

INDUSTRIES LEADING 21ST CENTURY IN KOREA

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Emerging Industries in the Next Century

Among many other curiosity-filled questions regarding the new millennium, the next question draws particular attention: What will emerge as leading industries in the twenty-first century? Ten industry clusters, which can be called "promising industry clusters¹⁾ in the twenty-first century", may be one answer. Specifically, though not in order of importance, they are: information technology, telecommunications, environment, health care & welfare, biotechnology, leisure & culture, business services, energy, electronics & media, and housing & urban renewal.

The promising industry clusters have the following common characteristics. First, they are high-technology intensive. Therefore, the technology level determines the competitiveness in each industry sector. Second, service plays a more important role than product alone. Promising industries such as information technology, telecommunication, health care & welfare, leisure & culture, and business services satisfy consumers' needs by providing services as well as physical products. Third, they are related with new demand trends of the future. In particular, transformation to the information society, aging society and environment-friendly society will be the major factor which will profoundly

change the future demand of the world economy. This is why the promising industry clusters include information technology, telecommunication, electronics & media, environment, energy, health care & welfare and biotechnology.

Promising Industries Take Roots in Korea

The history of promising industries in Korea is relatively short. Except for some industries such as information technology, telecommunications and electronics, Korea's promising industry clusters are in their infancy. However, the prospects are not necessarily discouraging. First, both domestic demand and production of promising industry clusters are growing. The proportion of promising industry clusters to the total domestic demand increased from 20.25% in 1990 to 23.56% in 1995. Their proportion to the total domestic output also increased from 17.37% to 23.03%.

Second, the profitability of the promising industry clusters is higher than the others. Their profit rate, which is the percentage of operating surplus to output, was 18.5% in 1990 and 18.6% in 1995, which exceeds the average rate of entire industries, 15.4% in 1990 and 14.6% in 1995. However, there is a large variance among industry clusters. The profit rate of information technology, biotechnology,

1) Quoted from *Technology and Industries in 2005*, Samsung Economic Research Institute, 1996. Also, several top-class research institutes around the world such as Nomura Research Institute and Mitsubishi Research Institute in Japan and Stanford Research Institute in the U.S. suggest similar lists.

2) If the state-run enterprises and non-profit organizations are excluded, the profit rate moves higher up to 14.3%.

Table 1. Promising Industry Clusters and Member Industries

Industry Cluster	Member Industries	
Information Technology	<ul style="list-style-type: none"> • Semiconductor (257, 258) • Computer & Peripherals (269) 	<ul style="list-style-type: none"> • PCB (261) • Computing Service (363)
Telecommunications	<ul style="list-style-type: none"> • Wired Telecommunication Equipment (267) • Wireless Telecom. & Broadcasting Equipment (268) • Telecommunication Facilities (328) • Telecommunication Service (348, 349) 	
Environment	<ul style="list-style-type: none"> • Water Supply & Sewerage (324) • Cleaning & Disinfection Service (367) • Sanitation Service (384, 385) 	
Health Care & Welfare	<ul style="list-style-type: none"> • Medical Equipment (276) • Welfare (382, 383) 	<ul style="list-style-type: none"> • Health Care (379, 380, 381)
Leisure & Culture	<ul style="list-style-type: none"> • Culture-related (386, 387) • Drama, Music & Other Arts (389) • Film (388) 	<ul style="list-style-type: none"> • Other Recreational Services (391) • Sports & Related Services (390)
Biotechnology	<ul style="list-style-type: none"> • Vegetables & Fruits (005, 006) • Other Edible Crops (007, 008, 009, 010, 011) • Seeds & Sapling (016) • Drugs & Cosmetics (163, 164, 165) 	
Business Services	<ul style="list-style-type: none"> • Law & Accounting Services (360) • Machinery & Supplies Lease (364) • Other Services (369) 	<ul style="list-style-type: none"> • Engineering Services (362) • Survey, Consulting & News Supply (366)
Energy	<ul style="list-style-type: none"> • Petroleum (033) • Engine & Turbine (228) • Electric Power (306, 307, 308, 309) 	<ul style="list-style-type: none"> • Natural Gas (034) • Generator & Electromotor (247) • Electric Facilities (327)
Electronics & Media	<ul style="list-style-type: none"> • Electronic Display (255, 256) • VCR (264) • Optical Equipment (279, 280) 	<ul style="list-style-type: none"> • TV (263) • Audio Equipment (265, 266) • Broadcasting (350, 351)
Housing & Urban Renewal	<ul style="list-style-type: none"> • Housing Construction (313, 314) • Subway (320) • Construction & Engineering Services (361) 	<ul style="list-style-type: none"> • Construction Renewal (317) • Urban Engineering (326)

Source : The Bank Of Korea, *Input-Output Tables in Korea*, 1993 & 1998.

business services and energy is relatively high and that of health care & welfare²⁾ and electronics & media is relatively low.

Third, international competitiveness of the promising industry clusters is weak. As most industries are in the early stage of growth, the amount of exports are not substantial. Especially, the import dependency rate of energy and health care industries is very high,

which needs to be lowered soon.

Fourth, among the promising industry clusters, the performance of information technology and telecommunication is excellent. Their demand and output share have been growing considerably, and their profit rates in 1995 were 22.6% and 14.3%, respectively. Their export-import indexes³⁾ are 0.344 and 0.081, which means that information

Table 2. Status of Promising Industry Clusters In Korea

	Proportion to Domestic Demand (%)		Proportion to Domestic Output (%)		Profit Rate* (%)		Export-Import Index**	
	1990	1995	1990	1995	1990	1995	1990	1995
Information Technology	2.27	4.01	1.58	3.46	6.4	22.6	0.088	0.344
Telecommunications	1.62	1.92	1.72	1.99	16.4	14.3	0.229	0.081
Environment	0.28	0.51	0.32	0.59	9.2	12.5	1.000	0.689
Health Care & Welfare	1.03	1.31	1.11	1.42	9.4	7.8	-0.658	-0.707
Leisure & Culture	0.45	0.67	0.49	0.70	20.4	13.2	0.195	-0.036
Biotechnology	3.70	3.97	3.61	3.59	15.8	14.9	-0.365	-0.529
Business Services	1.46	2.26	1.55	2.33	29.9	21.2	-0.318	-0.386
Energy	2.99	2.99	2.01	2.09	21.2	17.5	-0.924	-0.938
Electronics & Media	2.16	2.00	2.14	1.94	8.3	8.3	0.561	0.446
Housing & Urban Renewal	4.29	4.27	4.89	4.92	14.5	13.1	-	-
Sub Total	20.25	23.56	17.37	23.03	18.5	18.6	-0.082	0.000
Total Industries	474,895 (100.0)	969,261 (100.0)	416,965 (100.0)	841,519 (100.0)	15.4	14.6	-0.005	-0.011

Source : The Bank Of Korea, *Input-Output Tables in Korea*, 1993 & 1998

Note : * Percentage of operating surplus over output

** It is calculated by the formula, (export - import) / (export + import)

technology and telecommunication industries secured international competitiveness.

Prospects

For the promising industries to be the leading industries in the coming century, the following measures are needed. Above all, it is imperative to secure high-end technology and knowledge to boost core competence of the promising industries. Fortunately, the Korean government is putting emphasis on creating and accumulating knowledge and technology to meet the future economic needs. Another agenda is that

regulation should be lifted in order to spur the promising industries on. As some promising industries like telecommunications, health care, welfare, culture and environment have a characteristic of "public goods", they have been regulated by the government. However, it is necessary to discard factors which distort the market such as price control or exit barrier and to create a competition-promoting market environment.

Demand for the promising industries is growing and profit bases are very stable in the domestic market. Once a favorable business environment is established, these industries will lead the Korean economy in the next century. **VIP**

3) The following formula is used to calculate the export-import index: (export - import) over (export + import). The closer the index is to 1.0, the higher international competitiveness becomes.