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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Distr.
LIMITED
PPD.29
30 March 1987
Original: ENGLISH

INDUSTRIAL DEVELOPMENT REVIEW SERIES

THE REPUBLIC OF KOREA

Prepared by the
Regional and Country Studies Branch

V.87-83598

Preface

This series of industrial development reviews on developing countries is prepared within the framework of UNIDO country studies by the Regional and Country Studies Branch.

The reviews present brief factual and analytical surveys of industrial development in developing countries. Such industry-specific reviews are not available elsewhere, yet they are in demand for a variety of purposes: to provide an information service to relevant sections within UNIDO and other international organizations and aid agencies concerned with technical assistance to industry; to be used as a reference source for public and private industrial enterprises, financial organizations and economic research institutes in developed and developing countries; and to serve as a handy, useful information source for policy-makers in developing countries. Although the reviews do not represent in-depth industrial surveys, they focus exclusively on industry and present the information on the entire spectrum of the industrial development process in the countries concerned in a condensed and yet comprehensive form.

The reviews draw primarily on information and material available at UNIDO headquarters from national and international statistical publications as well as data contained in the UNIDO data base. No specific field survey is undertaken. The presentation of up-to-date information on manufacturing trends is usually constrained by incomplete national statistical data. In view of the changing industrial trends it is evident that the reviews will need to be updated periodically. To supplement efforts under way in UNIDO to improve the data base and to monitor industrial progress and changes on a regular basis, it is hoped that the appropriate national authorities and institutions in the respective countries and other readers will provide UNIDO with relevant comments and information. Such response will greatly assist in updating the reviews.

The present Review was prepared on the basis of information available at UNIDO headquarters at the end of January 1987. It is divided into two rather distinct parts. Chapters 1 and 2 are analytical in character, giving first a brief overview of the country's economy and its manufacturing sector and then a more detailed review of the structure and development of its manufacturing industries. Chapters 3 and 4 contain overview and assesment of national plans and policy measures relevant to industrial development, on the more important governmental and other institutions involved in industrial development and on the country's natural, human and financial resources for industrial development. The Review also contains relevant basic indicators and graphical presentation of manufacturing trends as well as statistical and other annexes.

It should be noted that the reviews are not official statements of intention or policy by Governments nor do the views and comments contained therein necessarily reflect those of the Government.

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EXPLANATORY NOTES

Regional classifications, industrial classifications, trade classifications and symbols used in the statistical tables of this report, unless otherwise indicated, follow those adopted in the United Nations Statistical Yearbook.

Dates divided by a slash (1984/85) indicate a crop year or a financial year. Dates divided by a hyphen (1984-85) indicate the full period, including the beginning and end years.

In tables:

Three dots (...) indicate that data are not available or are not separately reported;
A dash (-) indicates that the amount is nil or negligible;
A blank indicates that the item is not applicable;
One dot (.) indicates that there is insufficient data from which to calculate the figure;

Totals may not add precisely because of rounding.

Basic indicators and graphical illustrations of manufacturing trends contained in this Review are based on data sourced from the UNIDO data base, international organizations, commercial and national sources.

The following abbreviations are used in this document

ADB	Asian Development Bank
EC	European Community
ECDC	Economic Co-operation among Developing Countries
EIU	Economic Intelligence Unit
EPB	Economic Planning Board (of the Republic of Korea)
ESCAP	Economic and Social Commission for Asia and the Pacific
FRG	Federal Republic of Germany
GDP	Gross domestic product
GNP	Gross national product
GSP	Generalized System of Preferences
IBRD	International Bank for Reconstruction and Development (World Bank)
IFC	International Finance Corporation (of the World Bank)
ILO	International Labour Office
IMF	International Monetary Fund
KAIST	Korea Advanced Institute of Science and Technology
KDI	Korea Development Institute
KSIC	Korea Standard Industrial Classification
MOST	Ministry of Science and Technology (of the Republic of Korea)
MVA	Manufacturing value added
NIC	Newly industrializing country
PBEC	Pacific Basin Economic Council
SOC	Social overhead capital
TCDC	Technical Co-operation among Developing Countries
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
W	Won

BASIC INDICATORS 1

The economy

GNP (1986)	:	$93.2 billion[a/]
Population — Number	:	41.06 million (1985)
Growth rate	:	2.2 per cent (1965-73) 1.5 per cent (1973-84) 1.4 per cent (1980-2000)
Density	:	419 inhabitants per sq. km (1985)
Economically active population	:	15.55 million (1985)
GNP per capita	:	$2,260 (1986)[a/]

Average annual real growth rate of GDP (per cent) :

1965-73	1973-84	1983	1984	1985[a/]	1986[a/f/]
10.0	7.2	10.9	8.6	5.2	12.2

Structure of production :

Percentage Shares of GNP (1980 constant prices)

	1971	1985
Agriculture[b/]	26.7	14.5
Industry[c/]	28.6	43.9
Manufacturing	20.9	30.7
Services	44.7	41.6

Average annual rate of inflation[d/] (per cent) :

1971-75	1976-80	1981-85	1983	1984	1985	1986
15.7	17.7	3.8	3.4	2.3	2.5	1.3

	1980	1981	1982	1983	1984	1985	1986
Currency (Won equivalent to $1)	659.9	700.5	748.8	795.5	827.4	890.2	861.4
(Won equivalent to Y100)	291.0	317.6	300.6	334.9	348.3	373.2	569.9[e/]

a/ Preliminary.
b/ Including forestry and fishing.
c/ Manufacturing, mining & quarrying, construction and utilities.
d/ Consumer prices.
e/ Arbitrated rate (25 September 1986).
f/ GNP

BASIC INDICATORS 2

Resources and transport infrastructure

Crops (leading products by volume, 1984)	:	Rice (5.68 million mt), barley 0.8 million mt), sweet potatoes (0.28 million mt), soy beans (0.25 million mt)
Livestock (total numbers in million, 1985)	:	Cattle (2.55), pigs (2.85), goats (0.32), poultry (51.7)
Fisheries (total catch)	:	3.1 million mt (1985)
Forests	:	6.54 million ha; forest 172 million cbm (1984)
Mining (leading products by volume, 1985)	:	Anthracite (23.6 million mt), iron ore (0.54 million mt), granite (0.32 million mt)
Energy production		
major source	:	solid fuels
share of total production	:	84 per cent (1982)
share of total consumption	:	23 per cent (1982)
rate of growth of production	:	2.9 per cent (1965-73) 5.0 per cent (1973-84)
rate of growth of consumption	:	15.3 per cent (1965-73) 8.4 per cent (1973-84)
Consumption per capita (kg of oil equivalent)	:	237 (1965) 1,171 (1984)
Imports of energy as percent of merchandise exports:		18 per cent (1965) 25 per cent (1982/3)
Nuclear Power units in operation	:	3 (end 1984)
Nuclear power-generated electricity	:	1,790 MW (end 1984)
as percent of total electricity generated	:	20 per cent (1984)
Transport		
Roads	:	52,264 km (1985), of which 26,072 paved
Railways	:	6,299 km (1985), of which 3,121 km in operation
Ports	:	24 first-grade ports
Main international airport	:	Kimpo, Seoul
Other international airport	:	Kimhae, Pusan

BASIC INDICATORS 3

Foreign trade and balance of payments

Exports[a/]:	total value	: $34,700 million (1986)[b/]
	main goods	: Transport equipment; clothing, electrical machinery, apparatus and appliances; textile yarn, fabrics, made-up articles; iron and steel.
	main destinations, 1985	: USA (36%), Japan (15%), Hong Kong (5%), Canada (4%), Germany, F.R. (3%), Saudi Arabia (3%), United Kingdom (3%)
Imports[a/]:	total value	: $31,500 million (1986)[b/]
	main goods	: crude oil; non-electrical machinery; transport equipment; electrical machinery
	main origins, 1985	: Japan (24%), USA (21%), Malaysia (4%), Australia (4%), Germany, F.R. (3%), Indonesia (2%), Saudi Arabia (2%)
Balance of payments		: Current account surplus $4,600million (1986)[b/]
Gross international reserves		: $7,729 million (end 1985) or 13 weeks of import coverage
Outstanding foreign debt:	gross	: $44,500 million (1986)
	percentage of GNP:	47.7 per cent (1986)
	net	: $34,200 (1985)
	percentage of GNP:	41.2 per cent (1985)
Debt service:		
percentage of GNP		: 6.5 per cent (1984)
percentage of total exports of goods and services		: 15.8 per cent (1984)

a/ Customs Administration figures, incl. imported ships and re-export after repair.

b/ Preliminary.

BASIC INDICATORS 4

The manufacturing sector

Manufacturing value added	:	$23,670 million (1985)
MVA per capita	:	$577 (1985)
Employment in manufacturing	:	3.500 million (1985)
as percentage of total labour force	:	22.5 per cent (1985)
MVA per employee	:	$6,763 (1985)

Structure of MVA[a/] (Percentage shares)

		1975	1984
Mainly consumer goods[b/]	:	39.3	39.2
Mainly intermediate goods[c/]	:	39.9	36.7
Mainly capital goods[d/]	:	20.5	23.5

Average annual real growth rate of MVA[a/]

1971-75	1976-80	1980	1981	1982
18.2	14.1	-3.1	13.7	4.1

1983	1984	1985[e/]
16.9	14.6	4.0

Trade in manufactures[f/]

Total value	- exports:	$26,681 million (1984)
	- imports:	$16,932 million (1984)

Share of manufactures[f/]

- in total exports:	91.2 per cent (1984)
- in total imports:	55.3 per cent (1984)

a/ At 1980 prices.
b/ ISIC 311, 313, 314, 321, 322, 324, 332, 342, 361, 390.
c/ ISIC 323, 331, 341, 351, 352, 353, 354, 355, 356, 362, 369, 371, 372.
d/ ISIC 381, 382, 383, 384, 385; includes also some consumer durables.
e/ First three quarters 1985 as compared to same period 1984.
f/ Share of SITC 5 to 8 less 68 in total exports and imports, excluding ships imported for repair and re-exported.

BASIC INDICATORS 5

Trade in manufactured goods

In 1984

MANUFACTURED EXPORTS[a/] total value $26,681 million

Principal manufactured exports	(Percent of total)	Destination (in per cent)				
		Developing Countries	Developed Market Countries			Centrally Planned Developed Countries[b/]
			Total	USA	EC	Japan	
Transport equipment	(20.7)	44.4	51.3	15.6	15.5	6.1	0.0
Clothing	(16.9)	7.2	91.7	51.5	17.1	13.7	0.0
Electrical machinery, apparatus and appliances	(14.8)	16.5	81.4	58.5	7.8	9.4	0.0
Textile yarn, fabrics and made-up articles	(9.8)	48.5	43.0	13.9	6.3	15.2	0.0
Iron and steel	(7.7)	31.5	65.5	39.1	0.4	22.0	0.0

MANUFACTURED IMPORTS[a/] total value: $16,932 million

Principal manufactured imports	(Percent of total)	Origin (in per cent)				
		Developing Countries	Developed Market Countries			Centrally Planned Developed
Countries[b/]			Total	USA	EC	Japan	
Machinery, other than electric	(19.3)	1.6	97.7	25.7	15.7	52.1	0.0
Transport equipment	(19.3)	39.2	57.9	14.8	18.6	10.7	0.0
Electrical machinery, apparatus and appliances	(19.2)	5.2	92.4	35.7	9.0	43.1	0.0
Chemical elements and compounds	(8.9)	6.4	90.2	30.7	19.0	33.5	0.0
Iron and steel	(7.8)	6.1	87.2	2.7	5.6	74.6	0.0

a/ SITC 5 to 8 less 68.
b/ There is no recorded trade with centrally planned economies.

BASIC INDICATORS 6
Inter-country comparison of selected indicators

	Unit	Hong Kong	Malaysia	Singapore	Thailand	Taiwan Province of China	Republic of Korea
I. Demographic Indicators							
Population (mid-1984)	million	5.4	15.3	2.5	50.0	18.9	40.1
Population growth (1973-84)	per cent per annum	2.4	2.4	1.3	2.2	1.8	1.5
Infant mortality[a/] 1984	per 1000	10	28	10	44	11 [d/]	28
Area	'000 km^2	1	330	1	514	36	98
Density (1984)	persons/km^2	5,400	46	2,500	97	527	409
II. Economic Indicators							
GDP (1984)	$ billion	30.6	29.3	18.2	42.0	57.3	83.2
GNP per capita (1984)	$	6,330	1,980	7,260	860	3,058	2,110
GDP growth (1973-84)	per cent/ annum	9.1	7.3	8.2	8.7	7.6	7.2
Agriculture (1984)	per cent of GDP	1	21	1	20	6.5	14
Industry (1984)	per cent of GDP	22	35	39	28	52 [b/]	40
Manufacturing (1984)	per cent of GDP	23 [b/]	19	25	19	42	28
Services (1984)	per cent of GDP	78	44	60	52	41	47
Exports of goods and non-factor services (1984)	per cent of GDP	107	56	174	24	58	37
Gross domestic investment (1984)	per cent of GDP	24	31	47	23	22	29
External public debt (1984)	per cent of GNP	0.8	39.4	10.6	18.2	11.4	30.4
III. Industrial indicators							
MVA (1982)	million $ at constant 1975 prices	3,679	3,287	2,431	4,837	11,875	11,492
Share of MVA in GDP (1984)	per cent	23 [b/]	19	25	19	42	28
Growth of MVA (1973-84)	average annual per cent	6.7 [e/]	8.7	7.6	10.0	8.9	11.5
MVA share in world manufacturing value added (1981)	per cent	0.24	0.13	0.13	0.23	0.50	0.52
Share of manufactured [c/] exports in total exports (1984)	per cent	93.8	22.7 [f/]	49.4	32.8	91.0	84.2

a/ Aged under 1 year.
b/ 1983.
c/ SITC 5-8 less (67 + 68).
d/ 1980.
e/ Est. 1973-83.
f/ 1982.

EXECUTIVE SUMMARY

From a war-impoverished, rural based country in the 1950s the Republic of Korea has developed into one of the world's economically most dynamic countries with a long-term annual growth of GNP per capita of 6.6 per cent (1965-84) attaining in 1986 a GNP per capita of about $2,270. The Sixth Five-Year Plan (1987-91) envisages a further increase to $3,800 by the end of the plan period.

In the initial phase of post-war economic development the country was largely dependent on foreign aid to provide the key investible resources for the process of industrialization. The main emphasis was placed on a policy of import substitution until the early sixties, when policy orientation shifted to export promotion. With import substitution subsequently proceeding to heavy and chemical industries, the focus on export expansion and diversification has been maintained consistently ever since.

High rates of economic growth came to a brief halt in the wake of the first "oil shock" in 1973, but strong efforts were soon made to overcome the adverse balance-of-payments implications. These efforts included a reorientation of the originally domestically-oriented heavy and chemical industries towards export markets. As a result, over the Plan period 1972-76, it was possible to attain a growth rate of 8.6 per cent per annum (down from the target of 10.1 per cent). In the period 1979-81 the country experienced a more drastic setback due to the second oil price increase. However, through renewed emphasis on exports the GNP growth rate could be raised to 8.6 per cent per annum in the years 1981-84. For the whole Fifth Plan period (1982-86) it was 8.7 per cent annually, thus substantially surpassing the initial Plan target of 7.5 per cent.

Exports of manufactures constitute some 96 per cent (1984) of total exports - a share among the highest of any country in the world. The high overall export dependence of the economy is beginning to become problematic in times of sluggish growth in international trade and in view of the fact that protectionist forces tend to increase. One of the aims of the government's export policy is to lessen the country's dependence on the U.S. market which presently absorbs more than one third of Korean manufactured exports.

The structure of production and of employment has changed considerably over the past 20 years. In 1966, the agricultural sector (including forestry and fishing) accounted for 46 per cent of GDP and 58 per cent of employment; by 1985 the corresponding shares were down to 14.5 per cent and 25 per cent, respectively. By contrast, the share of manufacturing in GDP rose from 10 per cent in 1966 to 31 per cent in 1985 a share only exceeded by Taiwan Province of China and the Federal Republic of Germany. The share of manufacturing in total employment increased from 10 per cent to 25 per cent during the same period.

Within the manufacturing sector, structural changes have tended to favour engineering industries (in particular electrical machinery, fabricated metal products and transport equipment) as well as non-ferrous metals and iron and

steel. In general, the country's industrial sector has increasingly shifted from the production of relatively unsophisticated low value added items to more complex high value added manufactures and from labour-intensive to more skill- and technology-intensive branches. This trend was accompanied by high increases in labour productivity and substantial gains in real wages.

Foreign direct investment has contributed to these structural changes without, however, playing a pivotal role. The key sectors receiving foreign direct investment have been electronics, chemicals and machinery. As regards its sources, Japanese investment has been of overwhelming importance, accounting for slightly more than 50 per cent of cumulative inflows of direct investment between 1962-85. By far the largest share of total capital inflows has been in terms of commercial bank loans. Total outstanding external debt has increased to $44.5 billion in 1986 which, in view of the country's solid debt servicing capacity, has not given rise to major concern.

A system of medium-term indicative planning("administrative guidance") has been of basic importance to the country's economic achievements. The planning process is based on strong co-operation between government agencies and the private sector. The centrepiece of a sophisticated ensemble of incentives is the financial system which, in virtually no other developing country, has been so purposefully designed and systematically utilized as an instrument for targeted industrial development. Hence, the country's economic success has always been essentially due to specific forms of public/private sector institutional interlinking. Similar to the Japanese industrial policy approach, market signals have been used to guide strategic decisions without, however, leaving industrial development entirely to the unrestricted working of market forces.

Recent changes in industrial policy have sought to liberalize hitherto restricted areas of the country's economy. This includes the introduction of a "negative list" system for foreign direct investment (Foreign Capital Inducement Act of July 1984), the import liberalization schedule introduced at the same time, as well as recent steps to liberalize the country's financial system. In addition, industrial policy has increasingly focussed on strengthening small- and medium-scale industries which in the past had suffered from domination by the country's giant business conglomerates (chaebols).

Given the Republic of Korea's poor natural resources endowment (including the high import dependence to meet its energy requirements), the successful economic performance over the past two decades could only result from the efficient use of investment capital on the one hand and the industriousness and work commitment of the country's labour force on the other. The goverment attributes high value to the education system as reflected, inter alia, by the latter's high share in total government expenditure. The promotion of industry-related research and development is vigorously pursued as it is seen to hold the key for the country's economic future.

1. THE ECONOMY OF THE REPUBLIC OF KOREA

1.1 Economic structure

The Republic of Korea has gone through a process of very rapid industrialization which has resulted in a well diversified industrial structure and the mastery of advanced production technologies, as well as in a substantially increased income and standard of living of its population.

The country's per capita GNP surpassed the level of $2,000 in 1984. Hence, the Republic of Korea - apart from Hong Kong and Singapore as city states with exceptional development preconditions - is in a leading income position among all Asian developing countries second only to Taiwan Province of China.(Table 1).

The rapid transformation from an agricultural country to a semi-industrialized nation during the last two decades has led many economists to consider the Republic of Korea as a model case of economic development on the basis of an outward-oriented economic strategy.[1/] Since the early 1960s the country's economic strategy has continuously been determined by outward-looking, industry-oriented policies and measures. The average long-term growth rates of GDP (10.0 per cent 1965-73, 7.2 per cent 1973-84) and of GNP per capita (6.6 per cent 1965-84) indicate that the country has been able to cope with the major challenges confronting economies heavily reliant on manufactured exports for the world market, such as e.g., the persistent need to bring about required structural changes in utilizing particular comparative advantages vis-à-vis the international economy. In doing so, the Republic of Korea does not dispose of any significant natural resources, including energy resources (excepting moderate reserves of coal). In consequence, import requirements have always been very high and have pushed the country into export production.

The country's population growth has started to level off: from a 2.3 per cent to 2.6 per cent annual growth rate in the sixties it declined to about 1.5 per cent in the first half of the eighties. In 1985 urban population accounted for 61 per cent of the total with the metropolitan region of Seoul alone accounting for some 25 per cent of total population. Urban population was growing at a high annual average of some 5 per cent over the last three decades, mainly due to rural-urban migration. After a peak in the late sixties, the rate of migration to urban areas has gradually declined.

As far as the sectoral structure of GDP is concerned, a clear trend characterizes the recent decades of high sustained economic growth (Table 2). With the share of agriculture in GDP decreasing from 26.7 to 14.5 per cent between 1971 and 1985, manufacturing has proven to be the economy's most dynamic sector. With the exception of 1982 and 1985, manufacturing has consistently increased its relative importance resulting in an increase of its GDP share from 20.9 to 30.7 per cent. The Republic of Korea thus is one of the few countries in the world with a share of manufacturing in GDP of above 30 per cent. Apart from agriculture, a relative decline was experienced by the services sector (from 44.7 to 41.6 per cent). Utilities, and in particular construction, (the latter accounting for 8.5 per cent of GDP in 1985) have gained in importance.

1/ See UNIDO, 1986 (d).

Table 1. Comparison of basic indicators of selected Asian countries, 1984

Country	Population mid-1984 (million)	Area ('000 km^2)	GDP ($ bn)	GNP per capita ($)	Share of manufacturing in GDP (per cent)	Life expectancy at birth (years)
Republic of Korea	40.6	99	83.2	2,110	28	68
Indonesia	161.6	1,919	80.6	540	12	55
Malaysia	15.3	330	29.3	1,980	19	69
Philippines	53.4	300	32.8	660	25	63
Singapore	2.5	1	18.2	7,260	25	72
Thailand	50.7	514	42.0	860	19	64
India	729.7	3,288	162.3	260	15	56
Pakistan	93.3	804	27.7	380	20	51
China, Peoples Rep. of	1,029.2	9,561	281.3	310	15[a/]	69
Taiwan Province of China	18.9	36	57.3	3,058	42	72[c/]
Hong Kong	5.4	1	30.6	6,330	23[b/]	76

a/ Estimated from World Bank source below, b/ 1983, c/ 1980.

Sources: Asian Development Bank, Key Indicators of Developing Member Countries of ADB, April 1985 and Supplement, October 1985.
World Bank, World Development Report 1986.

Note: Some of the data for the Republic of Korea presented in this Table differ slightly from those sourced from national documents and reported in this Review.

Table 2. Distribution of GDP by sector of origin (at 1980 constant market prices), 1971, 1975, 1980-85
(percentage)

Year	Agriculture[a/]	Mining & Quarrying	Manufacturing	Construction	Utilities	Services
1971	26.7	1.3	20.9	4.8	1.5	44.7
1975	24.4	1.5	25.6	4.8	1.2	42.5
1980	14.6	1.4	29.6	8.3	2.1	44.0
1981	16.6	1.5	29.6	7.5	2.1	42.7
1982	16.2	1.5	29.2	8.4	2.0	42.7
1983	15.6	1.4	29.5	9.0	2.4	42.1
1984	14.4	1.4	31.2	8.8	2.7	41.5
1985[b/]	14.5	1.5	30.7	8.5	3.2	41.6

Sources: 1971 and 1975: Asian Development Bank, Key Indicators of Developing Member Countries of ADB, April 1985.
1980-1985: The Bank of Korea, Monthly Statistical Bulletin, No. 6/1986.

a/ Incl. forestry and fishing, b/ Provisional.

The recent growth performance of the various economic sectors (Table 3), shows that no consistent pattern emerges as to the relative importance of each sector in overall growth in the early eighties. Rather, large fluctuations in sectoral growth rates have prevailed.

Table 3. Sectoral contribution to growth 1979-85, (at constant 1980 prices)

	1979	1985	1979	1980	1981	1982	1983	1984	1985
	Per cent of GNP		Annual growth rates (per cent)						
Agriculture, forestry, and fishing	17.5	15.0	6.7	-21.7	24.5	4.1	6.3	0.4	5.9
Non-agricultural value-added	81.8	85.0	7.5	1.1	4.0	5.8	10.1	9.3	5.0
Mining and quarrying	1.4	1.5	-7.0	-8.5	16.1	-3.8	9.2	9.1	7.0
Manufacturing	27.6	31.9	10.3	-1.1	7.2	4.0	10.9	14.6	3.5
Construction	8.1	8.8	3.0	-1.4	-5.4	20.0	21.2	-0.1	2.1
Other	44.7	42.8	7.2	3.1	3.4	5.0	7.6	7.9	5.8
Gross domestic product	99.3	103.8	7.3	-3.0	6.9	5.5	9.5	7.9	5.2
Gross national product	100.0	100.0	6.5	-5.2	6.2	5.6	9.5	7.6	5.1

Sources: 1979-84: Aghevli and Marquez-Ruarte, 1985, Appendix III, Table 12.
1985: Calculated from EPB, Major Statistics of Korean Economy 1986, Tables 3-5b and 3-6c.

The close interlinkage of the Korean economy with the world economy is reflected by the high share of foreign trade in the country's GNP (Table 4). While the import share increased from 22.6 to 30.4 per cent between 1970 and 1985, the export share almost trebled in the same period to reach the same level of 30.4 per cent. Total foreign trade thus reached an order of magnitude of almost two-thirds of GNP in 1985 (60.8 per cent). Both the trade balance and the current account balance remained in a deficit position throughout the seventies and early eighties accounting, however, for only 1.3 and 1.7 per cent of GNP, respectively, in 1984. A further improvement was recorded during 1985 and in 1986, for the first time, a substantial current account surplus was achieved (see Basic Indicators 3). As is shown in Table 7 it is the heavy industry sector which has recently made the most dynamic contribution to export growth.

Table 4. GNP shares of exports, imports and current account balance, 1968-85 (selected years)

Year	Export share	Import share	Exports plus imports as per cent of GNP	Share of trade balance	Share of current account balance
1968	9.4	25.4	34.8	-16.1	-8.5
1969	10.0	25.0	35.0	-15.0	-8.3
1970	11.0	22.6	33.6	-11.6	-7.8
1975	23.9	31.9	55.8	-8.0	-9.0
1976	27.2	29.3	56.5	-2.1	-1.1
1977	26.9	28.1	55.0	-1.3	-
1978	24.4	27.9	52.3	-3.4	-2.1
1979	23.6	30.6	54.2	-7.0	-6.7
1980	28.5	35.8	64.3	-7.3	-8.8
1981	31.2	36.7	67.9	-5.5	-7.0
1982	30.1	33.9	64.0	-3.7	-3.8
1983	30.5	32.9	63.4	-2.3	-2.1
1984	32.7	34.0	66.7	-1.3	-1.7
1985	30.4	30.4	60.8	0.0	-1.0

Source: Calculated from EPB, Major Statistics of Korean Economy 1986, Tables 10-1a, 10-1b and 12-2a.

Trends in exports, imports and terms of trade are shown in Table 5. There has been an 11-fold increase in the volume of exports between 1971 and 1985. Over the same period real imports increased nearly 5-fold. A dramatic worsening of the net barter terms of trade is evident between 1971 and 1975 (a drop of 31 per cent) caused by the first oil price increase at the end of 1973. The second oil price increase (1979/80) partly evaporated the temporary improvement that had occurred and by 1981 the terms of trade were 15 per cent worse than in 1979. By 1985 there had been only a slight recovery and over the whole period 1971 to 1985 the net barter terms of trade worsened by 24.1 per cent. What is remarkable is that despite this adverse consequence of heavy dependence on imported fuels the country was able to improve its income terms of trade almost consistently over the whole period (with a temporary hesitation in 1975) primarily through the large increase in the volume of exports. The purchasing power of exports, i.e. the Republic of Korea's ability to import, thus increased by 770 per cent between 1971 and 1985.

Table 5. Net barter and income terms of trade, 1971-85 (selected years)

(1980 = 100)

	1971	1973	1975	1977	1979	1981	1983	1985
Exports								
Value	5.4	18.4	29.0	57.3	85.9	121.3	139.5	172.9
Unit value	34.2	50.0	58.7	72.4	95.8	103.2	95.9	95.5
Quantum	15.9	36.8	49.4	79.2	89.7	117.5	145.5	181.0
Imports								
Value	9.3	19.0	32.5	48.4	91.4	117.1	117.4	163.3
Unit value	24.5	38.1	61.0	64.4	83.1	105.4	93.0	90.2
Quantum	38.1	49.8	53.3	75.2	110.0	111.1	126.2	181.0
Terms of trade[a/]	139.6	131.3	96.2	112.4	115.3	97.9	103.1	105.9
Purchasing power of exports[b/]	22.0	48.3	47.5	89.0	103.4	115.0	150.0	191.7

Sources: Bank of Korea, Economics Statistics Yearbook 1985, Table 110 and Monthly Statistical Bulletin 1986.6, Table 53.
IMF, International Financial Statistics Yearbook 1984, p.377.

a/ Net barter terms of trade i.e. the ratio of the export unit value index to the import unit value index.

b/ Equivalent to the income terms of trade i.e. the net barter terms of trade x export quantum index (or, alternatively, the value index of exports deflated by the import unit value index).

1.2 Recent economic trends

The early 1980s were a period of remarkable economic success for the Republic of Korea. Since 1981 the economy has recovered from the 1980 recession (initiated by a 4 per cent decline in exports and non-factor services in 1979) when the country had suffered a real decrease of GNP of 5.2 per cent (Table 3). Indeed, since the initiation of the outward-looking, industry-oriented development strategy in the early 1960s the year 1980 was the first and only one of real growth below the five per cent level. The decline simultaneously affected output in all economic sectors but mainly in agriculture which incurred a drastic fall in production of 21.7 per cent above all due to adverse weather conditions.

The government's decision to adopt restrictive fiscal and monetary policies to curtail inflationary forces prevailing throughout the late seventies contributed significantly to the decline.

In general, it was the conjunction of several adverse factors which led to the severe weakening of overall economic activity: terms of trade declined by 13.3 per cent between 1979 and 1980; there was a marked rise in external interest and amortization payments from 0.7 per cent in 1979 to 2.3 per cent

of GNP in 1980; domestic demand fell by 8 per cent in 1980 compared with 1979 and gross fixed capital formation declined by 11 per cent over the two years.[1/] As a result, manufacturing output fell by 1.1 per cent in 1980 (Table 3) - the first and only decline in this sector.[2/]

The 1979-80 economic situation was only a short-term episode: as early as in 1980 the volume of exports was up by 11.5 per cent, although the volume of imports declined by 9.1 per cent.

In the period 1981-84 the country went through a phase of renewed high growth. The cumulative GNP increase over this period came to 27.9 per cent which corresponds to an annual average rate of 8.6 per cent; the GDP growth rate was approximately the same. In addition to this impressive resumption of economic growth, the country succeeded in (i) reducing its current account deficit from $5.32 bn (1980) to $1.37 be (1984) (partly through the export stimulation provided by the devaluation of the Won from 659.9 to the dollar in 1980 to 827.4 in 1984); (ii) bringing down inflation from 21.3 per cent in 1981 to 2.3 per cent in 1984; (iii) reducing the rate of unemployment from 5.2 per cent in 1980 to 3.8 per cent in 1984; and (iv) achieving substantial productivity improvements mainly in manufacturing which allowed for rising real wages.[3/] Taken together, these developments imply that, in spite of a difficult international situation (increasing protectionism, slow economic growth and in 1981 and 1982 even decline of world trade volume) the country succeeded in meeting its basic economic targets and in correcting some distortions of the late seventies when structural imbalances and inflationary pressures had occured in the wake of ambitious modernization programmes.

Preliminary figures indicate that the favourable performance outlined above was followed by a slowing down in 1985. The original projection for GNP growth was 7.5 per cent. Due to lagging exports, a decline in fixed capital formation and uncertain prospects for housing construction, the original projection had to be adjusted downwards, first to 6.8 per cent and in August 1985 finally to 'five to six per cent'. Actual GNP growth in 1985 amounted to 5.1 per cent with manufacturing showing a below-average 3.5 per cent growth and agriculture, forestry & fishing leading with 5.9 per cent.

However, strong signs of dynamic economic growth emerged in the fourth quarter of 1985 and in the first quarter of 1986 when real GNP was advancing at the rate of 9.7 per cent - the same as in the first quarter of the previous year. Estimates show that the 1986 growth rate of real GNP will be around 12 per cent - the highest registered in the last 10 years. Of particular interest is the high growth rate manifested by the agricultural sector - 18.7 per cent in the first quarter of 1986 compared with 8.7 per cent for the same period 1985. The manufacturing sector showed an even stronger proportionate

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1/ Aghevli and Marquez-Ruarte, 1985, Appendix III, Table II.

2/ Other statistics, e.g. the EPB's Major Statistics of Korean Economy, 1986 suggest that there has never been a fall in manufacturing output and that in 1980 it increased by 3.6 per cent (Table 3-6c).

3/ Labour productivity in all industries taken together rose by 55.8 per cent 1980 to 1984; real wages rose by 22.6 per cent over the same period. In manufacturing, the respective figures were 59.8 and 21.5 per cent. (EPB, 1986, Tables 5-13a and 5-13b.)

rise - an 11.4 per cent growth rate in the first quarter of 1986 compared with 4.2 per cent in the first quarter of 1985. Assuming that the "three lows" (low international interest rates, oil prices and US$)[1/] continue there is every expectation that 1987, with an expected GNP growth rate of 7.5 per cent, will be almost as expansionary as 1986.

During 1985 exports showed a halving of the volume rate of growth as compared with 1984. The Bank of Korea estimated that the volume of exports increased by 7.6 per cent in 1985 as compared with 15.6 per cent in 1984. However, in dollar terms and as estimated by the Office of Customs Administration the export growth rate 1984/85 was only 3.5 per cent. As Table 6 shows, the reason for the 1985 setback is to be found primarily in the reduced exports of the electronics sector. Imports grew by 6.1 per cent in volume terms according to the Bank of Korea quantum index, but by only 1.6 per cent in dollar terms according to the Customs Administration.[2/]

As can be further noted from Table 6, exports of heavy and chemical products grew by 5.8 per cent between 1984 and 1985, whilst total export growth was 3.5 per cent. Over a longer period, 1976 to 1984, exports of this increasingly important sector increased 22.2 per cent per annum, as compared with an increase of total exports over the same period of 5.5 per cent per annum.

Partly in consequence of the reduced rate of growth of imports the merchandise trade account in 1985 was close to an equilibrium position (-$19 million) whilst the current account deficit was reduced to $880 million, the smallest deficit since 1977.

In 1986, with exports increasing by 14.7 per cent while imports were almost stagnant (1.1 per cent growth rate), the current account switched into a sizable surplus position of $4.6 billion.

1/ A 1 per cent reduction in world interest rates would lead to an annual reduction of $300 million in The Republic of Korea's debt service. A $1 reduction in oil prices would lead to an annual reduction of the Republic of Korea's oil import bill of $200 million. (The Republic of Korea's customers would also benefit from lower oil prices leading to enhanced demand for the Republic of Korea's exports. Against this, the income effects of lower oil prices within the Republic of Korea would stimulate Republic of Korea imports.) Average oil import price was $27 per barrel in 1985; in 1986 it will probably be $18. By September 1986 there had been a drop in the value of the $ vis à vis the Yen of about 30 per cent compared with the 1985 average (Y154 to $ compared with Y200); in the same period the Won had depreciated in nominal terms by about 28 per cent against the Yen (W444 to Y100 compared with W570).

2/ Note that growth rates from balance-of-payments figures are considerably lower again (0.4 per cent for exports; -3.3 per cent for imports) because of the exclusion of imported ships and their re-export after repair.

Table 6. Exports by commodity group, 1984-85

Commodity group	1984 $ million	1985 $ million	Growth rate (per cent)
Heavy & chemical products	15,563	16,466	5.8
- chemicals	462	575	24.5
- iron & steel products	3,466	3,330	-3.9
- machinery	1,072	1,381	28.8
- electronic products	3,229	2,907	-10.0
- ships	4,684	5,035	7.5
Light industrial products	11,115	11,173	0.5
- textile goods	6,707	6,627	-1.2
- footwear	1,344	1,525	13.5
Raw materials & fuels	1,286	1,374	6.8
Livestock, food & consumer goods	1,283	1,259	-1.9
Total	29,245	30,273	3.5

Source: Office of Customs Administration.

Early estimates of outstanding foreign debt at the end of 1985 were put at $46.7 billion (Table 7) but later estimates gave a figure of $45.2 billion (Table 8). Forecasts expected foreign debt to increase to $47.5 billion at the end of 1986, but actually it was reduced to $44.5 billion. This places the Republic of Korea among the most highly indebted developing countries. As this high indebtedness is matched, however, by a solid debt servicing capacity, the debt does not give rise to major international concern.

Comparing the country's economic slowdown in 1980 with that of 1985 the latter seems to be considerably less severe but, to have different roots. As indicated above, in 1980 the external economy had performed quite well irrespective of the domestic recession. In contrast, the slowdown of overall economic activity in 1985 originated primarily from the decline in visible and invisible foreign trade. Even assuming that the 1985 sluggishness of external

economic activities was only of a temporary nature, it appears to be symptomatic of potential imbalances in the course of recent economic progress. The Republic of Korea has evidently reached a stage of development in which further high growth cannot be sustained by reliance on the external economy alone; rather the country will increasingly need a substantially expanded domestic market. Thus the hitherto successful strategy of export orientation will probably have to be complemented by policies geared to the strengthening of the domestic market.1/

Table 7. External debt Indicators, 1981, 1983 and 1985

	1981	1983	1985
		$ billion	
Total external debt (end period)	32.5	40.2	46.7
Medium- and long-term debt	22.3	28.1	36.0
Short-term debt	10.2	12.1	10.7
Debt service payments	5.5	5.7	7.2
Principal repayments	2.0	2.5	3.5
Interest payments	3.5	3.2	3.7
		Percent	
Growth rate of external debt (annual)	18.9	8.3	8.5
External debt as percent of GNP	48.4	53.6	56.2
Debt service ratio[a/]	20.1	18.8	21.8
Principal repayments as percent of total debt service payments	39.8	49.8	48.6
Interest payments as percent of total debt service payments	60.2	50.2	51.4
Share of medium- and long-term debt in total debt	68.5	70.0	77.0
Share of short-term debt in total debt	31.5	30.0	23.0
Ratio of gross international reserves to short-term debt	67.4	56.9	72.2

Sources: Aghevli and Marquez-Ruarte, 1985, Appendix III, Table 14, IMF, IFS, EPB, 1986, Table 8, p.24 and World Bank data.

a/ Debt service as percent of exports of goods and services.

1/ Cf. "There remains....the question of how much longer the Republic of Korea can retain its edge. A more serious question is whether, given the emotive reaction in the developed market economies, the Republic of Korea should continue to expand exports." (UNIDO, 1986(c), p.111).

Table 8. Foreign debt: 1985 and projections to 1991
($ billion, current prices)

	1985	1986	1987	1988	1989	1990	1991
Gross external debt	45.2	47.5	47.9	48.2	47.8	47.3	46.1
Annual change	+2.6	+2.3	+0.4	+0.3	-0.4	-0.5	-1.2
External assets[a/]	11.0	11.8	13.6	15.6	16.2	20.2	22.4
Foreign exchange holdings	7.7	8.3	8.4	9.0	9.9	11.1	12.7
Exports on deferred payment basis	2.0	2.1	3.8	4.8	5.8	6.8	7.8
Other external assets	1.3	1.4	1.4	2.0	0.5	2.3	1.9
Net foreign debt	34.2	35.7	34.3	32.4	31.6	27.1	23.7
Annual change	+2.5	+0.5	-1.4	-1.9	-0.8	-4.5	-3.4

Sources: Sixth Five-Year Plan of Republic of Korea, September 1986.
EPB Economic Bulletin No. 86-03, March 19, 1986, p.12.
World Bank Data.

a/ Whilst the total reflects Sixth Five-Year Plan estimates, the three component parts essentially reflect earlier EPB estimates (of March 1986).

1.3 Overview of the manufacturing sector

The share of the manufacturing sector in GDP, which in 1985 amounted to 30.7 per cent (twice agriculture's share), is among the highest to be found anywhere in the world. It might be predicted that on the basis of other countries' experience the Republic of Korea has achieved the maximum relative dependence on the manufacturing sector for growth and now the services sector tends to loom ever larger in relative importance. Manufacturing has assumed its important role in a short period of time with its share of GDP having increased from 14.2 per cent in 1970 to around 31 per cent in 1985. As a proportion of "industry" (manufacturing, mining and quarrying, construction and utilities), manufacturing increased from 58.2 per cent to 70.1 per cent during the same period.

During the period 1970 to 1985 manufacturing value added in constant prices increased by almost 13.2 per cent per annum (Table 9). In comparison, the annual population growth reached 1.6 per cent per annum and manufacturing employment grew by 6.9 per cent per annum (from 1.284 million to 3.500 million)over the same period. These figures suggest that productivity in the manufacturing sector, as measured by GDP contribution per man year, increased by 5.5 per cent per annum.

Table 9. Manufacturing output, employment and productivity, 1970 and 1985
(Index 1970=100)

	Manufacturing output (in 1980 constant prices) (1)	Employment in Manufacturing (2)	Productivity (1)/(2) (3)
1970	100.0	100.0	100.0
1985	639.4	272.6	234.5

Source: Calculated from EPB, Major Statistics of Korean Economy, 1986 and UNIDO data base.

More than one quarter (about 28 per cent) of manufacturing output is exported (Table 10).[1/] The relationship between manufacturing growth and exports has always been close in the Republic of Korea. Exports, in a rapidly growing world economy, provided a stimulus on the demand side and the foreign exchange earned by exports in turn reduced constraints on further manufacturing growth through enabling necessary inputs to be imported. Moreover, the country possessed the necessary skills in labour and in entrepreneurship to produce an appropriate mix of goods at competitive prices to suit world market requirements. Some of the industries which were of great importance in the early days of industrialization - wigs, toys, plywood - are now making much smaller export contributions, partly due to the rise in labour costs.

Table 10. Manufacturing gross output and exports of manufactures, 1975 and 1984

	Gross output of manufacturing $ million (current prices)	Exports of manufactures $ million	Exports of manufactures as proportion of gross output of manufacturing per cent
1975	16,816.7	4,791.2	28.5
1984	99,802.0	28,080.4	28.1

Source: Calculated from EPB, Major Statistics of Korean Economy, 1986 and UNIDO data base.

1/ Cf. the ratios of exports of industrially processed goods to gross manufacturing output: 23.8 per cent (1970-1974) and 27.4 per cent (1974-1980)(UNIDO, 1985(I), Table III-14, p.55).

They were progressively replaced by a new wave of chemical and heavy industrial products, stimulated by the government in the 1970s. In the 1980s, capital- and skill-intensive industries such as machinery (electrical and non-electrical), electronic consumer durables, components and transport equipment of all kinds (including automobiles) are gaining increasing importance. However, it is remarkable that in 1984 the textile and footwear sectors together still accounted for some 13 per cent of value added, 20 per cent of employment in manufacturing industry and 30 per cent of exports of the manufacturing sector.

In 1984, five sub-sectors - textiles, footwear, machinery, iron and steel and transport equipment - accounted for 39.4 per cent of MVA, 44.5 per cent of employment in manufacturing and 74.1 per cent of manufacturing exports (Table 11).

Table 11. Key indicators by selected manufacturing branches, 1975 and 1984

		Manufacturing total a/	Textiles b/	Footwear c/	Machinery (except electrical) d/	Machinery (electrical) e/	Iron and steel f/	Transport equipment g/
1975								
Value added								
Won billion		2,765	456	10	62	199	157	112
Share in total manufacturing	%	100.0	16.5	0.4	2.2	7.2	5.7	4.0
Employment								
'000		1,396	319	11	47	126	37	51
Share in total manufacturing	%	100.0	22.8	0.8	3.3	9.0	2.6	3.7
Exports								
$ million		4,523	1,796	191	37	441	231	185
Share in total manufacturing	%	100.0	39.7	4.2	1.7	9.7	5.1	4.1
1984								
Value added								
Won billion		26,087	3,328	169	893	2,215	1,842	1,822
Share in total manufacturing	%	100.0	12.8	0.6	3.4	8.5	7.1	7.0
Employment								
'000		2,217	422	31	91	232	73	136
Share in total manufacturing	%	100.0	19.1	1.4	4.1	10.5	3.3	6.1
Exports								
$ million		28,080	7,102	1,352	839	3,943	2,050	5,531
Share in total manufacturing	%	100.0	25.3	4.8	3.0	14.0	7.3	19.7

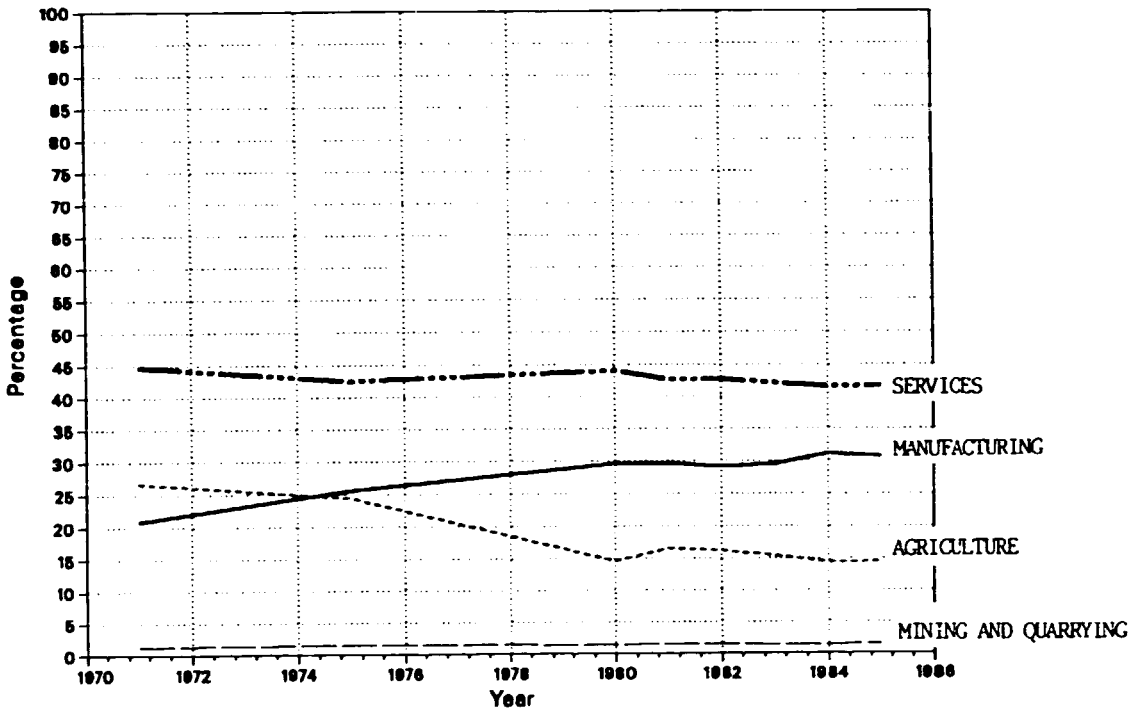
Source: UNIDO data base.

a/ SITC 5-8.
b/ Output and employment: ISIC 321 (textiles).
Exports: SITC 65 + 84 (textile yarn, fabrics, made up articles & clothing).
c/ Output and employment: ISIC 324 (footwear, except rubber or plastic).
Exports: SITC 85 (footwear).
d/ Output and employment: ISIC 382.
Exports: SITC 71.
e/ Output and employment: ISIC 383 (macinery electric).
Exports: SITC 72 (electrical machinery, apparatus and appliances).
f/ Output and employment: ISIC 371.
Exports: SITC 67.
g/ Output and employment: ISIC 384.
Exports; SITC 73.

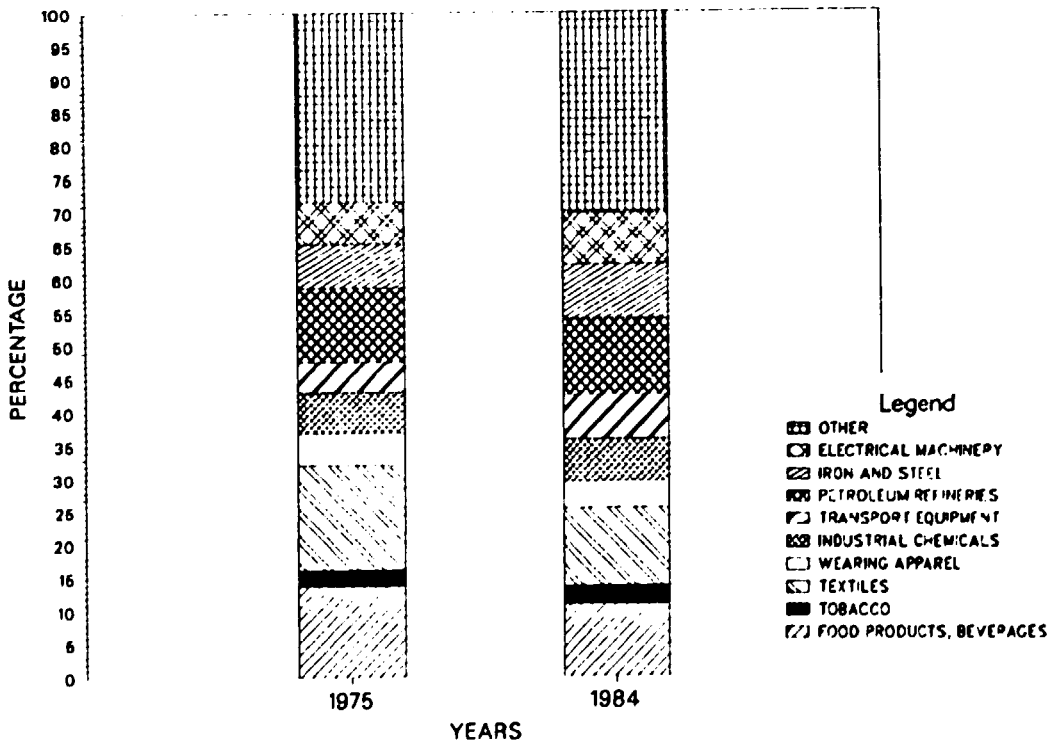
GRAPH 1

MANUFACTURING TRENDS

DISTRIBUTION OF GDP BY SECTOR OF ORIGIN, 1971-1985 (at constant 1980 prices)

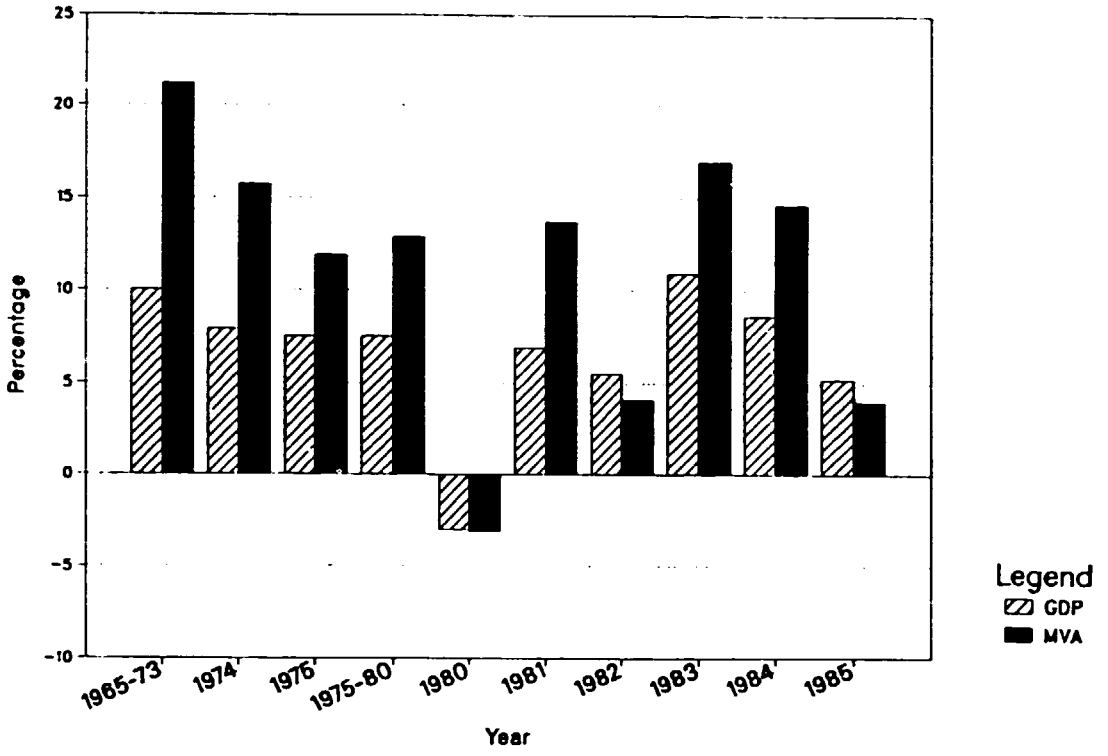


COMPOSITION OF GROSS MANUFACTURING OUTPUT, 1975 AND 1984 (AT CURRENT PRICES)

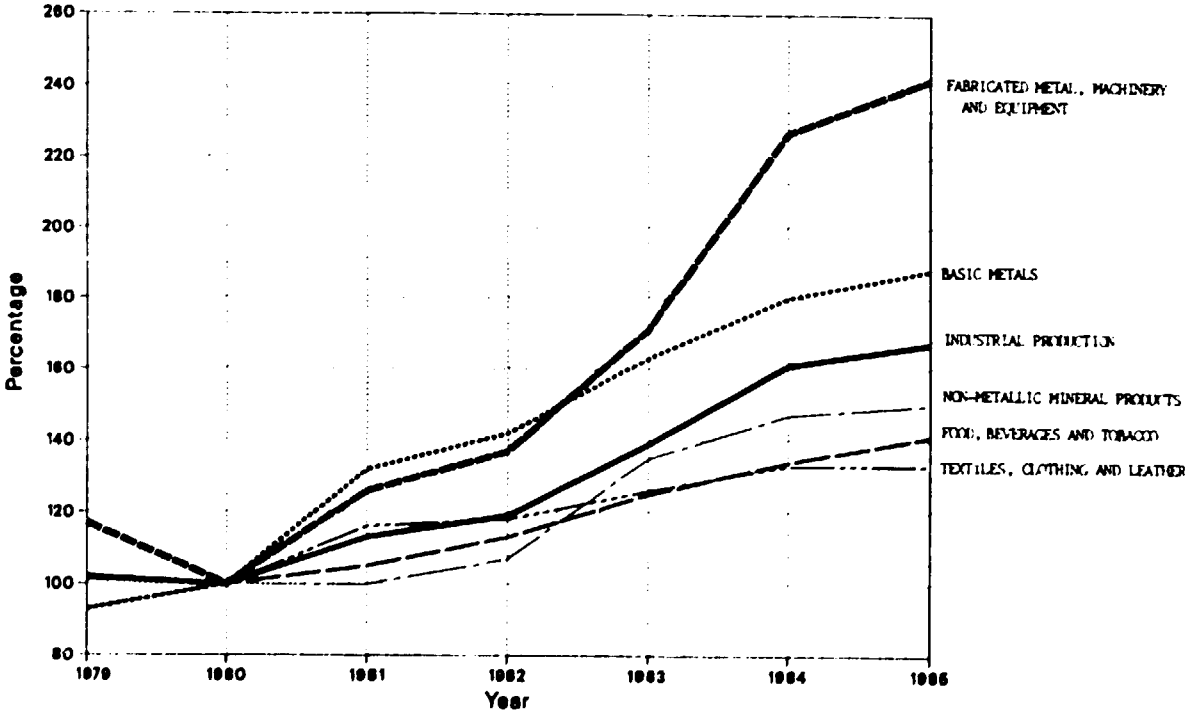


GRAPH 2

REAL GROWTH RATES OF GDP AND MVA, 1965-85

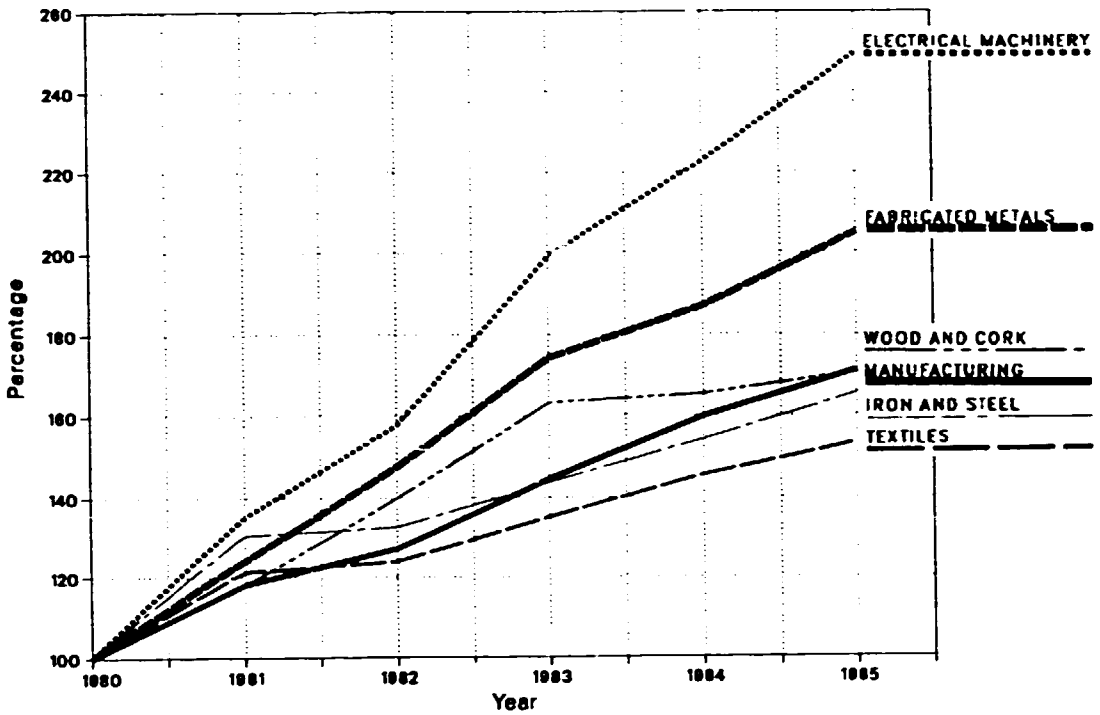


INDICES OF INDUSTRIAL OUTPUT, SELECTED PRODUCTS, 1979-1985 (1980=100)

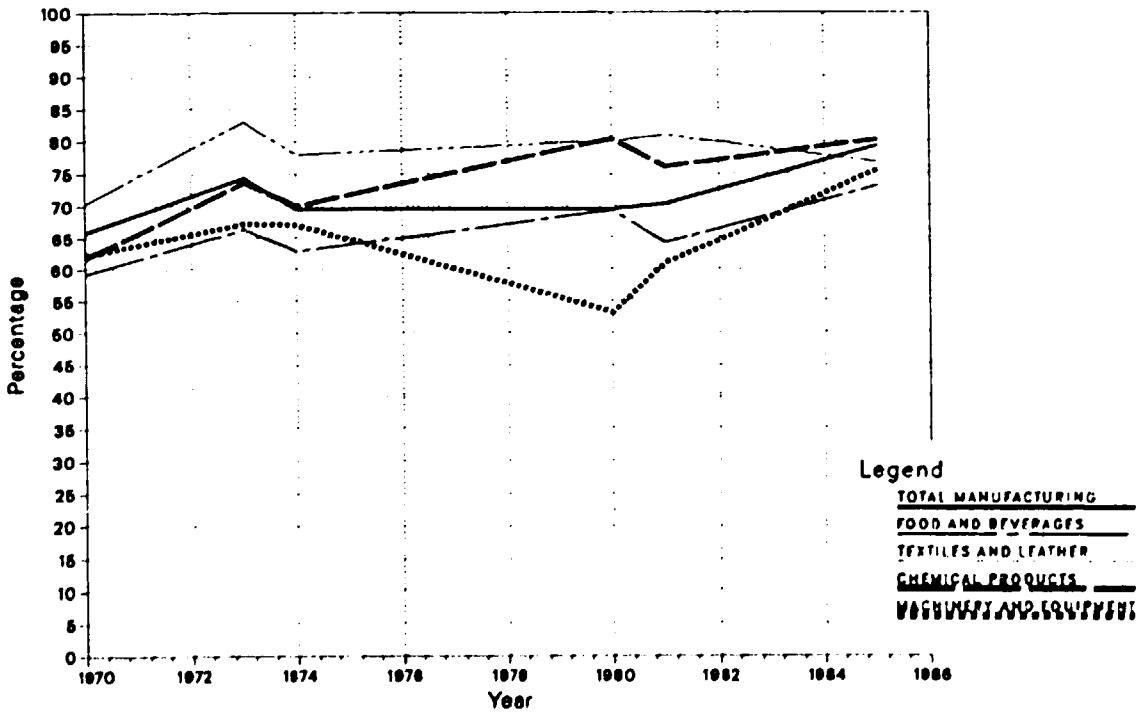


GRAPH 3

INDICES OF LABOUR PRODUCTIVITY, SELECTED INDUSTRIES, 1980-1985 (1980=100)

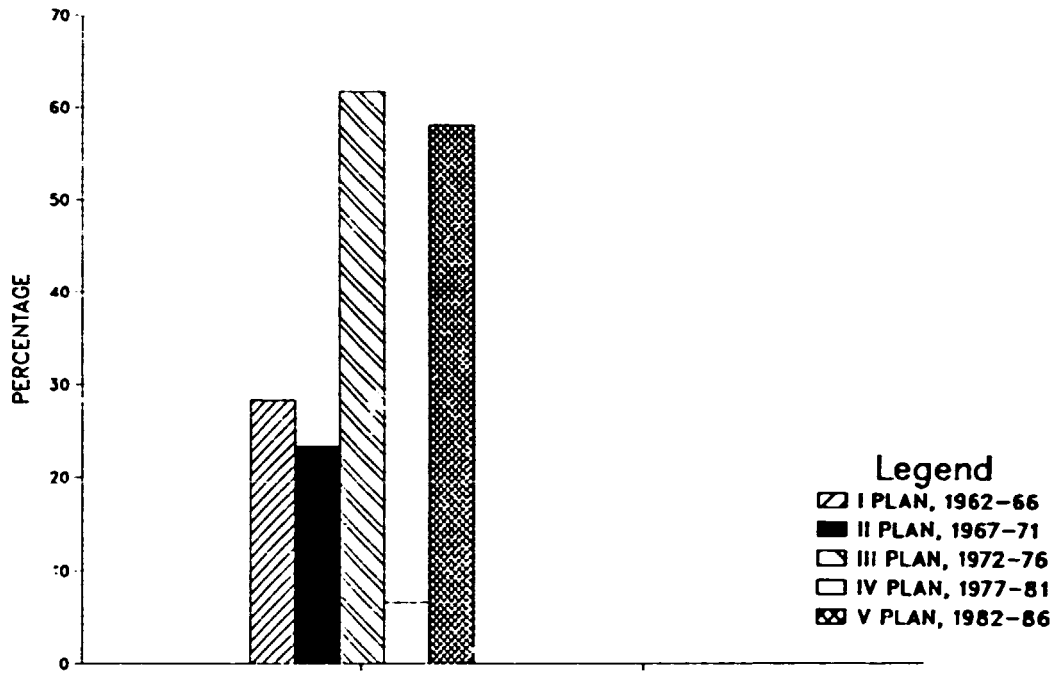


CAPACITY UTILIZATION RATES IN MANUFACTURING, 1970-1985

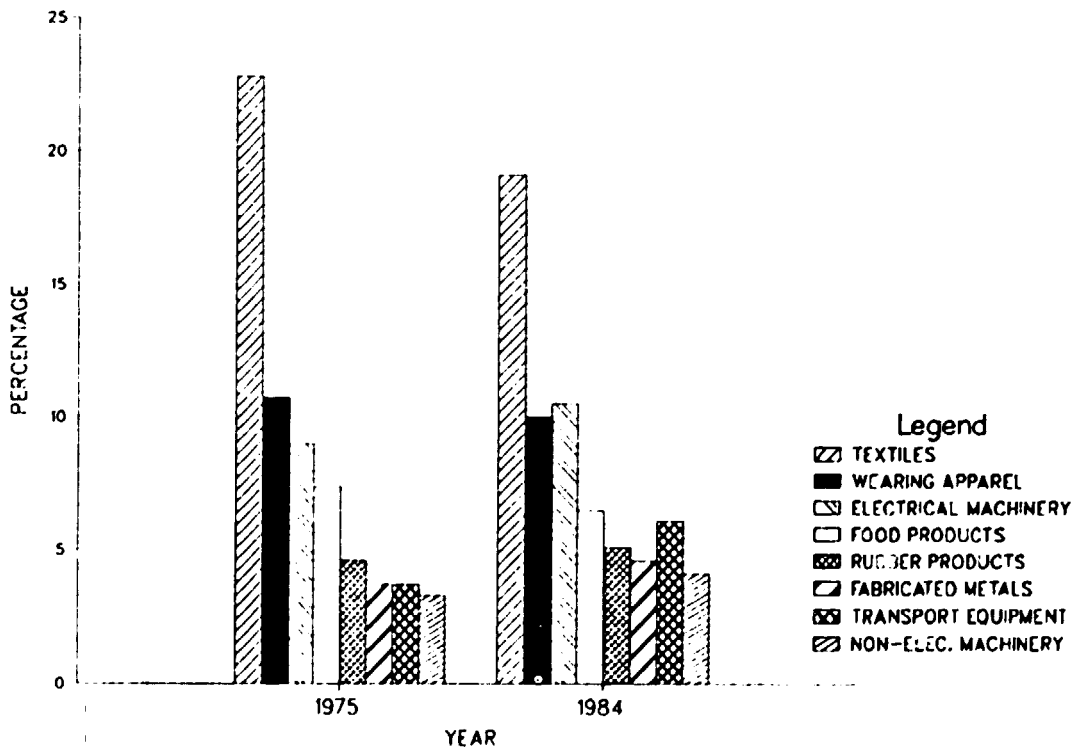


GRAPH 4

CONTRIBUTION OF MANUFACTURING TO OVERALL EMPLOYMENT GROWTH DURING PLAN PERIODS, 1962-86



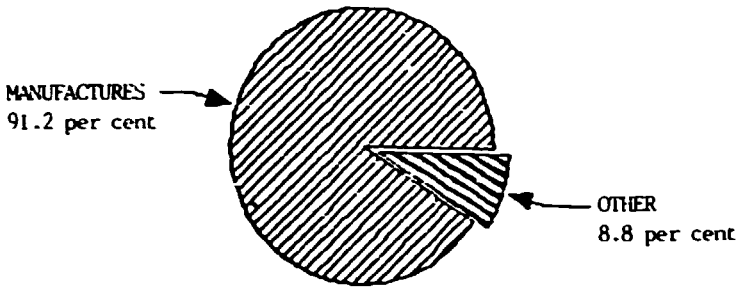
STRUCTURE OF MANUFACTURING EMPLOYMENT, 1975 AND 1984



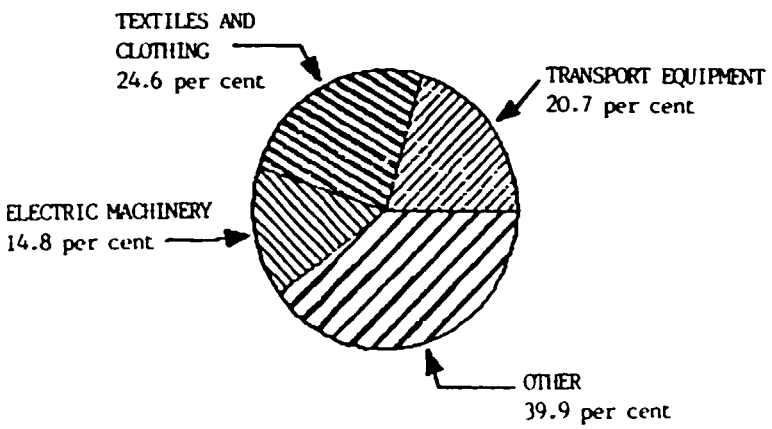
GRAPH 5

MANUFACTURED EXPORTS AND IMPORTS IN 1984

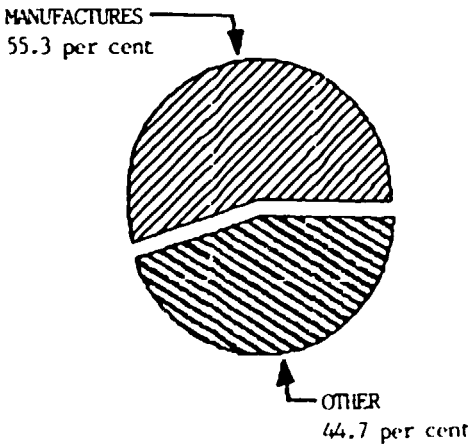
SHARE OF MANUFACTURES
IN TOTAL EXPORTS



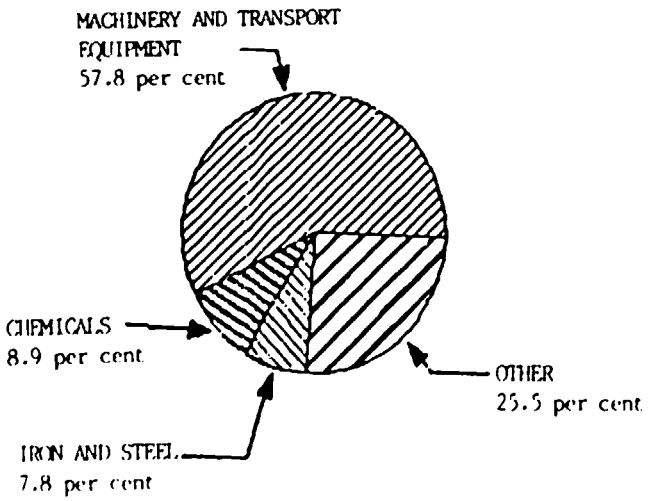
COMPOSITION OF MANUFACTURED
EXPORTS



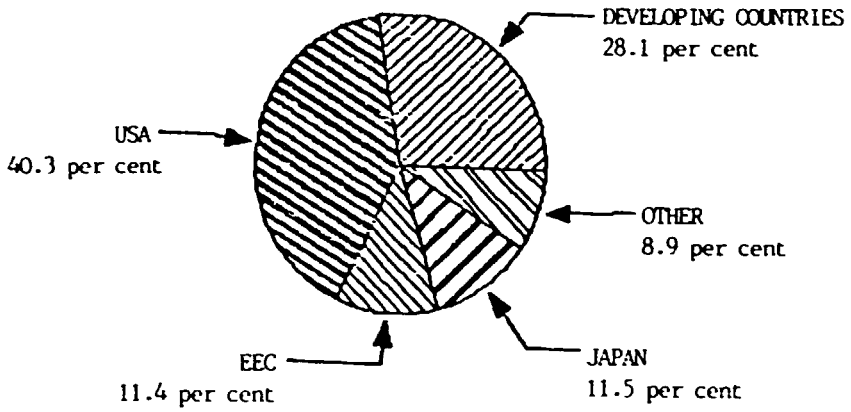
SHARE OF MANUFACTURES
IN TOTAL IMPORTS



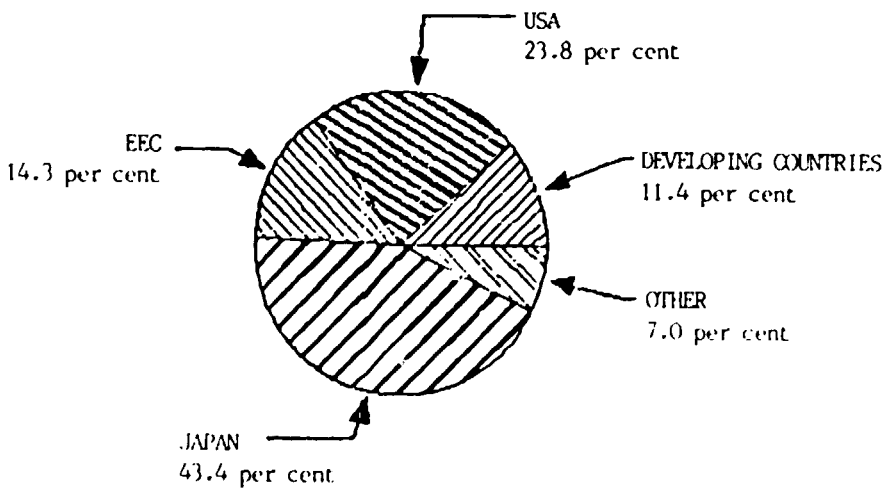
COMPOSITION OF MANUFACTURED
IMPORTS



DESTINATION OF MANUFACTURED EXPORTS



ORIGIN OF MANUFACTURED IMPORTS



2. STRUCTURE AND PERFORMANCE OF THE MANUFACTURING SECTOR

2.1 Growth and structural change

The most important source of economic growth in the Republic of Korea has been the rapid expansion of the manufacturing sector. Between 1966 and 1985 industrial production increased by a factor of 20.6. More specifically, the following annual average growth rates of manufacturing output have been recorded: 1966 to 1985: 18.4; 1975 to 1985: 13.7; 1980 to 1985: 10.8.[1/] Annual MVA growth rates of various sub-sectors of manufacturing, from 1975 to 1983, are presented in Annex Table A-4.

The leading growth performance 1975-1983 was registered by the non-ferrous metals sector with a value added growth rate of 28.4 per cent per annum. Other sectors exhibiting above-average growth rates were iron and steel, electrical machinery, fabricated metal products and transport equipment: 21.1, 18.3, 17.4 and 16.7 per cent respectively (Table 12).

As far as employment is concerned, three sub-sectors showed declines between 1975 and 1984: tobacco (-2.2 per cent per annum); leather products (-0.2 per cent per annum) and wood products, except furniture (-1.2 per cent per annum). As was the case with value added growth rates, the sub-sector with the greatest employment growth was non-ferrous metals (11.4 per cent per annum). The overall rate of growth of manufacturing employment was 5.1 per cent per annum, compared with a labour force growth rate of 1.8 per cent.

In a rather more aggregated fashion Table 13 shows the relative changes in various industrial sub-sectors since 1979. Sectors which advanced more rapidly than the average were basic metals and fabricated metal/machinery and equipment. The overall industrial production index shows an increase of 67 per cent between 1980 and 1985, an increase of 10.8 per cent per annum.

A further indication of the changing structure of production is provided in Annex Table A-6. It shows that the relative importance of metals and machinery increased markedly and persistently over the period 1970 to 1980 so far as the compilation of the official industrial production index was concerned. Textiles and clothing, on the other hand, first increased in importance but by 1980 had been reduced to a weight of 15.8 per cent in the index, compared with 16.9 per cent in 1970. Noteworthy is also the high, and growing, relative importance of manufacturing as a whole in the index - 85.9 per cent in 1970 and 91.3 per cent in 1980. Finally, the interesting observation has been made that despite the growing weight given to fabricated metal products and machinery they are still underweighted in the index since "1975 and 1980 were years of industrial recession (so) the indices for both years will tend to underweigh industries particularly vulnerable to cyclical movements".[2/]

1/ EPB, Major Statistics of Korean Economy, 1986, Table 5-1, p.97.

2/ E.I.U., 1985, Annual Supplement, p.15.

Tab' 12. Growth rates of manufacturing value added, employment and productivity, 1975-1983 and 1975-1983/1984

	Annual growth rate of value added at 1980 prices 1975-1983	Annual growth rate of employment 1975-1984	Annual growth rate of value added per employee 1975-1983
Food products	14.5	2.9	11.1
Beverages	11.3	2.1	9.1
Tobacco	7.1	-2.2	10.5
Textiles	10.9	1.8	9.0
Wearing apparel, except footwear	11.1	2.6	8.2
Leather products	10.2	-0.2	10.6
Footwear, except rubber or plastic	7.2	11.3	-5.0
Wood products, except furniture	0.3	-1.2	1.8
Furniture, except metal	20.7	8.6	10.1
Paper and products	13.7	4.7	8.2
Printing and publishing	9.3	3.1	5.9
Industrial chemicals	10.5	1.4	9.1
Other chemicals	14.8	3.0	11.4
Petroleum refineries	6.0	5.3	0.6
Misc. petroleum and coal products	14.1	0.4	14.1
Rubber products	13.7	4.4	8.5
Plastic products	9.0	9.9	-1.9
Pottery, china, earthenware	22.8	11.2	8.9
Glass and products	9.9	5.1	4.1
Other non-metallic mineral products	9.7	4.0	5.0
Iron and steel	21.1	6.2	13.2
Non-ferrous metals	28.4	11.4	14.0
Fabricated metal products	17.4	7.0	8.8
Machinery, except electrical	12.6	5.7	5.7
Machinery electric	18.3	4.4	12.7
Transport equipment	16.7	9.7	5.1
Professional and scientific equipment	11.2	4.3	6.1
Other manufactured products	3.1	2.3	0.7
TOTAL MANUFACTURING	12.8	(5.1)[a/]	(7.7)[b/]

Source: Statistics and Survey Unit, UNIDO. Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

a/ The figure refers to 1975-1983 and was calculated from EPB, Major Statistics of Korean Economy, 1986, Table 2-8a, p.24. It may not be directly comparable with the statistics in the Table.

b/ Calculated from the totals of the first two columns.

Table 13. Indices of industrial production, 1979-85
(1980 = 100)

	1979	1981	1982	1983	1984	1985
Food, beverages and tobacco	102	105	113	125	134	141
Textiles, clothing and leather	93	116	118	126	133	133
Wood, wood products, incl. furniture	138	112	120	150	159	148
Paper, printing and publishing	91	108	111	121	125	130
Chemicals, fuels, rubber & plastic	100	102	106	124	141	147
Non-metallic mineral products	101	100	107	135	147	150
Basic metals	93	132	142	163	180	188
Fabricated metal/machinery and equipment	117	126	137	171	227	242
Others	96	103	105	122	150	149
TOTAL	102	113	119	139	161	167

Source: EPB, Major Statistics of Korean Economy, 1986, Table 5-4a, pp.100, 101.

Table 14 provides in summary form the basis for an understanding of the structural changes that occurred between 1975 and 1983/84. The following inferences can be drawn:

- Total manufacturing value added in 1980 constant prices increased from $6.3 billion in 1975 to $18.7 billion in 1983, an increase of 198.7 per cent, implying a growth rate of 14.7 per cent per annum.

- The following branches declined in relative importance as far as gross output is concerned: food, beverages, tobacco, textiles, clothing, leather products, wood products, printing, other chemicals and glass. In broad terms a similar pattern emerges for value added shares.

- The following branches increased in relative importance as far as gross output is concerned: footwear, furniture, paper, industrial chemicals, plastic products, pottery, iron and steel, non-ferrous metals, fabricated metal products, machinery (all kinds), transport equipment and professional and scientific equipment.

- Of more interest, however, are the sectors which are both relatively important in the total and which evinced relative increases in value added. These were: other chemicals, iron and steel, fabricated metal products, machinery (all kinds) and transport equipment.

- The Republic of Korea has thus exhibited, in less than a decade, a substantial shift in the production mix from relatively unsophisticated low value added items to more complex high value added items and from labour-intensive to skill- and technology-intensive industries. Notwithstanding this general trend, the textiles and clothing together still accounted for some 17 per cent of value added in 1983.

Table 14. Composition of gross output and manufacturing value added, 1975 and 1983/1984[a/]

Sector (ISIC)	Share in total value of gross output at current prices (percentage)		Share in total manufacturing value added at 1980 prices (percentage)	
	1975	1984	1975	1983
TOTAL MANUFACTURING (300)	100.0	100.0	100.0	100.0
Food products (311)	9.9	8.6	6.7	7.6
Beverages (313)	3.8	2.2	2.1	1.6
Tobacco (314)	2.4	2.8	0.7	0.4
Textiles (321)	16.0	11.8	14.8	11.7
Wearing apparel, except footwear (322)	4.7	4.0	5.8	5.2
Leather products (323)	1.3	0.9	0.8	0.7
Footwear, except rubber or plastics (324)	0.3	0.6	1.3	1.0
Wood products, except furniture (331)	3.1	1.8	1.8	0.9
Furniture, except metal (332)	0.2	0.4	0.3	0.5
Paper and products (341)	2.4	2.5	2.3	2.3
Printing and publishing (342)	1.4	1.3	2.6	1.7
Industrial chemicals (351)	6.2	6.4	8.6	7.0
Other chemicals (352)	3.7	3.3	4.0	4.7
Petroleum refineries (353)	11.2	11.5	4.2	2.5
Misc. petroleum and coal products (354)	1.4	1.4	1.6	1.4
Rubber products (355)	2.5	2.5	2.4	2.5
Plastic products (356)	1.0	1.8	1.8	1.7
Pottery, china, earthenware (361)	0.1	0.2	0.2	0.4
Glass and products (362)	0.7	0.6	1.4	1.1
Other non-metallic mineral prod. (369)	3.2	3.2	5.5	4.5
Iron and steel (371)	6.5	8.0	4.9	7.7
Non-ferrous metals (372)	1.0	1.5	0.6	1.6
Fabricated metal products (381)	2.1	3.0	2.4	3.7
Machinery, except electrical (382)	2.0	2.7	5.6	6.9
Machinery electric (383)	6.2	7.8	6.9	12.2
Transport equipment (384)	4.5	6.6	4.6	4.8
Professional and scientific equip. (385)	0.6	0.8	1.0	1.0
Other manufactured products (390)	1.4	1.5	4.8	2.5
TOTAL MANUFACTURING IN $ MILLIONS	...	...	6,2756	18,745

Source: Statistics and Survey Unit, UNIDO. Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Note: TOTAL MANUFACTURING is the sum of the available components and does not necessarily correspond to ISIC 300 total.

a/ Value added figures are for 1983, not for 1984.

Electronics has been one of Korea's fastest growing industrial branches. The industry started producing components 30 years ago, moving on to the production of radios, speakers and transistors in the 1960s and then on to colour TV, videos and cassette players today. The value of output of electronics reached $7.3 billion in 1985. The electronics industry has been officially recognized as a strategic export industry with the introduction of the Electronics Industry Promotion Law in 1969. Exports have increased rapidly to reach $4.35 billion in 1985, thus contributing about one seventh to total exports. The Republic of Korea emerged recently as the newest entrant in the commodity chip market for large integrated circuits. The development of semi-conductor technology and manufacturing is seen as an essential part of a broader strategy to compete in high technology industrial electronics.

2.2 Performance and efficiency

As shown above, the share of manufacturing in GDP has been subject to a continually increasing trend, reaching more than 30 per cent in 1985 compared with some 18 per cent in 1965. These figures indicate that manufacturing has a more important role to play in the economy of the Republic of Korea than in almost any other country of the world, exceeded only by the Federal Republic of Germany and by Taiwan Province of China.

Employment in manufacturing increased from 2.2 million in 1975 (17.9 per cent of the labour force) to 3.4 million in 1984 (22.4 per cent of the labour force).[1/] As shown in Table 15, the most important branches in 1984 as measured by their share in total manufacturing employment were: textiles (19.1 per cent), electrical machinery (10.5 per cent), clothing (10.0 per cent), food products (6.5 per cent) and transport equipment (6.1 per cent). These five branches taken together employ more than half (52.2 per cent) of the total labour force in manufacturing. All other branches had a share of less than about 5 per cent, respectively.

There was some difference in the ranking of sectors within manufacturing in respect of employment between 1975 and 1984; textiles remained in top position but clothing slipped from second place to third and electrical machinery moved up from third to second. Food products remained in the fourth position but transport equipment moved up into the fifth rank, displacing "other manufactures".

When comparing employment shares with the shares of each branch in wages and salaries (Table 15) some interesting deductions can be made about the relative levels of wages and salaries. It is apparent, for instance, that wages in the textile and clothing sectors fell considerably below the average in manufacturing whilst wages in printing and publishing, chemicals, iron and steel and transport equipment, inter alia, were above the average.

1/ Major Statistics of the Korean Economy, 1986, op. cit., Tables 2-7 and 2-8a, pp.23, 24.

Table 15. Selected performance indicators by manufacturing branches, 1975 and 1984 (on the basis of current prices)

Sector (ISIC)	Employment		Wages & salaries		Share of value added in gross output	
	Share in total (percentage)		Share in total (percentage)		(percentage)	
	1975	1984	1975	1984	1975	1984
TOTAL MANUFACTURING (300)	100.0	100.0	100.0	100.0	34.0	31.6
Food products (311)	7.4	6.5	6.6	6.3	24.5	27.1
Beverages (313)	1.8	1.3	2.5	1.8	53.7	44.1
Tobacco (314)	1.1	0.7	1.0	0.9	64.0	65.7
Textiles (321)	22.8	19.1	20.1	15.9	35.0	34.0
Wearing apparel, except footwear (322)	10.7	10.0	7.1	7.0	30.5	37.8
Leather products (323)	1.4	1.1	1.2	0.9	37.4	28.3
Footwear, except rubber or plastic (324)	0.8	1.4	0.7	1.1	34.4	36.4
Wood products, except furniture (331)	2.9	2.1	2.7	1.9	26.5	21.9
Furniture, except metal (332)	0.7	0.9	0.5	0.8	42.0	37.6
Paper and products (341)	2.2	2.3	2.4	2.4	27.8	26.6
Printing and publishing (342)	2.7	2.2	3.7	3.2	48.0	51.8
Industrial chemicals (351)	2.4	2.0	4.1	3.1	31.9	24.0
Other chemicals (352)	3.0	2.6	4.4	3.5	43.8	45.9
Petroleum refineries (353)	0.3	0.3	1.0	0.7	22.2	12.2
Misc. petroleum and coal products (354)	0.9	0.6	0.9	0.7	25.2	23.3
Rubber products (355)	4.6	5.1	4.2	4.3	34.2	35.9
Plastic products (356)	1.7	2.5	1.4	2.3	31.5	31.1
Pottery, china, earthenware (361)	0.5	0.9	0.3	0.7	47.4	58.0
Glass and products (362)	0.9	0.9	1.0	1.1	49.9	45.6
Other non-metallic mineral products (369)	2.9	2.8	3.7	3.1	47.6	36.7
Iron and steel (371)	2.6	3.3	3.8	4.4	29.6	27.9
Non-ferrous metals (372)	0.7	1.0	0.9	1.3	26.3	25.0
Fabricated metal products (381)	3.7	4.6	3.6	4.8	38.9	38.3
Machinery, except electrical (382)	3.3	4.1	3.8	4.7	38.1	40.2
Machinery electric (383)	9.0	10.5	8.4	10.0	39.7	34.3
Transport equipment (384)	3.7	6.1	6.2	8.9	30.2	33.5
Professional and scientific equipment (385)	1.2	1.5	1.0	1.3	40.5	37.7
Other manufactured products (390)	4.1	3.7	3.1	3.0	47.5	41.4

Sources: Statistics and Survey Unit, UNIDO. Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

A surprising conclusion emerges from the last two columns of Table 15; for manufacturing as a whole the share of value added in gross output between 1975 and 1984 declined (from 34.0 per cent to 31.6 per cent). At first sight, this appears to be at variance with previous conclusions that the structure of manufacturing production has become increasingly sophisticated; thus one would not expect to find an indicator revealing lower processing over time. This could be explained, though, by the particularly high dependence of some technology-intensive production fields on imported inputs.

Labour productivity figures are presented in Table 16. Between 1980 and 1985 productivity in total manufacturing rose by 71.1 per cent (11.3 per cent per annum). The best performer was the electrical and electronic machinery branch where productivity increased by about 21 per cent per annum. Nominal wages in manufacturing rose by 13.0 per cent per annum in the same period, i.e., they increased more rapidly than productivity in manufacturing. With retail prices having increased by 41.0 per cent between 1980 and 1985 real wages in manufacturing, on the other hand, hence rose only 5.5 per cent per annum.1/

By comparing the index of manufacturing production with that of manufacturing real wages (which can be interpreted as real wage costs) some inferences can be drawn about real wage costs per unit of output. Between 1972 and 1985 unit labour costs declined by 62.4 per cent, i.e., by almost two-thirds. Looking at a more recent period, 1980-1985 - a period characterised by a growing shortage of skilled labour and, consequently, a faster rate of wage increases - it is found that real wages per unit of output again fell substantially, though only by 22 per cent.2/

Apart from labour productivity which was examined above, another useful way of examining the overall efficiency of the economy is to consider the rates of nominal and effective tariff protection for industry. The argument about efficiency is to suggest that those industries are the least efficient which require the highest degree of protection against imports in order to survive. Table 17 presents corresponding data on nominal and effective protection rates showing that transport equipment and consumer durables have received particularly high rates of effective tariff protection.

Another surprising conclusion to be drawn from Table 17 is that during the years 1968/70 to 1982 the levels of nominal and effective tariff protection appear to have been increasing for all industries combined. This trend can be expected to be reversed by current plans to reduce the average tariff rates on final manufactured products from 20.3 per cent in 1985 to 16.9 per cent in 1988 (see Table A-22).

1/ EPB, Major Statistics of Korean Economy, 1986, op. cit., Tables 5-13a and 5-13b, pp.117, 118.

2/ EPB, ibid. Tables 5-1 and 5-13b, pp.97,118.

Table 16. Labour productivity indices in various sectors of manufacturing, 1981-85
(1980 = 100)

	Manufacturing (total)	Textiles, wearing apparel and leather					Wood and wood products including furniture			Paper and paper products, printing and publishing		
		Total	Textiles	Wearing apparel	Leather and leather pro-	Footwear	Total	Wood and cork products	Furniture and fixtures	Total	Paper and paper products	Printing and publishing
1981	118.1	124.6	121.4	132.6	130.9	116.2	124.0	118.0	140.0	110.3	108.6	115.5
1982	127.3	121.2	124.0	108.9	142.7	137.8	156.1	139.9	170.4	125.3	130.3	119.2
1983	144.6	134.7	135.2	122.1	179.0	173.2	182.1	163.2	191.5	139.9	151.5	125.1
1984	159.8	143.2	145.5	125.6	201.7	182.5	203.3	165.3	235.8	139.0	152.0	122.3
1985	171.1	152.4	153.5	139.4	196.3	184.6	200.2	170.6	215.0	149.0	160.8	134.3

	Basic metal industries			Fabricated metal products, machinery and equipment						Others
	Total	Iron and steel industries	Non-ferrous industries	Total	Fabricated metal products	Machinery except electrical	Electrical & electronic machinery	Transport equipment	Scientific measuring & controlling equipment	
1981	131.9	130.6	135.0	129.9	124.2	114.2	135.2	137.3	99.3	112.5
1982	139.4	132.7	172.2	143.2	147.6	117.7	157.8	128.?	106.1	120.7
1983	153.0	143.7	194.9	167.6	174.2	159.9	199.1	116.4	120.1	141.1
1984	164.3	154.3	212.1	199.5	187.0	189.4	222.5	175.7	141.3	159.5
1985	177.4	165.5	232.9	213.6	204.9	197.8	249.6	172.4	140.3	153.2

Source: EPB, Monthly Statistics of Korea, 5. 1986, Table 32, p.85 and EPB, Major Statistics of Korean Economy, 1986, Table 5-13a, p.117.

Trends in capacity utilization in manufacturing are indicated in Table 18. The 1980 recession is clearly reflected with a figure of only 69.5 per cent of manufacturing capacity utilization compared with 82.1 per cent the previous year. The position improved slightly in 1981 only to worsen again in 1982. But the underlying trend from 1980 to the present has been upwards with a figure of 83.6 per cent being recorded in July 1986. It is considered that this is de facto full capacity utilization for the major part of manufacturing since the average includes industries like shipbuilding and wood products which are working well below capacity. Since March 1986 the small-to-medium industry capacity utilization figure has been slightly higher than the manufacturing average.

Table 17. Comparison of various estimates of nominal and effective protection, 1968/70, 1978 and 1982
(per cent)

	1968/70[a/]	1978[b/]	1982[c/]
Nominal protection (all industries)	18.4	26.5	31.7
Effective protection (all industries)	15.1	28.8	38.4
Effective rates of protection by sector[d/]			
Transport	94.4	74.5	60.4
Consumer durables	53.2	101.7	36.0
Consumer non-durables	...	42.2	...
Machinery	51.2	33.2	...
Construction	31.7	...	...
Agriculture	17.9	71.7	70.6
Mining	...	27.8	...
Intermediate inputs I	...	...	39.7
Intermediate inputs II	...	26.9	...

a/ Average of two estimates.
b/ Average of three estimates.
c/ Single estimate.
d/ Ranked by size of rate in 1968/70.

Source: Calculated from World Bank data.

Note 1: The method adopted for the calculation of all the estimates given in this Table is that devised by Max Corden. It differs from the so-called Balassa method in that Balassa treats non-traded goods as if they were traded and subject to zero tariff whilst Corden assumes that non-traded inputs are part of value added.

Note 2: Whilst three dots (...), as usual, indicate that the data is not available it is noted that where used in this Table the figure/s, if available, would be lower than the lowest one recorded column by column.

Table 18. Capacity utilization in industry, 1970-1986 (July)

Industry Group	1970	1971	1972	1973	1974 a/	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985		1986				
															Year	May	March	April	May	June	July
Food and beverages	59.2	61.8	70.6	66.4	62.9	62.4	75.8	85.6	82.4	69.3	64.3	64.9	75.4	78.8	73.0	...	...	...	...	...	...
Textiles and leather	70.4	66.3	76.3	83.0	77.9	87.5	85.9	84.8	82.1	80.1	80.9	80.2	79.0	78.9	76.7	...	...	...	...	...	...
Wood products	...	...	...	...	...	84.6	94.4	99.0	84.6	61.0	59.9	46.6	45.4	51.4	55.4	...	...	...	...	...	...
Paper products	...	...	...	...	...	72.8	80.8	88.4	85.1	75.4	74.8	72.5	76.4	82.1	79.5	...	...	...	...	...	...
Chemical products	61.8	62.1	66.2	73.6	70.0	91.9	98.1	110.4	95.4	80.3	76.0	70.9	75.4	78.5	80.2	...	...	...	...	...	...
Nonmetallic mineral products	72.5	73.1	71.7	75.5	77.2	81.9	88.2	87.3	77.9	63.6	61.1	68.3	77.6	78.4	72.6	...	...	...	...	...	...
Basic metal	60.1	58.9	53.5	63.2	59.0	78.6	81.1	88.1	81.0	71.3	71.2	74.7	83.8	87.3	88.9	...	...	...	...	...	...
Fabricated metal products, machinery and equipment	62.2	59.2	69.4	67.3	67.1	61.0	57.1	61.7	62.6	53.1	61.0	60.0	67.9	77.9	75.5	...	...	...	...	...	...
Total manufacturing	65.9	62.1	65.1	74.3	69.5	78.9	81.7	88.3	82.1	69.5	70.3	69.4	75.8	80.4	79.2	80.1	81.2	81.9	83.2	...	83.6
Small to medium industry	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	79.7	83.7	84.6	84.5	...	...

Sources: Korean Traders' Association (KTA), July 1986, Korea Herald, 12 September 1986, UNIDO, The Engineering Industry in the Republic of Korea: A success story in critical perspective. UNIDO/IS/R.43, 8 May 1986, Table 4, p.7 and World bank data.

a/ January-June.

2.3 Trade in manufactured goods

There has been a considerable increase in the relative importance of trade in the country's GNP over the past two decades; in 1968 foreign trade (i.e. exports plus imports) constituted 34.8 per cent of GNP whilst by 1985 it had risen to 60.8 per cent.[1/] Despite the strong expansion of exports there was a persistent deficit in the balance of trade until 1985 when it became negligible and in 1986 when a trade surplus of $3.2 billion was recorded. However, the trade deficit has represented a gradual declining share of GNP; the only exceptions to this trend are to be seen in the years of the first and second oil "shocks", 1974 and 1979/80, as Table 19 shows.

As to the geographical distribution of exports it can be seen from Table 20 that the major share, 70 per cent (of total and of manufactures) is destined to the developed market economies and only about 26 per cent to developing countries. By far the most important market is the United States which bought 39 per cent of narrowly defined manufactured exports. Japan, the second largest market, accounts for barely one half of the US share for all exports and for less than one-third of the US market share for narrowly defined manufactures. The overwhelming importance of the US market is causing increasing concern in both the USA and the Republic of Korea. The USA has announced that it will reduce Generalized System of Preference (GSP) concessions to the Republic of Korea between 1987 and 1993 and it is also exerting pressure on the country to liberalize imports and to revalue the Won.[2/] For its part the Republic of Korea is attempting to diversify its export markets with increasing attention being paid to the EEC. Although Japan takes 16 per cent of total exports there is a feeling in the country that the Japanese market could be opened up further - with the result of reducing the extremely large bilateral trade deficit with Japan; estimated to be between $5 and $6 billion in 1986.

Of related importance to the diversification of export markets is the necessity of reducing the economy's high dependence on exports as a whole. A rethinking has emerged through evident signs of growing world protectionism. The Republic of Korea considers that it is becoming the major target for those countries which impose restrictions on imports from developing countries. A list published by the IMF in 1985 indicated that 14 major countries (including the EEC as "a country") imposed trade measures against Korean exports in 1984. These measures ranged from anti-dumping duties to unilateral, bilateral and global quotas. A comprehensive set of commodities was involved - from an overall "textiles" bilateral quota imposed by the USA to cosmetics, for which "administrative guidance" is used by Japan to restrict imports from the Republic of Korea.[3/]

1/ Cf. Table 4.

2/ Concerning the degree to which the Korean currency has been effectively devalued since 1978 see Table A-1. From the 4th quarter of 1978 to the 4th quarter of 1985 the real effective exchange rate depreciated 11.5 per cent.

3/ Anjania, Kirmani and Petersen, 1985, Appendix II, Table 76, pp.158/9.

Table 19. Trade deficit as a proportion of GNP, 1968-85

	Trade deficit			Trade deficit	
	$ mill.	As per cent of GNP		$ mill.	As per cent of GNP
1968	836	16.1	1977	477	1.3
1969	992	15.0	1978	1,781	3.4
1970	922	11.5	1979	4,396	7.0
1971	1,046	11.1	1980	4,384	7.3
1972	574	5.4	1981	3,628	5.5
1973	566	4.2	1982	2,594	3.7
1974	1,937	10.5	1983	1,764	2.3
1975	1,671	8.0	1984	1,036	1.3
1976	591	2.1	1985	19	-

Source: EPB, Major Statistics of Korean Economy, 1986, Tables 10-1a, 10-1b and 12-2a, pp.221, 222, 285.

Table 20. Geographical distribution of Republic of Korea's total and manufactured exports and imports, 1984
(percentage shares)

	Total	Developing Countries	Developed market economies				
			Total	USA	EEC	Japan	Others
Total exports	100.00	25.93	70.02	36.00	10.22	15.75	4.05
Total manufactured exports[a/]	100.00	26.63	69.29	37.08	10.39	13.57	4.08
SITC 5-8 less 68[b/]	100.00	26.90	69.05	38.61	10.86	11.03	4.05
Total imports	100.00	28.15	65.00	22.41	8.26	24.87	6.85
Total manufactured imports[a/]	100.00	13.70	83.08	24.84	12.32	37.47	3.22
SITC 5-8 less 68[b/]	100.00	11.10	85.90	23.08	13.99	42.08	3.00

Source: UNIDO data base; information supplied by the United Nations Statistical Office (see Table A-11).

Note: There is no recorded trade with the Centrally Planned Developed Countries.

a/ Based on a definition of trade in manufactures covering a list of 148 specifically identified SITC 3-digit or 4-digit codes comprising a wide range of processing stages of manufactured goods.

b/ Covers only items recognized as exclusively manufactured goods, i.e. with a high level of manufacturing content.(Narrow Definition)

More recent examples are quoted in a study produced by the Korea Institute for Economics and Technology (KIET) in 1986. The study reveals, for instance, that in 1985 25.1 per cent of all Korean exports were exported under restrictions imposed by importing countries and 36.3 per cent of the country's exports to industrialised countries were likewise affected.[1/]

The reliance of the economy on exports of highly processed goods is underlined in Table A-16. In 1975 74.5 per cent of exports were processed goods for final use and this high figure increased to 84.5 per cent in 1984. The growth rate of exports in this category was also extremely high: 27.8 per cent per annum 1975 to 1980 and 14.6 per cent per annum 1980 to 1984. On the import side the large role played by non-processed goods, especially in 1975, is noteworthy. This category includes petroleum (detailed in Table A-12) and reveals the dependence of the economy on this commodity.

Table 20 also shows that 65.0 per cent of the Korean imports come from the developed market economy countries (with Japan predominating) and that 28 per cent originate in developing countries.

The share of manufactures in total exports, already among the highest for any country in the world in 1975, increased even further to 96.0 per cent in 1984 (Table 21) with narrowly-defined manufactures forming 91.2 per cent of total exports.

Table 21. Share of manufactures in total exports and imports, 1975, 1983 and 1984
(percentage shares)

	Exports			Imports		
	1975	1983	1984	1975	1983	1984
Total manufactures[a/]	89.2	95.4	96.0	62.2	61.5	65.2
SITC 5-8 less 68[b/]	81.4	90.9	91.2	50.7	50.9	55.3

Source: UNIDO data base: information supplied by the United Nations Statistical Office (see Table A-15).

a/ Based on a definition of trade in manufactures covering a list of 148 specifically identified SITC 3-digit or 4-digit codes comprising a wide range of processing stages of manufactured goods.

b/ Covers only items recognized as exclusively manufactured goods, i.e. with a high level of manufacturing content.(narrow definition).

1/ Kim, Lee and Oh, 1986, Table 3, p.42.

2.4 Ownership and investment patterns

Total foreign capital (including bank loans) has made a vital contribution to economic growth in the Republic of Korea. However, foreign direct investment (FDI) or portfolio foreign investment (PFI) (i.e. the purchase by foreigners of domestic company shares on the stock market) have never been important. Indeed, FDI has never amounted to more than 10 per cent of annual capital inflow and has usually been under 5 per cent. PFI has existed, effectively, only since the early 1980s when foreigners have been permitted to invest in half a dozen Trusts in the Republic of Korea. In addition, a few important companies started issuing their convertible bonds on the international financial markets in 1985, the intention being that within two or three years these could be converted into equity stock.

The converse of the small dependence on foreign direct or portfolio investment has been considerable dependence on conventional bank loans from abroad. Over 90 per cent of foreign capital inflow into the Republic of Korea is in this form; this is one reason why there is an element of risk in the country's foreign debt situation even though no major debt-servicing problems loom ahead. The problem arises from the fact that irrespective of the country's economic position the bank charges on the loans are fixed and thus represent an increased burden on the economy in times of economic downturn. This is probably one of the reasons for the move to increase the proportion of foreign equity holdings.

The Foreign Capital Inducement Act was promulgated as Law No. 1802 on 3 August 1966. It was amended in March 1973, December 1983 and in July 1984. The government is now committed to a long-term strategy of liberalizing private capital inflows and the most important method adopted has been the introduction of a Negative List System instead of a Positive List System. This means that whereas previously only the specific areas of investment open to foreigners were listed on the Positive List, the Negative List, outlines only the areas prohibited to and restricted for foreign investors.

Moverover, there is now an Automatic Approval System whereby:

"An applicant for foreign investment can freely invest simply by reporting to the Minister of Finance if all of the following conditions are met;

- the foreign investment ratio is less than 50 per cent;
- the project concerned is not an area on the Negative List;
- the amount of foreign investment is equivalent to US$ 1 million or less;
- the foreign investor does not apply for tax exemption or reduction."1/

1/ Ministry of Finance, 1986 (b), p.17.

The Korea Exchange Bank has succinctly outlined the effects of the new foreign investment regime:

> "According to the guidelines on foreign investment, which are effective from July 1, 1984, 999 industries have been judged appropriate for receiving foreign investment, out of the total of 1,048 industries on the most detailed classification of the Korea Standard Industrial Classification (KSIC). The 49 industries excluded are those in which foreign investment is impossible by nature, such as government administration and education institutions. In accordance with the criteria for the prohibited and restricted categories, 54 industries fall into the prohibited category and 183 into the restricted category. There remain 762 industries, or the equivalent of 76 per cent of the total of 999 industries, which do not apear on the negative list and therefore are open to foreign investment. In the manufacturing sector in particular, 483 industries or 93 per cent of the manufacturing sector industries are open to foreign investment."1/

Statistics on foreign direct investment are difficult to interpret. The Ministry of Finance publishes a list of "foreign investment by year" but it is on an "approval basis" only and it is not known how much of the approved investment was actually implemented in the Republic of Korea. Moreover, the statistics are presented in current dollars making it difficult to establish real trends. Finally, no information is available on the repatriation of capital so inevitably any calculated total of foreign investment over a period of years will be an overestimate.

These comments are pertinent when looking at Table 22. An attempt has been made to convert the published statistics into constant dollars on the basis of the wholesale price index but no corrections for the other two factors mentioned in the previous paragraph were possible. From the table it appears that foreign direct investment reached its peak in 1973, after which it fell. The most recent upward trend started in 1981 and continued to at least 1985. Over the whole period 1962 to 1985 gross direct foreign investment (on an "approval" basis) totalled $4.2 billion in 1980 prices.

Table 23 shows the relative importance of various countries in the foreign direct investment picture, by sector. It is clear that Japanese investment is of overwhelming importance, accounting for 51.6 per cent of cumulative foreign direct investment 1962-1985. Investment from the USA accounted for 29.1 per cent. What might be considered somewhat surprising is the fact that 58.5 per cent of Japanese investment is concentrated in the social overhead capital sector compared with 40.6 per cent in manufacturing. Hotels and tourism alone account for no less than 51.4 per cent of cumulative Japanese investment. Table 23 underlines the importance of manufacturing accounting for 59.3 per cent of total foreign investment. The key sectors receiving foreign investment were electronics (14.5 per cent), chemicals (14.3 per cent) and machinery (10.5 per cent).

1/ Korea Exchange Bank, 1984, pp.141, 142. (Some of the figures mentioned in the quotation have been updated to conform with October 1985 revisions - see the Table in Annex B.)

Table 22. Foreign investment, 1962-85
($1980 million, constant prices)

	$ million		$ million
1962	8.0	1974	210.8
1963	3.5	1975	381.5
1964	2.9	1976	144.9
1965	161.5	1977	121.4
1966	8.0	1978	211.9
1967	62.8	1979	149.0
1968	52.3	1980	140.8
1969	91.1	1981	120.7
1970	73.0	1982	149.0
1971	127.1	1983	212.0
1972	402.9	1984	329.4
1973	634.0	1985	414.4
			4,213.0[a/]

Source and method: Data in current prices from Ministry of Finance, 1986(a), Appendix Two, Table 1, p.97 converted to 1980 prices based on the wholesale price index:

1962-65: IMF, International Financial Statistics Yearbook, 1984 p.376.

1966-85: EPB, Major Statistics of Korean Economy 1986, Table 9-1a, p.205.

a/ For comparison, the total in current prices is $2,655 million.

Table A-17 provides a breakdown of the foreign/domestic ownership structure of the sectors with foreign capital involvement. It shows that in manu- facturing that 74 per cent of foreign investment is invested to differing degrees as a joint venture with local capital, while in all sectors combined the corresponding share amounts to only 62 per cent.

Table 23. Foreign investment[a/] by country and industry, cumulative[b/], 1962-85
($ million and percentage share)

Industry \ Country:	Japan		U.S.A.		EEC[c/]		Others[d/]		Total	
	$ mill	Percent	$ mill	Percent	$ mill	Percent	$ mill	Percent	$ mill	Percent
Agriculture & Fisheries	9.7	0.7	7.1	0.9	0.7	0.3	1.8	0.6	19.3	0.7
Agriculture	1.1	0.1	6.6	0.9	0.7	0.3	1.8	0.6	10.3	0.4
Fisheries	8.5	0.6	0.5	-	-		-	-	9.0	0.3
Mining and Manufacturing	559.9	40.9	680.8	88.2	179.9	76.7	154.3	55.5	1,574.9	59.3
Mining	3.4	0.2	0.3	-	0.7	0.3	-	-	4.4	0.2
Manufacturing	556.5	40.6	680.5	88.2	179.2	76.4	154.3	55.5	1,570.4	59.1
Foodstuff	16.6	1.2	24.4	3.2	2.1	0.9	27.7	10.0	70.8	2.7
Textiles & Garments	65.9	4.8	0.8	-	3.8	1.6	2.1	0.8	72.5	2.7
Wood Products	1.1	0.1	-		-	-	-	-	1.1	-
Chemicals	120.6	8.8	121.7	15.8	123.4	52.6	12.7	4.6	378.4 f/	14.3
Medical Products	13.0	0.9	42.3	5.5	12.4	5.3	9.4	3.4	77.0	2.9
Fertilizer	0.8	-	23.5	3.0	-	-	17.7	6.4	42.0	1.6
Petroleum	-		5.7	0.7	0.8	0.3	30.0	10.8	36.5	1.4
Ceramics	18.2	1.3	4.9	0.6	1.0	0.4	4.4 e/	1.6	28.5	1.1
Metals	50.9	3.7	8.0	1.0	10.4	4.4	3.3	1.2	72.6	2.7
Machinery	103.8	7.6	157.5	20.4	10.2	4.3	6.0	2.2	277.5	10.5
Electric & Electronics	133.6	9.8	211.1	27.4	12.4	5.3	29.1	10.5	386..2	14.5
Transportation	9.1	0.7	49.6	6.4	-	-	7.8	2.8	66.6	2.5
Others	23.0	1.7	30.9	4.0	2.6	1.2	4.1	1.5	60.6	2.3

continued

Table 23 (continued)

Industry / Country:	Japan		U.S.A.		EEC [c/]		Others [d/]		Total	
	$ mill	Percent	$ mill	Percent	$ mill	Percent	$ mill	Percent	$ mill	Percent
Social Overhead Capital	801.0	58.5	83.6	10.8	53.9	23.0	122.2	43.9	1,060.8	40.0
Financing	15.9	1.2	29.9	3.9	25.9	11.0	49.6	17.8	121.3	4.6
Construction	73.1	5.3	31.0	4.0	0.9	0.4	6.1	2.2	111.2	4.2
Electricity	0.2	-	3.2	0.4	-	-	-	-	3.4	0.1
Transport. & Storage	8.0	0.6	14.3	1.9	-	-	9.7	3.5	32.0	1.2
Hotel & Tourism	703.8	51.4	5.3	0.7	27.1	11.6	56.8	20.4	793.0	29.9
Total	1,370.1	100.0	771.5	100.0	234.6	100.0	278.2	100.0	2,655.0	100.0

Source: Ministry of Finance, 1986, Appendix Two, Table II, p.99.

a/ Approval basis.
b/ In current prices.
c/ Possibly incomplete as some E.C. countries may be included in "others"; EC in the table is the sum of Germany, U.K., France and Netherlands in original statistics.
d/ Possibly includes some EC countries other than Germany, U.K., France and Netherlands.
e/ Obviously the $436,000 of the original source is incorrect.
f/ Obviously the $368,418,000 of the original source is incorrect.

A particular institutional approach to attract foreign investment has been the establishment of export processing zones (EPZs).[1/] Masan EPZ was established in 1970. The second, and only other EPZ, Iri, commenced operations in 1973. Essentially the role of the EPZs was to attract foreign capital for exclusively export-oriented industries. By 1986 Masan EPZ had attracted 78 firms and Iri, 20. Investment in Masan and Iri EPZs totalled, $132.4 million and $17.5 million respectively by the middle of 1986. As with foreign investment as a whole in the Republic of Korea, foreign investment in the EPZs is dominated by Japanese capital. In Masan EPZ, for example, Japanese investment contributed 82.9 per cent of total cumulative investment by June 1986 (United States' capital formed 4.2 per cent and capital from the Republic of Korea, 10.5 per cent).[2/]

The question further arises to what extent public enterprises are involved in manufacturing in the Republic of Korea.[3/] As early as 1972 the public enterprise sector comprised 108 enterprises producing 9.1 per cent of GDP or 13.1 per cent of non-agricultural GDP. To see these proportions in perspective, it may be noted that they are similar to India and probably larger than in Italy or the United Kingdom in the late sixties. The number of public enterprises had grown from 36 in 1960. The sector with the largest government ownership in 1972 was finance in which 87 per cent of value added originated in public enterprises. This control, particularly over the banking sector, has been considerably reduced since that date (partly to pave the way towards membership of the OECD). Electricity/water/sanitation, mining and transport/communication were the sectors next in relative importance for public ownership with 66.2, 31.0 and 30.5 per cent, respectively, of value added by public enterprises. It is noteworthy that in the manufacturing sector only 15.1 per cent of value added emanated from public enterprises. However, in terms of absolute size, the manufacturing sector was responsible for 34.9 per cent of the total value added by the public enterprise sector as a whole.

It appears that the public enterprise sector is more than three times as capital-intensive (having utilized 30 per cent of the country's total investment) as the economy as a whole leaving the sector's contribution to the increase of total employment between 1962 and 1973 at only 5 or 6 per cent. On the other hand, employment creation is not the sole criterion of efficiency

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1/ These are of essentially the same nature as in other countries, except that those in the Republic of Korea have been more successful than most others. For a general overview of the characteristics of and problems connected with these zones cf. UNIDO, Export Processing Zones in Developing Countries, ICIS. 176, 18 August 1980; OECD, Investing in Free Export Processing Zones, Paris 1984 and UNCTAD, Export Processing Free Zones in deveicping countries: Implications for trade and industrialization policies. TD/B/C.2/211/Rev.1. UN New York, 1985.

2/ UNIDO, 1987 (b) (forthcoming).

3/ This section draws heavily upon Leroy Jones and Il Sakong, 1980, pp.148-155. There appears to be a noticeable lack of recent studies on the exact quantitative contribution of public enterprises to manufacturing production.

of an enterprise. As Jones and Sakong concluded:

"Korean public enterprises are generally more cost efficient than their counterparts in most developing countries, but much of this is due to the general competence of the labor force and the externalities of a well-run economy. More important, while the public enterprises are less efficient than comparable private Korean firms, we believe the public-private gap is smaller than in most other developing countries".[1/]

2.5 Size and geographical distribution of manufacturing enterprises

This section starts with an examination of the "chaebol", the large business conglomerates which present a dominant feature of the Korean economy. The "chaebol" have often been used as instruments of government policy and have played a crucial role in the process of industrialization. It has been claimed that "the breadth and speed of the rise of the "chaebol" in Korea seems unprecedented in the history of enterprise"[2/] and the evidence seems to bear this out. Table 24 indicates that in 1978 the number of "chaebols" was 46. Of these, the "Top 5" had a rate of growth of value added of 35.7 per cent per annum between 1973 and 1978 compared with the national GDP growth rate of 17.2 per cent per annum. This same "Top 5" contributed 8.8 per cent of the country's GDP in 1973 and 18.4 per cent in 1978. Taken together, all the 46 chaebols increased their share of GDP from 32 per cent in 1973 to 43 per cent in 1978.

The most important source of funds for the chaebols has been the banking system which was often encouraged to direct loans to chaebols both through government control of the banking sector and through preferential interest rates. This has had the unfortunate consequence (as has been the case, analogously, for the Korean reliance on foreign banks for external capital) that the debt/equity ratio is high.[3/] The result has been a certain inflexibility in the financial structure of the chaebol which can lead to sudden bankruptcies (for example, the Myungsung group collapsed in 1983 and the Kukje group in 1985).

The large size of many enterprises in the Republic of Korea is also indicated by their representation among the world's largest companies. Table 25 shows that of the world's 500 largest companies (excluding United States' companies) 10 were located in the Republic of Korea. The largest of them, the "chaebol" Samsung, was ranked 88 in the world in 1983, 38 in 1984 and 23 in 1985. The same enterprise was ranked 42 in 1985 in the world's "top 50" companies, including those with headquarters in the USA. One other Korean company was included in this "elite" group of 50 - Hyundai, with the 44th rank. By end of 1986, Hyundai sold 168,882 cars in the US and and captured 1.5 per cent of the US market with a projected sale of 250,000 cars in the US in 1987, Hyundai is expected to move up from seventh to fourth place in the US importers' list.

1/ Ibid., p.298.

2/ Kim, 1985, p.41.

3/ Cf. "In 1980 external funds - those borrowed from domestic banks and foreigners - for the top 50 enterprises in Korea accounted for as much as 85 per cent of the total. This ratio was much higher than that of Japan or the USA which showed 38.1 per cent in 1977 and 29.1 per cent in 1974 respectively" (Kim, 1985, p.43).

Table 24. Contribution to value added of the "Chaebols", 1973-78

Size group	Number of Chaebols: In each size group in 1978	Number of Chaebols: Cumulative 1978	Annual growth rate of value added of the cumulative number of Chaebols 1973 - 1978	Proportion of GDP contributed by the cumulative number of Chaebols 1973	1978
			(per cent)	(per cent)	
I (largest)	5	5	35.7	8.8	18.4
II	5	10	30.0	13.9	23.4
III	10	20	27.5	21.8	33.2
IV (smallest)	26	46	21.4	31.8	43.0
GDP total			17.2	100.0	100.0

Source: Kim, Kwan S. 1985, Table 8, p.42 (modified).

Table 25. Republic of Korea companies among the world's 500 largest companies excluding the United States, 1985 (with 1983 and 1984 rank comparisons)

Rank 1983	Rank 1984	Rank 1985	Company	Industry Code[b/]	Sales 1985 $ bill.	Employees 1985 '000
88	38	23	Samsung Group	36	14.2	129
67	39	25	Hyundai	37	14.0	156
89	43	43	Lucky-Goldstar	29	9.9	63
105	48	49	Daewoo	45	8.7	93
110	62	67	Sunkyong	29	6.4	19
242	139	137	Ssangyong	29	3.7	13
326	185	180	Korea Explosives	28	2.8	16
376	216	204	Hyosung	28	2.4	24
352	209	206	Pohang Iron & Steel	33	2.4	17
-	413	412	Doosan	49	1.2	14
388	-	-	Kukje[a/]	-	-	-
Total					65.7	544
As proportion of top 500. (per cent)					3.4	2.9

Sources: 1983: Dunning and Pearce, 1985, pp.171-180.
1984, 1985: Fortune, August 4 1986, pp.181-197 and p.203.

a/ Conglomerate dissolved early 1985.

b/ Industry Code (the industry which represents the greatest value of industrial sales): 28 chemicals; 29 petroleum refining; 33 metals; 36 electronics; 37 transportation equipment; 45 industrial and farm equipment; 49 beverages.

The 10 largest Korean companies in 1985 accounted altogether for sales of $66 billion, or 3.4 per cent of the aggregate sales of the "top 500". Employees of the 10 totalled over half a million, some 3.5 per cent of the Korean labour force.

It is instructive to examine what has been called by Dunning and Pearce the "research intensity"[1/] in the major companies of the Republic of Korea.

Annex Table A-28 provides 1983 data for the 10 largest companies. It appears, for instance, that in the important high-research-intensity category the Republic of Korea had only 1 firm in 1983 whilst 275 out of the world's 806 largest companies in that year were in this category. The one Korean firm was in the electronics and electrical appliances industry. In shipbuilding, however (a medium-research-intensity industry) Korean firms form a much higher proportion of the world's total - 2 out of 9.

In addition to comparing Korean firms with those of the world, it is also useful to compare them with firms in the Third World alone. In 1986 the Republic of Korea had the highest number of firms (93) in the "Top 600" (measured by size of sales/turnover) firms in the Third World. Other country numbers are as follows: Brazil, 83; India, 81; Mexico, 34; Argentina, 30; Malaysia, 23; Saudi Arabia, 20; Singapore, 18; Taiwan Province of China, 17; Hong Kong, 17.[2/]

Despite the dominance of the conglomerates in the industrial structure of the Republic of Korea over one-third of value added is contributed by small and medium industry (SMI). In 1983, this sector was made up of nearly 1 million firms (99 per cent of all the country's firms) and accounted for 60 per cent of employment. Relevant comparative statistics are presented in Table 26.

Within the manufacturing sector the number of SMI companies has grown from 23,400 in 1970 to 35,800 in 1982. They accounted for 49 per cent of employees and 29 per cent of value added in the former year and 54 per cent and 36 per cent, respectively, in the latter (see Annex Table A-18).

"Among broad industrial subsectors, four were predominant in 1981. Textiles/clothing and machinery/equipment accounted for 25 and 22 per cent, respectively of SMI firms and 33 and 23 per cent of the SMI labour force. Two others, chemicals/petroleum/plastics and food/beverages, together accounted for another 23 per cent of SMI firms and 20 per cent of SMI employment".[3/]

1/ Dunning and Pearce (1985, p.7) defined research intensity as percentage share of R&D in sales.

2/ See South, August 1986, p.65.

3/ ADB, 1985, p.57.

Table 26. Relative importance of small and medium industry (SMI) [a/] and large scale industry (LSI), end 1983 [b/]

	SMI		LSI		Total	
Firms ('000 and per cent)	930	(98.8)	11	(1.2)	941	(100.0)
Employees ('000 and per cent)	3,330	(59.8)	2,270	(40.2)	5,600	(100.0)
Production (Won billion and per cent)	32,200	(30.3)	74,000	(69.7)	106,300	(100.0)
Value added (Won billion and per cent)	10,600	(35.1)	19,600	(64.9)	30,200	(100.0)

Source: Korea Federation of Small Business, Promotion Policy for Small Business in Korea, Seoul, 1985, Table 4, p.6.

a/ The definition varies according to the characteristics of the industry (see Promotion Policy....p.4) but in general the term encompasses firms with 5-199 employees, with the upper limit raised to 499 for some industries. In some cases, especially in connection with government assistance purposes, SMIs are defined as firms with under Won 500 million in total assets.

b/ Figures in parenthesis indicate percentage share.

From time to time the government has deliberately adopted policies in support of the small and medium business sector. For example, in 1961 a special bank was established to provide loans to such enterprises. Again, since 1965 the banks have been "urged" to provide 30 per cent of their loans to SMI and, in support of this objective, the Committee for Financial Support to Small and Medium Industries was established in 1967. Other types of assistance, including interest rate subsidies were offered in succeeding years but in 1982 most measures were abandoned. In particular, the government has increasingly moved away from the use of credit control through allocation mechanisms and towards the use of market signals. Nevertheless a recent study suggests that "selective credit controls did indeed facilitate, albeit slightly, the investment activity of small and medium-sized enterprises". But the authors went on to add that "one might question ... whether this is the most efficient way to effect reasonable allocation ... it might be advisable for countries contemplating the use of selective credit controls to examine the possibility of using alternative measures such as ...tax-cum-subsidy". [1/]

As far as the regional distribution of SMI manufacturing industry is concerned some of the relevant data is presented in Tables A-19A and A-19B. In brief, the overwhelming proportion of the nation's manufacturing activity is located in Seoul (and its environs to the north, in the Province of Kyonggi) and in Pusan. These two areas together account for 57.5 per cent of establishments, 59.8 per cent of manufacturing employment and 55.6 per cent of gross manufacturing output.

1/ Leite and Vaez-Zadeh, 1986, p.125.

In Table A-19B, manufacturing is combined with mining - but the mining statistics do not significantly alter the picture which reveals the importance of the Seoul/Kyonggi/Pusan locations; together these areas account for 43.9 per cent of the total value added in manufacturing/mining.

Table A-19B also shows the importance of SMI relative to manufacturing/mining industry as a whole, by Province. In Seoul, for instance 98.4 per cent of the establishments are in the SMI category but they employ only 65.7 per cent of those employed by manufacturing/mining industry in Seoul and contribute but 50.8 per cent of value added by this sector in the city region.

3. INDUSTRIAL DEVELOPMENT STRATEGIES, POLICIES, PLANS AND INSTITUTIONS

3.1 Goals, instruments and impact of industrial policy

In the course of the preparatory work on a future long-term perspective plan for the social and economic development of the Republic of Korea, the Korea Development Institute, a semi-governmental institution, in cooperation with eleven further research organizations drafted the 1985 report on "Korea in the Year 2000". This report ascertains that the long-term objective of the national development process is to create a "free and stabilized society ...based on balanced development and justice". In order to achieve this final objective development efforts are primarily to be directed towards promoting hi-tech industries which are expected to contribute to advancing the country to the threshold of becoming a member state of the OECD.

This prediction of the "probable future image of the country" has been put forward on the two assumptions that the world economy will grow at an annual average real rate of 3.2 to 3.3 per cent during 1985-2000 and that no major political conflicts will occur on the Korean peninsula or elsewhere in the Asia-Pacific region. Given such favourable international circumstances the report forecasts the following macro-economic trends:

- Annual average real growth of GNP will reach 7-8 per cent until the year 2000. Calculated at 1984 constant prices GNP will increase from $81.1 billion in 1984 to about $252 billion until the end of the century. Per capita GNP will reach about $5,100.

- Foreign trade will experience a fourfold increase to $243 billion (at 1984 constant prices) by the year 2000. Exports are projected to reach $123.3 billion and imports $119.6 billion. The Republic of Korea would thus advance to the group of the ten leading world trading nations. During the late 1980s the country's current account is to be balanced.[1/] Thereafter it is predicted to register a surplus increasing steadily to $7.3 billion by the year 2000.

- Starting from the existing base for modernization, technological progress is to lead to significant structural changes at the sectoral and subsectoral levels of the economy. The share of agriculture in GNP is expected to decrease to a mere 8.3 per cent (about $21 billion) whereas industry will occupy a share of 33.2 per cent (about $84 billion). Social overhead capital and other services will reach a share of 58.5 per cent (about $147 billion).

1/ See Chapter 1.2 for data on the actual status in 1986.

- The manufacturing sector will be dominated by the production of machinery, electronics and automobiles. The projected shares in total MVA are to be 23.6 per cent for machinery and 18.8 per cent in the case of electronics. The 1981 shares came to 13.7 per cent and 7.0 per cent, respectively. The automotive industry is to see a 12.7-fold increase in output up to the year 2000. In 1990 production is expected to surpass one million units (1985: 361,000 units). Other major branches are to be shipbuilding, chemicals, steel and textiles. Furthermore, plans are in preparation to establish aviation as a major strategic industry which is to help strengthening other technology-intensive industries.

The projected long-term growth and structural changes of the economy can be achieved only on the assumption that major policy issues will be coped with successfully. The report lists six sets of issues which have emerged in the course of the rapid development during the last two decades and which require priority solutions: establishment of a well-functioning, consensus-building political system; improvement of the social order; promotion of welfare programmes; reinforcement of anti-protectionist international cooperation (in particular as regards the Asia-Pacific region); accelerated build-up of economy-related research and development institutions and above all the enhancement of the national education system. Provided that existing constraints in these fields can be successfully overcome the growth predictions seem to be fairly optimistic, but not unfeasible.

In the medium-term the Sixth Five-Year Plan (1987-91) is to lay the groundwork for the long-term direction of development. According to the Economic Planning Board (EPB) the Plan period is to be characterized by major efforts to change the country's industrial structure and to intensify technology-related activities. With respect to quantitative targets GNP is to rise by 7.2 per cent on an annual average leading to a GNP per capita of $3,140 (in 1980 prices) by the end of the Plan period. Exports are predicted to increase to $54.4 billion. Outstanding foreign debts are expected to reach $46.1 billion and net foreign debt $23.7 billion.[1/]

Priority objectives of all previous Five-Year Plans have been the increase in "domestic savings, export promotion, investment in social overhead capital (SOC) sectors, selective import substitution of intermediate and capital goods and self-sufficiency in major food grains".[2/] During the first two plan periods (1962-71) additional emphasis was placed on the

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1/ For a detailed outline of the objectives and achievements of previous Plans and preliminary information on the Sixth Five Year Plan, 1987-1991, see Annex Tables A-23 to A-25.

2/ Lee, 1985, p.18.

expansion of labour-intensive industries. The Third Plan period (1972-76) showed a shift in emphasis to the rapid promotion of heavy and chemical industries which was to continue through the Fourth Plan period covering 1977-81. Other major objectives of the Fourth Plan such as the achievement of self-sufficiency in investment financing and the obtainment of a current account surplus had to be abandoned due to the crisis-inflicted economic environment, rising inflation and the disruption of the socio-political order. In response to the deterioration of the economic performance the Fifth Development Plan (1982-86) was relatively modest in quantitative terms. The preoccupation with qualitative targets reflected increased concern about the need to correct unbalanced growth patterns. The main aims were to regain price stability through tight monetary control, to promote higher industrial efficiency in view of reduced international competitiveness and to reduce the foreign loan component in domestic development financing. Furthermore, the Fifth plan for the first time listed as a priority objective the improvement of social welfare and equity.

As for quantitative targets the remarkable performance of the economy during the first two plan years 1981-82 made the 1983 upward revision of the Fifth Plan feasible. The revised Plan "contain(ed) adjusted policy priorities and implementation strategies for the remaining three years of the Plan period". It "focuss(ed) on institutional improvements and adjustments needed to resolve structural problems, rather than on setting goals in quantitative terms".1/ Nonetheless, growth expectations for major macro-economic indicators clearly increased, the only exception being investment financing. Mainly because of the decline in the foreign savings ratio the share of total investment in GDP was projected to be lower by three percentage points than originally envisaged (29.5 per cent in 1986). In contrast, manufacturing was predicted to grow at a compound rate of 10.0 per cent per annum in 1984-86 and was expected to reach about $30 billion by 1986 in 1980 prices. With respect to external economic activities the balances of trade and current account were expected to show surpluses in 1986.

During the current Sixth Five-Year Plan period (1987-91) the manufacturing sector is projected to continue to grow in relative terms. By the Plan's end year in 1991 the industrial sector is to account for a share of 38.3 per cent in GNP which would correspond to $52.5 billion in 1984 prices. MVA alone would come to more than $50 billion. It is only during the 1990s that the manufacturing sector is expected to loose its relative growth momentum and to decline to about 33 per cent of GNP by the year 2000 while SOC and other services are forecast to experience accelerated growth.

1/ Government of the Republic of Korea, 1983, pp.18-19.

As for the past and present administrative guidance of economic development a regime of medium-term planning has been of basic importance to the country's economic achievements. Since the commencement of the export-oriented development strategy during the early sixties the planning process has always been the major means of ensuring strong cooperation between government agencies and the private sector.[1/] It is only during recent years that the comprehensive scope of plan-guided development has in part been curbed in favour of private decision-making prerogatives. The strong inclination of the Korean economic policy-makers towards planned development has often been attributed to the proximity of Japan, both geographically and as an economic mentor. Indeed, it is frequently stated that Japan has served as the model for catching-up in domestic and international economic development.[2/] With regard to the directive strength of plans it is to be noted that the planning regime has not been of an imperative nature. Plans have always consisted of a skillful mix of binding and indicative regulation elements.

As the first three five-year Economic and Social Development Plans (from 1962 to 1976) were very successful in attaining and surpassing their main targets it is not surprising that planning was generally accepted as the foundation for economic advancement. During the Fourth Plan period (1977-81), however, the 1979-80 economic crisis was aggravated by the inflexibility of planning. Against this background the country has since endeavoured to find a new balance between planning and private sector autonomy which is more appropriate to the present stage of economic development. Essentially, plans have become less comprehensive, more open to revision and more qualitative in nature.

As mentioned above the concept of planning in the Republic of Korea is largely to be understood as being of an indicative rather than imperative nature, i.e. private sector activities have not as a general rule been strictly determined by administrative precautions but have been steered by material incentives into the desired priority or strategic sectors. To this end, a comprehensive arsenal of incentives was created and from time to time adjusted to serve the prevailing industrial policy objectives.[3/]

1/ For an account of "bureaucratic authoritarianism" as applied to the Republic of Korea, see Yusuf and Peters (1985). Other accounts of the planning process are provided in Wade and Kim, 1978, Chapters 4 and 5 and Jones and Sakong, 1980, Chapters 3 and 4.

2/ For the comparison with Japan, see Kim and Roemer 1979, pp.137-146.

3/ For a detailed survey, Cf. Kim, 1985, pp.19-26 and pp.35-37. Export-oriented incentives in particular are dealt with in ESCAP, 1986 and Krueger, 1979, especially pp.92-99.

The centrepiece of the incentives policy has been the financial system which perhaps has been more purposefully designed and systematically used as an instrument for targeted industrial development promotion in the Republic of Korea than in any other developing country. Indeed, it was the public-sector control of credit allocation which best served to bring private activities in line with government intentions. Suffice it to note here (for details on the financial sector's institutional framework see section 3.3) that by means of so-called low-interest 'policy loans' special support was provided to priority sectors (shipbuilding, steel, machinery etc.). These policy loans, at times accounting for some 50 per cent of total bank lending, assumed particular importance since the unorganized financial market (kerb market) was initially a very thin market extending loans at interest rates 3-6 times the official rates. The "policy loans" were also of particular importance to the large industrial firms in the country which have traditionally been characterized by very low equity/debt-ratios (see section 2.5).

On the other hand, harnessing the financial sector for industrial development was only one of several major areas of industrial policy. Further measures have included fiscal incentives (tax exemptions and reductions; accelerated depreciation allowances; tariff exemptions for and tax rebates on imports required for export production), protective measures (quantitative import restrictions and import prohibitions on domestically produced items) as well as direct government investment in industrial estates and export-processing zones. Most of these incentives were particularly aimed at export promotion as was exclusively the case for example with additional export promotion funds, preferential foreign currency loans for export financing, export-import link systems etc.

It is rather difficult to calculate the combined quantitative effect of all these various incentives measures. Orders of magnitude, however, can be indicated: according to an estimate made by Hong[1/] the ratio of total interest subsidies to total fixed capital in manufacturing exceeded 25 per cent in 1972. Furthermore, time series data are available on the ratio of export subsidies to total export value indicating that between 1962 and 1978 this ratio fluctuated between 16 and 45 per cent with an average figure of 21 per cent for the years 1970-78 (see also Annex Table A-20).[2/]

Taking into account the fact that these quantitative material incentives have always been complemented by various qualitative incentives (public recognition of and awards for excellent achievements, moral suasion, administrative exhortations), it is hardly possible to establish a firm causal link between the extent and quality of policy interventions on the one hand and the performance of the industrial sector on the other. Empirical evidence does suggest, however, that in the Republic of Korea, efficient well designed and coherently implemented policy measures have to a large extent contributed to the country's economic success.[3/] The following aspects seem particular worthy of note in this regard:

1/ Cf. Hong, 1979.

2/ Calculated from Wang Y.K., 1983, p.12.

3/ For more detailed elaborations on this subject, cf. Kim, 1985 and Kuznets 1985, pp.44-67.

- There has always been a substantive state involvement in organizing, focusing and directing economic development. Contrary to what is sometimes mentioned the Republic of Korea has not been a paradigm for a free market laissez-faire approach to development; yet it should be noted that government policy has tried to use market signals.

- The State has exerted influence on industrial development less by claiming a large share of public enterprises in manufacturing (some 15 per cent of total manufacturing during the seventies) but more by persuading and/or directing private industry into the desired sectors and activities. The success of this strategy seems to imply that, as a general rule, 'guidance' is essential, not 'property'.

- This approach has resulted in a largely targeted development pattern with substantial subsidization of priority sectors.

Altogether, the method of economic policy formulation in the Republic of Korea has been characterized as being based on pragmatism (willingness to experiment undogmatically with available policy tools), particularism (application of 'tailor-made' policy decisions with a low level of generality), centralization (policy 'made in Seoul') and openness (long discussion of various opinion inputs preceding decision-making).[1/] To these four essentials, the high degree of corporatism can be added, i.e. the intense interaction between government and numerous economic interest groups in preparing and implementing industrial policy.[2/] This interaction has also had what has been called an "announcement effect", i.e. it has been instrumental "in articulating leadership commitment and giving the general guidelines and implicit promises of support that facilitate private planning".[3/]

It is this specific form of public/private sector institutional interlinking - in striking similarity to the Japanese industrial policy approach - which permits to refer to the Republic of Korea's economic system as being, almost paradoxically, a 'centrally guided and co-ordinated market economy'.[4/]

1/ Cf. Jones and Sakong, 1980, pp.53-66.

2/ Cf. "What proved most effective in influencing the process of decision-making turned out to be a myriad of lobbies established by various interest groups." (Kim, 1985, p.53.)

3/ Jones and Sakong, 1980, p.53.

4/ Cf. "There can be little doubt that the public policies derived from the planning function in Korea were indispensable to...economic growth...., or that the market mechanism as a tool of planning has yielded economic improvements which....have been altogether extraordinary". (Wade and Kim, 1978, p.196.)

3.2 Recent changes in industrial policy

As pointed out above, the Korean Government has initiated a series of economic policy measures and reform decisions in the recent past which are considered necessary prerequisites to sustaining future economic growth of at least 5-6 per cent annually. According to the Economic Planning Board continued growth of this order of magnitude is the minimum level needed to create sufficient employment opportunities for the country's labour force which "for the next ten years will grow at 3 per cent per annum. In absolute terms, about one half million new workers will join the labour force each year."1/

Until the late 1970s high growth of the so-called "strategic industries" and other priority segments of the economy had resulted in the gradual deterioration of resource allocation efficiency. Weak links began to emerge. The seriousness of the structural problems was underlined by rapidly rising inflation which in turn was mainly caused by continuous over-investment in heavy and chemical industries going beyond the absorptive capacity of the economy. At the same time underinvestment in light industries together with import restrictions and administrative price controls led to widening distortions in the domestic price structure, and the manufacturing sector experienced a deepening of productivity gaps between unprotected and protected subsectors. Finally, the second oil price crisis of 1979-80 aggravated these tendencies as the country's oil imports increased by $3 billion. Thus, in 1980 the Republic of Korea witnessed the first serious economic downturn after 1962. The government dealt with the crisis which had been caused by structural distortions accumulated over the years of high inflation by launching readjustment programmes, the realization of which continues to the present.

As to the medium and long-term course of the readjustment process three major objectives have been envisaged as basic targets:

- continuous improvement of labour productivity in manufacturing;
- improved mobilization of domestic savings and attraction of foreign direct investment to realize the opportunities which have been provided for productivity gains;
- efficient utilization of resources, in particular capital, by enhancing allocation mechanisms.

1/ EPB, August 1984, p.12.

To this end, various policy measures have recently been formulated which will be described in more detail below. The major emphasis of these measures is on economic liberalization and on enhancement of the market mechanism. Accordingly, this new shift in policy orientation - following import substitution and export promotion as the first two restructuring phases - is now sometimes being considered as launching the third post-war restructuring of the Korean economy.1/

Foreign direct investment

Foreign direct investment regulations have been liberalised since 1981. These efforts culminated in the Foreign Capital Inducement Act of July 1984. Under this Act the extent of restriction is indicated by a so-called "Negative List" system. "Investors with equity shares of less than 50 per cent in projects worth less than $1 million and not seeking special tax incentives do not have to apply for prior approval unless they undertake investment in industries specified on the negative list. Even for investors with majority equity shares, applications for prior approval are not required provided that the project is export-oriented or the output is already on the free import list and the applicable tariff is less than 10 per cent."2/ The negative list restricted or precluded foreign equity investment in 339 out of the total of 999 industrial subsectors of the economy. A mid-1985 review provided for the opening of further industrial areas. Up to 1988 it is planned to liberalize foreign access to altogether 230 of the remaining 339 subsectors. It is expected that as a result of these inducement measures the level of foreign investment will rise to over one billion US-dollars per year by 1988.3/

Import policy

The liberalization of foreign investment activities is to be accompanied and supported by a phased curtailment of import restriction policies. Faced with mounting international resentment of prevailing protective attitudes in vital areas of manufacturing and services the government reacted by announcing the medium-term opening of the import and financial markets. As mentioned above (see section 2.2) a comprehensive import liberalization schedule came officially into effect in July 1984. Under this schedule the country's import liberalization ratio is to be augmented from 80.4 per cent in 1983 to 92 per cent in 1986 and to 95 per cent in 1988 (for details on the industry-wide liberalization schedule see Annex Table A-21). It is said that "virtually no industrial products will face import barriers other than tariffs. These efforts to remove non-tariff barriers have been accompanied by moves not only to reduce the average tariff rate but also to drastically narrow the tariff differentials among different products."4/ As a result of the thorough tariff reform carried out in December 1983, the average tariff rate is to drop from 20.9 per cent in 1984 to 16.9 per cent in 1988 (Annex Table A-22).

1/ Cf. Kuznets, 1985, pp.54-55 and Cohen, B. and G. Ranis, 1971.

2/ EPB, August 1984, p.23.

3/ Korea News Review, May 4 1985, p.12.

4/ EPB, August 1984, p.22.

Exchange rate policy

In 1980 the Won, which had been overvalued for the most of the 1970s, was devalued. Based on purchasing power parity the degree of overvaluation has been assessed at more than 14 per cent by 1979-80.[1/] Since 1980, however, the Won has depreciated considerably due to its floating in relation to both the US dollar and the Japanese Yen (See Basic Indicators 1). The strong depreciation contributed substantially to a reassertion of the country's export competitiveness. The negative effects on the import bill have been largely neutralized by greater scrutiny by the private sector of import decisions, the resulting incentive to improve productive efficiency and the fortuitous world market price decline for fuels and raw materials.

Competition policy

In order to strengthen domestic economic competitiveness and to attain more market-regulated price movements the so-called Fair Trade and Anti-Monopoly Act was enforced in April 1981. The Act basically aims at checking non-market arrangements such as cartel building, price fixing and other practices of quasi-monopolistic behaviour. Anti-collusion measures seem to be the more important as the enterprise structure of the economy is dominated by only a dozen huge industrial and commercial conglomerates. The lopsided impact of these conglomerates on government decisions and the distribution of investment funds contributed in the past to impairing the opportunities for other enterprises. To counter the dominant position of large firms the government issued in 1984 a list containing so-called market-dominating enterprises (136 firms producing 71 products) whose pricing policies were to be subject to monitoring and control by the Fair Trade Commission of the EPB. A survey carried out by the EPB revealed that these oligopolistic items under surveillance are still heavily protected with an import liberalization ratio of less than 40 per cent.[2/]

One further aspect of the government's competition policy has been to ensure that "sunset industries" were indeed phased out. It appears that interventions have been in the direction of ensuring that market signals are obeyed, implying an unwillingness to artificially support industries which are declining. One example of governmental intervention in late 1986 was the announced decision to transfer "28 ailing companies to new owners, bringing to 43 the number of bankrupt firms merged this year." [3/] The companies which buy the failing companies have been "encouraged" to do so through tax favours and special loans; they exercise varying degrees of control over the companies they have taken over.

1/ Shinohara, 1985, p.59

2/ Cf. Kim, 1985, p.64.

3/ Far Eastern Economic Review, 2 October 1986. Among the 28 are 7 subsidiaries of the Kukje conglomerate which collapsed in 1985 and the Myungsung conglomerate which collapsed in 1983.

On the other hand, the government sometimes acts to prevent what it sees as the development of "excessive" competition, particularly in export markets. It was reported in 1986, for instance, that the government had intervened to prevent the Samsung group from concluding a deal with the Chrysler Corporation of the United States which had had as its objective the entry of Samsung into automobile production.

Financial system

The financial system has undergone partial liberalization. First, before 1983 the government relinquished its majority holdings in the country's five major commercial banks and approved the set-up of two new foreign-domestic venture commercial banks. Since 1984 foreign banks have been permitted to join the National Banking Association and gradually to expand their business activities. In 1986 "foreign banks will be entitled to make use of the rediscount facilities (at the Bank of Korea) for all their operations."[1/] Secondly, competition in the financial sector has been strengthened by rescinding part of the regulations which legally restricted the fields of activity of different kinds of financial institutions. Thirdly, the policy of preferential loans and interest rates as well as preferential treatment in taxation to "strategic industries" is being phased out in order to facilitate more equal access to investment resources and to bring about greater allocative efficiency.[2/] Fourthly, plans have been announced to liberalize the stock exchange and to permit unrestricted participation by foreign investors. At present, foreigners have access to the Korean equity market only through the indirect medium of shares in the six government-approved investment trusts. One of these, the Korean Fund, is listed on the New York Stock Exchange where, apparently, strong demand has caused the shares price to rise to 40 per cent above asset value. There is some experimentation, however, with the concept of foreign ownership of bonds in selected companies which, after two or three years, may be converted into Ordinary Stock.

Regional dispersal of industry

As evidenced by the stipulation of planning targets the government aims at attaining a more even geographical distribution of manufacturing activities. However, it must be noted that programmes oriented towards a greater degree of regional dispersal of industrial production have since long been part of the planning rhetoric without receiving serious practical attention.

Nevertheless, an exception to this generalization lies in the government's policy of deliberately locating the major industrial estates (including the two export processing zones, EPZs) in parts of the country deemed desirable to develop.[3/] Likewise, the stimulation of the rural sector - a major objective of the Sixth Five Year Plan - is to be partly accomplished through rural industrialization. The drive to establish numerous small-scale rural industrial estates has met with mixed success so far.

1/ EPB, August 1984, p.25

2/ Cf. Kim, Kihwan, 1983, pp.353-361 and EPB, August 1984, pp.15-16.

3/ See UNIDO 1987 (b).

The basic problem with regional development planning lies with the fact that it requires strong public sector involvement which runs counter to the current trend of government disinvolvement from direct economic activities.

Small- and Medium-Scale Industries

During the sixties and seventies the large business conglomerates (chaebols) were growing very rapidly in accordance with the prevailing government plans, which provided a wide range of support measures from restrictions on imports to subsidized bank loans and generous export financing. It has even been argued that "the chaebols' spectacular expansion was made not through rational management or innovation but through close connection with the government."[1/]

For two decades these giant business groups were allowed to penetrate into sectors traditionally characterized by small firms and to swallow up firms that could not compete. Recently, however, the government has reached the conclusion that the chaebols do not work efficiently any more and are in particular lacking the flexibility and resilience to adapt to rapid changes in international markets.

Some reasons for this alleged inefficiency are that:

- ownership of the chaebols is often concentrated in a handful of family members and that there should be a separation of capital and management to increase operational efficiency;

- the giant firms are heavily dependent upon bank lending;

- the chaebols are too diversified;

- small business cannot grow under the shadow of the few large groups as the allocation of investment funds, bank lending and general economic policies tend to be biased in favour of the chaebols.

On the other hand, the small- and medium-sized firms have remained rather weak in the Republic of Korea. They do not really have a chance to emerge and become efficient and they are often plagued with sluggish sales, backward technology, insecurity and poor access to credit.

Accordingly, during the last few years the government has tried to end privileges exclusively enjoyed by big business and to restrict further growth and diversification of the chaebols. The government also plans to promote small firms more strongly since it is believed that small business can play the role of a safety net in times of recession and that it is capable of innovating new technologies quickly.

1/ Business Korea, December 1984, p.24.

A 10-year Long-term Promotion Plan for Small and Medium Industry was adopted in 1982 to raise the value added, employment and investment shares of small and medium industry to some 50 per cent of national totals. A central role in formulating, initiating and co-ordinating support plans is played by the Small and Medium Industry Promotion Corporation (SMIPC).[1/]

Furthermore, in 1984 the Ministry of Trade and Industry (MTI) announced a plan for intensive support of 1,000 small companies. Since much of the country's trade deficit stems from imports of parts for electronics, machinery, shipbuilding and automobiles, MTI has begun to put emphasis on small companies becoming involved in parts and components production. In a move to stimulate the development of the parts industry, MTI has launched a plan to integrate the parts manufacturers and large-size prime manufacturers into closely-knit production units. The Plan is known as the industrial systematization project. It calls for financial support and tax priveleges to companies which join the project.

Tax privileges include for example, a reduction of tax payments by 10 per cent in the case of domestically purchased machinery and by 8 per cent in the case of imported machinery and equipment for laboratory and inspection purposes.[2/] Furthermore, expenses on required technical guidance are tax deductable.

Most of the items covered by the systemization project are related to automobiles, machinery and electronics. However, the system has numerous problems. Prime manufacturers are inclined to demand price cuts from their parts makers, payments are often delayed by several months and prime makers sometimes suddenly reduce or stop orders. Hence many problems remain for the producers of parts and components and various kinds of functional support are called for. A Systematization Promotion Council has already been established within the Korean Federation of Small Business, which, inter alia, has the task of regular examination (on a quarterly basis) of business transactions and of initiating suitable measures to deal with and eventually to avoid disputes between large firms and their suppliers.

One of the most important problems for small businesses to overcome is the difficulty of raising capital at "normal" rates of interest. Since the role of banks, under government guidance, has been to lend to "priority" sectors of the economy small businesses have been forced into the "kerb market" (unofficial financial market) where the rate of interest may be several times that charged by the banks. Even those high rates may be increasing as a shortage of loanable funds in this market is emerging owing, partly to the counterattraction of a booming stock market. In the circumstances the provision of appropriately priced capital to the small business sector is the sine qua non of its viability and growth. It is for this reason that the existence of "venture capital companies" is so important.

1/ For a detailed treatment of recently established small industry promotion schemes in the Republic of Korea, in particular concerning the activities of the Small and Medium Industry Promotion Corporation (SMIPC), cf. UNIDO, 1987 (a).

2/ Cf. UNIDO, 1985 (a), pp.26-28.

A further element in the recent attempts to promote small-scale industries has been their partial protection from being dominated and swallowed by large industrial enterprises. In the case of certain product groups (e.g. leather, shoes, towels, toys) production increases of large firms require prior government approval.

The introduction of the above-listed readjustment measures during recent years has led to visible successes in the transformation of the economic system. More flexible forms of guidance and regulation have evolved. In 1985 new challenges associated with the changes in the government's economic behaviour became imminent. The business leadership as represented by the Federation of Korean Industry voiced major complaints against both the import liberalization policy and the tight controls over the money supply. In spite of this the government has refused to alter its basic policies which give priority to domestic price stability, improvement of the balance of payments and the reduction of foreign debt.

3.3 Institutional framework for industry

The central institution in the national economic planning process is the Economic Planning Board (EPB). It is in fact difficult to overstate the role which the EPB has played in the course of the country's economic and industrial development. In spite of recent efforts to decentralize economic decision-making the EPB has remained the single most important government institution as the organ in charge of overall development planning of the national economy, formulation and execution of the government budget, overall coordination of plans for mobilization of resources, investment, technical development and economic cooperation with foreign countries and international organizations. It is noteworthy that the EPB Minister is concurrently Deputy Prime Minister and is in charge of coordinating the activities of Ministries related to economy and finance. This central position has "enabled the EPB to plan and to coordinate daily and annual operational decisions with the five-year plans, with unusual consistency and effectiveness".[1/] In order to fulfil its comprehensive planning and guidance functions the EPB is made up of a number of specialized offices and bureaus such as the Office of Planning and Management and the Office of Budget, the Bureaus of Economic Planning, Industrial Policy Coordination, Performance Evaluation, Price Policy and Statistics and the Fair Trade Commission. Furthermore, the Korea Development Institute (KDI), founded in 1970, serves as an essential economic research, advisory and decision-preparing institution to the EPB which is involved in all phases and elements of planning from target setting to evaluation and from micro sectoral and/or regional to macro planning.

The second most important administrative organ is the Ministry of Finance (MoF). The MoF is responsible for guiding and controlling the practical implementation of economic policies formulated by the EPB. This is done by employing budgetary/monetary policy instruments in cooperation with the Bank of Korea and other economy-related ministries. Furthermore, the MoF has under its control all state-owned and investment properties. The most important bodies of the State's direct participation in the economy are so-called Development Institutions such as the Korea Development Bank (see below).

1/ Wade and Kim, 1978, p.227.

Other ministries of major relevance to the industrial economy are the Ministry of Trade and Industry, Ministry of Energy and Resources, Ministry of Construction, Ministry of Transportation, Ministry of Communications, Ministry of Science and Technology and the Ministry of Labour.

The Ministry of Trade and Industry is responsible for all matters related to industry, including patents and standards of mineral and manufacturing products. The pertinent offices are those of Basic Industry, Textile and Consumer Goods Industry, Machinery Industry, Electronics and Electrical Appliance Industry and Small and Medium Industry. The Ministry further controls separate institutions such as the Free Export Zone Management Office, the Patents Administration and the Industrial Advancement Administration. In view of the political emphasis recently placed upon the development of small- and medium-scale production a Small and Medium Industry Promotion Corporation was established in 1979 which since 1980 incorporates the former Korea Rural Industry Development Center and since 1982 also the Korea Production Technology Corporation.

The Ministry of Energy and Resources is in charge of the development, production and import of energy and other resources. The respective departments are the Office of Resources Policy and the Bureaus of Electric Power, Mines and Resources Development.

The Ministry of Science and Technology coordinates the development and application of science and technology and the management of industrial and technical manpower. Its specialized institutions are the Office of R & D Policy and Coordination and the Bureaus of Technology Promotion, Technical Cooperation, Atomic Energy, Information Industry and Industrial Technology. The Korea Institute for Industrial Economy and Technology is a major independent organization related to the work of the Ministry.[2/]

As mentioned above, apart from the EPB and various ministries, the financial system in general and the credit policy in particular have always been of key importance in the Republic of Korea when it came to the actual implementation of strategic industrial policy decisions. This has been true in a double sense. Firstly, the mere threat of being cut off from badly needed credit supplies has brought the investment plans of many firms ex ante in line with government plans. Secondly, investment behaviour deviating from plan expectations could be 'dried up' and rechannelled ex post by means of largely discretionary decisions on the volume and price (interest rate) of credit availability.

In accordance with the enormous importance of financial institutions for the country's industrial and economic policy it is the Ministry of Financ- which tops the whole financial hierarchy. This includes the Bank of Korea (BoK) as the central bank which in 1962 was brought under the control of the Ministry of Finance.[1/]

In general the Republic of Korea disposes of a relatively diversified and deep financial infrastructure comprising financial institutions such as: Commercial banks (nation-wide city banks, local banks, foreign banks), special banks (e.g. Korea Exchange Bank, Small and Medium Industry Bank, Korea Housing

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1/ Cf. Abbott, 1984, p.5.

2/ For a detailed overview of the country's R&D institutions and policy see Annex D.

Bank), savings institutions, life insurance companies and investment companies. In addition to these a small number of development banks have been established which have been assigned a major role in industrial (economic) policy execution. Among these the following three assume particular importance:

- the Korea Development Bank, which holds equities in several dozens of industrial enterprises mostly in basic materials industries and heavy/chemical industry and which accounts for roughly 15 per cent of the country's outstanding foreign debt;

- the Korea Long-Term Credit Bank, which also assists in the development of private enterprises by medium- and long-term financing, incl. loans, guarantees and purchases of equities;

- the Korea Export-Import Bank, specializing in medium- and long-term credit for foreign trade transactions.

4. RESOURCES FOR INDUSTRIAL DEVELOPMENT

4.1 Human Resources

The Republic of Korea's labour force comprised 15.6 million persons in 1985 (for detailed labour statistics see Annex Tables A-29, A-30 and A 31). The unemployment rate was around 4.0 per cent (619,000), while the share of underemployed persons (working less than 18 hours per week) was 0.7 per cent of the economically active population. The labour force participation rate amounted to 37.9 per cent of the total population and to 54.6 per cent of the population segment which was capable of being economically active (population 14 years old and over). The major structural characteristics concerning the economically active population in 1985 are summarized below.

- Sectoral composition of economic activity: 3.722 million persons (24.9 per cent) were employed in the agricultural sector including forestry and fishing and 3.654 million (24.5 per cent) in mining and manufacturing (manufacturing only 23.4 per cent). The share of social overhead capital and services came to 44.5 per cent (6.651 million). Construction occupied a share of only 6.1 per cent.

- Age groups: 16.6 per cent of the labour force in 1985 were under 25 years of age, more than three quarters (77.7 per cent) between 25 and 59 years of age and 5.6 per cent 60 years and over.

- Female workers in the total labour force: in 1985 the share amounted to 39.0 per cent (5.828 million) (Table A-31). This implies a female labour force participation rate of 28.6 per cent of the total female population whereas the male rate reached 44.0 per cent.

- Labour union participation is relatively low. As of the end of 1983 the membership of the Federation of Korean Trade Unions (FKTW) totalled 811,387 persons, i.e. 5.4 per cent of the total labour force and 7.5 per cent of the non-agricultural labour force, respectively.[1/] The FKTW is composed of 16 industrial labour unions which in turn are made up of 1,641 business labour unions and 3,083 branches. The legal range for trade union activities is largely limited to intra-enterprise activities, mostly so-called joint labour-management conferences.

Table 27 shows the relative importance of manufacturing in employment creation over the five Plan periods, i.e., 1962 to 1986. It is evident that in all Plan periods, except in 1977-81, the contribution of manufacturing to total additional employment was substantial, ranging from almost one quarter in 1967-71 to around 60 per cent both in 1972-76 and in the most recent Plan period 1982-86 when manufacturing employment showed a strong resurgence. Over the whole period 1962-1986 manufacturing employment contributed more than one-third (37 per cent) to the increase in aggregate employment.

1/ Cf. Yonhap News Agency, Korea Annual 1984, p.181.

Table 27. Growth of manufacturing employment in relation to selected growth indicators, 1962-86

Five year Plan Period		Rate of Growth of GNP per cent per annum	Increase in Employment in Manufacturing in period '000	as per cent of increase in total employment	Increase in manufacturing share of GNP[b/]
I.	1962-66	8.5	563	28.3	4.4 (14.0-18.4)
II.	1967-71	9.7	315	23.4	1.2 (18.8-21.0)
III.	1972-76	10.1	1,233	61.7	5.1 (22.1-27.2)
IV.	1977-81	5.5	74	6.6	3.6 (26.8-30.4)
V.	1982-86[a/]	8.7	609	58.1	0.4 (29.6-30.0)

Sources: Derived from statistics in EPB, Major Statistics of Korean Economy, 1986, supplemented by Krueger, 1979, Table 57, p.219.

a/ Partly estimated.
b/ Values in brackets refer to percentages of manufacturing in GNP at the beginning and terminal years of the Plan.

Given the country's poor natural resources endowment the successful performance of the economy over the last two decades could only result from the efficient and skilful use of investment capital on the one hand and the industriousness and work commitment of the country's population on the other. The high work ethics rooted in confucian culture and the educability of the country's population have been the major traditional assets in implementing the nation's outward-looking development strategy.[1/] Based on these favourable preconditions the government has constantly emphasized the need for human resource development and manpower policies as well as the improvement of general educational conditions. As a result of high public sector investment in the field of education the educational system has witnessed a substantial expansion since the early 1960s. Nonetheless, because of the rapidly increasing demand for skilled labour in the course of the accelerated transformation of the economy some shortages and bottlenecks have occured in recent years. "To remove these bottlenecks, manpower management policies should be carried out in a more coordinated manner and further efforts should be made to develop high-tech manpower."[2/]

1/ See, for instance, Kahn, 1979, Chapter 6.

2/ Government of the Republic of Korea, 1983, p.94.

The high value which the government attributes to the educational system and its contribution to the country's economic development is reflected, inter alia, by the share of education in total government expenditure. During the 1980s expenditure on schools, colleges and universities accounted for between 14.9 per cent and 20.1 per cent (1986) of total government expenditure which means that education in 1986 ranked second behind expenditure on national defence (31.2 per cent). In relation to GNP the respective percentages varied between 4.0 per cent and 4.5 per cent.1/

As far as enrolment in schools at various levels is concerned, more than 98 per cent of all children reaching the age of compulsory education receive six years of elementary schooling and more than 95 per cent three additional years of middle school education. Almost 90 per cent undergo further education in general (3 years) or vocational high schools (2 years). More than one quarter (26.4 per cent in 1983) are registered with institutions of higher learning (junior colleges, colleges and universities). Moreover, the rate shows a clear upward trend as can be seen from past increases (1970, 10.1 per cent; 1980, 15.9 per cent).2/

In quantitative terms the country's educational system can stand up to comparison with that of most industrially advanced countries. Since the beginning of the Fifth Five-year Plan (1982) political priority has been given, however, to shifting the emphasis towards improving the quality of educational facilities and personnel. In particular the upgrading and modernization of advanced education as well as research and development institutions has been promoted on a priority basis. Enrolment in colleges as a proportion of the relevant age group rose from 9.3 per cent in 1970 to 25.3 per cent in 1984 and the number of graduates of tertiary institutions increased from 11 per 10,000 of the population to 40 over the same period (Table A-32).

In general, the level of education in the Republic of Korea has increased more rapidly than the rate of growth of GNP. From time to time (as at present) this has caused problems with regard to the ability of the economy to absorb all the graduates - particularly at the highest level - coming into the labour market but subsequent economic growth has always quickly absorbed the surplus.

Vocational training has also been important in providing skilled manpower. Systematic planning of vocational training began with the passing of the Vocational Training Law of 1966. This was followed in 1974 by a law which made it compulsory for all firms employing 300 or more workers to provide in-plant training; in general the government did not subsidise such training. To comply with the law many firms established their own vocational

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1/ Calculated from: The Bank of Korea, Economic Statistics Yearbook 1985, p.89.

2/ EPB, August 1984, p.40.

training institutes which trained about 10 per cent of the work force annually. The number of graduates from these institutes increased from 31,600 in 1970 to 104,500 in 1980. Since then, however, the annual output of graduates has gradually declined as the government relaxed the regulations following the economic downturn of the early 80s.[1/]

Between 1976 and 1984 the stock of research and development personnel more than trebled (Table A-26). During the same period the allocation of financial resources from government and private funds rose by 8 times (at current US$). In relative terms (as a proportion of GNP) 1984 R & D expenditures grew 2.9 times compared with those of 1976 (Table 28).

The 1984 figure for the share of expenditures on R & D in GNP (1.26 per cent) largely surpasses the level which UNESCO regards as an appropriate orientation for developing economies, but it would appear insufficient with respect to the projected build-up of new technology-intensive industries during the 1980s. What is of interest, however, is that the relative importance of private R & D has been continually expanding and now accounts for some 80 per cent of the total, compared with roughly equal private/government shares in 1980. This development is of importance because it is the private sector which will be primarily responsible for using the results of R & D research to improve productivity.

Table 28. Expenditures on Research and Development, 1976,1980 and 1984

Year	R & D expenditures[a/] (in $ million)			Ratio C/A per cent	Share of A in GNP per cent
	Total (A)	Government (B)	Private (C)		
1976	125.8	81.5	44.3	35.2	0.44
1980	348.6	179.9	168.7	48.4	0.57
1984	1007.8	215.3	792.5	78.6	1.26

a/ Excluding military and defense.

Source: Calculated from Major Statistics of Korean Economy 1986, Table 11-3, p.266.

1/ Kim, Linsu, 1986, pp.36-41.

Yet the Republic of Korea still lags far behind many industrialized countries in basic sciences. At the same time, in no other area of industrial policy is so much attention being paid by policy-makers to "catch up". It is a major objective, for instance, to be able to deal as an equal partner with new technology producers in Japan and the USA[1/] as the government is well aware that technology licencing is more easily negotiated among technological equals.

The gap between the country's R & D expenditure in relation to GNP and the comparable ratio in industrialized countries is diminishing rapidly. In 1981 the R&D/GNP ratio, for a number of countries was as follows: Federal Republic of Germany, 2.66; USA, 2.39; Japan, 2.11; France, 2.01.[2/] The 1984 figure of 1.26 for the Republic of Korea is expected to increase to 2.0 per cent in 1986 and to about 2.5 per cent of GNP in 1991. The intention is to focus on the major technological fields of information, energy, precision chemistry, new materials and bio-engineering.

Annex Table A-27 presents some statistics on R & D in relation to sales of the different branches of industry. It is evident that the Republic of Korea has begun to be a serious competitor to Japan and the USA in a number of industrial branches. For instance, the R & D expenditure to sales ratio in the textiles branch in 1984 of 0.82 compares favourably with the 0.90 of Japan (1983) and the 0.81 of USA (1984). In the important electrical machinery branch the ratio rose from 2.70 in 1977 to 3.01 in 1983.

4.2 Raw Material Resources

Agriculture, forestry and fishing

Total production of the agricultural sector including forestry and fishing witnessed long-term growth (1970-85) of slightly more than three per cent per annum in real terms. However, the pattern of growth was very uneven. The variations were mainly due to the strong annual fluctuations in the grain economy, which is the dominant agricultural subsector (almost half of the entire production value) in spite of sustained diversification efforts. The annual changes of food grains production oscillated between minus 34.2 per cent (1980) and plus 29.9 per cent (1981). In seven out of fifteen years food grains experienced decreases. The growth rhythm of other agricultural subsectors was more even. As measured by production indices the recent performance of the agricultural sector is reflected in Table 29.

1/ Cf. Ministry of Science and Technology (MOST) 1985 and Lee, 1984. Annex C for a note on Technological Innovation in the Republic of Korea.

2/ MOST, 1984.

Table 29. Agricultural production indices, 1973 and 1981-1983 (1979-81 = 100)

	Index Weight	Indices			
		1973	1981	1982	1983
Grains	47.7	96.6	104.3	104.0	108.1
Vegetables and fruits[a/]	24.1	38.8	97.8	101.9	111.9
Special crops	1.4	78.2	91.4	147.1	168.2
Monopolies	2.7	114.7	96.0	124.3	111.5
Others	4.0	...	...	...	...
Sub-total Cultivation	79.9	79.1	102.3	105.7	111.9
Livestock	15.1	53.6	98.6	119.0	156.6
Livestock products	4.3	40.5	120.1	118.3	147.6
Cocoon	0.7	155.9	67.1	62.1	54.8
Sub-total Livestock and cocoon	20.1	54.1	102.1	117.0	151.3
T O T A L	100.0	74.0	102.3	108.0	119.8

a/ Index for vegetables only.

Source: Compiled from The Bank of Korea, Economic Statistics Yearbook 1985, Table 64.

As a result of the agricultural support policies average grain yields per hectare could be pushed up to 3.93 tons in 1985[1/] compared with 2.57 tons in 1970 (a high growth rate of 2.9 per cent per annum) and total grain production reached 6.990 million mt (1970: 6.937 million)[2/] (Table 30).

1/ Includes white potatoes, sweet potatoes and "others" in the definition of "grain".

2/ Major Statistics of Korean Economy 1986, Table 4-3a, p.77.

In spite of the long-term growth in absolute orders of magnitude the position of the agricultural sector underwent a clear relative decline. This holds true for most indicators:

- The share of persons employed in agriculture and forestry decreased from 47.2 per cent of the total labour force in 1973 (including fishing 50.0 per cent) to 23.7 per cent in 1985 (including fishing 24.9 per cent).[1/]

- During the same period the number of farm households declined from 2,450,000 to 1,926,000 and the total farm population from 14.65 million to 8.52 million. As a proportion of total population those in farm households constituted 42.9 per cent in 1973 and 20.8 per cent in 1985.[2/]

- At the same time the cultivated area shrank by almost 97,000 ha to 2.144 million ha (paddy fields 1.325 million, dry fields 0.819 million).[3/] This means that the cultivated area per farm household rose by 0.20 ha to 1.11 ha between 1973 and 1985 while the cultivated area per head of total population declined from 0.066 ha to 0.052 ha.

- At current market prices agricultural value added (including forestry and fishing) increased from 1.33 billion Won in 1973 to 10.35 billion in 1985, whilst the value added contribution of the agricultural sector to GNP (including forestry and fishing) decreased over the period from 24.7 per cent to 14.3 per cent.

- Because of the absolute decline of the country's cultivated area the production of grains had to be promoted through intensification measures which included price incentive measures, increased agro-industrial investment and improved supply of industrial inputs (chemicals and machinery). Thus, the number of ploughing and levelling machines owned by farm households rose rapidly to 601,000 in 1985 (1970: 12,000), that of farm tractors grew to 12,400 in 1985 (1970: 61) other types of agricultural implements showed similar increases.[4/]

1/ Major Statistics of Korean Economy, 1986, op. cit., Table 2-8b, p.25.

2/ ibid. Table 4-2, p.76.

3/ ibid.

4/ ibid.Table 4-8, p.84.

However, the increase in grain production was too small to compensate for the population growth. Domestic grain production per head of population decreased from 215 kg in 1970 to 170 kg in 1985. This development implies that the Republic of Korea has not been able to attain self-sufficiency in food supply, in particular concerning the supply of major grains, except rice. On the contrary, the overall rate of self-sufficiency in staple crops has declined and prospects are that it will continue to decline. On the other hand it is to be expected that rising national income will lead to changes in the pattern of food consumption.[1/] According to projections made by the Korea Development Institute the share of grain food in total food consumption will decrease from 58.8 per cent in 1975 to 35.4 per cent in 1991.[2/] By that year the rate of food self-sufficiency is expected to lie above 80 per cent of total consumption of food. This would mean that the rise in food grain imports (from 3 million mt in 1975 to 6.9 million mt in 1985) would gradually level off.

Table 30. Production of grains, 1970 and 1981-1985

		1970	1981	1982	1983	1984	1985
Rice	Tons/ha/	3.27	4.14	4.36	4.40	4.62	4.55
	Million/mt	3.339	5.063	5.175	5.404	5.682	5.626
Barley	Tons/ha	2.18	2.43	2.36	2.53	2.38	2
	Million/mt	1.591	0.859	0.749	0.815	0.804	0.[illegible]1
Wheat	Tons/ha	2.22	2.79	3.23	4.02	2.63	2.89
	Million/mt	0.229	0.060	0.071	0.115	0.[illegible]	0.013
Corn	Tons/ha	1.45	4.38	4.18	3.66	4.43	5.04
	Million/mt	0.068	0.014	0.117	0.101	0.133	0.132
Others[a/]	Tons/ha	2.57	3.45	3.57	3.70	3.82	3.93
	Million/mt	6.937	6.915	6.804	7.133	7.315	6.49

a/ Incl. white and sweet potatoes and soya beans.

Sources: The Bank of Korea, Economic Statistics Yearbook 1985, Table 66.
EPB, Major Statistics of Korean Economy, 1986, Tables 4-3a 4-3b and 4-3c, pp.77-79.

1/ Industrialization generally leads to a shift towards more processed, branded and sophisticated food products. However, in the Republic of Korea where development has been associated with relatively low disparities in income, the basic diet continues to include a high level of fish and vegetables protein. Thus per capita consumption of processed food are relatively low ($38 in 1975 compared with an average of $111 for 20 developing countries). UNIDO, 1985, (1), pp.22

2/ [illegible] 1978, [illegible]

To a certain extent, the decline in domestic grain supply per head was made up for by an expansion of livestock raising (Table 31) which has been encouraged by the 1983 decision to prohibit the importation of beef and the consequent increase in domestic beef prices. However, the small-scale (and hence costly) nature of beef production in the Republic of Korea should be noted; only a few large enterprises exist. The major part of cattle raising is carried out by the majority of farm households and the figures suggest that the average number of cattle per farm household cannot be more than about 1.5.

Table 31. Number of Livestock, 1975 and 1981-85
'000

Year	Cattle	Milk Cows	Pigs	Goats	Poultry
1975	1,546	86	1,247	250	21,435
1981	1,312	194	1,832	197	43,403
1982	1,526	228	2,183	251	47,107
1983	1,940	275	3,649	350	49,690
1984	2,318	334	2,958	385	46,825
1985	2,553	390	2,853	318	57,746

Sources: Compiled from The Bank of Korea, Economic Statistics Yearbook 1985, Table 67 and EPB, Major Statistics of Korean Economy, 1986 Table 4-10, p.86.

In contrast to the increase in the number of livestock the annual fish catch rose less substantially (Table 32). The annual per capita supply came to 65 kg during the mid-1970s and to about 76 kg in 1985.

Table 32. Fish Catch, 1975/1981-85

Year	Total	Marine Fisheries	Inland Fisheries (incl. aquaculture)
1975	2.135	2.[illegible]	0.09
1981	2.812	2	0.40
1982	2.644	2.	0.44
1983	2.793	2.746	0.47
1984	2.910	2.860	0.50
1985	3.103	3.050	0.53

Sources: The Bank of Korea, Economic Statistics Yearbook 1985, Table 72 and EPB Major Statistics of Korean Economy, 1986, Table 4-16, p.92.

The Republic of Korea's forest area has slightly declined during the last decade. In 1984 it extended over 6.54 million hectares, i.e. almost two thirds of the national territory. About 1.81 million ha constituted state and public forests, 4.71 million ha were privately owned. Around 46 per cent of the total forest area is covered with coniferous forest, 28 per cent with deciduous forest and the remainder with mixed stands.

As for the national forest growing stock there has occured a rapid increase since the early 1970s (68.8 million m^3 in 1970) to about 171.9 million m^3 in 1984. The increase was entirely due to intensification measures. In 1970 the average growing stock per hectare came to 10.4 m^3 while it reached 26.3 m^3 in 1984.[1/] The production trends of principal forest products is shown in Table 33.

In spite of the country's large forest area and a considerable forest growing stock, domestic timber production has been relatively insignificant, which is mainly due to problems of access as well as transportation and to the inferior quality of much of the growing stock. Moreover, much of the country's natural timber was felled for war-time purposes during the Second World War; what remained was severely damaged in the 1950-1953 war. Consequently a major programme of reforestation had to be undertaken. The combined result of these factors has been that the country is heavily dependent on timber imports in order to secure an adequate flow of supply. In 1983 the share of imported timber in total consumption reached 84 per cent, with 64 per cent coming from Southeast Asia.[2/]

Table 33. Production of Principal Forest Products, 1970, 1975, 1980 and 1984-1985

Year	Timber '000 m^3	Forest Fuel mil. mt	Compost & Forage mil. mt
1970	832.8	6.4	26.2
1975	930.0	5.6	24.0
1980	933.2	4.7	25.5
1984	853.7	4.0	29.4
1985	780.8	3.2	26.3

Source: Compiled from: Major Statistics of Korean Economy 1986, Table 4-14, p.90

1/ EPB Major Statistics of Korean Economy, 1986, op. cit., Table 4-13, p.89.

2/ Cf. Yonhap News Agency, Korea Annual 1984, p. 175.

Finally, it is of interest to note the relative importance of each of the components of the composite sector "agriculture, forestry and fishing". Such a breakdown is not available from the published GDP figures but statistics derived from the 1980 input-output Table are presented in Table 34. Agriculture, it appears, contributes some four-fifths of the value of output of the composite sector. The forestry sector is relatively unimportant - accounts for only 5 per cent of the sector's total value of output.

Table 34. Output of the Agriculture, Forestry and Fishing Sector, 1980

Sub-sector	Value of Domestic Output		
	Won billion	$ million	Per cent of total
Agriculture	6.363	9.642	81.6
Forestry	0.415	0.629	5.3
Fishing	1.018	1.543	13.1
Total	7.797	11.815	100.0

Source: The Bank of Korea, 1980 Input-Output Tables of Korea, June 1983, Tables A1 and A2, pp.58, 82.

Mineral Resources

The Republic of Korea disposes of only a narrow mineral resource base which, inter alia, is reflected in the minor contribution of mining and quarrying to GNP. In the period 1980-85 this contribution varied between 1.4 per cent and 1.6 per cent. More than half of this share was accounted for by coal mining.[1/]

Mineral deposits exist only in the cases of coal (anthracite), tungsten ore, zinc ore, silver, kaolin, silica, limestone and gravel. In addition, some iron ore and lead ore deposits, of declining significance, may be mentioned. In consequence, domestic production of principal mineral products has been meagre, the major exception being coal (Table 35).

1/ In the first half of 1986 coal production reached a record high of 11.03 mt., an increase of 7.3 per cent over the same period 1985. It is considered likely that the year's output will exceed the 1986 target of 23.20 mt. Domestic demand is estimated to be 26.96 mt. which implies that necessary imports will amount to about 3.8 mt. at a cost of $203 million. Imports of coal have fluctuated widely since statistics were published in 1978 - from a low of 0.65 mt. in that year to a high of 4.29 mt. in 1981. The trend since 1983 is clearly upwards. See (Korean Business Review, September 1986, pp.64, 65 and EPB, Major Statistics of Korean Economy 1986, Table 5-16, p.121.

Table 35. Production of principal minerals, 1975, 1980 and 1985

Minerals	Unit	1975	1980	1985
Anthracite	mt mill.	17.59	21.34	23.63
Iron Ore 56 per cent	mt '000	574.4	545.2	542.2
Tungsten Concentrate	mt '000	4.4	4.6	4.3
Silver Refined	kg '000	46.5	32.8	51.5
Copper Ore 15 Per cent	mt '000	-	6.0	8.5[a/]
Lead Ore 50 per cent	mt '000	23.8	21.2	17.6
Zinc Ore 50 per cent	mt '000	92.5	112.3	89.7
Kaolin	mt '000	381.7	272.9	207.2
Limestone	mt mill.	15.71	26.70	31.04
Gravel	mt mill.	1.79	3.18	6.83

a/ 1982

Sources: EPB Major Statistics of Korean Economy 1986 Table 5-9a, pp.111, 112 and Korea Annual 1984 p. 139.

4.3 Energy resources

The Republic of Korea is an energy-deficit country with a degree of self-sufficiency (share of domestic production in consumption) of only 27 per cent in 1982 (Table 36). By 1985 the self-sufficiency ratio had fallen to 23.6 per cent.[1/]

The remaining three quarters of commercial primary energy consumption thus have to be imported. Some 20 per cent of these imports are met by solid fuels whereas the rest is accounted for by petroleum and petroleum products mostly from Saudi Arabia, Kuwait and Indonesia.

The major source of domestic primary energy production are solid fuels (coal) with a share of 84 per cent in 1982 (Table 36). In the late 1960s the Republic of Korea started onshore oil exploration activities and since 1979 also offshore exploration. Up to now these efforts have failed, however, to produce commercial results. Thus, there is no domestic production of crude oil. All crude has to be imported either through major international companies or through direct dealings with oil-producing countries. In spite of the lack of domestic crude deposits the country embarked upon an accelerated build-up of national petroleum and petrochemical industries during the 1970s, mostly in co-operation with foreign oil companies. The increases in the production of petroleum products and the expansion of refining capacities are reflected by changes in the pattern of energy consumption over the last fifteen years (Table 33).

1/ EPB, Major Statistics of Korean Economy, 1986, Table 5-15, p.120.

Table 36. Commercial primary energy balance, 1982
(in '000 tons coal equivalent)

Production		Consumption	
Solid fuels	13,294	Solid fuels	22,857
Hydroelectricity[a/]	880	Liquid fuels[b/]	32,987
Nuclear power[a/]	1,659	Hydroelectricity[a/]	880
		Nuclear power[a/]	1,659
Total production	15,833	Total consumption	58,383
Imports		**Exports**	
Solid fuels	10,597	Petroleum products	774
Crude petroleum	36,053		
Petroleum products	3,942		
Total imports	50,592		
		Bunkers	287
Drawdown of crude petroleum stocks	97	Increase in solid fuel stocks	1,034
		Increase in petroleum product stocks	3
		Balancing item[c/]	6,041
Total supply	66,522	Total demand	66,522

a/ Converted by the EIU on an input basis, showing the amount of energy a thermal power station of 28 per cent efficiency would require to produce the same amount of electricity.

b/ Including refinery consumption.

c/ Comprises coal equivalent of output of non-energy petroleum products (e.g. 2,261,000 tons of naphtha) and statistical discrepancy.

Source: Economist Intelligence Unit, Quarterly Economic Review of South Korea, Annual Supplement 1985, p. 12.

During the 1960s solid fuels, in particular coal, provided the major share in primary energy. From that period the share of petroleum rose rapidly to more than 60 per cent of total consumption in 1980 from which it declined to 49 per cent in 1985. Coal declined to less than one third in 1980 but has staged a comeback since, rising to 38 per cent in 1985. The 1985 resurgence of coal is, however, possibly a temporary phenomenon since (a) it is thought that domestic coal production will stagnate at the 20-23 million tons level per year until the early 1990s (i.e. about 15-17 million tons of oil equivalent) and (b) depressed international oil prices will probably lead to a renewed shift to oil. Long-term projections indicate a 36 per cent growth rate of domestic demand for petroleum until the end of the century. The importance of firewood as a source of primary energy has rapidly decreased since the early 1970s.

Finally, the high growth in the importance of nuclear energy is to be mentioned. Non-existent up to 1977, it was contributing 7.4 per cent of total consumption of primary energy in 1985 and 20 per cent to total generation of electricity in 1984. The Republic of Korea had 4 nuclear-power units in operation at the end of 1985 with a total capacity of 2,720 MW (higher than, for instance, the German Democratic Republic, India, Italy and the Netherlands), constituting 1 per cent of the world total. Five additional units with a total output of 4,692 MW are under construction, to be completed by 1989. Two more are planned for construction between 1989 and 1996 by which date the country will have 11 units supplying one-third of the nation's electricity needs.

4.4 Financial resources

There can be little doubt that the rapid development of the Korean economy would not have been feasible without corresponding long-term rates of growth in gross domestic savings and gross domestic investment as well as rising shares of gross domestic investment expenditures in GNP. Over the last decade, 1975-85, gross domestic investment has increased at an annual average rate of 9.4 per cent. Gross domestic savings has recorded an even higher growth rate in recent years. Over the whole period 1971-83 domestic savings constituted an average of some 76-77 per cent of total gross domestic capital formation. The rate began rising in 1981 when it reached 82.0 per cent; in 1982 it was 90.7 per cent and in 1983 96.7 per cent.[1/] Thus, the share of foreign savings in total gross investment has declined sharply to less than one tenth.

Investment activities have shown strong cyclical fluctuations (Table 37). This holds particularly true for private sector investment; it has not been possible to fully compensate for the reductions in absolute terms or the reduced growth rates which occurred from time to time through counter-cyclical public sector investment. Nor has it been possible (since 1980-81) to overcome the problem through investment-stimulating financial and fiscal incentives.[2/]

1/ Asian Development Bank, Key Indicators of Developing Member Countries of ADB, April 1985, p.190.

2/ Cf. "The Business Cycle and Fixed Investment: The Korean Case 1970-1983, in: The Bank of Korea, Quarterly Economic Review, March 1985, pp. 36-42.

Table 37. Annual growth rates of gross capital formation (GCF) and gross domestic fixed capital formation (GDFCF), 1979-85
(at constant 1980 prices)

	1979	1980	1981	1982	1983	1984	1985
	(Per cent changes per annum)						
Gross Capital Formation	19.7	-22.7	6.3	-	17.5	18.6	1.6
Gross Domestic Fixed Capital Formation	8.6	-10.9	-4.0	12.9	17.1	10.7	2.8

Source: Calculated from Major Statistics of Korean Economy 1986, Table 3-5a.

Note: The difference between GCF and GDFCF is that the former includes changes in stocks.

Irrespective of these cyclical variations of investment behaviour the long-term trend in savings as well as investment has been sufficiently strong to support the country's ambitious industrial development programme. Table 38 indicates that the rates of savings and investment to GNP have been very high.1/ They were clearly above-average even when compared with those of other high income developing economies. It is further noteworthy that since 1970 the domestic financing of gross investment has increased to the very high level of 93 per cent in 1985.

Table 38. Ratios of investment and savings to GNP, 1980-85
(at constant 1980 prices)

		1980	1981	1982	1983	1984	1985
(1)	Gross investment ratio	22.3	28.8	30.3	31.2	31.4	30.6(a)
(2)	Domestic savings ratio	20.8	20.5	20.9	25.3	27.9	28.4
(3)	(2) as percentage of (1)	93.3	71.2	69.0	81.1	88.9	92.8(a)

(a) Provisional.

Source: Korea Development Institute, Quarterly Economic Outlook, Summer 1986, Appendix Table 1, p.31.

1/ Note that it is the intention to push these already high rates to even higher levels in the Sixth Five Year Plan. By 1991 the investment/GNP target is 31.0 per cent and the savings/GNP target, 33.0 per cent (Table A-25).

The smooth generation and procurement of investment funds has been essentially facilitated by gradual, but major shifts in resource mobilization policies which were largely in conformity with the respective stages of the country's development. Since the beginning of the 1980s three fundamental trends have become discernible with regard to overall financing of investment. Firstly, as has been pointed out above, domestic savings rose strongly in absolute as well as relative terms thereby lessening the country's dependence on foreign sources of finance. Secondly, the composition of investment resources originating from abroad changed substantially. Whereas net foreign transfers remained rather stable in relative terms (at some 3-4 per cent of total investment) net foreign borrowings in the form of public and private loans were considerably reduced in line with government policies aimed at stabilizing the country's debt servicing position. Thirdly, the expansion of investment funds financed by domestic savings was predominantly due to considerable increases in private savings. Between 1971 and 1983 the share of private savings in total investment rose from 37 per cent to 62 per cent.

4.5 Technical assistance to industry

The Republic of Korea has been a major recipient of international technical assistance in the past. Between 1951 and 1984 a total value of $433 million of technical assistance was provided in the form of training, experts and equipment of which $110 million (25.4 per cent) was accounted for by the United Nations Agencies.[1/] The situation, however, is now changing. Technical assistance programming ought to take into consideration that the country over the past two decades has developed:

(a) a highly diversified and dynamic industrial structure;

(b) a well-designed institutional set-up for conceptualizing and implementing industrial policy;

(c) a high competence in mastering advanced technologies.

These are exceptional preconditions not found in the vast majority of developing countries. Consequently, technical assistance delivery ought to be based on a highly selective approach trying to identify niches where UNIDO inputs could beneficially supplement national industrialization efforts. The specific functional areas or branches to focus on can only be identified in closest co-operation and consultation with government authorities.

As far as UNIDO's current programme on Technical Co-operation is concerned it is evident from the approved list of projects that emphasis is being placed on the engineering and chemical branches of industry.[2/]

1/ Ministry of Science and Technology (MOST) 1986, p.46.

2/ For a list of Approved Projects see Annex E.

The government prepared a set of "Guidelines" for the Fourth UNDP Programme which were considered when the Sixth Five Year Plan was drawn up. Among programmes for advanced technical co-operation highest interests were for proposals to strengthen the science and technology policy, the development of an informatics industry and a high-technology capability for ocean, aeronautics and space innovations. The government is inviting UNIDO, among other UN Specialized Agencies, to assist in the formulation of project documents on a case by case basis.[1/] Another potential area of UNIDO contributions could be in the field of promoting high-technology small-scale enterprises in electronics. To this end, close co-operation with the Korea Federation of Small Business may be sought. Other areas might be the establishment of a permanent training activity in the field of plastics processing and work related to energy generation (based on coal) and conservation.[2/]

As a general guideline for UNIDO's technical co-operation it seems appropriate to concentrate less on direct assistance measures relating to manufacturing activities within the Republic of Korea but more on suitable approaches and methods to disseminate the country's technological competence as well as its sophisticated marketing experience to other developing countries within the framework of ECDC/TCDC by means of sub-regional, regional or inter-regional seminars and workshops. Mention should be made in this context of a recent request by K-TAC (Korea Technology Advancement Corporation), a subsidiary of of KAIST (Korea Advanced Institute of Science and Technology). K-TAC would welcome UNIDO's assistance in determining the potential for application of selected industrial technologies in other developing countries.[3/]

It seems clear that the government is anxious to intensify the country's participation in UNDP/UNIDO regional projects. The objective of increasing co-operation with other developing countries (mentioned above) will be stimulated by participation in investment projects. In this context, it has been indicated that a UNIDO Investment Promotion Office which has been under consideration for some time, will be established soon. This would be the first such office in a developing country.

1/ UNDP, Programme Planning: Country and Intercountry Programmes and Projects, Fourth Country Programme for the Republic of Korea, 1987-1991, New York, 1986, pp.3-5.

2/ UNIDO Report on the Mission to the Republic of Korea from 19-23 May 1986 concerning Technical Assistance Needs Assessment in the Industrial Sector for the Fourth Country Programme, 1988-1992, Vienna, 6 June 1986, p.17.

3/ Cf. M.O.S.T. op.cit. "We are interested in participating in international co-operative programmes initiated by UN Organizations in which we can exchange our development ideas and new technologies on a multilateral basis, by increasing contributions in expert services and technical training" (p.47).

A N N E X A

STATISTICAL TABLES

Table A-1. Dollar/Won exchange rates and international competitiveness of the Republic of Korea, 1978-1985
Indices 1980 = 100[a/]

Year and Quarter		Nominal exchange rate[c/] US Dollars per Won Index 1980=100	Effective Exchange Rates[b/] Nominal[d/]	Real[e/]
1978:	IV	125.1	117.7	94.8
1979:	I	125.1	120.2	99.6
	II	125.1	123.8	107.1
	III	125.1	123.4	107.2
	IV	125.1	127.5	112.2
1980:	I	106.2	110.4	103.7
	II	102.0	102.8	100.6
	III	98.8	97.1	98.1
	IV	93.1	90.6	96.5
1981:	I	93.1	88.3	96.0
	II	90.8	90.0	100.1
	III	89.0	92.2	105.8
	IV	88.3	89.9	102.3
1982:	I	85.3	89.2	102.0
	II	83.2	88.9	101.9
	III	81.7	89.9	103.1
	IV	81.4	89.8	102.5
1983:	I	80.4	85.5	99.4
	II	78.7	84.3	97.2
	III	77.2	83.8	96.1
	IV	76.2	81.9	93.0
1984:	I	76.2	81.5	93.2
	II	75.9	81.3	92.5
	III	74.8	82.7	94.0
	IV	73.9	82.7	93.4
1985:	I	72.2	83.2	94.2
	II	69.8	79.1	89.0
	III	68.5	75.2	84.4
	IV	68.2	74.7	83.9

a/ A decrease indicates depreciation of the Won.
b/ Trade-weighted.
c/ The official parity for the currency.
d/ An index of the number of dollars actually paid for 1 Won (i.e. the inverse of the actual number of Won received for $1 worth of transactions). Thus included will be surcharges, tariffs, and any other charges or rebates on exports or imports.
e/ The nominal effective exchange rate divided by the ratio of the Republic of Korea CPI (consumer price index) to the foreign CPI.

Source: Aghevli and Marquez-Ruarte, 1985, Appendix III, Table 10 updated on basis of World Bank and IMF International Financial Statistics data.

Table A-2. Budget bill for fiscal 1987[a]
billion Won and per cent

Source	1986 budget	1987 budget bill	Change per cent
REVENUES			
National tax	13,134.3	14,853.4	13.1
Internal tax	8,119.3	9,324.5	14.8
Tariffs	1,902.3	2,174.2	14.3
Defense tax	1,857.7	2,042.9	10.0
Education tax	334.2	405.7	21.4
Monopoly proceeds	920.8	906.1	-1.6
Nontax income	506.2	569.7	12.6
Carry-over	160.0	158.4	-1.0
Total	13,800.5	15,581.5	12.9

Item	1986 budget Amount	1986 budget Share per cent	1987 budget bill Amount	1987 budget bill Share per cent	Change per cent
EXPENDITURES					
National defense	4,309.0	31.2	4,897.4	31.4	13.7
Education	2,769.0	20.1	3,126.7	20.1	12.9
Social development	1,105.7	8.0	1,293.9	8.3	17.0
Economic development	2,2[illegible]	16.1	2,628.0	16.9	18.2
General administration	1,341.6	9.7	1,500.3	9.6	11.9
Supports to provincial governments	[illegible]90.0	9.3	1,391.6	8.9	7.9
Loan payments and others	237.1	1.8	303.1	1.9	27.8
Supports to grain fund & fund management special account	526.1	3.8	440.5	2.8	-16.3
Total	,800.5	100.0	15,581.5	100.0	12.9

(a) 1986-1987

Source: Korea Herald, 26 September, 1986.

Table A-3. Major socioeconomic projects[a] included in fiscal 1987 budget bill
Won billion and per cent

	1986 budget	1987 budget bill	Change per cent
Rural area development	44.2	347.6	686.4
Social welfare	252.8	369.5	46.2
Technology development	395.6	467.6	18.2
Supports to small businesses	129.3	143.5	10.9
Education	2,769.0	3,126.7	12.9
Living environment improvement	305.6	358.2	17.2
Social overhead capital expansion	833.8	1,024.4	22.9
Culture and sports	82.2	72.7	-11.6

(a)These programmes are financed by expenditures for socioeconomic projects plus parts of the educational subsidies and supports to provincial governments.

Source: Korea Herald, 26 September, 1986.

Table A-4. Annual growth rates of real manufacturing value added, 1975 to 1983

ISIC	ISIC-description	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84	##/##
311	Food products	31.0	29.1	19.7	23.5	-4.8	6.0	12.3	18.5	...	14.5
313	Beverages	14.9	29.6	28.6	16.7	-4.8	3.0	6.8	0.0	...	11.3
314	Tobacco	7.8	10.1	14.5	4.6	9.9	3.0	0.0	6.8	...	7.1
321	Textiles	30.0	9.2	14.1	11.1	11.1	11.0	1.8	4.4	...	10.9
322	Wearing apparel,except footwear	42.3	10.8	24.4	-3.9	2.0	26.0	-2.4	13.0	...	11.1
323	Leather products	39.3	24.7	15.1	-17.2	-1.0	38.0	2.2	17.0	...	10.2
324	Footwear,except rubber or plastic	39.6	45.9	47.2	-32.7	-6.5	11.0	1.8	8.0	...	7.2
331	Wood products,except furniture	31.8	13.8	15.9	-7.2	-29.6	8.0	-5.6	22.5	...	0.3
332	Furniture,except metal	12.2	37.0	52.4	14.6	-9.1	20.0	30.0	27.6	...	20.7
341	Paper and products	21.7	25.0	17.1	12.2	8.7	11.0	5.4	17.9	...	13.7
342	Printing and publishing	17.3	13.1	15.9	13.7	9.9	4.0	-1.0	-1.0	...	9.3
351	Industrial chemicals	25.0	18.3	22.5	11.5	3.1	3.0	-1.9	14.9	...	10.5
352	Other chemicals	36.6	26.8	28.2	18.7	-7.4	6.0	15.1	18.0	...	14.8
353	Petroleum refineries	13.8	14.9	9.4	8.6	-1.0	-1.0	0.0	15.2	...	6.0
354	Misc. petroleum and coal products	22.7	20.4	4.6	36.8	7.5	20.0	-1.7	0.8	...	14.1
355	Rubber products	37.8	21.6	21.0	18.7	12.4	0.0	-2.0	16.3	...	13.7
356	Plastic products	34.9	69.0	41.8	-7.9	-21.9	-8.0	1.1	33.3	...	9.0
361	Pottery,china,earthenware	22.2	51.5	12.0	30.4	37.0	20.0	-4.2	11.3	...	22.8
362	Glass and products	16.7	25.4	22.8	11.3	-7.4	4.0	-1.9	32.4	...	9.9
369	Other non-metallic mineral products	14.3	26.6	13.6	9.8	-1.0	-3.0	10.3	27.1	...	9.7
371	Iron and steel	43.8	19.6	29.1	31.0	7.5	29.0	4.7	11.9	...	21.1
372	Non-ferrous metals	42.9	27.5	47.1	22.7	8.7	50.0	16.0	23.6	...	28.4
381	Fabricated metal products	52.8	36.4	33.3	0.0	0.0	22.0	9.0	21.8	...	17.4
382	Machinery,except electrical	56.6	6.0	52.3	0.0	-25.4	26.0	9.5	40.6	...	12.6
383	Machinery electric	75.0	26.8	39.4	18.2	-14.5	21.0	1.7	36.6	...	18.3
384	Transport equipment	6.0	39.6	48.6	16.4	-21.9	49.0	9.4	-3.1	...	16.7
385	Professional & scientific equipment	84.8	18.0	27.8	6.5	2.0	0.0	-8.0	7.6	...	11.2
390		23.1	21.9	-15.4	-3.0	4.2	4.0	1.0	16.2	...	3.1
300	TOTAL MANUFACTURING	33.3	21.2	24.7	10.6	-3.1	13.7	4.1	16.9	...	12.8

SOURCE: UNIDO Data Base; Information supplied by the United Nations Statistical Office, with estimates by the UNIDO Secretariat.

##/ The initial- and/or the end-year of the trend-growth, is always the first and/or the latest year shown in the year-to-year-growth

NOTE: TOTAL MANUFACTURING is the sum of the available components and does not necessarily correspond to ISIC 300

Table A-5.

GROSS OUTPUT AND VALUE ADDED IN MANUFACTURING, 1975 and 1985
(AT CURRENT PRICES)

KOREA, REPUBLIC OF (currency=Won)

Description (ISIC)	Gross output				Value added			
	(millions) Producer val.	(millions) Producer val.	Share in total (percentage)		(millions) Producer val.	(millions) Producer val.	Share in total (percentage)	
	1975	1985	1975	1985	1975	1985	1975	1985
TOTAL MANUFACTURING(300)	8139300	75620500	100.0	100.0	2765300	25467710	100.0	100.0
Food products(311)	804400	6567430	9.9	8.7	196900	1830510	7.1	7.2
Beverages(313)	311400	1586630	3.8	2.1	167200	766610	6.0	3.0
Tobacco(314)	198300	2094360	2.4	2.8	126900	1495310	4.6	5.9
Textiles(321)	1303100	8327770	16.0	11.0	456200	3003630	16.5	11.8
Wearing apparel,except footwear(322)	385100	2947220	4.7	3.9	117600	1193880	4.3	4.7
Leather products(323)	107200	748400	1.3	1.0	40100	217670	1.5	0.9
Footwear,except rubber or plastic(324)	28200	491370	0.3	0.6	9700	190640	0.4	0.7
Wood products,except furniture(331)	253200	1193850	3.1	1.6	67000	306180	2.4	1.2
Furniture,except metal(332)	16900	321460	0.2	0.4	7100	134670	0.3	0.5
Paper and products(341)	199400	1915160	2.4	2.5	55400	559020	2.0	2.2
Printing and publishing(342)	115200	1075480	1.4	1.4	55300	579370	2.0	2.3
Industrial chemicals(351)	502500	4616140	6.2	6.1	160500	1188330	5.8	4.7
Other chemicals(352)	298500	2542930	3.7	3.4	130800	1201990	4.7	4.7
Petroleum refineries(353)	908700	8417160	11.2	11.1	201700	1143440	7.3	4.5
Misc. petroleum and coal products(354)	111400	1074780	1.4	1.4	28100	251550	1.0	1.0
Rubber products(355)	203100	1723900	2.5	2.3	69400	644780	2.5	2.5
Plastic products(356)	81700	1368290	1.0	1.8	25700	454170	0.9	1.8
Pottery,china,earthenware(361)	9500	171970	0.1	0.2	4500	105610	0.2	0.4
Glass and products(362)	53500	447050	0.7	0.6	26700	210210	1.0	0.8
Other non-metallic mineral prod.(369)	264300	2361990	3.2	3.1	125800	887070	4.5	3.5
Iron and steel(371)	530400	6088120	6.5	8.1	157000	1840580	5.7	7.2
Non-ferrous metals(372)	85400	1166690	1.0	1.5	22500	288510	0.8	1.1
Fabricated metal products(381)	170400	2459420	2.1	3.3	66300	1000980	2.4	3.9
Machinery,except electrical(382)	162800	2246890	2.0	3.0	62000	928380	2.2	3.6
Machinery electric(383)	501700	6389780	6.2	8.4	199100	2326760	7.2	9.1
Transport equipment(384)	369400	5543980	4.5	7.3	111700	1988340	4.0	7.8
Professional & scientific equipm.(385)	51900	549850	0.6	0.7	21000	213870	0.8	0.8
Other manufactured products(390)	111700	1182430	1.4	1.6	53100	515640	1.9	2.0

Source: Statistics and Survey Unit, UNIDO. Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Table A-6. Structure of the industrial production index, 1970, 1975 and 1980

	Weights (per cent)		
	1970	1975	1980
Mining	8.4	5.3	4.2
Electricity	5.6	2.0	4.5
Manufacturing	85.9	92.7	91.3
of which:			
food, beverages & tobacco	15.9	14.1	13.4
textiles & clothing	16.9	21.5	15.8
leather & footwear	0.5	2.0	1.3
wood and wood products	3.5	2.6	1.6
paper, printing & publishing	5.3	4.2	4.2
chemicals	17.7	19.7	20.2
non-metallic minerals	5.6	5.8	5.3
basic metals	4.3	4.7	7.6
fabricated metal products	2.4	2.5	4.2
non-electrical machinery	1.9	2.5	3.1
electrical machinery	3.5	6.1	7.6
transport equipment	4.9	4.1	4.1
other manufactures	3.5	2.8	2.8
TOTAL	100.0	100.0	100.0

Source: Economist Intelligence Unit, Quarterly Review of South Korea, Annual Supplement, 1985, p.15.

Table A-7.
COMPOSITION OF MANUFACTURING VALUE ADDED (AT 1980 PRICES), 1976-1985
(PERCENTAGE)

KOREA, REPUBLIC OF

Description (ISIC)	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
TOTAL MANUFACTURING(300)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Food products(311)	6.6	7.0	6.8	7.6	7.4	6.9	7.4	7.4	6.8	...
Beverages(313)	1.8	1.9	2.0	2.1	2.1	1.9	1.9	1.6	1.5	...
Tobacco(314)	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	...
Textiles(321)	14.4	13.0	11.9	12.0	13.7	13.4	13.0	11.6	10.4	...
Wearing apparel,except footwear(322)	6.2	5.7	5.7	4.9	5.2	5.8	5.4	5.1	4.8	...
Leather products(323)	0.8	0.9	0.8	0.6	0.6	0.7	0.7	0.7	0.7	...
Footwear,except rubber or plastic(324)	1.4	1.7	2.0	1.2	1.2	1.1	1.1	1.0	0.9	...
Wood products,except furniture(331)	1.8	1.7	1.6	1.3	1.0	0.9	0.8	0.9	0.7	...
Furniture,except metal(332)	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	...
Paper and products(341)	2.1	2.2	2.0	2.0	2.3	2.2	2.3	2.2	2.0	...
Printing and publishing(342)	2.2	2.1	2.0	2.0	2.3	2.1	2.0	1.7	1.4	...
Industrial chemicals(351)	8.1	7.9	7.8	7.8	8.3	7.5	7.1	6.9	6.4	...
Other chemicals(352)	4.1	4.3	4.5	4.8	4.6	4.3	4.7	4.6	4.5	...
Petroleum refineries(353)	3.6	3.4	3.0	2.9	3.0	2.6	2.4	2.4	2.2	...
Misc. petroleum and coal products(354)	1.4	1.4	1.2	1.5	1.6	1.7	1.6	1.4	1.4	...
Rubber products(355)	2.5	2.5	2.5	2.6	3.0	2.7	2.5	2.6	3.0	...
Plastic products(356)	1.8	2.5	2.9	2.4	1.9	1.6	1.5	1.7	1.7	...
Pottery,china,earthenware(361)	0.2	0.3	0.2	0.3	0.4	0.4	0.4	0.4	0.3	...
Glass and products(362)	1.2	1.2	1.2	1.2	1.2	1.1	1.0	1.1	1.2	...
Other non-metallic mineral prod.(369)	4.8	5.0	4.5	4.5	4.6	3.9	4.1	4.4	4.1	...
Iron and steel(371)	5.3	5.2	5.4	6.4	7.1	8.1	8.0	7.6	7.4	...
Non-ferrous metals(372)	0.7	0.7	0.8	0.9	1.1	1.4	1.5	1.6	1.5	...
Fabricated metal products(381)	2.8	3.2	3.4	3.1	3.1	3.4	3.5	3.6	3.5	...
Machinery,except electrical(382)	6.6	5.8	7.0	6.4	4.9	5.5	5.8	7.1	7.6	...
Machinery electric(383)	9.1	9.5	10.6	11.4	10.0	10.7	10.8	12.9	14.4	...
Transport equipment(384)	3.6	4.2	5.0	5.2	4.2	5.5	5.8	4.8	6.9	...
Professional & scientific equipm.(385)	1.4	1.4	1.4	1.3	1.4	1.2	1.2	1.1	1.1	...
Other manufactured products(390)	4.4	4.4	3.0	2.6	2.8	2.6	2.5	2.5	2.6	...
TOTAL MANUFACTURING IN MILLIONS US $	8363	10132	12627	13978	13543	15404	16140	18996	22085	...

Source: Statistics and Survey Unit, UNIDO. Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Note: TOTAL MANUFACTURING is the sum of the available components and does not necessarily correspond to ISIC 300 total.

Table A-8.

SELECTED INDUSTRIAL INDICATORS, BY BRANCH OF MANUFACTURING.
(AT CURRENT PRICES)

KOREA,REPUBLIC OF (currency=Won)

Description (ISIC)	Value added per employee		Wages and salaries per employee		Share of value added in gross output (percentage)		Share of wages and salaries in value added (percentage)	
	1975	1985	1975	1985	1975	1985	1975	1985
TOTAL MANUFACTURING(300)	1980732	11393399	466729	3060632	34.0	33.7	23.6	26.9
Food products(311)	1898746	12840098	414658	2941990	24.5	27.9	21.8	22.9
Beverages(313)	6505837	26828935	626459	4156814	53.7	48.3	9.6	15.5
Tobacco(314)	7981132	1.0E+08	415094	4093402	64.0	71.4	5.2	3.9
Textiles(321)	1431440	7341774	410104	2514014	35.0	36.1	28.6	34.2
Wearing apparel,except footwear(322)	790854	5199599	312038	2138532	30.5	40.5	39.5	41.1
Leather products(323)	2056410	8016130	384615	2588706	37.4	29.1	18.7	32.3
Footwear,except rubber or plastic(324)	881818	5197524	400000	2381667	34.4	38.8	45.4	45.8
Wood products,except furniture(331)	1646192	6856413	425061	2748170	26.5	25.6	25.8	40.1
Furniture,except metal(332)	763441	6502656	333333	2736725	42.0	41.9	43.7	42.1
Paper and products(341)	1828383	11487342	514851	3286686	27.8	29.2	28.2	28.6
Printing and publishing(342)	1470745	11486548	638298	4335021	48.0	53.9	43.4	37.7
Industrial chemicals(351)	4734513	27777051	784661	4649246	31.9	25.7	16.6	16.7
Other chemicals(352)	3144231	21425847	685096	4165070	43.8	47.3	21.8	19.4
Petroleum refineries(353)	49195122	2.0E+08	1585366	3387071	22.2	13.6	3.2	4.1
Misc. petroleum and coal products(354)	2212598	20449557	464567	4033831	25.2	23.4	21.0	19.7
Rubber products(355)	1075969	5523782	421705	2498945	34.2	37.4	39.2	45.2
Plastic products(356)	1066390	8086641	365145	2761774	31.5	33.2	34.2	34.2
Pottery,china,earthenware(361)	652174	5570735	318841	2376524	47.4	61.4	48.9	42.7
Glass and products(362)	2243697	10910931	529412	3616958	49.9	47.0	23.6	33.1
Other non-metallic mineral prod.(369)	3160804	14420385	608040	3509941	47.6	37.6	19.2	24.3
Iron and steel(371)	4266304	25293115	668478	3941938	29.6	30.2	15.7	15.6
Non-ferrous metals(372)	2163462	12472033	576923	3760095	26.3	24.7	26.7	30.1
Fabricated metal products(381)	1300000	9108844	456863	3276337	38.9	40.7	35.1	36.0
Machinery,except electrical(382)	1333333	9763685	531183	3488903	38.1	41.3	39.8	35.7
Machinery electric(383)	1578906	9989095	432197	2954765	39.7	36.4	27.4	29.6
Transport equipment(384)	2181641	13926388	792969	4570275	30.2	35.9	36.3	32.8
Professional & scientific equipm.(385)	1250000	6978497	398810	2693378	40.5	38.9	31.9	38.6
Other manufactured products(390)	936508	5983985	358025	2481114	47.5	43.6	38.2	41.5

Source: Statistics and Survey Unit, UNIDO.Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Note: TOTAL MANUFACTURING is the sum of the reported ISICs and does not necessarily correspond to ISIC 300 total.

Table A-9.

EMPLOYMENT AND WAGES AND SALARIES IN MANUFACTURING.
(AT CURRENT PRICES)

KOREA, REPUBLIC OF (currency=Won)

Description (ISIC)	Employment				Wages and salaries			
	Employees	Employees	Share in total (percentage)		(millions) Wag+sal empl.	Wag+sal empl.	Share in total (percentage)	
	1975	1985	1975	1985	1975	1985	1975	1985
TOTAL MANUFACTURING(300)	1396100	2235304	100.0	100.0	651600	6841442	100.0	100.0
Food products(311)	103700	142562	7.4	6.4	43000	419416	6.6	6.1
Beverages(313)	25700	28574	1.8	1.3	16100	118777	2.5	1.7
Tobacco(314)	15900	14317	1.1	0.6	6600	58605	1.0	0.9
Textiles(321)	318700	409115	22.8	18.3	130700	1028521	20.1	15.0
Wearing apparel,except footwear(322)	148700	229610	10.7	10.3	46400	491028	7.1	7.2
Leather products(323)	19500	27154	1.4	1.2	7500	70294	1.2	1.0
Footwear,except rubber or plastic(324)	11000	36679	0.8	1.6	4400	87357	0.7	1.3
Wood products,except furniture(331)	40700	44656	2.9	2.0	17300	122722	2.7	1.8
Furniture,except metal(332)	9300	20710	0.7	0.9	3100	56678	0.5	0.8
Paper and products(341)	30300	48664	2.2	2.2	15600	159943	2.4	2.3
Printing and publishing(342)	37600	50439	2.7	2.3	24000	218654	3.7	3.2
Industrial chemicals(351)	33900	42781	2.4	1.9	26600	198899	4.1	2.9
Other chemicals(352)	41600	56100	3.0	2.5	28500	233660	4.4	3.4
Petroleum refineries(353)	4100	5613	0.3	0.3	6500	47077	1.0	0.7
Misc. petroleum and coal products(354)	12700	12301	0.9	0.6	5900	49620	0.9	0.7
Rubber products(355)	64500	116728	4.6	5.2	27200	291697	4.2	4.3
Plastic products(356)	24100	56163	1.7	2.5	8800	155110	1.4	2.3
Pottery,china,earthenware(361)	6900	18958	0.5	0.8	2200	45054	0.3	0.7
Glass and products(362)	11900	19266	0.9	0.9	6300	69684	1.0	1.0
Other non-metallic mineral prod.(369)	39800	61515	2.9	2.8	24200	215914	3.7	3.2
Iron and steel(371)	36800	72770	2.6	3.3	24600	286855	3.8	4.2
Non-ferrous metals(372)	10400	23132	0.7	1.0	6000	86979	0.9	1.3
Fabricated metal products(381)	51000	109891	3.7	4.9	23300	360040	3.6	5.3
Machinery,except electrical(382)	46500	95085	3.3	4.3	24700	331742	3.8	4.8
Machinery electric(383)	126100	232930	9.0	10.4	54500	688253	8.4	10.1
Transport equipment(384)	51200	142775	3.7	6.4	40600	652521	6.2	9.5
Professional & scientific equipm.(385)	16800	30647	1.2	1.4	6700	82544	1.0	1.2
Other manufactured products(390)	56700	86170	4.1	3.9	20300	213798	3.1	3.1

Source: Statistics and Survey Unit, UNIDO.Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Table A-10.

DESTINATION OF EXPORTS BY INDUSTRY, 1985

KOREA, REPUBLIC OF

Description of traded goods (SITC)	World total (in 1000 current US $)	Developing countries	Developed market economies				Centrally planned economies
			Total	USA	EEC	Japan	
		(Percent of world total)					
OILS AND FATS							
Animal oils and fats(411)	25.7	0.0	100.0	4.8	0.0	95.2	0.0
Fixed vegetable oils and fats(421/2)	1832.8	55.1	2.8	1.1	0.0	1.5	0.0
Processed animal and vegetable oils and fats(431)	1824.0	15.8	83.8	0.0	0.0	83.8	0.0
CHEMICALS							
Organic chemicals(512)	218064.6	19.5	66.2	18.1	13.6	27.3	0.0
Inorganic chem., oxides and halogen salts(513/4)	60585.9	27.0	65.8	6.2	14.2	37.4	0.0
Dyeing, tanning and colouring materials(531)	17212.8	18.6	76.6	18.5	21.0	29.3	0.0
Medicinal and pharmaceutical products(541)	42206.5	43.6	48.4	9.8	9.9	14.7	0.0
Plastics, cellulose and artificial resins(581)	346745.0	61.1	34.0	9.1	2.1	19.9	0.0
FERTILIZERS							
Nitrogenous fertilizers & related materials(5611)	27039.6	90.9	5.1	0.0	0.0	5.0	0.0
Phosphatic fertilizers and related materials(5612)	2402.3	19.5	80.5	0.0	0.0	80.5	0.0
Potassic fertilizers and related materials(5613)	5396.0	38.8	61.2	0.0	0.0	60.9	0.0
PETROLEUM							
Petroleum, crude or partly refined(331)	...	...	...	...	...	...	...
Petroleum products(332)	928967.0	8.1	81.8	14.3	0.2	66.1	0.0
RUBBER							
Crude rubber, synthetic and reclaimed(231)	13850.1	79.1	14.9	8.5	3.5	0.6	0.0
Rubber materials, e.g.sheets, threads, piping(621)	7014.7	21.0	66.5	42.3	0.0	3.3	0.0
Articles of rubber, e.g. tyres, tubes(629)	470192.8	29.5	64.9	42.8	10.4	2.3	0.0
WOOD AND FURNITURE							
Wood, shaped or simply worked(243)	19716.3	17.6	74.6	0.0	0.0	74.5	0.0
Pulp paper, including waste(251)	364.5	1.5	98.5	0.0	0.0	98.5	0.0
Veneers, plywood, improved wood(631)	40595.7	26.1	20.2	11.9	6.8	0.2	0.0
Wood manufactures(632)	29889.2	25.7	71.9	22.5	9.4	37.2	0.0
Paper and paperboard(641)	67477.2	68.3	17.4	13.9	0.4	2.5	0.0
Articles of pulp, paper or paperboard(642)	67061.9	12.8	84.4	47.4	24.9	4.6	0.0
Furniture(821)	75703.5	26.1	72.7	40.3	1.8	26.4	0.0
TEXTILES AND CLOTHING							
Wool and other animal hair(262)	17531.9	2.7	95.5	0.5	5.9	87.9	0.0
Cotton(263)	2182.3	3.5	20.8	0.0	4.0	11.9	0.0
Jute(264)	9.2	32.2	18.5	0.0	0.0	18.5	0.0
Vegetable fibres, flax and hemp(265)	79.7	20.2	79.8	55.1	0.0	24.7	0.0
Synthetic and regenerated fibres(266)	77157.5	74.1	21.9	2.5	0.1	19.2	0.0
Textile yarn and thread(651)	600226.3	35.9	52.3	1.8	6.2	30.2	0.0
Woven cotton fabrics(652)	169660.9	21.2	68.2	30.1	16.6	8.8	0.0
Woven textile fabrics(653)	1326035.1	60.5	35.0	15.7	6.0	8.6	0.0
Made-up articles chiefly of textiles(656)	180424.2	30.1	67.5	44.3	7.1	1.5	0.0
Travel bags, handbags, etc.(831)	470061.1	3.2	96.6	61.8	17.5	4.3	0.0
Clothing, excluding leather(841 less 8413)	3751292.2	8.4	37.4	49.5	14.3	15.1	0.0
Calf leather(6113)	63.0	82.5	17.5	13.6	0.0	3.9	0.0
LEATHER AND PRODUCTS							
Other leather, including artificial(611 less 6113)	11331.6	60.7	35.4	9.9	12.5	8.1	0.0
Leather manufactures(612)	44127.8	6.8	87.9	53.7	6.8	13.4	0.0
Apparel and accessories of leather(8413)	539989.0	0.3	99.6	55.8	26.8	5.2	0.0
Footwear(85)	1534316.8	2.2	97.5	74.3	8.6	7.5	0.0
BUILDING MATERIALS AND GLASS							
Lime, cement, fabricated building materials(661)	146944.0	48.5	50.9	9.1	0.0	41.8	0.0
Construction and refractory materials of clay(662)	9050.8	28.7	70.9	43.7	11.4	5.7	0.0
Glass(664)	48059.5	49.7	49.5	20.0	0.9	24.4	0.0
Glassware and pottery(665/6)	91462.7	12.7	86.7	57.5	15.1	6.1	0.0

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Table A-10 (continued)

DESTINATION OF EXPORTS BY INDUSTRY, 1985

KOREA, REPUBLIC OF

Description of traded goods (SITC)	World total (in 1000 current US $)	Developing countries	Developed market economies				Centrally planned economies
			Total	USA	EEC	Japan	
		(Percent of world total)					
IRON AND STEEL							
Iron ore and concentrates(281)	...	...	...	...	...	...	...
Iron and steel scrap(282)	13095.5	32.2	67.8	0.0	0.0	67.8	0.0
Pig iron and sponge(671)	14709.9	90.0	10.0	2.7	4.6	2.7	0.0
Ingots and other primary forms(672)	364481.2	19.3	77.1	14.6	2.0	58.7	0.0
Bars, rods, shapes, sections(673)	391695.7	61.3	25.8	11.7	3.3	9.0	0.0
Universals, plates and sheets(674)	528835.7	24.2	74.4	36.4	0.3	31.0	0.0
Hoop and strip(675)	7148.3	59.6	37.6	21.5	0.4	8.6	0.0
Iron and steel wire(677)	46541.2	40.3	45.2	23.5	2.4	13.4	0.0
Tubes, pipes and fittings(678)	434030.3	18.7	78.8	69.9	0.3	3.6	0.0
Unworked castings and forgings(679)	22334.1	16.1	82.8	55.7	1.6	13.5	0.0
NON-FERROUS METALS							
Non-ferrous ore and concentrates(283)	5219.5	0.7	99.3	0.0	29.4	64.7	0.0
Copper, blister, refined, alloys(6821)	5445.1	27.2	61.3	48.4	0.0	12.9	0.0
Copper bars, shapes, sections, wire, etc.(6822)	58402.9	44.7	34.7	16.6	0.1	13.7	0.0
Aluminium, unwrought or worked(684)	53270.2	87.8	7.2	2.7	0.1	4.2	0.0
Lead, unwrought or worked(685)	302.3	52.3	34.6	0.3	0.0	34.3	0.0
Zinc, unwrought or worked(686)	867.9	39.9	15.9	6.3	0.0	4.8	0.0
Tin and alloys, unwrought or worked(687)	185.9	1.9	83.4	6.0	0.0	77.4	0.0
Wire products, e.g. cables, ropes(693)	174362.8	14.1	61.4	39.2	5.6	5.6	0.0
SELECTED CAPITAL GOODS							
Hand tools used in agriculture(6951)	6858.9	21.8	65.0	46.1	6.2	0.5	0.0
Tools for use in hand or machine(6952)	29954.3	11.3	84.3	56.4	7.3	11.3	0.0
Power generating machinery, non-electric(711)	187524.4	37.4	60.0	42.8	4.0	12.8	0.0
Agricultural machinery(712i/2)	2328.6	40.4	56.9	16.5	0.0	40.3	0.0
Dairy equipment(7123)	2.4	0.0	100.0	0.0	74.3	0.0	0.0
Tractors(7125)	286.4	79.3	20.7	20.3	0.0	0.5	0.0
Office machines(714)	581585.9	5.1	94.8	64.6	22.1	4.3	0.0
Metal working machinery(715)	24777.7	17.2	76.7	37.4	21.0	14.6	0.0
Textile and leather machinery(717)	33598.2	70.0	26.7	6.1	2.8	13.3	0.0
Machines for paper, pulp and paper articles(7181)	5643.8	65.4	34.3	18.4	4.0	11.8	0.0
Industrial food-processing machinery(7183)	438.2	61.2	35.6	23.8	0.3	9.7	0.0
Machine tools for working minerals,wood,etc.(7195)	7357.3	44.3	54.5	32.8	1.4	18.7	0.0
Electrical power machinery and switchgear(722)	264340.0	26.1	67.5	19.5	3.8	42.0	0.0
MAJOR CONSUMER DURABLES							
Commercial road vehicles(732 less 7321)	126891.9	22.5	63.8	43.1	3.5	3.7	0.0
Passenger motor cars(7321)	518789.0	5.3	94.2	0.4	4.2	0.1	0.0
Television and radio sets(7241/2)	1090994.8	19.8	79.6	54.3	12.2	1.4	0.0
Domestic electrical equipment(725)	311147.6	9.2	89.7	72.3	7.0	3.0	0.0
TOTAL OF ABOVE	16777623	20.7	74.9	39.7	9.4	16.0	0.0
TOTAL OF ALL MERCHANDISE (SITC 0 to 9)	30282665	25.8	69.9	35.6	9.7	15.0	0.0

Source: Statistics and Survey Unit, UNIDO. Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Note: Percentages may not add to 100.0 due to the fact that countries report trade to/from "unspecified areas". Selection of products shown in this table was based on the definition of the manufacturing sector used for production statistics (i.e. the ISIC) and the associated raw material supplies. Thus, not all products are regarded as manufactures according to the conventional definitions of manufactured trade (e.g. SITC 5 to 8 less 68).

Table A-11.
Destination of exports of manufactures by branches, 1984 */

SITC	DESCRIPTION OF TRADE GOODS	WORLD TOTAL (1000 US$)	DEVELOPING COUNTRIES (PERCENT)	DEVELOPED MARKET ECONOMIES TOTAL (PERCENT)	USA (PERCENT)	EEC (PERCENT)	JAPAN (PERCENT)	CENTRALLY PLANNED DEVELOPED COUNTRIES (PERCENT)
01	Meat and meat preparations	18899	1.53	98.30	0.18	0.02	98.09	0.00
02	Dairy products and eggs	24340	0.37	97.53	0.01	0.00	97.52	0.00
032	Fish n.e.s. and fish preparations	114792	1.83	96.24	25.85	5.59	52.41	0.00
0422	Rice,glazed or polished not otherwise worked	53	36.99	0.47	0.47	0.00	0.00	0.00
046	Meal and flour of wheat or of meslin	66	23.07	1.44	1.44	0.00	0.00	0.00
047	Meal and flour of cereals,except above	50	37.80	55.78	55.21	0.00	0.00	0.00
048	Cereals preparat. & starch of fruits & vegetab.	8168	42.41	54.56	33.72	1.82	16.60	0.00
052	Dried fruit	101	2.09	97.91	60.90	0.00	29.94	0.00
053	Fruit,preserved and fruit preparations	14085	1.12	96.28	36.95	2.35	38.50	0.00
055	Vegetables,roots & tubers,preserved or prepared	35340	49.38	45.05	34.78	3.09	3.93	0.00
06	Sugar,sugar preparations and honey	65873	87.73	11.67	2.38	7.90	0.67	0.00
0713	Coffee extracts,essences,concentrates & similar	936	1.49	1.72	0.06	0.18	0.69	0.00
073	Chocolate and related food preparations	531	50.24	49.48	9.48	0.00	21.63	0.00
074	Tea and mate	537	27.10	70.42	46.28	1.34	19.58	0.00
081	Feeding-stuff for animals	2345	0.71	10.22	0.10	0.01	10.07	0.00
09	Miscellaneous food preparations	33954	37.63	57.36	26.60	4.37	19.47	0.00
11	Beverages	7967	59.93	38.28	8.17	1.95	27.02	0.00
122	Tobacco manufactures	8835	88.38	0.12	0.00	0.09	0.03	0.00
2219	Flour and meal of oil seeds,nuts,kernels	13	30.33	69.67	46.38	10.08	0.00	0.00
231	Crude rubber,synth. & reclaimed(excl.SITC 2311)	12183	57.08	4.72	0.34	0.17	1.48	0.00
243	Wood,shaped or simply worked	25867	44.76	44.80	0.07	0.00	44.71	0.00
251	Pulp and waste paper	340	0.00	100.00	0.00	0.00	100.00	0.00
2628	Wool tops	839	0.00	100.00	0.00	0.00	100.00	0.00
2629	Waste of wool and other animal hair n.e.s.	860	0.03	99.97	0.00	0.00	99.95	0.00
263	Cotton	4360	3.62	20.82	0.00	12.76	8.06	0.00
266	Synthetic and regenerated(artificial) fibres	75309	79.37	11.74	2.03	0.00	8.08	0.00
267	Waste materials from textile fabrics(incl.rags)	3568	33.65	63.82	46.71	5.12	6.48	0.00
332	Petroleum products	803389	7.11	91.52	3.71	0.14	86.48	0.00
4	Animal and vegetable oils and fats	4149	42.28	40.66	1.08	0.00	38.24	0.00
411	Animal oils and fats	53	0.00	60.72	0.00	0.00	60.72	0.00
421	Fixed vegetable oils,soft(incl.SITC 422)	2096	02.71	6.23	1.20	0.00	4.92	0.00
431	Animal and vegetable oils and fats processed	2000	21.99	76.22	0.98	0.00	72.56	0.00

Table A-11 (continued)

Destination of exports of manufactures by branches, 1984 */

SITC	DESCRIPTION OF TRADE GOODS	WORLD TOTAL (1000 US$)	DEVELOPING COUNTRIES (PERCENT)	DEVELOPED MARKET ECONOMIES TOTAL (PERCENT)	USA (PERCENT)	EEC (PERCENT)	JAPAN (PERCENT)	CENTRALLY PLANNED DEVELOPED COUNTRIES (PERCENT)
5	Chemicals	918341	39.59	39.39	10.18	5.48	18.48	0.00
51	Chemicals elements and compounds	267018	19.91	64.54	16.53	11.86	28.92	0.00
52	Tar and chemicals from coal,petroleum,nat. gas	31123	1.88	97.40	0.00	0.00	58.20	0.00
53	Dyeing,tanning and colouring materials	31751	29.78	58.40	13.30	11.20	25.55	0.00
54	Medicinal and pharmaceutical products	32443	38.64	43.96	10.85	6.92	16.56	0.00
55	Essential oils and perfume materials	17274	57.78	21.14	10.89	2.06	3.00	0.00
56	Fertilizers,manufactured	24361[illegible]	45.73	6.14	0.00	0.00	6.13	0.00
57	Explosives and pyrotechnic products	13756	18.87	76.56	63.66	1.42	8.02	0.00
58	Plastic materials,regenerated cellul. & resins	253648	60.99	32.64	11.42	2.79	15.08	0.00
59	Chemical materials and products n.e.s.	27712	33.15	51.72	7.25	18.91	22.17	0.00
6	Manufactured goods classified by material	7356083	40.27	53.23	28.43	4.72	14.00	0.00
61	Leather manufactured n.e.s. & dressed fur skins	62847	14.14	84.01	46.63	4.51	13.84	0.00
62	Rubber manufactures n.e.s.	506330	27.31	60.30	42.83	8.10	1.79	0.00
63	Wood and cork manufactures(excl.furniture)	111302	48.60	33.05	12.02	7.29	11.24	0.00
64	Paper,paper board and manufactures thereof	127314	33.93	60.80	39.07	13.04	3.19	0.00
65	Textile yarn,fabrics,made-up articles	2601459	48.54	43.01	13.85	6.30	15.19	0.00
66	Non-metallic mineral manufactures,n.e.s.	362683	36.41	62.39	27.53	6.80	23.97	0.00
67	Iron and steel	2049349	31.50	65.53	39.13	0.43	22.00	0.00
68	Non-ferrous metals	131984	40.98	39.25	12.63	2.39	23.17	0.00
69	Manufactures of metal,n.e.s.	1402515	44.44	50.15	35.88	5.57	2.30	0.00
7	Machinery and transport equipment	10312485	31.81	64.92	35.13	12.15	7.56	0.00
71	Machinery,other than electric	838903	21.13	76.98	54.16	10.71	9.06	0.00
72	Electrical machinery,apparatus and appliances	3942932	16.46	81.44	58.45	7.76	9.37	0.00
73	Transport equipment	5530570	44.37	51.31	15.61	15.51	6.05	0.00
8	Miscellaneous manufactured articles	8225745	7.61	91.21	54.82	15.19	12.08	0.00
81	Sanitary,plumbing,heating & lighting fixtures	21075	14.29	79.97	60.18	8.03	4.64	0.00
82	Furniture	71580	37.95	56.91	30.77	1.53	21.02	0.00
83	Travel goods,handbags and similar articles	454939	4.60	94.88	59.34	18.21	3.07	0.00
84	Clothing	4501014	7.24	91.72	51.48	17.14	13.71	0.00
85	Footwear	1352057	2.69	96.97	68.93	9.76	9.05	0.00
86	Professional,scient. & controll. instruments	366765	25.49	69.80	37.78	8.09	20.50	0.00
89	Miscellaneous manufactured articles,n.e.s.	1458316	8.16	90.38	56.02	15.83	10.22	0.00
	TOTAL manufactures	28080405	26.63	69.29	37.08	10.39	13.57	0.00
	TOTAL: SITC 5-8 LESS 68 a/	26680670	26.90	69.05	38.61	10.86	11.03	0.00
	TOTAL traded goods: SITC 0-9	29247888	25.93	70.02	36.00	10.22	15.75	0.00

Note:Data and SITC descriptions refer to SITC revision 1

*/ This table is based on the definition of trade in manufactures covering a list of 148 specifically identified SITC 3-digit or 4-digit codes comprising a wide range of processing stages of manufactured goods.

a/ Definition of trade in manufactures SITC 5-8 less 68 is one of the most often found. It covers only items recognized as exclusively manufactured goods,i.e. with a high level of manufacturing content.

Source: UNIDO data base;Information supplied by the United Nations Statistical Office.

Note: Percentages may not add to 100.0 due to the fact that countries report trade to/from "unspecified areas".

Table A-12.
ORIGIN OF IMPORTS BY INDUSTRY, 1985

KOREA, REPUBLIC OF

Description of traded goods (SITC)	World total (in 1000 current US $)	Developing countries	Developed market economies				Centrally planned economies
			Total	USA	EEC	Japan	
		(Percent of world total)					
OILS AND FATS							
Animal oils and fats(411)	61013.9	0.0	100.0	55.9	1.0	10.0	0.0
Fixed vegetable oils and fats(421/2)	69928.0	91.5	7.0	4.3	0.2	2.5	0.0
Processed animal and vegetable oils and fats(431)	15360.1	34.4	65.3	14.4	26.7	22.3	0.0
CHEMICALS							
Organic chemicals(512)	1342355.8	9.2	88.3	25.8	21.5	32.9	0.0
Inorganic chem., oxides and halogen salts(513/4)	237692.4	3.4	87.6	36.3	12.4	35.5	0.0
Dyeing, tanning and colouring materials(531)	103359.5	2.0	94.8	2.7	36.5	36.3	0.0
Medicinal and pharmaceutical products(541)	113211.2	1.3	97.1	23.7	37.6	23.7	0.0
Plastics, cellulose and artificial resins(581)	435188.8	1.8	95.3	24.2	14.2	53.1	0.0
FERTILIZERS							
Nitrogenous fertilizers & related materials(5611)	472.7	59.4	22.5	0.1	3.6	12.7	0.0
Phosphatic fertilizers and related materials(5612)	...	...	...	...	...	...	...
Potassic fertilizers and related materials(5613)	48622.0	11.4	72.5	3.5	0.0	0.1	0.0
PETROLEUM							
Petroleum, crude or partly refined(331)	5572147.7	82.9	0.0	0.0	0.0	0.0	0.0
Petroleum products(332)	588244.6	35.4	59.0	38.9	3.5	15.7	0.0
RUBBER							
Crude rubber, synthetic and reclaimed(231)	218383.9	60.1	38.3	7.3	3.4	24.0	0.0
Rubber materials, e.g.sheets, threads, piping(621)	20347.9	4.4	93.8	21.7	27.8	42.9	0.0
Articles of rubber, e.g. tyres, tubes(629)	45669.3	1.5	97.8	19.5	15.3	36.2	0.0
WOOD AND FURNITURE							
Wood, shaped or simply worked(243)	47377.3	75.6	24.2	17.3	0.7	2.4	0.0
Pulp paper, including waste(251)	336626.5	9.1	87.5	54.8	0.0	1.8	0.0
Veneers, plywood, improved wood(631)	39669.6	53.7	45.4	11.6	10.2	3.1	0.0
Wood manufactures(632)	6597.9	6.8	86.9	42.7	15.5	24.8	0.3
Paper and paperboard(641)	101355.0	3.6	93.1	46.9	5.7	30.9	0.0
Articles of pulp, paper or paperboard(642)	29707.6	1.9	97.9	44.5	17.4	34.7	0.0
Furniture(821)	17375.4	4.1	94.3	56.4	17.2	18.6	0.0
TEXTILES AND CLOTHING							
Wool and other animal hair(262)	186324.2	10.4	73.1	0.7	2.9	2.0	0.0
Cotton(263)	531582.7	10.0	82.7	75.0	0.0	0.0	0.0
Jute(264)	206.1	11.1	2.9	2.9	0.0	0.0	0.0
Vegetable fibres, flax and hemp(265)	24340.8	26.6	20.4	0.3	18.2	1.9	0.0
Synthetic and regenerated fibres(266)	85458.7	0.0	91.3	18.5	1.7	67.6	0.0
Textile yarn and thread(651)	199513.7	13.8	56.3	7.4	3.6	43.5	0.0
Woven cotton fabrics(652)	61312.6	17.3	75.8	1.3	7.8	64.0	0.0
Woven textile fabrics(653)	290087.3	5.9	68.4	3.5	12.1	51.2	0.0
Made-up articles chiefly of textiles(656)	3336.3	32.4	48.6	16.7	16.0	13.2	0.0
Travel bags, handbags, etc.(831)	1274.2	8.3	78.3	13.9	44.5	16.4	0.0
Clothing, excluding leather(841 less 8413)	13978.2	5.5	87.5	14.3	17.5	53.5	0.0
Calf leather(6113)	4055.5	4.8	95.2	11.3	53.5	29.6	0.0
LEATHER AND PRODUCTS							
Other leather, including artificial(611 less 6113)	294827.0	13.0	85.3	17.8	13.6	50.7	0.0
Leather manufactures(612)	11311.3	6.1	90.4	24.5	15.8	49.2	0.0
Apparel and accessories of leather(8413)	862.3	19.1	80.5	13.0	14.9	42.5	0.0
Footwear(85)	2126.5	0.6	87.3	4.1	43.4	31.1	0.0
BUILDING MATERIALS AND GLASS							
Lime, cement, fabricated building materials(661)	30477.8	3.3	91.5	3.7	61.4	21.9	0.0
Construction and refractory materials of clay(662)	31481	0.5	99.4	16.8	26.3	52.1	0.0
Glass(664)	116507	1.0	96.4	13.0	5.6	70.7	0.0
Glassware and pottery(665/6)	18552.8	1.4	93.9	23.2	19.6	38.2	0.0

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Table A-12 (continued)

ORIGIN OF IMPORTS BY INDUSTRY, 1985

KOREA, REPUBLIC OF

Description of traded goods (SITC)	World total (in 1000 current US $)	Developing countries	Developed market economies				Centrally planned economies
			Total	USA	EEC	Japan	
		(Percent of world total)					
IRON AND STEEL							
Iron ore and concentrates(281)	318885.1	62.4	37.6	0.0	0.0	0.0	0.0
Iron and steel scrap(282)	278904.8	3.6	92.7	78.1	3.0	5.7	0.0
Pig iron and sponge(671)	42522.7	30.2	55.9	1.9	11.6	25.6	0.0
Ingots and other primary forms(672)	432653.0	7.2	81.2	0.0	5.2	70.3	0.0
Bars, rods, shapes, sections(673)	187210.7	0.7	87.6	2.0	8.5	75.9	0.0
Universals, plates and sheets(674)	315153.1	0.2	94.8	0.4	4.4	85.3	0.0
Hoop and strip(675)	25168.5	0.0	100.0	1.2	6.8	88.0	0.0
Iron and steel wire(677)	30020.6	0.6	91.3	2.0	3.4	84.3	0.0
Tubes, pipes and fittings(678)	133635.5	0.6	98.2	12.4	24.6	57.3	0.0
Unworked castings and forgings(679)	3988.3	0.0	97.4	27.2	7.7	62.1	0.0
NON-FERROUS METALS							
Non-ferrous ore and concentrates(283)	251005.1	57.0	34.0	9.5	0.0	1.3	0.0
Copper, blister, refined, alloys(6821)	80340.0	78.7	14.7	1.7	0.3	10.0	0.0
Copper bars, shapes, sections, wire, etc.(6822)	44564.6	0.9	91.1	5.7	9.4	75.0	0.0
Aluminium, unwrought or worked(684)	253254.4	16.0	79.5	10.8	5.4	17.4	0.0
Lead, unwrought or worked(685)	21503.5	38.5	44.4	4.5	0.4	18.8	0.0
Zinc, unwrought or worked(686)	10336.1	24.0	76.0	0.3	0.8	14.4	0.0
Tin and alloys, unwrought or worked(687)	18440.3	92.1	7.7	2.8	2.7	2.1	0.0
Wire products, e.g. cables, ropes(693)	13006.3	0.1	98.8	20.4	23.0	53.8	0.0
SELECTED CAPITAL GOODS							
Hand tools used in agriculture(6951)	117.3	0.6	99.4	25.0	1.1	68.5	0.0
Tools for use in hand or machine(6952)	76181.3	1.8	93.7	13.4	12.6	59.0	0.0
Power generating machinery, non-electric(711)	564923.7	1.5	89.7	43.3	14.2	29.4	0.0
Agricultural machinery(7121/2)	13299.5	0.0	99.5	3.8	6.0	89.2	0.0
Dairy equipment(7123)	1403.2	0.0	100.0	13.3	42.6	27.7	0.0
Tractors(7125)	2629.3	0.0	99.7	2.6	81.4	14.5	0.0
Office machines(714)	454624.9	5.2	94.2	36.2	5.4	51.4	0.0
Metal working machinery(715)	309775.0	0.1	99.5	4.9	11.2	79.3	0.0
Textile and leather machinery(717)	211263.3	0.0	99.0	3.7	27.1	62.0	0.0
Machines for paper, pulp and paper articles(7181)	39873.3	0.0	99.9	6.0	14.1	74.3	0.0
Industrial food-processing machinery(7183)	21016.0	0.0	99.9	5.4	30.6	54.8	0.0
Machine tools for working minerals,wood,etc.(7195)	49779.6	0.1	97.6	9.9	18.3	61.8	0.0
Electrical power machinery and switchgear(722)	650576.7	1.7	94.2	20.9	14.7	53.3	0.0
MAJOR CONSUMER DURABLES							
Commercial road vehicles(732 less 7321)	192918.1	0.2	99.6	4.8	15.6	77.8	0.0
Passenger motor cars(7321)	16734.7	0.1	99.8	36.8	28.5	30.5	0.0
Television and radio sets(7241/2)	21796.1	0.4	91.8	6.4	1.6	83.3	0.0
Domestic electrical equipment(725)	79716.1	1.9	94.8	18.2	14.4	57.4	0.0
TOTAL OF ABOVE	16525552	36.5	54.0	15.6	7.1	24.9	0.0
TOTAL OF ALL MERCHANDISE (SITC 0 to 9)	31118685	28.6	63.7	20.8	8.9	24.2	0.0

Source: Statistics and Survey Unit, UNIDO. Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Note: Percentages may not add to 100.0 due to the fact that countries report trade to/from "unspecified areas". Selection of products shown in this table was based on the definition of the manufacturing sector used for production statistics (i.e. the ISIC) and the associated raw material supplies. Thus, not all products are regarded as manufactures according to the conventional definitions of manufactured trade (e.g. SITC 5 to 8 less 68).

Table A-13.
Origin of imports of manufactures by branches, 1984 */

SITC	DESCRIPTION OF TRADE GOODS	WORLD TOTAL (1000 US$)	DEVELOPING COUNTRIES (PERCENT)	DEVELOPED MARKET ECONOMIES TOTAL (PERCENT)	USA (PERCENT)	EEC (PERCENT)	JAPAN (PERCENT)	CENTRALLY PLANNED DEVELOPED COUNTRIES (PERCENT)
01	Meat and meat preparations	72647	0.02	99.75	9.68	0.57	0.15	0.00
02	Dairy products and eggs	14806	12.69	86.44	1.66	47.78	2.01	0.00
032	Fish n.e.s. and fish preparations	2717	0.00	91.64	82.76	0.72	3.10	0.00
0422	Rice,glazed or polished not otherwise worked	64	50.23	45.99	45.99	0.00	0.00	0.00
046	Meal and flour of wheat or of meslin	1	0.00	100.00	38.47	39.17	0.00	0.00
047	Meal and flour of cereals,except above	0	0.00	99.99	20.87	47.82	31.30	0.00
048	Cereals preparat. & starch of fruits & vegetab.	2896	0.55	99.45	29.28	44.72	0.63	0.00
052	Dried fruit	3601	17.26	69.27	68.83	0.00	0.44	0.00
053	Fruit,preserved and fruit preparations	11295	61.87	37.46	32.56	3.79	0.17	0.00
055	Vegetables,roots & tubers,preserved or prepared	9262	6.91	31.70	20.66	0.34	6.83	0.00
06	Sugar,sugar preparations and honey	217534	46.89	46.19	0.17	1.42	0.19	0.00
0713	Coffee extracts,essences,concentrates & similar	89	0.00	100.00	68.84	29.73	0.77	0.00
0722	Cocoa powder,unsweetened	3196	42.83	57.17	0.08	57.09	0.00	0.00
0723	Cocoa butter and cocoa paste	1703	30.20	69.80	0.00	69.78	0.00	0.00
073	Chocolate and related food preparations	510	0.00	100.00	52.15	11.60	5.01	0.00
074	Tea and mate	37	66.64	31.03	9.82	2.58	18.63	0.00
081	Feeding-stuff for animals	76705	53.05	44.93	20.07	1.36	1.65	0.00
09	Miscellaneous food preparations	10255	4.38	94.95	57.99	11.28	24.33	0.00
11	Beverages	8141	0.69	98.64	5.11	49.06	43.49	0.00
122	Tobacco manufactures	18	1.65	23.33	0.00	4.29	19.04	0.00
231	Crude rubber,synth. & reclaimed(excl.SITC 2311)	97436	0.52	97.02	18.49	12.09	63.19	0.00
243	Wood,shaped or simply worked	47425	64.85	34.59	21.39	0.68	1.42	0.00
251	Pulp and waste paper	358145	11.60	87.59	56.32	0.05	4.47	0.00
2626	Wool shoddy	1486	1.12	98.88	2.59	52.93	42.35	0.00
2627	Wool or other animal hair,carded or combed	663	58.94	27.56	0.00	16.08	8.75	0.00
2628	Wool tops	27925	17.54	48.57	0.00	1.91	4.59	0.00
2629	Waste of wool and other animal hair n.e.s.	2820	4.08	43.60	2.95	25.12	5.37	0.00
263	Cotton	615978	9.95	84.76	79.37	0.02	0.02	0.00
266	Synthetic and regenerated(artificial) fibres	77331	0.01	92.54	15.17	0.25	73.97	0.00
267	Waste materials from textile fabrics(incl.rags)	8730	4.48	95.44	29.81	32.92	20.02	0.00
332	Petroleum products	643465	54.03	45.48	26.57	1.85	12.16	0.00
4	Animal and vegetable oils and fats	173674	35.56	63.14	33.37	2.72	5.85	0.00
411	Animal oils and fats	93773	0.00	100.00	56.07	0.79	3.56	0.00
421	Fixed vegetable oils,soft(incl.SITC 422)	65659	87.49	9.14	5.15	0.32	3.65	0.00
431	Animal and vegetable oils and fats processed	14243	30.31	69.43	14.07	26.47	28.39	0.00

Table A-13 (continued)

Origin of imports of manufactures by branches, 1984 */

SITC	DESCRIPTION OF TRADE GOODS	WORLD TOTAL (1000 US$)	DEVELOPING COUNTRIES (PERCENT)	DEVELOPED MARKET ECONOMIES TOTAL (PERCENT)	USA (PERCENT)	EEC (PERCENT)	JAPAN (PERCENT)	CENTRALLY PLANNED DEVELOPED COUNTRIES (PERCENT)
5	Chemicals	2797785	4.59	92.64	28.86	19.10	37.05	0.00
51	Chemicals elements and compounds	1505921	6.40	90.23	30.74	18.97	33.54	0.00
52	Tar and chemicals from coal,petroleum,nat. gas	65072	5.13	94.42	74.62	0.03	18.33	0.00
53	Dyeing,tanning and colouring materials	229693	1.53	95.46	11.60	32.16	39.27	0.00
54	Medicinal and pharmaceutical products	119126	1.12	97.48	22.83	35.88	23.45	0.00
55	Essential oils and perfume materials	79307	1.64	98.03	19.91	22.06	47.04	0.00
56	Fertilizers,manufactured	49382	4.79	93.94	24.96	0.36	0.87	0.00
57	Explosives and pyrotechnic products	21351	0.19	99.14	53.96	37.13	0.97	0.00
58	Plastic materials,regenerated cellul. & resins	471180	1.51	95.57	26.87	11.88	54.24	0.00
59	Chemical materials and products n.e.s.	256751	5.08	93.64	29.07	19.16	42.08	0.00
6	Manufactured goods classified by material	3761410	9.73	83.31	12.07	9.24	54.15	0.00
61	Leather manufactured n.e.s. & dressed fur skins	394071	12.08	85.26	25.18	12.16	42.22	0.00
62	Rubber manufactures n.e.s.	52633	3.81	94.96	20.13	15.39	50.49	0.00
63	Wood and cork manufactures(excl.furniture)	49109	42.80	55.66	16.24	6.93	11.77	0.00
64	Paper,paper board and manufactures thereof	116654	1.76	96.22	44.86	6.90	36.11	0.00
65	Textile yarn,fabrics,made-up articles	601489	8.35	76.18	5.68	10.35	58.23	0.00
66	Non-metallic mineral manufactures,n.e.s.	299685	1.15	96.54	13.44	16.72	50.89	0.00
67	Iron and steel	1313820	6.10	87.17	2.71	5.59	74.64	0.00
68	Non-ferrous metals	543151	28.11	62.91	8.69	6.45	22.20	0.00
69	Manufactures of metal,n.e.s.	390797	1.75	95.61	32.36	15.11	42.97	0.00
7	Machinery and transport equipment	9796846	15.36	82.65	25.37	14.47	35.26	0.00
71	Machinery,other than electric	3274682	1.64	97.71	25.70	15.73	52.07	0.00
72	Electrical machinery,apparatus and appliances	3248277	5.20	92.37	35.65	9.03	43.11	0.00
73	Transport equipment	3273887	39.18	57.94	14.83	18.60	10.67	0.00
8	Miscellaneous manufactured articles	1119333	2.86	95.03	18.72	9.34	64.07	0.00
81	Sanitary,plumbing,heating & lightning fixtures	27808	8.85	89.78	41.02	21.59	15.59	0.00
82	Furniture	16756	5.72	91.18	51.91	13.82	24.07	0.00
83	Travel goods,handbags and similar articles	1055	4.60	78.56	33.67	26.15	15.65	0.00
84	Clothing	15078	7.33	87.53	20.14	12.30	52.74	0.00
85	Footwear	2390	4.82	62.02	7.56	24.48	24.19	0.00
86	Professional,scient. & controll. instruments	528153	2.06	96.66	20.39	10.54	61.78	0.00
89	Miscellaneous manufactured articles,n.e.s.	528093	3.12	94.19	14.80	7.16	70.79	0.00
	TOTAL manufactures	19965928	13.70	83.08	24.84	12.32	37.47	0.00
	TOTAL: SITC 5-8 LESS 68 a/	16932222	11.10	85.90	23.06	13.99	42.08	0.00
	TOTAL traded goods: SITC 0-9	30608610	28.15	65.00	22.41	8.26	24.87	0.00

Note:Data and SITC descriptions refer to SITC revision 1
*/ This table is based on the definition of trade in manufactures covering a list of 148 specifically identified SITC 3-digit or 4-digit codes comprising a wide range of processing stages of manufactured goods.
a/ Definition of trade in manufactures SITC 5-8 less 68 is one of the most often found. It covers only items recognized as exclusively manufactured goods,i.e. with a high level of manufacturing content.
Source: UNIDO data base;Information supplied by the United Nations Statistical Office.
Note: Percentages may not add to 100.0 due to the fact that countries report trade to/from "unspecified areas".

Table A-14.

THE COMPOSITION AND VALUE OF TRADE IN 1984 AND 1985

KOREA, REPUBLIC OF

Description of traded goods (SITC)	Imports (Percentage of total trade)		Exports (Percentage of total trade)		Trade balance (Exports less imports in 1000 current US $)	
	1984	1985	1984	1985	1984	1985
OILS AND FATS						
Animal oils and fats(411)	0.3	0.2	0.0	0.0	-93719.4	-60987.1
Fixed vegetable oils and fats(421/2)	0.2	0.2	0.0	0.0	-63562.6	-68095.2
Processed animal and vegetable oils and fats(431)	0.0	0.0	0.0	0.0	-12242.8	-13536.0
CHEMICALS						
Organic chemicals(512)	4.1	4.3	0.7	0.7	-1043038.5	-1124291.2
Inorganic chem., oxides and halogen salts(513/4)	0.8	0.8	0.2	0.2	-169967.1	-177106.5
Dyeing, tanning and colouring materials(531)	0.3	0.3	0.1	0.1	-83395.8	-86146.8
Medicinal and pharmaceutical products(541)	0.4	0.4	0.1	0.1	-86693.1	-71004.7
Plastics, cellulose and artificial resins(581)	1.5	1.4	0.9	1.1	-217532.3	-88443.8
FERTILIZERS						
Nitrogenous fertilizers & related materials(5611)	0.0	0.0	0.1	0.1	30829.3	26566.9
Phosphatic fertilizers and related materials(5612)	...	...	0.0	0.0	...	...
Potassic fertilizers and related materials(5613)	0.1	0.2	0.0	0.0	-30803.9	-43226.1
PETROLEUM						
Petroleum, crude or partly refined(331)	18.9	17.9	...	...	...	...
Petroleum products(332)	2.1	1.9	2.7	3.1	159924.4	340722.4
RUBBER						
Crude rubber, synthetic and reclaimed(231)	0.8	0.7	0.0	0.0	-241514.9	-204533.9
Rubber materials, e.g.sheets, threads, piping(621)	0.1	0.1	0.0	0.0	-9593.0	-13333.2
Articles of rubber, e.g. tyres, tubes(629)	0.1	0.1	1.7	1.6	463290.5	424523.4
WOOD AND FURNITURE						
Wood, shaped or simply worked(243)	0.2	0.2	0.1	0.1	-21557.1	-27661.0
Pulp paper, including waste(251)	1.2	1.1	0.0	0.0	-357805.4	-336262.0
Veneers, plywood, improved wood(631)	0.1	0.1	0.2	0.1	22315.7	926.1
Wood manufactures(632)	0.0	0.0	0.2	0.1	40339.4	23291.4
Paper and paperboard(641)	0.3	0.3	0.2	0.2	-28151.9	-33877.8
Articles of pulp, paper or paperboard(642)	0.1	0.1	0.3	0.2	38812.0	37354.3
Furniture(821)	0.1	0.1	0.2	0.2	54823.5	58328.1
TEXTILES AND CLOTHING						
Wool and other animal hair(262)	0.6	0.6	0.0	0.1	-168824.2	-168792.3
Cotton(263)	2.0	1.7	0.0	0.0	-611617.9	-529400.4
Jute(264)	0.0	0.0	0.0	0.0	-439.4	-196.9
Vegetable fibres, flax and hemp(265)	0.0	0.1	0.0	0.0	-13874.2	-24261.1
Synthetic and regenerated fibres(266)	0.3	0.3	0.3	0.3	-2022.1	-3301.2
Textile yarn and thread(651)	0.6	0.6	2.1	2.0	426853.3	400712.6
Woven cotton fabrics(652)	0.2	0.2	0.6	0.6	126612.7	108348.3
Woven textile fabrics(653)	0.8	0.9	4.5	4.4	1060079.8	1035947.8
Made-up articles chiefly of textiles(656)	0.0	0.0	0.7	0.6	207186.8	177087.8
Travel bags, handbags, etc.(831)	0.0	0.0	1.6	1.6	453884.0	468786.8
Clothing, excluding leather(841 less 8413)	0.0	0.0	12.7	12.4	3701909.2	3737314.0
Calf leather(6113)	0.0	0.0	0.0	0.0	-4685.3	-3992.5
LEATHER AND PRODUCTS						
Other leather, including artificial(611 less 6113)	1.1	0.9	0.0	0.0	-335838.9	-283495.4
Leather manufactures(612)	0.0	0.0	0.2	0.1	47504.9	32816.5
Apparel and accessories of leather(8413)	0.0	0.0	2.1	1.8	618736.6	539126.7
Footwear(85)	0.0	0.0	4.6	5.1	1349666.4	1532190.3
BUILDING MATERIALS AND GLASS						
Lime, cement, fabricated building materials(661)	0.1	0.1	0.5	0.5	124337.0	116466.2
Construction and refractory materials of clay(662)	0.1	0.1	0.1	0.0	-19639.2	-22437.6
Glass(664)	0.4	0.4	0.1	0.2	-71606.4	-68448.0
Glassware and pottery(665/6)	0.1	0.1	0.4	0.3	83429.9	72909.9

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Table A-14 (continued)

THE COMPOSITION AND VALUE OF TRADE IN 1984 AND 1985

KOREA,REPUBLIC OF

Description of traded goods (SITC)	Imports (Percentage of total trade)		Exports (Percentage of total trade)		Trade balance (Exports less imports in 1000 current US $)	
	1984	1985	1984	1985	1984	1985
IRON AND STEEL						
Iron ore and concentrates(281)	0.9	1.0	0.0	...	-282936.0	...
Iron and steel scrap(282)	0.8	0.9	0.1	0.0	-224387.2	-265809.3
Pig iron and sponge(671)	0.2	0.1	0.0	0.0	-43649.5	-27812.8
Ingots and other primary forms(672)	1.6	1.4	1.4	1.2	-61352.5	-68171.9
Bars, rods, shapes, sections(673)	0.8	0.6	1.3	1.3	141608.6	204485.0
Universals, plates and sheets(674)	1.1	1.0	2.2	1.7	289001.1	213682.6
Hoop and strip(675)	0.1	0.1	0.0	0.0	-16645.2	-18020.1
Iron and steel wire(677)	0.1	0.1	0.2	0.2	15171.2	16520.7
Tubes, pipes and fittings(678)	0.4	0.4	1.7	1.4	375898.6	300394.8
Unworked castings and forgings(679)	0.0	0.0	0.1	0.1	14917.1	18345.9
NON-FERROUS METALS						
Non-ferrous ore and concentrates(283)	0.8	0.8	0.0	0.0	-228185.5	-245785.6
Copper, blister, refined, alloys(6821)	0.3	0.3	0.0	0.0	-76938.9	-74894.9
Copper bars, shapes, sections, wire, etc.(6822)	0.2	0.1	0.3	0.2	29822.4	13838.3
Aluminium, unwrought or worked(684)	1.0	0.8	0.1	0.2	-271694.1	-199984.2
Lead, unwrought or worked(685)	0.1	0.1	0.0	0.0	-19101.0	-21201.2
Zinc, unwrought or worked(686)	0.1	0.0	0.0	0.0	-20521.6	-9468.2
Tin and alloys, unwrought or worked(687)	0.1	0.1	0.0	0.0	-30095.0	-18254.3
Wire products, e.g. cables, ropes(693)	0.1	0.0	0.6	0.6	164334.4	161356.5
SELECTED CAPITAL GOODS						
Hand tools used in agriculture(6951)	0.0	0.0	0.0	0.0	8291.7	6741.7
Tools for use in hand or machine(6952)	0.2	0.2	0.1	0.1	-28521.8	-46227.0
Power generating machinery, non-electric(711)	2.1	1.8	0.5	0.6	-491456.9	-377399.3
Agricultural machinery(7121/2)	0.1	0.0	0.0	0.0	-19105.6	-10970.9
Dairy equipment(7123)	0.0	0.0	0.0	0.0	-1755.8	-1400.7
Tractors(7125)	0.0	0.0	0.0	0.0	-1448.4	-2342.8
Office machines(714)	1.3	1.5	1.5	1.9	44770.2	126961.0
Metal working machinery(715)	0.6	1.0	0.1	0.1	-151541.7	-284997.3
Textile and leather machinery(717)	0.8	0.7	0.1	0.1	-212180.2	-177665.1
Machines for paper, pulp and paper articles(7181)	0.1	0.1	0.0	0.0	-28055.6	-34229.4
Industrial food-processing machinery(7183)	0.1	0.1	0.0	0.0	-24131.0	-20577.8
Machine tools for working minerals,wood,etc.(7195)	0.1	0.2	0.0	0.0	-38326.6	-42422.3
Electrical power machinery and switchgear(722)	2.1	2.1	0.9	0.9	-380550.3	-386236.7
MAJOR CONSUMER DURABLES						
Commercial road vehicles(732 less 7321)	0.6	0.6	0.3	0.4	-97124.3	-66026.2
Passenger motor cars(7321)	0.1	0.1	0.6	1.7	156865.8	502054.2
Television and radio sets(7241/2)	0.1	0.1	4.3	3.6	1229304.1	1069198.7
Domestic electrical equipment(725)	0.3	0.3	1.1	1.0	230029.1	231431.5
TOTAL OF ABOVE, IN MILLIONS OF US $	16864	16526	16370	16778	-494	252
TOTAL TRADE (SITC 0 TO 9), IN MILLIONS OF US $	30609	31119	29248	30283	-1361	-836

Source: Statistics and Survey Unit, UNIDO.Based on data supplied by the UN Statistical Office, with estimates by the UNIDO Secretariat.

Table A-15.

Product mix of traded manufacturing goods, 1975, 1983, 1984 */

SITC	DESCRIPTION OF TRADE GOODS	EXPORTS 1975 PERCENT IN TOTAL	EXPORTS 1983 PERCENT MANUFACTURES	EXPORTS 1984 PERCENT MANUFACTURES	EXPORTS 1984 (1000 US $)	IMPORTS 1975 PERCENT IN TOTAL	IMPORTS 1983 PERCENT MANUFACTURES	IMPORTS 1984 PERCENT MANUFACTURES	IMPORTS 1984 (1000 US $)
01	Meat and meat preparations	0.881	0.063	0.067	18899	0.262	0.968	0.364	72647
02	Dairy products and eggs	0.009	0.091	0.087	24340	0.034	0.083	0.074	14806
032	Fish n.e.s. and fish preparations	0.832	0.418	0.409	114792	0.002	0.008	0.014	2717
0422	Rice,glazed or polished not otherwise worked	0.000	0.000	0.000	53	0.098	0.000	0.000	64
046	Meal and flour of wheat or of meslin	0.000	0.000	0.000	66	0.079	0.000	0.000	1
047	Meal and flour of cereals,except above	0.000	0.000	0.000	50	0.001	0.000	0.000	0
048	Cereals preparat. & starch of fruits & vegetab.	0.098	0.028	0.029	8168	0.023	0.018	0.015	2896
052	Dried fruit	0.002	0.000	0.000	101	0.007	0.032	0.018	3601
053	Fruit,preserved and fruit preparations	0.035	0.058	0.050	14085	0.028	0.051	0.057	11295
055	Vegetables,roots & tubers,preserved or prepared	0.617	0.183	0.126	35340	0.045	0.040	0.046	9262
06	Sugar,sugar preparations and honey	2.633	0.419	0.235	65873	4.572	1.392	1.090	217534
0713	Coffee extracts,essences,concentrates & similar	0.003	0.002	0.003	936	0.002	0.001	0.000	89
0722	Cocoa powder,unsweetened	...	...	...	...	0.004	0.014	0.016	3196
0723	Cocoa butter and cocoa paste	...	...	...	...	0.016	0.016	0.009	1703
073	Chocolate and related food preparations	0.002	0.002	0.002	531	0.001	0.001	0.003	510
074	Tea and mate	0.002	0.002	0.002	537	0.000	0.000	0.000	37
081	Feeding-stuff for animals	0.032	0.007	0.008	2345	0.033	0.553	0.384	76705
09	Miscellaneous food preparations	0.518	0.122	0.121	33954	0.063	0.063	0.051	10255
11	Beverages	0.024	0.023	0.028	7967	0.087	0.018	0.041	8141
122	Tobacco manufactures	0.005	0.049	0.031	8835	0.005	0.004	0.000	18
2219	Flour and meal of oil seeds,nuts,kernels	0.000	0.000	0.000	13	0.000	...	...	...
231	Crude rubber,synth. & reclaimed(excl.SITC 2311)	0.000	0.051	0.043	12183	0.334	0.522	0.488	97436
243	Wood,shaped or simply worked	0.351	0.083	0.092	25867	0.032	0.205	0.238	47425
251	Pulp and waste paper	0.001	0.002	0.001	340	2.147	1.668	1.794	358145
2626	Wool shoddy	...	0.000	...	...	0.001	0.009	0.007	1486
2627	Wool or other animal hair,carded or combed	0.000	...	...	...	0.003	0.002	0.003	663
2628	Wool tops	0.217	0.001	0.003	839	0.030	0.156	0.140	27925
2629	Waste of wool and other animal hair n.e.s.	...	0.003	0.003	860	0.024	0.007	0.014	2820
263	Cotton	0.000	0.010	0.016	4360	5.508	3.320	3.085	615978
266	Synthetic and regenerated(artificial) fibres	0.163	0.102	0.268	75309	0.859	0.455	0.387	77331
267	Waste materials from textile fabrics(incl.rags)	0.041	0.017	0.013	3568	0.044	0.042	0.044	8730
332	Petroleum products	2.101	2.791	2.861	803389	1.505	3.866	3.223	643465
4	Animal and vegetable oils and fats	0.021	0.018	0.015	4149	1.168	0.878	0.870	173674
411	Animal oils and fats	0.005	0.000	0.000	53	0.921	0.381	0.470	93773
421	Fixed vegetable oils,soft(incl.SITC 422)	0.003	0.015	0.007	2096	0.078	0.410	0.329	65659
431	Animal and vegetable oils and fats processed	0.013	0.003	0.007	2000	0.169	0.087	0.071	14243

Table A-15 (continued)

Product mix of traded manufacturing goods, 1975, 1983, 1984 */

SITC	DESCRIPTION OF TRADE GOODS	EXPORTS 1975 PERCENT IN TOTAL MANUFACTURES	EXPORTS 1983 PERCENT IN TOTAL MANUFACTURES	EXPORTS 1984 PERCENT IN TOTAL MANUFACTURES	EXPORTS 1984 (1000 US $)	IMPORTS 1975 PERCENT IN TOTAL MANUFACTURES	IMPORTS 1983 PERCENT IN TOTAL MANUFACTURES	IMPORTS 1984 PERCENT IN TOTAL MANUFACTURES	IMPORTS 1984 (1000 US $)
5	Chemicals	1.651	3.194	3.270	918341	17.477	14.183	14.013	2797785
51	Chemicals elements and compounds	0.909	0.991	0.951	267018	8.633	7.563	7.542	1505921
52	Tar and chemicals from coal,petroleum,nat. gas	0.139	0.101	0.111	31123	0.086	0.168	0.326	65072
53	Dyeing,tanning and colouring materials	0.058	0.103	0.113	31751	1.744	1.303	1.150	229693
54	Medicinal and pharmaceutical products	0.214	0.120	0.116	32443	0.608	0.660	0.597	119126
55	Essential oils and perfume materials	0.049	0.064	0.062	17274	0.478	0.453	0.397	79307
56	Fertilizers,manufactured	0.001	0.833	0.868	243615	3.093	0.197	0.247	49382
57	Explosives and pyrotechnic products	0.011	0.043	0.049	13758	0.002	0.077	0.107	21051
58	Plastic materials,regenerated cellul. & resins	0.194	0.886	0.903	253648	2.025	2.486	2.360	471180
59	Chemical materials and products n.e.s.	0.075	0.054	0.099	27712	0.809	1.277	1.286	256751
6	Manufactured goods classified by material	32.705	29.790	26.196	7356083	19.137	18.640	18.839	3761410
61	Leather manufactured n.e.s. & dressed fur skins	0.221	0.193	0.224	62847	1.456	2.169	1.974	394071
62	Rubber manufactures n.e.s.	2.010	1.687	1.803	506330	0.121	0.492	0.264	52633
63	Wood and cork manufactures(excl.furniture)	5.031	0.688	0.396	111302	0.025	0.249	0.246	49109
64	Paper,paper board and manufactures thereof	0.813	0.531	0.453	127314	0.514	0.600	0.584	116654
65	Textile yarn,fabrics,made-up articles	14.343	10.357	9.264	2601459	5.618	3.141	3.013	601489
66	Non-metallic mineral manufactures,n.e.s.	2.362	1.825	1.292	362683	0.676	1.469	1.501	299685
67	Iron and steel	5.117	7.877	7.299	2049649	7.620	5.730	6.580	1313820
68	Non-ferrous metals	0.177	0.645	0.470	131984	1.515	2.864	2.720	543151
69	Manufactures of metal,n.e.s.	2.631	5.987	4.995	1402515	1.592	1.927	1.957	390797
7	Machinery and transport equipment	15.495	33.764	36.725	10312485	42.217	46.880	49.068	9796846
71	Machinery,other than electric	1.687	2.950	2.988	838983	18.784	16.983	16.401	3274582
72	Electrical machinery,apparatus and appliances	9.748	12.844	14.042	3942932	11.329	16.302	16.269	3248277
73	Transport equipment	4.060	17.971	19.695	5530570	12.104	13.596	16.397	3273887
8	Miscellaneous manufactured articles	41.563	29.205	29.294	8225745	4.150	5.905	5.606	1119333
81	Sanitary,plumbing,heating & lightning fixtures	0.022	0.066	0.075	21075	0.041	0.134	0.139	27808
82	Furniture	0.239	0.276	0.255	71580	0.047	0.096	0.084	16756
83	Travel goods,handbags and similar articles	1.756	1.738	1.620	454939	0.002	0.004	0.005	1055
84	Clothing	25.378	15.880	16.029	4501014	0.084	0.075	0.076	15078
85	Footwear	4.227	5.300	4.815	1352057	0.002	0.007	0.012	2390
86	Professional,scient. & controll. instruments	1.499	1.323	1.306	366765	1.887	2.879	2.645	528153
89	Miscellaneous manufactured articles,n.e.s.	8.440	4.621	5.193	1458316	2.087	2.711	2.645	528093
		1975		1983	1984	1975		1983	1984
	TOTAL MANUFACTURES	4522543		23306697	28080405	4522481		16091667	19965928
	TOTAL: SITC 5-8 LESS 68 a/	4126205		22213315	26680670	3684321		13315075	16932222
	TOTAL TRADED GOODS: SITC 0-9	5070601		24436930	29247888	7271004		26173742	30608610

Note:Data and SITC descriptions refer to SITC revision 1
*/ This table is based on the definition of trade in manufactures covering a list of 148 specifically identified SITC 3-digit or 4-digit codes comprising a wide range of processing stages of manufactured goods.
a/ Definition of trade in manufactures SITC 5-8 less 68 is one of the most often found. It covers only items recognized as exclusively manufactured goods,i.e. with a high level of manufacturing content.
Source: UNIDO data base;Information supplied by the United Nations Statistical Office.

Korea, Republic of

Table A-16.

SHARES OF EXPORTS AND IMPORTS CLASSIFIED ACCORDING TO LEVEL OF PROCESSING 1975 AND 1983 AND TREND GROWTH RATES 1975-1980 AND 1980-1983

CLASSES	EXPORTS				IMPORTS			
	CLASS SHARE OF TOTAL (PERCENTAGE)		CLASS GROWTH RATE (PERCENTAGE)		CLASS SHARE OF TOTAL (PERCENTAGE)		CLASS GROWTH RATE (PERCENTAGE)	
	1975	1983	1975-1980	1980-1983	1975	1983	1975-1980	1980-1983
A : Non-processed goods for further processing	3.48	1.54	12.54	3.44	40.96	37.90	26.75	-1.73
B : Processed goods for further processing	14.60	12.89	30.06	3.77	19.46	16.18	25.08	0.94
C : Non-processed goods for final use	7.44	3.08	18.43	0.40	0.84	3.72	61.10	20.33
D : Processed goods for final use	74.47	82.50	27.82	12.97	38.74	42.20	26.89	11.54
		1975		1983		1975		1983
Sum of classes: A+B+C+D in 1000 current US$		5070601		24423804		7271004		26173470
Total trade SITC 0-9 in 1000 current US$		5070601		24436930		7271004		26173742

SOURCE: UNIDO data base; Information supplied by the United Nations Statistical Office, with estimates by the UNIDO Secretariat.

Note: Calculations are based on current us dollar prices.
Sum of classes and Total trade figures should be identical. Discrepancies or zero values are due to lack of countrys" trade reporting in general, but especially at the 3-, 4- and 5-digit SITC level.

Table A-17. Foreign investment [a/] and share of foreign ownership in total and industry, cumulative[b/], 1962 - 1985

Ratio[c/]	Total	Under 25%	25-49%	50%	51-99%	100%
Industry	$ mill	$ mill	$ mill	$ mill	$ mill	$ mill
Agriculture & Fisheries	19.3	0.2	8.9	3.4	1.4	5.5
Agriculture	10.3	0.1	4.2	1.6	1.4	3.0
Fisheries	9.0	0.1	4.8	1.7	-	2.5
Mining & Manufacturing	1,574.9	107.2	206.2	618.3	227.2	416.0
Mining	4.4	0.2	1.9	0.9	0.4	1.0
Manufacturing	1,570.4	106.9	204.3	617.3	226.8	415.0
Foodstuff	70.8	3.1	7.3	20.2	36.5	3.6
Textile & Garments	72.5	8.1	2.8	23.3	36.0	2.4
Wood products	1.1	-	0.2	-	-	0.9
Chemicals	378.4	6.2	41.8	204.0	16.2	110.3
Medical products	77.0	2.2	5.0	26.4	33.3	10.2
Fertilizer	42.0	-	17.7	24.3	-	-
Petroleum	36.5	5.0	0.8	30.7	-	-
Ceramics	28.5	5.1	7.2	-	12.1	4.2
Metals	72.7	6.3	13.0	14.0	25.2	14.1
Machinery	277.5	20.8	35.7	167.9	14.5	38.6
Electric & Electronics	386.2	35.0	49.0	54.1	38.7	209.3
Transportation	66.6	13.8	0.3	45.9	5.8	0.8
Others	60.6	1.3	23.6	6.5	8.6	20.6
Social Overhead Capital	1,060.8	42.7	169.6	122.0	152.2	574.3
Financing	121.3	37.7	46.5	34.1	1.0	2.0
Construction	111.2	2.8	11.4	16.5	13.3	67.2
Electricity	3.4	-	3.4	-	-	-
Transportation & Storage	32.0	-	13.4	12.0	6.6	-
Hotel & Tourism	793.0	2.2	95.0	59.5	131.4	505.1
Total	2,655.0	149.0	384.7	743.7	380.8	995.8

Source: Ministry of Finance, 1986, Appendix Two, Table III, p.101.

a/ Approval basis.

b/ In current prices.

c/ Ratio of foreign ownership to total, in percent.

Table A-18. Relative importance of small and medium manufacturing industry, 1970, 1975 and 1982

		Number of Establishments		Number of Employees		Gross Output		Value added	
		No.	Composition per cent	No.	Composition per cent	Won billion	Composition per cent	Won billion	Composition per cent
1970	Small & medium	23,406	97.1	421,558	49.0	403.7	30.2	156.6	28.5
	Large establishment	708	2.9	439,483	51.0	930.8	69.8	393.2	71.5
	Total	24,114	100.0	861,041	100.0	1,334.5	100.0	549.8	100.0
1975	Small & medium	21,914	96.2	648,955	45.7	2,509.2	30.7	895.8	31.7
	Large establishment	873	3.8	771,189	54.3	5,661.0	69.3	1,932.4	68.3
	Total	22,787	100.0	1,420,144	100.0	8,170.0	100.0	2,828.2	100.0
1982	Small & medium	35,805	97.3	1,128,453	53.8	17,676.4	34.4	6,261.7	36.2
	Large establishment	994	2.7	970,334	46.2	33,881.6	65.6	11,044	63.8
	Total	36,799	100.0	2,098,787	100.0	51,649	100.0	17,305.6	100.0

Source: Small and Medium Industry Promotion Corporation, Major Statistics of Small and Medium Industries, 1984, Tables 4-10a, 4-10b and 4-10c, pp.45-47.

Table A-19A. Regional distribution of SMI in manufacturing, 1982

	Establishments		No. of employees		Gross Output	
	Number	Per cent	'000	Per cent	Won bill.	Per cent
Seoul	10,700	29.9	295.3	26.2	3,823	21.5
Pusan	4,500	12.6	157.5	14.0	2,424	13.6
Taegu	3,500	9.9	112.0	9.9	1,321	7.4
Inchon	1,400	4.0	67.7	6.0	1,367	7.7
Kyonggi	5,400	15.0	221.0	19.6	3,642	20.5
Kangwon	900	2.5	15.2	1.3	446	2.6
Chungchongbuk	700	1.8	15.9	1.4	329	1.9
Chungchongnam	1,700	4.7	45.9	4.1	792	4.5
Chollabuk	1,200	3.3	28.8	2.5	379	2.1
Chollanam	2,100	5.8	42.4	3.8	711	4.0
Kyongsangbuk	1,600	4.4	51.3	4.5	778	4.4
Kyongsangnam	2,000	5.5	71.8	6.4	1,711	9.6
Cheju	200	0.5	3.7	0.3	46	0.3
TOTAL	35,800	100.0	1,128.5	100.0	17,767	100.0

Source: Small and Medium Industry Promotion Corporation, Major Statistics of Small and Medium Industries, Table 4-11, p.48.

Table A-19B. Regional distribution of Small and Medium Mining and Manufacturing Industry (SMI), 1982

	Establishments		Employment		Value added	
	Number	SMI Per cent	'000	SMI Per cent	Won mill.	SMI Per cent
Seoul	10,728	98.4	449	65.7	2,943,581	36.2
Pusan	4,653	96.8	345	45.7	1,708,479	45.3
Taegu	3,586	98.5	148	75.5	842,000	59.5
Inchon	1,548	93.6	150	45.2	1,315,647	31.7
Kyonggi	5,555	96.9	358	61.7	2,948,742	46.3
Kangwon	879	99.3	19	80.9	159,799	71.2
Chungchongbuk	677	96.6	38	41.5	365,202	34.2
Chungchongnam	1,743	97.5	90	51.1	850,285	32.2
Chollabuk	1,206	97.3	55	52.2	440,141	31.0
Chollanam	2,083	98.8	63	66.9	945,277	22.9
Kyongsangbuk	1,655	95.7	121	42.5	1,630,437	16.9
Kyongsangnam	2,155	93.0	258	27.8	3,137,363	17.4
Cheju	197	100.0	3	100.0	18,683	100.0
TOTAL	36,799 (a)	97.3	2,099	53.8	17,305,636	36.2

(a) Total does not add up correctly, even adjusting the obviously incorrect figure for Seoul from 20,883 to the correct manufacturing plus mining figure of 10,728.

Source: Korea Federation of Small Business, Promotion Policy for Small Business in Korea, Seoul, 1985, Table 7, p.8.

Table A-20. Scope and Structure of Export Promotion Measures, 1962-78

	Official Exchange Rate (A)	Export Premium (B)	Direct Subsidy (mill. won)	Reduction of Internal Tax (mill. won)	Tariff Reduction[a/] (mill.won)	Tariff Rebate (mill. won)	Interest Subsidy by Collection[b/] (mill.won)	Interest Subsidy[c/] (mill. won)	Total Export (mill. won)	Exports Subsidy Mill.$)	Export Subsidy (won) (C)	Export and Premium D=B+C	Subsidy/ Exchange Rate (D/A, %)
1962	130.0	-	566	310	255	-	-	34	1,165	54,8	21.3	21.3	16.4
1963	30.0	39.8	354	527	571	-	-	147	1,599	86,8	18.4	58.2	44.8
1964	13.7	39.7	350	992	1,197	-	-	161	2,700	119,1	22.7	62.4	29.2
1965	266.7	-	-	2,398	2,692	-	-	513	5,603	175,1	32.0	32.0	12.0
1966	271.0	-	-	5,021	5,333	-	-	1,080	11,434	250,3	45.7	45.7	16.9
1967	269 5	-	-	7,724	8,224	-	-	3,636	19,584	320,2	61.2	61.2	22.7
1968	276.9	-	-	11,127	19,261	-	-	6,290	36,678	455.2	80.6	80.6	29.1
1969	288.7	-	-	17,207	22,551	-	-	9,974	49,732	622.5	79.9	79.9	27.7
1970	311.1	-	-	26,827	35,613	-	-	15,164	77,604	835.2	92.9	92.9	29.9
1971	350.8	-	-	41,852	54,333	-	-	23,341	119,526	1,067.6	112.0	112.0	31.9
1972	394.0	-	-	47,453	111,208	-	-	20,907	179,568	1,624.1	110.6	110.6	28.1
1973	398.3	-	-	64,845	210,788	-	-	33,360	308,993	3,225.0	95.8	95.8	24.1
1974	406.0	-	-	101,763	248,998	-	-	40,198	390,959	4,460.4	87.7	87.7	21.6
1975	484.0	-	-	169,129	171,563	3,778	59,562	380,070	5,081.0	74.8	74.8	15.5	
1976	484.0	-	-	259,268	125,586	258,000	10,933	77,850	731,637	7,715.1	94.8	94.8	19.6
1977	484.0	-	-	479,893	116,301	308,600	14,114	100,491	1,019,399	10,046.5	101.46	101.46	21.0
1978	484.0	-	-	691,460	140,758	355,800	20,490	161,489	1,369,997	12,710.6	107.78	107.78	22.3

a/ Includes exemption or reduction of tariffs by Tariff Law 28, 29 and 32 (equipments of major industries, re-exports, and raw materials for exports) and by regulations for foreign capital introduction.

b/ Postponed tariff collection x annual rate of discount rate on bills x 1/4 (multiplied by one-fourth since the average grace period is three months).

c/ Outstanding export loans x (discount rate on bills for prime firms - lending rate for exports).

Source: Wang 1983, p. 12.

Table A-21. Import liberalization by sector up to 1984 and advance notice schedule of import liberalization, 1984-1988

Sector	Total import items No. a/	Number of Items: Liberalized up to 1984	Number of Items: Still restricted in 1983	Number of items to be liberalized: 1984	1985	1986	1987	1988	Number of items still excluded in 1988	Liberalization Ratio Summary: 1983	1988
										Per cent	
Primary (Food and Drink)	1,386	1,018 (73.4)	368	30 (75.6)	30 (77.8)	32 (80.1)	-	-	276	73.4	79.4
Chemical goods	2,182	2,063 (94.6)	119	10 (95.6)	14 (95.6)	46 (97.7)	35 (99.4)	-	14	94.5	99.4
Iron and steel products	802	728 (90.8)	74	16 (92.8)	17 (94.9)	31 (98.8)	6 (99.5)	-	4	90.8	99.5
Machinery	1,414	979 (69.2)	435	123 (77.9)	75 (83.2)	86 (89.3)	54 (93.1)	95 (99.9)	2	69.2	99.9
Electric and electronic machinery and appliances	495	254 (51.3)	241	53 (62.0)	59 (73.9)	64 (87.0)	48 (96.6)	17 (100)		51.3	100.0
Textiles (incl. leather garments	1,089	870 (79.9)	219	114 (90.4)	33 (93.4)	33 (96.1)	19 (97.9)	-	20	79.9	97.9
Others	547	443 (81.0)	104	6 (82.1)	9 (83.7)	17 (86.8)	12 (89.0)	-	60	81.0	89.0
Total	7,915	6,355 (80.3)	1,560	352 (84.7)	237 (87.7)	309 (91.6)	174 (93.8)	112 (95.2)	376	80.3	95.2

a/ Figures represent number of import items in each category.

Source: Based on and partly calculated from Chungsoo Kim with assistance of Bonghun Lee and Sungjung Oh, Effects of Neo Protectionism on the Korean Exports, Korea Institute for Economics and Technology (KIET), Seoul, May 1986, Table 41, p.182, quoting Ministry of Trade and Industry (MTI).

Note: Numbers in brackets refer to the percentage of imported items it is intended liberalizing or which have been liberalized (i.e. for which import controls have been or will be abolished) year by year.

Table A-22. Import liberalization ratio and average tariff rate, 1978-1988

	Import Liberalization ratio[a/]	Average tariff rates			
		Raw materials	Intermediate products	Final products	Total
		Per Cent			
Pre-May 1978	53.9	...	...	...	...
1978	62.8	...	...	...	...
1979	68.1	...	...	...	...
1980	68.6	...	...	...	24.9
1981	74.7	...	...	...	24.9
1982	76.6	...	...	...	23.7
1983	80.3	11.9	21.5	26.4	22.6
1984	84.7	11.0	18.7	24.9	20.9
1985	87.7	...	...	...	20.3
1986	91.6	...	...	...	18.7
1987	93.8	...	...	...	18.2
1988	95.2	9.8	17.1	19.0	16.9

a/ The proportion of import items which are given automatic import approval in relation to the total number of imported items. The remainder are specified on the "Negative List" and are official restricted.

Sources: KTA, Doing Business with Korea 1985, pp.44 and 46.

Korea Exchange Bank, Businessman's Guide to Korea, 1984 pp.126, 127, 129.

EPB, Economic Survey: Annual Report of the Korean Economy, 1984, Table 1-2-2, p.17.

Ministry of Finance, Customs Policy Division, 1986, (internal memo).

This report, Table A-2.

Note: Where the figures differed among the sources used the Ministry of Finance figures have been preferred.

Table A-23. Strategies of Republic of Korea Economic Development Plans, 1962-1991

Plan Title / Contents of Plans	The First 5-Year Plan (1962-1966)	The Second 5-Year Plan (1967-1971)	The Third 5-Year Plan (1972-1976)	The Fourth 5-Year Plan (1977-1981)	The Fifth 5-Year Plan (1982-1986)	The Sixth 5-Year Plan (1987-1991)
Plan Targets	1. Correction of vicious circle of social and economic aspects.	1. Modernization of industrial structure.	1. Balanced growth stabilization and a balanced economy.	1. Growth, equity and efficiency.	1. Stabilization, efficiency, and balance.	1. Reduction in net external debt.
	2. Establishment of the foundation of a self-sustaining economy.	2. Acceleration of self-sustaining economy.	2. Realization of self-sustaining economic structure.	2. The creation of economic structure for self-sustaining growth.	2. Completion of the foundation for economic stabilization.	2. A surplus of domestic savings over domestic investment (i.e. surpluses on current account).
			3. To ensure balanced regional development.	3. Promotion of social development.	3. Increase in job opportunity and income.	3. Setting the stage for "an advanced economy and improved people's welfare" with an emphasis on efficiency and equity.
				4. Technological innovation and raising of efficiency.	4. Promotion of national welfare.	4. Reduced unemployment rate.
						5. Introduction of national pension scheme, a medical insurance system and a minimum wage.

continued

Table A-23 (continued)

Content	Plan Title of Plans	The First 5-Year Plan (1962-1966)	The Second 5-Year Plan (1967-1971)	The Third 5-Year Plan (1972-1976)	The Fourth 5-Year Plan (1977-1981)	The Fifth 5-Year Plan (1982-1986)	The Sixth 5-Year Plan (1987-1991)
Annual rate of economic growth a/		7.1% (8.5%)	7.0% (9.7%)	8.6% (10.1%)	9.2% (5.5%)	7.6% (8.6%) b/	7.2%
Development Strategy (policy)		1. Correction of structural imbalance in national economy caused by increase in agricultural productivity.	1. Self-sufficiency in food and development of water resources.	1. Self-sufficiency in major food grains.	1. Self-reliance in investment financing.	1. Price stabilization.	1. Increase of savings.
		2. Securing of resources for supplying energy.	2. Establishment of the foundation for rapid development of industries (chemical, iron and steel, and machinery).	2. Improvement of living standards in farming and fishery villages.	2. An equilibrium in the balance of payments.	2. Nurturing of comparative advantage industries.	2. Increase of exports to enable a net transfer of resources out of the economy.
		3. Expansion of basic industry and sufficient supply of social overhead capital.	3. $700 million worth export performance and acceleration of import substitution industries - improvement in the balance of payments.	3. Promotion of manufacturing through the build-up of heavy and chemical industries.	3. Change in industrial structure and rapid development thereof.	3. Maximization of investment efficiency.	3. Continuation of trade and financial liberalization policy.
		4. Utilization of idle resources.	4. Increase of employment, expedite family planning measures and restrain population growth.	4. Promotion of science and technology and development of manpower.	4. Expansion of Saemaul (New Community Movement).	4. Promotion of marketing competition.	4. Special measures to attract direct and portfolio foreign investment.

continued

Table A-23 (continued)

Plan Title / Contents of Plans	The First 5-Year Plan (1962-1966)	The Second 5-Year Plan (1967-1971)	The Third 5-Year Plan (1972-1976)	The Fourth 5-Year Plan (1977-1981)	The Fifth 5-Year Plan (1982-1986)	The Sixth 5-Year Plan (1987-1991)
	5. Improvement of the balance of payments.	5. Diversification of farming and increase in farm income.	5. A balanced expansion of social overhead capital.	5. Increased investment in science and technology.	5. Acceleration of liberalization, or market-opening to foreign goods.	5. Prudent and flexible fiscal, monetary and exchange rate policies.
	6. Promotion of technology.	6. Promotion of science and management technology and increase in productivity.	6. Efficient development of national land resources and optimum dispersion of industries and population.	6. Management of economy and system improvement.	6. Resolution of management labour disputes.	6. Budget deficits to remain under 2% of GNP.
			7. Social security and promotion of national welfare.		7. Expansion in social development.	7. Fiscal policy will be more socially directed. 8. Use of a managed, but competitive, exchange rate. 9. Shift from sectoral to functional supports for industry. 10. Shift of support from large- to small-scale industry
Principles of industrialization	Adjustment of the foundation of industrialization.	Outward-oriented industrialization.	The build-up of export-oriented heavy and chemical industries.	Development of technological and skilled-labour intensive industries.	To attain a stage of advanced industrialization.	To continually upgrade the degree of sophistication of the economy.

a/ GDP growth rates. Note: ( ) = rate of growth actually achieved.
b/ Estimated.

Sources: Korean Business Review, September 1986, p.43, based on Economic Planning Board (EPB), Reublic of Korea.
Information on the Sixth Plan derived from UNIDO and World Bank sources.

Table A-24. Summary of Industrialization in Republic of Korea

	The First 5-Year Plan (1962-1966)	The Second 5-Year Plan (1967-1971)	The Third 5-Year Plan (1972-1976)	The Fourth 5-Year Plan (1977-1981)	The Fifth 5-Year Plan (1982-1986)	The Sixth 5-Year Plan (1987-1991)
Development Strategy of Manufacturing Sector	Nurturing of basic industry and adjustment of social overhead capital (the establishment of the foundation for self-sustaining industries).	Capital goods import substitution and exportation of light manufactured goods (outward looking industrialization).	The build-up of heavy and chemical industries (change in industrial structure).	Change in industrial structure and promotion of competitiveness (realization of economic structure for self-sustaining growth).	Advanced industrialization as as seen in developed countries (Development of intelligence and information intensive industries).	Restructuring to take account of changing compara-advantages.
Annual rate of economic growth a/	7.1% (8.5%)	7.0% (9.7%)	8.6% (10.1%)	9.2% (5.5%)	7.6% (8.6%) b/	7.2%
Annual rate of growth in mining and manufacturing	(14.2%)	(19.8%)	(18.1%)	(10.3%)	(9.6%) c/	
Ratio of mining and manufacturing sector to total industries (Target Year)	(25.7%)	(20.9%)	(29.5%)	(21.3%)	(29.9%) c/	
Ratio of heavy and chemical industries to manufacturing sector (Target Year)	(36.0%)	(37.3%)	(45.6%)	(51.8%)	(57.0%) c/	

continued

Table A-24 (continued)

	The First 5-Year Plan (1962-1966)	The Second 5-Year Plan (1967-1971)	The Third 5-Year Plan (1972-1976)	The Fourth 5-Year Plan (1977-1981)	The Fifth 5-Year Plan (1982-1986)	The Sixth 5-Year Plan (1987-1991)
Ratio of heavy and chemical industries' exports to total manufacturing exports	(10.2%)	(14.2%)	(29.8%)	(45.3%)	..	
Sectors emphasized	Electricity, fertilizers, oil refining, synthetic fibres (nylon yarn), cement, PVC.	Synthetic fibres (polyester yarn) petrochemicals, electrical appliances (TV and refrigerator).	Iron and steel, transport machinery, household electronics (TV transistor), ship building, petrochemicals.	Iron and steel, industrial machinery and equipment, electronic appliances, components and parts, shipbuilding.	Precision machinery, electronics industry, intelligence and information industries.	Machinery, precision machinery, machine parts; science and hi-tech, based industries.
Ratio of growth in mining and manufacturing to economic growth.		(34.2%)	(38.7%)	(30.8%)	(37.0%) c/	

a/ GDP growth rates.
b/ Estimated.
c/ 1982 - 1984.

Sources: Korean Business Review, September 1986, pp.45/46, based on Economic Planning Board (EPB), Republic of Korea.
Note: ( ) = rate of growth actually achieved.

Table A-25. The Sixth Five Year Plan, 1987-1991

(A) Major Social and Economic Indicators

	Unit	1986	1987	1988	1989	1990	1991
GNP growth rate per annum[a/]	per cent	9.0	7.5	7.5	7.3	7.0	7.0
Total GNP	current $ bill.	92.8	103.9	117.7	132.8	147.8	166.0
	1980 prices $ bill.	92.2	103.7	110.2	119.0	127.8	138.6
Per capita GNP	current $	2,232	2,474	2,767	3,081	3,396	3,800
	1980 prices $	2,218	2,464	2,587	2,761	2,931	3,143
Total population	'000	41,569[d/]	42,082	42,593	43,097	43,601	44,094[e/]
Economically active population	'000	15,475	...	...	...	...	17,302
Proportion in manufacturing	per cent	24.3	...	...	...	...	25.7
Unemployment rate	per cent	4.0	3.7	3.6	3.6	3.7	3.7
Total investment ratio	per cent	30.7	30.2	30.6	30.8	30.9	31.0
Domestic savings ratio	per cent	26.6	31.4	32.0	32.4	32.7	33.0
Wholesale price increase	per cent	0.9	2.0	2.0	2.0	2.0	2.0
Consumer price increase	per cent	3.6	3.0	3.0	3.0	3.0	3.0
Tax burden ratio	per cent of GNP	18.8	19.0	19.3	19.7	20.1	20.5

continued

Table A-25 continued

	Unit	1986	1987	1988	1989	1990	1991
Current balance	$ bill.	2.0	2.3	2.7	3.2	3.6	4.0
Exports[b/]	$ bill.	31.7	35.6	39.8	44.5	49.1	54.4
Imports[c/]	$ bill.	29.2	32.6	36.3	40.5	44.7	49.6
Trade balance	$ bill.	2.5	3.0	3.5	4.0	4.4	4.8
Gross external debt	$ bill.	47.5	47.9	48.2	47.8	47.3	46.1
Net external debt	$ bill.	35.7	34.3	32.4	31.6	27.1	23.7
Per farmhousehold current income	Won '000	4,382	4,854	5,171	5,521	5,870	6,253
Housing supply ratio	per cent of "need"	70.1	70.1	70.3	70.6	70.9	71.5
Road pavement ratio	per cent of roads	54	56	60	63	65	70
Students per class in Primary school	number	60	58	56	54	52	50

continued

Table A-25 continued

(B) Korean Economy and Society in 1991

Total population	44 million
Total GNP	$166 billion
Per capita GNP	$3,800
Surplus on current account	$4 billion
Gross external debt	$46.1 billion
Net external debt	$23.7 billion
Average life expectancy	man: 67.3 years woman: 73.9 years
Tapped water supply rate	80 per cent
Telephone supply rate	26 units per 100 persons
Pension receiving rate	58.5 per cent

a/ An average real growth rate of 7.2 per cent per annum over the Plan period is expected.
b/ Growth rate of 11.4 per cent per annum predicted for Plan period.
c/ Growth rate of 11.2 per cent per annum predicted for Plan period.
d/ Growth rate of 1.25 per cent per annum.
e/ Growth rate of 1.10 per cent per annum.

Source: Based on UNIDO and World Bank sources.

Table A-26. R&D Expenditures in the Republic of Korea selected years 1970-1984

	1970	1976	1980	1984
R&D expenditures (Won, mill.)	10,548	60,900	211,727	833,894
Government sources (Won, mill.)	7,414	39,462	109,282	178,172
Private sources (Won, mill.)	3,023	21,438	102,445	655,722
Government: Private	70:30	65:35	52:48	21:79
GNP (Won, billion)	2,735	13,881	36,672	66,408
R&D/GNP (per cent)	0.39	0.44	0.58	1.26
R&D per capita (Won '000)	327	1,699	5,553	20,583
($)	1,033	3,510	8,415	24,877
Number of researchers	5,628	11,661	18,434	37,103
Number of researchers per 1,000 population	0.17	0.33	0.48	0.92
Patents	218	567	647	1,123
Utilities	1,145	1,115	1,753	2,360
Private R&D centres	1	12	51	152
Engineering consultant firms	1	127	194	193

Sources: Kim, Linsu Technological Transformation in Korea: Progress Achieved and Problems Ahead. Paper commissioned by the World Institute of Development Economic Research (WIDER), the United Nations University, Helsinki, 31 August 1986 (mimeo) Table 4-4, p.45 and EPB, Major Statistics of Korean Economy, 1986, Table 11-3, p.266.

Table A-27. R&D Expenditure-to-sales ratios
(A): Country Comparisons 1983 and 1984

Industry	Republic of Korea (1984)	Japan (1983)	USA (1984)
Industry average	1.01	2.03	2.88
Manufacturing	1.27	2.31	2.84
Food	0.65	0.70	0.87
Textiles	0.82	0.90	0.81
Pulp and paper	0.56	0.55	0.98
Chemicals	0.71	1.96	1.94
Petrochemicals	0.31	0.49	0.91
Nonferrous metals	0.99	1.82	2.44
Machinery	2.25	3.38	4.27
General	1.45	2.57	3.53
Electrical	3.51	4.70	5.19
Transportation	1.21	2.66	3.61
Precision	3.07	4.02	5.98
Others	1.38	1.40	2.58

R&D Expenditure-to-sales ratios
(B): Republic of Korea, 1977/1980/1983

Industries	1977	1980	1983
Food	0.34	0.36	0.70
Textile and clothing	0.48	0.53	0.73
Wood products	0.36	0.34	0.66
Pulp and paper			0.65
Industrial chemicals			0.58
Other chemicals			1.62
Petroleum refining			0.08
Rubber products	0.78	0.26	0.98
Plastic products and miscellaneous			1.74
Ceramics	1.45	0.52	0.77
Iron and steel	0.52	0.18 (0.33)	0.28
Nonferrous metals		0.54	0.55 (0.43)
Fabricated metals			0.93
Electrical machinery	2.70	1.90	3.01
Machinery	0.99	1.23 (0.78)	2.00
Transport equipment		0.62	1.48 (1.63)
Precision machinery		1.64	1.28
Other manufacturing	2.68	0.16	1.30
Total	0.95	0.50	0.80

Source: World Bank data based on MOST, Science and Technology Annual and Korea Industrial Research Institute (KIRI) information.

Table A-28. Research intensity among the 10 largest companies in the Republic of Korea, 1983

Type of Company	No. of companies in Republic of Korea	Distribution of companies in world's top 806 companies	Sales of Republic of Korea companies		Employment in Republic of Korea companies	
			$ bill.	Per centage Share	'000	Per centage Share
High Research Intensity:						
Total	1	275	7.2	14.9	102	23.1
of which: Electronics & electrical appliances	1	62	7.2	14.9	102	23.1
Medium Research Intensity:						
Total	4	217	19.9	41.3	219	49.3
of which: Shipbuilding, railroad and transportation equipment	2	9	15.6	32.4	161	36.3
Metal manufacturing and products	2	108	4.3	8.9	58	13.0
Low Research Intensity:						
Total	1	196	2.1	4.4	20	4.6
of which: Textiles, apparel and leather goods	1	24	2.1	4.4	20	4.6
Petroleum	4	95	19.0	39.5	102	23.0
TOTAL	10	806[a/]	48.2	100.0	444	100.0

Source: Dunning and Pearce, 1985, Tables 2.1, 2.2 and 2.7, pp.24, 26 and 37.

a/ Includes "other manufacturing" covering 13 firms.

Table A-29. Economically active population, 1966-1985, selected years

000 and per cent

	Population 14 years old and over	(Economically active population			Non-economically active population	Less than 18 hours employed	Labour force participation rate Per cent	Unemployment rate Per cent
		Total	Employed	Unemployed				
1966	29,436	16,367	9,071	8,423	648	7,296	740	55.4	7.1
1971	32,883	18,984	10,542	10,066	476	8,442	490	55.5	4.5
1976	35,849	22,549	13,061	12,556	505	9,488	223	57.9	3.9
1981	38,723	25,969	14,710	14,048	661	11,260	62	56.6	4.5
1985	41,056	28,489	15,554	14,935	619	12,935	112	54.6	4.0

Source: EPB, Major Statistics of Korean Economy, 1986, Tables 1-1a and 2-7.

Note: Years shown are, with the exception of 1985, the final years of the Five Year Plans.

Table A-30. Persons employed by industry, 1966-1985, selected years

000 and per cent

	Employed population Total	Agriculture, forestry & fishing			Mining and Manufacturing			Social overhead capital and services		
		Total	Agri. & forestry	Fishing	Total	Mining	Manufacturing	Total	Construction	Others
1966	8,423	4,876	4,695	181	913	80	833	2,634	209	2,425
	(100.0)	(57.9)	(55.7)	(2.1)	(10.8)	(0.9)	(9.9)	(31.3)	(2.5)	(28.8)
1977	10,066	4,876	4,758	118	1,428	92	1,336	3,762	348	3,414
	(100.0)	(48.4)	(47.3)	(1.2)	(14.2)	(0.9)	(13.3)	(37.4)	(3.5)	(33.9)
1976	12,556	5,601	5,323	278	2,743	65	2,678	4,212	529	3,683
	(100.0)	(44.6)	(42.4)	(2.2)	(21.8)	(0.5)	(21.3)	(33.5)	(4.2)	(29.3)
1981	14,048	4,806	4,560	246	2,996	124	2,872	6,247	875	5,372
	(100.0)	(34.2)	(32.5)	(1.8)	(21.3)	(0.9)	(20.4)	(44.5)	(6.2)	(38.2)
1985	14,935	3,722	3,544	178	3,654	154	3,500	7,559	908	6,651
	(100.0)	(24.9)	(23.7)	(1.2)	(24.5)	(1.0)	(23.4)	(50.6)	(6.1)	(44.5)

Source: EPB, Major Statistics of Korean Economy, 1986, Tables 2-8a and 2-8b.

Notes: (1) Figures in parenthesis are percentages.
(2) Years shown, with the exception of 1985, are the final years of the Five Year Plans.

Table A-31. Persons employed by occupation and type of employment, 1966-1986, selected years

000

	Employed			By occupation						By type of employment				
	Total	Male	Female	Professional technical admin. & mgl. workers	Clerical workers	Sales workers	Service workers	Agr., forestry, fishing & hunting workers	Production workers & equip. ops.	Self-employed	Family workers	Regularly employed	Temporarily employed	Daily workers
1966	8,423	...	...	...	...	...	...	...	...	...	...	...	...	...
1971	10,066	...	...	494	689	1,285	781	4,857	(1,960)	...	...	...	...	...
1976	12,556	7,736	4,820	428	858	1,478	895	5,626	(3,271)	4,263	3,096	2,965	1,086	1,146
1981	14,048	8,687	5,361	790	1,259	2,047	1,204	4,779	3,970	4,734	2,690	4,419	973	1,232
1985	14,935	9,107	5,828	1,087	1,723	2,307	1,621	4,797	4,522	4,661	2,182	5,081	1,623	1,387
1986 1	13,419	8,491	4,928	1,152	1,745	2,273	1,664	2,246	4,359	4,190	1,374	4,719	2,050	1,086
2	13,525	8,555	4,970	1,140	1,754	2,249	1,600	2,414	4,367	4,262	1,457	4,588	2,129	1,089
3	14,611	9,047	5,564	1,138	1,763	2,272	1,602	3,113	4,723	4,577	1,853	4,556	2,266	1,358

Sources: The Bank of Korea, Economic Statistics Yearbook, 1983 (Table 145) and 1985 (Table 122) and Monthly Statistical Bulletin, 1986.6 (Table 76).

Notes: (1) Years shown, with the exception of 1985, are the final years of the Five Year Plans (the first quarter of 1986 is included to provide an indication of the outcome of the final year of the Fifth Plan).

(2) Figures in parenthesis are not directly comparable with others in the column since there appears to have been a slight change in definition.

Table A-32. Indicators of human resource development in the Republic of Korea, 1953-1984, selected years

	1953	1960	1970	1980	1984
Literacy rate (per cent)	22.0	72.1	89.4	(a)	(a)
Enrollment as percentage of corresponding age group					
Elementary school (ages 6-11)	59.6	86.2	102.8	101.0	103.4
Middle school (ages 12-14)	21.1	33.3	53.3	94.6	97.4
High school (ages 15-17)	12.4	19.9	29.3	68.5	77.7
Colleges	3.1	6.4	9.3	...	25.3
Graduates of vocational training centres ('000)	...	...	31.6	104.5	51.8
Number of graduates from tertiary schools (per 10,000 population)	...	10 (b)	11	27	40
Number of scientists and engineers (c)	4,157	16,436	65,687	174,832	271,514

(a) The illiteracy rate after the mid-1970s was so insignificant that the government ceased to collect data on it.

(b) 1965.

(c) Cumulative number of college graduates from 1945.

Source: Kim, Linsu Technological Transformation in Korea: Progress Achieved and Problems Ahead. Paper commissioned by the World Institute of Development Economic Research (WIDER), the United Nations University, Helsinki, 31 August 1986 (mimeo) Table 4-2, p.38.

Table A-33. Consumption patterns of primary energy, 1967/1970/1980/1983/and 1985

Percentage shares

Year	Share in total primary energy consumption					Total
	Coal	Petroleum[a/]	Hydro	Nuclear	Firewood	
	Per cent					
1967	40.0	26.8	1.7	-	31.5	100.0
1970	29.6	47.2	1.5	-	21.6	100.0
1980	29.9	61.3	1.1	2.0	5.7	100.0
1983	33.1	56.2	1.4	4.5	4.8	100.0
1985	38.3	49.1	1.6	7.4	3.6	100.0

a/ Incl. LNG/LPG.

Source: EPB, Major Statistics of Korean Economy, 1986, Table 5-14, p.119.

ANNEX B

Foreign investment in the Republic of Korea: Procedures, incentives and potential investment areas[1/]

1. General information

A. Purpose

The government of the Republic of Korea amended "The Foreign Capital Inducement Act" on 31 December 1983 for promotion of foreign capital inducement and liberalization of advanced technology inducement. The Act became law with effect from 1 July 1984. The object, as stated by the Korea Chamber of Commerce and Industry, "is to induce an open and free competitive economic system and to promote international competitiveness by improving the industrial structure....as it will lift the onerous restrictions and controls covering inducement of foreign capital and technology, which are so necessary for the continuous growth of the economy." It is considered that it will put Korean corporations in a better position for the promotion of international competitiveness and that it will also make the employment of foreign capital easier, together with technology transfer and the development of new overseas markets.

One of the major points of the 1983 amendment was to consolidate legislation into the "Foreign Capital Inducement Act" from different areas of legislation which vary depending on the foreign capital inducement and the nature of the capital. In particular, a negative system is to be adopted listing industries where foreign investments are prohibited, while the previous positive system, listed industries where foreign investment was permitted. Furthermore, restrictions on foreign investment ratios and industries have been substantially reduced.

In accordance with the 1984 Law, approval is not required for any foreign technology inducement; only a report on the licencing arrangement is required.

It is believed that foreign investment into the Republic of Korea will complement the shortage of local capital resources without increasing the debt burden of the country. It will provide the nation with a technology and management capacity which will greatly benefit the economy through joint production ventures, technology improvement, management techniques, capital increase and market development. It is the policy of the government that foreign capital will be encouraged and promoted in place of offshore borrowings, with the object of ensuring that the proportion of foreign investment to total foreign exchange inflow will increase to 7.8 per cent by 1988 from 1.6 per cent in 1983 (on arrival basis). The total foreign investment approved during 1985 amounted to $532 million. Projects recently approved by the government include joint ventures in technology-oriented industries such as electronics, automobile parts, machinery and chemicals.

1/ This annex has been based on material in Ministry of Finance, Investment Guide to Korea (1986), Korean Traders' Association, Doing Business with Korea (1985) and Korea Chamber of Commerce and Industry, A Guide to Investment in Korea, 1985.

This trend also reflects the efforts of Korean industry to achieve transfer of advanced technology and management techniques by way of joint ventures and the improvement of productivity for the promotion of international competitiveness and foreign exchange earnings. Furthermore, industry in the Republic of Korea has made great efforts to develop overseas markets for the promotion of exports and also to secure a stable supply of raw materials through joint venture partnerships.

The Chamber of Commerce and Industry states that "the ultimate purpose of foreign capital inducement is to achieve self-reliance in the economy of the recipient through economic growth and co-operation, (and that therefore) a thorough and careful prior screening and selection policy is needed for the promotion of the national economy. The induced foreign capital should be utilized effectively for the maximum yield to the national economy and the investors."1/

And in the words of the 1983 Act, the government's fundamental policy is to "effectively induce and protect foreign capital conducive to the sound development of the national economy and the improvement of the international balance of payments, and to properly manage such foreign capital."2/

B. Basic features of 1983 revision of the foreign investment policy

(1) It is intended to secure smooth and stable supply of foreign capital and technology which are necessary for continuous economic growth.

(2) The revision is to induce an open foreign investment system which will render local enterprises more flexible and adaptable to any changes in international circumstances. The revision will also contribute to the promotion of international competitiveness.

(3) It is intended to lift and/or alleviate ridgid control and regulation, which will make the economy more private-sector oriented.

(4) More favourable conditions are created to facilitate foreign investment by simplification of the government procedures.

(5) It is designed for equal treatment of pure local corporations and foreign invested corporations. Therefore some of the tax benefits allowed to foreign invested corporations are abolished.

(6) It is to guarantee protection of already existing foreign invested corporations.

(7) The minimum allowable amount or value for foreign investment is $100,000 and there is no ceiling on the maximum.

Most importantly:

(8) Instead of the previous positive system, a negative system is adopted listing the industries where foreign investment is prohibited or restricted.

1/ Op. cit. p.11.

2/ Ministry of Finance, op. cit. p.14.

C. Tax and tariffs regime

In the past, the foreign invested corporations were exempted from corporations tax, income tax, property tax and tariff duties.

Under the new policy of opening doors to foreign investors, foreign invested corporations will be treated equally with local companies in terms of business activities and tax liabilities. Therefore, in principle no tax benefit will be granted to foreign invested corporations except for projects which are considered to be essential to the economy.

As for tariffs, under the previous system total duties were exempted. But under the new system differentiated rates will be applied to the capital good induced depending on the item.

However, tax exemptions and reductions will continue to be permitted when the following criteria apply:

i) Projects that contribute greatly to the improvement of the balance of payments
   - Projects that export more than a certain portion of self-manufactured products
   - Projects that manufacture products which have never been locally produced or with local production capacity which is below a certain level

ii) Projects which require highly sophisticated technology or a huge amount of capital investment
   - Projects which are considered to be essential to the national economy or difficult to develop
   - Projects which are considered to require a huge amount of capital investment from national economic point of view

iii) Investment projects undertaken by Republic of Korea residents abroad

iv) Projects in the Export Processing Zones of Masan and Iri

v) Projects for which the Minister of Finance considers that tax benefits should be inevitably granted for the foreign investment. (Diversification of investors and labour employment effect will be taken into consideration.)

vi) Option for Tax Benefits and Period
   - The foreign investor can have an option of either 100 per cent exemption of taxes for 5 years or special depreciation on capital goods.

As far as tariffs are concerned the Law provides for the following:

i) No benefit (exemption) will be granted for importation of capital goods by the foreign investor for the following industries:
   Agriculture, Forestry, Hunting, Fishing
   Mining
   Electricity and Gas
   Construction
   Wholesale and Retail Trade, Restaurants and Hotels (excluding hotels for tourists)
   Communications
   Banking, Insurance, Real Estate, and Service Industries
   Social and Personal Services

ii) Tariffs will be waived to the extent of 100 per cent for capital goods imported by foreign investors in respect of industries other than those mentioned above. But special exemptions/reductions rate of tariffs can be provided by the Minister of Finance's Regulations subject to approval by the Foreign Capital Inducement Deliberation Committee.

D. The foreign investment ratio

Under the previous policy, the foreign investment ratio was allowed to reach 100 per cent or 50 per cent depending on the industry, but under the current policy, there is no restriction on the foreign investment ratio.

For projects where the foreign investment ratio is less than 50 per cent, approval will be granted automatically and immediately after application.

For projects where the foreign investment ratio is 50 per cent or more, approval will be granted after consultation and review jointly with relevant ministries.

E. Approval of foreign investment projects

Projects which meet the following qualifications will be approved automatically without consultation with relevant ministries.

i) Projects where the foreign investment ratio is less than 50 per cent. However, there is no restriction on the foreign investment ratio for projects which export more than 60 per cent of their manufactured products or for which the basic tariff rate is 10 per cent or more.

ii) Projects where the foreign investment amount is $1 million or less

iii) Projects for which tax benefits are waived

For other projects, approval will be granted after consultation with relevant ministries and screening by the Foreign Capital Inducement Deliberation Committee.

F. Repatriation of foreign capital investment, reinvestment, etc.

i) Restrictions on the withdrawal of the original investment are lifted. Under the old law, withdrawal of the original investment was only approved two years after the investment. However, under the revised law, withdrawal of the original investment is permitted at any time.

ii) Under the old law, reinvestment of dividends by foreign investors was allowed to take place only in the originally investing company. However reinvestment will be granted for any new project under the revised law.

iii) For the promotion of investment by Republic of Korean residents abroad, no condition is imposed regarding the period of residence abroad.

iv) For minor changes in terms and conditions of foreign investment, a simple report only is required.

G. Technology inducement

The inducement of advanced technologies from foreign countries started in 1962 and 2,641 license agreements were concluded by the end of 1983.

Whether strategic importance should be laid on the independent development or on the import of foreign technologies for technical innovation of a country depends on the current state of its technology level and the stage of technological development. In the Republic of Korea, the demand for technology cannot be met adequately by independent development because of the high costs involved. Therefore, it has been considered a desirable policy for the economy to complement the development of its own technologies by introducing advanced technologies from abroad.

Given this policy, the system of technology inducement has been revised several times in the direction of liberalising license agreements in order to acquire promptly up-to-date technologies essential for economic development. As a result, the number of foreign technologies induced have been increasing gradually.

Breaking down the induced foreign technologies by industry, 726 technologies were induced by the machine industry, representing 27.5 per cent of the total, 499 technologies (18.9 per cent) by the electricity and electronics industry and 438 technologies (16.6 per cent) by the oil refining and chemical sector. These were followed by the metal and shipbuilding industries.

Turning to the nationalities of the licensors, most of the technologies were induced from Japan which licensed 1,486 technologies comprising 56.3 per cent of the total and 610 technologies (23.1 per cent) were imported from USA. The other technology exporting countries to the Republic of Korea are the Federal Republic of Germany, UK and France in the order of the number of licensed technologies.

The 1984 Law provides for a simplification of the procedure of technology inducement:

i) Under the previous system, approval of a technology inducement was granted on a selective basis after assessing the contents of licenses and the level of royalties. However, under the revised system, in order to facilitate the inducement of advanced technology, approval is granted automatically if the license period is ten years or less and the rate of royalties is not greater than ten per cent of net sales.

ii) Technical licenses from foreign countries can now be induced simply by report to the relevant Ministers - provided there is no particular disqualification for the country concerned.

2. Selected areas of foreign investment

The most important aspects of the 1984 Law are the introduction of an automatic approval system[1/] and a shift to a negative list system. Thus the range of projects eligible for foreign investment has been substantially widened.

1/ See Section E in this Annex.

The "negative list" consists of two categories of projects: (a) those in which foreign capital is "prohibited" and (b) those in which it is "restricted".

(a) Projects in which foreign investment is prohibited are the following:

- Public projects to be carried out by national or public organizations (water works and supply, human waste removal and disposal services, postal services, telephone and telegraph services, railway transport, manufacture of steamed-and-dried ginseng, manufacture of tobacco products, etc.)

- Projects which cause harm to the health and sanitation of nationals and maintenance of the environment (harmful projects resulting in environmental pollution, etc.)

- Projects which are greatly in violation of established social morals and customs (gambling, etc.)

- Any other projects prescribed by Presidential Decree (publishing newspapers, radio broadcasting, manufacture of grain mill products, etc.)

(b) Projects in which foreign investment is currently restricted[1/] are the following:

- Projects specially supported by the government

- Projects with a high level of energy consumption and a high proportion of imported raw materials

- Projects resulting in heavy pollution

- Projects considered extravagant or resulting in non-productive consumption[2/]

- Projects affecting the subsistence of farmers and fishermen[3/]

- Other projects whose industry is in the initial development state and for which protection is deemed necessary for a certain period (from the point of view of industrial policy)

Detailed lists of the Restricted Projects are selected and publically notified by the Minister of Finance after consultation with the competent Minister.

1/ Projects for which foreign investment is tentatively restricted, will be progressively liberalised for foreign investment reflecting the economic situation. They are prescribed in Article 7 of the FCIA and Article 9 of the Enforcement Decree of the FCIA.

2/ Alternative terminology is: "projects whose products cause luxurious consumption or extravagance".

3/ Alternative terminology is: "projects which endanger the livelihood of farmers and fishermen".

The table below sets out the degree of liberalization so far as foreign investment in the Republic of Korea is concerned. As of October 1985, foreign investment was prohibited in 5.4 per cent of the total number of industrial sub-sectors (note, however, that this total number of sub-sectors of 999 specifically excludes 49 sub-sectors which are not open to foreign investment e.g. government industries and religious and political institutions). Restricted sub-sectors comprise 18.3 per cent of the 999 sub-sectors. In 76.3 per cent of the 999 sub-sectors foreign investment is freely admitted (subject to the various procedures outlined in the previous sections). It is interesting to note, however, that in the manufacturing sector as high a proportion as 92.5 per cent of sub-sectors are categorized as being "allowed" for foreign investment. There are no prohibited sub-sectors in mining and construction.

Table A-B-1. Classification of industry in respect of liberalization for foreign investment, as of October 1985

	Total No. of Industries	Prohibited	Restricted	Allowed
Total	999[a/] (100%)	54 (5.4%)	183 (18.3%)	762 (76.3%)
1. Agriculture, Hunting Forestry and Fishing	40	13	19	8
2. Mining	26	0	5	21
3. Manufacturing	522 (100%)	6	33	483 (92.5%)
4. Electricity, Gas and Water	6	3	0	3
5. Construction	31	0	0	31
6. Wholesale and Retail Trade and Restaurants/Hotels	139	7	27	105
7. Transport, Storage and Communication	53	7	30	16
8. Financing, Insurance, Real Estate and Business Services	75	5	39	31
9. Community, Social and Personal Services	107	13	30	64

a/ Excludes 49 industries, such as government institutions and religious and political organizations, from the total of 1,048 items on the most detailed classification of the KSIC.

Source: Ministry of Finance, Investment Guide to Korea, Seoul, 1986, p.18.

ANNEX C

Technological Innovation: Republic of Korea

Korean production of capital goods began in 1960 with legislation to establish shipbuilding, motor vehicle, general machinery and electronics industries. During the 1970s further policies were adopted to expand machinery production, including a scheme to promote the heavy electrical machinery sector, a plan to develop machine tool and textile and agricultural machinery industry, the selection of 85 key kinds of machinery and of 35 types of specialized machinery for early development, the designation of 72 small machinery makers and a second long-term plan for the machinery sector. These measures were in most cases accompanied by low-interest finance and tax concessions. An Institute for Machinery and Metals, was established to upgrade the technical capability of Korean machinery industries.

Between 1960 and 1975 the share of the machinery industry in total manufacturing output doubled, with an average annual growth rate of 21 per cent, as compared with 13 per cent for manufacturing as a whole. This growth performance is attributable in large degree to the incentives provided by the government to create a technology base for the machinery industry. In 1979, the Korean Government took further steps to facilitate the development of industrial technology in the capital goods industry. Capital goods developed by 70 enterprises were designated as "Newly Developed Innovative Machines" (NDIM) and special incentives offered for their production and purchase. The criteria used in designating NDIMs included:

1. The NDIM must have been developed with local patents or with a local technology;
2. Local components content must be at least 60 per cent;
3. The NDIM must have been developed in the Republic of Korea without technical co-operation from abroad;
4. The quality must be certified by an independent quality inspection laboratory;
5. The NDIM must not be an exact copy of a foreign product;
6. No foreign components must be used for critical functions.

In other words, the objective was to promote local technological innovation in the capital goods industry.

A sample study of innovative entrepreneurs under the scheme showed that 85 per cent of them consisted of small- and medium-sized companies. This finding corresponds with similar findings in other industralizing countries suggesting that small companies tend to respond more flexibly to opportunities for innovation. Approximately two-thirds of local technological innovations arose in response to market needs and only one-third more from technical feasibility. In more than half the cases, the innovative company had outside technical assistance, either from research institutions or from potential users of the product. In most cases, catalogued technical descriptions compiled by foreign machine producers were drawn upon for guidance.

The Korean case study underlines that innovative government incentives, market demand and technically competent and innovative entrepreneures are necessary ingredients in the environment needed for the development of an indigenous technological capability in specific areas.

Source: UNIDO Prospects for Industrial Development and for a Capital Goods Industry in Indonesia, Vol. III, Prospects for a Selected Capital Goods Industry, UNIDO/IS.479/Add.2 23 July 1984, pp.204/5.

ANNEX D

R & D in the Republic of Korea

In the early stages of industrialization, the Korean Government focused on institution building for the R&D infrastructure, as demonstrated in 1966 with the establishment of the Korea Institute of Science and Technology. This institute had to cover a broad spectrum of activities in applied research including project feasibility studies, technical services for small and medium industries, and engineering studies on a pilot plant scale.

The government reached the conclusion that it was necessary to establish an institute for science education to meet the need of high-level scientists; as a result, in 1971, the Korea Advanced Institute of Science was inaugurated.

In 1981, however, the Korea Institute of Science & Technology and the Korea Advanced Institute of Science were merged into one institute for more efficient operation. This new institute was named the Korean Advanced Institute of Science and Technology (KAIST).

In the 1970s, the government had established specialized industrial research institutes related to machinery, metals, electronics, nuclear energy, resources, chemicals, telecommunications, standards, shipbuilding, marine sciences, etc., but were finding it increasingly difficult to operate those small-scale institutes. Hence, the government decided in 1981 to optimize their size for better utilization or research staff and equipment. Finally, sixteen research institutes, supported by various government agencies, were integrated into nine institutes to be supervised by the Ministry of Science and Technology.

The present R&D institutes are shown in the following table (Table A.D.1).

This Annex is drawn from material contained in MOST, Introduction to Science and Technology, Republic of Korea, 1986; pp. 32-35 and KAIST, Korea Advanced Institute of Science on Technology, 1985, pp. 6-7, 26, 32, 38.

Table A.D.1: Government supported R&D institutes and foundations as of February 1986

Organization	Field of Research	Expenditures in 1985 in $ Mill.	Location
Korea Advanced Institute of Science and Tech- (KAIST)	Research & Development of National Projects	70.33 (1,061)	Seoul
- Korea Institute of Technology (KIT)	Gifted Students in Close Co-operation with KAIST	16.3 (201)	Daejeon
- Korea Ocean Research and Development	Basic and Applied Research to Promote the Efficient use of Ocean Resources and Continental Shelf	5.57 (117)	Seoul
- Systems Engineering Research Institute (SERI)	Software Research and Development Training and Education of Computer	9.7 (212)	Seoul
- Genetic Engineering Research Center (GERC)	Development and Dissemination of Genetic Engineering Technology	0.4 (37)	Seoul
Korea Advanced Energy Research Institute (KAERI)	Atomic Energy Research and Atomic Safety Regulations	31.31 (934)	Daejeon
Korea Institute of Energy and Resources (KIER)	Development of Technology of Resources and Energy Exploitation	29.32 (646)	Daejeon
Korea Institute of Machinery and Metals (KIMM)	Development of Technology Pertaining to Machinery Metals and Shipbuilding	18.20 (449)	Changwon
Industrial Technology Center (ITC)	Technical Support for Businesses and Quality Inspection of Machinery & Components	2.3 (296)	Seoul
Korea Standards Research Institute (KSRI)	Establishment of National Standards	7.24 (246)	Daejeon
Electronics and Telecommunications Research Institute (ETRI)	Development of Technology Relating to Semiconductor and Telecommunications	40.02 (1,210)	Daejeon

Organization	Field of Research	Expenditures in 1985 in $ Mill.	Location
Korea Research Institute of Chemical Technology (KRICT)	Research and Development Chemistry	10.49 (194)	Daejeon
Korea Ginseng and Tobacco Research Institute	Research Pertaining to Ginseng and Tobacco	7.36 (352)	Daejeon
Korea Electro Technology Research Institute (KERI)	Development of Technology Pertaining to Electric Power	5.89 (163)	Changwon
Korea Science and Engineering Foundation (KOSEF)	Support for Basic Research and Manpower Development	12.81 (37)	Daejeon

As KAIST is the most important R&D institution in terms of the impact on industrial development, it is described in more detail below. KAIST exists to integrate high quality graduate education with high level resources; it provides the country with top grade scientific manpower and at the same time develops pioneer technologies for continued economic development. A subsidiary organization, Korea Technology Advancement Corporation (K-TAC) was established in 1979 to facilitate the commercial- ization of research results. This research is linked with business and entrepreneurs through the translation of research and development into practical applications. K-TAC conducts techno-economic feasibility studies and offers a wide range of services, including technical and managerial assistance; the sale, licencing or processing of technology; and the establishment of new enterprises based on appropriate technology through joint investments with business.

In this manner, the more academically-oriented KAIST is directly associated with the needs of industry. The areas covered by KAIST include the following: mathematics and physics, chemistry, biological science and engineering, chemical engineering, material science and engineering, mechanical engineering, electrical engineering and computer sciences, industrial engineering, aero-space. KAIST also incorporates (i) a comprehensive science library; (ii) a Research Centre for Science and Technology Policy (which incorporates a Techno-economic Research Group to study "the process of technological innovation and relevant government policy and the socioeconomic impact of technology"), (iii) a Systems Engineering Research Institute, a Genetic Engineering Centre and the Korea Ocean R&D Institute.

In sum, the objectives of KAIST can best be described as follows:

1. To "educate and develop high calibre manpower for competence in both abstract theory and practical application in the fields of science and technology".;

2. To "conduct basic and applied research to implement medium to long-term projects of national significance, and develop the nation's scientific and technological potential";

3. To provide comprehensive research and assistance services for the industrial community as well as for other research and professional organizations, and disseminate research results for public record and use".

Finally, however, it should be noted that not all research and development is government sponsored; private companies have been required to establish their own R&D institutes. The "requirement" was encouraged through tax incentives and financial support. In consequence, the total number of private research institutes had reached 183 by the end of 1985.

ANNEX E

UNIDO's Approved and/or Operational Technical Co-operation Projects
(as of October 1986)

Republic of Korea

Backstopping Responsibility	Project Number	Project Title
IO/IIS/INFR	DP/ROK/82/034*	Extension service for small and medium industries
IO/IIS/INFR	DP/ROK/82/025*	Industrial design centre
IO/IIS/FCTY	DP/ROK/82/033*	Korea Energy Management Corporation (KEMCO) (Asscciated Agency: UNDTCD)
IO/IT/AGRO	DP/ROK/82/027*	Preparatory assistance - textile dyeing and finishing industry service centre
IO/IT/MET	DP/ROK/82/030*	Surface treatment centre
IO/IT/ENG	DP/ROK/82/026*	Mechanical engineering computer application (MECA) programme (application of CAD/CAM techniques in mechanical industries)
IO/IT/ENG	DP/ROK/82/031*	Numerical control centre
IO/IT/ENG	DP/ROK/86/002*	Establishment of the computer aided design (CAD) section within the dies and moulds centre of the Korea Institute of Machinery and Metals (KIMM)
IO/IT/ENG	TF/ROK/84/001	Associate expert
IO/IT/ENG	DC/ROK/85/001	Project manager/co-ordinator
IO/IT/ENG	DP/ROK/85/001*	Project manager/co-ordinator for projects executed by UNIDO
IO/IT/CHEM	SI/ROK/84/801	Assistance to the Korean Institute of Construction Technology (KICT)
IO/IT/CHEM	DP/ROK/82/028*	Toxicology research laboratory
IO/IT/CHEM/PH	DP/ROK/86/003*	Screening centre for pharmaceuticals
IO/IT/CHEM	DP/ROK/82/029*	Low grade coal utilization and property analysis

* Large-scale project (= total allotment $150,000 or above)

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