



Section 1 Investment for Enhancing Information Accessibility

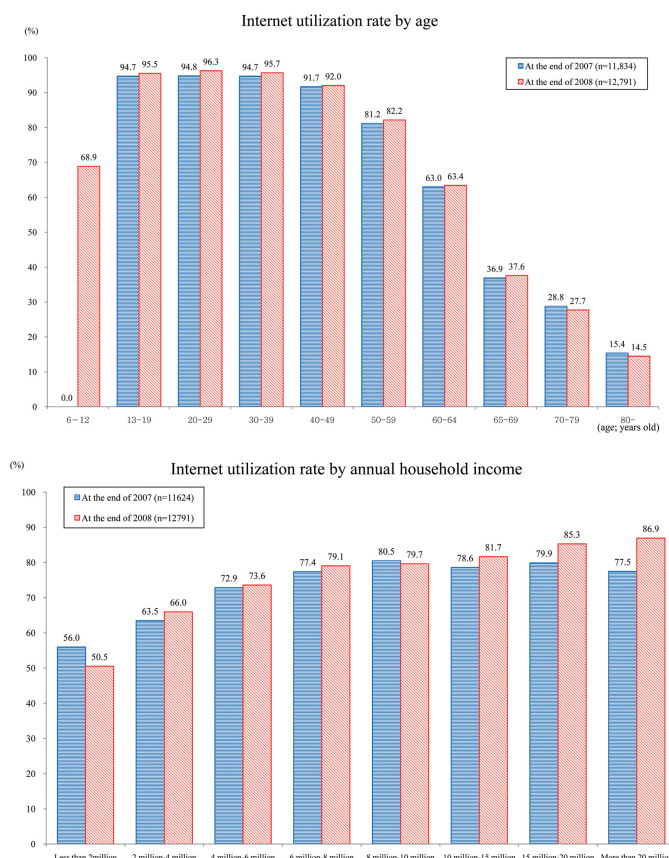
The comparison of seven countries in chapter 2, section 2, proved that Japan has the world's most advanced ICT infrastructure. It was also found that Japan is lagging slightly behind in terms of the dissemination rate of ICT equipment and services, despite the fact that charges and speed of broadband in Japan are the most favorable in the world. In this section, we will propose an investment strategy that would increase information capital stock per capita (information equipment ratio³³), thus contributing to the dissemination rate as well as to an increase in the growth rate of the Japanese economy.

1. Persistent Information Gap

Figure 3-1 shows Internet utilization rate³⁴ by age, annual household income and area of residence, and it is typical that the rate is low for the following three categories: elderly people, low-income households and rural areas. What is noteworthy is that the utilization

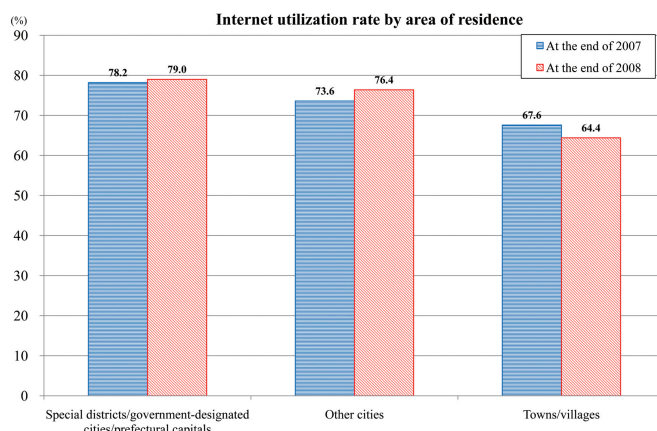
rate at the end of 2008 was lower than at the end of 2007 for those over 70 years of age, those with a household income of less than ¥2 million, and those living in towns and villages. While the national average Internet utilization rate has increased to 75.3%, with three out of four people using the Internet, the information gap has widened. There are

Figure 3-1 Status of Internet utilization by attribute



³³ Per capita capital is called "capital equipment ratio." Information capital per capita is accurately referred to as "information capital equipment ratio." the information capital in this discussion includes software applications as well as hardware through which information and knowledge are obtained. Thus, the term "information equipment ratio" is used for convenience.

³⁴ The Internet utilization rate is the percentage of the population over 6 years of age who has used the Internet in the previous year by means of (1) personal computer, (2) mobile phone (including PHS, mobile information terminals) or (3) other (game machine, TV, etc.).



(Source) Survey of ICT Utilization 2008, Ministry of Internal Affairs and Communications

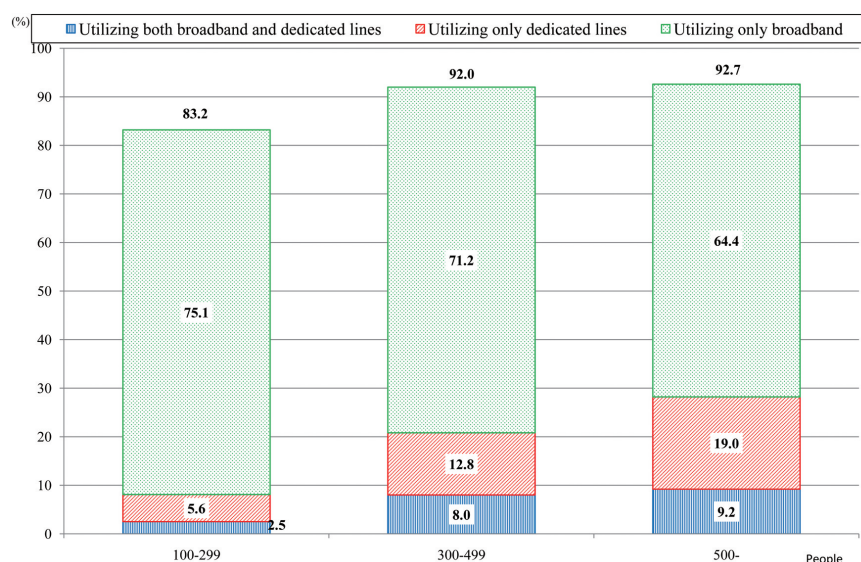
concerns that the global economic crisis could cause elderly people, low-income households and those living in rural areas to be left behind in terms of access to the Internet.

There is also an information gap between companies. With the Internet utilization rate for companies reaching 99.0% as a whole, for companies with over 500 employees it is 100%, whereas for companies with less than 300 employees it is 97.8%. Although there is a gap, the use of the Internet has penetrated into small- and medium-size enterprises. However, the story is different when it comes to the utilization of high-speed, large-capacity networks. Figure 3-2 shows the utilization of high-speed networks by company size

size, and it has been observed that the larger the company, the higher the utilization rate of broadband or dedicated lines; in particular, the rate of utilization of dedicated lines tends to increase remarkably.

A broadband environment, such as an optical fiber network, could be critical to whether or not local small- and medium size enterprises can secure nationwide or worldwide sales channels. The broadband service area coverage rate for households reached 98.6% and the optical fiber service area coverage rate for households 89.5% (as of end of September 2008), but it is still necessary to steadily facilitate investment in information infrastructure with the aim of eliminating broadband-zero areas by 2010.

Figure 3-2 Utilization of high-speed networks by company size



(Source) Survey on ICT Utilization 2008, Ministry of Internal Affairs and Communications

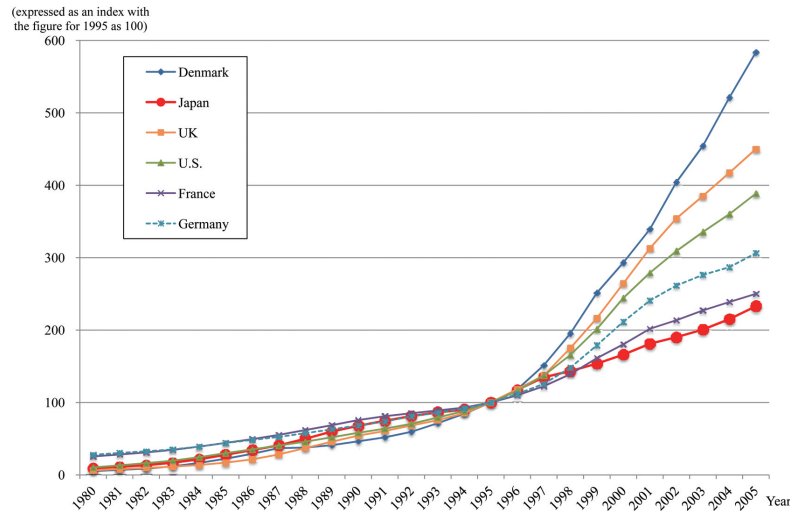
2. Lowest ICT investment among developed countries

Figure 3-3 shows an international comparison with regard to growth in information capital for six countries (U.S., UK, Germany, France, Denmark and Japan)³⁵. The growth of ICT investment, whose contribution to economic growth is high, after 1995 was about 6-fold in Denmark and about 4-fold in the U.S. and UK, but less than twofold in Japan, the lowest among the six countries. Until 1995, Japan was nearly at the same level as other countries, but the gap

widened after the so-called lost decade. For instance, if we compare the percentage of ICT investment with the total business investment in the private sector between Japan and the U.S. in 2006 that of the U.S. is 37% while that of Japan remains at 22%.

Figure 3-4 shows changes in information capital by industry. Although the growth in information capital in Japan's ICT industry is fifth among the six countries, it shows enough information capital accumulation to be comparable to the U.S. However, in terms of industries using ICT, Japan is ranked lowest or next to lowest in every industrial sector. In particular, Japan's

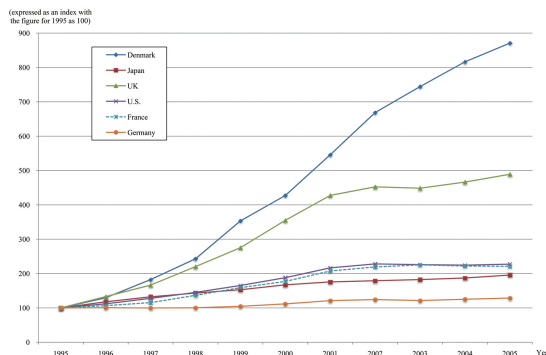
Figure 3-3 International comparison of growth in information capital (for the entire industry)



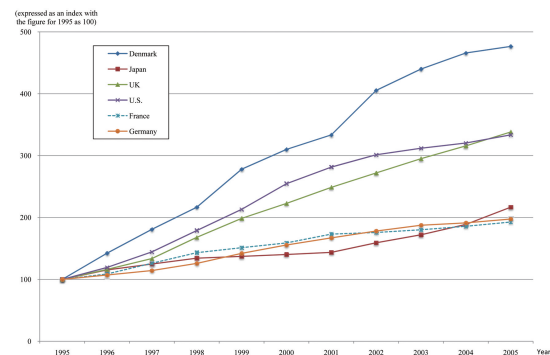
Compiled from EU KLEMS database

Figure 3-4 Growth in information capital by industry

(ICT industry (electronics/communications))



(Manufacturing excluding electronics devices)



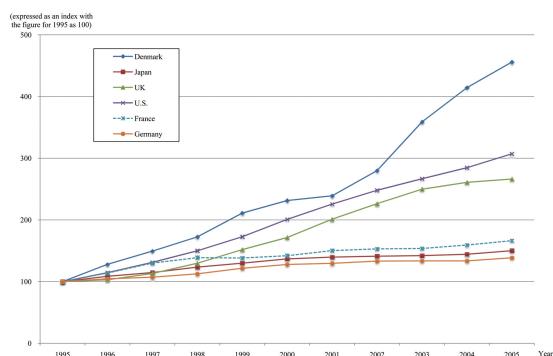
³⁵ Estimates were conducted by the EU KLEMS database. Among the seven ICT advanced countries compared in part I, chapter 2, section 2, three countries were excluded due to lack

of date [Sweden (lack of chronological data), South Korea (some data was hugely volatile), Singapore (data unavailable)]; and Germany and France were included instead.

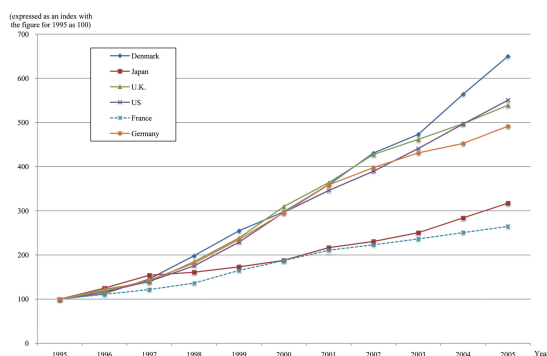
wholesale/retail/transportation sector, services for individuals, and public services are showing huge gaps with the other five countries, and Japan's information

capital accumulation, mainly in the service industry, is lagging far behind other developed countries.

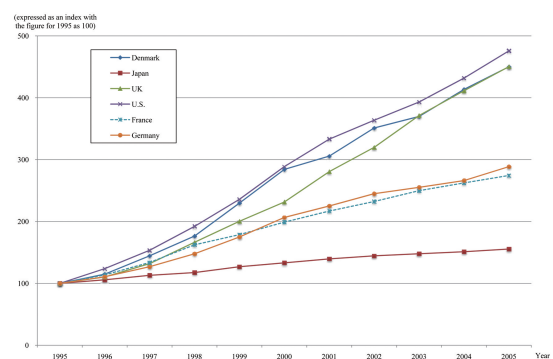
(Construction/ electricity/gas/water/agriculture, forestry and fisheries/mining)



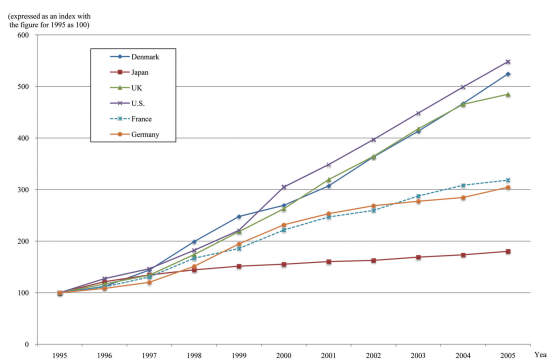
(Finance/services for business establishments)



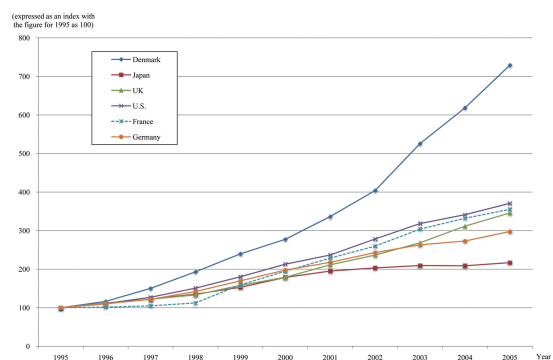
(Wholesale/retail/transportation)



(Services for individuals (food and drink/accommodation/self-employed, etc.))



(Public services (education/healthcare, etc.))



Compiled from EU KLEMS database

3. Acceleration of ICT investment: the key to economic regeneration

As we have seen thus far, since ICT investment has not increased in Japan as much as in other developed countries in the West, its contribution to growth is limited. Sluggish ICT investment is a phenomenon of ICT-using industries and it is possible that its stagnation could decelerate productivity growth in ICT-using industries, leading to a stagnation of the entire economy.

In order, then, to overcome the global economic crisis, it is essential to drastically increase ICT investment mainly in ICT-using industries. We will conduct a simulation of the impact of an acceleration of ICT investment on Japan's economy using an econometric model over the following pages.

To establish the impact of an acceleration of ICT on Japan's economic growth in the 2010s, a macro economic model was developed with 63 endogenous variables and 42 exogenous variables comprising five blocks: demand, household income, corporation, finance/banking and prices by explicitly incorporating

the effects of ICT investment. Then, we estimated the impact of the activation of corporate investment on medium-term economic growth while checking the balance against other macro variables³⁶.

To estimate the impact we first drew up a baseline scenario³⁷ incorporating the recent global recession that assumes that the global economy, which is rapidly slipping into recession, will recover moderately in fiscal 2010, and then compared this with the estimated results for two other scenarios: an accelerated investment scenario³⁸ and an accelerated ICT investment scenario³⁹. The accelerated investment scenario assumes that corporate investment will start growing across the board in fiscal 2010 because of investment promotion measures. The accelerated ICT investment scenario assumes that the ratio of ICT investment to private—sector corporate capital expenditure will rise because of measures to promote ICT investment. Figure 3-5 shows the results of the simulation of major indices for various growth rates and employment during 2011 and 2020.

Figure 3-6 shows the estimated value of real GDP growth rate for each scenario in the 2010s. While the

Figure 3-5 Major results of the simulation of medium and long-term economic growth

Fiscal Year		2011-15	2016-20	2011-20
Real GDP growth rate (%)	Baseline scenario	1.7	1.5	1.6
	Accelerated investment scenario	2.2	2.1	2.2
	Accelerated ICT investment scenario	2.3	2.5	2.4
Nominal GDP growth rate (%)	Baseline scenario	1.8	1.8	1.8
	Accelerated investment scenario	2.4	2.7	2.5
	Accelerated ICT investment scenario	2.5	3	2.7
Potential GDP growth rate (%)	Baseline scenario	0.7	0.7	0.7
	Accelerated investment scenario	0.9	1.3	1.1
	Accelerated ICT investment scenario	1	2	1.5

(Source) Survey on the Impact of ICT Investment and the Accumulation of ICT-related Capital on the Japanese Economy, Ministry of Internal Affairs and Communications

³⁶ Jointly conducted by the Ministry of Internal Affairs and Communications and the Japan Center for Economic Research

³⁷ The 35th Medium-term Economic Forecast (FY2008-2020) released by the Japan Center for Economic Research was used as a baseline scenario. When calculating the estimate, it was assumed that the growth rate of the global economy will not reach 4% even in 2020, that the foreign exchange rate will remain at a high level, and that government spending will continue to restrain public investment. The same applies to the accelerated investment scenario and the accelerated ICT investment scenario.

³⁸ Compared to the baseline scenario, this assumes that the rate of private-sector corporate capital expenditure will rise at an annual average of about 3 percentage points during the 2010s (annual average rise of ¥3 trillion in monetary terms).

³⁹ Compared to the baseline scenario, this assumes that the ratio of ICT investment to private-sector corporate capital expenditures will rise at an annual average of about 2 percentage points during the 2010s (annual average ICT investment growth rate of about 6 percentage points and annual average rise of about ¥1.75 trillion in monetary terms).

average growth rate of real GDP in the 2010s in the baseline scenario is 1.6%, that of the accelerated investment scenario is 2.2% and of the accelerated ICT investment scenario 2.4%. While the average growth rate of nominal GDP in the baseline scenario is 1.8%, that of the accelerated investment scenario is 2.5% and of the accelerated ICT investment scenario 2.7%. If ICT investment is accelerated drastically, the annual average growth rate is highly likely to increase by around one percentage point both in real and nominal terms.

4. Strategic ICT investment is important

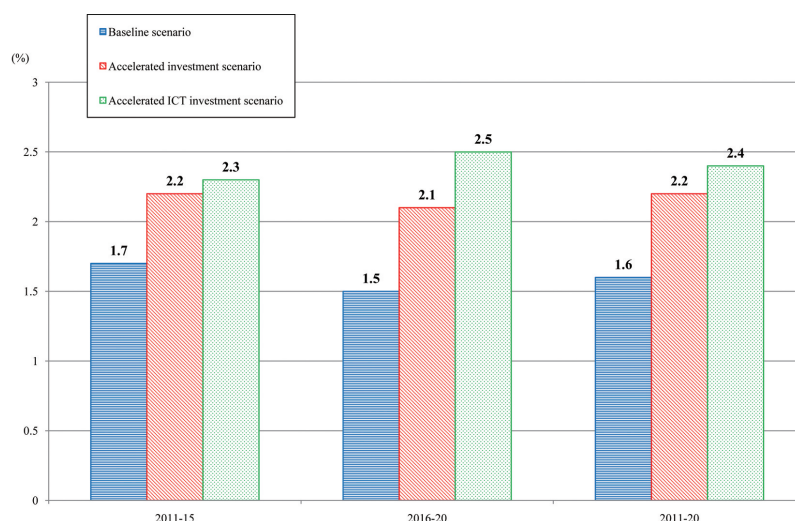
With the global economic crisis worsening, the

world's major economies have instituted drastic stimulus packages and a prioritization of ICT investment. To respond to this trend, Japan is also expected to realize measures to accelerate ICT investment.

However, since these measures require investment decisions that works against the economic cycle, strategic decision-making is necessary. Figure 3-7 shows the relationship between the economic cycle and real ICT investment. In the United States, ICT investment has steadily grown even under the economic slowdown, except for the IT bubble period in 2000, whereas Japan's ICT investment has tended to rise and fall in conjunction with the economic cycle.

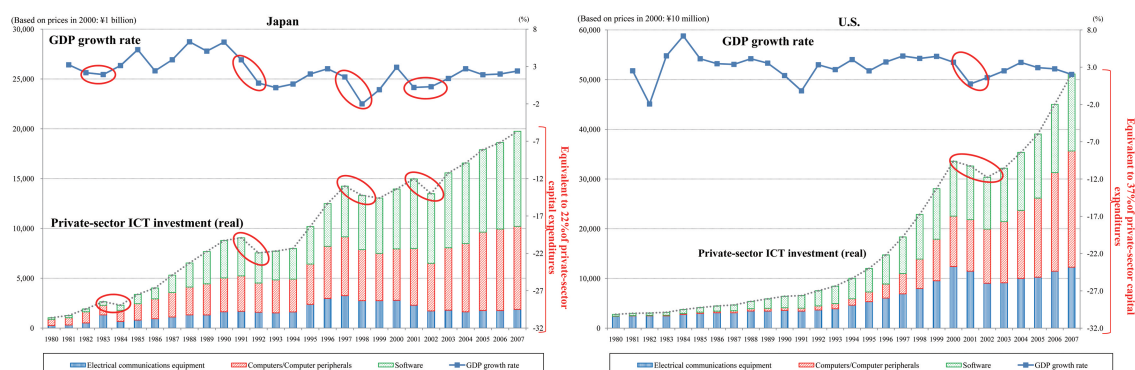
Let us now look at this relationship, comparing Japan and the West. Figure 3-8 shows the relationship between the number of times that nominal ICT invest-

Figure 3-6 The estimate of real GDP growth rate for each scenario in the 2010s



Compiled from the Survey on the Impact of ICT Investment and the Accumulation of ICT-related Capital on the Japanese Economy, Ministry of Internal Affairs and Communications

Figure 3-7 Economic cycles and ICT investment in Japan and the United States



Compiled from the Survey on Economic Analysis of ICT (2009), Ministry of Internal Affairs and Communications

ment (nominal ICT investment defined by OECD) registered negative growth against the previous year and real GDP growth. Japan's nominal ICT investment turned negative against the previous year nine times—the most frequently--and the growth rate was the lowest level among developed countries. The approach

to investment in Japan, where ICT investment is reduced as soon as the economy slows down, is rather uncommon among developed countries. It is necessary to see ICT investment as an investment for future growth and to accelerate ICT investment in a continuous and strategic manner.

Figure 3-8 Relationship between the number of times that nominal ICT investment turned negative against the previous year and real GDP growth

Number of times that nominal ICT investment turned negative against the previous year	Countries	Average year-on-year GDP growth rate
0-1 times	Australia (0), Canada (1)	3.10%
2-3 times	Netherland (2), U.S. (2), New Zealand (3)	2.80%
4-5 times	Belgium (4), France (4), Ireland (4), Italy (4), Switzerland (4), UK (4), Austria (5), Finland (5), Portugal (5), Spain (5)	2.80%
6 times	Denmark, Sweden	2.00%
9 times	Japan	2.00%

Period: 1988-2004

The OECD definition of nominal informatization investment is used. This includes public-sector, as well as private-sector, investment.
Compiled from County Statistical Profiles 2009, OECD