The Economic Environment for Japan in 50 Years—Assessing the Future Impact of China and India

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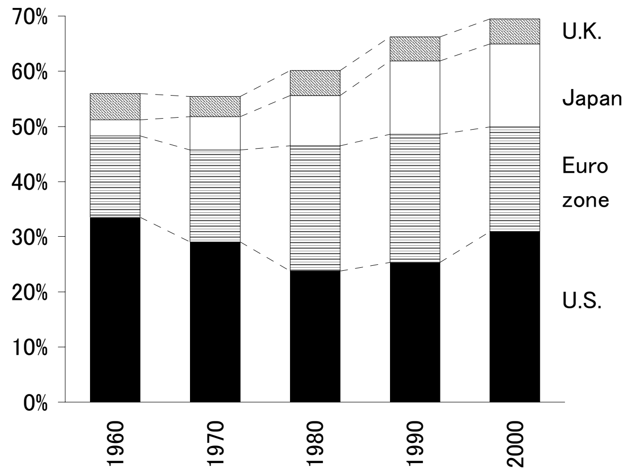
Introduction

Over the past 50 years, the world economy has been characterized by the leadership of the U.S., with Europe and Japan following close behind. The economic preeminence of the U.S., Europe and Japan in the world is quite apparent (Figure 1).

Figure 1 Share of World GDP (nominal US$)



Sources: IMF, World Bank

However, recent developments have vastly altered the structure of the world economy—the collapse of the Berlin Wall in 1989, fall of the Soviet Union and end of the Cold War, birth of the euro and expansion of the massive EU market, development of information and communications technology, and population aging in Japan and Europe. Perhaps one of the most important phenomena has been the strong growth of China and India, who together comprise approximately 40% of the world's population, since the 1990s on the strength of globalization, and the possibility of accelerated growth in the 21st century to become major economic powers that will vastly alter the world's economic map.

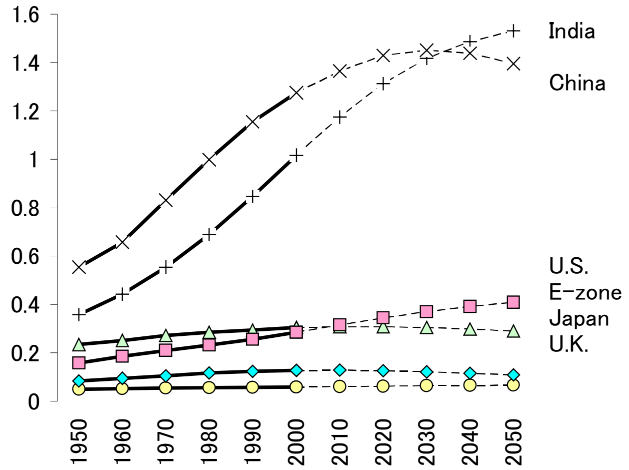
In light of these changes in the structure of the world economy at the start of the 21st century, this paper performs simple calculations of trends in population and per capita GDP, examines how the world economy will change in the next 50 years, and assesses the impact on Japan.

1. World Population Composition in 50 Years

According to U.N. statistics, the world's population stood at 6.3 billion at the end of 2002, and is projected to grow to 8.9 billion by 2050.[1] Since the world's population was 2.5 billion 50 years ago, the growth of 2.6 billion over the next 50 years is equivalent in absolute terms; however, the growth rate will decline by half due to the higher death rate from aging, sustained decline in birth rate, and diseases such as HIV/AIDS.

By country, Japan's population is projected to peak out in the next decade and gradually decrease, while that of Europe (specifically the 12 member states of the euro zone) will also peak out early this century, and drop in population ranking. Among industrialized countries, the U.S. population is predicted to continue growing but at a slower pace, so that its proportion in the world population will not increase (Figure 2).

Figure 2 Population Trends of Major Economies (billion persons)



Source: U.N., *World Population Prospects*.

On the other hand, populations in Africa are predicted to grow beyond the 21st century. Nigeria will reach the 100 million mark in 2005, Ethiopia in 2030, and Egypt in 2040. These three countries will thus eventually outsize Japan's population.

Meanwhile, the historically large populations of China and India are both projected to maintain populations of over 1 billion in the next 50 years. Due partly to birth control policies, China's population is predicted to peak out in 2030, relinquishing its longstanding position as

[1] U.N., *World Population Prospects: The 2002 Revision*, February 2003.

the world's largest since the 19th century to India in 2040. However, both countries will remain the world's two most populated countries.

2. Per Capita GDP as Indicator of Economic Strength

National economies achieve growth not only through population growth, but through the accumulation of capital and technology. Advances in these three factors enhance economic strength, boost per capita GDP, and bring about economic prosperity.

China and India show that having a large population alone does not lead to economic strength. As Figure 3 shows, the economic strength of China and India is not necessarily proportional to population. In 2000, per capita GDP in both countries (in nominal U.S. dollars unless otherwise noted) was less than $1,000 (IMF basis),[2] far below the average of industrialized economies and even the global average.

Figure 3 Comparison of National Economies and Populations (2000)

① Population		② Nominal GDP		③ Per capita GDP	
World	6,070.58 mil.	World	US$ 31,397.7 bil.	World	US$ 5,241
1 China	1,275.22	1 U.S.	9,824.7	1 Luxemburg	43,848
2 India	1,016.94	2 Euro zone	6,073.3	2 Japan	37,578
3 Euro zone	304.47	3 Japan	4,766.7	3 Norway	37,064
4 U.S.	285.00	4 Germany	1,875.2	4 U.S.	34,796
5 Indonesia	211.56	5 U.K.	1,440.9	5 Switzerland	33,309
6 Brazil	171.80	6 France	1,309.9	6 Iceland	29,903
7 Russia	145.61	7 China	1,080.0	7 Denmark	29,661
8 Pakistan	142.65	8 Italy	1,077.6	8 Qatar	29,119
9 Bangladesh	137.95	9 Canada	717.1	9 Sweden	26,992
10 Japan	127.03	10 Brazil	599.8	10 Ireland	25,102
13 Germany	82.28	13 India	463.2	22 Euro zone	7,347
21 France	59.30	14 Korea	461.5	115 China	852
168 Luxemburg	0.44	66 Luxemburg	19.2	134 India	457

Notes: For euro zone, nominal GDP and per capita GDP are calculated for the 12 member states.
Global per capita GDP is calculated from available data for 175 countries and regions.
Shows ranking for both entire euro zone and member states.
Source: U.N., *World Population Prospects*; IMF, *World Economic Outlook*.

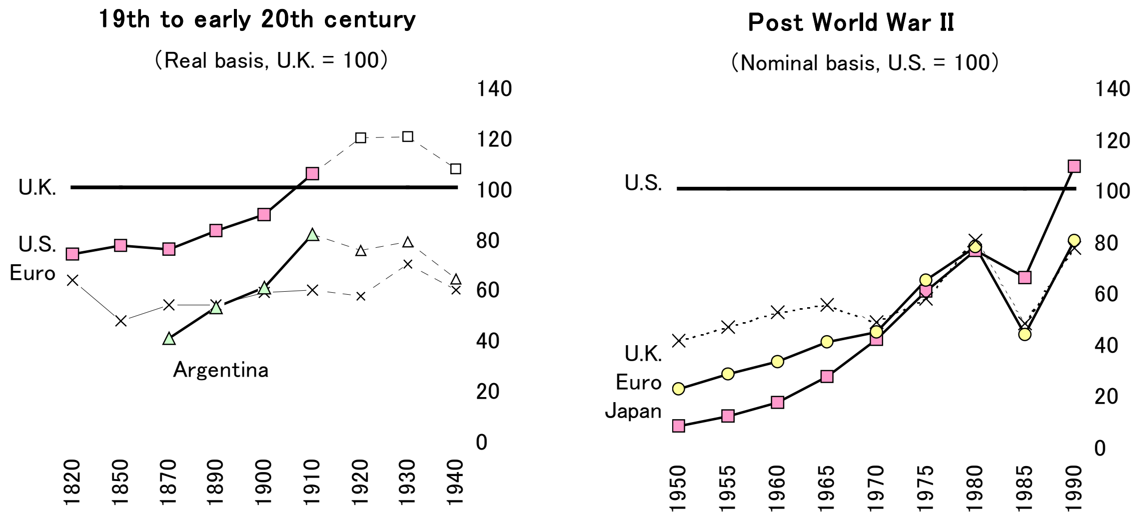
Historically, one country has dominated each era with a high per capita GDP, while other countries have tried to catch up to it. For example, in the late 19th century, the U.S. and Argentina struggled to catch up with the U.K., while in the post-World War II era, Europe and Japan strove to catch up to the U.S.

The U.S. attempted to catch up with the U.K. in the 19th century, and managed to do so in per

2 IMF, *The World Economic Outlook (WEO) Database*, April 2003.

capita GDP in the early 20th century. As a result, the U.S. achieved economic supremacy over the U.K., and per capita GDP also surged ahead. On the other hand, Argentina, which at one point surpassed continental Europe in per capita GDP, later regressed due to delayed industrialization after World War I and stagflation after World War II, and as a result fell further behind the U.S. and U.K. For the period from the 19th to early 20th century, Figure 4 shows real per capita GDP estimates by Maddison (Figure 4).[3]

Figure 4 Catching Up in per Capita GDP: A Historical Perspective



Sources: For 19th to early 20th century, Maddison, *Monitoring the World Economy 1820-1992*. For postwar era, IMF, *International Financial Statistics*, and *World Economic Outlook*; U.N., *World Population Statistics*.

In the second half of the 20th century, Europe and Japan worked hard to catch up to the U.S. Both continental Europe and the U.K. were depleted by World War II, and managed to gradually close the gap in per capita GDP with the U.S. so that by 1990, per capita GDP in the U.K. and euro zone (12 member states) had recovered to 80% that of the U.S.

Meanwhile, Japan, still in an early development stage after the war, experienced rapid economic and per capita GDP growth in the postwar era. Since the 1970s, due partly to the floating exchange rate system and strong yen following the Nixon shocks, Japan was able to reduce the gap with the U.S. and achieve parity by 1990. During this time, Japan's per capita GDP growth exceeded that of the U.S. by approximately 7%, an unprecedented growth rate in history (Figure 4).

Also important was the catch-up among newly industrialized economies (NIEs) such as Hong Kong and Singapore since the 1980s (Figure 5). Though temporarily mired by the Asian

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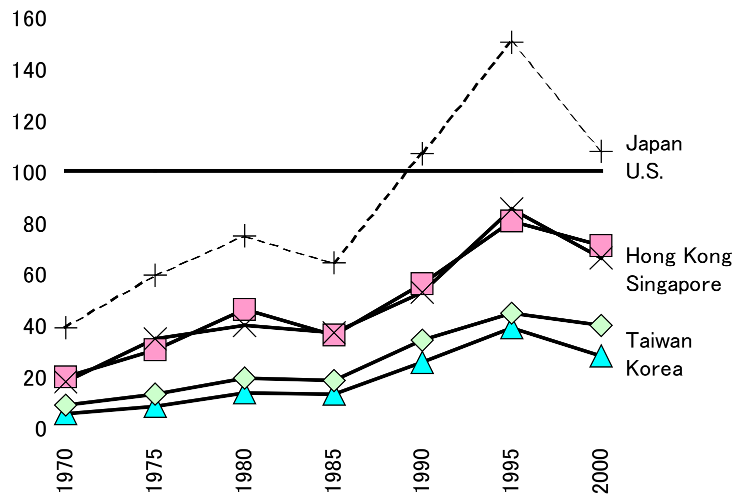
[3] Angus Maddison, *Monitoring the World Economy 1820-1992*, Toyo Keizai Shinposha, 2000.

financial crisis of 1997, these economies and Japan show how swiftly an economy that has achieved takeoff can catch up with the rest of the world.

Figure 5　Catching Up in Asia (U.S. = 100)



Source: IMF, *World Economic Outlook*.

3.　Conditions for Catching Up [4]

If national economic growth could be achieved through population growth, capital accumulation and technological progress, we could conclude that countries that lag behind in economic development could boost growth and catch up through technology transfer from advanced economies, so that per capita GDP would converge for all countries of the world.

However, the fact is that economic levels are not necessarily converging around the world. Indeed, as with Argentina in the 20th century, many countries in Africa and South America are actually falling further behind advanced economies in income.

This has occurred against the backdrop that while late developers have a high population growth rate, not only is their economic growth rate low to begin with due to low investment ratios and capital productivity, but the gap cannot be reduced because educational systems necessary to enhance per capita capital equipment, technology, and technical skills are undeveloped. In addition, economic infrastructure components (institutional, social, and policy) do not improve productivity of capital and technology, while rampant corruption reduces the incentive to invest. Thus capital and technology fail to accumulate, making catching up all the more difficult. These limitations to economic development have occurred in China and India.

[4] Charles I. Jones, *Introduction to Economic Growth*, W.W. Norton & Co., 1998.

4. China and India are Catching Up

Although their large populations failed to cause economic growth in the past, China and India appeared on the verge of economic takeoff in the 1990s.

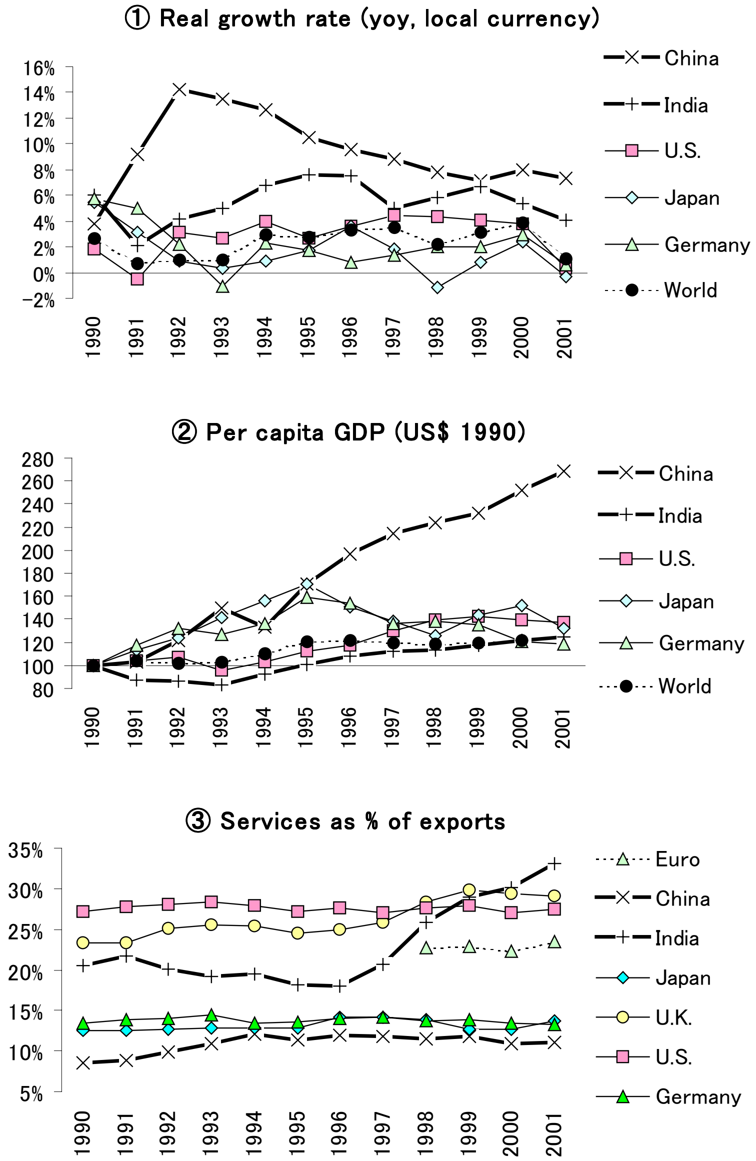
Since the 1990s, China and India have pursued economic reforms and achieved higher growth rates than industrialized economies (Figure 6). In particular, China's per capita GDP, though far behind industrialized economies, is growing remarkably. If the renminbi, which is currently pegged to the dollar, floats in the future and appreciates due to the current account surplus, per capita GDP growth could accelerate as in Japan in the 1970s, causing the gap with industrialized economies to shrink drastically.

On the other hand, India's per capita GDP growth remains low. But with its current account turning to surplus in fiscal 2001 and 2002, and the rupee's devaluation abating, India's per capita GDP growth is expected to turn positive. Moreover, whereas globalization has benefited blue collar workers in China, India's white collar workers have begun to benefit from globalization. For example, in service and IT industries, U.S. companies are concentrating on India more than China for outsourcing call centers and subcontracting software design. In fact, while India has a persistent trade deficit in goods, the surplus in services continues to grow, and the ratio of services in total exports is as high as the U.S.

The takeoff of China and India in the 1990s occurred against the backdrop of economic infrastructure components falling into place (institutional, social and policy). That is, China's adoption of economic reform in 1978 and WTO accession in 2001 reduced the institutional gap with G7 nations compared to the former socialist economy. In India, the shift to economic liberalization from 1991 reduced the economic infrastructure gap with industrialized economies, while educational progress such as the rising rate of advancement to secondary education is expected to lead to higher income levels in the future.

At the Davos conference in January, the media reported that discussions focused on the future of China and India more than Japan. Clearly, the world's attention is focusing on both countries, and recognition is growing that the world economy rests on the future of these two countries.

Figure 6　Data Suggesting High Growth Potential of China and India



Sources: IMF, *International Financial Statistics*, and *World Economic Outlook*.

5.　The World Economy in 50 Years

As mentioned earlier, the world economy has centered on the U.S., Europe, and Japan over the past 50 years. We now consider whether the U.S., Europe and Japan will continue to play a major role in the next 50 years. In addition to their population trends, if China and India can move from the takeoff stage to catch-up stage, they could alter the map of the world economy in the next 50 years. Using U.N. population projections and making the following assumptions, we performed a simple simulation based on the level of development of China and India, and constructed an image of the world economy 50 years from now.

(1) Countries and Regions in the Simulation

Our simulation includes six countries and regions that rank high in either population or economic scale: Japan, U.S., Europe (euro zone), U.K., India, and China. These countries accounted for approximately 60% of global GDP (in U.S. dollars) in 1970, and their share has stabilized at 75% since the 1990s. Thus we assume that they will continue to comprise 75% of global GDP in the next 50 years.

(2) Per Capita GDP Growth

Regarding per capita GDP in the six countries, we assume: (1) per capita GDP growth in the U.S. will remain at 4-4.5%, its average rate since the 1990s, and (2) per capita GDP in other industrialized economies (Japan, Europe, and the U.K.) will converge with the U.S. by 2010, and subsequently grow at the same level as the U.S. until 2050. We hypothesized two scenarios for China and India. In Case 1, China and India gradually catch up with industrialized economies, with per capita GDP growing at approximately 8-9%. This is consistent with the pace of convergence in continental Europe from the 1950s to 1970s, and in Asia from the 1970s. In Case 2, per capita GDP grows at almost 12% annually, the growth pace equivalent to what Japan experienced in absolute terms over the 50-year postwar period.

For both cases, simulation results for the world economy in the next 50 years are shown in Figures 7 and 8. In Case 1, where China and India grow per capita GDP slightly faster than the U.S., China will achieve only 25% of the per capita GDP of industrialized economies, and India less than 20%. Thus the gap with industrialized economies will remain large (Figure 8).

Nonetheless, in terms of national GDP, by virtue of their large populations, China and India will boast economies comparable in size to the U.S. and euro zone.

Industrialized economies will also be in transition. First, while the U.S. will remain largest, its share of the global economy will decline from over 30% during the past 50 years, to approximately 20%, the same as China 50 years ahead. Although the euro zone will also be a large economy, its relative ranking will decline.

As for Japan, its 15% share of the global economy in the 1990s will decrease to only 5%. Thus even if Japan's per capita GDP growth keeps up with other industrialized economies, Japan as well as the U.K. will become minor economic powers 50 years in the future.

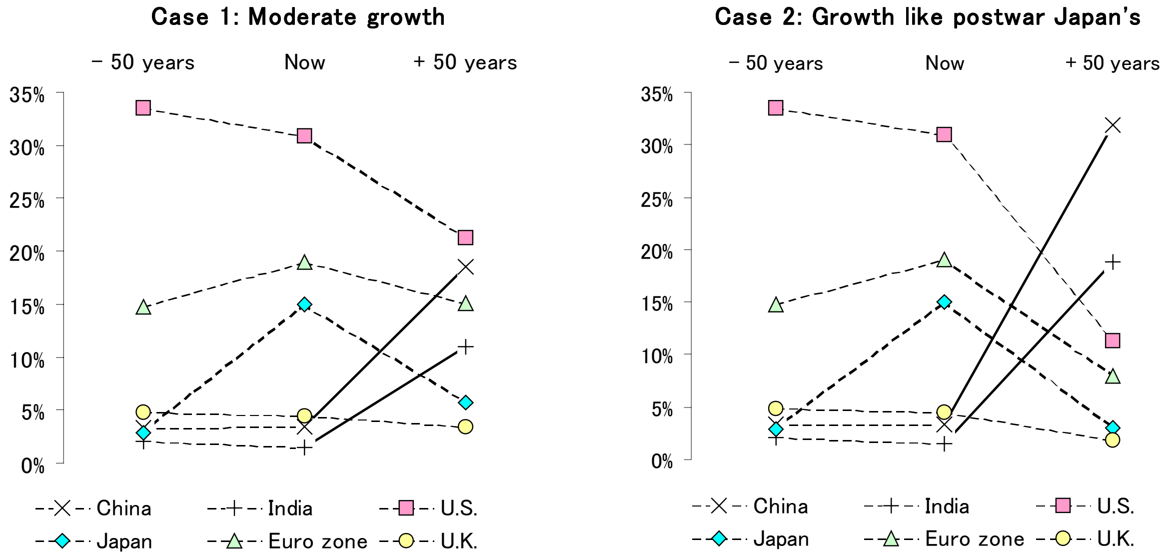
If Case 1 unfolds, the economic order of the past 50 years, in which Japan and Europe played catch-up with the U.S., will over the next 50 years shift to one led by the U.S. and China, with India playing catch-up.

In Case 2, where per capita GDP of China and India grows at a pace comparable to Japan during the rapid growth era, China will catch up in 50 years with industrialized economies, while India would reach 50% that level. Moreover, the two economies would comprise half of the world's GDP, and thus usurp the position of U.S. and Europe.

Case 2 may be hard to imagine, but is not impossible if the catch-up in per capita GDP is a factor not only of income but of exchange rate adjustments that strengthen the renminbi and rupee. Moreover, if African countries, with their rapidly growing populations, can accumulate capital and engineer an economic takeoff, the global share of Japan, the U.S., and Europe will shrink further.

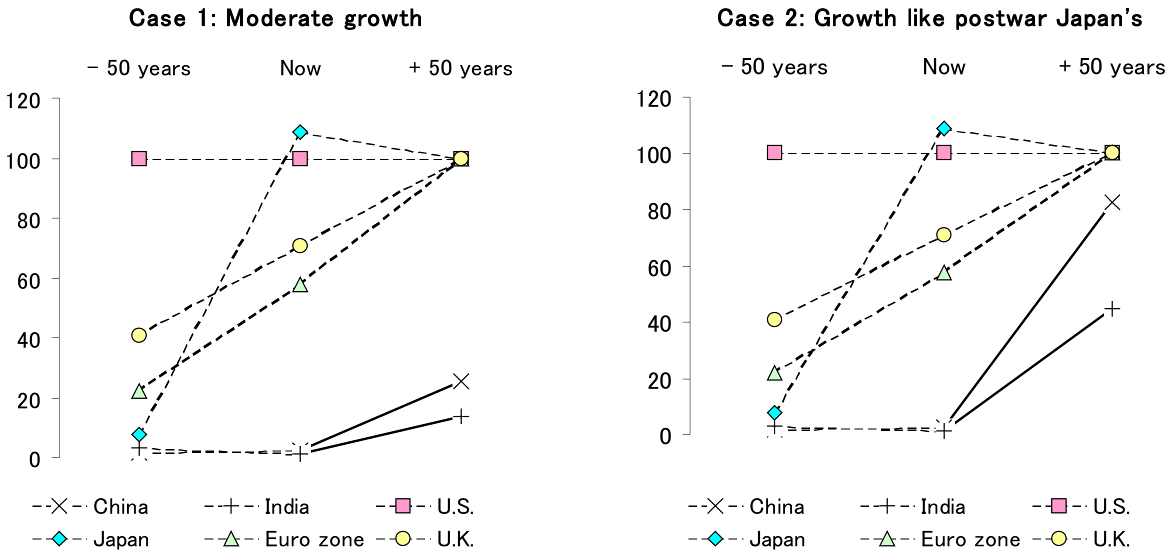
However, as was the case during the past 50 years, China and India still face significant obstacles to development. China confronts issues such as income disparities between urban and rural areas and between coastal and inland areas, bad loans comprising over 30% of outstanding loans by financial institutions to state-owned enterprises, and serious pollution problems. India has similar income disparities, as well as religious disputes with neighboring countries. Moreover, China has yet to overcome obstacles to catching up such as rampant corruption, presence of strong vested interests, and continuing government control of the economy. Both countries will need to resolve such problems and build the necessary economic infrastructure (institutional, social, and policy).

Figure 7　World Economy in 50 Years (by GDP Share)



Sources: IMF, U.N., World Bank.

Figure 8　Per Capita GDP in 50 Years (U.S. = 100)



Sources: IMF, U.N., World Bank

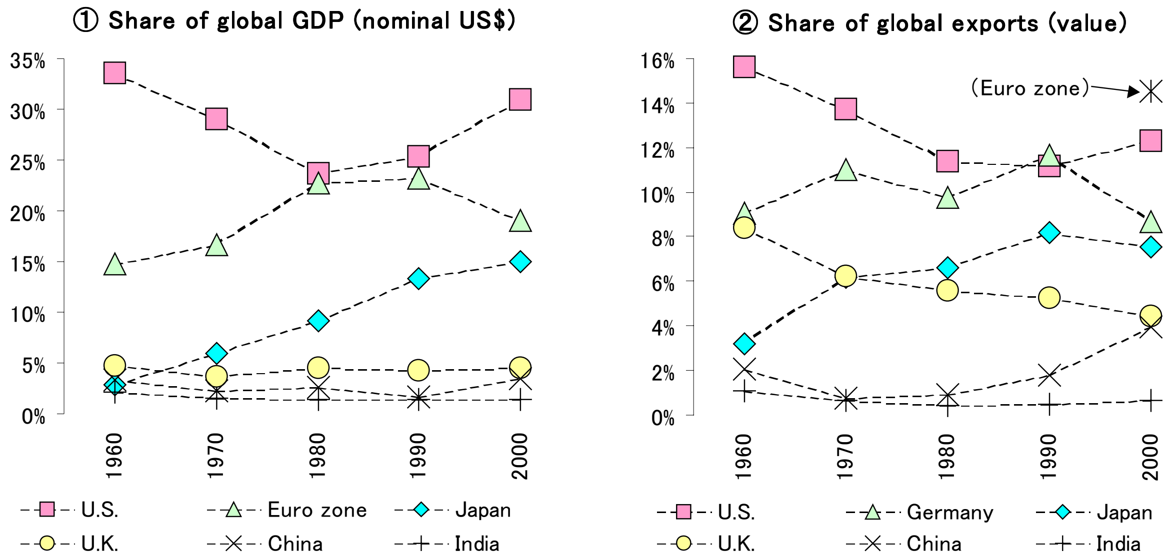
6. Environment Surrounding Japan in 50 Years

If growth in China and India will alter the structure of the world economy, how will Japan be affected? First, the flow of goods will be vastly altered. As Figure 9 shows, since trade volume is basically linked to size of economy, as China and India grow into huge economies, the chief players in world trade will shift from the U.S., Japan and Europe to the U.S., China and India. This will significantly affect Japan's trading partners in that Japan's main trading partners will diversify from the U.S. to China, India and other areas. Already, in fact, the primary source of imports to Japan is no longer the U.S. but China. Such changes will increasingly affect exporters in the future.

Second, as the economies of Japan and Europe shrink in relative terms and the world economy becomes centered on the U.S., China, and India, the global flow of funds in financial markets will change. Thus far, Japan has recycled its massive current account surpluses through capital outflows and growth in net external assets. However, as the population ages and excess savings in the IS balance diminish, current account deficits are likely to cause the yen to depreciate, so that capital will no longer flow from Japan and Europe to the U.S., but from China and India to Japan, the U.S. and Europe.

In the foreign exchange market, the dollar rate is emphasized because of the dollar's strong presence and position as a key currency. However, if the world economy changes as described above, in 50 years the yen's value against the renminbi and rupee will be more closely watched than the dollar, and Japan may enter an era of great economic influence. In any case, fixation on the yen-dollar rate since the beginning of the floating exchange rate system is likely to shift to a focus on multiple currencies.

Figure 9 Size of Economy and Amount of Trade

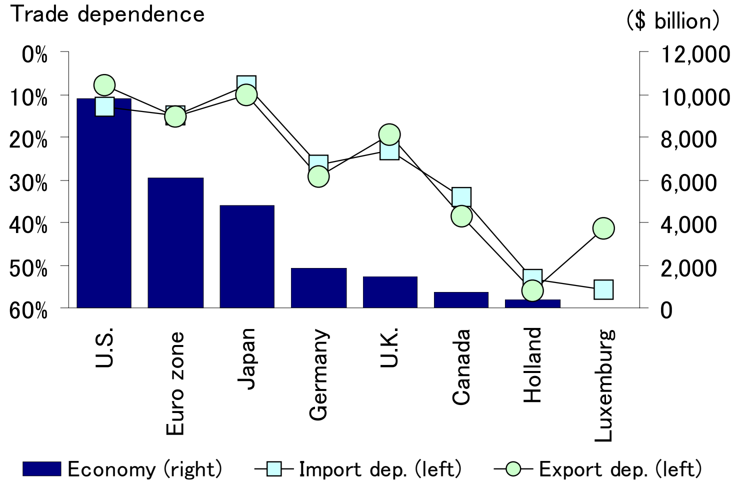


Source: IMF, *International Financial Statistics*.

Third, as Japan's economic strength recedes, changes may occur domestically. First, Japan's trade dependence is likely to grow. As Figure 10 shows, while dependence on exports and imports is approximately 10% for large economies like the U.S. and Japan, dependence is extremely high for small economies such as Holland and Luxemburg. This is because while large economies tend to be self sufficient, smaller economies must import what they cannot supply themselves, and must also import unfinished imports, which are processed into finished goods for export. To remain prosperous as a small economy in the future, Japan will need to increase its trade dependence, and specialize in value-added manufacturing.

Finally, whereas Japan's economy has been highly centralized to enable the efficient flow of goods, the growing trade dependence in the future will cause local economies to develop so as to better accommodate trade with Asia and elsewhere. Contradictory as it may seem, Japan's success in shifting to a more diversified economic structure depends on its becoming a smaller player in the world.

Figure 10 Size and Trade Dependence of Industrialized Economies (2000)



Notes: Trade dependence = (Exports or imports) / nominal GDP. Size of economy is nominal GDP calculated in US$.
Sources: IMF, *International Financial Statistics*, and *World Economic Outlook*.

7. Coexistence with Asia is Key to Japan's Future

As mentioned earlier, considering world population trends and the economic takeoff of China and India, Japan will inevitably become a minor economic power in 50 years. Only by growing per capita GDP at a fantastic rate can Japan remain a major economic power, given its declining population.

But does becoming a minor economic power mean that Japan will also become a poor country? Not according to Figure 3, which shows that ranking first in size of economy or population does not necessarily indicate prosperity. Indeed, small countries such as Luxemburg, Switzerland, and Norway enjoy economic prosperity by virtue of achieving a high per capita GDP.

As China and India grow, competition in the world economy will intensify not only in manufacturing but in services. Japan, predicted to become a minor economy and increasingly dependent on trade, can secure economic prosperity by taking the lead in collaborating with China, India and the rest of Asia, as well as by enhancing its own technological strength by developing the necessary educational and economic infrastructure.

The U.K., which has already experienced a decline in economic power, may not equal the euro zone in economic size, but still boasts London as a key financial center on a par with the euro zone. Moreover, Luxemburg and Switzerland, who have a high per capita GDP, are also financially superior to Germany and France. In the future, if Japan relinquishes its financial lead to Singapore or Hong Kong, Japan will weaken not only economically but financially, and the yen will be relegated to a local currency.

Europe achieved economic integration at a moderate pace during the postwar era, with monetary union finally occurring in 1999. If China and India join the ranks of major economic powers in the next 50 years, Japan, being closely tied to these countries and geopolitically better situated than Europe, stands to benefit enormously by developing a currency system in Asia that includes China, India, Korea, and ASEAN. By building a flexible currency zone for the yen and Asian currencies, or integrating currencies, Japan could secure a position in Asia's financial markets. It would increase Japan's purchasing power, and sustain Japan's high per capita GDP on the strength of the economic rise of China and India in the next 50 years. Japan could thus avoid decline as a financial center and capital flight, thereby escaping the fate of Argentina.

For Japan, as a minor economic power in the future, coexistence with Asia's future economic powers will be crucial. Indeed, it is no exaggeration to say that Japan's success in doing so will determine its economic prosperity.