(8.1)
Mean, all destinations a/	27.95	(16.5)	15.08	(10.0)	12.11	(8.0)	9.30	(6.4)
Difference in means (from cotton clothing)	+15.84	(8.5)	+2.97	(2.0)	-	(-)	-2.81	(-1.6)
Mean, coastal countries	22.88	(11.86)	12.74	(7.72)	9.98	(5.98)	7.52	(4.88)
Mean, landlocked countries	36.40	(24.17)	19.23	(13.90)	15.67	(11.47)	11.60	(8.90)
Difference in means (coastal and landlocked countries)	+13.52	(+12.31)	+6.49	(6.18)	+5.69	(+5.49)	+4.08	(+4.02)
	Ratios of oncost percentages							

Small and large countries

Destination	Enamelware	Leather footwear	Cotton clothing	Machinery
Mombasa	2.337	1.367	1	0.816
Dar-es-Salaam	2.337	1.367	1	0.816
Banjul	2.183	1.204	1	0.710
Accra/Tema	2.389	1.250	1	0.731
Lagos	2.206	1.166	1	0.696

Coastal and landlocked countries

Destination	Enamelware	Leather footwear	Cotton clothing	Machinery
Mombasa	2.337	1.367	1	0.816
Bujumbura	2.301	1.290	1	0.784
Blantyre	2.216	1.169	1	0.730
Accra/Tema	2.389	1.250	1	0.731
Ouagadougou	2.459	1.212	1	0.699
Mean (coastal)	2.290	1.277	1	0.754
Mean (landlocked)	2.325	1.224	1	0.738

Note: Figures in brackets show percentage cost over f.o.b. Liverpool values.

a/ Excluding those within Tanzania.

developed countries. They are significantly higher than the freight factors in table 6 (5.8 per cent for European countries but only 6.0 per cent for small African countries), where the figures reflect commodities actually exported. Compared with the McFarland figure cited and in relation also to the differences shown in his table between developed and least developed countries, some of the figures here, such as the 22.7 per cent for footwear to Bujumbura and the 40.5 per cent for enamelware co Bujumbura, are astronomic. Since McFarland's figures are based on c.i.f.-f.o.b. differences, the figures in brackets in table 6, based on f.o.b. Liverpool values, should be compared, but these are still relatively high.

From table 6 the effect of small economic size does not appear substantial. Despite Mombasa's far larger volume of trade compared with Dar-es-Salaam, for instance, the percentage oncosts are identical. Similarly the percentage oncosts for Lagos are not significantly different from those of Accra or Banjul despite Nigeria's much more substantial economic size. These costs are limited to direct shipping costs, and do not take into account such indirect and perhaps quite important costs associated with infrequency of service, involving for instance the capacity to respond effectively and quickly to overseas market demands, longer periods in transit or unpredictability of delivery.

Being landlocked has a much more significant effect. The percentage oncost for cotton clothing for example, jumps from 9.8 per cent at Mombasa to 17.6 per cent at Bujumbura. The mean for enamelware to coastal countries is under 23 per cent compared with over 36 per cent for landlocked countries. For products in the middle of the value-per-freight-tonne range, footwear and cotton clothing, the oncost is 10-13 per cent for coastal countries and 16-19 per cent for the landlocked countries.

What makes the greatest difference to the percentage oncost proves to be the type of product, specifically value relative to weight or bulk. The mean for all destinations is close to 28 per cent for enamelware, compared with just 12 per cent for cotton clothing. The ratios in the bottom half of the table show that the pattern of ratios for different products is almost the same for small and large countries and for landlocked and non-landlocked countries, suggesting that the relative impact of different values per tonne is independent of these factors. The absolute impact may be a different matter, since the 36 per cent and 40 per cent oncosts at Ouagadougou and Bujumbura, for example, may be too much even for manufacturing industries that are able to take advantage of cheap labour in the least developed countries, while the lower values at Mombasa might fall within the limits of tolerance. A low value ex works such as the £1,150 per tonne for enamelware will therefore produce a strong comparative disadvantage in export production, and in general the data points to the need to concentrate on higher-valued (per tonne) manufactured goods for export and to high natural protection for production of low-valued (per tonne) goods for the domestic market.

As already stressed, the margins revealed by these quotations relate only to direct costs of shipment. In the case of landlocked

countries the problems of delays and general unpredictability associated either with bureaucratic interference in the transit country or in some cases political dislocation, or losses from damage or theft (not fully compensated by insurance) can add greatly to costs and interfere with the capacity to deal in foreign markets. The capacity to deliver to overseas markets on a reliable basis may be affected in both directions, availability of imported inputs becoming less reliable as well as the supply of the finished product.

The freight factors calculated above will also be increased to the extent that the manufactured goods produced incorporate some import content, in the form of capital equipment as well as materials and components, which itself has an inflated element of international transport. Data for precise calculation are not readily available, but illustrative calculations are shown in table 9, assuming in each case that the import content amounts to 30 per cent of the ex works value, that it is subject to the freight facto. already calculated for machinery, and that the freight factor from Africa to Europe is identical to that in the reverse direction. This adds a significant amount to the size of the freight factor in all cases. The absolute increase in the size of the freight factor is slightly higher in the case of enamelware (the good with low value to bulk). But since export production of goods such as this may already be ruled out, it is worth noting that the proportionate increase in size of the freight factor - 22-25 per cent in the case of cotton clothing - increases for higher value-to-bulk goods, that is, inversely with the size of freight factor, thus decreasing the potential competitiveness of the countries in question. The proportionate change is about the same for landlocked and non-landlocked countries, the absolute increase larger for landlocked. Since even within the category of least developed countries there is potential competition as supply centres to developed country markets between the large number of islands and coastal countries on the one hand, and landlocked least developed countries on the other, the element of import content will add a further important disadvantage in the latter's case.

Reference should be made to two important issues with policy implications raised by Yeats. In one paper [4] based on data from India, he shows that ad valorem transport rates for some important products tend to escalate with each stage of processing in the same way as tariffs, compounding the negative effect on the growth of processing industries in developing countries. In his book [5] he demonstrates that tariff valuation procedures using a base of c.i.f. rather than f.o.b. figures severely disadvantage exports from developing countries and particularly those landlocked countries for which freight factors are highest. He notes that many products with production characteristics that make them especially suitable for developing countries have freight factors ranging from 20 to 50 per cent or more ([5], p. 89).

D. General implications of high external transport costs

The effects of high external transport costs are in many respects opposite to those of small market size, for transport

Table 9. Effect on freight factors of assumed import
content of the goods manufactured a/

| Commodity and destination - origin | Freight factor (percentage oncost) | | Absolute increase in freight factor (percentage) | Proportionate increase in freight factor (percentage) |
	As already calculated	With transport oncost on 30 per cent imported capital content		
Footwear				
Mombasa -	13.4	16.0	2.6	19.4
Bujumbura	22.7	27.4	4.7	20.7
Accra/Tema -	13.5	16.0	2.5	18.5
Ouagadougou	17.7	21.1	3.4	19.2
Enamelware				
Mombasa -	22.9	25.7	2.8	12.1
Bujumbura	40.5	45.9	5.4	13.3
Accra/Tema -	25.8	28.6	2.8	12.2
Ouagadougou	35.9	39.8	3.9	10.9
Cotton clothing				
Mombasa -	9.8	12.3	2.5	25.5
Bujumbura	17.6	22.0	4.4	25.0
Accra/Tema -	10.8	13.3	2.5	23.1
Ouagadougou	14.6	17.9	3.3	22.6

a/ Import content of goods calculated as 30 per cent of ex works value in African country, subject to freight factor calculated already for machinery.
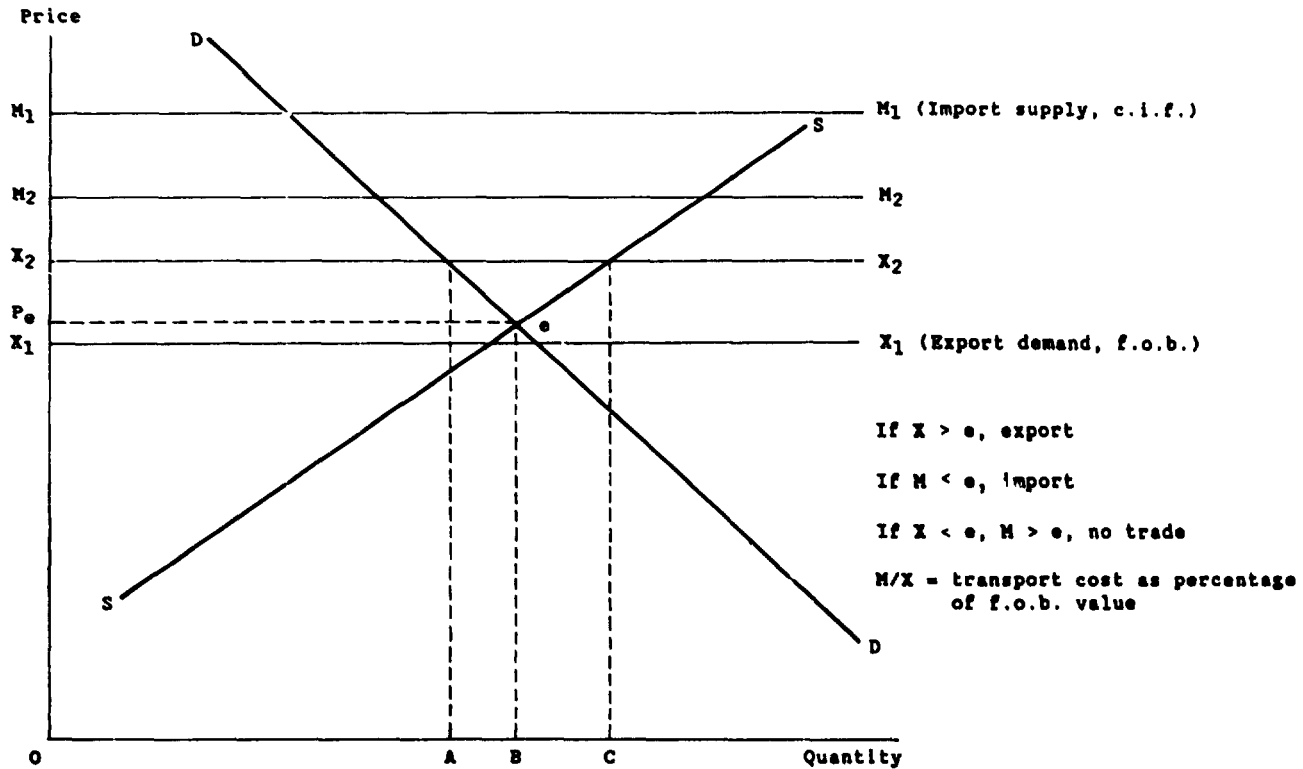
costs provide a natural barrier to trade, favouring the domestic rather than the external market, and thus tend to reduce the ratio of trade to gross domestic product. Small countries with high external transport costs could be said to have suffered disadvantages in producing for both domestic and external markets, despite the natural barrier advantage. However, the following figure illustrates the effect of the latter. Assume that small countries 1 and 2 have equivalent domestic demand and supply functions for steel, DD and SS (small means here that import supply and export demand elasticities are infinite, so that, for traded goods, prices are set externally, with trade adjusting for supply-demand differences). Country 1 faces higher external transport costs than country 2, since the difference between what would be paid for imported steel (M_1) and what would be received for steel exports (X_1) is much higher than M_2-X_2. For country 1, the domestic equilibrium (e) lies between the import supply price (M_1) and the export demand price (X_1), resulting in steel being non-traded. Quantity OB will be produced (and consumed). For country 2, the export demand price (X_2) lies above e, so that steel is exported (note that the import supply line for a given good always exceeds the export demand line, since the former includes transport cost). Quantity OA will be consumed and AC will be exported. An important point of the diagram is that it shows that high transport costs imply that many goods which would be traded in the case of low transport costs become non-traded.

The effect of high transport costs may be either to reduce the net return received by producers for undertaking an export activity or to make this activity non-competitive and non-viable. The first effect will most often hold in the case of primary products where farmers and other producers are price-takers in the world market, and will result in lower incomes per unit of effort or resources used up in production.

A numerical example may serve to indicate the orders of magnitude involved. Suppose footwear may be produced either in Accra or Birmingham, and that the wage bill at the United Kingdom wage levels amounts to 30 per cent of the ex works value. The freight factor in either direction is 15 per cent of the United Kingdom ex works price, but measures the transport disadvantage faced by Ghana in supplying the United Kingdom market (compared with 13.5 per cent calculated above for Accra/Tema). Assuming Ghana is a price-taker in the United Kingdom market and is able to absorb the export on-cost only through reduction in the wage bill, the 15 per cent would need to come out of the 30 per cent for the wage bill, implying wages at just half the United Kingdom level. If the transport on-cost were higher, at 25 per cent (compare 22.7 per cent for footwear Birmingham-Bujumbura), a similar calculation would allow wages of only one sixth of the United Kingdom level. This indicates that even for coastal countries the transport factor may significantly erode the cheap labour advantage of a developing country in relation to manufacturing, but that for landlocked countries the effect on the return to labour may be catastrophic.

Impact of transport cost on trade, production and consumption:
high- and low-cost countries compared

Price

M_1 — M_1 (Import supply, c.i.f.)

M_2 — M_2

X_2 — X_2

P_e
X_1 — X_1 (Export demand, f.o.b.)

S

D

If $X > e$, export

If $M < e$, import

If $X < e$, $M > e$, no trade

M/X = transport cost as percentage
of f.o.b. value

O   A   B   C   Quantity

In the case of agricultural export commodities, there may be no choice but to accept a reduced return to labour, the alternative being purely subsist.nce agriculture. If a high-priced export crop is involved, such as coffee, incomes may still be very satisfactory, and since there will not be the same problem of economies of scale in production - peasant farming units being entirely viable - small economic size of a country may not affect the viability of production. This may not hold in the case of manufacturing, where capital is mobile and able to seek alternative locations, not leaving labour the option of accepting a lower wage.

Table 10 shows the negligible extent of manufacturing for export in the African least developed countries. These frequently amount to no more than a few percentage points of exports, which are overwhelmingly of primary products. Such manufactured exports as exist are invariably resource-based, for example vegetable oils, animal feeding-stuffs (cattle cake from oil-seeds) or manufactured tobacco.

As stated at the outset, small domestic markets make a standard import-substitution strategy even more problematic. This may also affect potential for export of manufactures where domestic production would have provided the foundation required for subsequent export promotion. Exports to neighbouring countries are often of this type. More generally Srinivasan states that

"... even if there are no constraints on size of the market for a product because of possibilities for export, to the extent that penetration into foreign markets depends on the experience gained in producing and selling in the domestic market, smallness of the latter may preclude export development" ([2], p. 1).

It has been remarked elsewhere ([6], p. 56) that the small least developed countries "are utterly lacking in the institutional infrastructure needed for export promotion policies", and that transnational corporations, with their extensive marketing network throughout the world and their acquired skills in this direction, might be the best means, or one means, of overcoming this problem. Transnational corporations may be persuaded to locate in a country for offshore production and export, taking advantage of cheap labour or tax concessions, independently of any domestic market. But the existence of such a market could undoubtedly provide a reason for selecting one location rather than another - Brazil, for example, rather than Ghana. Industries which are directed simultaneously towards domestic and export markets have been referred to as "Janus" industries.* If these are important, small economic size can handicap a country's industrial progress in both domestic and export markets.

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*After the Greek god Janus who faced in two directions.

Table 10. Export structure of African least developed countries, 1981

Country	Leading exports	Manufactured exports and percentage share of total domestic exports
Benin	Cocoa, fixed vegetable oil, cotton	Cement, building products (5.74), animal feeding-stuff (4.21), woven cotton fabrics (2.10), clothing (1.44), other inorganic chemicals (1.08), cereal etc. preparations (0.69)
Botswana	..	..
Burkina Faso	Cotton, live animals, oil-seeds, nuts etc.	..
Burundi	Coffee	Textile yarn and thread (0.11), animal feeding-stuff (0.11)
Cape Verde	Fresh fish, crude minerals	Tinned fish (12.07), animal feeding-stuff (1.62), machinery for special industries (0.56), metal manufactures n.e.s. (0.44), power machinery, non-electric (0.41)
Central African Republic	Diamonds, coffee	Veneers, plywood etc. (1.30), tobacco manufactures (1.27), natural abrasives (0.70), coal and coke briquettes (0.69), rubber, crude and synthetic (0.24), processed animal and vegetable oils etc. (0.16)
Chad	Cotton	Cotton fabrics, woven (13.45), animal feeding-stuff (0.93), alcoholic beverages (0.41), leather (0.39), sugar and honey (0.16)
Ethiopia	Coffee, hides and skins	Animal feeding-stuff (1.01), processed animal and vegetable oils (0.33)
Gambia	Oil-seeds, nuts etc.	Fixed vegetable oil (31.6), animal feeding-stuff (12.46), clothing (0.72), gold, silver, jewellery (0.47)
Malawi	Tobacco, sugar, tea	Clothing (0.66), textile yarn and thread (0.49), animal feeding-stuff (0.44), footwear (0.39), textile products, n.e.s. (0.34)
Mali	Cotton, oil-seeds	Cotton fabrics, woven (2.0), animal feeding-stuff (2.0), leather (0.3)
Niger	Non-ferrous base metal ore	Tobacco manufactures (3.25), cotton fabrics, woven (0.54), non-cotton woven textiles (0.25), coal, coke briquettes (0.23), machinery for special industries (0.14), lace, ribbons etc. (0.11)

Table 10 (continued)

Country	Leading exports	Manufactured exports and percentage share of total domestic exports
Rwanda	Coffee	Toys, sporting goods etc. (0.04), textile yarn and thread (0.03), clothing (0.03)
Sierra Leone	Diamonds, natural abrasives, non-ferrous base metal ore, cocoa, coffee	Animal feeding-stuff (1.05), fixed vegetable oil, non-soft (1.86)
Somalia	Live animals, fresh fruit and nuts	Tinned meat, leather (exact share not available)
Sudan	Oil-seeds etc., cotton, cereals, n.e.s.	Animal feeding-stuff (3.39), fixed vegetable oil, non-soft (2.40), textile yarn and thread (0.63)
Togo	Crude fertilizers, cocoa	Cement etc. (10.64), petroleum products (1.32), iron and steel shapes (0.71), cotton fabrics, woven (0.61), machines, n.e.s., non-electric (0.43), clothing (0.4), animal feeding-stuff (0.26), textile products, n.e.s. (0.26)
Uganda	Coffee	Electrical energy (0.53), textile yarn and thread (0.13), iron and steel shapes (0.10), iron and steel plate and sheet (0.07), iron and steel primary forms (0.06), organic chemicals (0.05)
United Republic of Tanzania	Coffee, cotton, cashew nuts, spices	Animal feeding-stuff (2.22), special textile products (1.98)

The data provided above reflect the size of the relative transport handicap faced by the landlocked among the least developed countries. It is necessary to be more specific about the nature of this handicap, particularly as transport costs between port cities and interior areas of non-landlocked countries may be just as large and are frequently larger than those of the landlocked. One specific difference is that transport costs to the interior are in the latter case payable in foreign exchange and generate incomes to nationals. An obvious problem, secondly, is that the country in the former case retains control over procedures, conditions, facilities and rates affecting transport, including transport investment. Thirdly, because of the import content of manufacturing, a large proportion of manufacturing is frequently located at the port, as at Accra, Lagos or Mombasa; in the case of landlocked countries, this locational factor takes industry out of the country altogether. Related to this, fourthly, labour mobility permits migration to the coast in search of employment, where also a significant part of the national (urban) market is found. The same mobility for a landlocked country to coastal industries does not exist, and any employment obtained abroad is less secure and less durable than employment at home.

The effect of transport costs on the location of industry is particularly critical for landlocked countries because of reliance on foreign investment and the international mobility of transnational corporations. There is no obvious reason to locate in the landlocked country rather than the transit coastal country, particularly as the domestic market of the latter is almost invariably the larger of the two, and indeed there will always be many coastal countries - and islands - to choose from. Landlocked countries may thus be at the end of a long queue from the point of view of internationally footloose industry, with many implications for their long run development.

This will apply also to the location of industry geared to a local regional market as well as to overseas markets. Here the import content of manufacturing with weight loss in processing at the port will be important also, as already mentioned. One example of the impact of this is cited by Selwyn:

"Thus in the trade between Upper Volta and the Ivory Coast, 80 per cent of Upper Volta's exports to the Ivory Coast in 1969 consisted of live animals and animal products, and a further 15 per cent of vegetable products. Ivory Coast's exports to Upper Volta were far more diversified, including cement (15.6%), wood and cork products (10.3%), textiles (9.6%), chemical products (9.2%), transport products (8.6%), food, drink and tobacco products (5.6%) and base metal products (4.9%). This structure clearly shows e peripheral relation of Upper Volta to the Ivory Coast economy" ([7], p. 5).*

*Ivory Coast and Upper Volta are the former names of, respectively, Côte d'Ivoire and Burkina Faso.

A similar fate may befall Uganda, for instance, in relation to Kenya. The effect of externalities in producing polarization of industry around established centres will tend to render this cumulative.

Even though landlocked least developed countries are particularly disadvantaged as a subgroup, the least developed countries themselves constitute a special group with a number of compounded disadvantages such as the following: small domestic market; high external transport cost; a poor resource base (in some cases there is the good fortune of minerals which however do not create significant employment or widely spread incomes); very often a semi-arid climate producing a weak agricultural economy lacking potential linkages with industry and creat·ng a special problem of labour absorption; and vicious circle effects of poverty, such as underdeveloped transport and other infrastructure, low savings and lack of education and technical and managerial know-how.

The problem of labour absorption needs special emphasis since the advent of medical services in semi-arid countries, by reducing the death rate, is resulting in a specific population problem affecting countries which have a fragile resource base and may face increasingly serious problems of resource conservation in future. While countries with a fertile agriculture can use this to buy time, the agriculture sector serving as a "sponge" to absorb population pending the eventual development of manufacturing, it is more difficult to see even a temporary solution in some of the semi-arid countries.

An obvious advantage which least developed countries might exploit for labour-intensive export manufacturing is cheap labour. A major problem here is that the number of candidates for location of such enterprise is far greater than viable. Just as in the case of primary product exports, there may be a "fallacy of composition" in expecting that many new such centres can be established. The entire sub-group of least developed countries may in fact be late-comers or rather "last-comers" in this respect.

It is quite possible, the. fore, that the existing gap between this subgroup and other developing countries will widen. Table 11 shows that the least developed countries have experienced a lower growth rate of manufacturing value added, and that this rate has also fallen behind that of gross domestic product over the decade, particularly during 1975-1980, implying a falling share of MVA in gross domestic product, while this has not been true in other African countries.* Table 12, relating to all least developed countries, shows that their income per capita was only an estimated 23 per cent of that in all developing countries in 1981, and that

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*Statistical data on manufacturing value added is often misleading when the industrial sector is comparatively underdeveloped, because it may reflect processing of a single mineral or one or two high-valued crops, for example sugar and tobacco in Malawi.

Table 11. Expansion of manufacturing value added in the least
developed African countries, 1970-1980

Grouping	Real growth rate of manufacturing value added (percentage)			Real growth of manufacturing value added less that of gross domestic product (percentage)		
	1970-1975	1975-1980	1970-1980	1970-1975	1975-1980	1970-1980
21 least developed countries	3.0	2.1	2.6	0.2	-1.4	-0.6
Main oil-exporting countries	11.6	9.1	10.4	4.1	0.7	2.4
Other African countries	5.2	3.9	4.6	1.6	0.1	0.8

Source: Secretariat of UNIDO, "The poor fall behind: an assessment of industry in the least developed countries", Industry and Development, No. 8 (United Nations publication, Sales No. E.83.II.B.1).

Table 12.   Per capita gross domestic product and population in different regions
of the world, 1981

| Country grouping | Population 1981 (millions) | Value in 1981 (dollars) | Gross domestic product per capita | | Projected value in 1990 (dollars) |
| | | | Annual average growth rate (percentage) | | |
			1960-1970	1970-1980	
Least developed countries	292	227	0.3	0.4	235
All developing countries	2 280	1 003	2.9	3.1	1 320
Developed market economies	789	9 723	3.7	2.5	12 143
Socialist countries of Eastern Europe	383	5 005	5.6	4.4	7 374
Least developed countries as percentage of all developing countries	12.8	22.6	-	-	17.8
Least developed countries as percentage of developed market economies	37.0	2.3	-	-	1.9

Source: The Least Developed Countries: 1984 Report   (United   Nations   publication,   Sales
No. E.84.II.D.25), vol. I.

this figure might actually fall to below 18 per cent by 1990, sug-
gesting that there is a clear segment of the world's population
which is extremely poor and becoming, in relative terms, progres-
sively poorer.*

E. Specific implications for industrial development policy

One of the clearest implications of table 8 incorporating our
international transport cost calculations is the sensitivity of the
freight factor to the value of the commodity relative to weight or
bulk. This points to identification of high value-to-bulk com-
modities for the export market, as those most able to bear high
external transport costs,** and to domestic production rather than
imports, when this is feasible, where low value-to-bulk goods are
needed at home.

The latter may tie in with a second criterion, the maximiza-
tion of local content. Thus instead of imported enamelware, or
domestically-produced namelware with a high import content and low
value added, domestically-produced cooking pots and containers can
be used. This would simply be a response to comparative advantage
and is, of course, already in evidence in developing countries,
particularly those landlocked countries with exceptionally high
external transport costs. A major example of a commodity produced
with maximum local content (and labour-intensive construction tech-
niques) is housing, while furniture, baskets and mats (serving as
carpets), and other household equipment and agricultural transport
(ox-carts) are others.

Maximization of local content is related to an emphasis on
"appropriate products". In the use of this latter term, care
should be taken not to imply that consumers in particular countries
should be content with inferior products or forms of the product.
Rather, it is suggested here that the most should be made of com-
parative advantage, selectively, in the choice of domestic produc-
tion of manufactured goods and, related to this, in the choice of
technique.*** Thus it will not make sense to eschew factory
production of cheap leather or plastic shoes with high import
content, or even the import of cheap shoes, in order to protect
laborious production of the hand-made article. This would not
promote the attainment of basic needs. On the other hand the

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*The gross domestic product per capita figures quoted here
cannot be considered very reliable indicators, but the general con-
clusion may nonetheless stand.

**This has to be qualif'   o take account of resource-based
export commodities, as discus   presently.

***The theoretical basis of these arguments is explored at some
length in Stewart [8].

pushing of import-substituting industrialization beyond the limits of a very narrow domestic market, such that factories exhibiting colossal excess capacity have to be subsidized directly or through tariff and import controls, as in Somalia, for instance, should be avoided. The suggestion here is that efforts be made to identify local products which can perform the equivalent function, and thus economize foreign exchange at minimum cost to consumers.

In some cases advertising and sales promotion by expatriate or other large-scale enterprises has influenced tastes in the direction of "Western" products produced by more capital-intensive methods. An example is traditional bread versus the factory-packed English white bread produced in many African countries, particularly for the benefit of urban consumers but now extending into rural areas. Middle Eastern oven-baked flat bread produced by small enterprises, or the Indian chapati, might be more suitable types of product to encourage here, and small enterprises producing such a product should be given assistance at least equivalent to that of the large firm.

Similar considerations may be extended to energy, where charcoal supplies need to be preserved and hydroelectric power may be available.

Maximization of domestic value added together with minimization of transport cost content may be secured in some cases by importing and distributing a basic input. Thus sheet metal may be imported and converted locally into basic items such as water containers, cases or pipes using what scale of production the size of the market can support. Very often internal costs of transport for such items is substantial, and can be reduced by producing them through a dispersed local craft industry. Thus in the United Republic of Tanzania in the early 1970s supply of sheet metal to artisans working under the National Small Industry Corporation promotional scheme proved very successful.*

Production of appropriate goods may more generally be linked to the promotion of small-scale industry and informal sector manufacturing. Advocates of small industry and informal sector development programmes sometimes have romantic notions of their potential, but clearly the two conditions obtaining here (particularly in small landlocked countries), a restricted domestic market and high external transport costs affecting the imported good, together create the situation most favourable to the economics of such production.

While import-substituting factory production generally benefits from substantial protection and priority in foreign exchange allocations, small and rural industry usually obtains no such assistance and suffers chronic problems of access to credit, equipment, materials and means of obtaining import requirements. The nature and scope of the products involved and some of the difficul-

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*Described in Livingstone [9, 10].

ties encountered by their producers are indicated by the following observations of Shula and Maleka based on a recent survey of artisan industry in the Nchelenge district of Zambia:

"Common products by carpenters include boats, wooden doors, window and door frames, chairs, dining and side tables, baby cots, stools, cupboards, bookshelves, wardrobes and so forth. The more prominent carpenters do engage in upholstery work, producing advanced sofas, on orders from well-to-do customers from both inside and outside the district. Here we are talking of items found to cost more than K1,500 a piece .... Products of the two crafts [knitting and sewing] include jerseys, hats, sack bags, shawls, rompers, socks, table-cloths and dresses of various types. These are in high demand in local communities but their production is often hampered by difficulties with input supply to the district .... The district has approximately 40 registered pitsawing groups spread all over from Kabalenge to Chipingu. Of late pit-sawyers have been experiencing a crisis, a limited but growing crisis of insufficient productivity in timber supply industry due to receding stock of suitable species .... Products [from basket/mat-making] are equally in high demand throughout the district. Those involved normally produce baskets of various types, drying mats, side tables, bamboo/reed bowls, sun hats, baby cots, stools, water stands, chairs, fish traps and other items for home decor. And to get the bamboo long journeys to sources are a must" ([11], pp. 42-47).

The references to timber and bamboo indicate that policy for the promotion of such industrial activities should include the conservation and development of natural materials, an area where private and social interests may diverge, requiring intervention.

Two further examples of really quite significant small-scale production activities may be cited from Malawi. An estimate for 1978 indicated that over 15,000 persons (including women and children) were engaged in small-scale brick-making throughout the country, attached to some 400 enterprises producing rather attractive bricks which make rural houses and other buildings in Malawi some of the most attractive and well built in Africa. In 1981 these were producing, by the most simple, labour-intensive methods, some 70 million bricks per annum, compared with only about one million machine-made bricks, the latter accounting for no more than 1.4 per cent of the combined total. Although the hand-made bricks were of lower quality and durability, they cost only 10 to 20 per cent of the machine-made. Even in the urban market 15 to 20 per cent of higher quality bricks are made in the informal sector, and an attempt to promote a machine-based enterprise failed because of competition from the informal industry ([12], p. 50).

Likewise, informal-sector tailoring is a significant employer in Malawi. Although there was a substantial number of persons, some 5,400 in 1977, employed in a modern textile sector, the number engaged in the traditional sector was between 25,000 and 30,000,

about five times as many. An interesting aspect is that David Whitehead's, a large-scale transnational corporation producing cotton fabrics, felt it more advantageous to supply material for purchase by informal sector tailors than to extend its own activities vertically ([12], p. 55). In many African countries, the provision of substantial numbers of sewing machines, new or second-hand, to small-scale entrepreneurs on a hire-purchase basis might have a greater impact and show a higher rate of return than the same amount of capital invested in a single large industrial project.

Small-scale industry in general has the advantages of being dispersed, often local-resource-using and labour-intensive. Moreover, dispersed rural industry can be combined by rural households with agricultural production as supplementary non-farm activities, helping to maintain rural household viability and reduce rural-urban migration. By maintaining a larger proportion of households in the rural areas where they are in a position to provide much of their own food supply, the costs and difficulties of providing for an expanding urban population are reduced. Dispersed small industry reduces internal transport costs where these are especially high because of dispersed populations, underdeveloped roads and low value of goods transported relative to distance, common characteristics in the least developed countries, probably more so in the landlocked ones. This applies particularly to resource-based activities.

Hughes [13] points out that the natural protection given by high transport costs affords opportunities for development of semi-service activities such as baking, dry cleaning, printing and motor repair. In fact most of these do not require much protection and additional protection is redundant. The significant element is where the commodity is expensive, due to high external transport costs, and imported, involving scarce foreign exchange. Where consumers are also poor, it will pay them to prolong the life of the item as far as possible by constant repair rather than to replace it. This applies to items such as motor vehicles, particularly, but also to radios, watches, clothes and shoes, and indeed to any consumer or producer durable, but especially expensive imported items. The greater relative importance of repair activities in developing countries is evident. What is less evident, perhaps, is that entrepreneurs in, for example, motor repair may require some promotion and credit facilities on the same basis as other entrepreneurs.

The type of products mentioned so far reflect two general points. The standard import-substituting industrial strategy pursued by so many countries has been much criticized in part because it provides for a restricted market weighted heavily in favour of a high-income consuming elite. The size of the market in the countries considered here is much smaller still, particularly if based on the very small minority of higher-income consumers within the towns. For this reason, any import-substituting response to high external transport cost should be directed towards goods more widely consumed by low- or average-income consumers, on a selective basis, as already stressed. The production of such

goods may not require other than natural protection, but may
benefit from other specific forms of assistance or promotion,
including training and technological development.

Secondly, the activities promoted must reflect the nature of
the economies concerned and a long-term development perspective
appropriate to their circumstances, particularly the compound of
disadvantages described earlier. Kuznets [14] has stressed the
need "for devising variants of a theory of economic growth for the
many small national units different from those for the few large
ones". More recently Nixson [15] has stressed the specificity of
the processes of growth and change occurring in the developing and
other countries and the need to consider the historical circum-
stances - and presumably geographical and resource endowment - of
each. A general tendency among not only economists but also
policy-makers in the countries concerned is to assume a standard
sequential model in which every country will follow in due course
the same sequence of economic - and industrial - development, on
the way to joining the ranks of the industrialized nations. The
need is rather to assess the individual circumstances and to devise
a set of strategies and policies which will make the most of the
opportunities actually offered, and which can be expected to
produce benefits - and avoid disasters - for the majority of the
people in the short and medium term, as well as the long term.
This points among other things to a basic-needs orientation in
industrial and other development. Many of the products and activi-
ties identified above are consistent with this.

The problem of labour absorption in semi-arid and other ecco-
omies with a weak agricultural base was emphasized above. This is
also reflected in many of the countries under discussion here in
migration and the export of labour to other economies: Somali
labour to the Gulf, labour from Malawi, Botswana, Lesotho and
Swaziland to South Africa, and Burkina Faso labour to the Ivory
Coast. This kind of participation by labour in a regional economy
where the national economy is weak must be accepted, with efforts
to promote the regional economy and discussion on distribution of
benefits and safeguards to labour. Apart from the direct employ-
ment opportunities involved, remittances may be valuable to main-
tain household viability at home and have important multiplier
effects, as in the case, for example, of Somalia [16].

Standard import-substitution strategies do not create much
employment and may be employment-destroying. This may be more so
in the kind of economies discussed here because the limited range
of industrial activities for which import-substituting factory
production can be contemplated may lead to direct competition with
traditional industries already established in these fields. Thus,
for example, Ethiopia's fine traditional cottage cloth-making
industry, which employs more than 10,000 people throughout the
country, having already been replaced by factory production to a
great extent around the capital, is under threat from a decision to
distribute new textile factories around the country as part of
regional development policy. The small-scale, basic-needs manu-
facturing activities discussed earlier - not, it should be stressed

again, to be pursued in isolation but as one component part of
industrial development policy - do have the advantages from the
labour-absorption point of view of being both labour-intensive and
dispersed.

Resource-poor least developed countries are quite likely to
exhibit major rural-urban dichotomies. Somalia, once more, and
Ethiopia are obvious examples. There is a need, therefore, to
assist the interdependence of the two sectors, again for instance
by promoting resource-based industries. Leather goods production
in a livestock economy would be an example.

An important issue is what capital goods production should be
contemplated by economies such as these. If more advanced develop-
ing countries have difficulty in justifying a capital goods indus-
try, the much smaller size of the domestic market of least devel-
oped countries and more severely restricted range of import-
substituting consumer goods industries will produce an even
stronger limitation. However, as Stewart [8] and Pack and
Todaro [17] have argued, capital goods industries in the sense of
machine-making industries rather than large-scale iron and steel
production or a chemical industry may be both essential in develop-
ing countries for ensuring some technical capacity and progress and
also more viable development. In the case of least developed coun-
tries, high external transport costs, limited foreign exchange and
a range of smaller enterprises suggest the possibility of small-
scale machine-making industry (for smaller, custom-built items),
machine assembly and - where lines of communication with the
original machine-makers overseas are extended - machine-repair
activities. Such industry might make parts and spares, including
equipment used in agriculture, livestock industry (e.g., for bore-
holes) or transport, providing a further urban-rural linkage and
some promise of technological development.

The discussion so far has concentrated on manufacturing for
the domestic market, taking into account small market size but also
the element of natural protection afforded by external transport
costs. The possibilities for producing for the export market
should also be considered.

Labour-intensity is an obvious criterion for choice of
export-oriented industry in coastal countries, though the fallacy
of composition involved in suggesting that all such countries could
follow this path has been pointed out. For land-locked countries
the criterion is valid in respect of inward-oriented industry,
certainly, capital equipment being expensive to import, but is
still more problematic for export industry.

The calculations carried out above did not refer specifically
to resource-based industry. In this case, however, some of the
external transport costs of manufacturing value added are already
borne by agricultural or mineral export. Manufacturing in the
form of processing which reduces bulk may in effect carry negative
external transport costs, particularly as the country is likely to
have no alternative to the exports in question, the only issue

being whether these are exported in processed or unprocessed form.
Moreover, a₀ricultural exports, in raw or processed form, may
provide the necessary scale for transport, limiting the effects of
small economic size on transport costs. Apart from the absol⋯ e
advantage of reduced transport costs, resource-based manufactⁱ
will derive a relative advantage as compared with other pos:
manufacturing activity, particularly in land-locked countries wh.
the external transport costs are highest. This is a further
important argument, apart from the obvious benefit of using local
resources, for exploring as fully as possible the possibilities for
resource-based manufacturing. It is significant that such exports
constitute most of the limited manufacturing exports which exist at
present (see table 10).

There may also be scope for resource-based manufacturing
activity by land-locked countries for export to other countries
further inland, such as sugar production in Uganda for export to
Sudan or Burundi. These opportunities also need to be explored.

Small economic size suggests a need for countries in their
search for viable manufacturing export activities to concentrate
and specialize. This has been argued, for instance, by Hughes:

"... [small countries'] opportunities for exploiting internal
and external economies of scale in production (including sales
and marketing) are limited in an absolute sense by the size of
the labour force and the capacity to absorb immigrants, so
that small countries are restricted in specialization options
and must choose their industries carefully to ensure competi-
tiveness and an ensuing build-up of comparative advantage in
specific areas of industrial production" ([13], p. 90).

The emphasis here on the size of the labour force is probably not
justified, except in the case of very small island economies. The
proportion of the labour force engaged in manufacturing is usually
no more than 5-10 per cent, and the supply of labour to the sector
perfectly elastic at a low wage.

It may be sensible to specialize in some specific activities,
however, in order to concentrate the limited amount of savings
available for investment in a small economy, given also the large
number of potential competitors in the queue for exporting to major
world markets. This is illustrated by the data presented in
table 13, which gives economic size and level of investment rela-
tive to the United Kingdom (= 100), both figures being minute in
most cases, even if comparison is made with the smallest European
countries such as Belgium and Finland, or even with Singapore.

There may, secondly, be external economies at the level of the
industry, either in production or in marketing and sales promotion,
which favour specialization. The fact that the developing coun-
tries which have already broken into manufacturing export markets
have done so often in particular lines, initially at least, offers
some evidence of this. Thus Mauritius, for example, has relatively
recently established a niche in the international knitwear indus-
try, but on the basis of a number of separate small firms, all

Table 13. Level of investment in African countries compared with other selected countries

Country	Year to which data applies	Gross domestic product (millions of dollars)	Gross domestic product per capita (dollars)	Index of gross domestic product (United Kingdom = 100)	Investment (gross fixed capital formation plus increase in stocks) Year a/	Percentage of gross domestic product	Millions of dollars (estimate)	Index of investment (United Kingdom = 100)
Selected countries								
Belgium	1982	86 229	8 754	79.5		17	14 659	20.4
Finland	1982	49 168	10 201	10.3		24	11 800	16.4
France	1982	540 124	11 015	112.9		22	118 827	165.5
India	1982	173 883	242	36.3		25	43 471	60.6
Mauritius	1982	1 078	1 135	0.2		18	194	0.3
Singapore	1982	14 928	6 044	3.1		45	6 718	9.4
United Kingdom	1982	478 588	8 495	100		15	71 788	100
African countries								
Benin	1979	910	272	0.2	1978	17	155	0.2
Botswana	1980	981	1 087	0.2		46	451	0.6
Burkino Faso	1979	1 209	200	0.3		18	218	0.3
Burundi	1980	889	216	0.2		14	124	0.2
Congo	1981	1 994	1 270	0.4		48	957	1.3
Côte d'Ivoire	1981	8 519	996	1.8		25	2 130	3.0
Ghana	1979	3 656	339	0.8	1978	5	183	0.3
Kenya	1982	6 264	344	1.3		22	1 378	1.9
Lesotho	1982	352	250	0.1		37	130	0.2
Liberia	1982	834	419	0.2		21	175	0.2
Malawi	1982	1 334	213	0.3		20	267	0.4
Nigeria	1982	71 044	825	14.8		30	21 313	29.7
Rwanda	1980	1 163	230	0.2		8	93	0.1
Sierra Leone	1980	1 231	373	0.3		19	234	0.3
United Republic of Tanzania	1982	5 127	253	1.1		20	1 025	1.3
Zaire	1979	6 423	233	1.3	1977	37	2 377	3.3

Source: National Accounts Statistics: Analysis of Main Aggregates, 1982 (United Nations publication, Sales No. E.85.XVII.4), tables 1 and 3.

a/ If different from year to which data applies.

engaged in the same line of production, suggesting economies
external to the firm but internal to the industry. Unfortunately
it is not possible to be more specific than this because of the
general lack of empirical investigation specifically of industry-
level externalities.

In some cases a Janus industry would provide the basis for the
externalities. Experience in production and in product design and
development may provide the basis for exports and suggests an
obvious advantage in concentrating on lines already successfully
developed. However, the smaller the country the less likely it is
to be able to establish an initial industry based on the home
market.

Externalities may arise from product differentiation in the
export market and the need to establish credibility for a
Mauritian, Malawian or Burundian product, as well as from imper-
fections in marketing, input availability or bank credit and
government assistance. The need to keep up with changing fashions
and to be aware of detailed market demand is clearly a major
handicap for developing countries trying to establish a foothold in
foreign markets, and this suggests that there would be advantages
in specializing in certain product lines.

In some markets it may be necessary to secure specific market
quotas on a national basis, as in the case of Mauritian knitwear,
and this will concentrate opportunity for new firms within the
quota areas. Attention might be given internationally to offering
favourable initial quotas to allow a degree of participation by
small countries with promising but as yet unestablished new lines.

F. Conclusions

1. This paper focuses on the implications of two particular
aspects of the category known as least developed countries, namely
small economic size, as measured by population or more accurately
by aggregate gross domestic product, affecting the size of the
domestic market, and high external transport costs, affecting
access to export markets but also affording a degree of natural
protection.

2. The interdependence between the two, that is, the effect of
small economic size on external transport cost, was investigated by
examining United States import data for different categories of
country for 26 representative commodities and directly by obtaining
quotations from shippers for shipment from the United Kingdom to
Africa for four representative commodities.

3. Freight factors calculated by McFarland from the same United
States import data vary according to level of economic development
and are particularly high for the least developed countries.

4. Although these were calculated separately for different cate-
gories of product, any calculation based on goods actually trad- !

is biased to the extent that the goods traded will be those with relatively favourable freight factors, for example, with high value to bulk.

5. The data for the 26 representative commodities do not suggest that small economic size necessarily produces a high freight factor. For instance, the freight factor is lower for small Central American countries with low success in exporting manufactures to the United States market than for the South-East Asian selected developing countries and areas with a good record of success.

6. Despite the application of a correction factor to reduce bias, however, this data remains biased by dependence on cost data relating to goods actually exported, including high-valued products such as coffee with proportionately very low freight factors.

7. This points to the need for direct valuations of transport cost as provided here for four representative commodities with varying value-to-bulk ratios.

8. A major limitation of the data presented is that it uses quotations for shipment from a representative point in Europe (Birmingham) to varying destinations in Africa as an indication of costs from these destinations to Europe. This may be defended in part by the likelihood that relative transport costs for different kinds of manufactured goods would remain substantially the same in the reverse direction and also by the fact that, while it may be possible to take advantage of cheap backhaul, the appropriate costs would be those which approximate the rates that would prevail if trade showed a balanced and regular pattern.

9. Once again the data, restricted, it should be said, to direct costs of transport, do not suggest that economic size itself produces high external transport costs, countries of different economic size in terms of gross domestic product and volume of exports having similar and sometimes identical costs.

10. Part of the reason for this appears to be shared shipping lines, for instance along the West African coast, where ships call at successive ports independently of coastal country size, and perhaps a degree of bureaucratic averaging of shipping charges by liner companies.

11. The far bigger differences in shipping costs are between coastal and land-locked countries and between goods of differing ratios of value to bulk, tending to dwarf other factors.

12. These direct cost estimates do show relatively high freight factors even for coastal countries, however, compared with, for example, the figures provided by McFarland for actual Europe-United States trade, that is, between developed countries.

13. These direct costs will underestimate the full costs of shipment to small countries off the main shipping routes and especially

to land-locked countries as a result of delays, losses, uncertainties and other factors. These could seriously affect the capacity to export.

14. The freight factors should be increased to take account of import content, in the form of capital equipment as well as materials and components. Illustrative calculations show that this increases the freight factor significantly.

15. Further illustrative calculations show that freight factors of the orders of magnitude calculated would require substantial reductions in wage levels in the exporting countries if competitiveness is to be maintained through reductions in the wage bill.

16. Because capital is mobile, transport costs and difference in economic size will always favour location of industry in coastal over land-locked countries. Land-locked countries may be at the end of a long queue from the point of view of internationally foot-loose industry.

17. The least developed countries constitute a subgroup of countries suffering from compounded disadvantages of domestic market, high external transport costs, a poor resource base including a weak agricultural economy, producing a problem of labour absorption, and various vicious-circle effects. As a group these exhibited relatively weak growth performance during the 1970s and can expect to fall further behind even other developing countries in respect of the share of manufacturing value added in gross domestic product and of gross domestic product per capita.

18. On the export side, the high freight factors revealed point to the need to concentrate on high value-to-bulk products, and on the domestic side, to low value-to-bulk products.

19. In respect of the latter, there should also be maximization of local content. This would be in line with comparative advantage.

20. This may be related to an emphasis on appropriate products, which use local content, applied on a selective basis to avoid conflict with economies of scale. Such an emphasis would be in line with existing observed responses to comparative advantage.

21. Local energy sources, equally, need to be developed.

22. Maximization of domestic value added and minimization of transport cost content may be secured in some cases by importing and distributing a basic input for local fabrication.

23. Production of appropriate goods car be linked to the promotion of small industry and informal sector manufacturing, which are made more economic by the combination of a restricted domestic market and high external transport costs. Such industry is capable of producing a wide range of the basic consumer goods consumed by the population.

24. The promotion of such activity should include the conservation and development of natural materials.

25. Dispersed rural industry can be combined by rural households with agricultural production as supplementary non-farm activities, helping to maintain rural household viability and reduce rural-urban migration. It also reduces the internal transport costs content of goods consumed, often also high in the least developed countries under consideration.

26. A conventional import-substitution strategy biased towards the consumer goods consumed by the higher income groups is less viable in countries with even smaller domestic markets. Hence any import-substituting response should be directed towards consumers with low or average incomes.

27. Development strategy as a whole and for manufacturing specifically should be devised in the light of the individual circumstances of each country and the need to make the most of the opportunities actually offered.

28. This points among other things to a basic-needs orientation in industrial and other development.

29. The kind of activities suggested under the preceding criteria would also be favourable to labour absorption compared with conventional import substitution.

30. Participation by migrant labour in a developing regional economy will need to be accepted where the national economy is weak, with discussion on distribution of benefits (including freedom to remit foreign exchange) and safeguards to labour.

31. There is a need to promote the interdependence of urban and rural sectors in the economy, for instance by encouraging resource-based industries.

32. High external transport costs, limited foreign exchange and a range of smaller enterprises point to the need for a capital goods industry in the form of small-scale machine-making industry for smaller, often custom-built items, machine assembly and machine-repair activities, as well as making parts and spares, including equipment used in agriculture, the livestock industry and transport.

33. Labour-intensity is an obvious criterion for choice of export-oriented industry in coastal countries, but expectation of general development here may be subject to a fallacy of composition, limiting the aggregate volume of output which can be established in developing countries.

34. For land-locked countries especially, the labour-intensity criterion will be valid for inward-oriented industry.

35. Manufacturing in the form of processing which reduces bulk may in effect carry negative external transport costs if the country

has no alternative to the exports, processed or unprocessed, in question.

36. This will reduce not only the absolute transport costs for value added in resource-based manufacturing, but also cost relative to alternative manufacturing activity, especially in land-locked countries.

37. This provides a further strong argument for a resource-based industrial development strategy.

38. There may also be scope for resource-based manufacturing activity by the land-locked countries for export to other countries still further inland.

39. Small economic size suggests a need in respect of export manufacturing for specialization. This may be justified, not on the basis of the size of the labour force, except in the case of very small islands, but by the need to concentrate the limited amount of savings available for investment and by the existence of industry-level external economies in production and marketing. The fact that many countries have made their initial breakthrough into export markets in just one or two industries suggests the existence of industry-level externalities.

Annex

FREIGHT FACTORS AND ESTIMATED TOTAL DISTRIBUTION COSTS
FOR SELECTED REPRESENTATIVE COMMODITIES

Products selected for calculation of freight factors

1. Fish, filleted
2. Shrimps, peeled
3. Cane or beet sugar etc.
4. Cocoa beans
5. Coffee, crude
6. Tea
7. Lumber, hardwood, rough, n.e.s.
8. Hardwood veneers, n.e.s.
9. Men's and boys' cotton knit shirts
10. Men's cotton sports shirts
11. Men's sweaters, wool-knit
12. Women's cotton dresses
13. Women's other wool-knit sweaters over $5
14. Women's man-made fibre blouses and skirts
15. Natural rubber, dry form
16. Screwdrivers
17. Hand tools
18. Aluminium cookware ex cast
19. Digital clock radios
20. Electrical switches
21. Transistors
22. Footwear, leather uppers, for men
23. Footwear, leather, crepe soles for women
24. Handbags or pocket books, women and girls
25. Luggage, bags and cases, leather, except reptile
26. Furniture of wood

Table 14. Freight factors in United States imports, 1980,
calculated for regional groupings based on
26 representative commodities

Regional groupings	Freight factor (percentage excess of c.i.f. over f.o.b.)	Mean of ratios of country freight factor for product to factor for the product as a whole	
Countries adjacent to the United States	0.2	0.185	
Canada	0.1	0.032	Wooden furniture
Mexico	0.2	0.347	Coffee, crude, peeled shrimp
Large European countries and Japan	5.8	0.975	
Denmark	9.1	..	Wooden furniture
France	4.1	0.757	Coffee, crude
Germany, Federal Republic of	3.8	0.751	Coffee, crude
Italy	5.4	1.058	Footwear, leather, for women
Japan	3.7	0.969	
Netherlands	6.0	0.742	
Poland	7.6	1.663	
Portugal	6.7	1.400	
Spain	5.7	1.236	Footwear, leather, for women
Sweden	6.7	1.069	
United Kingdom	11.2	0.930	
Land-locked European countries	6.6	1.003	
Austria	9.1	1.120	
Hungary	7.9	1.590	
Switzerland	3.6	0.710	
European and Mediterranean islands	8.4	1.131	
Cyprus	9.2	1.251	
Iceland	7.8	1.026	
Malta	6.4	1.310	
Large Latin American countries	5.0	1.251	
Argentina	7.0	1.538	Sugar
Brazil	5.6	1.363	Coffee, footwear for women, sugar, cocoa beans
Chile	15.3	1.556	
Colombia	3.6	0.864	Coffee
Ecuador	4.4	1.069	Coffee, sugar
Peru	5.6	1.301	
Uruguay	9.7	1.255	

Table 14 (continued)

Regional groupings	Freight factor (percentage excess of c.i.f. over f.o.b.)	Mean of ratios of country freight factor for product to factor for the product as a whole	
Land-locked Latin American countries			
Paraguay	4.7	0.958	
Small Central American and Caribbean countries	**4.5**	**6.938**	
Bahamas	5.3	0.515	
Costa Rica	5.1	0.999	Coffee, sugar
Dominican Republic	4.8	0.774	Sugar, coffee, cocoa beans
Guatemala	4.2	0.863	Coffee, sugar
Guyana	4.4	0.853	
Haiti	4.4	0.942	
Honduras	1.4	0.915	Coffee, sugar
Jamaica	9.1	1.219	Sugar
Nicaragua	4.7	0.758	Coffee, sugar
Panama	5.7	1.024	Sugar
Salvador	4.6	0.944	Coffee
Trinidad	7.6	1.624	
East Asian selected developing countries and areas	**7.3**	**1.145**	
China (Taiwan Province)	8.7	1.021	
Hong Kong	6.0	1.062	
Indonesia	8.0	1.539	Rubber, coffee
Malaysia	6.6	1.081	Rubber
Philippines	7.9	1.334	Sugar
Republic of Korea	5.5	1.019	
Singapore	5.9	1.084	Natural rubber
Thailand	7.4	1.134	Rubber, sugar
Low-income Asian countries	**9.7**	**1.667**	
Bangladesh	16.2	1.391	
China	11.9	1.335	
India	8.2	1.906	Peeled shrimp
Pakistan	13.9	2.160	
Papua New Guinea	4.9	1.101	
Sri Lanka	13.0	1.561	
Australia, New Zealand, South Africa	**7.3**	**1.445**	
Australia	7.0	1.273	Sugar
New Zealand	13.9	1.401	
South Africa	7.5	1.612	Sugar

Table 14 (continued)

Regional groupings	Freight factor (percentage excess of c.i.f. over f.o.b.)	Mean of ratios of country freight factor for product to factor for the product as a whole	
Large African countries	5.9	1.237	
Kenya	10.3	1.143	
Nigeria	4.0	1.621	Cocoa beans
Zaire	5.6	1.043	
Small African countries, not land-locked	6.0	1.338	
Cameroon	5.5	1.189	
Congo	17.8	2.479	
Côte d'Ivoire	5.1	1.269	Cocoa beans
Ethiopia	4.9	1.260	
Ghana	4.4	1.012	Cocoa beans
Guinea	2.5	0.641	
Liberia	7.4	1.159	
Mauritius	11.5	1.894	Sugar
Mozambique	7.8	0.932	Sugar
Senegal	5.5	1.157	
Sierra Leone	5.5	1.593	
United Republic of Tanzania	5.9	1.170	
Small African countries, land-locked	5.3	1.137	
Burundi	5.1	1.288	
Malawi	10.2	1.039	
Swaziland	5.9	0.950	Sugar
Uganda	4.5	1.140	
Zimbabwe	..	1.367	

Table 15. Estimated total distribution costs for one freight tonne of cargo

A. Birmingham – Dar-es-Salaam-Moshi/Mwanza/Mbeya

Item	Enamelware (pounds sterling)	Enamelware (per-centage)	Leather footwear (pounds sterling)	Leather footwear (per-centage)	Cotton clothing (pounds sterling)	Cotton clothing (per-centage)	Machinery (pounds sterling)	Machinery (per-centage)
Primary packed, ex works Birmingham	1 150	100	2 430	100	3 000	100	4 500	100
Packing into strong wooden crates	69		69		69		69	
Collection and delivery to Liverpool	24.60		24.60		24.60		24.60	
Port charges	20		20		20		20	
f.o.b. Liverpool	1 263.60	109.9	2 543.60	104.7	3 113.60	103.8	4 613.60	102.5
Ocean freight, net of currency/ bunker adjustment factors, including loading	96.16	8.4	128.24	5.3	83.36	2.8	15.42	2.6
Cost and freight Dar-es-Salaam	1 359.79		2 671.84		3 196.96		4 729.02	
Wharfage (1.5 per cent) of c.i.f. Dar-es-Salaam	20.62	3.6	40.50	2.5	48.48	2.3	71.72	2.1
Port costs	11		11		11		11	
Delivery to store, Dar-es-Salaam	10		10		10		10	

Insurance (0.7775 per cent)	11.99	1.0	23.38	1.0	27.94	0.9	41.24	0.9
c.i.f. Dar-es-Salaam store	1 413.40	122.9	2 756.74	113.4	3 294.38	109.8	4 862.98	108.0
Transport to Moshi	41.40		41.40		41.40		41.40	
Delivery to store Moshi	5	4.1	5	1.9	5	1.6	5	1.0
Additional insurance to Moshi	0.40		0.40		0.40		0.40	
c.i.f. Moshi store	1 460.20	127.0	2 803.54	115.4	3 341.18	111.4	4 909.78	109.1
Transport to Mwanza	61.83		61.83		61.83		61.83	
Delivery to store, Mwanza	5	5.9	5	2.8	5	2.2	5	1.5
Additional insurance to Mwanza	0.57		0.57		0.57		0.57	
c.i.f. Mwanza store	1 480.80	128.8	2 824.14	116.2	3 361.78	112.1	4 930.38	110.0
Transport to Mbeya	99		99		99		99	
Delivery store, Mbeya	5	9.1	5	4.3	5	3.5	5	2.3
Additional insurance to Mbeya	0.89		0.89		0.89		0.89	
c.i.f. Mbeya store	1 518.29	132.0	2 861.63	117.8	3 399.27	113.3	4 967.87	110.4

Table 15 (continued)

B. Birmingham - Banjul

Item	Enamelware (pounds sterling)	(percentage)	Leather footwear (pounds sterling)	(percentage)	Cotton clothing (pounds sterling)	(percentage)	Machinery (pounds sterling)	(percentage)
Primary packed, ex works	1 150	100	2 430	100	3 000	100	4 500	100
Packing into strong wooden crates	69		69		69		69	
Collection and delivery to Liverpool	24.60		24.60		24.60		24.60	
Port charges	20		20		20		20	
f.o.b. Liverpool	1 263.60	109.9	2 543.60	104.7	3 113.60	103.8	4 613.60	102.5
Ocean freight, net of currency/ bunker adjustment factors, including loading	66.80	5.8	87.59	3.6	87.59	2.9	81.65	1.8
Cost and freight Banjul	1 330.40		2 631.19		3 201.19		4 695.25	
Landing costs a/	3.63		3.63		3.63		3.63	
Wharfage b/	20	2.9	20	1.4	20	1.1	20	0.7
Oncarriage to Banjul store b/	10		10		10		10	
Insurance (1.2775 per cent)	19.17	1.7	37.45	1.5	45.46	1.5	66.45	1.5
c.i.f. Banjul	1 383.20	120.3	2 702.27	111.2	3 280.28	109.3	4 795.33	106.6

a/ Could be included in cost and freight Banjul, but here listed alongside, including wharfage etc.

b/ Estimated.

Item	Enamelware (pounds sterling)	(per-centage)	Leather footwear (pounds sterling)	(per-centage)	Cotton clothing (pounds sterling)	(per-centage)	Machinery (pounds sterling)	(per-centage)
Primary packed, ex works	1 150	100	2 430	100	3 000	100	4 500	100
Packing into strong wooden crates	69		69		69		69	
Collection and delivery to Liverpool	24.60		24.60		24.60		24.60	
Port charges	20		20		20		20	
f.o.b. Liverpool	1 263.60	109.9	2 543.60	104.7	3 113.60	103.8	4 613.60	102.5
Ocean freight, net of currency/ bunker adjustment factors, including loading	84.56	7.4	97.74	4.0	105.34	3.5	97.74	2.2
Handling costs	1.10		1.10		1.10		1.10	
Cost and freight Tema	1 349.26		2 642.44		3 200.04		4 712.44	
Wharfage	..		..		..		..	
Clearance/on-carriage to Accra store	78	6.8	78	3.2	78	3.2	78	1.7
Cost of freight Accra	1 427.26		2 720.44		3 278.04		4 790.44	
Insurance (1.25 per cent)	19.62	1.7	37.41	1.5	45.07	1.5	65.87	1.5
c.i.f. Accra store	1 446.88	125.8	2 757.85	113.5	3 323.11	110.8	4 856.31	107.9

Table 15 (<u>continued</u>)   D. Birmingham - Lagos

Item	Enamelware (pounds sterling)	(per-centage)	Leather footwear (pounds sterling)	(per-centage)	Cotton clothing (pounds sterling)	(per-centage)	Machinery (pounds sterling)	(per-centage)
Primary packed, ex works	1 150	100	2 430	100	3 000	100	4 500	100
Packing into strong wooden crates	69		69		69		69	
Collection and delivery to Liverpool	24.60		24.60		24.60		24.60	
Port charges	20		20		20		20	
f.o.b. Liverpool	1 263.60	109.9	2 543.60	104.7	3 113.60	103.8	4 613.60	102.5
Ocean freight, net of currency/ bunker adjustment factors, including loading	75.50	0.6	96.00	4.0	96.00	3.2	87.59	1.9
Landing costs	25		25		25		25	
Cost and freight Lagos port	1 364.10	4.3	2 664.60	2.1	3 234.60	1.7	4 726.19	1.1
Clearance/on-carriage to Lagos store (estimated)	25		25		25		25	
Insurance (1.2775 per cent)	19.52	1.7	37.80	1.6	45.81	1.5	66.77	1.5
c.i.f. Lagos store	1 408.62	122.5	2 727.40	112.2	3 305.41	110.2	4 817.96	107.1

E. Birmingham - Ouagadougou via Abidjan

Item	Enamelware (pounds sterling)	(per-centage)	Leather footwear (pounds sterling)	(per-centage)	Cotton clothing (pounds sterling)	(per-centage)	Machinery (pounds sterling)	(per-centage)
Primary packed, ex works	1 150	100	2 430	100	3 000	100	4 500	100
Packing into strong wooden crates	69		69		69		69	
Collection and delivery to Liverpool	24.60		24.60		24.60		24.60	
Port charges	20		20		20		20	
f.o.b. Liverpool	1 263.60	109.9	2 543.60	104.7	3 113.60	103.8	4 613.60	102.5
Ocean freight, net of currency/ bunker adjustment factors, including loading	111.17	9.7	111.17	4.6	111.17	3.7	111.17	2.5
Cost and freight Abidjan	1 374.77		2 654.77		3 224.77		4 724.77	
Landing costs (estimated)	20		20		20		20	
Insurance to Abidjan (1.2775 per cent)	19.60		37.59		45.60		66.68	
c.i.f. Abidjan	1 414.37	123.0	2 712.36	111.6	3 290.37	109.7	4 811.45	106.9
Remaining clearance and oncarriage to Ouagadougou store	146.75		146.75		146.75		146.75	
Additional insurance to Ouagadougou (1.2775 per cent)	2.06	12.9	2.06	6.1	2.06	5.0	2.06	3.3
c.i.f. Ouagadougou store	1 563.18	135.9	2 861.17	117.7	3 439.18	114.6	4 960.26	110.2
Total insurance	21.66	1.9	39.65	1.6	47.66	1.6	68.74	1.5

Table 15 (continued)   F.   Birmingham – Bujumbura via Mombasa

Item	Enamelware (pounds sterling)	Enamelware (per-centage)	Leather footwear (pounds sterling)	Leather footwear (per-centage)	Cotton clothing (pounds sterling)	Cotton clothing (per-centage)	Machinery (pounds sterling)	Machinery (per-centage)
Primary packed, ex works	1 150	100	2 430	100	3 000	100	4 500	100
Packing into strong wooden crates	69		69		69		69	
Collection and delivery to Liverpool	24.60		24.60		24.60		24.60	
Port charges	20		20		20		20	
f.o.b. Liverpool	1 263.60	109.9	2 543.60	104.7	3 113.60	103.8	4 613.60	102.5
Ocean freight, net of currency/ bunker adjustment factors, including loading	96.19	8.4	128.24	5.3	83.36	2.8	115.42	2.6
Total	1 359.79		2 671.84		3 196.96		4 729.03	
Wharfage (2.6 per cent of c.i.f. Mombasa)	35.74	4.1	70.23	3.3	84.04	3.2	124.31	3.0
Port costs	11		11		11		11	
Cost and freight Mombasa	1 406.53		2 753.07		3 292.00		4 864.34	
Insurance to Mombasa (1.275 per cent)	19.73		38.61		46.17		68.22	
c.i.f. Mombasa	1 426.26	124.0	2 791.68	114.9	3 338.17	111.3	4 932.56	109.6
Additional clearance and on-carriage to Bujumbura store	187.40	16.3	187.40	7.7	187.40	6.2	187.40	4.2
Additional insurance to Bujumbura (1.275 per cent)	2.63		2.63		2.63		2.63	
c.i.f. Bujumbura store	1 616.29	140.5	2 981.71	122.7	3 528.20	117.6	5 122.59	113.8
Total insurance	22.36	1.9	41.24	1.7	48.80	1.6	70.85	1.6

G. Birmingham - Blantyre via Durban

Item	Enamelware (pounds sterling)	(per-centage)	Leather footwear (pounds sterling)	(per-centage)	Cotton clothing (pounds sterling)	(per-centage)	Machinery (pounds sterling)	(per-centage)
Primary packed, ex works	1 150	100	2 430	100	3 000	100	4 500	100
Packing into strong wooden crates	69		69		69		69	
Collection and delivery to Liverpool	24.60		24.60		24.60		24.60	
Port charges	20		20		20		20	
f.o.b. Liverpool	1 263.60	109.9	2 543.60	104.7	3 113.60	103.8	4 613.60	102.5
Ocean freight, net of currency/ bunker adjustment factors, including loading	122.86	10.7	104.29	4.3	82.86	2.8	89.29	2.0
Cost and freight Durban	1 386.46		2 647.89		3 196.46		4 702.89	
Wharfage (1.8 per cent of f.o.b. value)	22.74		45.78		56.04		83.04	
Insurance to Durban (1.0275 per cent)	15.93		30.45		36.76		54.09	
c.i.f. Durban	1 425.13	123.9	2 724.12	112.1	3 289.26	109.6	4 853.05	107.8
Clearance and on-carriage to Blantyre store	101	8.9	124	5.2	154	5.2	145	3.3
Additional insur-ance to Blantyre (1.0275 per cent)	1.14		1.40		1.74		1.64	
c.i.f. Blantyre store	1 527.27	132.8	2 849.52	117.3	3 445.00	114.8	4 986.66	110.8
Total insurance	17.07	1.5	31.85	1.3	38.50	1.3	55.73	1.2

Table 15 (continued)

Notes: 1. Percentages are of ex works values.

2. The data are based on quotations made by shippers to Crown Agents and may be somewhat more favourable than general market rates for reasons of goodwill, but not significantly.

3. Freight costs are volatile due to the competitive nature of cargo movement to East and West Africa and fluctuations in fuel costs, currency values or sudden government-imposed changes in port charges. These quotations were obtained in November 1985.

4. Items included among the charges and their description vary between shippers and between destinations, and the overall quotation to destination is more reliable than its component parts.

5. Wharfage is a particularly loose term and can include other costs (agency, indirect taxes etc.). It may also be included in clearance costs and not consequently shown as a percentage of the value of the goods (as for Ghana). It may be charged either on the f.o.b. value (as for Malawi) or c.i.f. port of discharge value (as for the United Republic of Tanzania). In the United Republic of Tanzania a nominal insurance rate of 0.5 - 1 per cent is calculated before estimating wharfage.

The usual calculation is to take the cost plus freight value, raised by 10 per cent, before calculating insurance at, for example, 1 per cent, adding this to the cost and freight value to obtain a c.i.f. value to which a 1.5 per cent wharfage may be applied. The insurance element here is unrelated to the actual marine insurance payable on the goods.

6. Marine insurances rates are governed by market conditions, nature of cargo, destination, special risks involved, the insurance claims record of the assured, type of cover required and method of shipment, and may vary from those obtained in these quotations.

7. Rates differ as between containerized, as quoted here, and non-containerized cargo. Small and remote countries are quite likely to have a higher proportion of non-containerized export and import cargo.

8. It is assumed throughout that a full containerized freight tonne is shipped, except in the case of transport between Dar-es-Salaam and internal destinations of the United Republic of Tanzania, where transport charges for minimum shipments of 30 tonnes have been increased by 50 per cent to allow for smaller consignments.

9. There are differences in rates between conference line shippers used here and more competitive non-conference agents.

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THE ECONOMIC IMPACT OF THE TOURIST INDUSTRY IN THE UNITED REPUBLIC OF TANZANIA: AN INPUT-OUTPUT ANALYSIS

Steve Curry*

International tourism expanded rapidly in the late 1960s and early 1970s and continues to expand under current less favourable economic circumstances. For some developing countries, especially small island countries, tourism provides one of the few forms of industrial development available, centred around new wage jobs in the hotel industry. For other countries, tourism provides an alternative to traditional export products, one that involves the expansion of the wage labour force in city or specifically tourist areas. Internationally, tourism has acquired the characteristics of other major industrial sectors with a strong involvement of transnational corporations and a dependence on the market choices of households and businesses in developed countries [1]. The growth of international tourism to developing countries requires that an assessment of its impact is developed both methodologically and in practice [2, 3].

International tourism to the United Republic of Tanzania grew in the early 1970s as a result of an hotel expansion programme. In the major holiday tourism area, the Northern Wildlife Area, this growth was brought to a halt in 1977 when the border with Kenya was closed.** In this paper, an attempt will be made to estimate the economic impact of tourism on the economy for the year 1976, the last year of full operation before the border closure. Such an estimate will indicate the extent to which the priority given to tourism at the turn of the 1970s was justified in establishing a new sector of foreign exchange and income generation. In addition, a previous paper using information for the same year identified differences in the operating performance of hotels catering to business and holiday tourists respectively [4]. Business hotels were found

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**By the distribution of hotel bednights, international tourism to the United Republic of Tanzania consisted of approximately 50 per cent town tourism principally in the capital city, Dar-es-Salaam, 30 per cent wildlife-viewing tourism in the Northern Wildlife Area and 20 per cent holiday tourism in beach and other wildlife areas.

to generate more employment and value added than, and as much
foreign exchange as, holiday hotels, but at greater unit material
costs. Estimates of the economic impact of different types of
tourist have been made here to see if the total expenditure effect,
including out-of-hotel expenditures, of different types of tourist
compensate for differences in these relative hotel performances.

A. Methodology

Common measures of impact adopted for the tourism sector have
been those of output and income multipliers. The multiplier meth-
odology may be appropriate to international tourism as it involves
exogenous expenditure in the national economy. The multipliers
have been constructed for both developed and developing countries,
although paradoxically they are more commonly applied in developing
countries where the effect is weaker. However, multiplier values
are rarely transferable between countries, depending as they do on
the prevalent economic conditions and on the specific method of
calculation that is used.

Different approaches to the measurement of multiplier values
for tourism have been used. Early attempts at aggregate multiplier
values [5, 6] met with justified criticism on methodological
grounds [7]. The specific requirements of tourism - food, drink,
transport and fuel, entertainment - were unlikely to conform to the
economy-average propensity to save or import, and might experience
specific supply limitations given the importance of food and fuel
within the economy as a whole. In conjunction with the improved
availability of statistics, a preference has emerged for the calcu-
lation of disaggregated multipliers using input-output analysis.

Several applications of disaggregated multipliers have been
made. Some have been restricted to the direct and indirect
requirements to meet tourism demand [8]; some have included the
induced effects of consumption out of additional household
incomes [9, 10, 11]; some have included the induced effects of re-
spent tax revenues and re-spent profit incomes as well [12]. This
diversity of approach, while making comparisons difficult, has
resulted from an adjustment of methodology to the circumstances
prevailing in specific countries at specific times. These applica-
tions share a common assumption that the additional demands within
the economy can be met from existing productive capacity without a
disproportionate increase in imports. It has been pointed out that
resources related to tourism demands may have alternative uses that
are foregone [13], and that tourism demand may give rise to extra
consumption within the economy that may not be as highly valued as
extra savings. Recognition of these additional costs related to
meeting tourist demands can be made through a revaluation of
resources at opportunity cost prices. The present methodology
involves three stages, depending on the assumptions made about the
conditions under which the impact of tourism took place. In the
first stage, a basic input-output model of the economy of the

United Republic of Tanzania is applied to estimate the direct and indirect impact of tourist expenditure. In its assumptions, this basic model is considered to be the closest to the actual impact of tourist expenditure.

Given a matrix A of direct input coefficients showing the purchase of inputs between sectors in the economy per unit of output, and given a vector Y of final demand expenditures by tourists, the vector of total outputs required to sustain such demand is calculated by

$$X = (I - A)^{-1} \cdot Y \tag{1}$$

This standard input-output expression involves the assumptions that each sector produces a single product, that input coefficients are fixed regardless of scale of production or prices, and that there are no external effects of one sector on another. Given also a matrix C of primary input coefficients showing the use of primary inputs per unit of output for each sector, it is also possible to compute

$$L = C \cdot X \tag{2}$$

where L is a vector of total primary input requirements needed to sustain the same final demands. This further step requires the assumptions that primary input coefficients are fixed, and that there is no substitution between imported and locally produced goods (as intermediate imports constitute the first primary input).

The impact of tourist expenditure as measured through these expressions has been summarized in three indicators. The total output effect records the total output in the economy required to sustain a unit level of tourist final demand:

$$\text{Total output effect} = \frac{\text{Total output}}{\text{Tourist final demand}}$$

The multiplier effect records the incomes generated directly and indirectly in the economy as a result of a unit of tourist final demand:

$$\text{Multiplier effect} = \frac{\text{Total direct and indirect incomes}}{\text{Tourist final demand}}$$

The multiplier coefficient records the extent to which direct and indirect incomes occur outside the tourist subsectors themselves:

$$\text{Multiplier coefficient effect} = \frac{\text{Total direct and indirect incomes}}{\text{Direct incomes in tourist subsectors}}$$

As well as calculating these indicators for tourism as a whole, they have been used to compare the economic impact of different types of tourist.*

In the second stage of the methodology, an adjustment is made for the opportunity costs associated with the commitment of primary inputs, directly and indirectly, to tourism production. The multiplier methodology of the first stage assumes that tourist expenditure brings into productive use resources previously unutilized. However, these resources may have alternative productive uses which are foregone (opportunity costs) when they are committed to tourism.

In principle, it would be necessary to trace through the resource use as a result of tourist expenditure, revaluing these resources at their opportunity cost values. A cruder but simpler method has been adopted. Having obtained the vector L of primary input requirements, a shadow price has been applied to each category of primary inputs representing the opportunity cost to the economy as a whole.** The net impact of tourist expenditure is the difference between the total incomes created directly and indirectly as measured at market prices and the sum of primary inputs measured at their opportunity costs. The impact indicators have been recalculated as the total output effect, the net resource

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*Tourist final demand also involves direct purchase of imports and direct creation of value added in in-bord shops, which are referred to as direct imports (DI) and direct value added (DVA) respectively. Using notation appropriate to the text, the indicators are as follows:

$$\text{Total output effect} = \frac{\sum_{j=1}^{n} x_j}{\sum_{j=1}^{n} y_j + DI + DVA} \quad \text{(where n is the number of sectors)}$$

$$\text{Multiplier} = \frac{\sum_{i=2}^{m} L_i + DVA}{\sum_j y_j + DVA + DI} \quad \text{(where m is the number of primary input categories)}$$

$$\text{Multiplier coefficient} = \frac{\sum_{i=2}^{m} L_i + DVA}{\sum_{j=1}^{n} \sum_{i=2} C_{ij} \cdot y_j + DVA}$$

**The opportunity cost values used have been derived from Hughes [14]. They are:

Imports	1.0
Taxes less subsidies	0.0
Wages and salaries	0.762
Depreciation	0.877
Operating surplus	0.419
Direct value added	0.514

multiplier effect and the net resource multiplier coefficient
effect. In this stage, another indicator that records the domestic
resource cost of foreign exchange earnings from tourism has been
added:*

$$\text{Domestic resource cost} = \frac{\text{Total resource use at opportunity cost}}{\text{Net foreign exchange effect of tourist final demand}}$$

In the third stage of the methodology, allowance is made for
the induced effect of consumption out of extra household incomes
derived from exogenous tourism expenditures. These direct, indirect
and induced effects are calculated at market not opportunity cost
prices. The calculations require that the A matrix of direct input
coefficients be augmented by a row showing the wage and household
income payments per unit of output, and a column showing the
structure of consumption per unit of household consumption. The
indicators of tourist expenditure impact have been adjusted to
include the output of this additional sector in the total direct,
indirect and induced incomes.** The approach used here to

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*The expressions of the second footnote all have to be amended
at this stage by multiplying value-added elements by the opportu-
nity cost values of the third footnote. The new indicator is
defined as follows:

$$\text{Domestic resource cost} = \frac{\sum_{i=2}^{m} P_i L_i + P_{DVA} DVA}{(\sum_{j=1}^{n} y_i + DI + DVA) - L_i + DI}$$

where P_i is the opportunity cost value of the relevant primary
resource.

**In order to restate the indicators in a form including
induced effects, it is easier to note that the size of the original
A matrix was 45 x 45 (and will now be 46 x 46, with household
incomes as the additional row and column) and the original C matrix
was 5 x 45 (and will now be 4 x 46). The indicators will now be:

$$\text{Total output effect} = \frac{\sum_{j=1}^{45} x_j}{\sum_j y_j + DVA + DI}$$

$$\text{Multiplier} = \frac{x_{46} + \sum_{i=2}^{4} L_i +}{\sum_j y_j + DVA + DI}$$

$$\text{Multiplier coefficient} = \frac{x_{46} + \sum_{i=2}^{4} L_i + DVA}{\sum_j x_{46j} \cdot y_j + \sum_j \sum_{i=2}^{4} C_{ij} \cdot y_j}$$

$$\text{Net foreign exchange effect} = (\sum_j y_i + DVA + DI) - L_i$$

incorporate induced effects assumes the pattern of household consumption expenditure including imports s fixed regardless of income levels. However, it limits the inclusion of induced effects to that of household income. It was considered unreasonable to assume a stable relationship between extra tax revenues as a result of tourist expenditure and induced government consumption, because government expenditure levels are generally formulated on a medium-term rather than annual basis, and because the extent of recurrent expenditure in the United Republic of Tanzania in 1976 was dependent upon the availability of external funds to finance the development budget. Extra tax revenue would not necessarily result in an immediate adjustment of expenditure levels. Moreover, although additional gross profit incomes do give rise to greater expenditures on current inputs and consumption goods, this effect is more prob-lematic than that of household incomes. This is partly because profit incomes are an end-of-year result and not a continuous income, and partly because the commitment of gross profits to current purposes may vary from year to year depending upon the investment decisions being taken. Induced effects out of gross profit incomes have not been incorporated here.

There is also an overriding reason why it would be wise not to include the induced effects of spending out of tax and profit incomes. These induced effects are calculated on the assumption that there are additional idle resources in the economy that will be brought into production not just by the direct and indirect effects of tourist expenditure but also by the induced effects as well. Given conditions in the United Republic of Tanzania in 1976, when the country was slowly recovering from an acute foreign exchange shortage that had reduced inputs to industry and under-mined agriculture-related transport, it is unlikely that the economy could have responded to a substantial exogenous expenditure with domestically produced outputs, in the absence at least of productivity improvements in food production sectors. The view is therefore taken that inclusion of the induced household income effects is the most that could be achieved with these economic con-ditions, while measures without induced effects at all are regarded as a more plausible representation of the impact of tourist expenditures in 1976.

B. Data

The coefficients in the A and C matrices have been obtained from the published input-output table for the United Republic of Tanzania, which identifies 45 productive sectors and five primary input categories [15]. These matrices have been adapted in one respect for each set of computations. A survey of hotel accounts carried out for 1976 identified an hotel input structure for holi-day, business and all international hotels, together with one for wildlife hotels within the holiday category. These input structures have been introduced in the A and C matrices as intermediate and primary input vectors for the hotel sector, to replace those from the original table. Hence, in relation to the major sector of tourist expenditure, the base data has been

adjusted to the year 1976. The third stage of calculations require that the A and C matrices be augmented to include a 46th row of wage and household incomes, and a 46th column of household consumption proportions. Both of these have been derived from the same input-output table for 1970. Apart from the coefficient sets, data is also required on the level and pattern of expenditure of tourists. A departing tourist expenditure survey was carried out in the United Republic of Tanzania between December 1976 and December 1977. This showed a substantial concentration of expenditures in hotels, but with some differences in expenditure pattern and levels between tourists (see table 1).* Business tourists have a higher level of spending than holiday tourists as a whole, with higher proportions going to hotels, taxis and other accommodation. Holiday tourist activities are more diverse, resulting in greater spread of expenditure, with craft purchases, tour transport and national parks prominent. However, one category of holiday tourist, those in the Northern Wildlife Area, shows the greatest concentration of expenditure on hotels, parks, tour transport and craft purchases, and has considerably higher expenditure levels than business tourists.

In comparing the impact of different types of tourist these structures of expenditure for business, holiday and Northern Wildlife Area tourists have been used. However, the period of the survey poses one problem for the estimation of the impact of tourism overall. Substantially more than half the survey returns occurred after the border closure with Kenya, when Northern Wildlife Area and business tourists visiting the north of the United Republic of Tanzania had additional transport costs from and to Dar-es-Salaam airport. This will have affected both the level and structure of expenditure compared with a normal year's operation. Two adjustments to the survey data have therefore been made before estimating the overall impact of tourism. The first was to identify the expenditure structure of tourists departing before the border closure; this structure has been taken to be more indicative of expenditure structure in 1976, despite the observations being confined to the peak period for tourism. It will be noted that concentration of expenditure in hotels was even more pronounced for tourists departing before the border closure. The second was to deflate the expenditure-per-night level for all tourists from 1977 to 1976 levels using appropriate price deflators.**

*The coefficients for the A and C matrices, including the additional row and column coefficients to allow for induced effects, the hotel input coefficients, and the conversion of hotel input coefficients and tourist expenditure patterns to the sector of the input-output table are all given in Curry [16].

**The hotel and national park components of expenditure were deflated by an hotel price and national park fee index respectively. All other components were deflated by a retail price index.

Table 1. Expenditure structure and level

| Item | Before border closure | Type of tourist | | Northern Wildlife Area |
		Business	Holiday	
	Expenditure structure (percentage)			
Hotels	72	70	58	64
Other accommodation	5	6	2	0
National parks	6	1	6	9
Tour transport	3	2	8	13
Taxis	3	8	5	2
Public transport	0	2	1	0
In-bond purchases	0	2	1	0
Craft purchases	4	4	9	8
Other food and drink	4	4	5	2
Other expenditure	3	1	5	2
	Expenditure level (Tanzanian shillings)			
Per night	154.6 a/	202.7	124.2	289.6
Per stay	883.6 a/	949.3	876.5	1 388.2

a/ Figures for all tourists in survey, not just those before
the border closure.

C. Direct and indirect effects of tourism

An estimate of total tourist expenditure in 1976 derived from
the survey of departing tourists showed tourism contributing
3.4 per cent of total exports.* When direct and indirect imports
are subtracted, net earnings from tourism account for 2.6 per cent
of total imports (see table 2, column 1). These are not large
values, but when added to the earnings of other relatively new
export sectors, for example tea, tobacco and livestock, they mark
the attempt to diversify the foreign exchange earning sectors.

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*The total expenditure derived from the expenditure survey
differs from the official estimate and is larger. The official
estimates would give lower measures of economic impact. Because
the official estimates, derived through the banking sector,
declined in the mid-1970s when prices and bednights were rising,
there is reason to believe they were no longer reliable. Hence the
estimate derived from the expenditure survey has been used as the
basis of measuring the tourism impact.

The distribution of incomes directly and indirectly dependent on tourism shows the major category as operating surplus, but the impact on wage incomes is more important with tourism stimulating 1.7 per cent of all wage incomes. As a proportion of total gross domestic product at factor cost, tourism-related gross domestic product accounted for 0.6 per cent, roughly equivalent to the combined contribution of the electricity and water supply sectors. This direct and indirect impact on total product is also not large, despite the relatively limited expenditure on imports out of tourism-related incomes.

Table 2. Economic impact of total tourist expenditure, 1976

Item	Direct and indirect effect	Direct, indirect and induced effect
	Thousands of Tanzanian shillings	
1. Total expenditure	180 000	180 000
2. Taxes less subsidies	22 896	40 860
3. Wages and household incomes	55 081	178 898 a/
4. Depreciation	13 388	21 936
5. Operating surplus	61 370	58 417
6. Total value added	152 735	300 111
7. Tourism imports	27 265	58 787
	Percentage	
8. Total expenditure as proportion of total exports	3.4	3.4
9. Tourism expenditure less imports (1-7) as proportion of total imports	2.6	2.1
10. Tax revenues as proportion of total tax revenues	0.5	0.9
11. Incomes, depreciation and surplus (3+4+5) as proportion of total GDP at factor cost	0.6	1.3
12. Wages and household incomes as proportion of total wages and household incomes	1.7	5.7 a/

a/ When calculating induced effects, the operating surplus in some sectors, mostly domestic agriculture, has been taken as household incomes and included in the wages and salaries row of the augmented A matrix. These items including induced effects are thus not directly comparable with the previous column.

As a wage-income sector, tourism is part of the industrializa-
tion process in developing countries, even if tourism investment,
as in game parks, are not situated in urban areas. The direct and
indirect linkages of tourism tend to reinforce this view of an
industry-related sector. The list below shows that the sectors
most affected by tourism expenditure comprise industries and
services, including government services; linkages with food sectors
combined is approximately the same as for beverages, and less than
for the services sectors combined. Moreover, these relatively low
linkages to agriculture obtained at a time when direct imports into
tourism were heavily curtailed, with hotels making all food and
drink purchases domestically.

Top ten sectors ranked by total direct and indirect output

1. Hotels and restaurants
2. Transport
3. Beverage industries
4. Business services
5. Commerce
6. Public administration
7. Other small-scale industries
8. Food grains
9. Livestock
10. Chemicals and petroleum
    Other crops

Comparison between types of tourist shows that the difference
in expenditure levels per night and per stay are much more impor-
tant than differences in expenditure structure. The multiplier
effect, which measures the direct and indirect incomes generated
per shilling of tourist expenditure, is higher for business and
Northern Wildlife Area tourists than for all holiday tourists (see
table 3), but the differences are not that marked. The multiplier
value of 0.849 for all tourists is higher than that using an equiv-
alent methodology of up to 0.759 for Nepal [8], and almost as high
as those of 0.858 and 0.869 for the United Kingdom and Ireland
respectively, economies with much greater capacity to supply inputs
domestically [11]. The restriction on imports within the hotel
sector in 1976 in particular may well have improved the multiplier
effect of tourism expenditure, although at some cost in terms of
the quality of goods and services offered.

The higher multiplier values for business and Northern Wild-
life Area tourists, when combined with higher expenditure levels,
show them to be much more valuable than other types of tourist as
far as income effects are concerned.* It may be concluded that it
was unwise to invest beyond these categories in other forms of
holiday tourism in the United Republic of Tanzania, for example

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*The total output effects of tourist types in table 4 have
been calculated on expenditure levels deflated to 1976 values in
the same proportions as for all tourism.

beach tourism and game-viewing tourism outside the Northern
Wildlife Area. The greater material costs per unit of output in
town hotels are more than compensated for by the level and impact
of business expenditure, at least in comparison with these other
forms of holiday tourism. However, the lower unit costs of holiday
hotels including those in the Northern Wildlife Area and the higher
expenditure levels of Northern Wildlife Area tourists are more than
adequate compensation for the difference in multiplier value with
business tourists (0.861 to 0.863), and indicate that, on these
criteria, Northern Wildlife Area tourists were as valuable as
business tourists even if holiday tourists as a whole were not.*
However, it should be noted that holiday tourists led to a more
dispersed generation of income, shown by the multiplier coefficient.

Table 3. Total output and direct and indirect
effects of tourism

Item	Type of tourism			
	All types	Business	Holiday	Northern Wildlife Area
Total output in Tanzanian shillings				
Per night	229	292	180	421
Per stay	1 309	1 368	1 265	2 019
Total output effect	1.591	1.548	1.551	1.562
Multiplier effect	0.849	0.863	0.836	0.861
Multiplier coefficient effect	1.821	1.715	1.743	1.693

A feature of the economic impact of tourism is that there is a
relatively large impact on total output in the economy and that
incomes are dispersed outside the tourism subsectors themselves.
This is confirmed by comparison with other export sectors (see
table 4). In these estimates, cotton ginning is an anomaly**; with

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*It should be noted that Northern Wildlife Area tourists are
included in holiday tourists. The multiplier impact of non-
Northern-Wildlife-Area holiday tourists would in consequence be
lower than shown here for all holiday tourists.

**The total output and multiplier coefficient effects for
cotton ginning are high because the input-output table from which
they are calculated shows cotton production and cotton ginning as
separate sectors, with nearly all the costs of the cotton ginning
sector going on purchases of cotton, thus creating very large out-
put and income dispersion effects to that sector.

this exception, tourism has a greater total output and multiplier coefficient effect than other export sectors, of which the lowest is diamond mining. The greater linkages of tourism are not un-expected; tourists spend in a number of subsectors, each of which has its own direct and indirect impact, whereas the effects of com-modity exports is confined more to those in the sectors themselves. However, the greater linkages of tourism do not give rise to greater incomes per shilling expenditure. The multiplier values of nearly all export sectors (except tea) are greater than tourism, indicat-ing a lower direct and indirect outflow of earnings on intermediate imports, and a greater impact on incomes. The linkages of tourism are with sectors with a lower proportion of value added per unit of output. This is both a cost and a reflection of the relatively high linkages between tourism and industrial and service sectors noted earlier, where value added levels per unit of output are lower than in agriculture. Greater linkages do not necessarily imply greater total incomes.

Table 4. Economic impact of foreign-exchange-earning sectors

Sector	Total output	Multiplier	Multiplier coefficient
Tourism	1.591	0.849	1.821
Cotton ginning	2.017	0.951	12.352
Tea	1.464	0.763	1.576
Tobacco	1.462	0.895	1.563
Sisal	1.435	0.896	1.414
Cashew-nuts	1.378	0.971	1.375
Diamond mining	1.298	0.934	1.232
Coffee	1.163	0.971	1.133

These calculations of the direct and indirect impact of tourist expenditure have shown that the advantages of town hotels in generating employment, income and foreign exchange are rein-forced by the overall impact of business tourists on the economy, and that this form of tourism was more valuable to the United Republic of Tanzania than holiday tourism, with the exception of holiday tourism in the Northern Wildlife Area. They also show that tourism in the United Republic of Tanzania had a relatively high multiplier value, combined with a high total output and multiplier coefficient effect. However, the impact of tourism on incomes directly and indirectly is lower than for other export sectors per unit of earnings. This last comparison means that the priority given to tourism in the late 1960s and early 1970s was justified only if tourism output was growing faster than that of other export sectors, or if that output was more valuable in relation to the imports purchased with the greater earnings. Despite a multiplier value which is high by the standards of international tourism, it cannot be concluded that the priority given to tourism was justified.

D. Direct and indirect effects of tourism in terms of alternative production foregone

Forms of demand giving rise to high direct and indirect values for wages, intermediate imports and depreciation involve a greater opportunity cost than those resulting in higher values for taxes and operating surplus. In the application of accounting prices representing the opportunity cost to the whole economy of the resources committed directly and indirectly to tourism production, allowance has been made for the greater consumption resulting from operating surplus, both in the form of household income in non-wage sectors, and personal incomes derived from rent, interest and net profit, the remaining elements of operating surplus. Nevertheless, the extra consumption costs are not as high as the production foregone through commiting labour or capital resources (represented annually by depreciation allowances) to the sector. The value of primary resources at opportunity cost represents the production foregone elsewhere in the economy to satisfy tourist demands. The foregone production has to be subtracted from the direct and indirect primary resource requirements at market prices to give the net additional output in the economy as a result of tourism demand. Evidently, the net economic impact of tourism measured in this way will be less than the unadjusted direct and indirect effect. The net resource multiplier is lower at 0.407 (compared with 0.849), showing that the additional output created in the economy via a shilling expenditure by tourists is 40.7 cents (see table 5, row 1).

Table 5. Economic impact indicators measuring opportunity costs of resources

Sector	Net resource multiplier	Net resource multiplier coefficient	Domestic resource cost
Tourism	0.407	1.734	0.521
Business	0.438	1.663	0.492
Holiday	0.375	1.659	0.551
Northern Wildlife Area	0.396	1.641	0.540
Cashew-nuts	0.537	1.532	0.447
Coffee	0.512	1.165	0.473
Cotton ginning	0.512	18.656	0.462
Tobacco	0.400	1.585	0.553
Diamond mining	0.375	1.240	0.599
Sisal	0.287	1.337	0.679
Tea	0.242	1.446	0.683

This value compares favourably with a previous estimate for Kenya of between 5 and 10 per cent [13]. Mitchell however assumed

that the opportunity cost of labour could be measured by wages, and
the opportunity cost of capital by depreciation allowances and
operating surplus, thus reducing the net contribution of tourism to
its net contribution to the government budget. In this paper it has
been recognized that wage payments, depreciation allowance and
operating surplus all contain an element of output net of alter-
native production foregone, and thus the net contribution of tourism
is considerably higher.

The net resource multiplier is lower for all types of tourism
than the direct and indirect multiplier value, but the difference
is larger for holiday tourism, and even the Northern Wildlife Area,
than for business tourism. This indicates that holiday tourism
creates demand for resources with a higher opportunity cost than
business tourism. This is stated in direct form by the domestic
resource cost indicator showing the resources, measured at opportu-
nity cost, needed to generate a net unit of foreign exchange. The
net resource multiplier coefficient is lower for all forms of
tourism, although it still shows a substantial generation of net
output outside the tourism subsectors themselves. Measurement at
opportunity costs shows tourism in a different light with respect
to other export sectors. In terms of the net resource multiplier,
it now ranks above four other sectors - tobacco, diamond mining,
sisal, and tea - while retaining its characteristic of showing a
dispersion of incomes outside tourism itself. A shilling of
foreign exchange earned in tourism net of direct and indirect
imports costs 52.1 cents in domestic resources measured at their
opportunity cost, below the middle of the range for export sectors.

E. Direct, indirect and induced household income effects of tourism

It will be recalled that induced effects are restricted to
those of household incomes and does not include the induced effects
of other forms of income. They are calculated on the assumption
that the economy could have produced out of existing capacity not
only the intermediate demands linked to tourism but the consumption
demands linked to the expenditure of extra household incomes.

Naturally, the inclusion of induced effects raises the esti-
mates of economic impact. Table 2, column 2, shows that the impact
of tourism on gross domestic product at factor cost including
induced effects is 1.3 per cent instead of 0.6 per cent, on tax
revenue is 0.9 per cent rather than 0.5 per cent, and on household
incomes is 5.7 per cent.

However, this still does not make tourism a particularly large
sector in terms of domestic production.

The effect on total output is now much greater (see table 6,
column 1), as also are the multiplier and multiplier coefficient
values. The multiplier including induced effects of 1.677 is
almost twice the previous value of 0.849, showing the importance of
induced effects if they can be accommodated from existing produc-
tive capacity, but the higher total output and multiplier effects

will involve larger amounts of intermediate imports - the net
foreign exchange ea ned through tourism falls from 2.6 to 2.1 per
cent of total imports in 1976.

The multiplier and net foreign exchange effects involve a
trade-off. The greater the multiplier effect, the greater the
amount being spent indirectly on intermediate imports. The values
for the United Republic cf Tanzania may be compared with those
using a similar methodology elsewhere. A multiplier value
including induced household consumption effects of 0.818 was found
for Fiji, together with a net foreign exchange effect of
0.387 [10]. These much lower values (less than those for the
United Republic of Tanzania without induced effects) are partly
explained by higher amounts of direct import leakages in the Fiji
case through purchases in in-bond shops, which account for much
more total tourist expenditure than in the United Republic of
Tanzania. However, the difference in values is still very marked.
Equivalent multiplier values of 1.702 and 1.906 were found for the
United Kingdom and Ireland [11]. The value for the United Republic
of Tanzania is much closer .. these, which are for economies with a
much greater capacity to pr duce extra consumption goods. Again,
the restrictive import conditions in the United Republic of
Tanzania probably helped to raise the multiplier effects of the
sector.*

Table 6.   Direct, indirect and induced household
consumption effects of tourism

| Item | Type of tourism | | | |
	All types	Business	Holiday	Northern Wildlife Area
Total output effect	2.694	2.570	2.752	2.739
Multiplier effect	1.677	1.632	1.741	1.738
Multiplier coefficient effect	7.692	6.132	9.227	7.613
Net foreign exchange effect	0.673	0.701	0.645	0.675

*No adjustment has been made at this or earlier stages for any
outflow of foreign-owned incomes. Given the restrictions on profit
and salary outflows, and the large State ownership of tourism
enterprises in particular, it is unlikely that potential outflows
would be large. A test for output and income effects including
assumed outflows of all foreign incomes showed that the text
results were little affected by ownership factors.

The inclusion of induced effects changes the comparison between business and holiday tourists. Holiday tourists have a greater total output and multiplier coefficient effect, but they also now have a greater multiplier effect. This must stem from the greater level of household incomes generated through holiday as opposed to business tourism, and their re-expenditure on consumption goods. The higher multiplier value applies to the Northern Wildlife Area as well as holiday tourism as a whole. The trade-off between net foreign exchange and the multiplier also shows up however in these comparisons (see figure). The higher multiplier and output values for holiday tourism are associated with lower retained earnings. Within holiday tourism, Northern Wildlife Area tourism has a higher net foreign exchange but lower multiplier value than non-Northern-Wildlife-Area tourism. Business tourists however spend more than holiday tourists; and although Northern Wildlife Area tourists spend more than business tourists, they have a lower net foreign exchange effect. The choice between tourists including induced effects, like that including only direct and indirect effects, depends upon the relative weights of the objectives tourism serves.

Multiplier and net foreign exchange values including
induced effects of tourism
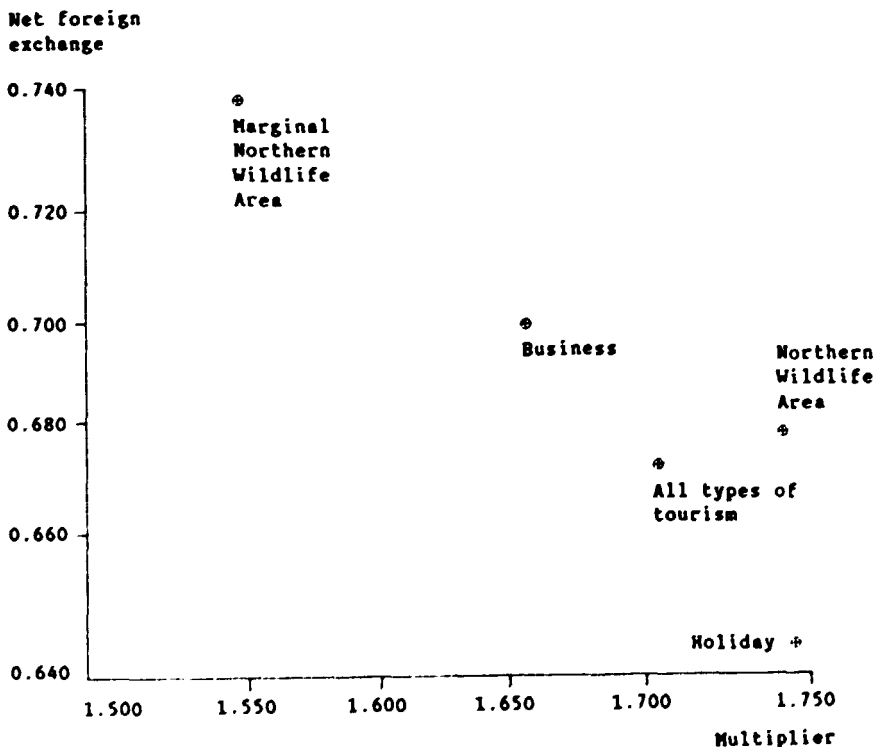
These results including induced effects are probably an over-
statement of what occurred. Reference has already been made to the
assumption that inputs and consumption goods would have to be
produced from existing capacity for these values to materialize;
this is an optimistic assumption for the United Republic of
Tanzania in 1976. The results are also an overstatement because
the calculations assume all additional household income would be
spent on consumption goods, as there has been no allowance for tax
and national insurance payments, nor savings. Ma·y households will
not pay tax, and will not be able to save either, given the
conditions in 1976, but some will, and to this extent the induced
effects have been exaggerated.

F. Impact of marginal tourism in the Northern Wildlife Area

Tourism in Tanzania grew in the 1970s on the basis of invest-
ments undertaken at the beginning of the decade. In town areas,
occupancies were high and not seasonal; there was little spare
capacity by 1976. In holiday areas, including the Northern Wilc-
life Area, there was still spare capacity. A further growth of
tourism would have been possible without major new investments in
holiday areas. This suggests that an appropriate methodology for
holiday areas might be to calculate the economic impact of the
marginal tourist.

This has been done for the Northern Wildlife Area (see
table 7). It gives an indication of what the effects of additional
tourism would have been in 1976 if there had been no border
closure. To estimate the effects of marginal tourism, marginal
cost coefficients have been calculated for Northern Wildlife Area
hotels and inserted in the A and C matrices to replace the average
coefficients. The same final demand structures have been used, but
these will now have a different direct, indirect and induced impact
through the adjusted hotel coefficients.

Table 7. Effects of marginal tourism in the
Northern Wildlife Area

Item	Direct and indirect effects	Net resource effects	Direct, indirect and induced effects
Total output	1.330	1.330	2.227
Multiplier	0.877	0.462	1.548
Multiplier coefficient	1.31ꭒ	1.323	3.577
Domestic resource cost	..	0.473	..
Net foreign exchange	m a/	m a/	0.735

a/ m = 1 minus multiplier. Not stated in earlier tables.

Hotels have a relatively low level of variable costs. The consequence of using marginal hotel cost coefficients is that a larger proportion of initial expenditures results in profit rather than labour incomes or purchases.* This tends to reduce the impact of tourist spending since there are lower indirect effects, and lower induced effects as well. The total output and multiplier coefficient effects are lower than for the average spending impact, for all three stages of the methodology adopted in this paper. In most cases however, the multiplier effect is higher, but with a much higher proportion of profit incomes being created rather than taxes or labour incomes.

The exception is the multiplier value including induced effects, which is lower than for the average tourist. The greater proportion of profits initially means a lower proportion of household incomes re-spent on consumption goods. The lower induced effects more than offset the higher direct and indirect effects on income. This means that even if the additional supplies to cater for extra tourists in the Northern Wildlife Area could have been produced from domestic capacity, there would have been a con-- strained impact as higher revenues to hotels appeared as profits rather than additional payments. The additional consequence is that the lower multiplier value including induced effects of marginal tourists is associated with a larger net foreign exchange effect, there being a smaller outflow on intermediate imports.

The inclusion of marginal rather than average hotel coefficients has resulted in lower linkage effects. The growing proportion of profit in total income could be adjusted through amended tax regulations or labour payments, further increasing the induced effects. However, the hotels in the Northern Wildlife Area were not that profitable, and the additional marginal tourism was necessary to increase the return on the investments that had taken place. In the basic case of direct and indirect effects only, lower linkages would result from marginal tourists, together with higher total incomes.

G. Conclusions on the impact of tourism and its measurement

The application of input-output analysis to measuring the direct and indirect impact of tourist expenditure in the United Republic of Tanzania indicates that in 1976 tourism contributed 3.4 per cent to exports, 3.1 per cent to total imports, 0.5 per cent of tax revenues and 0.6 per cent of gross domestic product at factor cost. The tourism sector showed a relatively high total output effect, meaning that operating purchases were met to a large extent by backward linkages in the domestic economy, but this did not necessarily imply a large income effect. For tourism, high backward linkages seem to have been with sectors with a low proportion of value added. Nevertheless, a multiplier value of 0.849

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*Hotel labour has been treated as a fixed cost. This is appropriate in the United Republic of Tanzania where hotel labour is employed on a year-round basis and jobs are protected in the short run by employment legislation.

shows that the income and net foreign exchange effects of tourism
in the United Republic of Tanzania are high for developing coun-
tries, partly as a result of the restrictive import policies in
force. This relatively favourable result in terms of international
tourism suffers by comparison with other export sectors which,
although not having the same impact on total output, generated more
income and net foreign exchange per unit of export earnings.

The impact of marginal tourists in the Northern Wildlife Area
is closer to that of other export sectors with lower linkages but
higher multiplier effects. However, although there are differences
in output and income effects between types of tourist, these are
not as substantial as the differences in expenditure per night and
per stay. Moreover, there seems to be no uniquely preferable type
of tourist from the viewpoint of economic impact, although the
greater expenditure of business tourists and holiday tourists in
the Northern Wildlife Area marks them out from the others. Dif-
ferences between tourists are not sufficient to compensate for the
better operating performance of town hotels with respect to employ-
ment and foreign exchange earnings.

These basic conclusions from the direct and indirect impact of
tourist expenditure have been extended methodologically. Similar
calculations making some allowance for the opportunity cost of
primary inputs devoted to tourism production indicate that tourist
expenditure still has a substantial impact on the economy despite
the alternative production possibilities foregone. Moreover, when
the induced household income effect of tourism, as well as the
direct and indirect effect, is separately considered, the
contribution of the sector rises to 1.3 per cent of gross domestic
product at factor cost and a multiplier value of 1.677, although
the proportion of retained foreign exchange earnings diminishes.
The trade-off between income and net foreign exchange effects
including induced effects is apparent when looking at the impact of
different tourists. However, the total impact including induced
effects is unlikely to have been achieved in the United Republic of
Tanzania in 1976, as the direct and indirect inputs and additional
consumption goods would have placed too great a burden on existing
domestic capacities. Instead, they are likely to have increased
the demand for imports.

These basic results have been obtained using a common method-
ology which measures impact in a particular way. In effect, the
successive purchases to which tourist expenditure gives rise have
been traced through the economy as if there were no impact on tech-
nology or investment. The use of fixed input coefficients for the
hotel sector and all other sectors rules out technical change, and
any inducement tourist expenditures might give to further invest-
ment in either the hotel or other sectors has been omitted.
Although it may be questioned whether average rather than marginal
coefficients are the appropriate ones to use - it is likely that
increases in demand in the industrial and commercial sector as well
as hotels might raise the level of capacity utilization and affect
only those costs that are variable rather than all costs - these
measures of impact are made for a point in time on the basis of
existing capacities and technologies.

This methodological perspective is narrow in its objectives and results. What has been measured is the impact on the economy through an expansion of final demand expenditures, and this might be regarded as an inadequate basis for assessing the contribution of tourism to the accumulation process in the United Republic of Tanzania. Any accumulation process involves more than a simple expansion of demand and expenditure. More fundamentally, it involves an increase over time in levels of productivity, so that equivalent levels of output can be produced with less resources, or so that greater levels of output can be produced with the same resources. And more fundamentally still, it involves the commitment of resources to investment activities that will both increase the productive capacity and raise productivity.

Generally, foreign-exchange-earning sectors in developing countries contribute to this process indirectly, through raising the capacity to import new equipment and its associated material inputs. Without an improvement in productivity in the tourism subsector, and particularly in the main hotel subsector, tourism does not appear to be such a good avenue for doing this as other export sectors with their higher multiplier values and higher net foreign exchange effects. Moreover, as a sector of competitive production like other exports, any improvement in productivity in tourism could be nullified by a decline in the price of tourism internationally, through the well-known process whereby productivity improvements are in effect captured by the purchasing countries through a lower international price. Hence, the contribution of tourism to the accumulation process depends not necessarily on productivity levels within tourism itself but on the extent to which tourism earnings can be converted through new investments into productivity increases in other sectors, notably those supplying the domestic market. Earlier evidence on the terms of trade for tourism in the United Republic of Tanzania suggested that these had been declining through 1976; more bednights had to be sold in 1976 just to maintain the import capacity of earlier years [17]. This may have been true for other export sectors as well, on a mid-term basis. But the declining terms of trade, indicating a lower contribution over time to the capacity to import per unit of tourist expenditure, combined with the multiplier and net foreign exchange value found in this paper, compared with those of other export sectors, suggests that tourism in the United Republic of Tanzania in 1976 did not repay the priority for investment it had been given at the beginning of the decade. The mitigating factor the calculations have shown is that tourism's economic impact there is more substantial than in other developing countries. This would suggest a need in developing countries as a whole to evaluate more closely the economic impact of tourism in comparison with other alternatives, or at the least to explore more closely the impact of different forms of tourist development.

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A FACTOR-INTENSITY ANALYSIS OF STRUCTURAL CHANGE IN
ASEAN MANUFACTURING*

Mohamed Ariff** and Hal Hill***

Introduction

Most of the five original member countries of the Association
of South-East Asian Nations (ASEAN) (Indonesia, Malaysia,
Philippines, Singapore and Thailand)**** have been among the most
rapidly growing developing countries in the last two decades. The
manufacturing sector has generally been a major element of this
growth. Accompanying this vigorous industrialization have been the
following two important structural transformations: the extremely
rapid expansion in manufactured exports from all but one
(Indonesia) of the countries; the significant changes in the struc-
ture of manufacturing, involving the transition from simple consumer
goods and resource-based processing activities towards a more
sophisticated industrial structure. Despite some similarities in
the general orientation of industrial policies, however, the manu-
facturing sectors of the ASEAN countries are quite dissimilar in
other respects, most notably the level of industrialization and
resource endowments. At one extreme is Singapore, a high-wage,
resource-poor, selected developing country; at the other extreme is
Indonesia, a poor, relatively well-endowed economy with, until
recently, one of the least developed manufacturing sectors for its
size in the world. Given their diversity, the manufacturing
experience of these five countries is of considerable relevance to
many other developing countries.

By almost any indicator, growth and structural change in the
manufacturing sectors of these countries has been extremely rapid
since the 1960s. The share of manufacturing in gross national
product has risen strongly and currently either exceeds or
approximates that of agriculture in all but one of the countries

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****A sixth country, Brunei, joined ASEAN in January 1984. It is
excluded from our analysis because its manufacturing sector is very
small and almost entirely oil-related.

(Indonesia). Manufacturing growth in all cases has exceeded that
of lower- and upper-middle-income countries (using the World Bank
definition).

A number of indicators reveal the extent of structural trans-
formation in ASEAN manufacturing. One is a simple index of struc-
tural change, which captures variations in the composition of manu-
facturing output.* According to this index, calculated for the
period 1971-1980 (using unpublished statistics from the data bank
of the United Nations Industrial Development Organization), struc-
tural change proceeded very quickly in ASEAN, exceeding that in the
Republic of Korea in four of the five countries (the Philippines
was the exception). Another indicator is the changing output com-
position according to end-use as consumer, intermediate and capital
goods. In all countries a shift from consumer to capital goods is
apparent, especially in Indonesia and Singapore. In the former the
share of consumer goods halved and that of intermediate and capital
goods trebled during the 1970s; in Singapore the capital goods
(heavy industry) sector now accounts for over half of manufacturing
output.** A final indicator is the changing size distribution of
manufacturing firms. As industrialization proceeds a pattern of
industrial consolidation emerges, involving a shift from cottage
and small industry to larger firms.*** In four of the countries
for which time series data are available (all except Thailand) such
a trend is evident. This is particularly so in Singapore where,
over the period 1965 to 1982, the output share of large firms (300
or more workers) approximately doubled.

These figures amply illustrate the dimensions of structural
change in ASEAN manufacturing, but they are largely devoid of
analytical significance. The purpose of this paper is to explain
the process of structural change. An attempt will be made to
relate variations in the composition of industrial output, through
the theory of comparative advantage, to the changing factor
endowments of the countries. To summarize the approach adopted, a
three-stage transformation process may be envisaged. Initially,
the manufacturing sector generally consists of simple processing

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*The index is defined as

$$I = \Sigma \ (A_{i2}-A_{i1}) \text{ for all } A_{i2} > A_{i1}$$

where A_i refers to the percentage of industry i in manufacturing
value added, and 1 and 2 refer to time periods. The calculations
in this paragraph refer to 3-digit data of the International
Standard Industrial Classification of all Economic Activities
(ISIC).

**The capital goods sector is defined here as ISIC division 38.
According to Oshima [1], this category broadly corresponds to heavy
industry.

***The large literature on this subject is summarized by
Anderson [2].

and resource-based activities. ' capital accumulation - both human and physical - proceeds, a re of non-resource-hased activities develop. Initially, these c st mainly of unskilled-labour-intensive products, but subsequently those which are more capital and technology-intensive emerge. In section A the relevant literature on changing comparative advantage is briefly reviewed as it relates to the pattern of production and exports, and data are assembled on the changing factor endowments of the ASEAN countries. In section B production and trade in manufactures are disaggregated according to a factor-intensity classification, and the extent to which changes in the manufacturing sector conform to the earlier theoretical predictions is examined.

A.   Changing comparative advantage and factor endowments

The starting-point in the literature on changing comparative advantage is the basic Heckscher-Ohlin-Samuelson factor proportions explanation of trade patterns, according to which a country will export those commodities which embody factor inputs that the country possesses in greatest relative abundance. The basic model has been extended in a variety of directions (see Balassa [3]). One of these has led to recent syntheses by Krueger [4] and Garnaut and Anderson [5] which, drawing on the model developed by Jones [6], have incorporated natural resources into the model. In this formu-lation a two-good model is proposed, consisting of manufactures and natural resources. There are three factors of production, namely: capital, which is specific to the production of manufactures; natural resources, which are specific to natural-resource-based goods; and labour, which is required for both.

In the early stages of development, when the capital stock is small, the wage rate is determined largely by the ratio of natural resources to labour, that is, the lower the ratio the lower the marginal productivity of labour. At this stage the country will export natural-resource-based goods and import manufactures. As capital accumulation proceeds, labour is attracted into the newly developing manufacturing sector, and the country gradually shifts from being a net exporter of natural-resource-based goods to a net exporter of manufactures. According to this formulation, the speed at which labour is reallocated to manufacturing, and the "cross-over point" at which manufactured exports exceed those of natural-resource-based goods, will be determined by the initial per capita endowment of natural resources; the greater the endowment, the greater the capital accumulation, the higher the wage necessary to achieve the cross-over and the longer the period of specialization in the production and export of natural-resource-based goods.

The inclusion of these variables results, broadly, in a three-phase schema: first, a resource-based processing stage; secondly, a period of sustained growth in unskilled-labour-intensive manufactures; and thirdly, the emergence of a mature industrial structure encompassing more skill and capital-intensive activities. Two key economic variables which explain the dynamics of the model are relative resource endowment and the rate of (broadly defined) capital accumulation.

A third variable is policy intervention, in the form of domestic protection policy, State ownership in the manufacturing sector and a range of government licensing and regulation activities. Thus the theory will be difficult to test for production in the case of a small industrial sector characterized by significant production of "home goods", substantial State ownership, and sizeable tariff and other trade barriers. By contrast, a larg r economy, and one characterized by closer domestic and international economic integration, should provide a more reliable test for theory. Exports should also provide a better test, since they are generally less distorted by domestic policy intervention.

Is there a commodity classification which is broadly consistent with the requirements of this model of changing comparative advantage? The most widely used classification, first invoked systematically by Lary [7], is that based on United States per capita value added within manufacturing. While this classification is satisfactory in many cases, its major limitation is that it does not specifically identify resource-based goods, which are important both in the theoretical formulation and in several of the ASEAN countries. A modification of Lary's classification, developed by Krause [8], overcomes this limitation.

Krause [8] identifies four factors of production - natural resources, unskilled labour, technology and human capital. Commodities are classified according to their dominant factor input, which is that used most intensively or which determines the location of production. A sequential classification system is adopted, identifying first natural-resource-intensive goods, then unskilled-labour-intensive goods (based on United States per capita value-added data) and finally technology-intensive goods (based on United States research and development expenditure data). A subsequent modification, developed by Tyers and Phillips [9] and adopted here, disaggregates resource goods into agriculture and mineral-resource-intensive products. There is no separate classification for physical-capital-intensive goods since it is assumed that physical capital is internationally mobile. Krause's classification based on the Standard International Trade Classification (SITC) is reproduced, with some modifications discussed below, in appendix II at the three-digit level. A similar classification is presented in appendix II for ISIC-based (production) data, using an SITC-ISIC concordance.*

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*Two points should be made regarding this classification. First, what is an internationally mobile factor input - and therefore excluded from the classification - is to some extent arbitrary. For example, the exclusion of physical capital in the case of the ASEAN countries is justified since these countries have fairly open capital markets, although for other countries it might have to be included. It may also be argued that resources and technology

Before applying this commodity classification, it will be use-
ful to summarize data relating to the level of and trend in ASEAN
factor endowments. These are important since they are the basis
for each country's changing comparative advantage and output com-
position.* The ASEAN economies are neither resource-rich nor
resource-poor in the regional (East Asian) and international per-
spective, with the obvious exception of Singapore. The best-
endowed countries are Malaysia and Indonesia, while the Philippines
has the poorest endowment, except for the city-state of Singapore.
But even the poorer endowment of the Philippines is much superior
to tnat of Japan and the Republic of Korea; similarly, the well-
endowed countries lack a resource base as rich as that of the major
oil exporters or sparsely populated regional countries such as
Australia.

The ASEAN economies have generally grown rapidly since the
1960s, which, following the broad definition of capital-intensity
(see, for example, Johnson [10]), is indicative of high rates of
human and physical capital accumulation. The relative importance
of manufacturing - manufacturing production related to population,
land area and natural resource endowment - varies considerably
among the countries. Singapore's manufacturing activity is
extremely large relative to its resource endowment, whereas, at the
other extreme, Indonesia exhibits a much lower specialization in
manufacturing. Time series data for each country's manufacturing
sector, based on annual censuses or survey data (see appendix I),
confirm the rapid growth in physical capital productivity, capital-
intensity as broadly defined, real wages and skill-intensities.
However, there are considerable variations among the five countries
to which we will refer in the following section.

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are freely traded and that their production is not location-
specific. However, there are often substantial economies in at
least early-stage processing on-site, and for some perishable agri-
cultural commodities such processing is essential. The same may be
said for technology-intensive goods (conceptually the least satis-
factory of the five categories), in the sense that the inter-
national relocation of production facilities requires basic tech-
nical competence in the host country. Secondly, there is the
question of the definition of manufacturing. The conventional
national accounts definition is ISIC 3, whereas in the case of
trade that most widely accepted is SITC 5-8 (less 68). Neither
definition is clearly superior, and yet there are substantial dif-
ferences in coverage. The simplest solution is therefore to retain
the original and separate definitions, even though the trade and
production statistics will not be directly comparable.

*Our discussion here is greatly condensed. Data on the
relevant indicators are provided in tables 5.9-5.13 of our forth-
coming book. A copy of the tables is available on request.

B. A factor-intensity analysis of structural change*

1. The pattern of manufactured exports

Exports will he first examined because, being less subject to domestic policy interventions, the changing composition should foliow more closely that predicted by theory. As indicated, ASEAN manufactured exports have grown extremely rapidly, from $381 million in 1962 to $1.3 billion in 1972 and to $17.5 billion in 1982. Here, however, the focus is on trends in the composition of these exports. Indonesia is not included in the analysis because its manufactured exports are very small (just 6 per cent of total exports in 1983).

Trends in the exports of the remaining four countries are presented in figures I to IV. Before examining these trends, it will be useful briefly to refer to the experience of the Republic of Korea, an industrially advanced neighbouring country. The development of this country accords closely with the predictions of the model. Rapid growth and a poor resource endowment resulted in a very sharp transformation of its exports. In the early 1960s, resource-based manufactures accounted for over one fifth of these exports, and unskilled-labour-intensive manufactures over 40 per cent. After the mid-1960s the former began to decline, while the latter's share rose sharply, peaking in the mid-1970s at about two thirds of total manufactured exports. Thereafter their relative importance declined somewhat, being replaced increasingly by human-capital-intensive manufactures.

In ASEAN, the Philippines accords most closely with the theoretical predictions. The transition from exports on predominantly resource-based manufactures (almost four fifths of the total in the mid-1960s) to a heavy concentration on unskilled-labour-intensive goods in a little over a decade has been quite dramatic (figure I). Both human-capital- and technology-intensive exports have generally been very limited. Three main factors account for the rapid change. The first is its poorer resource endowment and very rapid population growth, resulting in an increasing comparative disadvantage in resource-based activities. Secondly, a number of domestic policy interventions have hastened the transformation. One is the establishment of export processing zones which have attracted much unskilled-labour-intensive activity. Another is government measures to promote greater processing of resource products, one effect of which was to discourage the export of basic wood manufactures (included in SITC 63, an agricultural-resource-intensive commodity) and promote wood products exported in the form of, for example, furniture (SITC 821, an unskilled-labour-intensive commodity). A third factor explaining the changing composition has

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*For a description of data sources used in this section, see appendix I.

Figure I. Factor-intensity composition of Philippine manufactured exports, 1962-1982
(Percentage of total)

Key:

——— Unskilled-labour intensive
····· Agricultural-resource-intensive
— — Mineral-resource-intensive
—·— Technology-intensive
····— Human-capital-intensive
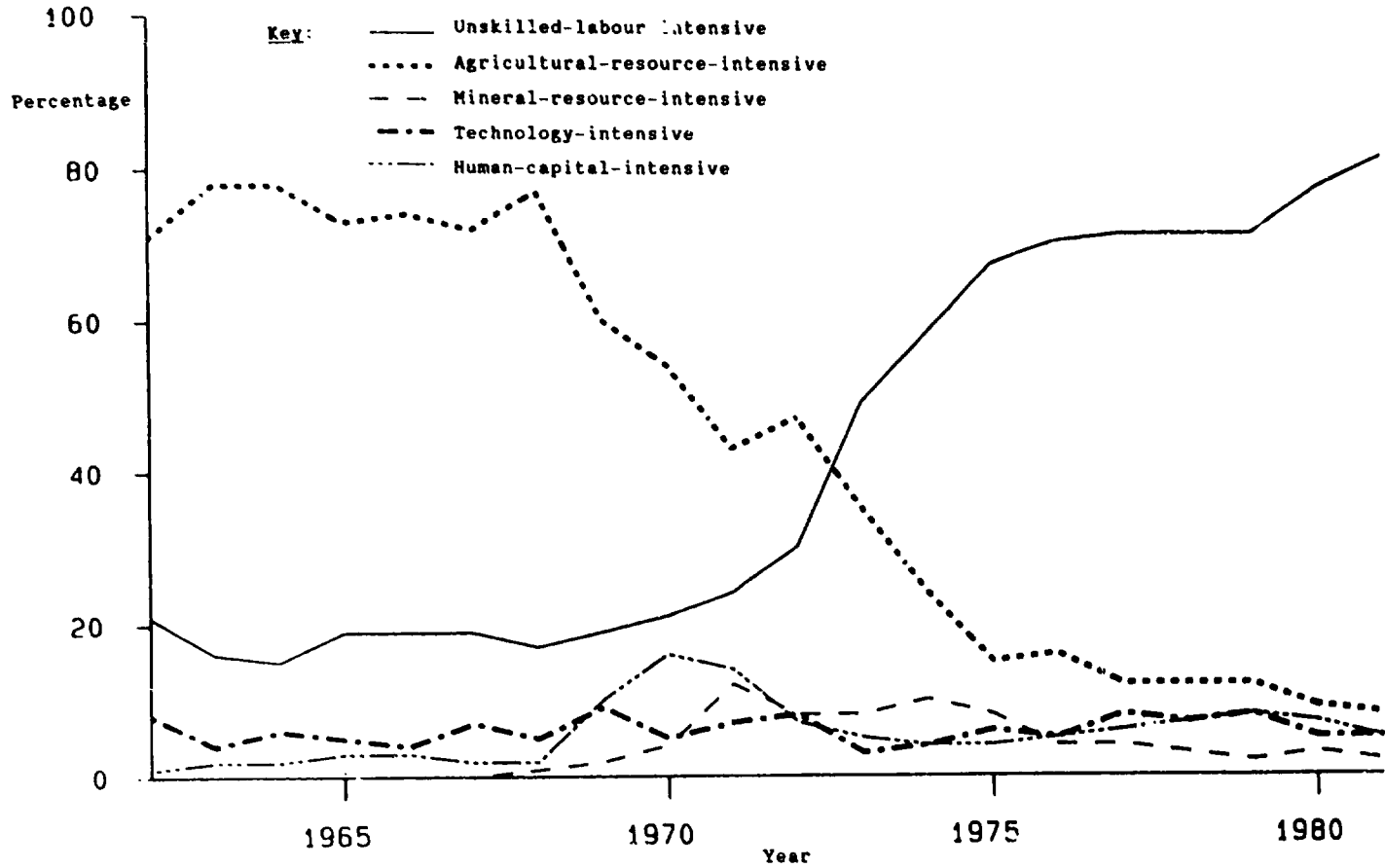
Source: Australia-Japan Research Centre Data Bank.

Figure II. Factor-intensity composition of Singapore manufactured exports, 1962-1982
(Percentage of total)

Key:

————	Unskilled-labour-intensive
•••••	Agricultural-resource-intensive
— —	Mineral-resource-intensive
—•—	Technology-intensive
···—·	Human-capital-intensive
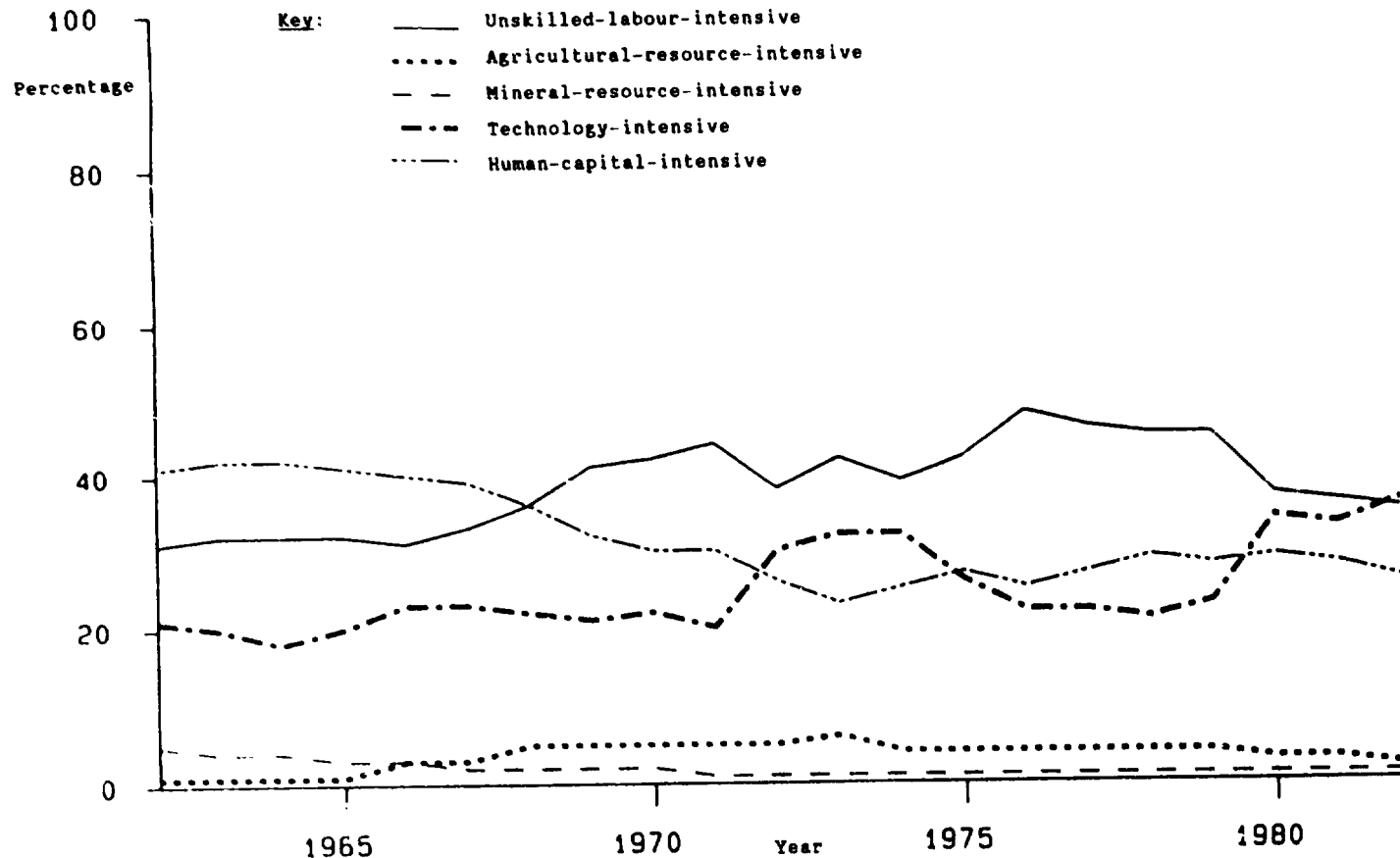
Source: Australia-Japan Research Centre Data Bank.

Figure III. Factor-intensity composition of Malaysian exports, 1962-1981
(Percentage of total)
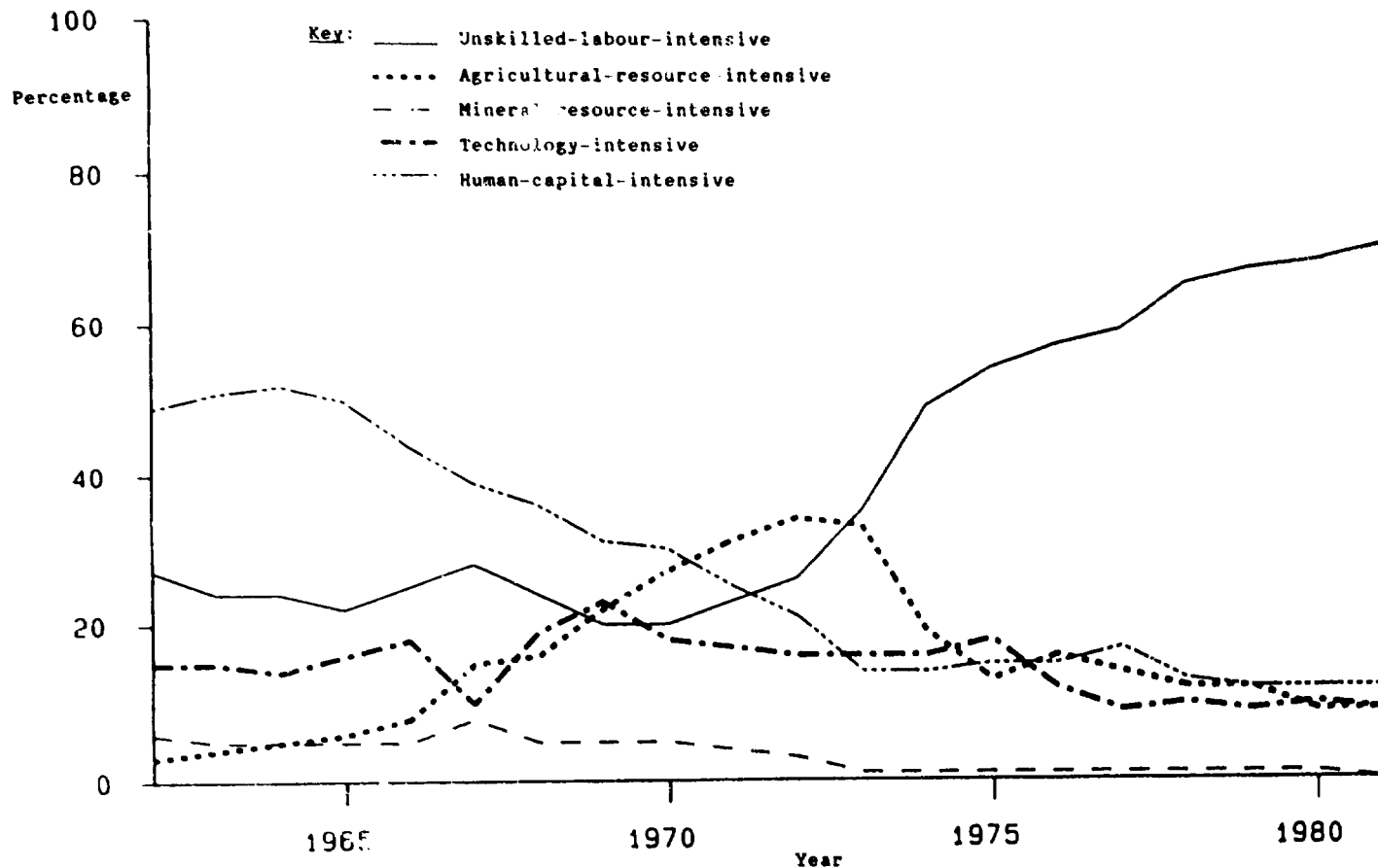
Source: Australia-Japan Research Centre Data Bank.

Figure IV. Factor-intensity composition of Thai manufactured exports, 1962-1982
(Percentage of total)
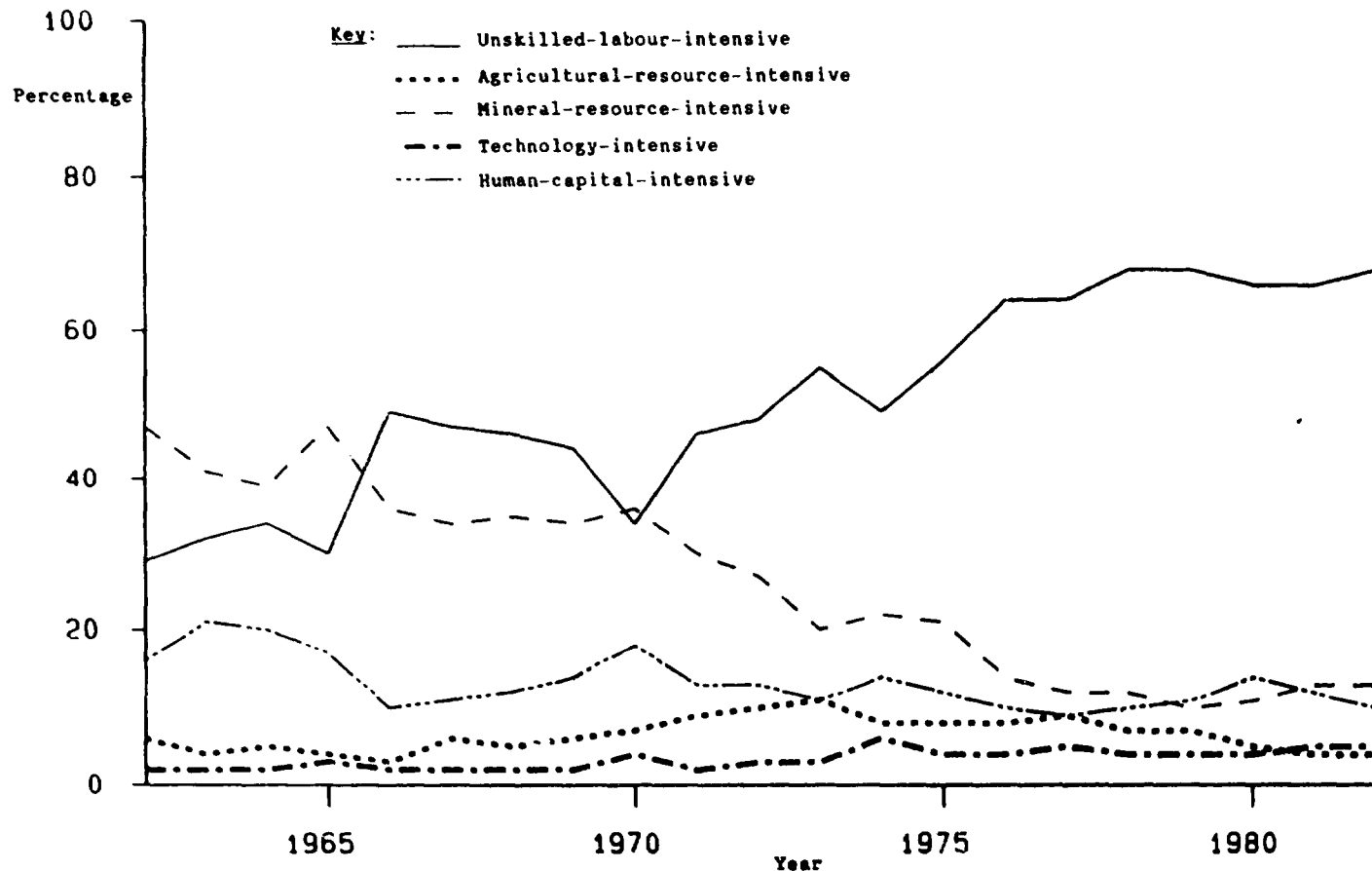
Source: Australia-Japan Research Centre Data Bank.

has been the historical constancy - oi even decline - of real manufacturing wages (on which see Lal [11]) which has consequently not induced a shift towards more capital-intensive activities.

The Singapore record is, at first glance, rather puzzling.* Although its resource-based exports have always been minimal, the share of human-capital-intensive manufactures - contrary to expectations - was very high in the 1960s (figure II). The high share is explained mainly by the export of transport equipment (SITC 732) to Malaysia. Closely integrated automotive assembly industries were established in both Singapore and Malaysia on the assumption of the creation of a common market between the two countries. Following the collapse of the short-lived federation, the industries resumed their domestic market orientation, and Singapore exports of these products declined considerably after the late 1960s. Once this special case is excluded, the Singapore experience accords well with theory. Indeed, because of its more advanced industrial structure and poorer resource endowment, it has progressed further along our three-phase schema. The share of unskilled-labour-intensive manufactures continued to increase until about the mid-1970s, when the rising real wage and human capital development began to erode the economy's comparative advantage in these products. Correspondingly, the share of technology and human-capital-intensive manufactures began to increase gradually.

The shift from resource-based to unskilled-labour-intensive manufactures in Malaysia is also evident after the late 1960s (figure III). Indeed, despite its good resource endowment, the share of the latter in Malaysia's manufactured exports is very high. The rapid shift is explained by the country's vigorous promotion of attractively priced and efficient export processing zones, which have encouraged the establishment of many labour-intensive industries.** The high share of human-capital-intensive exports in the 1960s is explained, again, by the export of transport equipment (SITC 732) to Singapore, as a share of its very small total manufactured exports.

Developments in the relatively undistorted Thai economy also broadly conform to the predictions of the model. Since the early 1960s there has been a pronounced shift from resource-based manufactured exports to the unskilled labour group (figure IV). During the 1970s the share of the latter rose, but less sharply than in the Philippines and Malaysia, in part because of the higher initial

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*It should be noted that re-exports of products originally from Indonesia and Malaysia have been excluded. The low shares of both resource-based groups attest to this fact.

**The most important has been the assembly and packaging of semi-conductor components, contained within item SITC 729. In recent years this has accounted for about half of Malaysia's manufactured exports.

share of these products in Thailand, and in part because export
processing zones and associated policy incentives for exports were
introduced more recently in this country. Both technology and
human-capital-intensive activities have generally been unimportant.

In sum, then, the ASEAN record of manufactured exports accords
well with the theory outlined above. In the four countries there
is a close correspondence between the predicted and actual out-
comes, once allowance is made for the effects of specific policy
interventions. All four countries have moved out of the first
phase of specialization in natural-resource-based manufactured
exports (Singapore was never in this phase owing to its poor
resource endowment). Malaysia, the Philippines and Thailand are in
the second phase, although there are signs that Malaysia will soon
graduate to the third. Singapore, the most industrialized economy
in the region, has already entered this stage.

2. The pattern of manufacturing production

Trends in the composition of manufacturing output will be more
difficult to predict because policy interventions have a greater
effect on production than on exports.* The production data, pre-
sented in figures V to IX, suggest two broad conclusions. The
first is that structural change, as indicated by a shift between
categories, has been a good deal less than that suggested by the
export data. The second is that the two categories in which most
of these countries would not be expected to have a comparative
advantage - technology- and human-capital-intensive goods - are
relatively more important in the case of production than exports.
Both conclusions are broadly consistent with the fact that govern-
ment intervention (especially protection) in some ASEAN countries
is very extensive.

In Indonesia the only significant changes have been a steady
decline in the relative importance of agricultural-resource-
intensive goods, from about two thirds in 1963 to two fifths in
1981, and the growth of the human-capital-intensive category
(figure V). The former trend is to be expected. But the large and
increasing importance of human-capital-intensive products and the
decline in the share of unskilled-labour-intensive products af er
1973 both require elaboration. Production of labour-intensive

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*A close correspondence between production and trade shares
among the five countries would not necessarily be expected in any
case. Apart from differences in coverage, already referred to,
production statistics generally exclude very small firms, whereas
export data include all manufactured exports. Moreover, the pro-
duction data are measured in terms of value added, whereas exports
are gross value of output (appendix I discusses the limitations of
the production data in more detail). Nevertheless, trends in the
composition of production should be broadly comparable to those of
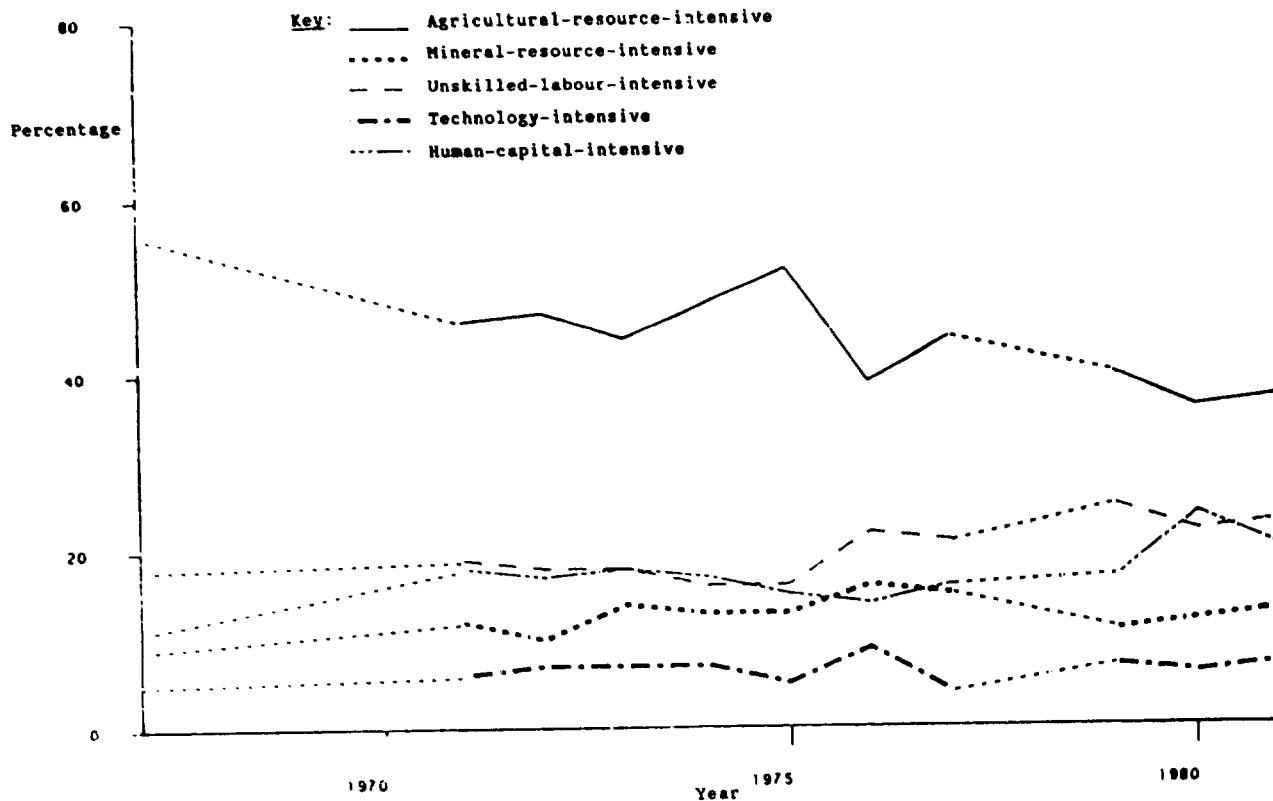trade.

Figure V. Factor-intensity composition of Indonesian manufacturing value added, 1963-1982

(Percentage of total)
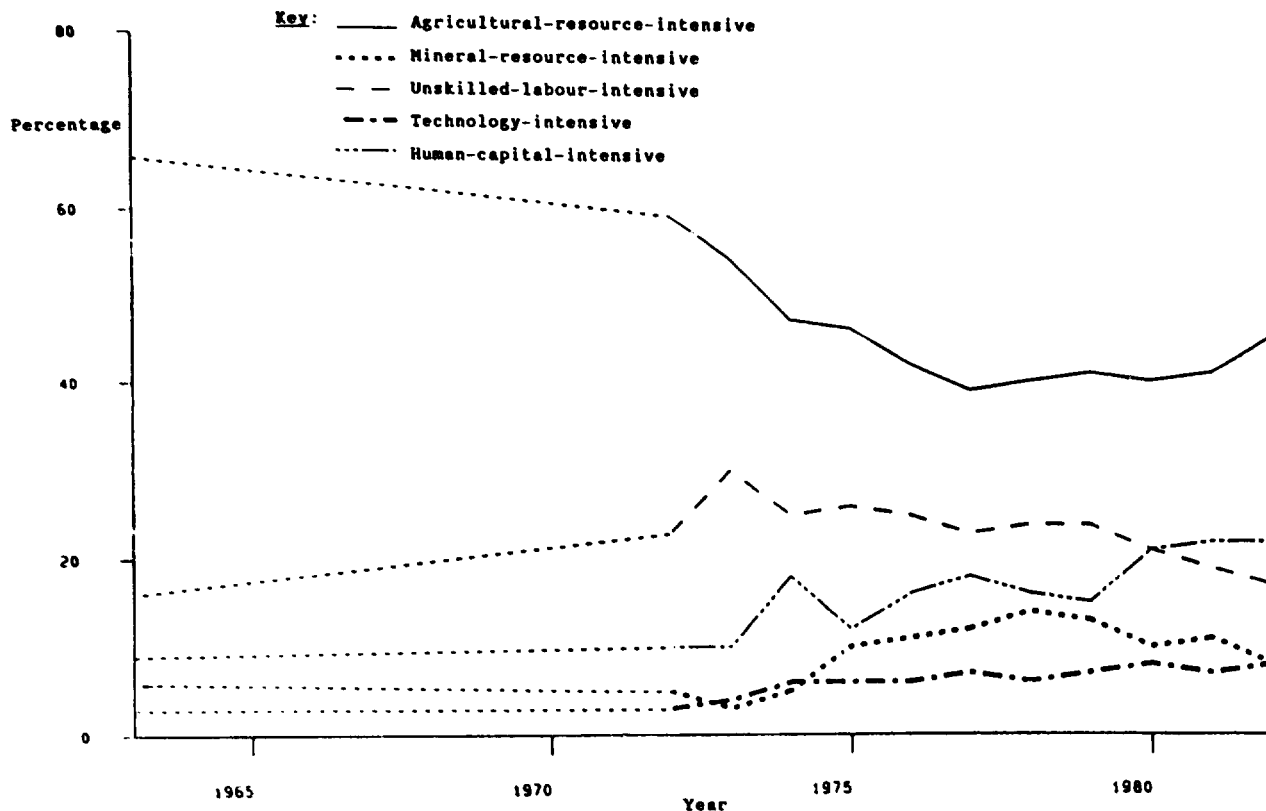
Key:
 ─────── Agricultural-resource-intensive
 ····· Mineral-resource-intensive
 ─ ─ Unskilled-labour-intensive
 ──·── Technology-intensive
 ·····─ Human-capital-intensive

Source: Country statistical publication.

Note: Dashed line indicates data not available for intervening years. Mineral-resource-intensive excludes ISIC 353 (refined petroleum products).
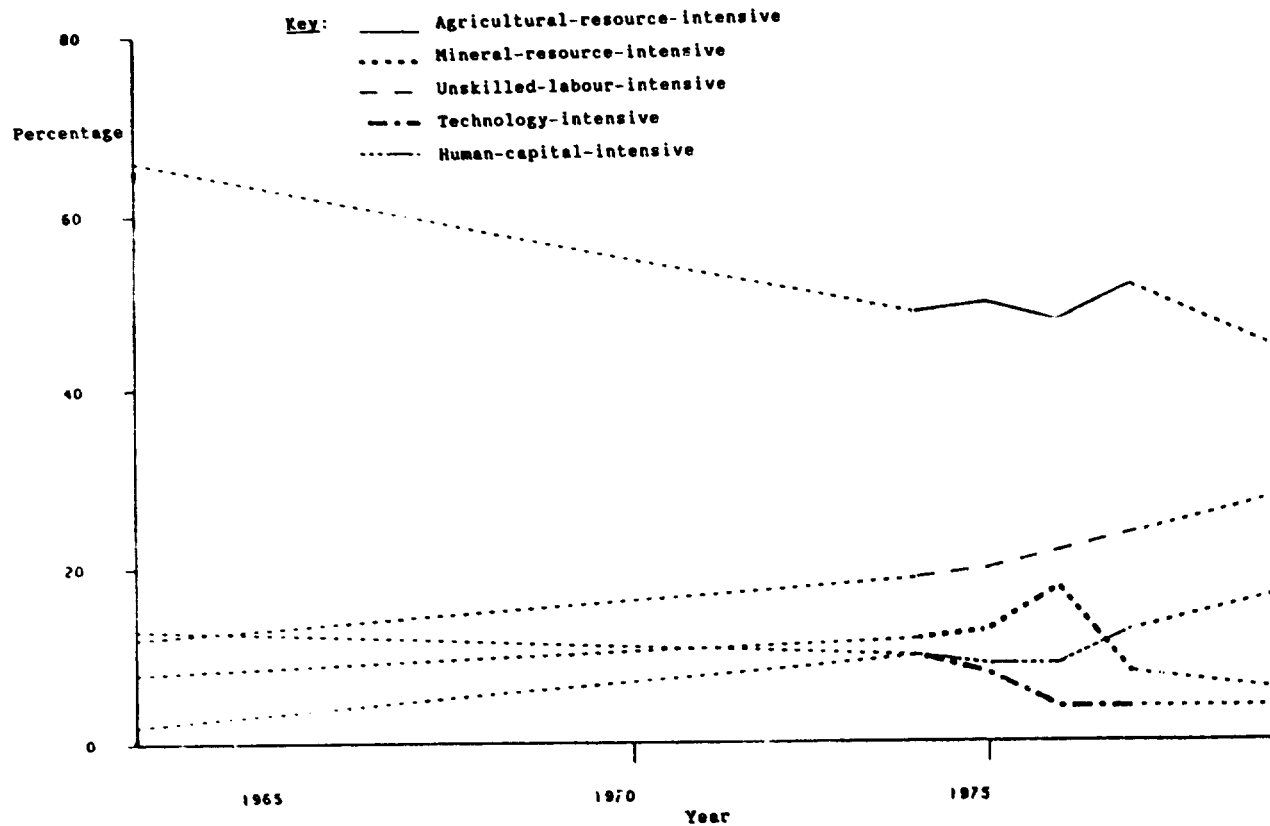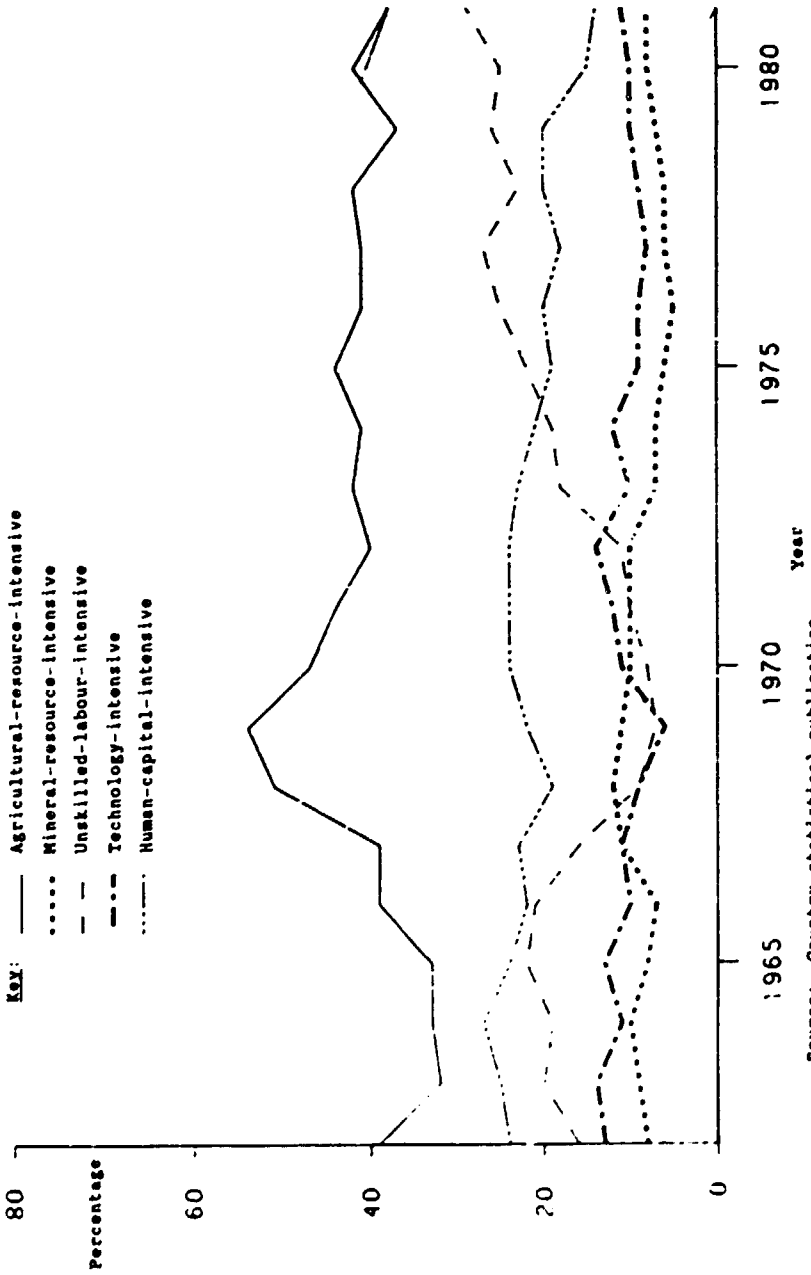
Figure VI. Factor-intensity composition of Philippine manufacturing value added, 1967-1982
(Percentage of total)

Key: ——— Agricultural-resource-intensive
..... Mineral-resource-intensive
— — Unskilled-labour-intensive
—.— Technology-intensive
...—. Human-capital-intensive

Source: Country statistical publication.

Note: Dashed line indicates data not available for intervening years. Mineral-resource-intensive excludes ISIC 353 (refined petroleum products).

Figure VII. Factor-intensity composition of Thai manufacturing value added, 1963-1979
(Percentage of total)

Source: Country statistical publication.

Note: Da..ed line indicates data not available for intervening years. Mineral-resource-intensive excludes ISIC 353 (refined petroleum products).

Figure VIII. Factor-intensity composition of Malaysian manufacturing value added, 1962-1981

(Percentage of total)

Key:
— Agricultural-resource-intensive
····· Mineral-resource-intensive
– – Unskilled-labour-intensive
–·– Technology-intensive
···· Human-capital-intensive

Source: Country statistical publication.

Note: Dashed line indicates data not available for intervening years. Mineral-resource-intensive excludes ISIC 353 (refined petroleum products).

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Figure IX. Factor-intensity composition of Singapore manufacturing value added, 1960-1982
(Percentage of total)
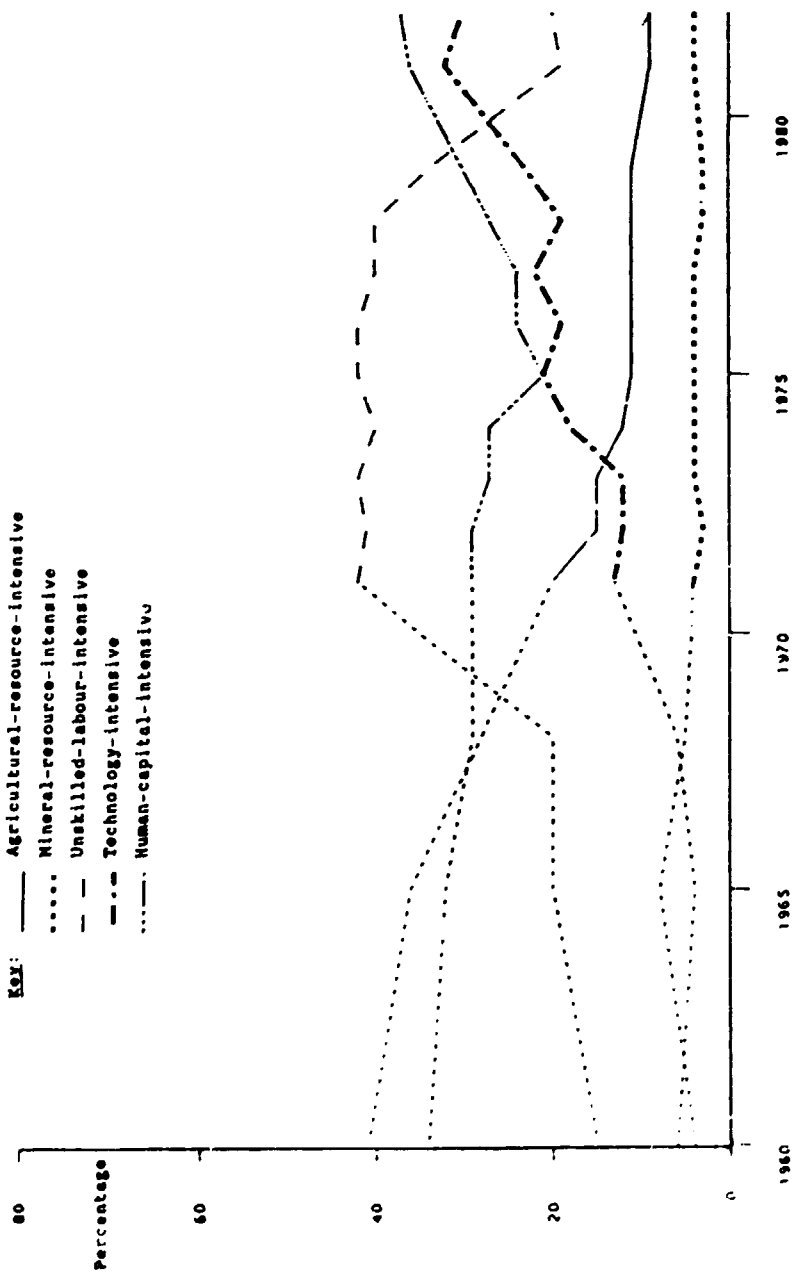
Key:
——— Agricultural-resource-intensive
••••• Mineral-resource-intensive
— — Unskilled-labour-intensive
—·— Technology-intensive
••••• Human-capital-intensive

Source: Country statistical publication.

Note: Dashed line indicates data not available for intervening years. Mineral-resource-intensive excludes :SIC 353 (refined petroleum products).

consumer goods - most notably textiles - grew very rapidly in the
late 1960s and early 1970s, during a catch-up phase following the
economic dislocation of the first half of the 1960s. Thereafter,
however, production growth was limited essentially to the expansion
in the domestic market, because exports of these products were
minimal (McCawley [12]). In the case of human-capital-intensive
products, their growth was fostered by the protection régime
(Pangestu and Boediono [13]). Very high effective protection rates
were conferred upon a range of consumer durable goods. Imports of
the most important product of this group, motor vehicles, have been
prohibited since 1974. State-owned enterprises in a range of heavy
industries also contributed to the growth of this category. Conse-
quently, although Indonesia's manufacturing sector grew very
rapidly, the promotion of uneconomic activities through high pro-
tection and extensive regulation resulted in an outcome quite the
opposite of that predicted by the model.*

The Philippine pattern (figure VI) bears some resemblance to
that of Indonesia, and for similar reasons. Agriculture-based
activities declined from more than one half in 1967 to a little
over one third in 1981, while the share of the human-capital-
intensive group rose. In this case also, transport equipment
(ISIC 384), especially, and the human-capital-intensive component
of electrical machinery (ISIC 383) have accounted for much of the
increase. As in Indonesia, the very high effective protection con-
ferred on these activities in the Philippines (Bautista [14])
explains much of the growth of these industries. The rapid
increase in the share of unskilled-labour-intensive manufactured
exports is reflected in a much smaller corresponding increase in
this group's share of output, primarily because a good deal of the
export expansion consisted of very low (domestic) value added
activities.

The Thai production data, though rather incomplete and not of
uniform coverage, reveal a fairly clear pattern (figure VII). The
two resource-based categories have generally declined, although
around a fluctuating trend. At the same time, the unskilled-labour-
intensive product group has increased its share rapidly, to almost
30 per cent (higher than all ASEAN countries except Malaysia) by
the late 1970s. The share of technology- and human-capital-
intensive products has remained fairly modest. The increase in the
latter is explained again by protection for consumer durables,
especially motor vehicles.

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*It should be noted that Indonesian manufacturing statistics
exclude the large petroleum refining industry (ISIC 353). However,
since this industry grew at about the same rate as manufacturing as
a whole, the direction of trends - if not the magnitudes - is
reasonably accurate. This industry is also excluded from the
Malaysian and Singapore data, since its considerable but fluctua-
ting importance tends to blur underlying trends in the other cate-
gories.

Trends in the composition of Malaysian manufacturing production also conform to the predictions of the model (figure VIII). The share of resource-intensive manufacturing - especially agriculture-based - has declined substantially since the late 1960s. The very sharp increase in unskilled-labour-intensive manufactured exports is also reflected in a lesser increase in this group's share of manufacturing production. Much of the growth in this group is explained by the semi-conductor industry (a subgroup of electrical machinery, ISIC 383) and by textiles. Correspondingly, the share of the technology and human-capital-intensive groups has declined somewhat, as the country's advantage in unskilled-labour-intensive products has been vigorously promoted.

Trends in Singapore, the most open of the ASEAN economies and possessing a longer period of industrialization, accord best with our theoretical predictions (figure IX). In the early 1960s, resource- and human-capital-intensive activities were particularly important, reflecting the nature of its economic relations with, and its factor endowments relative to, its ASEAN neighbours. Agriculture-based activities declined sharply in relative importance in the 1960s and early 1970s, as would be expected. Correspondingly, the importance of unskilled-labour-intensive activities grew strongly, especially in the late 1960s, until rising real wages resulted in a sharp absolute and relative decline in these activities beginning in the late 1970s. As in the case of manufactured exports, Singapore began to move into the third phase of our schema in the late 1970s, as technology and human-capital-intensive products became increasingly important.

C. Conclusions

To what extent has the attempt made in this paper to capture and explain the major dimensions of structural change in ASEAN manufacturing since the 1960s been successful? In the case of exports, the theoretical predictions - based on the relationship between changing factor endowments and the transformation of manufacturing activity - accord well with the observed changes in the ASEAN countries. The four countries for which useful trade data are available all appear to be following our three-phase schema. Departures from the predicted pattern of structural change may be explained by institutional and policy factors. The most important of these in the ASEAN context have been the close economic relationship between Malaysia and Singapore, especially prior to 1970, and domestic government policies affecting the export drive, particularly export processing zones and export incentives.

The effects of policy interventions are particularly important in explaining the changing pattern of manufacturing production. In the three more open economies, Singapore (especially), Malaysia and Thailand, the observed changes match the model's predictions. But in the Philippines and, especially, Indonesia the changing structure of manufacturing production does not correspond closely to our expectations. The explanation is that protection has inhibited the growth of industries in which these two countries have a comparative

advantage, and fostered the expansion of a range of uneconomic activities. The importance of the protection systems is clearly illustrated by the fact that there is a strong association between the predictive power of our model and the trade régime. A framework has therefore been provided which not only enables structural change to be predicted, but also illustrates the effects of protection in retarding the allocation of resources into those activities in which a country will have a comparative advantage.

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Appendix I

DATA SOURCES

The following two main data sources have been used in this paper:

(a) Trade statistics. These are based on the ASEAN-Australia Joint Research Project and Australia-Japan Research Centre Data Bank. The data, obtained from the World Bank trade data tapes, are at the three-digit SITC level and commence for most countries in 1962;

(b) Production statistics. These are based on each country's manufacturing statistics (referred to in the figures as "country statistical publication"). The publications and coverage for each country are:

(i) Indonesia. Biro Pusat Statistik, Statistik Industri (Industrial Statistics), annual since 1970. In addition, a Sensus Industri (Industrial Census) has been published for the years 1963 and 1974. The coverage of the Statistik Industri includes: 1974 - firms with 20 or more employees; 1970-1973 - firms with 10 or more employees without power equipment and five or more employees using power equipment. Petroleum refining (ISIC 353) is not included;

(ii) Malaysia. Data compiled from unpublished statistics obtained from the Department of Statistics Annual Survey of manufacturing establishments. The data refer only to West Malaysia. Petroleum refining is excluded in some years;

(iii) Philippines. National Census and Statistics Office, Annual Survey of Establishments: Manufacturing, annual since 1974. For the years 1961, 1967, 1972, 1975 and 1978 there was a Census of Establishments. Beginning with the 1976 Survey, all establishments employing one or more workers are included. Prior to 1975 firms employing fewer than five workers were excluded. The Surveys provide data only at the three-digit level. Where four- or five-digit data were required, they were interpolated from the closest Census;

(iv) Singapore. Department of Statistics, Report on the Census of Industrial Production, annual since 1959. The Census includes all firms employing at least 10 workers;

(v) Thailand. National Statistical Office, Report of the Industrial Census, occasional since 1963. The Census includes all firms employing at least 10 workers.

Appendix II

THE COMMODITY CLASSIFICATION

The commodity classification follows that of Krause [8], with the additional modification introduced by Tyers and Phillips [9] of separating resource goods into agricultural- and mineral-resource-intensive products, and other small adjustments. Krause presents the classification for SITC (trade) commodities. The corresponding ISIC (production) categories have been prepared on the basis of an ISIC-SITC concordance. The classifications are as follows:

SITC (trade) classification of manufactures

Code	Product
	1. Agricultural-resource-intensive
61	Leather, dressed fur etc.
63	Wood, cork manufactures
	2. Mineral-resource-intensive
661-3	Non-metal building products and minerals
667	Pearls, precious, semi-precious stones
671	Pig iron etc.
	3. Unskilled-labour-intensive
54	Medical etc. products
65	Textile, yarn, fabric etc.
664-6	Glass, glassware, pottery
695-7	Tools, cutlery, metal household equipment
729	Electrical machinery n.e.s.
735	Ships and boats
81-5	Plumbing, heating, lighting etc. equipment; furniture; travel goods; clothing; footwear
893-5	Articles of plastic n.e.s.; toys, sporting goods; office supplies, n.e.s.
899	Other manufactured goods
931 a/	Special transactions
951	War firearms, ammunition
	4. Technology-intensive
51	Chemical elements, compounds
52	Coal, petroleum etc., chemicals
56-9	Fertilizers, explosives, plastics, chemicals n.e.s.
71	Machinery, non-electric
722	Electrical powered machinery, switchgeared
723	Electrical distributing machinery
726	Electro-medical, X-ray equipment
734	Aircraft
861-3	Instruments, photo, cinema supplies, movies

5. Human-capital-intensive

53	Dyes, tanning, colour products
55	Perfume, cleaning etc., products
62	Rubber manufactures n.e.s.
64	Paper, paperboard and manufacturing
672-9	Iron and steel excluding 670-1
691-4	Metal manufactures excluding 695-9
698-9	Metal manufactures n.e.s.
724	Telecommunications equipment
725	Domestic electric equipment
731-3	Railway and road vehicles
864	Watches and clocks
891	Sound recorders, producers
892	Printed matter
896	Works of art etc.
897	Gold, silverware, jewelry

ISIC (production) classification of manufactures

Code	Product

1. Agricultural-resource-intensive

311	Food
312	
313	Beverages
314	Tobacco
323	Leather goods, fur excluding footwear and clothing
33111-3	Sawmills, planning and other wood mills
3411	Pulp, paper and paperboard

2. Mineral-resource-intensive

3512	Fertilizers and pesticides
353	Petroleum refineries
354	Miscellaneous petroleum and coal products
361	Pottery, china, earthenware
363-9	Building products and minerals, non-metallic
372	Non-ferrous-metal basic industries

3. Unskilled-labour-intensive

321	Textiles
322	Wearing apparel, excluding footwear
324	Footwear excluding rubber, plastic footwear
331	Rest of wood, cork excluding furniture and 33111-3
332	Furniture, fixtures, excluding those primarily metal
3522	Drugs and medicines
356 b/	Plastic products n.e.s.
362	Glass, glass products
3811	Cutlery, handtools, general hardware

3812	Furniture, fixtures primarily of metal
38329 c/	Electronic components, communications
3841	Shipbuilding and repairing
3849	Transport equipment n.e.s.
390	Rest of other manufacturing, excluding jewelry

4. Technology-intensive

351	Rest of industrial chemicals, except 3512
3529	Chemical products n.e.s.
3813	Structural metal products
382	Machinery, excluding electrical
3831	Electrical industrial machinery
3839	Electrical apparatus and supplies n.e.s.
3845 d/	Aircraft
3851	Professional, scientific equipment
3852	Photographic and optical goods

5. Human-capital-intensive

341	Rest of paper and paper products, excluding 3411
342	Printing, publishing and related
352	Rest of other chemical products, excluding 3522
355 e/	Rubber products
371	Iron and steel basic industries
3814-9	Fabricated metal products n.e.s.
38321-8	Radio, television, communication equipment
3833	Electrical appliances and housewares
3842-4	Railroad equipment vehicles, bicycles
3853	Watches and clocks
3901	Jewelry and related articles

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a/ The Philippines classifies exports from export processing zones as SITC 931. These are classified as unskilled-labour-intensive.

b/ Singapore uses 357 for plastics n.e.s., which is classified as unskilled-labour-intensive.

c/ Data for 38329 (semi-conductors etc.) are not always provided separately, in which case a share of 3832 has been allocated on the basis of years for which data are available.

d/ Indonesia uses 3845 for bicycles, which is classified as unskilled-labour-intensive, and 3846 for aircraft which is classified as technology-intensive.

e/ 355 includes only 3551 (tyres and tubes) and 3559 (miscellaneous rubber products); crumbed and smoked rubber and rubber sheeting are excluded.

SOMMAIRE

Le coût des transports internationaux et le développement
industriel dans les pays africains les moins avancés

Ian Livingstone

Parmi d'autres avantages, les 26<pays africains classés dans la catégorie des pays les moins avancés souffrent d'une dimension économique restreinte et d'un coût élevé des transports internationaux. Le présent article traite de l'impact des deux facteurs sur les perspectives de développement économique et industriel de ces pays et contient en particulier des indications intéressant le problème des transports. Les faits montrent qu'une faible dimension et des coûts de transport élevés sont d'importants obstacles au développement desdits pays et qu'il faudrait en tenir compte dans la planification et la formulation des stratégies et des politiques industrielles. L'article contient des recommandations concernant les types d'ajustement qui pourraient se révéler nécessaires afin de réduire au minimum les effets négatifs des deux facteurs considérés.

L'impact économique de l'industrie touristique
en République-Unie de Tanzanie : une analyse entrées-sorties

Steve Curry

Le tourisme est devenu une industrie internationale importante qui a des rapports avec les autres secteurs industriels et commerciaux ainsi qu'avec l'agriculture. Cet article mesure l'impact économique du tourisme en République-Unie de Tanzanie en utilisant divers aspects des méthodes de calcul du multiplicateur des entrées-sorties. L'impact global du tourisme est important dans les pays en développement mais plus faible que celui de la plupart des autres secteurs d'exportation. Des comparaisons entre divers types de touristes montrent que les différences entre les niveaux de dépenses sont plus importantes que les différences de structure des dépenses. Des rapports entrées-sorties plus élevés n'engendrent pas forcément des revenus plus élevés. La portée de ces mesures étant limitée, il faut les compléter par des études sur l'impact indirect du tourisme sur l'économie grâce à la contribution qu'il apporte aux investissements et à la capacité d'importation.

Analyse de l'intensité factorielle de l'évolution structurelle
des industries manufacturières des pays appartenant à
l'association des nations de l'Asie du Sud-Est (ANASE)

Mohamed Ariff et Hal Hill

Les membres de l'Association des nations de l'Asie du Sud-Est (ANASE) sont, depuis vingt ans, parmi les pays en développement dont la croissance est la plus rapide. Le secteur manufacturier

constitue un élément important de cette croissance. Cette étude analyse l'évolution structurelle du secteur manufacturier de chacun des pays en detaillant les tendances de la production et des exportations grâce à une classification des produits de base tenant compte de l'intensité factorielle. Les transformations structurelles à l'intérieur du secteur manufacturier peuvent s'expliquer par la théorie de l'évolution des avantages comparatifs et par référence aux effets induits par des mesures interventionnistes spécifiques.

EXTRACTO

Los costos del transporte internacional y el desarrollo
industrial en los países africanos menos adelantados

Ian Livingstone

Los 26 países africanos menos adelantados sufren las conse-
cuencias de diversas circunstancias poco ventajosas, entre ellas,
su pequeña dimensión económica y los elevados costos de los trans-
portes externos. En el documento se examina la repercusión de es-
tos factores en las posibilidades de desarrollo económico e indus-
trial de los países africanos menos adelantados y, en particular,
se proporcionan algunas mediciones de barreras derivadas del trans-
porte. Los datos indican que la pequeña dimensión y los elevados
costos de transporte son obstáculos considerables al desarrollo de
estos países, hecho que debe tenerse en cuenta al planificar la
industria y formular estrategias y políticas. El estudio contiene
recomendaciones sobre los tipos de reajuste que tal vez se requie-
ran para minimizar los efectos negativos de los dos factores que se
examinan.

Las repercusiones económicas de la industria turística en la
República Unida de Tanzanía: un análisis de insumo-producto

Steve Curry

El turismo se ha convertido en una importante industria inter-
nacional, que tiene vinculaciones con otros sectores industriales y
comerciales y con actividades económicas como la agricultura. En
este artículo se determinan las repercusiones económicas del turis-
mo en la República Unida de Tanzanía mediante el empleo de diferen-
tes metodologías del multiplicador de insumo-producto. El turismo
tiene importantes repercusiones en los países en desarrollo, pero
esa importancia es menor que la de la mayor parte de los sectores
de exportación. Las comparaciones entre distintos tipos de turismo
permiten ver que las diferencias de los niveles de gastos son más
importantes que las diferencias en cuanto a la estructura de és-
tos. Una mayor vinculación no significa necesariamente una mayor
generación de ingresos. Esta medición de las repercusiones se li-
mita a un ámbito reducido, y es necesario complementarla con estu-
dios de las repercusiones indirectas del turismo por la contribu-
ción de éste a las inversiones y a la capacidad de importación.

Análisis de la intensidad de los factores del cambio
estructural en el sector manufacturero de la ASEAN

Mohamed Ariff y Hal Hill

En los dos últimos decenios, los países miembros de la Asocia-
ción de Naciones del Asia Sudoriental (ASEAN) han venido figurando
entre los países en desarrollo de más rápido crecimiento. El sec-
tor manufacturero ha desempeñado un papel importante en ese

crecimiento. En este documento se analiza el cambio estructural
del sector manufacturero de cada país, desagregando las tendencias
de la producción y de las exportaciones a base de una clasifica-
ción de la intensidad de los factores de productos fabricados. Las
transformaciones estructurales dentro del sector manufacturero pue-
den explicarse por la teoría del cambio de la ventaja comparativa y
por los efectos de determinadas invenciones estatales.

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