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**Economic Slowdown in Japan and
the Role of Intangible Assets on
the Revitalization of the Japanese Economy**

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Abstract

The Japanese economy has stagnated since the economic bubble collapsed in 1990. The paper points out two reasons for the long-term stagnation of the Japanese economy: the slow growth in capital accumulation including ICT assets and the decline of entrepreneurship. In the advanced countries, intangible assets play a crucial role in the growth at the aggregate and firm levels. To revitalize the Japanese economy, we need policies which promote accumulation in intangible assets.

Keywords: bubble, non-performing loans, ICT investment, MFP, intangible investment

JEL Classification numbers: E01, E22, O47, O50

1. The Japanese Economy after the Collapse of the Bubble Economy

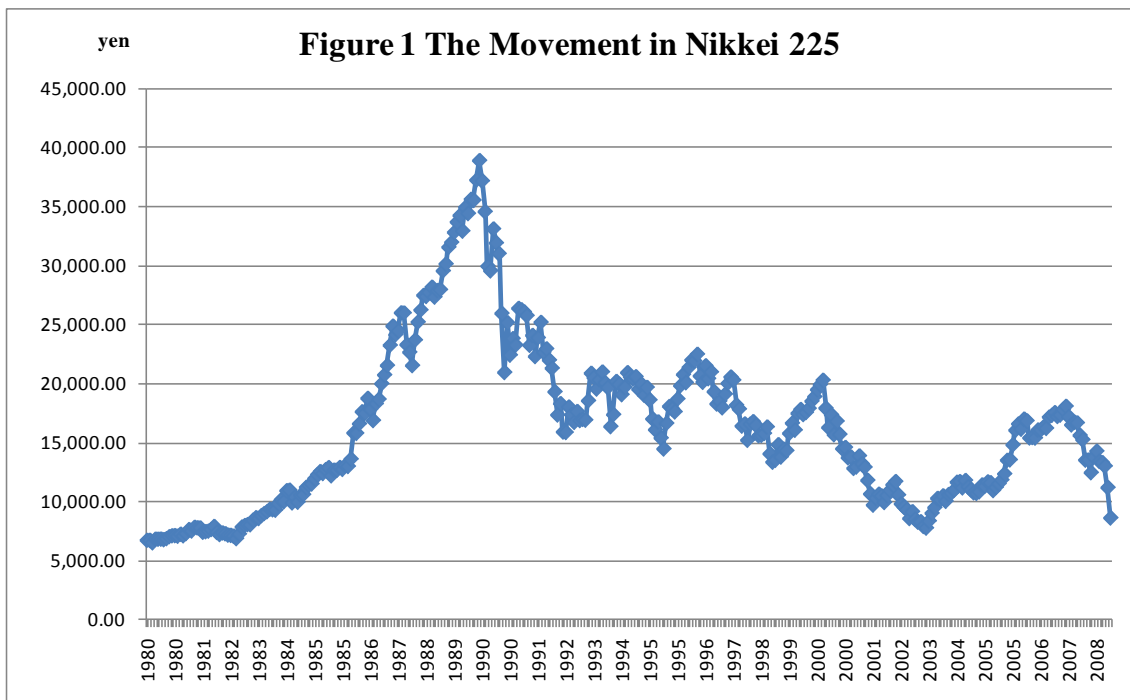
The Japanese economy has continued growing at a rate of 1% since the collapse of the bubble economy in 1990. This growth rate is one of the lowest in the advanced economies that enjoyed prosperity in the 1990s and the early 2000s. The Japanese economy in the late 1980s was similar to the US economy before the Leaman Shock. Stock and land prices surged. The Nikkei-225 Stock Average Price at the end of 1989 was almost four times as high as the level of 1985. However, the Nikkei-225 fell sharply after 1990. In two years after the collapse of the bubble, the stock values almost halved (Table 1 and Figure 1).

Table 1 GDP Growth Rate in China, EU, Japan, Korea, and the US
(%)

| | China | EU 15 | Japan | Korea | the US |
|------------------|--------------|--------------|--------------|--------------|---------------|
| 1980-90 | 9.3 | 2.4 | 4.6 | 9.7 | 3.2 |
| 1990-2000 | 10.4 | 2.3 | 1.2 | 6.5 | 3.4 |
| 2000-09 | 10.2* | 2.0* | 0.5 | 3.9 | 1.5 |

(Source) SNA in Japan, Korea and the US and APO Asia Productivity Databook 2010

(Note) * shows that the average growth rate is calculated in the period 2000-07.

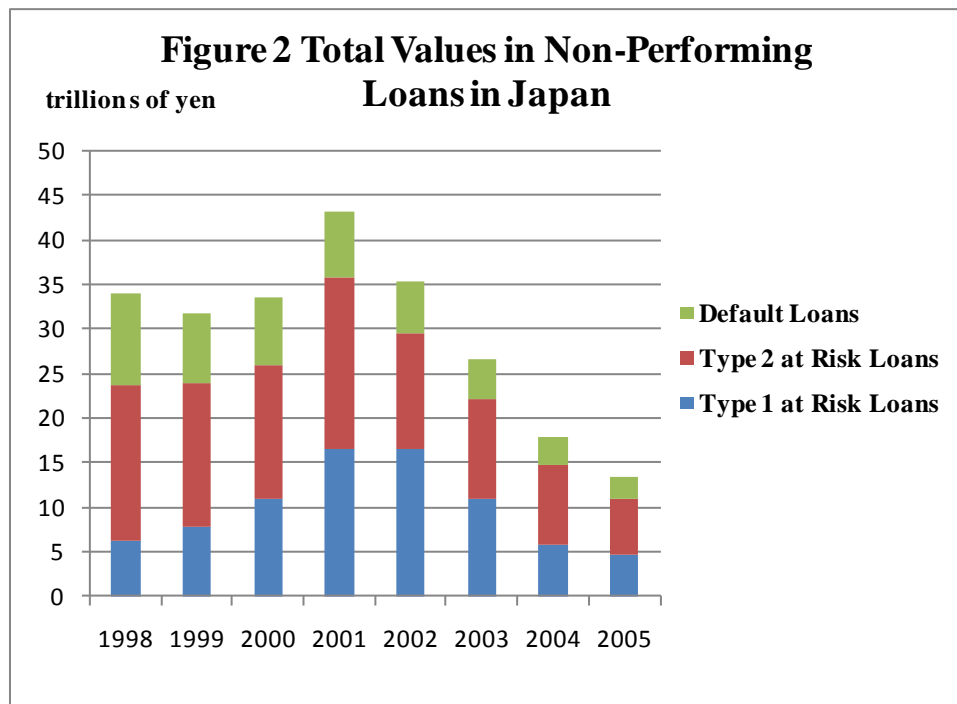


(Source) Nikkei Inc.

Due to the collapse of the bubble, the banking sector ended up with vast amounts of non-performing loans. The Japanese government concealed the amount of non-performing loans and tried to lower them through fiscal stimuli in the first half of the 1990s. However, as these fiscal stimuli did not work to raise the growth rate to the level prior to the collapse of the bubble economy, the non-performing loans continued to accumulate. As a result, in 1997, the financial crisis occurred. The fourth largest securities company in Japan and a few large banks went bankrupt.

The financial crisis induced more serious economic stagnation than before. Due to harsh restructuring, the unemployment rate rose to 5%. The Japanese economy suffered from the vicious cycle whereby the depression led to deflation that expanded

the amount of non-performing loans and thus aggravated the depression. The total values of non-performing loans reached about 45 trillion Japanese Yen (346 billion Euros), which is about 9% of GDP (Figure 2).



(Source) Financial Service Agency, the Government of Japan

This huge amount of non-performing loans shrank due to the economic recovery from 2002 that was supported by the good economic performance in the US and the high economic growth of China. As this recovery depended on exports to these countries, the structural reform in Japan did not actually improve and productivity growth measured by multifactor productivity remained low. As exports from Japan fell

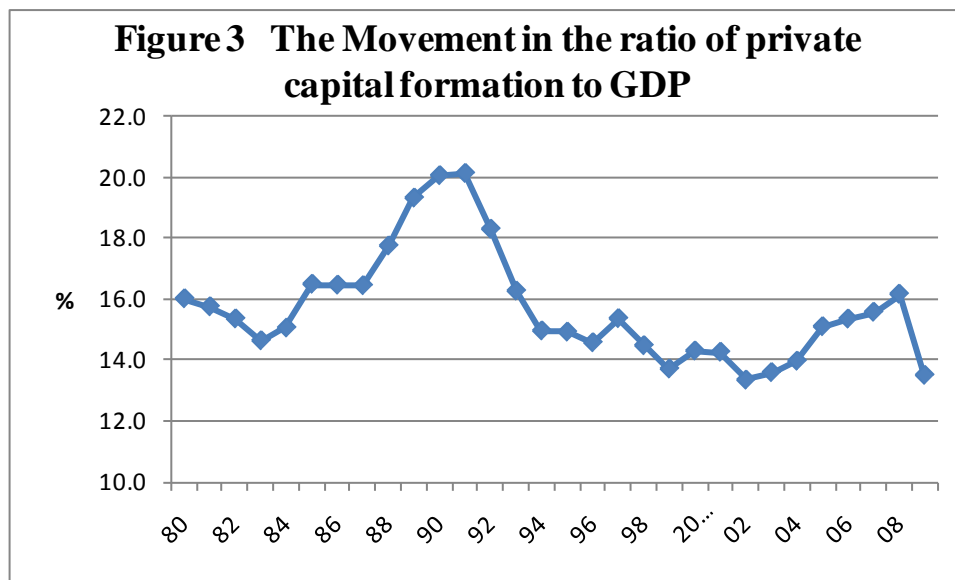
rapidly after the Leaman Shock, the Japanese economy suffered from a serious recession again. The recovery from the Leaman Shock has been slow and the economy has not yet reached the peak of the previous economic recovery. Although the Japanese government is afraid of a second dip, it is not able to implement effective fiscal and monetary policies due to the huge amount of national debts and zero bound interest rate.

2. The Structural Problems in the Japanese Economy

There are several factors explaining the reasons for the economic stagnation in Japan. Some economists have argued that the main factors behind the stagnation are the inadequate and inappropriate monetary policies conducted by the Bank of Japan (BOJ). They have emphasized that the BOJ should have implemented an inflation target policy to get out from the deflationary state. Other economists have pointed out that the Japanese government should conduct structural reform to improve productivity. In this paper, I focus on the latter argument.

One of the main engines in Japanese economic growth was capital formation in tangible assets. However, the recent trend of the domestic capital formation in the private sector in Japan is showing a decline. As shown in Figure 3, the current ratio of domestic investment to GDP is only 13%, although its average in the 80s and 90s was 16%. The current amount of private capital formation corresponds to the total

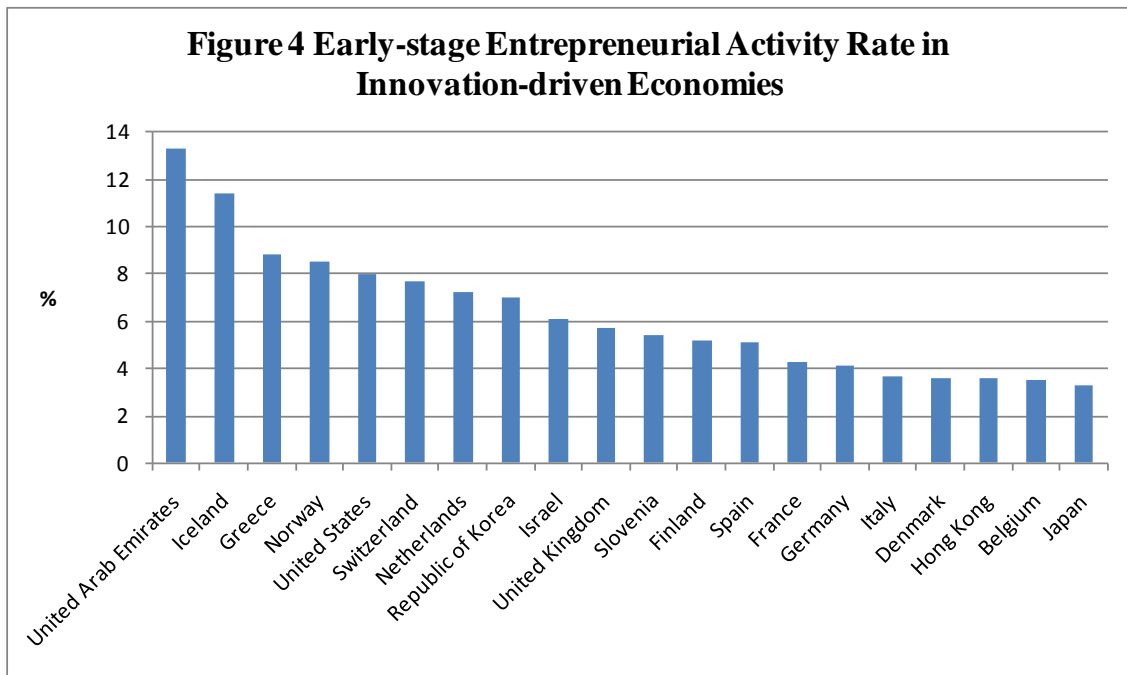
depreciation of capital stock. This implies that the current capital formation in Japan is carried out for replacement only, and there is no additional capital accumulation in Japan.



(Source) Cabinet Office, the Government of Japan

There are two reasons for this declining trend in domestic capital formation in the private sector. One is that firms and entrepreneurs are reluctant to take risks because many firms went bankrupt after the financial crisis. Therefore, the entry rate of new firms in Japan is very low compared to other advanced economies. In Global Entrepreneurship Monitor in 2009, the early-stage entrepreneurial activity in Japan was the lowest among innovation-driven economies (Figure 4). Financial institutions in

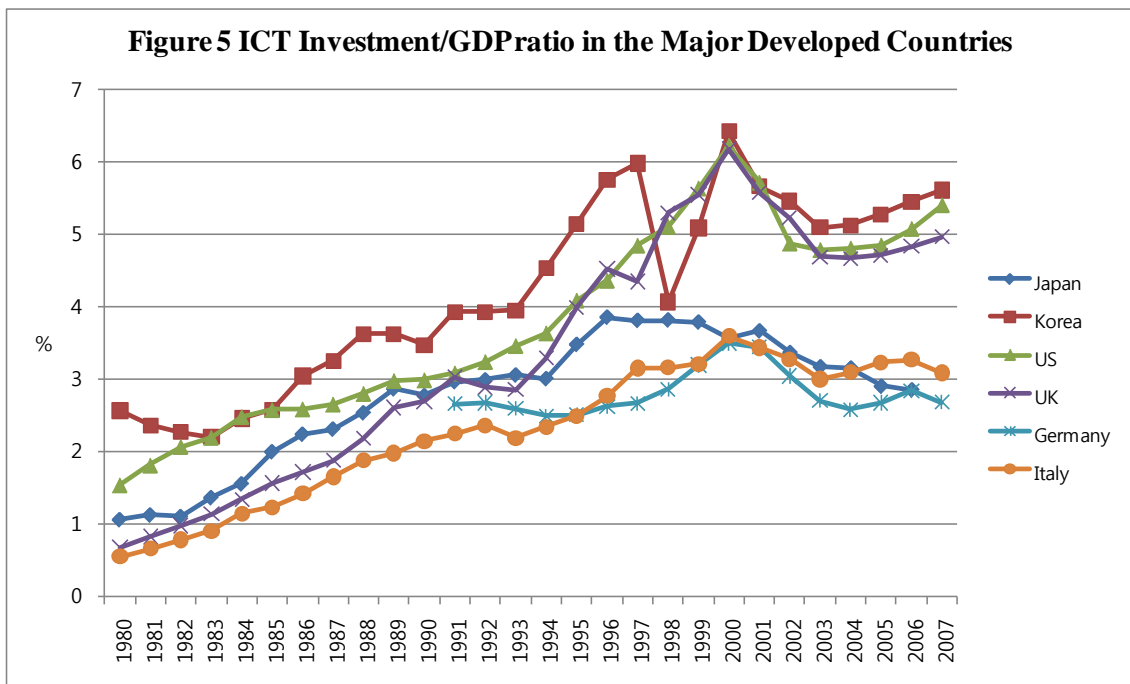
Japan are also reluctant to provide funds to firms and new entrepreneurs in order to avoid the risk of holding non-performing loans.



(Source) Global Entrepreneurship Monitor in 2009

The other reason is the decline of the Japanese population. Firms expect the domestic demand to shrink due to the decline of the Japanese population. Therefore, manufacturing firms prefer foreign direct investment to domestic investment because the markets in the other Asian countries are growing. The firms in the service industry that depend on the domestic market and hold over 70% of the total employment tend to keep their capacity.

In this environment, the accumulation in ICT assets in Japan – that leads to technological progress and new business – has been slow. After 1995 when the ICT revolution has been generating new business, the ICT investment in Japan fell behind Korea, the UK, and the US. In particular, the contribution of ICT assets to economic growth is low in the Japanese service sector (Figure 5).

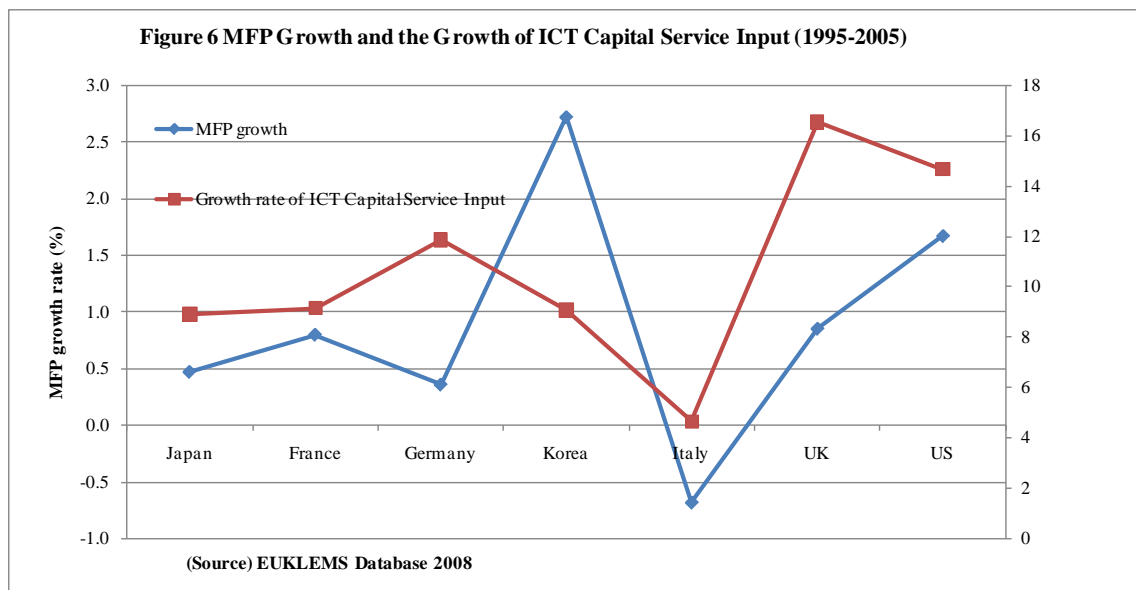


(Source) EUKLEMS Database 2009

3. The Role of Intangible Assets on Firm and Economic Growth

The accumulation in ICT assets is not a sufficient factor for firm and aggregate economic growth in the information age. As shown in Figure 6, productivity growth is

not necessarily correlated with the accumulation of ICT assets. Although the growth rate in ICT assets is high in the UK and US, a productivity gap exists between the UK and the US.

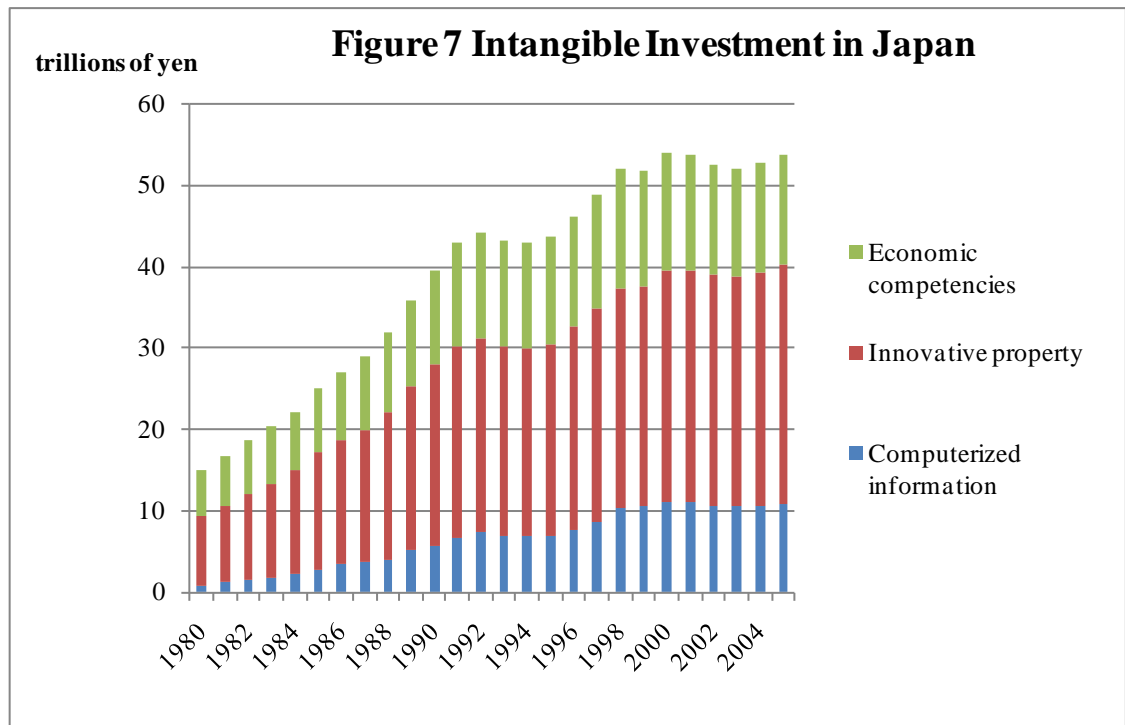


Therefore, economic researchers have recognized that intangible assets play a complementary role to ICT equipment. For example, a PC does not work without software. The new network or communication equipments may not contribute to productivity growth in a firm unless the conventional organizational management and human resource management are revised. As a result, the 2007 Economic Report of the President in the US stated, “Only when they made intangible investments to complement their IT investments did productivity growth really take off.”

Although the concept of intangible assets has been developed by international economic organizations such as OECD and EU since the 1980s, it took a long time to capture intangible assets quantitatively. The pioneering work on the measurement in intangible investment at the aggregate level was Corrado, Hulten and Sichel (2009, abbreviated as CHS hereafter). CHS classified intangible assets into three types: computerized information, innovative property, and economic competencies. Computerized information consists of, for example, software and databases. Innovative property includes scientific and nonscientific research and development (R&D), where the latter refers to, for example, mineral exploitation, copyright and license costs, and other product development, design, and research expenses. Finally, economic competencies include brand equity, firm-specific human capital, and organizational structure. Following their classification, they measured the amount of intangible investment in the US by using several statistics.

Following CHS, Fukao et al. (2009) measured the aggregate intangible investment in Japan. According to their estimates shown in Figure 7, the average annual value of intangible investment in Japan from 2000-2005 was 53 trillion yen (408 billion Euros). The share of intangible investment in GDP in the same period was 11.1 %, which is similar to the estimate for the US and the UK and larger than the estimate for Korea

(Table 2). Some characteristics of Japanese intangible investment are that investment in firm-specific resources is lower than those in many advanced countries, and that scientific R&D investment is the largest among advanced countries.



(Source) Fukao et al. (2009)

Table 2 International Comparison in Intangible Investment/GDP Ratio

| | | Total investment | Computerized information | Innovative property | Economic competencies |
|-------------|-------------------------------|------------------|--------------------------|---------------------|-----------------------|
| Japan | All industries (2000-05) | 11.1 | 2.2 | 6.0 | 2.9 |
| | Manufacturing (2000-05) | 16.6 | 2.1 | 11.5 | 3.0 |
| | Service (2000-05) | 9.2 | 2.4 | 3.6 | 3.2 |
| Australia | Market economy (2005-06) | 9.6 | 1.3 | 3.6 | 4.7 |
| Canada | All industries (2005) | 9.8 | 1.0 | 5.0 | 3.8 |
| France | Market economy (2004) | 8.3 | 0.9 | 3.1 | 4.4 |
| Germany | Market economy (2004) | 7.1 | 0.8 | 3.5 | 2.9 |
| Italy | Market economy (2004) | 5.2 | 0.7 | 2.3 | 2.2 |
| Korea | All industries (2000-05) | 6.7 | 1.6 | 3.2 | 1.9 |
| Netherlands | All industries (2005) | 8.4 | 1.4 | 1.8 | 5.2 |
| Spain | Market economy (2004) | 5.2 | 0.8 | 2.5 | 2.0 |
| UK | Market economy (2004) | 13.0 | 2.1 | 3.9 | 6.9 |
| US | Non-farm business (2000-2003) | 13.8 | 1.9 | 5.3 | 6.6 |

(Source) Barnes and McClue (2009), CHS (2009), Fukao et al (2009), Marrano, Haskel and Wallis(2009), Pyo, Chun, and Rhee(2010)

As the amount of intangible investment in Japan is relatively high, but has not increased since 1998, the growth rate in intangible assets was very low in the 2000s. Thus, the gap in labor productivity growth between Japan and the US in the first half of the 2000s is attributable to the gap in intangible assets between the two countries described in Table 3.

Table 3 Growth Accounting with Intangibles in Japan and the US

| | Japan | | | | US |
|--|-------------|--------------|-------------|-------------|-------------|
| | 1985-90 | 1990-95 | 1995-2000 | 2000-05 | 1995-2003 |
| Growth rate of labor productivity | 4.40 | 1.65 | 2.27 | 2.53 | 3.09 |
| Capital deepening | 2.66 | 1.75 | 1.34 | 1.17 | 1.68 |
| Tangible assets | 1.77 | 1.25 | 0.86 | 0.83 | 0.85 |
| Intangible assets | 0.89 | 0.49 | 0.47 | 0.33 | 0.84 |
| Labor composition | 0.44 | 0.49 | 0.51 | 0.42 | 0.33 |
| MFP growth | 1.30 | -0.59 | 0.43 | 0.95 | 1.08 |

(Source) Fukao et, al. (2009) and CHS (2009)

We suspect that the difference in investment behavior between Japan and the US is at least partially due to differences in their financial systems. In Japan, financial institutions such as banks play a major role in the provision of corporate funds, and they typically require tangible assets as collateral to provide financing. As a result, Japanese firms have preferred to accumulate tangible assets which can be used as collateral. In particular, small firms have been hampered in their growth because they often possess insufficient tangible assets to increase borrowing. As Japanese banks tended to be less willing to finance intangible investment after the financial crisis in the late 1990s, intangible assets in Japan have not been accumulated.

The slow growth in intangible assets means that the new innovative firms such as Microsoft, Apple, and Google that led the US growth in the late 1990s are not nurtured

in Japan. Hulten (2010) applied the method of CHS to the financial statements of Microsoft and measured the contribution of intangible assets to the growth of the company. Surprisingly, over 40% of sales growth in Microsoft was explained by accumulation in intangible assets.

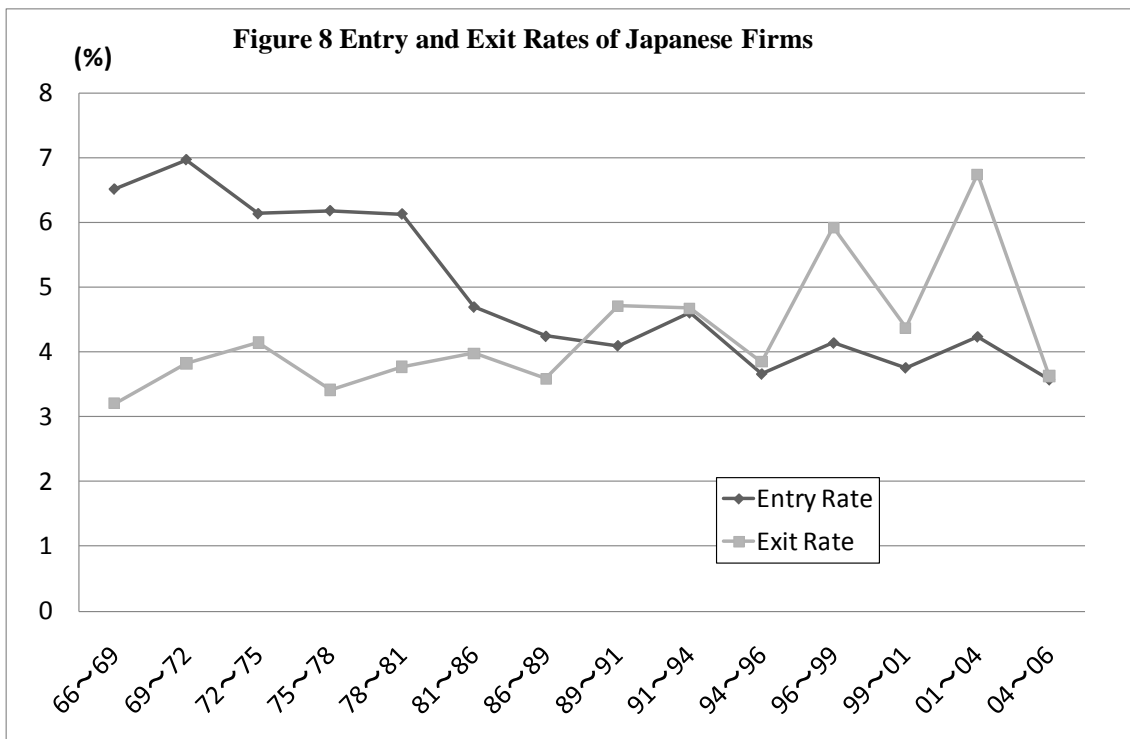
4. Lessons from the Japanese Experience

In the 2000s, the Japanese government implemented some growth strategies when the Prime Minister changed. However, these growth strategies were merely a compilation of the policies that each ministry wanted to promote, and lacked consistency. They did not show a coherent vision of the future industry structure in Japan to the people and firms in Japan.

The Japanese manufacturing sector is still competitive in the global market, but its share of employment in the total economy is less than 20% and they are not able to increase employment. Thus, we have to promote the growth in the service sector where an accumulation in intangible assets is more important than the manufacturing sector. However, as we showed in the previous section, Japanese intangible investment has not increased in the 2000s.

One reason for the slow growth in intangible assets is the traditional-thinking financial sector that does not have the know-how to finance intangible investment, as

pointed out in the previous section. Another reason is that firms are reluctant to accumulate intangible assets because they focused on some harsh restructuring after financial crisis. As a result, the entry rate of new firms that do not have enough tangible assets for collateral is decreasing in Japan (Table 8).



(Source) Establishment Survey in Japan

The Leaman Shock that occurred in 2008 is similar to the collapse of the bubble economy in 1990 and the financial crisis in 1997 in Japan. Many advanced countries in North America and Europe are likely to repeat the dismal experiences of the Japanese

economy. I have two suggestions for these countries to avoid 'Japanification' which means a long-term economic stagnation in the 90s and the 2000s in Japan.

One is that the government should show its vision of the economy to its people and firms. After the currency crisis in 1997, Korea totally changed its traditional management system and encouraged that the high-technology industry become a key industry for economic growth. Recently, the Korean government founded the Ministry of Knowledge Economy that has played a major role in informing the Korean people on the importance of intangibles.

The other suggestion is to promote a reform in the financial system to make it easier to evaluate intangible assets. According to the recent research in economics, productivity growth is attained by active entry and exit. The government should reform the financial system so that financial institutions are more easily able to provide financing to new entrants that have invaluable technologies and ideas.

I hope that making an effort to create a knowledge economy will help all advanced countries escape from the stagnation trap induced by the Leaman Shock.

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