

MID TO LONG TERM ISSUES FOR THE KOREAN ECONOMY

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1. Resolving the stagnation of science and technology education

The science and technology fields, which led the country's industrialization in the 1970's and 1980's, are being avoided. 56% of graduate students and researchers in science and technology are considering a move to other fields. The number of high school students applying for science and technology majors is continually falling: in 1998 the figure was 370 thousand, but is expected to fall to 190 thousand in 2002. In addition, the percentage of top managers in Korea's 30 largest companies who studied science or technology is only 22%.

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One reason for the shift away from science and technology is Korea's Confucian tradition, which accords higher status to humanities rather than technology. Civil servant was cited as the top career choice of Korean university students, and many engineering students choose to take civil service exams.

According to a forecast by the Science and Technology Policy Institute, Korea will have 39,800 new Ph.D's in the science and technology fields. However, Ph.D's unable to find employment are likely to amount to 9,700 or 24.4% of the total.

Another problem is that the quality of university education needs to be improved. Universities need to keep up with technological developments and maintain a connection with relevant industries. The science and technology fields are losing attractiveness to students because they offer relatively low wages and status compared to fields such as credit evaluation or finance.

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In the future, the decline in the science and technology fields could lead to problems such as a brain drain of scientists and engineers out of Korea, lower competitiveness in basic science or core technology, and decreased economic growth potential.

To resolve this situation, a number of measures can be suggested. First, R&D spending should be expanded. The R&D budget of the US is 103.7 billion dollars, 25.9 times that of Korea, while Japan's figure is 7.3 times that of Korea at 29.2 billion dollars. In particular, Japan has been lowering its overall budget by 2% yearly due to its economic slump. Strengthened support of university research is also needed. Korea's ratio of university R&D support to budget is only 25%, compared to 27% in the US, 41% in Japan, 44% in Germany, and 31% in Taiwan.

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Second, businesses should foster the specialized talent they need through cooperation with academia. The government should also adopt measures such as recognizing companies that helped develop talent in science and technology. Other promising measures include the efficient management of post-doctoral programs, or improving the liquidity of research staff so they can work in venture companies or small businesses.

The most basic way to resolve the lack of interest in science and technology is for companies to increase demand for talent in those fields. To do this companies need to shift their management focus from applied technology to basic technology. The key to corporate survival in the 21st century is possession of basic, core technology. Therefore, companies need to increase their R&D capacity and staff. If corporate demand for science and technology talent increases, social recognition and compensation will also improve.

Another essential measure is to expand education in new technology fields. Although there is currently an excess supply of R&D talent overall, there is a continuing shortage of talent in the cutting-edge new technology fields. This is because new science and technology fields are constantly emerging, but it is difficult to quickly create programs in these areas. This issue should be addressed because demand for R&D talent is expected to grow geometrically in these new fields. For example, in 2001, there were only 1,000 researchers working in nanotechnology, but this figure is expected to increase to 2,800 by 2004.

2. Transition to an aging society

In 2000, the number of people over 65 years of age accounted for 7.1% of the Korean population, reflecting Korea's transition into an aging society. The birth rate, which was 4.5% in 1970, fell to 1.4% in 2000, while the average life expectancy increased from 63.2 to 74.9 years. Korea is expected to move from an aging to an

Table 1. Aging of Korea Society and Labor Force Participation

	Birth Rate	Average Life Expectancy (years)	Percentage of Persons over 65	Dependency Rate	Economic Participation Rate (%)
1970	4.5	63.15	3.07	45.60	-
1980	2.7	65.81	3.82	37.79	59.0
1990	1.6	71.57	5.12	30.72	60.0
2000	1.4	74.85	7.13	28.78	60.7
2010	1.7	76.99	9.94	29.86	64.3
2020	1.8	78.08	13.18	30.39	64.1
2030	1.7	78.95	19.27	35.29	62.6

Note: Dependency Rate = (persons under age 15 and persons over 65) / total population × 100

aged society in about 20 years. In comparison, France took 115 years to make this shift, Sweden took 85 years, the US took 71 years, and Japan took 24 years. Korea's forecast is based on the assumption that birth rates will increase slightly, and the shift to an aged society may occur even more quickly.

The demographic shift will have significant effects on the economy. First, the labor force will decrease. Currently, the rate of labor force participation is increasing with the rise in female employment. After 2020 however, the growth rate of female employment is expected to slow down, resulting in a decline in the employment rate.

Second, economic growth is expected to slow down. The increase in the older population means that the labor force will decrease. As a result, savings are expected to decrease, leading to a contraction in investment and slowdown in economic growth.

A worsened fiscal balance may be another effect of the demographic trend. With a labor force decline and slowdown in economic growth, government income from taxes and social insurance will decrease, while pension payments, medical costs, and welfare spending will increase, leading to higher fiscal spending. The fiscal spending on medical insurance for one senior citizen is twice that of a younger person.

One positive aspect of the aging society is the expansion of silver industries catering to senior citizens. While the elderly in the past did not work, many of them are expected to continue working and spending in the future. With the beginning of regular payments from the National Pension in 2008, the elderly are expected to begin consumption in earnest. In 2010, consumption by seniors is forecast to account for 11% of total consumption (The current percentage is 0.94%). Industries with high consumption by the elderly such as housing, leisure, and healthcare are expected to amount to 37 trillion won by 2010.

In the mid-to long term, policy should work to maintain a high level of production in the future while establishing long term welfare programs for the elderly. Implications of the unprecedentedly rapid aging of society are expected to emerge within five to ten years. Policies to respond to this trend will also need a long period of time to see effects, and such measures should be planned well in advance.

Institutional incentives should be created so that the elderly have the option of working. Social security policies such as pensions and employment insurance should be revised so that they provide incentives for work. Such revisions could include a higher minimum age for pension payments, and higher payments for delayed retirement.

Also, programs to foster human resources and provide IT training for adults and seniors would improve productivity and increase labor force participation in the information age.

The government's role in welfare or silver industries should be transferred to the private sector as far as is possible without creating social or economic side effects. Although welfare systems for the elderly should be run by the government for a certain period, their functions should gradually be transferred to the private sector through policies to promote silver industries. However, the public service role of these industries needs to be clearly emphasized. **VIP**

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