

# KNOWLEDGE COMPETITIVENESS OF KOREA, CHINA, AND JAPAN

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## Knowledge economy conditions

This article compares the knowledge-based economies of Korea, China, and Japan as reflected by knowledge input, outcome, and process indexes. Korea generally surpassed China in knowledge economy conditions but lagged behind Japan. Setting Korea's indexes at 100, Japan's knowledge input index was 141.1 while China's score was 36.2. For knowledge outcome indexes, Japan scored 208.0 while China's figure was 37.0. Meanwhile, Japan's knowledge process index was 159.0 while China scored 61.0.

Korea and Japan had high knowledge input, outcome, and process indexes, while China's knowledge infrastructure was very weak. In terms of knowledge input, Korea stood out in its high PC ownership rate and strong technology cooperation

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*Korea stood out in its high PC ownership rate.*

—Table 1. Knowledge Economy Strengths of Korea, China, and Japan—

	Korea	Japan	China
<b>Input</b>	-PC ownership rate	-R&D investment rate	
	-Technology cooperation between business and academia	-Share of workers in R&D	
		-Higher education completion rate	-
		-Technology cooperation between businesses	
<b>Outcome</b>	-e-commerce index	-Number of registered patents	
	-Number of papers presented	-Per capita labor productivity	-
	-Share of high-tech exports to total exports	-Income from royalties	
<b>Process</b>	-Number of mobile telecom subscribers	-Number of Internet hosts	
	-Number of Internet users	-Index for relation between firms and workers	-Investment
	-Investment index for basic research	-Tentative competitiveness index	Incentives
	-FDI to GDP		

Note: Strengths indicate categories where the country ranked first

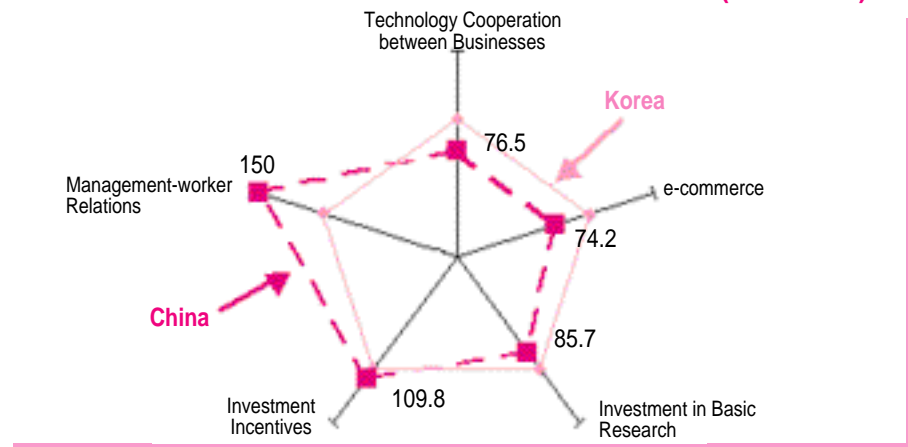
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between business and academia, while in knowledge performance, Korea's strengths were in e-commerce, number of academic papers published, and its high share of cutting-edge technology exports. Japan's knowledge input was helped by dynamic R&D investment and talent, and technology cooperation between businesses, while its knowledge performance was boosted by income from patents and royalties, and high labor productivity. China however was weak in both knowledge input and performance, and its only strength in knowledge process was its attractive investment incentives.

Although China's knowledge input, outcome, and process indexes were at relatively low levels, it showed high potential in some areas. China had relatively high levels of technology cooperation between businesses, e-commerce, investment in basic research, investment incentives, and management-worker relations. Although e-commerce in China had a score of 75 to Korea's 100, China's IT promotion policy is expected to bring a rapid expansion and development in e-commerce. In addition, China's score for investment in basic research was 85.7, showing that China's technology innovation may challenge that of Korea and Japan in the future. China is also attracting foreign direct investment with its investment incentives (109.8 to Korea's 100), and this is expected to become a basis for the country's transformation into a knowledge-based economy in a short time frame. The inflow of foreign direct investment is expected to be enhanced by China's low wages and relatively favorable relations between management and workers (150 to Korea's 100).

— Figure 1. Knowledge-based Economy Indexes for Korea and China — (Korea=100)



### Comparison of education sectors

Education is the core of a knowledge-based economy. The education sectors of Korea, China, and Japan were rated referring to figures from organizations such as the IMD, OECD, and World Bank. Compared to other OECD countries including

Japan, Korea had a far lower spending on public education, but Korea's figure in turn dwarfed that of China. In the student/teacher ratio however, Korea's conditions were significantly unfavorable not only to Japan but also to China. Meanwhile, Korea and China spent far more on private education than Japan.

Korea, China, and Japan all had high educational achievement levels. In math and science tests, students from Korea, China, and Japan ranked among the world's top scorers. However, the contribution of the education system and university education to national competitiveness was among the world's lowest in all three countries.

While the education systems of Korea and Japan seem to outperform China's in efficiency and quality of science education, Chinese students were found to be far more interested than their Korean or Japanese counterparts in science and technology.

Considering the poor condition of Korea's education infrastructure (such as the student/teacher ratio) and Korean students' lack of interest in science, these areas demand increased investment and reform. Some measures could include higher spending on public education, reforms to increase the contribution of education to national competitiveness, and programs to stimulate interest in science and technology.

### Possibility of development

A variety of indexes from international organizations were used to estimate the potential of the knowledge economies of Korea, China and Japan. The focus was on incentive systems for knowledge creation, a framework for the innovation of science and technology, and the potential for knowledge creation.

The results showed that Korea's potential for knowledge creation was higher than China's, but lower than Japan's. Korea's greatest strength was R&D cooperation between business and academia, and its framework for science and technology innovation, centered around private business, was found to be the best of the three countries. China scored the highest in government efficiency, which includes legislation for free competition and policy transparency. Meanwhile, Japan ranked first in a wide variety of categories including protection of intellectual property rights, economic freedom, technology cooperation between business, innovation and creativity, adaptation to new thinking, incentive systems for knowledge creation, and science and technology innovation systems.

Korea was more competitive than China in economic freedom, technology cooperation between business, innovation and creativity, adaptation to new thinking, and level of science and technology. However, Korea was the weakest in its protection of intellectual property rights, and its incentive systems for knowledge creation, such as legislation for free competition and policy transparency, were even less developed than China's.

For Korea to successfully compete with China and Japan in the information age, it needs to strengthen its incentives for knowledge creation, such as the protection of intellectual property rights. In particular, the public sector should strengthen its legislation for free competition while increasing policy transparency, and a culture should be created that promotes innovation, creativity, and adjustment to new ideas. **VIP**

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