Global Japan

2050 Simulations and Strategies

Global Japan Special Committee

Keidanren, the 21st Century Public Policy Institute

April 16, 2012

Introduction

Japan could fall from its position as a developed country

Japan is falling into a "no-growth economy" where nominal GDP has stopped at the approximately the level of 20 years ago. National government debts have reached 200% of GDP, and public finance and social security are facing a crisis. In March 2011, Japan experienced the unparalleled Great East Japan Earthquake, and subsequently the issue of long-term energy restrictions arose. Moreover, there is also tension regarding security assurance within the East Asian region, where Japan is located. It is under these circumstances that in the future Japan will become a depopulating society in earnest. The rapid progression of the aging of the population coupled with the dwindling birthrate in Japan—the fastest in the world—will exert an immense impact on the whole of economic society. If this situation continues, there is even the danger that Japan could fall from its position as a developed country, reverting to being just a small Far Eastern country. It can be said that Japan is a so-called "Forerunner of Emerging Issues" as we face many of the issues being experienced by other countries, including responding to a diminishing population and super-aged society, strengthening growth potential, and reforming public finance/social security.

Opportunities for Overcoming the Crisis

The 21st century is said to be the century of the Asia-Pacific region. Emerging countries are growing, improving the living standards of many people. In particular China, with its enormous population, continues to enjoy high growth, despite risks. The United States, too, continues to maintain extraordinary population growth for a developed country and socioeconomic dynamism.

Against this background, how Japan can maintain socioeconomic dynamism and realize rich and prosperous living for Japanese citizens is being called into question. Brushing aside the impact of the diminishing population and continuing economic growth is extremely difficult without extraordinary effort. However, it is a fact that Japan is exceptionally positioned in the center of the Asia-Pacific region, which is the world's center of growth.

First of all, looking candidly and directly at Japan's current situation, it is necessary that efforts be made as a nation to resolve the mountain of issues the country faces. Although pulling out of deflation is an issue for the foreseeable future, an essential issue is raising the economy's potential growth rate by promoting reforms in the medium-to-long term. In addition to creating an environment in which each citizen can "make a full effort", it is imperative that Japan incorporate the vitality of the dynamic Asia-Pacific region. Through such measures, we must pass on a richly prosperous and appealing Japan to our children and grandchildren without passing these issues onto them as well. Looking back, our forebears faced and overcame a multitude of crises in and after the Meiji era.

Strategies Aimed towards 2050

Based on awareness of these issues, the KEIDANREN 21st Century Public Policy Institute decided to not only conduct simulations of the world economy and Japanese public finance in 2050, but also clarify the issues that Japan must tackle and raise issues widely. Since January 2011 we have been amassing the wisdom of the academic, economic, and government worlds and tirelessly conducting discussions with experts in various fields—economics, industry, employment, tax/pubic finance/social security, and foreign policy/national security—as well as international surveys, etc., and these efforts have recently been compiled into a report.

I would be most pleased if this report were to be read by many people and serve as a catalyst for invigorating national discussion concerning Japan's future. The KEIDANREN 21st Century Public Policy Institute will also continue to regularly review the contents of this report, as well as to promote concrete investigation on the issues the report examines. At the same time, the Institute will proactively pursue dialogue across all levels of Japanese society and transmit information both throughout Japan and overseas. Of course, implementing policies to create a "strong Japan" is the responsibility of the government; however, Japan has had a new prime minister each year for the past five years and politics are in disarray. I earnestly hope that the political leaders of the government's ruling and opposition parties seriously consider the issues raised in this report and advance government policies.

Tomijiro Morita
President, KEIDANREN 21st Century Public Policy Institute
Chairman, Global Japan Special Committee

April 2012

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I. Summary

Global Japan: 2050 Simulations and Strategies

Keidanren, the 21st Century Public Policy Institute

- Due to the population beginning to drop in earnest, there is concern that the Japanese economy will experience constant negative growth from the 2030s onwards (losing developed country status)
- We must look straight at this serious reality and consider the steps that the Japanese economy should take (there is a chance)

1. Simulations of the World Economy and Japanese Public Finance in 2050

In order to attain long-term economic predictions for up until 2050 for 50 countries worldwide, these simulations estimate potential growth rate from the supply side ((1) Labor force population, (2) Capital=Investment, (3) Productivity) while taking exchange rate fluctuations into consideration.

1) Premise for World Economy Simulations

(1) Labor Force Population

In Japan, the birthrate is declining and population aging at the fastest rate in the world. By 2050, the total population will fall below 100 million, with the population aged 65 years and over comprising 38.8% of the total and the labor force decreasing by 21.52 million to 44.38 million.

Total Population Projections for Japan

(Units: 1,000 people; %)

	2010	2020	2030	2040	2050
Total Japanese population	128,057	124,100	116,618	107,276	97,076
		2011-20 Average annual growth rate	2021-30 Average annual growth rate	2031-40 Average annual growth rate	2041-50 Average annual growth rate
		- 0.31	- 0.62	- 0.83	- 0.99

Labor force Projections for Japan

(Units: 1,000 people; %)

	2010	2020	2030	2040	2050
Japanese labor force population	65,904	61,775	57,227	50,344	44,380
		2011-20 Average annual growth rate	2021-30 Average annual growth rate	2031-40 Average annual growth rate	2041-50 Average annual growth rate
		- 0.65	- 0.76	- 1.27	- 1.25

(Sources) National Institute of Population and Social Security Research Medium variant (2012)

(2) Capital

As the population ages, there is also expected to be a decrease in saving=a decrease in investment; and capital accumulation is expected to slow.

(3) Productivity

In four scenarios for the Japanese economy, the following productivity growth rates are assumed.

Productivity Growth Rates for the Japanese Economy by Scenario (figures in parenthesis are values converted to the contribution to GDP growth rate)

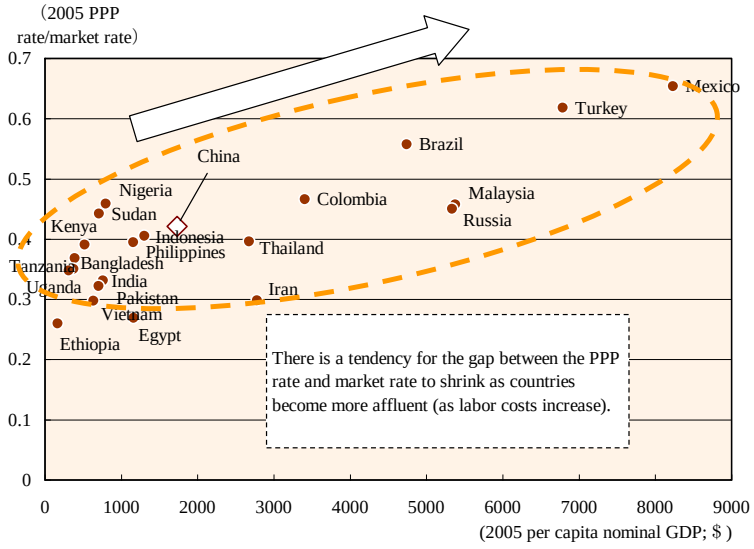
	1981 -90	1991 -00	2001 -10	1991 -2010	2011-20	2021-30	2031-40	2041-50
Base 1 (average developed country productivity)	2.28% (1.5%)	−0.01% (0.0%)	1.00% (0.7%)	0.5% (0.3%)	1.05% (0.7%)	1.15% (0.8%)	1.2% (0.8%)	1.2% (0.8%)
Base 2 (continuing the "Lost 20 Years")					0.5% (0.3%)	0.5% (0.3%)	0.5% (0.3%)	0.5% (0.3%)
Pessimistic scenario (drop in productivity growth due to financial deterioration)					−0.45% (−0.3%)	−0.35% (−0.2%)	−0.3% (−0.2%)	−0.3% (−0.2%)
Improved labor force participation rate					1.05% (0.7%)	1.15% (0.8%)	1.2% (0.8%)	1.2% (0.8%)

- Base 1 (average developed country productivity) — Restore productivity growth rate to the average of 1.2% for developed countries (corresponding to 0.8% GDP growth rate)
- Base 2 (continuing the "Lost 20 Years") — By 2050, the productivity growth rate stabilizes at the average 1991-2020 value of 0.5% (corresponding to 0.3% GDP growth rate)
- Pessimistic scenario — The GDP growth rate is expected to drop 1 percentage point lower than in Base Scenario 1 (corresponding to a drop in the productivity growth rate of 1.5 percentage points)
  According to Reinhart & Rogoff ("Growth in a Time of Debt," American Economic Review: Papers & Proceedings 100, 2010, p.573-578), based on the assumption that countries with a debt-to-GDP ratio of 90% or higher will experience falls in economic growth of around 1 percentage point, the corresponding productivity growth rate was lowered.
- Improved labor force participation rate scenario — The labor force participation rate for women in Japan is expected to increase on par with that of Sweden between 2020 and 2040.
  Example: increase the labor force participation rate for women aged 40-44 from 72.5% in 2020 → 90.5% in 2040

(4) Exchange Rates

Based on the purchasing power parity (PPP) rate for 2005, the exchange rates are assumed to fluctuate according to the correlation between growth in per capita GDP and PPP rate/market rate

We estimate predicted value for exchange rate based on the idea that there is a tendency for the gap between the market rate and PPP rate to shrink as countries become more affluent. For example, while there was a gap of 0.42 times between China's market rate and PPP rate in 2005 (per capita GDP of 1,731 dollars converted with the market rate compared to 4,115 dollars converted with the PPP rate), we assume the gap in 2050 will shrink as much as 0.68 times.



Example: PPP rate/market rate

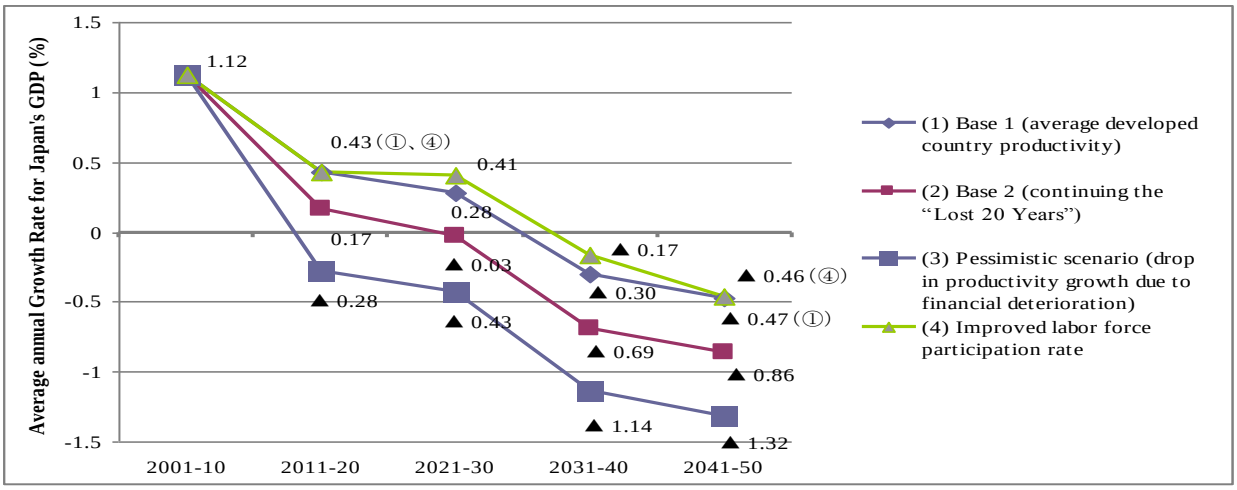
China 0.42 in 2005 → 0.68 in 2050
Japan 1.18 in 2005 → 1.16 in 2050

(Sources): Prepared by the Japan Center for Economic Research from World Bank data

2) Results of World Economy/Japanese Public Finance Simulations

(1) GDP Growth Rate (Real)

Even if productivity recovers, the impact of the declining birthrate and aging of society is large, with negative growth expected from the 2030s onwards. If perchance financial collapse does occur, there is the risk of continuous negative growth.



(2) Decomposition of GDP Growth Rate

Japan will be affected immensely by the population decline, with the two elements of labor and capital exerting continuous downward pressure on the growth rate in the medium to long term.

(Unit: %)

		2011 -20	2021 -30	2031 -40	2041 -50	2011 -50
Base 1	Average annual Growth Rate for Japan's GDP	0.43	0.28	- 0.30	- 0.47	- 0.02
Average developed country productivity	Labor force contribution level	- 0.43	- 0.51	- 0.86	- 0.84	- 0.66
	Capital contribution level	0.20	0.14	- 0.35	- 0.57	- 0.14
	Productivity contribution level	0.70	0.77	0.80	0.80	0.77
Base 2	Average annual Growth Rate for Japan's GDP	0.17	- 0.03	- 0.69	- 0.86	- 0.35
Continuing the "Lost 20 Years"	Labor force contribution level	- 0.43	- 0.51	- 0.86	- 0.84	- 0.66
	Capital contribution level	0.20	0.14	- 0.43	- 0.66	- 0.19
	Productivity contribution level	0.33	0.33	0.33	0.33	0.33
Pessimistic scenario	Average annual Growth Rate for Japan's GDP	- 0.28	- 0.43	- 1.14	- 1.32	- 0.80
Improved labor force participation rate	Average annual Growth Rate for Japan's GDP	0.43	0.41	- 0.17	- 0.46	0.05
Labor force participation rate for Japanese women to increase on par with that of Sweden	Labor force contribution level	- 0.43	- 0.33	- 0.69	- 0.85	- 0.58
	Capital contribution level	0.20	0.14	- 0.33	- 0.55	- 0.13
	Productivity contribution level	0.70	0.77	0.80	0.80	0.77

(Note) Due to exchange conversion, the total of each element does not correspond with growth rates

(3) GDP

China, the United States, and now India have assumed the throne of world superpowers. If the scale of Japan's GDP drops to below that in 2010to No. 4 in the world (Base Scenario 1), its scale will be one-sixth that of China and the United States and less than one-third that of India, with Japan's presence on the world stage significantly diminished.

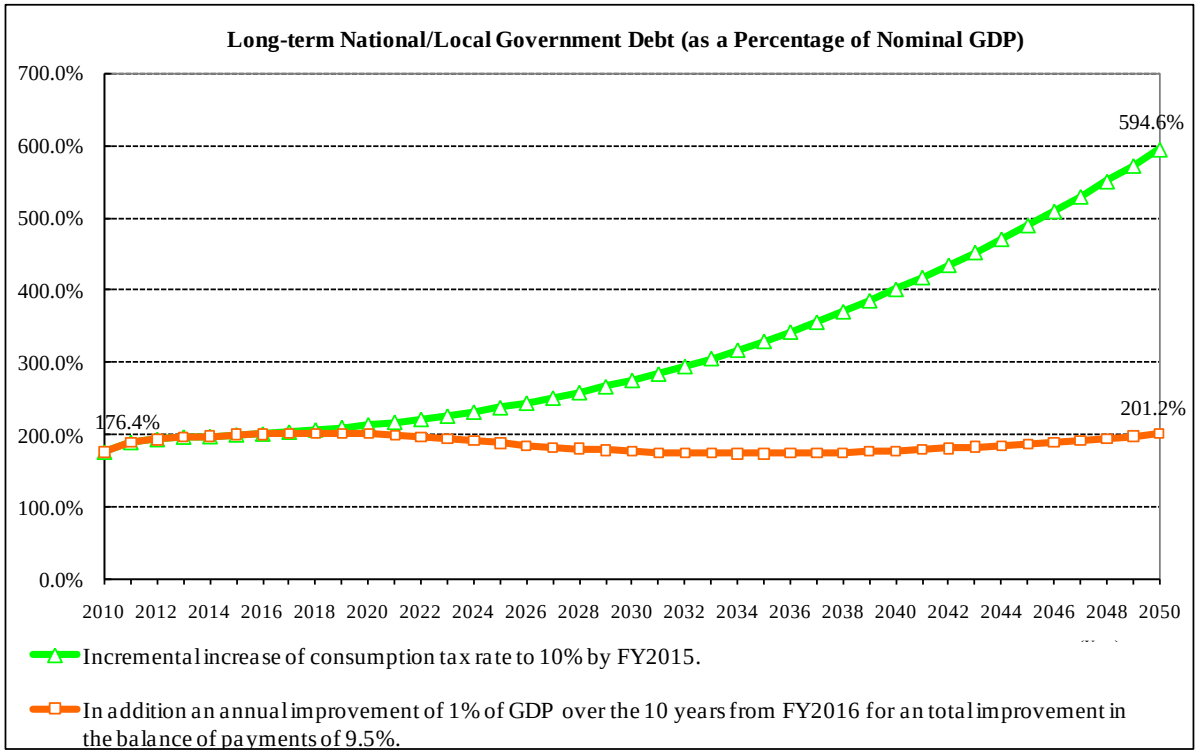
(Unit: 1 billion PPP dollars; figures in parenthesis are relative ratios when Japan is 1)

	2010 GDP			2050 GDP											
				Base Scenario 1			Base Scenario 2			Pessimistic Scenario			Improved Labor Force Participation Rate Scenario		
1	US	13,800	(3.38)	China	24,497	(6.04)	China	24,497	(6.91)	China	24,497	(8.24)	China	24,497	(5.87)
2	China	7,996	(1.96)	US	24,004	(5.92)	US	24,004	(6.77)	US	24,004	(8.08)	US	24,004	(5.75)
3	Japan	4,085	(1.00)	India	14,406	(3.55)	India	14,406	(4.06)	India	14,406	(4.85)	India	14,406	(3.45)
4	India	3,493	(0.86)	Japan	4,057	(1.00)	Brazil	3,841	(1.08)	Brazil	3,841	(1.29)	Japan	4,171	(1.00)
5	Germany	2,800	(0.69)	Brazil	3,841	(0.95)	Japan	3,546	(1.00)	Russia	3,466	(1.17)	Brazil	3,841	(0.92)
6	UK	2,087	(0.51)	Russia	3,466	(0.85)	Russia	3,466	(0.98)	UK	3,229	(1.09)	Russia	3,466	(0.83)
7	France	2,025	(0.50)	UK	3,229	(0.80)	UK	3,229	(0.91)	Germany	3,080	(1.04)	UK	3,229	(0.77)
8	Russia	1,941	(0.48)	Germany	3,080	(0.76)	Germany	3,080	(0.87)	France	3,022	(1.02)	Germany	3,080	(0.74)
9	Brazil	1,897	(0.46)	France	3,022	(0.75)	France	3,022	(0.85)	Japan	2,972	(1.00)	France	3,022	(0.72)
10	Italy	1,708	(0.42)	Indonesia	2,687	(0.66)	Indonesia	2,687	(0.76)	Indonesia	2,687	(0.90)	Indonesia	2,687	(0.64)

*In addition to the four scenarios for the Japanese economy, pessimistic scenarios for developing countries and European countries were prepared.

(4) Public Finance

Even if the consumption tax (VAT) rate is increased to 10% by FY2015, the debt-to-GDP ratio for the Japanese government will be approx. 600% in 2050 unless further improvements to the balance of payments are implemented between 2015 and 2050 (*).



*The above are simple trial calculations that do not take into consideration available capacity for issuing government bonds.

- In order to achieve stabilization of government debt from FY2020 onwards, which is government policy, an annual improvement of 1% of the debt-to-GDP ratio (approx. 5 trillion yen, as of FY2011 value) over the 10 years from FY2016, i.e., a total improvement in the balance of payments of 9.5% is required. (Even if it were possible to achieve the same targets only by raising consumption tax rate, the required increase in tax rate would be equivalent to 24.7 percentage points in a simple calculation.)
- If other measures to improve the balance of payments are implemented, such as cutting expenditure and raising other taxes, it would be possible to contain the increase in consumption tax rate.

2. Fundamental Changes Affecting the World in 2050

(1) Increase in global population (7 billion→more than 9 billion); decrease in Japanese population (128 million→97 million); large increase in elderly population

(2) Further deepening of globalization and IT (increase in international interdependence; decrease in information costs; risk of widening gap between rich and poor)

(3) Arrival of the Asian century, including China (China will overtake the United States in 2025 to become the world's largest economic power, but risks exist)

(4) Tightening of resource demand and supply (tightening of demand and supply for energy resources and food/water resources)

3. Issues and Recommendations

1) Human Resources: Establish a "Full Participation" and "Full Effort" Society Aimed at Growth by Improving Ourselves through Friendly Rivalry

(1) Promote labor participation of women and the elderly, and strengthen the workforce from young to senior workers.

Increase the labor force participation rates of women and the elderly; proactively accept skilled human resources from overseas.

(2) Nurture new human resources capable of responding to environmental changes.

Provide an environment in which young people are able to "make a full effort".
To nurture global resources, hone not only English language skills but also "individuality", "sensitivity", "logical-thinking abilities", and "cultivated thinking skills".

(3) Implement fundamental educational reforms by strengthening originality/ingenuity in the classroom and public support.

Expand the discretion of communities and schools; effectively utilize the introduction of university autumn entrance systems (adjust Japan's university entrance season to the global standard).
Utilize human resource placement agents to resolve the mismatch between university graduates and jobs.

2) Economy and Industry: Incorporating Asia-Pacific Region Dynamism and Strengthening the Japanese Economy's Growth Potential

(4) Incorporate the growth of China and other emerging Asian countries.

Enhance Japan's appeal as an investment destination and promote the inflow of capital; aim for high revenue from overseas investment.
Promote TPP and turn Asian growth into domestic demand; increase quality of agricultural products and turn them into export goods.

(5) Open up growth frontiers that utilize Japan's strengths.

Taking advantage of "sophistication" and "hospitality", at which Japan excels, construct business models that earn money through systems (such as infrastructure for transportation and electricity).
Go ahead of future growth markets, including Asia, with "Green/Life/Silver Strategies".

(6) Comprehensively resolve the "post March 11" energy constraints.

Make rational decisions based on the 3 rules of "comprehensively", "progressively", and "efficient", promote diversification of power sources in accordance with risk.

3) Tax/Public Finance/Social Security: Stop Procrastinating; It is Now or Never for Restoring Fiscal Health and Reforming the Social Security System

(7) Adhere to government policies without postponing restoration of fiscal health.
To prevent pessimistic scenarios for the Japanese economy, fiscal reconstruction cannot be postponed and expenditure efficiency must be enhanced.
Raise consumption tax, strengthen income redistribution function through refundable tax credits, and lower corporate tax for the globalization of the Japanese economy.

(8) Establish a social security system that restores the trust of young people and is secure and sustainable.
Apply the pension's automatic adjustment function (=macroeconomic slide) to the benefit and burden of the social security system, including health/nursing care, making the system sustainable through this expansion; correct inter-generational disparities; expand/improve measures to counteract the declining birthrate.

(9) Change the social system in response to the aging of society with a community-based effort.
Change town/city and housing structures, and with a community-based effort create an environment where active senior citizens can work as supporters of society.

(10) Reduce income disparity/poverty issues through employment promotion and income redistribution.
Improve the public assistance system by coordinating pension, health care, and labor policies; strengthen income redistribution function through refundable tax credits.

(11) Revise the division of roles between national and local government.
Restructure municipalities into wide-area government entities; reconstruct the current local-allocation-tax-based fiscal adjustment system.
Revise local taxes so they are imposed in line with benefit principles to enable more self-sustained local fiscal administration.

4) Foreign Policy and National Security: Active Engagement in Shaping the International Order and Promoting Asia-Pacific Prosperity, with Japan-US Ties as the Cornerstone

(12) Global governance: Maintain an open, rule based international order.
Recognize the historic power shifts now underway; maintain an open, rule-based international order; the capabilities of the state will be important.

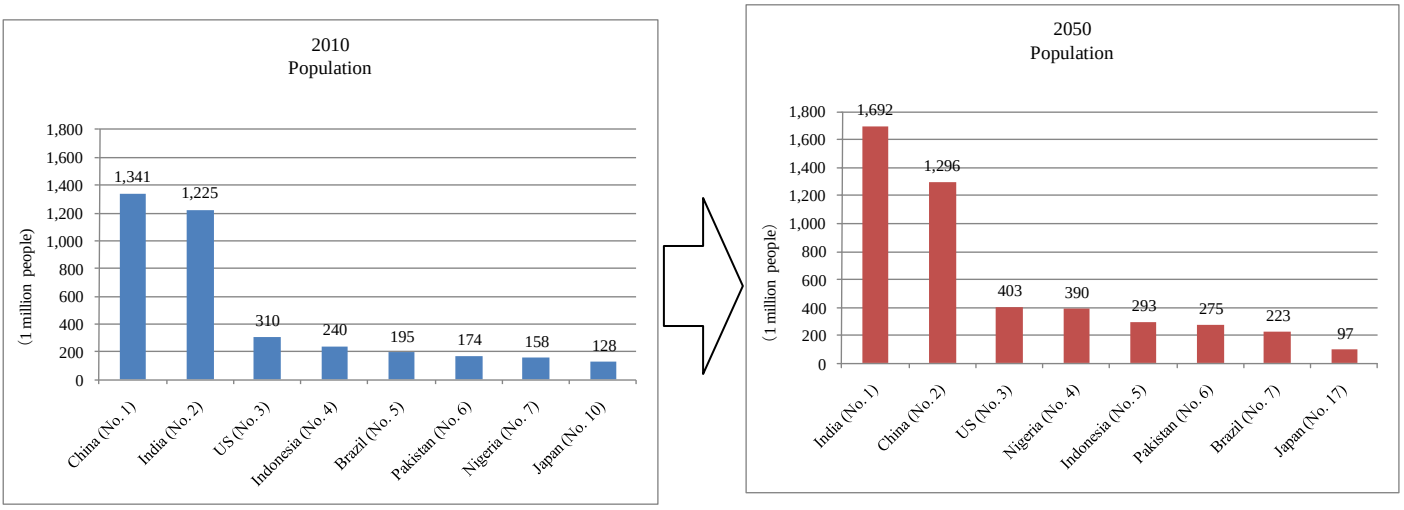
(13) Regional governance: Enhance Asia's stability and prosperity.
Asia is on the front lines of the power shift; strengthen the open, rule-based order while maintaining dynamic equilibrium.

(14) National governance: Security thorough self-help and mutual assistance.
Achieve Japan's security through self-help and mutual assistance; play an active role in global governance.

4. World Power Shifts

1) Population

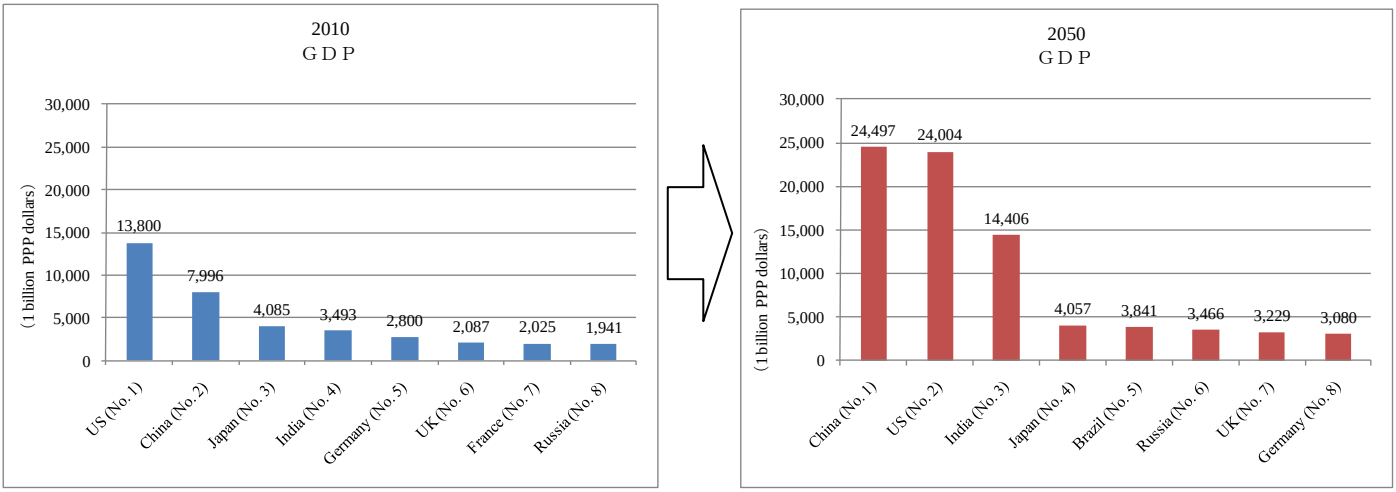
- India and China continue to be the population superpowers of more than 1 billion people. The United States is showing robust growth uncommon for a developed country.



(Source) Figures for Japan for 2010/2050 are from the National Institute of Population and Social Security Research Medium variant (2012); figures for other countries are from United Nations Median variant (2010)

2) GDP

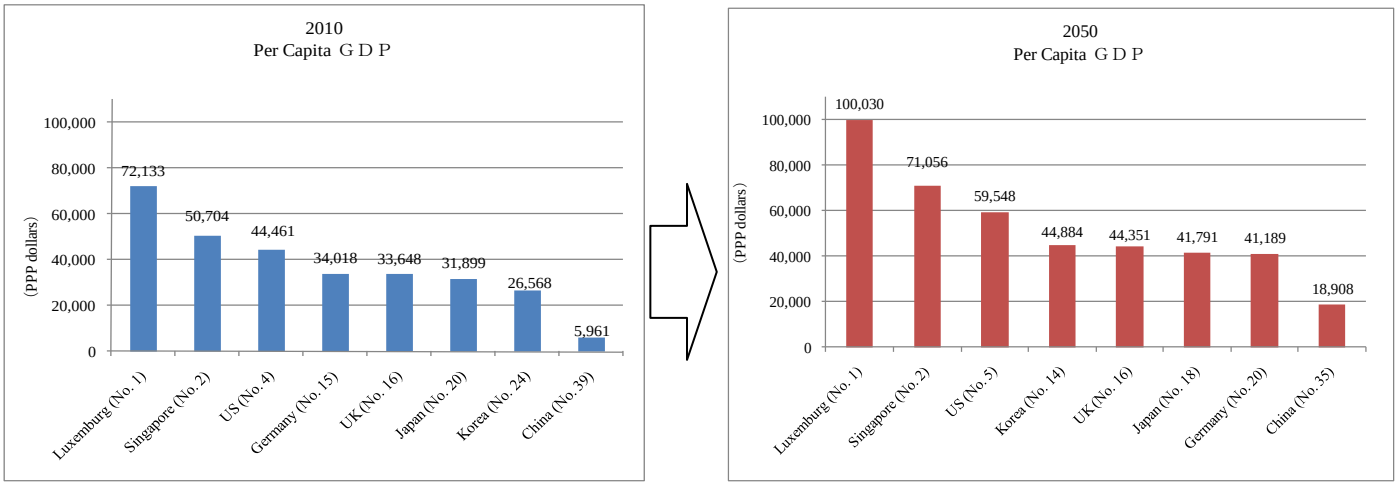
- Japan's GDP will fall below the 2010 level and the United States and China will have overwhelming economic power, with GDPs 6 times the size of Japan's GDP



(Note) In the case of Base Scenario 1 (productivity is on par with the average for developed countries)

3) Per Capita GDP

- Japan will be overtaken by Korea in terms of per capita GDP



(Note) In the case of Base Scenario 1 (productivity is on par with the average for developed countries)

II. Simulations of the World Economy and Japanese Public Finance in 2050

This chapter examines the relative position of the Japanese economy within the world economy in 2050 as well as the state of public finance in Japan.

In the simulations of the world economy, the GDP (gross domestic product) and per capita GDP for various counties, including Japan, has been estimated; the relative position of the Japanese economy within the world economy in 2050 verified; and hints for the strategies that Japan should adopt sought. Furthermore, these simulations estimate potential growth rate from the supply side while taking exchange rate fluctuations into consideration as in reality the economy is impacted by demand-related fluctuations.

In the simulations of Japanese public finance, fiscal revenue and expenditure have been estimated on the premise of GDP growth rates, etc., based on medium-to-long-term preliminary calculations by the Cabinet Office for years up until 2023 and on world economy simulations for 2024 onwards, leading to a range of necessary fiscal revenue and expenditure improvements aimed at 2050.

1. World Economy Simulation

1) Premise and preconditions, etc., for estimations

In the world economy simulations (total of 50 countries and regions; refer to page 28 for a list of the countries/regions for which simulations were performed), the main preconditions were (1) labor, (2) capital, and (3) productivity, while exchange rate fluctuations were taken into consideration. The GDP (gross domestic product) and per capita GDP for various counties, including Japan, were estimated and the relative position of the Japanese economy within the world economy in 2050 verified. At the same time, estimations were also performed using different scenarios in which preconditions were changed, such as increased productivity due to technological innovation and enhanced efficiency and the labor participation ratio, and hints for the strategies that Japan should adopt were sought.

In performing estimations over a prolonged period of time and for 50 countries and regions, as with much of the previous research, supply side factors were used; accordingly, demand side variables were not considered. In addition, rising interest rates due to public finance deterioration and other aspects of public finance that impact the economy have not been reflected in the simulations due to the qualitative nature of the model. With regard to this point, it was decided to supplement the simulations with by separately estimating a range of improvements to fiscal revenue and expenditure that are necessary to prevent the collapse of public finance.

- Premise and preconditions, etc., for estimations

(1)Labor　Population × labor participation ratio ＝ labor force

For the Japanese population, the National Institute of Population and Social Security Research medium variant (2012) has been used, and for other countries/regions the United Nations medium variant (2010) and labor participation ratio are ILO estimations (until 2020; from 2021 onwards, growth has remained virtually unchanged)

(Figure 2-1-1) Japanese population

(Units: 1,000 people; %)

	2010	2020	2030	2040	2050
Total Japanese population	128,057	124,100	116,618	107,276	97,076
		2011-20 Average annual growth rate	2021-30 Average annual growth rate	2031-40 Average annual growth rate	2041-50 Average annual growth rate
		▲ 0.31	▲ 0.62	▲ 0.83	▲ 0.99

(Materials) National Institute of Population and Social Security Research Medium variant (2012)

(Figure 2-1-2) Japanese labor force

(Units: 1,000 people; %)

	2010	2020	2030	2040	2050
Japanese labor force	65,904	61,775	57,227	50,344	44,380
		2011-20 Average annual growth rate	2021-30 Average annual growth rate	2031-40 Average annual growth rate	2041-50 Average annual growth rate
		▲ 0.65	▲ 0.76	▲ 1.27	▲ 1.25

(2)Capital　As the population ages, there is also expected to be a decrease in saving=a decrease in investment; and capital accumulation is expected to slow.

Until 2030, Japan's capital stock rate is exogenously determined by the Japan Center for Economic Research "38th Mid-term Economic Estimate" capital stock rate of increase.

(Figure 2-1-3) Capital Stock (Japan: Base scenario 1)

(Units: Standard PPP for 2005 = 1 billion US dollars; %)

	2010	2020	2030	2040	2050
Capital Stock (Japan: Base 1 scenario)	14,781	15,915	16,431	14,576	12,220
		2011-20 average annual growth rate	2021-30 average annual growth rate	2031-40 average annual growth rate	2041-50 average annual growth rate
		0.74	0.32	▲ 1.19	▲ 1.75

(3)Productivity　Productivity due to technological innovation and enhanced efficiency

It is predicted that within a certain number of years, the productivity growth rate for each country will return to the average productivity growth rate for developed countries in the 1980s, 1990s, and 2000s.

Average productivity growth rate for developed countries (figures in parenthesis are those for Japan): 1980s 1.9% (2.3%), 1990s 1.7% (-0.0%), 2000s 1.2% (1.0%)
Productivity performance values were calculated from GDP, labor force, and capital stock

(Figure 2-1-4) Preconditions for productivity growth rates in simulations for the world economy

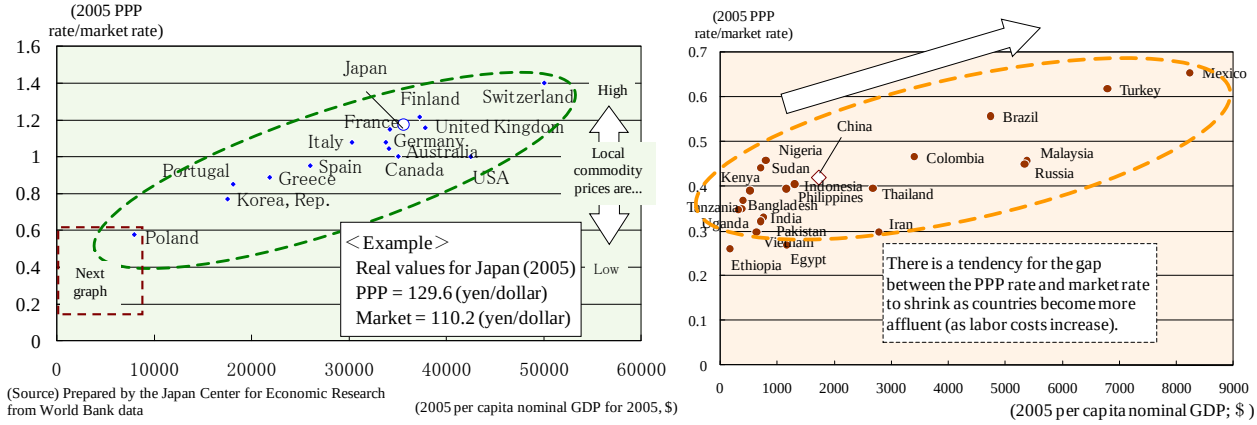
	2030	2040	2050
Developed countries	Converge at 1.2%	1.2%	1.2%
Poland, Slovakia, Hungary, Czech Republic, Korea, Hong Kong, Singapore	Converge at 1.7%	Decrease to 1.2%	1.2%
China, Brazil, Russia, etc.	Converge at 1.9%	Decrease to 1.7%	Decrease to 1.2%
India, etc.		Converge at 1.9%	Decrease to 1.7%
Bangladesh, etc.			Converge at 1.9%

Korea: 2010s 2.75%
2020s 2.02%
China: 2010s 7.39%
2020s 3.60%

(4) Exchange rate　Based on the purchasing power parity (PPP) rate for 2005, exchange rates are assumed to fluctuate according to the correlation between growth in per capita GDP and PPP rate/market rate (refer to Figure 2-1-5).

For the purchasing power parity (PPP) rate for 2005, the World Bank "Global Purchasing Power Parities and Real Expenditures 2005 International Comparison Program" was used.
We estimate predicted value for exchange rate based on the idea that there is a tendency for the gap between the market rate and PPP rate to shrink as countries become more affluent. For example, while there was a gap of 0.42 times between China's market rate and PPP rate in 2005 (per capita GDP of 1,731 dollars converted with the market rate compared to 4,115 dollars converted with the PPP rate), we assume the gap in 2050 will shrink as much as 0.68 times.
Example: PPP rate/market rate　China: 0.42 in 2005→0.68 in 2050,　Japan: 1.18 in 2005 →1.16 in 2050

(Figure 2-1-5) PPP rate/market rate and per capita GDP



(Source) Prepared by the Japan Center for Economic Research from World Bank data

- Four scenarios for the Japanese economy

With regard to the productivity growth rate and labor participation ratio, future projections were calculated for the following four scenarios.

(1)Base 1 (average developed country productivity
- Restore productivity growth rate to the average of 1.2% for developed countries

The productivity growth rate returns to the average rate of 1.2% for developed countries in 2000 onwards by 2030.

(2)Base 2 (continuing the "Lost 20 Years")
- The economy is expected to continue to slow down

The productivity growth rate stabilizes at the average rate of 0.5% between 1991 and 2010 by 2050 (corresponding to 0.3% GDP growth rate).

(3)Pessimistic scenario: growth rate swings downwards due to deteriorating public finance
- Accumulation of government debt becomes a weight and the growth rate declines

The GDP growth rate is expected to drop 1 percentage point lower than in the Base 1 scenario (corresponding to a drop in the productivity growth rate of 1.5 percentage points). According to Reinhart & Rogoff's paper "Growth in a Time of Debt (American Economic Review: Papers & Proceedings 100, 2010, p.573-578), based on the assumption that countries with a debt-to-GDP ratio of 90% or higher will experience falls in economic growth of around 1 percentage point, the corresponding productivity growth rate was lowered and pessimistic scenarios for Japan and Europe were formulated.

(4)Improved labor force participation rate:
- The labor force participation rate for women in Japan is expected to increase on par with that of Sweden between 2020 and 2040.

Example: increase the labor force participation rate for women aged 40-44 from 72.5% in 2020 → 90.5% in 2040

(Figure 2-1-6) Productivity Growth Rates for the Japanese Economy by Scenario (figures in parenthesis are values converted to the contribution to GDP growth rate)

	1981-90	1991-00	2001-10	1991-2010	2011-20	2021-30	2031-40	2041-50
Base 1 (average developed country productivity)	2.28% (1.5%)	▲ 0.01% (0.0%)	1.00% (0.7%)	0.5% (0.3%)	1.05% (0.7%)	1.15% (0.8%)	1.2% (0.8%)	1.2% (0.8%)
Base 2 (continuing the "Lost 20 Years")					0.5% (0.3%)	0.5% (0.3%)	0.5% (0.3%)	0.5% (0.3%)
Pessimistic scenario (drop in productivity growth due to financial					▲0.45% (▲0.3%)	▲0.35% (▲0.2%)	▲0.3% (▲0.2%)	▲0.3% (▲0.2%)
Improved labor force participation rate					1.05% (0.7%)	1.15% (0.8%)	1.2% (0.8%)	1.2% (0.8%)

- Other scenarios for the world economy

(1)Pessimistic scenario for emerging countries:

- Emerging countries (China, India, Brazil, Russia, Indonesia, South Korea, Singapore, and Hong Kong) are expected to fall into the "middle income trap" (*) of being unable to transition to a developed country-type economy.

The productivity growth rate returns to 1.9% (corresponding to 1.3% GDP growth rate) by 2020, then drops to 1.7% (1.1% GDP growth rate) by 2030, and 1.2% (1.1% GDP growth rate) by 2040, remaining steady thereafter.

*The "middle income trap" refers to the possibility of emerging countries being unable to transition to a developed country-type economy after achieving high growth and emerging from the developing world and catch up to developed countries, with income levels stopping at the middle income level.

(2)Pessimistic scenario for Europe:

- For countries with a debt-to-GDP ratio of more than 90%—Greece, Italy, Belgium, Ireland, and Portugal—the impact of the financial crisis is expected to remain for the foreseeable future.

Because the base scenarios do not reflect the impact of the recent European financial crisis, a pessimistic scenario for Europe was formulated.

The productivity growth rate is expected to drop 1.5% lower than the Base 1 scenario for each country (corresponding to 1.0% GDP growth rate), then return to 1.2% (0.8% GDP growth rate) by 2030.

2) Results of simulations for the four scenarios for the Japanese economy

Based on the preconditions, in all of the scenarios the impact exerted on the Japanese economy by the declining birthrate and aging of society, the declining labor force due to the declining population, and declining savings and investment (=capital accumulation slowdown) is enormous (refer to Figure 2-1-9). Outlines of the results for each scenario are as follows.

(1)Base 1 (average developed country productivity)

- Productivity will recover, but due to the population decrease and investment decrease the GDP growth rate for 2011-2020 will average 0.43% and after 2030 will enter negative growth. Consequently, Japan's GDP will drop to No. 4 in the world and Japan will be overtaken by Korea in terms of per capita GDP.

- Productivity will recover, but due to the population decrease and investment decrease the GDP growth rate for 2011-2020 will average 0.43% and for 2041-2050 will average ▲0.47%.
- GDP will decrease 0.7% from 4.085 trillion PPP dollars in 2010 to 4.057 trillion PPP dollars in 2050. Although Japan's GDP will rank No. 4 in the world after China, the United States, and India, it will be 1/6 the GDP of China and the United States and less than 1/3 the GDP of India, with Japan's presence in the world economy dropping dramatically. India is expected to overtake Japan in terms of GDP in 2014.
- Per capita GDP will increase 31.0% from 31,899 PPP dollars in 2010 to 41,791 PPP dollars in 2050. Although Japan's ranking will rise from No. 20 to No. 18 in the world, Korea will overtake Japan with a per capita GDP of 44,884 PPP dollars, rising to No. 14.

(2)Base 2 (continuing the "Lost 20 Years")

- In the case that Japan's 0.5% productivity growth rate of the past 20 years continues, the GDP growth rate for 2011-2020 will average 0.17%, but will enter negative growth in the 2020s, averaging ▲0.86% for 2041-2050. Japan's GDP ranking will drop to No. 5 in the world, and its per capita GDP ranking will tumble to No. 21 in the world.

- Japan's average productivity growth rate for the past 20 years (1991-2010) is a mere 0.5%. If this continues, Japan's GDP growth rate for 2011-2020 will average 0.17%, and stagnate further, averaging▲0.86% for 2041-50.
- GDP will drop 13.2% from 4.085 trillion PPP dollars in 2010 to 3.546 trillion PPP dollars in 2050, a decrease of 12.6% compared with the Base 1 scenario. Japan's ranking will drop to No. 5 in the world, trailing behind Brazil.
- Although per capita GDP will increase 14.5% from 31,899 PPP dollars in 2010 to 36,523 PPP dollars in 2050, Japan's ranking will fall from No. 20 to No. 21 in the world.

(3)Pessimistic scenario: growth rate swings downwards due to deteriorating public finance

➢ Negative growth from 2010 onwards; Japan's GDP ranking falls to No. 9 in the world and per capital GDP begins to decrease in 2010, with Japan's ranking falling to No. 28 in the world and Japan dropping out of the top group completely.

- Further accumulation of government debt will become a weight on economic growth, and in the case of the pessimistic scenario according to which Japan enters negative growth from 2010 onwards, Japan drops out of the world's top group completely.
- Japan will enter large-scale negative growth, with the GDP growth rate for 2011-2020 averaging ▲0.28% and for 2041-2050 averaging ▲1.32%.
- GDP will drop 27.2% from 4.085 trillion PPP dollars in 2010 to 2.972 trillion PPP dollars in 2050, a decrease of 26.7% compared with the Base 1 scenario. Japan's ranking will drop to No. 9 in the world, to roughly the same size as Indonesia, which will rank No. 10 with a GDP of 2.687 trillion PPP dollars.
- Per capital GDP will also drop, decreasing 4.0% from 31,899 PPP dollars in 2010 to 30,612 PPP dollars in 2050, with Japan's ranking falling dramatically to No. 28 in the world.

(4)Improved labor force participation rate: The labor force participation rate for women in Japan is expected to increase to be on par with that of Sweden by 2040.

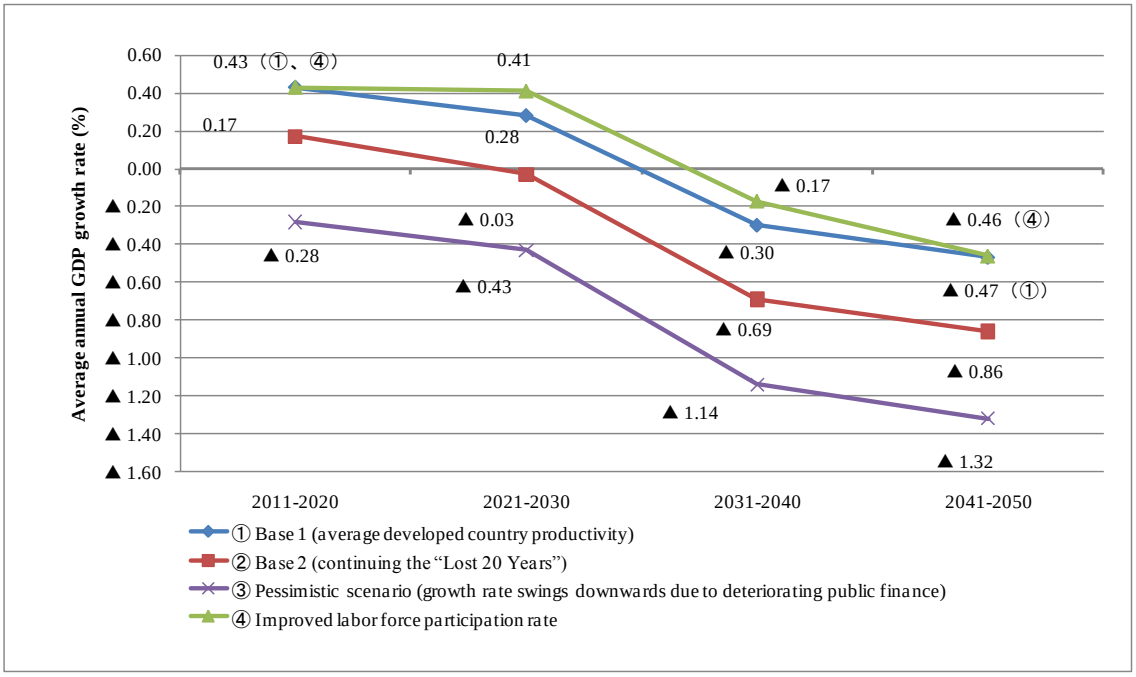
➢ GDP will increase 2.8% compared with the Base 1 scenario, and Japan will rank No. 4 in the world.

- In the case that the labor participation ratio for women increases to be on par with that of Sweden, Japan's GDP in 2050 will be an increase of 2.8% compared with the Base 1 scenario. If there is an additional increase in the labor participation ratio for the elderly, further improvement is anticipated

For these four scenarios, the situation in countries other than Japan will be as follows.

- GDP for China and India will increase exponentially in scale to rank No. 1 and No. 3 in the world, respectively, in 2050. In 2025, China will overtake the United States to assume the world's top position.
- The United States will continue to growth steadily in scale to rank No. 2 in the world at virtually the same level as China.
- Amongst emerging countries other than China and India, the rapid advancement of Indonesia (ranking rising from No. 16 in 2010 to No. 10 on 2050) stands out.
- Like in Japan, in Germany the impact on the economy of a declining birthrate and aging population is large, and in terms of GDP the rankings of Germany and the United Kingdom will be reversed.

(Figure 2-1-7) GDP Growth Rate (Real): Negative growth from the 2030s onwards for all scenarios



(Figure 2-1-8) Scale of GDP: Except in the Improved labor force participation rate scenario, the scale of GDP for 2050 is lower than that for 2010.

	Japan's GDP (1 billion PPP dollars)			Japan's world ranking		
	2010	2030	2050	2010	2030	2050
Base 1 (average developed country productivity)	4,085	4,384	4,057	3	4	4
Base 2 (continuing the "Lost 20 Years")	4,085	4,141	3,546	3	4	5
Pessimistic scenario (growth rate swings downwards due to deteriorating public finance)	4,085	3,803	2,972	3	4	9
Improved labor force participation rate	4,085	4,441	4,171	3	4	4

(Figure 2-1-9) Decomposition of GDP Growth Rate: Decreased labor and capital due to the population decrease are major factors in negative growth

(Unit: %)

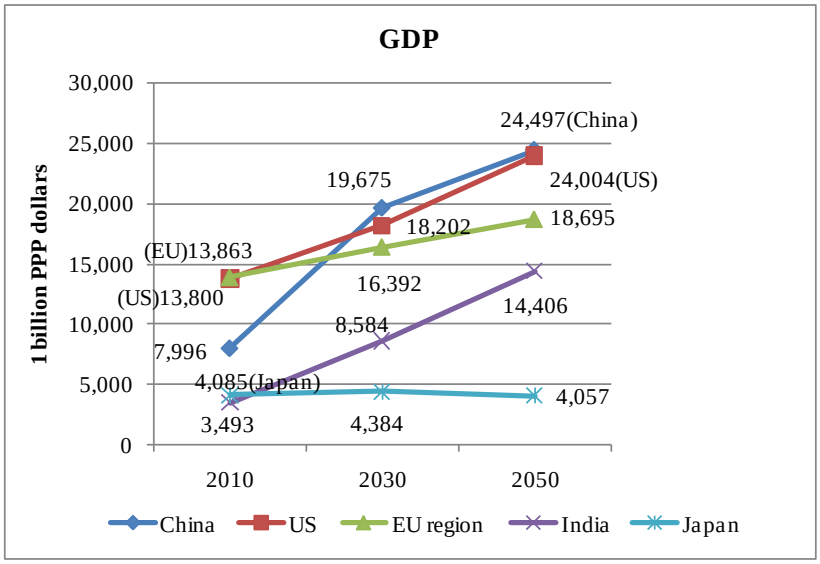
		2011 -20	2021 -30	2031 -40	2041 -50	2011 -50
Base 1 Average developed country productivity	Average annual Growth Rate for Japan's GDP	0.43	0.28	▲ 0.30	▲ 0.47	▲ 0.02
	Labor force contribution level	▲ 0.43	▲ 0.51	▲ 0.86	▲ 0.84	▲ 0.66
	Capital contribution level	0.20	0.14	▲ 0.35	▲ 0.57	▲ 0.14
	Productivity contribution level	0.70	0.77	0.80	0.80	0.77
Base 2 Continuing the "Lost 20 Years"	Average annual Growth Rate for Japan's GDP	0.17	▲ 0.03	▲ 0.69	▲ 0.86	▲ 0.35
	Labor force contribution level	▲ 0.43	▲ 0.51	▲ 0.86	▲ 0.84	▲ 0.66
	Capital contribution level	0.20	0.14	▲ 0.43	▲ 0.66	▲ 0.19
	Productivity contribution level	0.33	0.33	0.33	0.33	0.33
Pessimistic scenario	Average annual Growth Rate for Japan's GDP	▲ 0.28	▲ 0.43	▲ 1.14	▲ 1.32	▲ 0.80
Improved labor force participation rate	Average annual Growth Rate for Japan's GDP	0.43	0.41	▲ 0.17	▲ 0.46	0.05
Labor force participation rate for Japanese women to increase on par with that of Sweden	Labor force contribution level	▲ 0.43	▲ 0.33	▲ 0.69	▲ 0.85	▲ 0.58
	Capital contribution level	0.20	0.14	▲ 0.33	▲ 0.55	▲ 0.13
	Productivity contribution level	0.70	0.77	0.80	0.80	0.77

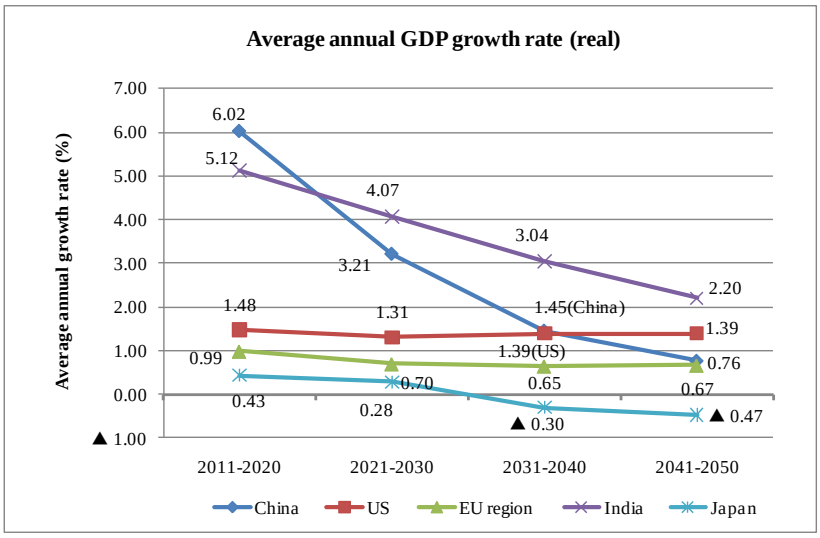
(Note) Due to exchange conversion, the total of each element does not correspond with growth rates

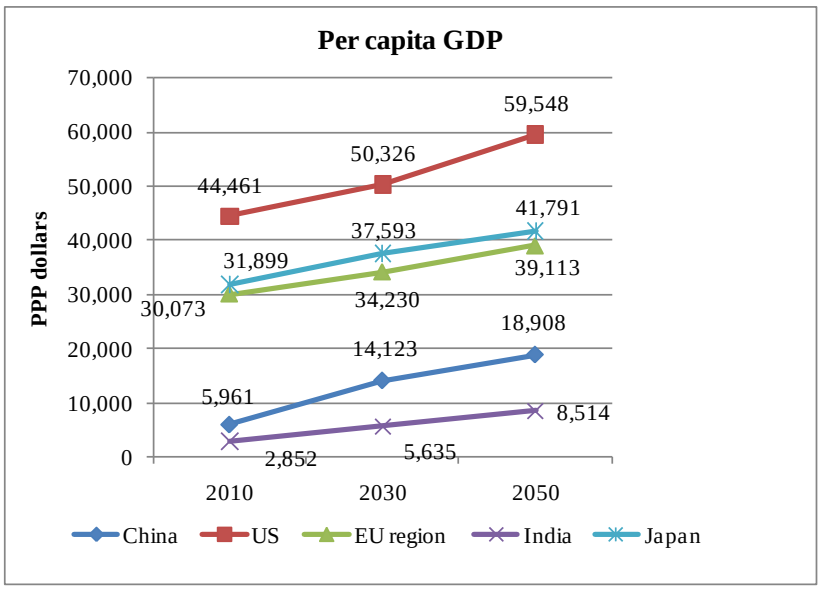
(Figure 2-1-10) Per capita GDP: According to the pessimistic scenario, per capita GDP also decreases

	Japan's per capita GDP (PPP dollars)			Japan's world ranking		
	2010	2030	2050	2010	2030	2050
Base 1 (average developed country productivity)	31,899	37,593	41,791	20	17	18
Base 2 (continuing the "Lost 20 Years")	31,899	35,511	36,523	20	20	21
Pessimistic scenario (growth rate swings downwards due to deteriorating public finance)	31,899	32,614	30,612	20	21	28
Improved labor force participation rate	31,899	38,086	42,967	20	15	18

(Figure 2-1-11) Comparison of major countries (in the case that Japan is Base 1 (average developed country productivity) scenario)







* "EU region" is limited to countries for which simulations were performed.

(Figure 2-1-12) GDP world rankings

GDP (Unit: 1 billion PPP dollars)

① Base 1 (average developed country productivity)

	2010		2030		2050	
1	U.S.	13,800 (3.38)	China	19,675 (4.49)	China	24,497 (6.04)
2	China	7,996 (1.96)	U.S.	18,202 (4.15)	U.S.	24,004 (5.92)
3	Japan	4,085 (1.00)	India	8,584 (1.96)	India	14,406 (3.55)
4	India	3,493 (0.86)	Japan	4,384 (1.00)	Japan	4,057 (1.00)
5	Germany	2,800 (0.69)	Brazil	3,014 (0.69)	Brazil	3,841 (0.95)
6	United Kingdom	2,087 (0.51)	Russia	2,983 (0.68)	Russia	3,466 (0.85)
7	France	2,025 (0.50)	Germany	2,965 (0.68)	United Kingdom	3,229 (0.80)
8	Russia	1,941 (0.48)	United Kingdom	2,619 (0.60)	Germany	3,080 (0.76)
9	Brazil	1,897 (0.46)	France	2,444 (0.56)	France	3,022 (0.75)
10	Italy	1,708 (0.42)	Mexico	1,969 (0.45)	Indonesia	2,687 (0.66)

② Base 2 (continuing the "Lost 20 Years")

	2010		2030		2050	
1	U.S.	13,800 (3.38)	China	19,675 (4.75)	China	24,497 (6.91)
2	China	7,996 (1.96)	U.S.	18,202 (4.40)	U.S.	24,004 (6.77)
3	Japan	4,085 (1.00)	India	8,584 (2.07)	India	14,406 (4.06)
4	India	3,493 (0.86)	Japan	4,141 (1.00)	Brazil	3,841 (1.08)
5	Germany	2,800 (0.69)	Brazil	3,014 (0.73)	Japan	3,546 (1.00)
6	United Kingdom	2,087 (0.51)	Russia	2,983 (0.72)	Russia	3,466 (0.98)
7	France	2,025 (0.50)	Germany	2,965 (0.72)	United Kingdom	3,229 (0.91)
8	Russia	1,941 (0.48)	United Kingdom	2,619 (0.63)	Germany	3,080 (0.87)
9	Brazil	1,897 (0.46)	France	2,444 (0.59)	France	3,022 (0.85)
10	Italy	1,708 (0.42)	Mexico	1,969 (0.48)	Indonesia	2,687 (0.76)

③ Pessimistic scenario (growth rate swings downwards due to deteriorating public finance)

	2010		2030		2050	
1	U.S.	13,800 (3.38)	China	19,675 (5.17)	China	24,497 (8.24)
2	China	7,996 (1.96)	U.S.	18,202 (4.79)	U.S.	24,004 (8.08)
3	Japan	4,085 (1.00)	India	8,584 (2.26)	India	14,406 (4.85)
4	India	3,493 (0.86)	Japan	3,803 (1.00)	Brazil	3,841 (1.29)
5	Germany	2,800 (0.69)	Brazil	3,014 (0.79)	Russia	3,466 (1.17)
6	United Kingdom	2,087 (0.51)	Russia	2,983 (0.78)	United Kingdom	3,229 (1.09)
7	France	2,025 (0.50)	Germany	2,965 (0.78)	Germany	3,080 (1.04)
8	Russia	1,941 (0.48)	United Kingdom	2,619 (0.69)	France	3,022 (1.02)
9	Brazil	1,897 (0.46)	France	2,444 (0.64)	Japan	2,972 (1.00)
10	Italy	1,708 (0.42)	Mexico	1,969 (0.52)	Indonesia	2,687 (0.90)

④ Improved labor force participation rate

	2010		2030		2050	
1	U.S.	13,800 (3.38)	China	19,675 (4.43)	China	24,497 (5.87)
2	China	7,996 (1.96)	U.S.	18,202 (4.10)	U.S.	24,004 (5.75)
3	Japan	4,085 (1.00)	India	8,584 (1.93)	India	14,406 (3.45)
4	India	3,493 (0.86)	Japan	4,441 (1.00)	Japan	4,171 (1.00)
5	Germany	2,800 (0.69)	Brazil	3,014 (0.68)	Brazil	3,841 (0.92)
6	United Kingdom	2,087 (0.51)	Russia	2,983 (0.67)	Russia	3,466 (0.83)
7	France	2,025 (0.50)	Germany	2,965 (0.67)	United Kingdom	3,229 (0.77)
8	Russia	1,941 (0.48)	United Kingdom	2,619 (0.59)	Germany	3,080 (0.74)
9	Brazil	1,897 (0.46)	France	2,444 (0.55)	France	3,022 (0.72)
10	Italy	1,708 (0.42)	Mexico	1,969 (0.44)	Indonesia	2,687 (0.64)

※ figures in parenthesis are relative ratios when Japan is 1

*GDP for the "EU region" (limited to countries for which simulations were performed) was 13,863 for 2010; 16,392 for 2030; and 18,695 for 2050 (unit: 1 billion PPP dollars).

(Figure 2-1-13) Per capita GDP world rankings

Per Capita GDP (Unit: PPP dollars)

① Base 1 (average developed country productivity)

2010		2030		2050	
1 Luxembourg	72,133	Luxembourg	87,581	Luxembourg	100,030
2 Singapore	50,704	Singapore	62,998	Singapore	71,056
3 Norway	47,821	Norway	52,939	Norway	61,670
4 U.S.	44,461	Hong Kong	52,909	Hong Kong	60,221
5 Hong Kong	40,543	U.S.	50,326	U.S.	59,548
6 Ireland	39,237	Ireland	50,089	Ireland	58,699
7 Switzerland	38,843	Australia	43,562	Australia	52,271
8 Netherlands	37,881	Switzerland	41,939	Finland	50,315
9 Australia	36,915	Finland	41,905	Sweden	47,976
10 Canada	36,648	Netherlands	41,828	Netherlands	47,805
11 Austria	35,968	Austria	41,298	Canada	46,389
12 Sweden	34,843	Sweden	40,574	Switzerland	46,233
13 Denmark	34,756	Canada	39,840	Austria	46,183
14 Belgium	34,288	Belgium	38,333	Korea	44,884
15 Germany	34,018	Korea	38,007	Belgium	44,439
16 United Kingdom	33,648	United Kingdom	37,778	United Kingdom	44,351
17 Iceland	33,633	Japan	37,593	Denmark	43,063
18 Finland	33,632	Germany	37,310	Japan	41,791
19 France	32,252	Denmark	36,986	France	41,724
20 Japan	31,899	France	35,699	Germany	41,189
21 Spain	29,103	Iceland	34,758	Iceland	40,781
22 Italy	28,208	Spain	32,289	Czech Republic	36,176
23 Greece	26,959	Greece	31,155	Spain	35,058
24 Korea	26,568	Czech Republic	31,065	Greece	34,350
25 New Zealand	25,903	Italy	29,352	New Zealand	34,209
39 China	5,961	36 China	14,123	35 China	18,908

② Base 2 (continuing the "Lost 20 Years")

2010		2030		2050	
1 Luxembourg	72,133	Luxembourg	87,581	Luxembourg	100,030
2 Singapore	50,704	Singapore	62,998	Singapore	71,056
3 Norway	47,821	Norway	52,939	Norway	61,670
4 U.S.	44,461	Hong Kong	52,909	Hong Kong	60,221
5 Hong Kong	40,543	U.S.	50,326	U.S.	59,548
6 Ireland	39,237	Ireland	50,089	Ireland	58,699
7 Switzerland	38,843	Australia	43,562	Australia	52,271
8 Netherlands	37,881	Switzerland	41,939	Finland	50,315
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14 Belgium	34,288	Belgium	38,333	Korea	44,884
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16 United Kingdom	33,648	United Kingdom	37,778	United Kingdom	44,351
17 Iceland	33,633	Germany	37,310	Denmark	43,063
18 Finland	33,632	Denmark	36,986	France	41,724
19 France	32,252	France	35,699	Germany	41,189
20 Japan	31,899	Japan	35,511	Iceland	40,781
21 Spain	29,103	Iceland	34,758	Japan	36,523
22 Italy	28,208	Spain	32,289	Czech Republic	36,176
23 Greece	26,959	Greece	31,155	Spain	35,058
24 Korea	26,568	Czech Republic	31,065	Greece	34,350
25 New Zealand	25,903	Italy	29,352	New Zealand	34,209
39 China	5,961	36 China	14,123	35 China	18,908

Per Capita GDP (Unit: PPP dollars)

③ Pessimistic scenario (growth rate swings downwards due to deteriorating public finance)

	2010		2030		2050	
1	Luxembourg	72,133	Luxembourg	87,581	Luxembourg	100,030
2	Singapore	50,704	Singapore	62,998	Singapore	71,056
3	Norway	47,821	Norway	52,939	Norway	61,670
4	U.S.	44,461	Hong Kong	52,909	Hong Kong	60,221
5	Hong Kong	40,543	U.S.	50,326	U.S.	59,548
6	Ireland	39,237	Ireland	50,089	Ireland	58,699
7	Switzerland	38,843	Australia	43,562	Australia	52,271
8	Netherlands	37,881	Switzerland	41,939	Finland	50,315
9	Australia	36,915	Finland	41,905	Sweden	47,976
10	Canada	36,648	Netherlands	41,828	Netherlands	47,805
11	Austria	35,968	Austria	41,298	Canada	46,389
12	Sweden	34,843	Sweden	40,574	Switzerland	46,233
13	Denmark	34,756	Canada	39,840	Austria	46,183
14	Belgium	34,288	Belgium	38,333	Korea	44,884
15	Germany	34,018	Korea	38,007	Belgium	44,439
16	United Kingdom	33,648	United Kingdom	37,778	United Kingdom	44,351
17	Iceland	33,633	Germany	37,310	Denmark	43,063
18	Finland	33,632	Denmark	36,986	France	41,724
19	France	32,252	France	35,699	Germany	41,189
20	Japan	31,899	Iceland	34,758	Iceland	40,781
21	Spain	29,103	Japan	32,614	Czech Republic	36,176
22	Italy	28,208	Spain	32,289	Spain	35,058
23	Greece	26,959	Greece	31,155	Greece	34,350
24	Korea	26,568	Czech Republic	31,065	New Zealand	34,209
25	New Zealand	25,903	Italy	29,352	Italy	31,907
26	Portugal	22,491	New Zealand	28,809	Slovakia	31,298
27	Czech Republic	22,301	Portugal	27,570	Portugal	31,066
28	Slovakia	18,481	Slovakia	26,989	Japan	30,612
29	Hungary	18,104	Poland	23,704	Poland	27,736
30	Poland	16,449	Hungary	23,588	Hungary	27,689
39	China	5,961	36 China	14,123	35 China	18,908

④ Improved labor force participation rate

	2010		2030		2050	
1	Luxembourg	72,133	Luxembourg	87,581	Luxembourg	100,030
2	Singapore	50,704	Singapore	62,998	Singapore	71,056
3	Norway	47,821	Norway	52,939	Norway	61,670
4	U.S.	44,461	Hong Kong	52,909	Hong Kong	60,221
5	Hong Kong	40,543	U.S.	50,326	U.S.	59,548
6	Ireland	39,237	Ireland	50,089	Ireland	58,699
7	Switzerland	38,843	Australia	43,562	Australia	52,271
8	Netherlands	37,881	Switzerland	41,939	Finland	50,315
9	Australia	36,915	Finland	41,905	Sweden	47,976
10	Canada	36,648	Netherlands	41,828	Netherlands	47,805
11	Austria	35,968	Austria	41,298	Canada	46,389
12	Sweden	34,843	Sweden	40,574	Switzerland	46,233
13	Denmark	34,756	Canada	39,840	Austria	46,183
14	Belgium	34,288	Belgium	38,333	Korea	44,884
15	Germany	34,018	Japan	38,086	Belgium	44,439
16	United Kingdom	33,648	Korea	38,007	United Kingdom	44,351
17	Iceland	33,633	United Kingdom	37,778	Denmark	43,063
18	Finland	33,632	Germany	37,310	Japan	42,967
19	France	32,252	Denmark	36,986	France	41,724
20	Japan	31,899	France	35,699	Germany	41,189
21	Spain	29,103	Iceland	34,758	Iceland	40,781
22	Italy	28,208	Spain	32,289	Czech Republic	36,176
23	Greece	26,959	Greece	31,155	Spain	35,058
24	Korea	26,568	Czech Republic	31,065	Greece	34,350
25	New Zealand	25,903	Italy	29,352	New Zealand	34,209
39	China	5,961	36 China	14,123	35 China	18,908

*Per capita GDP for the “EU region” (limited to countries for which simulations were performed) was 30,073 for 2010; 34,230 for 2030; and 39,113 for 2050 (unit: PPP dollars).

3) Results of simulations of other scenarios for the world economy

(1)Pessimistic scenario for emerging countries
- If emerging countries fall into the "middle income trap", in 2050 China will be unable to achieve the top GDP ranking and the United States will continue to rank No. 1.

(2)Pessimistic scenario for Europe
- The relative rankings of Greece, Belgium, Ireland, and other countries with a high debt-to-GDP ratio will fall.

(Figure 2-1-14) Pessimistic scenario for emerging countries (Japan is Base 1 (average developed country productivity) scenario)

GDP (Unit: 1 billion PPP dollars)

Pessimistic scenario for emerging countries

	2010		2030		2050	
1	U.S.	13,800 (3.38)	U.S.	18,202 (4.15)	U.S.	24,004 (5.92)
2	China	7,996 (1.96)	China	15,774 (3.60)	China	18,506 (4.56)
3	Japan	4,085 (1.00)	India	7,416 (1.69)	India	11,150 (2.75)
4	India	3,493 (0.86)	Japan	4,384 (1.00)	Japan	4,057 (1.00)
5	Germany	2,800 (0.69)	Brazil	2,977 (0.68)	Brazil	3,668 (0.90)
6	United Kingdom	2,087 (0.51)	Germany	2,965 (0.68)	United Kingdom	3,229 (0.80)
7	France	2,025 (0.50)	Russia	2,668 (0.61)	Germany	3,080 (0.76)
8	Russia	1,941 (0.48)	United Kingdom	2,619 (0.60)	France	3,022 (0.75)
9	Brazil	1,897 (0.46)	France	2,444 (0.56)	Russia	2,960 (0.73)
10	Italy	1,708 (0.42)	Mexico	1,969 (0.45)	Mexico	2,681 (0.66)

※figures in parenthesis are relative ratios when Japan is 1

Per Capita GDP (Unit: PPP dollars)

Pessimistic scenario for emerging countries

	2010		2030		2050	
1	Luxembourg	72,133	Luxembourg	87,581	Luxembourg	100,030
2	Singapore	50,704	Singapore	60,929	Singapore	68,538
3	Norway	47,821	Norway	52,939	Norway	61,670
4	U.S.	44,461	Hong Kong	50,445	U.S.	59,548
5	Hong Kong	40,543	U.S.	50,326	Ireland	58,699
6	Ireland	39,237	Ireland	50,089	Hong Kong	57,179
7	Switzerland	38,843	Australia	43,562	Australia	52,271
8	Netherlands	37,881	Switzerland	41,939	Finland	50,315
9	Australia	36,915	Finland	41,905	Sweden	47,976
10	Canada	36,648	Netherlands	41,828	Netherlands	47,805
11	Austria	35,968	Austria	41,298	Canada	46,389
12	Sweden	34,843	Sweden	40,574	Switzerland	46,233
13	Denmark	34,756	Canada	39,840	Austria	46,183
14	Belgium	34,288	Belgium	38,333	Belgium	44,439
15	Germany	34,018	United Kingdom	37,778	United Kingdom	44,351
16	United Kingdom	33,648	Japan	37,593	Korea	43,499
17	Iceland	33,633	Germany	37,310	Denmark	43,063
18	Finland	33,632	Denmark	36,986	Japan	41,791
19	France	32,252	Korea	36,940	France	41,724
20	Japan	31,899	France	35,699	Germany	41,189
21	Spain	29,103	Iceland	34,758	Iceland	40,781
22	Italy	28,208	Spain	32,289	Czech Republic	36,176
23	Greece	26,959	Greece	31,155	Spain	35,058
24	Korea	26,568	Czech Republic	31,065	Greece	34,350
25	New Zealand	25,903	Italy	29,352	New Zealand	34,209
39	China	5,961	39 China	11,323	39 China	14,284

(Figure 2-1-15) Pessimistic scenario for Europe (Japan is Base 1 (average developed country productivity) scenario)

GDP (Unit: 1 billion PPP dollars)

Pessimistic scenario for Europe

	2010		2030		2050	
1	U.S.	13,800 (3.38)	China	19,675 (4.49)	China	24,497 (6.04)
2	China	7,996 (1.96)	U.S.	18,202 (4.15)	U.S.	24,004 (5.92)
3	Japan	4,085 (1.00)	India	8,584 (1.96)	India	14,406 (3.55)
4	India	3,493 (0.86)	Japan	4,384 (1.00)	Japan	4,057 (1.00)
5	Germany	2,800 (0.69)	Brazil	3,014 (0.69)	Brazil	3,841 (0.95)
6	United Kingdom	2,087 (0.51)	Russia	2,983 (0.68)	Russia	3,466 (0.85)
7	France	2,025 (0.50)	Germany	2,965 (0.68)	United Kingdom	3,229 (0.80)
8	Russia	1,941 (0.48)	United Kingdom	2,619 (0.60)	Germany	3,080 (0.76)
9	Brazil	1,897 (0.46)	France	2,444 (0.56)	France	3,022 (0.75)
10	Italy	1,708 (0.42)	Mexico	1,969 (0.45)	Indonesia	2,687 (0.66)

※figures in parenthesis are relative ratios when Japan is 1

Per Capita GDP (Unit: PPP dollars)

Pessimistic scenario for Europe

	2010		2030		2050	
1	Luxembourg	72,133	Luxembourg	87,581	Luxembourg	100,030
2	Singapore	50,704	Singapore	62,998	Singapore	71,056
3	Norway	47,821	Norway	52,939	Norway	61,670
4	U.S.	44,461	Hong Kong	52,909	Hong Kong	60,221
5	Hong Kong	40,543	U.S.	50,326	U.S.	59,548
6	Ireland	39,237	Australia	43,562	Australia	52,271
7	Switzerland	38,843	Ireland	43,179	Finland	50,315
8	Netherlands	37,881	Switzerland	41,939	Ireland	49,889
9	Australia	36,915	Finland	41,905	Sweden	47,976
10	Canada	36,648	Netherlands	41,828	Netherlands	47,805
11	Austria	35,968	Austria	41,298	Canada	46,389
12	Sweden	34,843	Sweden	40,574	Switzerland	46,233
13	Denmark	34,756	Canada	39,840	Austria	46,183
14	Belgium	34,288	Korea	38,007	Korea	44,884
15	Germany	34,018	United Kingdom	37,778	United Kingdom	44,351
16	United Kingdom	33,648	Japan	37,593	Denmark	43,063
17	Iceland	33,633	Germany	37,310	Japan	41,791
18	Finland	33,632	Denmark	36,986	France	41,724
19	France	32,252	France	35,699	Germany	41,189
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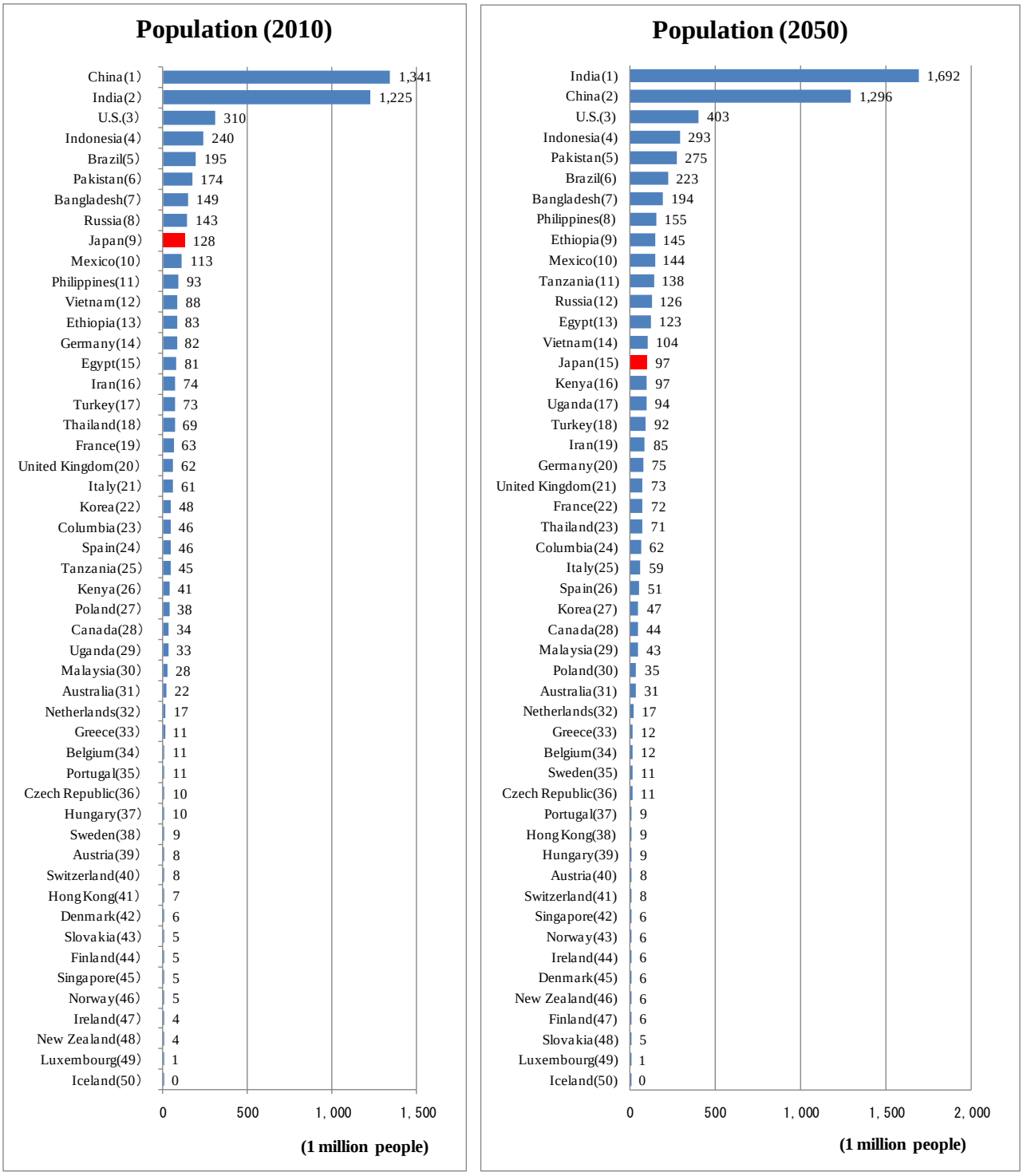
22	Italy	28,208	Spain	32,289	Czech Republic	36,176
23	Greece	26,959	Czech Republic	31,065	Spain	35,058
24	Korea	26,568	New Zealand	28,809	New Zealand	34,209
25	New Zealand	25,903	Slovakia	26,989	Slovakia	31,298
39	China	5,961	36 China	14,123	35 China	18,908

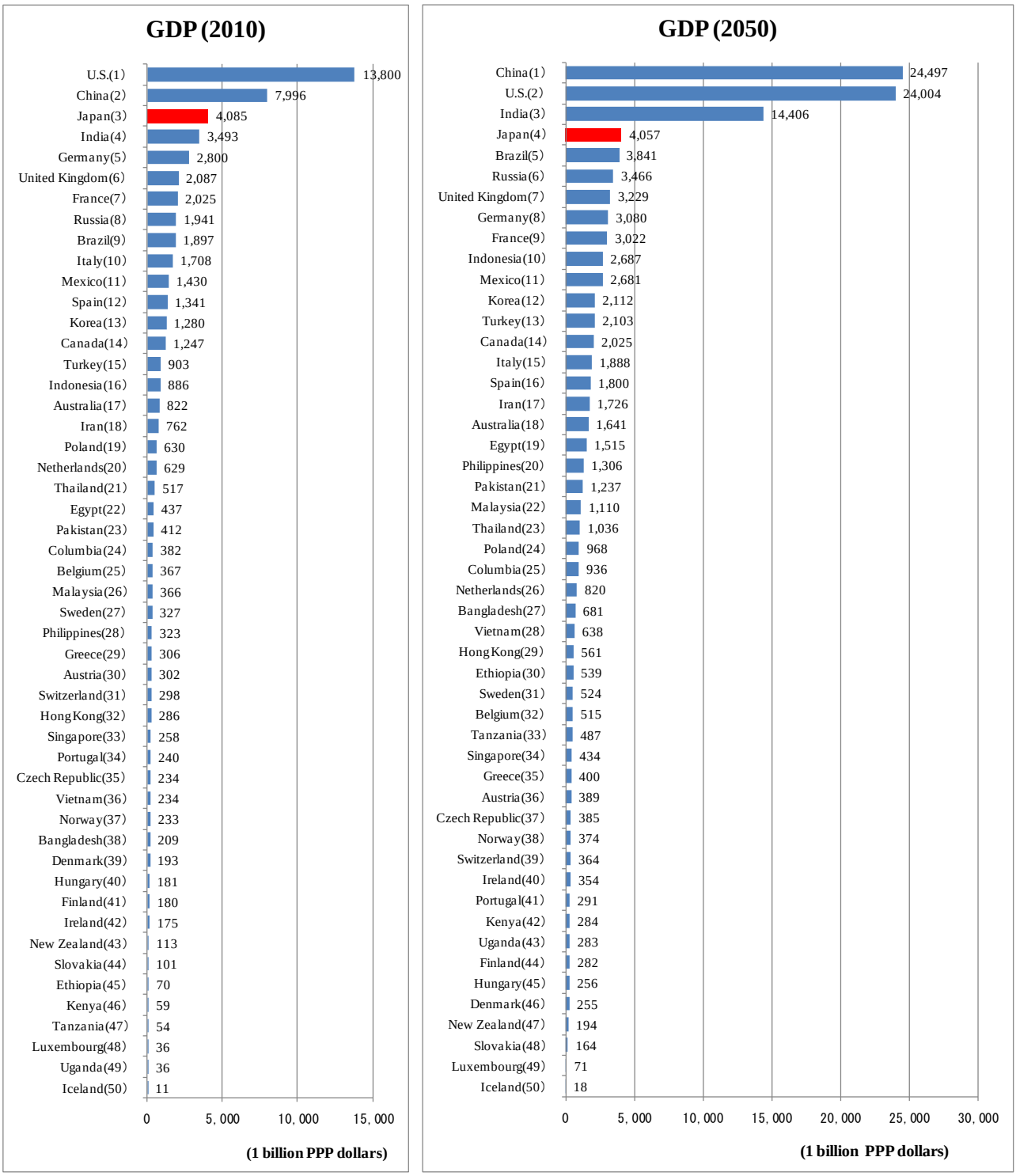
*GDP for the "EU region" (limited to countries for which simulations were performed) was 13,863 for 2010; 15,965 for 2030; and 18,178 for 2050 (unit: 1 billion PPP dollars); per capita GDP was 30,073 for 2010; 33,337 for 2030; and 38,032 for 2050 (unit: PPP dollars).

(Figure 2-1-16) Population (countries for which simulations were performed)



(Source) Figures for Japan are from the National Institute of Population and Social Security Research medium variant (2012); figures for other countries are from United Nations medium variant (2010). Figures in parenthesis are the relevant country's ranking amongst those countries for which simulations were performed.

(Figure 2-1-17) GDP (countries for which simulations were performed); Base 1 scenario)



Figures in parenthesis are the relevant country's ranking amongst those countries for which simulations were performed.

2. Simulations for Japanese Public Finance

1) Premise and preconditions, etc., for estimations

Under current government policies, (1) "the consumption tax (VAT) rate is to be increased incrementally to 10% by 2015" and (2) "by 2020, the primary balance is to be brought into the black, after which the debt-to-GDP ratio is to be lowered stably". Based on this, simulations for Japanese public finance up until 2050 were performed.

- Premise for estimations

(1)Scope

Based on future projections for the national general account and local general accounts, predictions were performed for balance of payments within the scope of general government SNA (system of national account) (including overall social security benefits and local public finance).

(2)Relationship between macro economics and public finance

Based on the concept that "real GDP growth rate" = "(per capita) real wage increase" + "labor force increase rate" (long-term labor share stability), real wage increases were estimated based on the GDP growth rate, and then depending on the nature of expenditure, linked with the inflation rate and wage growth rate.

(Social security expenditure reflects the precondition of changes in population structure, and interest payments reflect the precondition of interest.)

- Preconditions

(1)Growth rate, inflation rate, and interest rate

- Up until 2023: Cabinet Office projections for January 2012 were used.

Real growth rate: -0.1% for 2011, 0.9% for 2015, 1.2% for 2020, 1.1% for 2023
Interest: 1.1% for 2011, 2.1% for 2015, 3.0% for 2020, 3.5% for 2023
Inflation rate: -0.2% for 2011, 1.6% for 2015, 1.2% for 2020, 1.2% for 2023

- 2024 onwards: World economy simulation (Base 1) GDP growth rates were used for GDP growth rate.

Real growth rate: 0.0% for 2030, -0.6% for 2040, -0.6% for 2050
(excluding the impact of exchange rates for all rates)

Interest rates for 2024 onwards remain steady (3.7%); inflation rate for 2024 onwards is fixed (1.0%)

(2)Income

- Up until 2023: With resolution of the GDP gap, corporate tax is assumed expected to grow strongly and consumption tax (VAT) is expected to be raised to 8% in April 2014 and then further raised to 10% in October 2015.

Income tax revenue (as a percentage of GDP): 2.7% (13 trillion yen) for 2010; 2.9% (17 trillion yen) for 2023
Corporate tax revenue (as a percentage of GDP): 1.9% (9 trillion yen) for 2010; 2.2% (13 trillion yen) for 2023

- 2024 onwards: Growth with the value of elasticity of overall tax revenue (as a percentage of GDP) as 1

- Social insurance premiums:

Pension premiums are expected to increase to up to18.3% and benefits–linked healthcare/nursing care insurance premiums are expected to be raised

(3)Expenditure

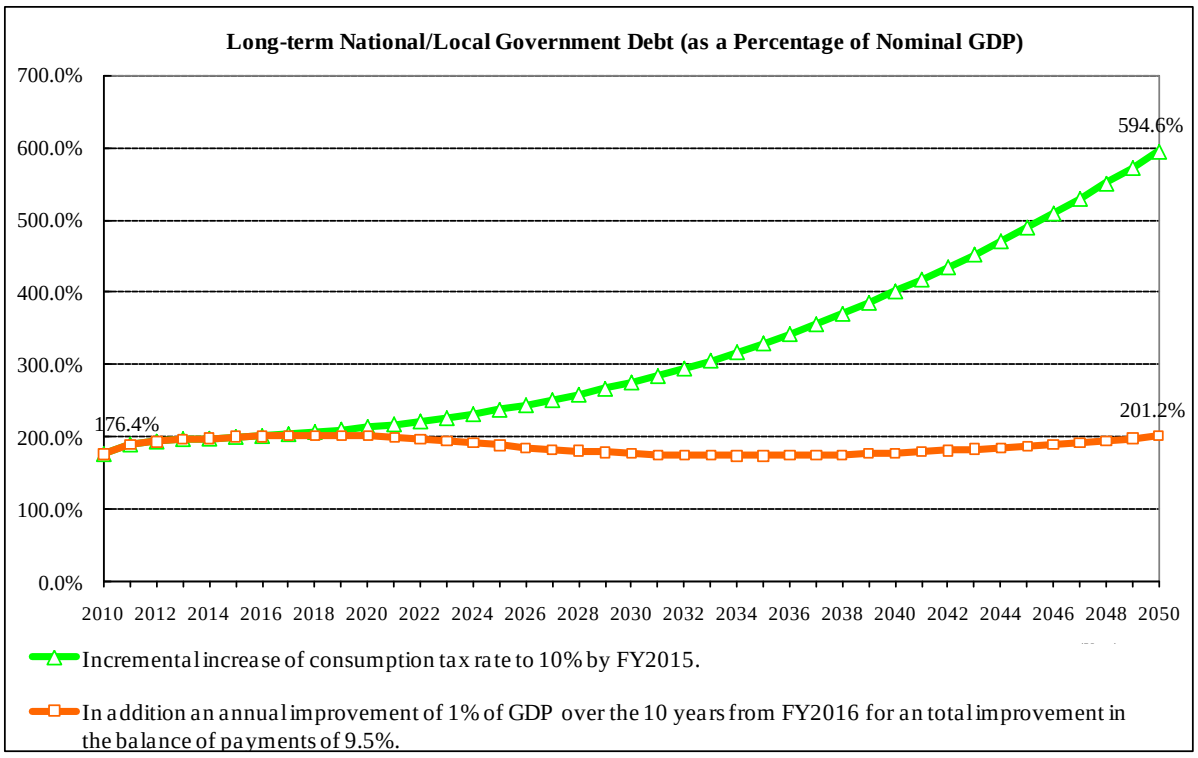
- Social security costs:
  Reflecting changes in population structure and inflation rate and wage growth rate increases, expenditure is expected to increase in the future (reflecting functional enhancement through the raising of the consumption tax (VAT) rate in 2014 and 2015)
- Interest payment costs:
  The interest rate for each year (estimating yield curve based on interest over 10 years) is applied to the new bond issue and the refinancing issue for that year
- Other: Growth from the level of the initial budget for 2012 due to the nominal growth rate (with regard to recovery/reconstruction activities after the Great East Japan Earthquake, expenditure is anticipated for a concentrated period of reconstruction).

2) Results of simulations for Japanese public finance

- Even if the consumption tax (VAT) rate is raised incrementally to 10% by 2015, in the case that further improvements in the balance of payments are not implemented thereafter, Japan's debt-to-GDP ratio will reach 594.6% in 2050 (176.4% at the end of 2010) and the collapse of public finance will be inevitable.

- In order to bring the primary balance into the black by 2020 and then stably reduce the debt-to-GDP ratio in accordance with government policy, an improvement in the balance of payments of 9.5% in total is necessary, with an annual share of GDP of 1% over 10 years beginning in 2016 (equivalent to 5 trillion yen at 2011 prices). (Even if it were possible to achieve the same targets only by raising consumption tax rate, the required increase in tax rate would be equivalent to 24.7 percentage points in a simple calculation.) It would be possible to limit increases in consumption tax (VAT) rates through measures

(Figure 2-2-1)



(1)Incremental increase of the consumption tax (VAT) rate to 10%

In the case that the consumption tax (VAT) rate is increased incrementally to 10% by 2015 and from then until 2050 no further improvement in the balance of payments is made, the size of the national/local government debt at the end of 2050 as a percentage of GDP will be 594.6%.

In this case, it is predicted that in reality at some point in the process a financial collapse will occur. In the world economy simulations presented above, due to the constrictions of a model that generates estimates using supply-side factors only it is difficult to incorporate the impact of public finance collapse, but if public finance collapse does indeed occur, it is thought that the economic growth rate will plummet.

(2)Government policies related to primary balance

In order to avoid the blowout of public finance discussed above, an improvement in the balance of payments of 9.5% in total—with an annual share of GDP of 1% over 10 years beginning in 2016 (equivalent to 5 trillion yen at 2011 prices)—is necessary to check the national/local government debt-to-GDP ratio in 2050 at 201.2%, the same level as at the end of 2020. (Mechanically calculating the increase necessary to achieve the same target through increases in consumption tax (VAT) rates only, a rise of 24.7 percentage points would be necessary.) It would be possible to limit increases in consumption tax (VAT) rates through measures such as cutting expenditure and raising/introducing other taxes.

3. Supplementary information

Supplementary information concerning the simulation results are provided below.

1) GDP (Gross Domestic Product) and GNI (Gross National Income)

The simulations use GDP (Gross National Product) as an indicator. With the deepening of globalization, if Japan were to advance along the path of an "investment nation" as a mature creditor nation, income from overseas would expand (income balance surplus). GNI (Gross National Income) is income balance added to GDP, and in the future the use of GNI as an indicator also should be considered. On a nominal base, GDP for 2010 was 479.2 trillion yen and GNI was 491.9 trillion yen—exceeding GDP by 12.7 trillion yen (source: Cabinet Office, ""System of National Accounts Annual Report 2010").

2) Savings and investment

Because the simulations for the world economy include simulations for some 50 countries and regions, it is extremely difficult to consider the current-account balance for each. Here, therefore, savings = investment was assumed, and simulations were performed on the premise of pseudo-closed economies (with regard to the capital stock of the Japanese economy, the capital stock rate of increase in the mid-term economic projections calculated by the Japan Center for Economic Research were used). In the models, for the Japanese economy the impact of reduced savings due to the aging of society will bring about a reduction in capital stock through a decline in the investment rate. However, it is thought that in the real economy, it is possible to soften the impact of reduced savings if there is an inflow of foreign investment, even if the current-account balance is in the red.

3) "Blowout" and "collapse" of public finance

In simulations for Japanese public finance, even if the consumption tax (VAT) rate is increased incrementally to 10% by 2015, if no efforts are made to improve the balance of payments from then until 2050, the debt-to-GDP ratio will reach approximately 600%. However, it is thought that in reality, there would be a blowout of public finance long before the debt-to-GDP ratio reached 600%, but it is difficult to incorporate the timing of financial blowout into simulations. Consequently, it was assumed that public finance blowout could be avoided by maintaining the debt-to-GDP ratio at the same level from 2020 onwards, and for this reason it was decided to show the range of the fiscal revenue and expenditure required.

III. Fundamental Changes Affecting the World in 2050 and Issues for Japan

The four fundamental changes affecting the world moving towards 2050 are (1) population dynamics, (2) globalization and IT expansion, (3) the rise of the Asian region, especially China, and (4) resource problems. Considering how these fundamental changes should be addressed is important in considering the long-term strategies that Japan should take.

1. Increase in global population; decrease in Japanese population and large increase in the elderly population

1) Global population (Figures 3-1-1 to 3-1-4)

- In 2050, the global population will exceed 9 billion (increase of 35% over 2010).
- While population growth is a growth factor in terms of macro-economics, from a global perspective issues concerning resources, food supply, and the environment will become more and more serious.
- Looking at the countries with the largest populations, the populations of India and the United States will continue to increase, while China's population will decrease slightly. India will overtake China to become the world's most populous country.
- In Japan as well as in developed European countries and some emerging Asian countries such as China and South Korea, population decrease and aging of society will occur concurrently.
- Aging of society in the United States will be gradual due to the inflow of immigrants.
- If the one-child policy is drastically amended, China's population dynamics may change.
- In some African and Asian countries, the youth population will notably increase, and there is the risk of political and social destabilization if employment for youth in these countries is not secured.

2) Decrease in Japanese population and large increase in the elderly population (Figures 3-1-5 to 3-1-7)

- Japanese population in 2050 will be 97 million—a decrease of more than 20%.
- The population aged 75 or over will increase by 9.65 million (increase of 68.0%) and comprise 24.6% of the total population, making Japan the country in the world where the aging of society is progressing the fastest.
- Japan's labor force population (population aged between 15 and 64) will decrease by 31.72 million (decrease of 38.8%), resulting in a social composition in which a large elderly population must be supported by a smaller labor force population. It is imperative that a diversity of labor, such as women and elderly people, be utilized.
- In urban areas, the number of elderly households and population requiring nursing care will notably increase.
- Efforts to restore fiscal health, reform social security, and redress inter-generational disparities are necessary. The acceptance of skilled human resources from overseas is another issue that needs to be considered.
- Sustained economic growth is imperative for resolving various issues.

(Figure 3-1-1)

Global population exceeds 9 billion; India overcomes China to become the world's most populous country; US population continues to increase; Japan's world ranking for population falls from No. 10 to No. 17

Countries with the world's largest populations

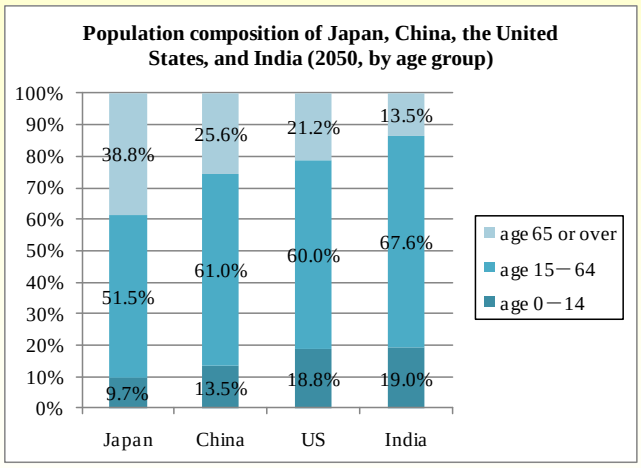
(Unit : 1 million people)

2010		2050	
1 China	1,341	1 India	1,692
2 India	1,225	2 China	1,296
3 U.S.	310	3 U.S.	403
4 Indonesia	240	4 Nigeria	390
5 Brazil	195	5 Indonesia	293
6 Pakistan	174	6 Pakistan	275
7 Nigeria	158	7 Brazil	223
8 Bangladesh	149	8 Bangladesh	194
9 Russia	143	9 Philippines	155
10 Japan	128	10 D.R.Congo	149
11 Mexico	113	11 Ethiopia	145
12 Philippines	93	12 Mexico	144
13 Vietnam	88	13 Tanzania	138
14 Ethiopia	83	14 Russia	126
15 Germany	82	15 Egypt	123
16 Egypt	81	16 Vietnam	104
17 Iran	74	17 Japan	97
World total	6,896	World total	9,306

(Source) Figures for Japan are from the National Institute of Population and Social Security Research medium variant (2012); figures for other countries are from the United Nations medium variant (2010)

(Figure 3-1-2)

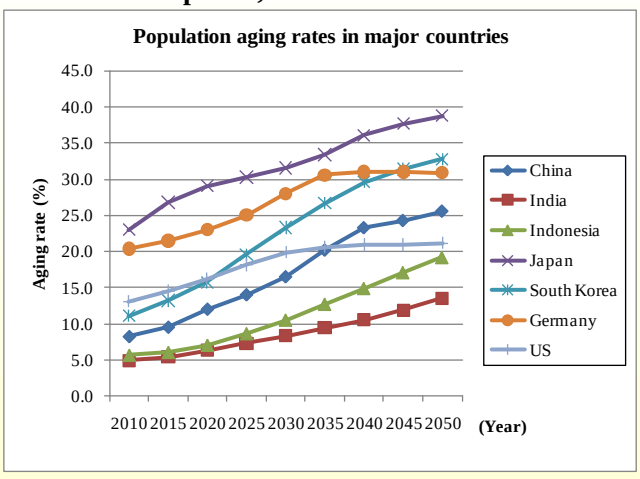
In 2050 China's population aging will advance, with the proportion of the population aged 65 or over reaching 25.6%. India and the US will maintain their population with a larger percentage of younger people



(Source) Figures for Japan are from the National Institute of Population and Social Security Research medium variant (2012); figures for other countries are from the United Nations medium variant (2010)

(Figure 3-1-3)

Japan becomes the frontrunner in the declining birthrate and aging population, and the aging of society also advances in other major countries, with some exceptions, such as the US

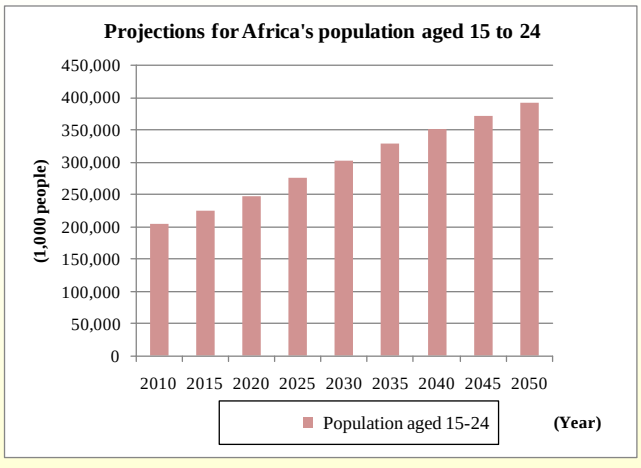


(Source) Figures for Japan are from the National Institute of Population and Social Security Research medium variant (2012); figures for other countries are from the United Nations medium variant (2010)

The population aging rate is the percentage of the population aged 65 or over.

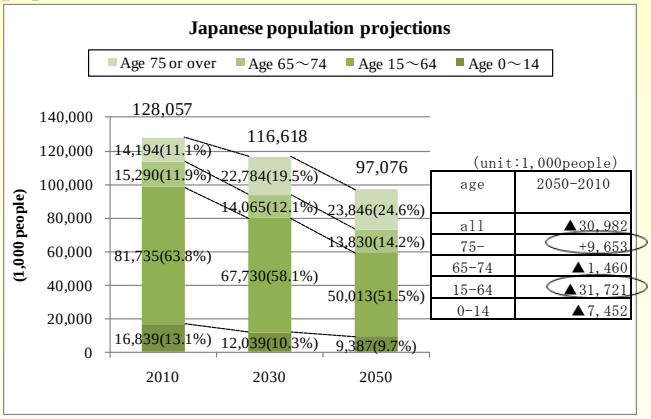
(Figure 3-1-4)

In Africa, the youth population (people aged 15-24) will double from approximately 200 million to 400 million, causing destabilization in the region



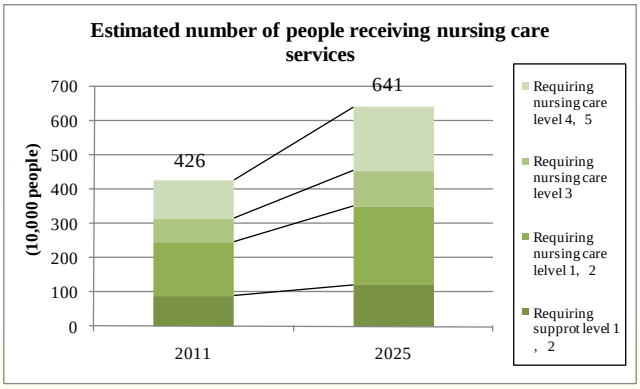
(Source) United Nations medium variant (2010)

(Figure 3-1-5)
In 2050, Japan's population aged 65 years or over will comprise 38.8% and the population aged 75 years or over will comprise 24.6% of the total population



(Source) National Institute of Population and Social Security Research medium variant (2012)

(Figure 3-1-6)
The number of people receiving nursing care services will increase 1.5 times by 2025



(Source) Ministry of Health, Labour and Welfare materials (2011)

(Figure 3-1-7)
The population aging rate will increase in all prefectures of Japan, with a notable increase in the elderly population in metropolitan areas such as cities with large populations

Aging rate by prefecture

・Top 10 (Unit:%)

	2009	2035
Akita	28.9	41.0
Wakayama	26.7	38.6
Aomori	24.9	38.2
Iwate	26.8	37.5
Yamaguchi	27.5	37.4
Kochi	28.4	37.4
Nagasaki	25.7	37.4
Hokkaido	24.2	37.4
Shimane	29.0	37.3
Ehime	26.2	37.0

・Urban areas (Unit:%)

	2009	2035
Saitama	20.0	33.8
Chiba	21.0	34.2
Tokyo	20.9	30.7
Kanagawa	20.0	31.9
Aichi	19.8	29.7
Kyoto	23.1	32.3
Osaka	22.0	33.3
Hyogo	22.8	34.3

(Source) "Annual Report on the Aging Society: 2011"
Figures for 2009 are Ministry of Internal Affairs and Communications estimates; figures for 2035 are National Institute of Population and Social Security Research estimates (2007)
The population aging rate is the percentage of the population aged 65 years or over.

2. Further deepening of globalization and IT

1) Deepening of globalization (Figures 3-2-1 to 3-2-3)

- Due to the advancement of globalization, we have entered an age in which people, goods, and money cross borders freely.
- People and businesses are enjoying the merits of globalization, such as the expansion of markets, improvement of productivity, and ability to purchase goods and services at low prices.
- While international interdependence is deepening, shocks experienced by specific countries reverberate globally (e.g.: the Lehman Shock and the impact on the supply chain of the Great East Japan Earthquake).
- International cooperation in the formulation of TPP and other global rules is becoming imperative.
- Wage standards for manufacturers of tradable goods will be exposed to international pressure to converge.

2) Deepening of IT (Figures 3-2-4 to 3-2-6)

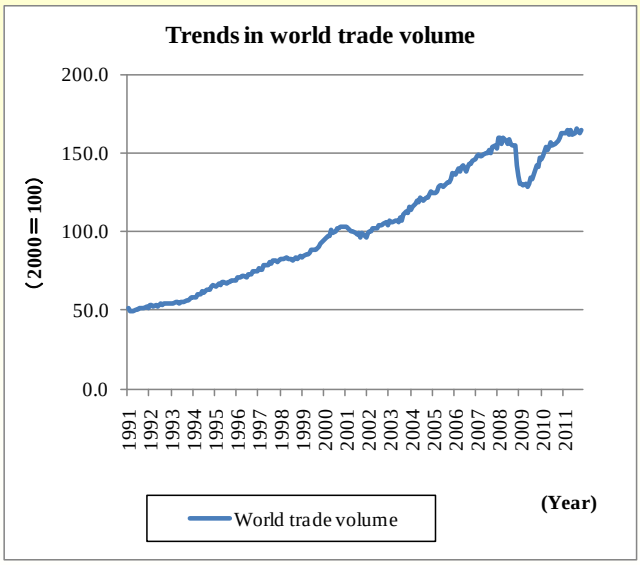
- The Internet and social media will penetrate every corner of economic society, with information costs reduced to virtually zero, contributing to the smooth facilitation of economic activity.
- Expectations are also held for the potential of IT to bring about social effects that create new demand and newly link people together. (e.g.: for the IT activities of elderly people in Tamaki Town, Mie Prefecture, refer to page 72).
- With the deepening of IT, it has become possible to obtain, accumulate, and disseminate large and diverse amounts of information, but the key to economic growth is how effectively this information can be used and linked to innovation and improved productivity.
- Highly skilled human resources will become the center of focus; this may become a factor in the expansion of economic disparity and social destabilization (dissolution of the middle class). Moreover, information management centered on personal and classified (confidential) information will also become a major issue.
- It will become an era in which the sharing of information by citizens moves political action; there is the possibility of national/regional destabilization (e.g.: the Arab Spring).

3) Nurturing of human resources (Figures 3-2-7 to 8)

- Nurturing of global human resources capable of responding to the deepening of globalization and IT is urgently required.
- Human resources with not only “English language” (the global common language) and “IT” literacy (skills) but also a broad education in areas such as history, culture, and philosophy should be nurtured.
- The educational and corporate training systems for nurturing global human resources need to be revised; the University of Tokyo is considering introducing autumn entrance systems instead of the conventional spring entrance system.

(Figure 3-2-1)

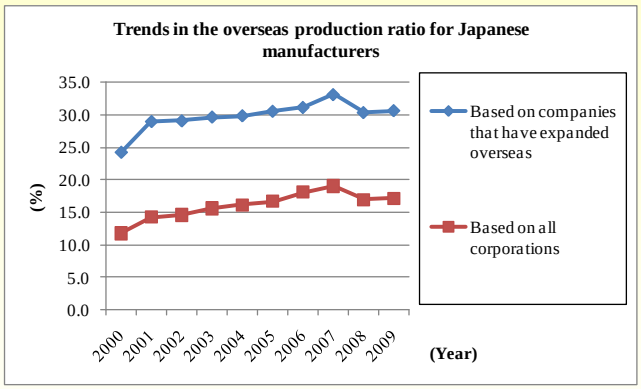
World trade volume dropped temporarily due to the Lehman Shock but will continue to increase, while the progress of globalization will remain unchanged



(Source) CPB Netherlands Bureau for Economic Policy and Analysis

(Figure 3-2-2)

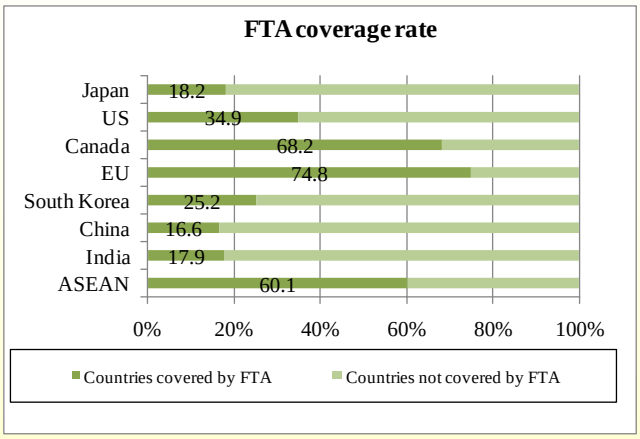
The overseas production ratio of Japanese manufacturers will tend to increase



(Source) Ministry of Economy, Trade and Industry, "40th Basic Survey of Overseas Business Activities"

(Figure 3-2-3)

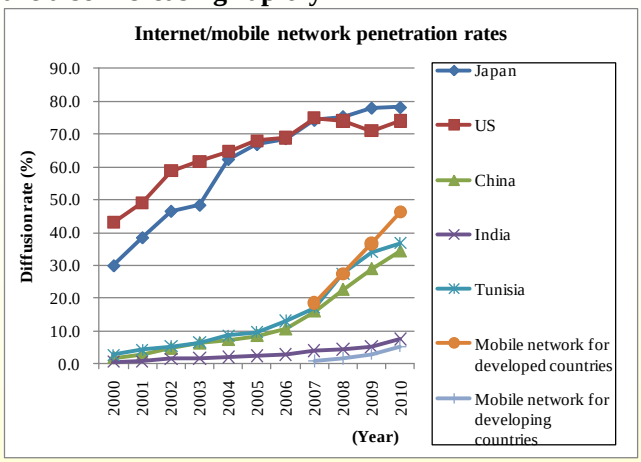
Japan's "FTA coverage rate"—the percentage of overall trade comprised of trade with countries with which FTAs (free trade agreements) have been concluded—is low



(Source) JETRO. "Global Trade Investment Report 2011";
"Countries covered by FTA" are the based on effective date of FTA as of August 2011; trade amount is based on 2010 figures.

(Figure 3-2-4)

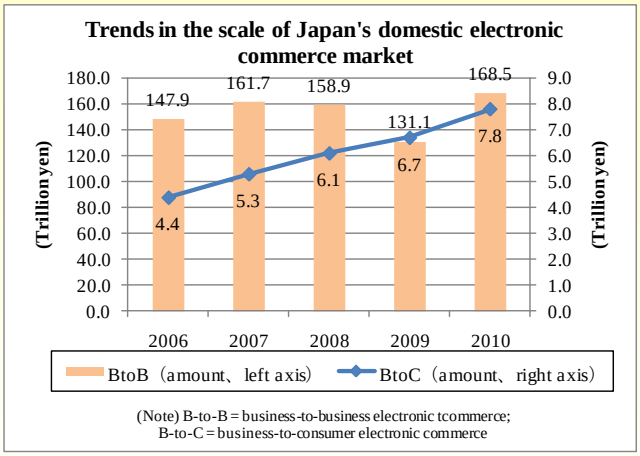
The Internet penetration rate is high in developed countries, more than 30% in China, and less than 10% in India. Mobile network penetration rates are also increasing rapidly



(Source) International Telecommunication Union (2011)
"Percentage of Individuals using the Internet"; "Active mobile-broadband subscriptions per 100 inhabitants"

(Figure 3-2-5)

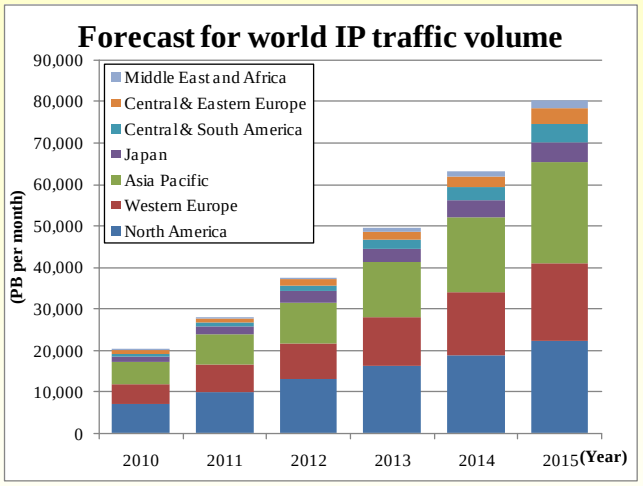
Japan's business-to-business (BtoB) electronic commerce stagnated temporarily due to the Lehman Shock, but is maintaining a tendency to expand, with business-to-consumer (BtoC) steadily expanding



(Source) Ministry of Economy, Trade and Industry, "FY 2010 Research on Infrastructure Development in Japan's Information-based Economy Society"

(Figure 3-2-6)

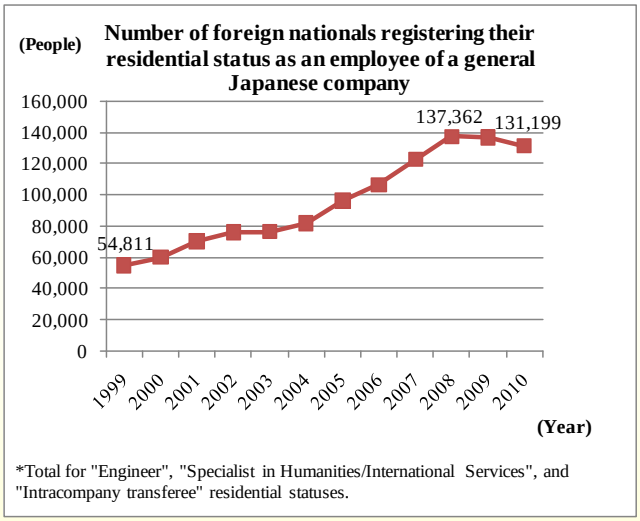
Global data traffic will increase approximately fourfold by 2015



(Source) Cisco Systems (2011) "Cisco Visual Networking Index: Forecast and Methodology, 2010–2015"

(Figure 3-2-7)

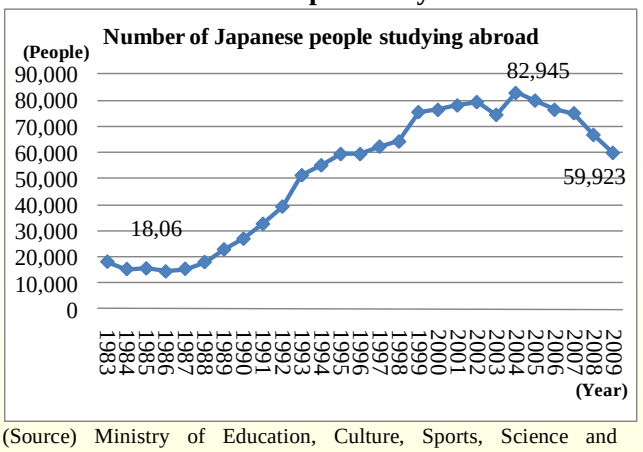
The number of foreign nationals being employed by domestic Japanese companies is increasing



(Source) Ministry of Justice, "Immigration Control" for each year.

(Figure 3-2-8)

The number of Japanese studying abroad increased almost monotonously until 2004 but has tended to decrease in the past few years



(Source) Ministry of Education, Culture, Sports, Science and Technology, January 2012: "On the number of Japanese citizens studying abroad, the number of international students enrolled at Japanese universities, etc."

3. Arrival of the century of Asia, including China

1) Economic growth in China and Asia and risks (Figures 3-3-1 to 3-3-6)

- China will overtake the United States in 2025 to become the world's largest economic power.
- China's economic expansion from now until 2050 will be on a scale equivalent to four Japans.
- China's per capita GDP (PPP rate) will increase approximately three times the 2010 figure to reach 18,908 dollars.
- By 2020, China will lead world consumption, with its middle class increasing to 920 million and the wealthy class increasing to 180 million.*

  * The "middle class" comprises households with an annual disposable income of between 5,000 dollars and 34,999 dollars; the "wealthy class" comprises households with an annual disposable income of 35,000 dollars or more.

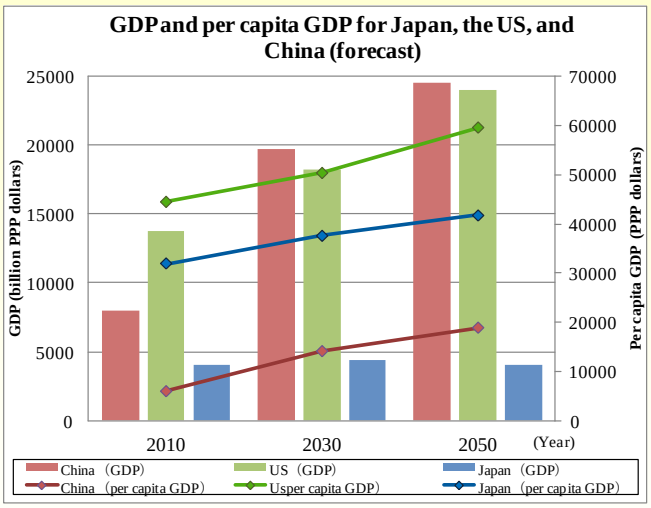
- China is Japan's largest trading partner and in future could also possibly become Japan's largest direct investment destination.
- As its population continues to decrease, the birthrate continues to diminish, and society continues to age, it is imperative that Japan cooperates in China's sustained growth and grows with China.
- The Chinese economy will in future face various issues and risks such as transitioning from an investment economy to a consumer economy, controlling inflation, correcting disparities between individuals and regions, securing resources for economic growth, responding to global environmental issues, responding to the aging of the population, conforming to international rules, and the impact of the world economy.
- If Asia can maintain growth, the region will comprise 50% of world GDP in 2050 and the Asian century will arrive. In this case, per capita GDP on a purchasing power parity (PPP) base will reach a level of approximately six times the current level—equivalent to the 2011 figure for Europe.
- However, in the case that the risks faced by Asia's emerging countries cannot be overcome, it has been suggested that these countries will fall into the "middle income trap" (the possibility of emerging countries being unable to transition to a developed country-type economy after achieving high growth and emerging from the developing world and catch up to developed countries, with income levels stopping at the middle-income level).

2) China's security assurance/politics (Figures 3-3-7 to 3-3-8)

- China's declared defense spending for 2011 was 583.6 billion yuan, the largest in Asia, and China's defense spending is also expected to increase in the future.
- Tension over military build-up, competition for natural resources, and territorial disputes pose the greatest risks to security assurance in the Asia-Pacific region.
- The stronger China's presence grows, the greater international interest grows in the country's political risks, such as domestic disparity issues and the expansion of democratization.

(Figure 3-3-1)

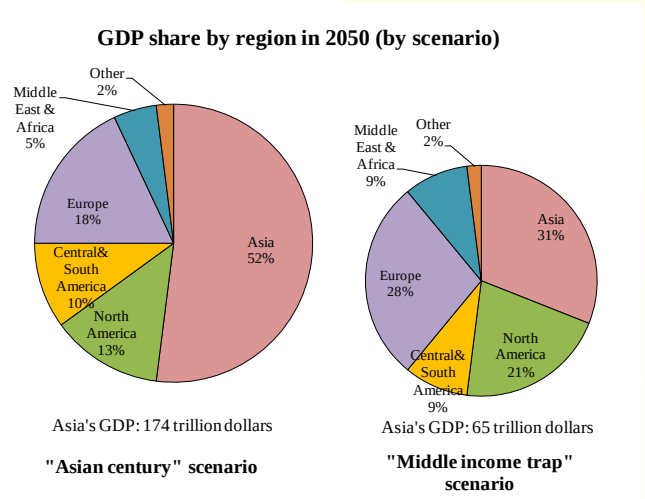
As early as 2025, China will become the world's largest economic power, with per capita GDP increasing by 2050 to the same level as Japan's per capita GDP for 1980



(Source) Chapter II simulations

(Figure 3-3-2)

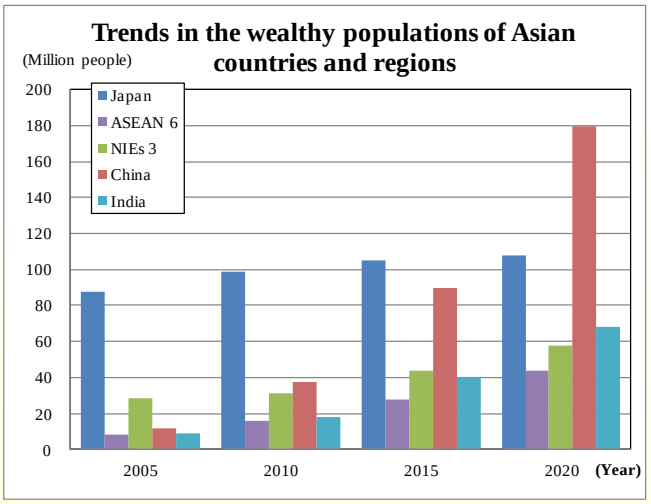
If Asia sustains economic growth, by 2050 its GDP will have expanded to half the world GDP, but growth will be limited if emerging countries fall into the "middle income trap"



(Source) Asian Development Bank, "Asia 2050 Realizing the Asian Century "

(Figure 3-3-3)

In 2020, China's wealthy population will exceed that of Japan

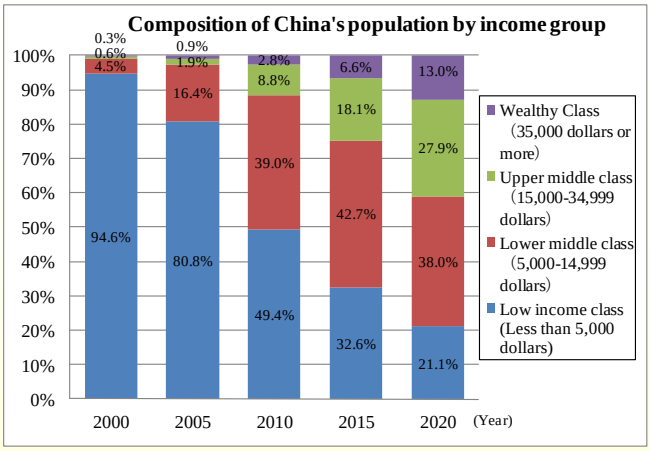


(Source) Ministry of Economy, Trade and Industry, "White Paper on International Economy and Trade 2011"
Euromonitor International 2011

* The "wealthy class" comprises households with an annual disposable income of 35,000 dollars or more.

(Figure 3-3-4)

In China, the percentage of the population comprising the middle class will increase, and in future the lower middle class will enter the volume zone

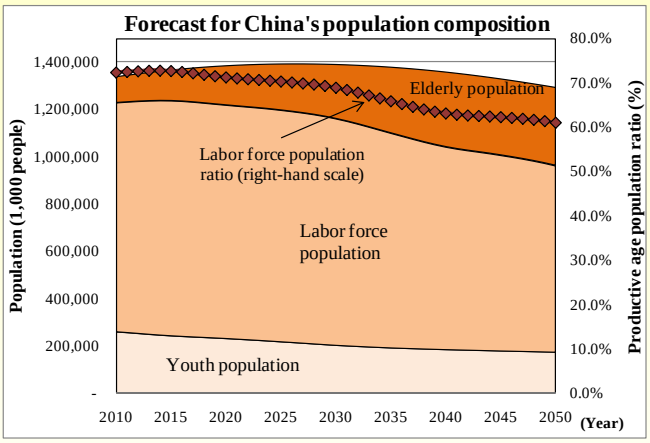


(Source) Ministry of Economy, Trade and Industry, "White Paper on International Economy and Trade 2011";
Euromonitor International 2011

*Population for each disposable household income level. Calculated by multiplying the relative ratio for each income group by the population. Figures for 2015 and 2020 are Euromonitor estimates.

(Figure 3-3-5)

China will end its "population bonus", transitioning to a "population onus"

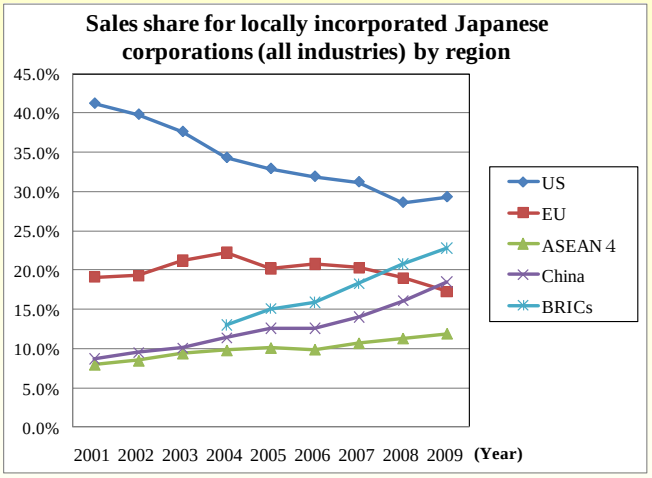


(Source) United Nations medium variant (2010)

* "Population onus" is the situation when the percentage of the population comprising the elderly and youth populations (ratio of dependent population) increases and the load on the labor force population increases.

(Figure 3-3-6)

The sales share for locally incorporated Japanese corporations will decrease in the United States and increase in China and BRICs

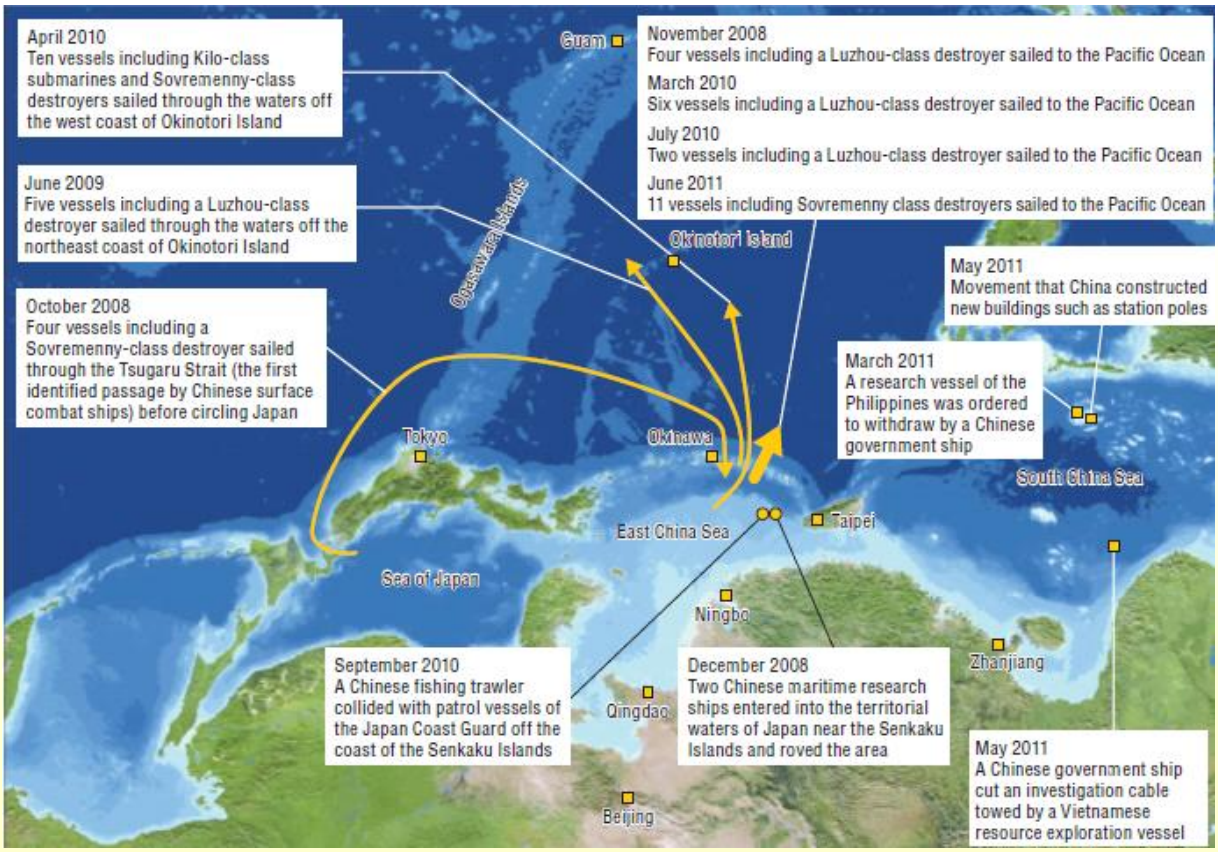


(Source) Ministry of Economy, Trade and Industry, "White Paper on International Economy and Trade 2011" and "Basic Survey of Overseas Business Activities 2009"

*Regarding BRICs, surveys began in 2004, and so there is no data available for 2001-2003. Figures for both BRICs and China include Hong Kong.

(Figure 3-3-7)

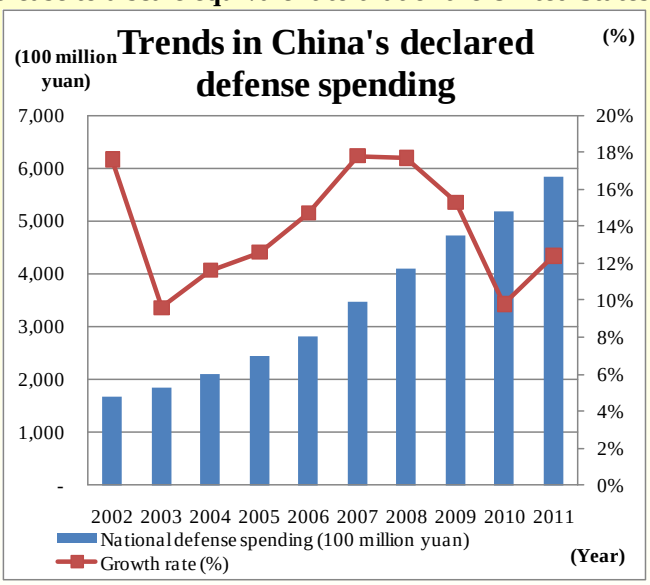
China's activity in waters adjacent to Japan are intensifying



(Source) Ministry of Defense, "Defense of Japan 2011"

(Figure 3-3-8)

China's national defense spending has increased 18 times in the past 20 years and in the future could possibly increase to a scale equivalent to that of the United States



(Source) Prepared based on the Ministry of Defense, "Defense of Japan"

4. Tight supply of and demand for resources

1) Tight supply of and demand for energy resources (Figures 3-4-1 to 3-4-4)

- Against the background of growth and population growth in emerging countries, primary energy consumption in 2050 will be twice that for 2010 and price rises will be inevitable.

- The bulk of the increase in primary energy consumption will comprise non-OECD countries—mainly Asian, African, and Middle Eastern countries.

- In future, the percentage of primary energy consumption comprised by fossil fuels will fall slightly, but primary energy consumption will continue to center on fossil fuels.

- Due to the Fukushima nuclear power plant accident, an increase in electricity costs in Japan is unavoidable, and securing a stable electricity supply and controlling cost are vital issues for the Japanese economy.

- Shale gas and other fuel resources for which there is the possibility of uncovering new stores in the United States and elsewhere could transform the balance of world energy supply and demand and even bring about major change to geopolitics and international politics.

2) Tight supply of and demand for food and water resources (Figures 3-4-5 to 3-4-7)

- World grain consumption will increase approximately 1.35 times, from approximately 2.2 billion tons in 2010 to approximately 3 billion tons in 2050.

- Due to the increase in income in emerging countries, meat consumption will increase approximately 1.7 times, from approximately 269 million tons in 2010 to 464 million tons in 2050.

- With the increase in food production, demand for water for agricultural purposes, which comprises 70% of world water usage, will increase and the problem of water shortages will become increasingly more serious. For Japan, which imports 60% of its food supply, the world water shortage issue is far from being “someone else’s problem”.

3) Efforts to resolve global environmental issues (Figure 3-4-8)

- Realizing agreement on the Post-Kyoto Protocol and how to control CO_2 emissions continue to be major issues.

- Japan should provide the world with excellent environmental technology and contribute to the control of global warming, developing into a pillar of growth industries in the environmental field as well as a diverse range of other fields.

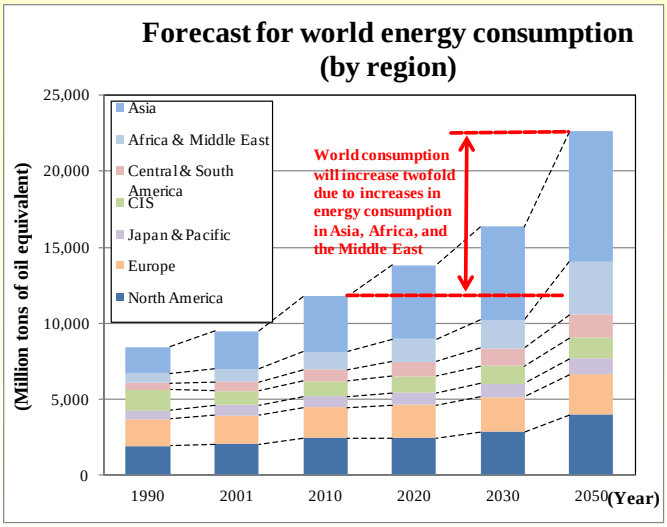
4) Concern about international conflict

- Securing resources is an important issue for all countries and can become the trigger for international conflict. Thus there is an urgent need for the formulation of international rules.

- In Asia and Africa, where demand for resources will increase rapidly in the future, there is a high possibility of conflict occurring frequently (e.g.: conflict over the water of the Mekong River).

(Figure 3-4-1)

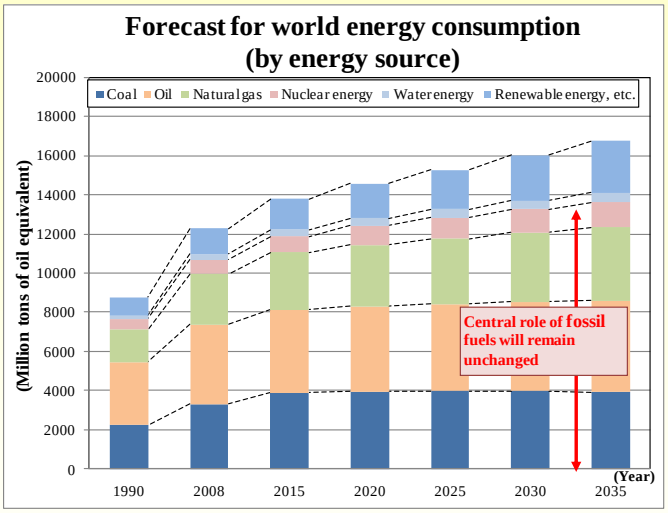
Energy consumption will rise in mainly Asia, Africa, and the Middle East, increasing to twice the 2010 amount in 2050



(Source) European Commission, "World Energy Technology Outlook-WETO-H2"

(Figure 3-4-2)

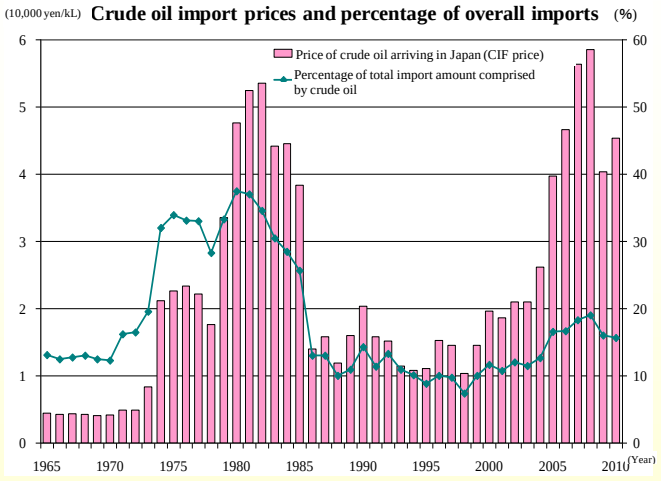
Fossil fuels are expected to maintain a high share in future as important energy sources.



(Source) International Energy Agency (IEA) "World Energy Outlook"

(Figure 3-4-3)

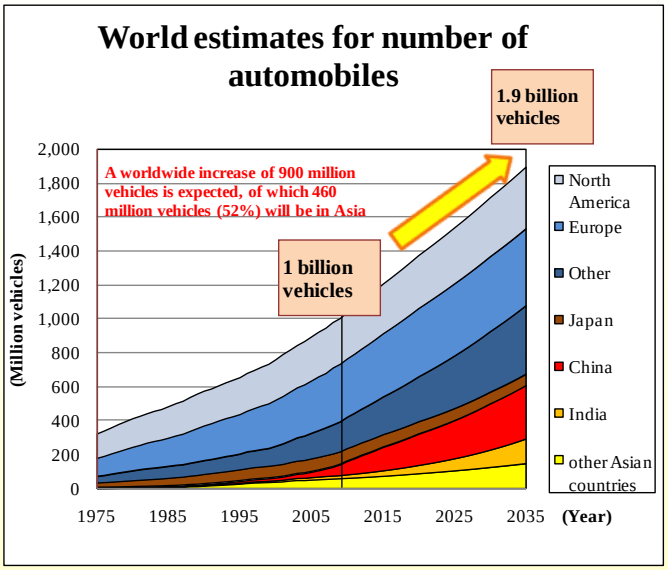
Crude oil prices will remain at a high level, making procurement of resources difficult



(Source) Ministry of Finance, "Trade Statistics"

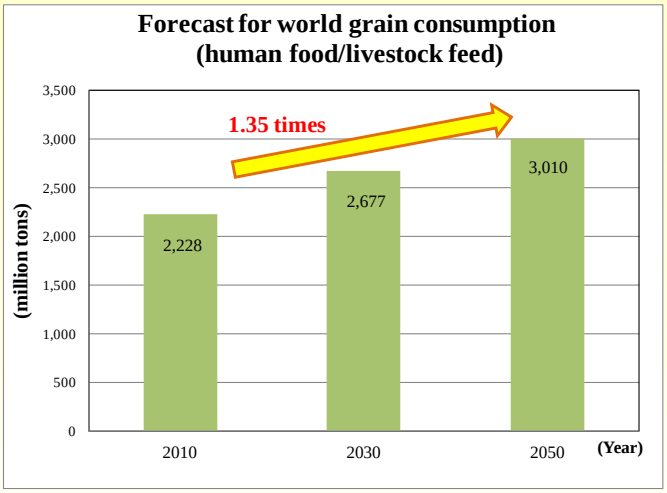
(Figure 3-4-4)

The number of automobiles in mainly Asia and China will increase, with an increase of 900 million vehicles worldwide, and an increase in energy demand is anticipated



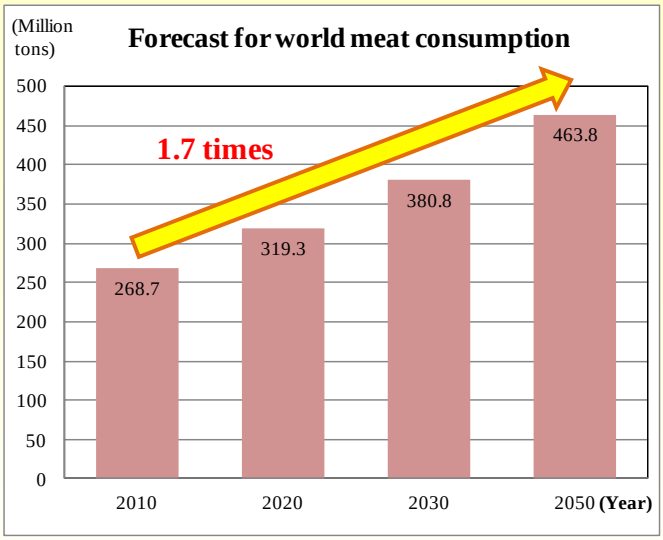
(Source) Institute of Energy Economics, Japan, "Asia/World Energy Outlook 2011"

(Figure 3-4-5)
Increase in grain consumption due to the increase in the world population



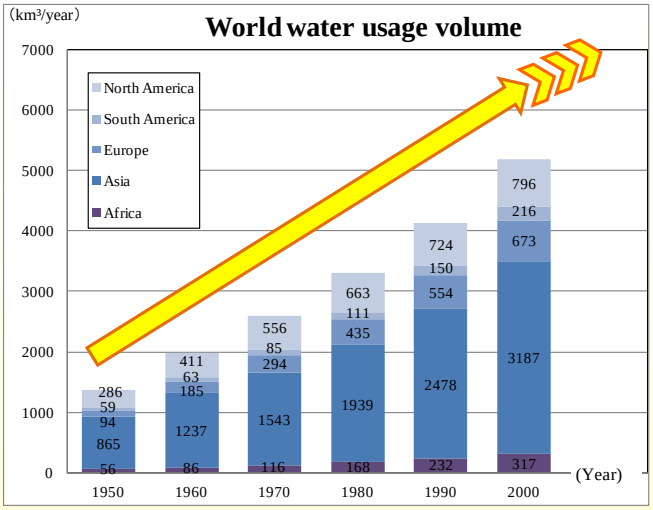
(Source) United Nations Food and Agriculture Organization (FAO), "World agriculture: towards 2030/2050" (2006)
Date for the current situation is from the United States Department of Agriculture (USDA), "World Agricultural Supply and Demand Estimates" (2012)

(Figure 3-4-6)
Increase in meat consumption due to increase in income in emerging countries



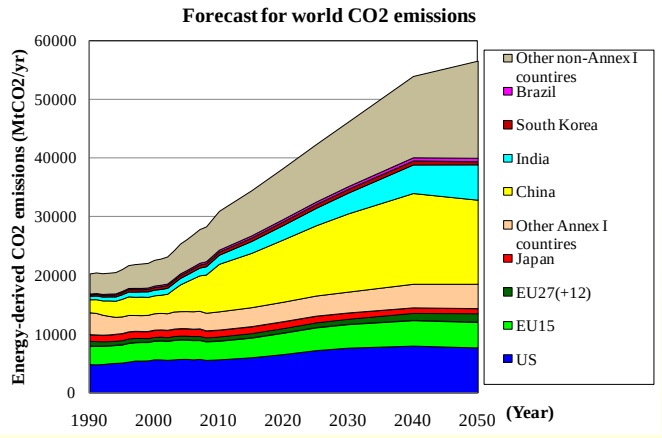
(Source) United Nations Food and Agriculture Organization (FAO), "World Livestock 2011"

(Figure 3-4-7)
Due to the impact of food production, etc., the lack of water resources will also become increasingly serious



(Source) Food and Agricultural Policy Research Institute (FAPRI)

(Figure 3-4-8)
Greenhouse gases will notably increase in emerging countries, and global warming countermeasures will have a weak effect if only emission gasses within Japan are reduced



(Source) Research Institute of Innovative Technology for the Earth (RITE)
*"Annex I countries" are major developed countries that have numerical targets for reducing greenhouse gas emissions under the United Nations Framework Convention on Climate Change

IV. Issues and Recommendations

This chapter clarifies the issues that Japan needs to address in order to exist as a proud and prosperous nation within a radically changing world and presents long-term visions for various fields: 'human resources', 'economy and industry', 'tax, public finance and social security', and 'foreign policy and national security'. In order to change the future, Japan must break away from the past and take action immediately.

Human Resources

Establish a "Full Participation" and "Full Effort" Society Aimed at Growth by Improving Ourselves through Friendly Rivalry

With the country's lack of natural resources, the key to sustaining Japan is ultimately "human resource capabilities". Such 20th century concepts as choosing between work and child-raising and taking life easy after retirement need to be fundamentally revised and an environment that enables everyone—especially young people, women, elderly people, and foreign nationals—to "make full effort" and "work" must be created immediately.

Issues and Recommendations (1)

Promote labor participation of women and the elderly, and strengthen the workforce from young to senior workers.

- In order to raise the labor participation rate for women, enable workers to freely choose their working hours to suit their lifestyle, even if the workers continue to work for the same company over the course of their career.
- Address the poverty issue through compensation for unstable employment and equal treatment for non-regular employees and activation policies aimed at the unemployed.
- Proactively accept skilled human resources from overseas.
- Nurturing of Human resources is the responsibility of companies (managers); emphasize on training/skills development through "workplace" experience.

By 2050, Japan's labor force will decrease by more than 20 million, and as shown in Chapter 2, this is expected to have a tremendously negative impact on the Japanese economy (refer to the simulations on page 18 in Chapter 2). Securing "labor quantity" by raising the labor participation rate and enhancing "labor quality" through education and training are imperative, but there is a mountain of issues to be addressed. Under the current situation, the heavy burden of child-raising and nursing care is depriving women of opportunities to improve/exercise their skills, forcing them to withdraw from the labor market; moreover, the rich experience and skills of middle-aged and elderly people are not necessarily being fully utilized. Mobilization of women and elderly people as well as increasing the labor participation rate are the "trump card" for mitigating the negative effects (population onus effect) of the rapidly declining birthrate and aging of society.

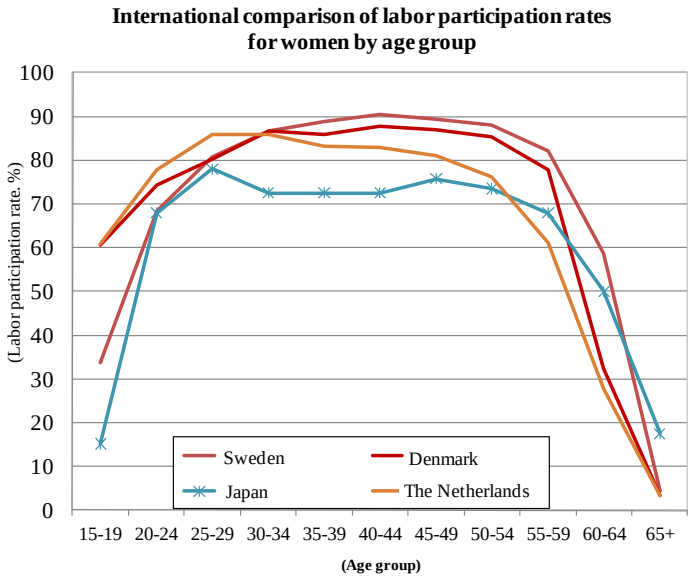
1. Promoting the participation of women and elderly people in society and creating an environment in which they can continue working

Looking at trends in the labor supply rate for women by age group, Japan is a typical M-shape, with the labor participation rate for women aged in their 30s and 40s lowered than in other countries. (Figure 4-1-1). If a person's career is interrupted due to child-raising or nursing care responsibilities, enhancement of their human resources capabilities also stops. There is the problem that, even for full-time employees, returning to the workplace as a full-time employee is difficult in many cases, narrowing subsequent opportunities for skills development. If this job turnover can be lowered and the labor participation rate for women in their 30s and 40s raised to the level on the Netherlands and then Northern Europe, the negative macro-economic impact of the declining birthrate and aging of society (population onus effect) can be significantly counterbalanced. To achieve this, first of all Japan needs to introduce mechanisms, like those in the Netherlands that enable employees to flexibly choose between short-time and regular working hours to suit the circumstances of their lifestyles (utilization of part-time regular employees). In addition, efforts need to be made to thoroughly enhance child-raising support services provided by childcare centers and childcare givers, etc., to create an environment where it is easy for not only women but also men to take childcare/nursing care leave (increasing

income compensation for while workers are on leave) and in future approach the Scandinavian working environment. To this end, the national and local governments should proactively implement system changes.

(Figure 4-1-1)

Japan has an M-shaped curve, with a low labor supply rate for women in their 30s and 40s.



(Source) ILO, Economically Active Population, Estimates and Projections (6th edition, October 2011)

It is also important to promote the participation of elderly people in the labor force. Japan's average life expectancy is increasing, and it is imperative that society transition to one in which elderly people with the desire and physical ability to do so can work (e.g.: The project for work with a sense of motivation in Kashiwa City, Chiba Prefecture; refer to Column (2) on page 92).

2. Strengthening poverty countermeasures through compensation for unstable employment /equal treatment for non-regular employees and "activation" of the unemployed

In Japan, where the "everyone-is-middle-class" mentality was strong, poverty-related issues have gradually surfaced. One in 10 male and one in seven female workers live in relative poverty,[1] and the number of public assistance recipients has risen to a record high of 2.07 million (as of October 2011). Comparing the poverty situation in Japan internationally, 80% of households living in poverty include members who are employed—a ratio that is much higher than in other countries.[2] In many developed countries unemployment is a major cause of poverty, but in Japan the issue of the "working poor"—people who cannot escape poverty even though they are employed—is serious. In response to this problem, multilateral measures are necessary, including employment stability for non-regular employees in fixed-term employment, equal treatment, provision of training opportunities, and transition to regular employment. In particular, from the perspective of raising the "quality" of fixed-term labor, introduction of a "termination allowance"—paid on termination of the contract and comprising a certain percentage (10% in France) of the wages paid up until that point—should be considered as compensation for employment instability. Furthermore, in order to promote equal

treatment, European general legal mechanisms "prohibiting unfair treatment without reasonable grounds" are required. Moreover, the introduction of refundable tax credits for low-income earners should be promoted in order to thoroughly implement the principle of providing "the necessary support for those who need it" (refer to page 86). In Japan's case, although the problem of unemployment has not been so serious, in recent years the percentage of unemployed people who have been unemployed for a long period of time (long-term unemployment) has increased, while at the same time there has been a noticeable increase in the number of public assistance recipients since the Lehman shock. In future, over the long term how successfully both the working poor and the unemployed can be employed and brought out of poverty will be a major theme. With regard to the unemployed, it is imperative that not only is every effort made to ensure that they do not enter the public assistance system, but also that "activation" policies are systematically formulated as measures for increasing work incentive, such as the "soft" measures (regular interviews with counselors, work training, employment assistance) and "tough" measures (compulsory work training and reduction of unemployment benefits/period of payment for non-participation) that have been implemented in Europe in recent years with a certain degree of success. The current "job-seekers support system" also should be revised with the aim of increasing work incentive.

3. Bold acceptance of foreign nationals

With regard to the acceptance of highly skilled human resources from overseas, Japan should quickly make acceptance criteria transparent through such means as the introduction of the points-based system that is currently under consideration and promote the swift acceptance of foreign nationals.[3] Based on the fact that Japan is currently behind other countries in its acceptance of highly skilled foreign workers, Japan should also consider taking the major step of allowing such foreign nationals to be accompanies by family members and domestic employees.[4] Furthermore, in the long term, based on the fact that Japan's population will decrease in the future, consideration should also be given to broadly revising immigration policies and otherwise boldly opening the country.

4. Reevaluation of OJT: improving capabilities and skills through work

"Company-specific human capital and skills" (human capital/skills that have no application outside the company in question), which in the past were said to be the source of corporate Japan's competitive strength, have come to be viewed negatively amidst the transformation of the Japanese employment system. In contrast, the importance of acquiring "general" human capital/skills that can be applied in any business in order to boost a person's career without being restricted to a certain company is being emphasized frequently. However, such awareness goes hand-in-hand with the introduction of performance-based systems, etc., and it is undeniable that managers' and supervisors' motivation for nurturing their subordinates has weakened. Technical training and skills development through work "in the workplace" is more effective that training outside the company, and managers/senior workers providing guidance to their subordinates/junior workers is an important means of strengthening human resources capacity in any era.

Issues and Recommendations (2)

Nurture new human resources capable of responding to environmental changes.

- Provide an environment in which young people are able to “make a full effort”.
- Nurture human resources with “individuality”, “sensitivity”, “the ability to think for themselves”, and “strong spirits” who are capable of staying ahead of changes in the times.
- To nurture truly global human resources, hone not only English language skills but also “logical-thinking abilities”, “communication skills”, “tolerance”, and “cultivated thinking skills”.
- “Information analysis skills” and “interpersonal skills” will be all the more necessary with the deepening of IT.

1. Image of the new human resources required by changes in the times

Alongside increasing the labor participation rate, the fundamental key to the long-term prosperity of Japan—a country with few natural resources—is human resource capabilities. It is important that an environment be created that can raise the capabilities, efforts, motivation, and productivity of individuals, especially the ability of young people to “make a full effort”. Such grassroots efforts to raise productivity will also lead to tolerance for the high burden of tax and social security on future generations due to the decreasing population.

However, three significant environmental changes are occurring with regard to human resources—(1) the end of stable high growth; (2) the achievement of affluence; (3) increasing future uncertainty (as well as further advancement of IT and globalization)—and the desired human resources image is also changing.

In order to respond to these changes, first of all human resources equipped with the qualities of “individuality” and “unorthodoxy” that generate radical innovation are required.

Secondly, in order to uncover latent demand in a society filled with affluence, not only functional and quality improvements that can be quantified but also human resources equipped with the “sensitivity” to elicit consumers’ fascination and smiles are important. Traits such as this “individuality” and “sensitivity” need to be nurtured from the primary education stage.

Thirdly, the fact that uncertainty is growing in various aspects of the economy means that human resources with “flexible thinking” and “the ability to think for themselves”, which do not rely on the past or patterns, as well as the “strong spirit” (toughness) to be able to adapt in even unexpectedly demanding environments are also required. These traits should be nurtured at mainly secondary and tertiary education levels.

In the wake of the Great East Japan Earthquake, many positive comments were heard about the sight of many young people “making a full effort” in volunteer activities in the disaster zone; young people have ample capacity for “making a full effort”.

2. Global human resources nurturing focused on the "next" after English language ability

Furthermore, with the advancement of globalization, there is an urgent need for the nurturing of global human resources. Although strengthening of English language education is a required condition for this, it is not necessarily a sufficient condition. In order to provide global human resources nurturing that focuses on the "next" after English language ability, the following perspectives are important.

First of all is the nurturing of persuasive and universal "logical-thinking abilities" and "communication skills" that prevail in a global world, as well as a "broad perspective" and "tolerance" that accepts diversity. Curricula that nurture "logical-thinking abilities" and "communication skills" while teaching English language skills are desirable. Moreover, the frameworks of "humanities" and "sciences" studies should be overcome and subjects established that enable students to acquire basic "comprehension ability" and "written expression ability" in the Japanese language, as well as "the ability to think for themselves" and "logical-thinking abilities" in mathematics and physics.[5] Skills in the basic subjects of English language, Japanese language, and mathematical (physics) should be thoroughly honed in small-sized classes at the secondary education level.

Second is the fundamental revision of the "yutori-education (pressure-free education)" that has continued over several decades at primary and secondary education levels from the standpoint of global competition for human resources. For example, the content required to be learned in elementary, junior high school, or high school may be increased, but it need not be decreased; instead, there is a need to make study more efficient. Moreover, frequent curriculum guideline changes that bring about confusion should be avoided.

Third is the increasing of opportunities for Japanese people to study abroad and the further acceptance of international students into Japan. Although young people are frequently criticized for their supposed "inward-orientation" due to the declining trend in Japanese students studying abroad in the United States, in fact the overall number of students studying overseas, including in countries other than the United States, is actually increasing, despite the decrease in the Japanese population within the age range considered most appropriate for studying abroad (Figure 4-2-1). Study abroad plays a large role in not only enhancing language abilities but also nurturing the other skills mentioned about as necessary for global human resources. Within university education, too, creating virtual "study abroad spaces" by having small-sized classes comprising a mixture of Japanese and international students, conducting discussions and presentations in English, and enabling the two groups to compete with and learn from each other is also effective.[6]

Fourth is rich "cultivated thinking skills" that enable communication and empathy in essential areas of humanity and intelligence such as culture, history, and the arts amongst elite human resources and which are necessary in order to produce internationally top-level human resources in particular, even amongst global human resources. Nurturing skills in these areas in general university education courses (1st and 2nd year of university) is desirable. From this perspective, Japan should aim for a liberal arts-style university education system with small-sized classes where lessons are not "broad and shallow" but instead students are able to dig deeply into specific fields according to their individual interests.

3. "Information analysis skills" and "interpersonal relation-building skills" required as IT deepens

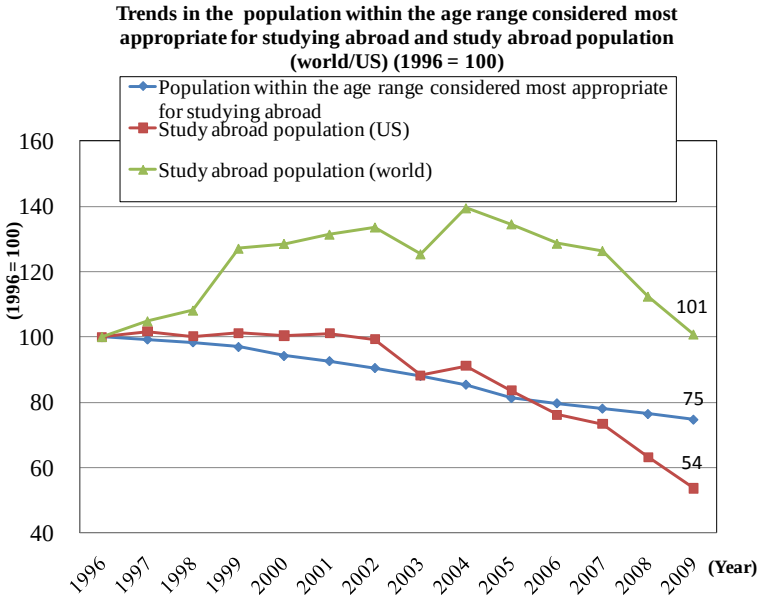
Another major environmental change on par with globalization is the deepening of IT, but from the standpoint of human resources, increasing IT literacy and PC usage skills is as yet insufficient, even though it is essential. Rather, what will be even more necessary is "information analysis skills" that test how well a person can analyze and utilize large and diverse amounts of digitalized data.

Furthermore, due to the increasing relative value and demand for information that cannot be digitalized and specialized knowledge and skills that cannot be manualized, jobs requiring interpersonal interaction—even though their skills may be different levels—will become increasingly important, and for this reason the importance of "interpersonal relation-building skills" and "skills in the work place" in a broad sense will increase.

Such skills comprise such elements as not only practical skills and knowledge such as business manners and social common sense but also "communication skills", "cooperative skills" that enable teamwork and smooth interpersonal relationships, and "sense of initiative" and "leadership ability "that generate leadership.

Furthermore, "reading, writing and speaking skills" are important as a foundation for these skills and abilities, many aspects of which are nurtured far less by school lessons than by playing with friends at the primary education level and through club activities and various school events (cultural festivals, sports days, etc.) at the secondary level and above. Since "personalization" of play and extracurricular activities by using IT is also progressing, the significance of the above activities should be reconfirmed and emphasized.

(Figure 4-2-1)
The Japanese population within the age range considered most appropriate for studying abroad will decrease, but the study abroad population will tend to increase (study abroad destinations will decentralize, shifting to countries other than the US)



(Source) OECD, "Education at a Glance"; UNESCO Institute for Statistics; IIE "Open Doors"; Ministry of Education of the People's Republic of China; Ministry of Education, Republic of China (Taiwan); Japanese Ministry of Internal Affairs and Communications Statistics Bureau

Issues and Recommendations (3)

Implement fundamental educational reforms by strengthening originality/ingenuity in the classroom and public support.

- Carry out drastic educational reforms by enhancing originality/ingenuity in the classroom and strengthening public support.
- Introducing autumn entrance for universities is the first step in fundamental educational reform.
- Promote diversification of places of employment for students, including small- and medium-sized companies, and resolve university graduate-job placement mismatching.

1. Fundamental educational reforms through strengthening of originality/ingenuity in the classroom and public support

Regrettably, the perspective of nurturing human resources capable of taking on the challenge and responding to the above-mentioned new environmental changes is absent from Japan's current educational administration system. Japan should proactively incorporate this perspective and aim for bold educational reforms. As basic environmental adjustments to enable this, specifically it is important that Japan first of all not standardize education with uniform teaching guidelines nationwide—especially at the primary and secondary education levels—but rather dramatically expand the margin for local governments and individual schools to exercise originality/ingenuity (including with regard to teaching personnel). It is desirable that post-hoc comprehensive national achievement examinations be conducted regularly to assess whether or not the minimum standards required are being achieved.

Moreover, educational form should not be left up to a certain group of educational specialists; rather, an educational framework reflecting the earnest voices of various interested parties (parents, the business world, the cram school industry, etc.). In addition, the burden of education in Japan is heavier than in the past and than other major countries,[7] and this is another factor in the declining birthrate. From the standpoint of governmental support, education should be regarded as an integrated issue with social security and family policies, etc., and priority considered from amongst these.

2. Introduction of autumn entrance for universities

In the world ranking of universities, Japanese universities rank beneath US and UK universities, and in order to facilitate the acceptance of outstanding international students into Japanese universities and Japanese students' study abroad as well as promote the further globalization of Japanese universities, implementation of the autumn university entrance system being proposed by the University of Tokyo and other universities should be realized. Under the process envisioned, high schools, junior high schools, and elementary schools would maintain the spring entrance/graduation system for the foreseeable future while several universities take the lead in implementing autumn entrance systems, encouraging other universities to follow suit.

Autumn university entrance system would create six months of "free time" between high school graduation and university entrance, and this time should be regarded as a newly created period for nurturing human resources that enables students to reexamine themselves through a diversity of experiences and clarify the meaning and purpose of university study.

(Figure 4-3-1)
In world university rankings, Japanese universities rank beneath US and UK universities

World University Ranking

	Name of university	Country	Overall Score
1	California Institute of Technology	US	94.8
2	Harvard University	US	93.9
2	Stanford University	US	93.9
4	University of Oxford	UK	93.6
5	Princeton University	US	92.9
6	University of Cambridge	UK	92.4
7	Massachusetts Institute of Technology	US	92.3
8	Imperial College London	UK	90.7
9	University of Chicago	US	90.2
10	University of California, Berkeley	US	89.8
	⋮		
30	University of Tokyo	Japan	74.3
	⋮		
52	Kyoto University	Japan	64.8

(Source) Times Higher Education World University Ranking 2011-12

In the same way, the period between university graduation and commencement of employment can be proactively posited as a fruitful preparatory period, as is the case with university seniors who, having failed to find employment, chose to repeat their final university year.

Furthermore, the extremely small number of foreign-national professors at present is a problem that should be beaten in terms of globalization.

3. Resolution of university graduate-job placement mismatching through the use of human resource placement agents

The "employment ice age" for university graduates has been emphasized as problem for the transition period between education and employment; however, the main cause of this is the large increase in the number of students advancing to university and consequently the number of university graduates while the birthrate declines and the school-age population decreases (Figure 4-3-2). With the unchanged expectation that "university graduation promises employment with a major company", the group of people seeking employment with large companies has increased, causing a corresponding expansion of graduate/company mismatching.

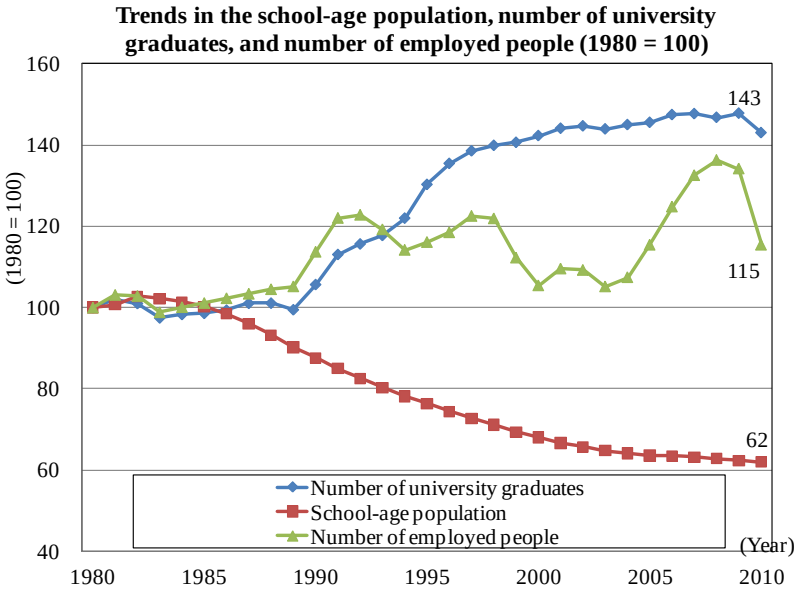
In addition, rather than acting to lessen this mismatching, the deepening of IT may in fact encourage mismatching by enabling students to easily access and register on recruitment websites and the recruitment pages of large companies' websites. Furthermore, it cannot be forgotten that, due to the environmental changes they face, large businesses are more than ever narrowing down their hiring of

university graduates to include future candidates for executive positions. Accordingly, the point is how best to match students who are unable to gain employment with large companies with medium- and small-sized companies. Considering the fact that traditionally high school graduates have generally been referred to employers by their schools, it is difficult for all university graduates to find employment only by themselves.

Thus consideration should be given to the role of universities to procure employment services for the students from human resource placement agents with know-how and experience providing support for career changes and re-employment.

(Figure 4-3-2)

While the school-age population with decrease, the university advancement rate and number of university graduates will greatly increase



(Source) Ministry of Education, Culture, Sports, Science and Technology, "School Basic Survey"; Statistics Bureau, Ministry of Internal Affairs and Communications

Economy and Industry

Incorporating Asian-Pacific Region Dynamism and Strengthening the Japanese Economy's Growth Potential

The negative impact of Japan's population decrease will be enormous. In order for Japan to grow, we need to make efforts to achieve a dramatic increase in productivity in addition to incorporating the dynamism of the growing Asian region (however, there are also economic and political risks in Asia).

Issues and Recommendations (4)
Incorporate the growth of China and other emerging Asian countries.

- In preparation for a future current-account deficit, especially aim for high profitability of overseas investments and return these domestically.

- Promote economic partnerships, focusing on the TPP (Trans-Pacific Partnership) agreement.

- Promote thorough "localization" in order to incorporate the growth of emerging countries.

1. Preparation for and response to a future current-account deficit

It is estimated that in future the trade balance will go into and remain in deficit and the income balance will remain in surplus, with the current-account balance moving into deficit around 2020 (Figure 4-4-1). Thus it is imperative that Japan now begin making preparations and formulating responses for such situations.

Firstly, in preparing for the shrinking of domestic markets due to the declining birthrate and aging of society, the "incorporation" of overseas markets of emerging countries such as China, India, and Brazil is an even more important issue. Secondly, if Japan does enter a current account balance deficit in the future, policy management that prevents this situation from expanding and continuing—that is, maintains sustainability—is required. To this end, Japan should aim to bring controllable fiscal balance into surplus, avoiding the "twin deficit" experienced by the United States in the past.[8]

Furthermore, in order to stabilize the ratio of the current-account deficit to nominal GDP, economic growth must also increase. It is also important that Japan enhance its appeal as an investment destination and promote a smooth inflow of capital from overseas, while maintaining an income surplus that compensates for the trade deficit by promoting overseas investment and generating a high profitability.

2. Promotion of economic partnerships centered on the TPP

A country poor in natural resources, Japan has achieved growth by maintaining an "orientation towards integration with the world economy",[9] and this principle should be firmly maintained and strengthened.[10] It is also important that Japan promote further liberalization of trade and investment in order to incorporate overseas markets. It is known that a "domino effect" is at work in the process of expanding free trade zones.[11] If Japan is slow to participate, the negative effects of being shut out of the free trade zone escalate more and more, forcing the country into a more and more disadvantageous position in both economical and negotiating terms. Accordingly, early participation is advantageous in various aspects. In the Asia-Pacific region, numerous free trade agreements are currently being proposed, but the TPP is the highest quality in terms of restrictiveness, free participation, and high standards.[12]

Furthermore, participation in the TPP is also meaningful in terms of strengthening cooperation with the United States and underpinning the security assurance guaranteed by the Japan-US alliance.

In order to create balance between the two powers of the United States and China in the Pacific region, economic cooperation is needed between the United States, which has lost its previous momentum, and countries that share its market economy principles and other values, and China must ultimately be incorporated into this economic cooperation.[13]

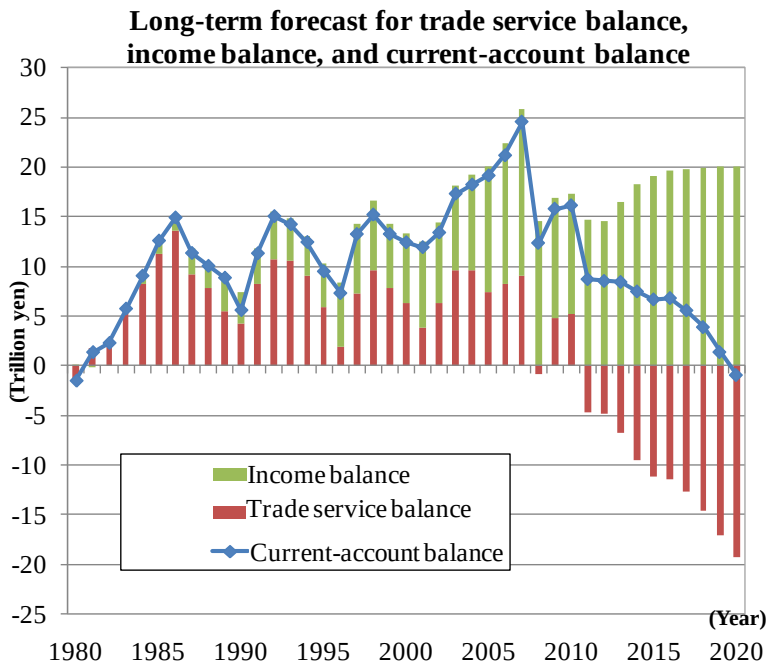
3. Thorough "localization" and "high added value for exports" in order to "incorporate" emerging countries' growth markets

"Incorporating" the growth of rapidly expanding Asian countries is imperative for invigorating the Japanese economy, and two measures for achieving this are (1) aiming for a more affluent lifestyle through "incorporation" in the form importing a diversity of goods and services at low prices from Asian countries; and (2) "incorporating" the tremendous demand of emerging countries by means of "localization" through foreign direct investment and "high added value for exports". From the perspective of the latter, a problem that arises is the "Galapagos Syndrome" according to which Japanese businesses, due to their tendency to exist comfortably within Japan's affluent and enormous domestic market, create products with specifications and standards that do not apply overseas.

In contrast, in South Korea competitiveness is rising rapidly in fields such as electronics, and this is because, due to the limitations of South Korea's small domestic market, South Korean companies have from an early stage targeted emerging markets where large growth is anticipated and there are few strong rivals, and injected management resources into these markets. What Japan should learn is the strategy of "incorporating" growth markets by Japan keeping a constant eye on global markets and leaping into emerging markets it decides to target before rivals—even if there are unfavorable conditions in the country's infrastructure construction or various risks—and providing products suited to the characteristics and needs of each market in a timely manner. In order to implement such a strategy, it is important that Japan be aware that human resource nurturing and motivation are key, and it is especially important that proactive utilization of local human resources and internationalization of corporate head offices (such as by making English the common in-house language) be implemented across-the-board.

Environmental enhancement through TPP and FTA, etc. (removal of institutional disadvantages and uncertainties) and expansion and enhancement of support for companies' overseas expansion are also necessary to enable support of corporate globalization.[14] For example, in the case of small and medium businesses, it is difficult for companies to spare manpower for performing export procedures or gathering information on overseas markets. Moreover, it has been pointed out that when small and medium businesses expand overseas, the risk awareness of the company's management executives exerts an extremely strong impact. In order to remove such obstacles, provision of information and financial support to reduce risks are necessary to encourage globalization.

(Figure 4-4-1)
In 2020, the current-account balance is expected to enter a deficit



(Source) Japan Center for Economic Research materials based on Ministry of Finance/Bank of Japan, "Balance of Payments"

With regard to "high added value for exports", enhancing the quality of Japanese agriculture holds enormous potential for opening up the way for overseas demand for agricultural products as export goods. Within agriculture as well, it is important to enhance quality competitiveness instead of price competitiveness.[15] In actual fact, there are many Japanese agricultural products that are of a higher quality than overseas products, with Japanese rice evaluated highly in international markets as well. In order to increase the production of such high-quality agricultural products and expand their export, Japan needs to reform the convoy system, which makes no distinction in treatment between full-time and part-time farmers, and formulate assistance measures that are limited to highly motivated farmers. Furthermore, in order to expand the export of high-quality agricultural products, responses to the scale of overseas demand resulting from the increase in export scale as well as strengthening of cost competitiveness are essential. To this end, consolidation of agricultural land for full-time farmers needs to be promoted. In addition, Japan also needs to lower barriers to the emergence of agricultural production corporations in order to accumulate sales know-how in overseas markets as well as smooth finance procurement for expanding the scale of production.

4. Corporate governance/accounting systems must also develop effective responses to globalization without taking refuge in external standards

In order for Japanese companies to survive in global markets, not only the globalization of management but also governance and accounting systems require mechanisms to sufficiently ensure transparency and accountability from an international standpoint as well. However, forcibly converging the systems of countries around world, with their differing historical backgrounds, etc., towards a single global standard is not necessarily always the best course of action. When adopting

International Financial Reporting Standards (IFRS) and other international standards, the government should give careful and flexible consideration to their country's interests and harmony with other countries of the world.

However, the occurrence of misconduct by archetypal global companies—such as Olympus—that have high overseas sales ratios and foreign stockholder ratios, with open governance characterized by their appointment of outside directors and foreign managers has been received as a tremendous shock. Rather than strengthening formal governance, it is important that companies create mechanisms for self-discipline (assignment of managers) and mechanisms performed by outside directors (formation of human resource pools of outside directors and markets).

Issues and Recommendations (5)
Open up growth frontiers that utilize Japan's strengths.

- Instead of focusing single-mindedly on improving performance and reducing prices, pursue high value-added strategies that utilize Japan's strengths of "sophistication", "fun", and "hospitality".
- Aim for overseas business development that earns through "integrated systems" rather than focusing solely on individual products and services.
- Look ahead to future growth markets with "Green/Life/Silver Strategies".

1. High value-added strategies that utilize Japan's strengths of "sophistication", "fun", and "hospitality"

In the past, Japan achieved high growth in order to catch up with Western countries through process innovation, but today, when Japan is a front-runner, we face the necessity of opening up new frontiers for growth. For example, when living standards improve and a certain level of affluence is secured, a "view of consumption saturation" that predicts that consumption will not grow in the future inevitably emerges, but in actual fact markets expend if latent demand is successfully uncovered through the provision of even more attractive products and services.

In recent years the improvement in product quality has been remarkable, such as personal computer processing speed and digital camera pixel count, but there are some cases in which the creation of products with high added value through improved functionality enabling quantification (digitalization) has reached a level that exceeds the needs of consumers. In such fields, "sophistication" that appeals to consumers' "sensitivities", "fun" that makes consumers smile, and a spirit of "hospitality" that carefully considers consumers' needs have historically as well been regarded as specialties and strengths of Japan that have also been highly evaluated overseas; these should be made the basis of strategies for creating high added-value.[16] By combining these characteristics with delicate technology cultivated through manufacturing that cannot be manualized, Japan should aim to create innovative products and services.[17]

2. Business development that earns through "integrated systems"

When considering external business expansion, in the past great success has been achieved with business models in which earnings are made through polishing excellent technologies and exporting and high-quality products, as can been see with the typical example of the automobile industry. In contrast, Japan has fallen behind with respect to constructing comprehensive business models which sell "integrated systems"—such as bullet train operating systems and water works administrative structure –to foreign markets as "packages".

In future, demand for infrastructure development in emerging Asian countries is expected to be very high, and so there is great meaning for Japan—where there is high awareness regarding environmental and safety issues as well as advanced technology—in forming cooperative alliances between the public and private sectors and promoting the expansion of business that earn through

"systems".

Growth is especially anticipated in infrastructure business fields such as electricity generation, renewable energy, railways, water (Figure 4-5-1), and smart communities; moreover, hospitals, elderly nursing services, and other fields are also expected to expand tremendously overseas in the future.

Issues involved in the expansion of businesses that earn through "integrated systems" that has been raised include Japanese involvement at the infrastructure planning stage for each country, strengthening of public finance, nurturing of global human resources, and diplomatic back-up such as top-levels sales by the Prime Minister or relevant Cabinet minister.

3. "Green/Life/Silver Strategies" that look ahead to future demand and growth markets

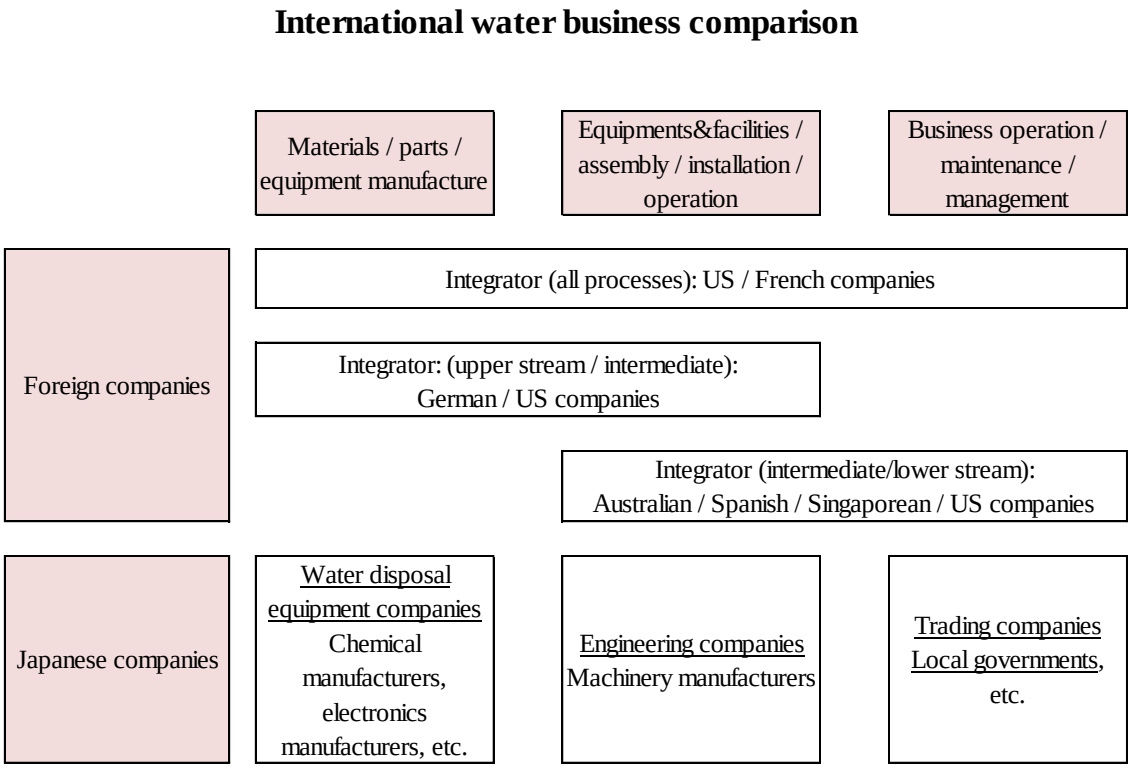
In opening up new frontiers for growth, it is important to focus attention on fields in which future demand and growth are envisioned and consider ways to boost these fields, which can be roughly divided into three groups: "green", "life", and "silver" fields. "Green" refers to fields such as the environment, food supply, and water. From the viewpoint of the "system exporting" mentioned above, the environment and water are very important fields that can also utilize Japan's high-level technology. Furthermore, with respect to food supply, it is expected that latent demand can be expanded through the development of agricultural products that perfectly meet consumers' needs and the improvement of distribution systems. In addition, it is expected that demand in Asian countries will rise for high-quality Japanese agricultural products created through elaborate, meticulous work as income levels in these countries increase.

From the most common perspective of "organic life", "life" refers to healthcare, and expectations are being held for future technological innovations in this field more than ever. However, from the perspective of "lifestyle", "life" also has the important meaning of digging up demand for products closely related to community and lifestyle. For example, in the healthcare field, preventative medicine and health businesses are gaining attention. Because such services are not covered by health insurance, in many instances this market is aimed at the wealthy, but further diffusion is expected through the reduction of costs using IT. As a service closely related to lifestyle, there is expected to be an expansion of delivery and other businesses in response to decreases in the population density, as is seen with depopulation.[18]

"Silver" refers to markets where demand will increase due to the progressive aging of the population. It is important to carefully uncover "demand aimed at elderly people" that have not previously emerged in not only healthcare and nursing care, but also various other fields. In considering "demand aimed at elderly people", the use of IT holds especial potential. For example, in the case that it is physically difficult for a elderly person to go shopping, online shopping and home delivery are very convenient; not only that, IT can also be used for making bus reservations and otherwise using transportation facilities. (For an example of Tamaki Town, Mie Prefecture, where smartphones have been distributed to elderly people, refer to the column 1 on page 72). Moreover, usage applications such as elderly people with little mobility using IT to maintain social networks also hold promise. In addition, even from a worldwide perspective Japan is a "super-aging society"

top-runner, followed by China and other Asian countries. Silver markets are also a promising field from the perspective of "incorporating" the growth of emerging Asian countries.

(Figure 4-5-1)
Japanese companies have fallen behind overseas companies in terms of expanding business activities that earn through systems



(Source) Reprinted from Atomic Energy Commission materials (21st Regular Meeting of the Atomic Energy Commission on April 6, 2010; reference case for "Environmental changes related to industrial technology" in briefing materials provided by the Ministry of Economy, Trade and Industry)

Issues and Recommendations (6)
Comprehensively resolve the "post March 11" energy constraints.

- Implement measures based on the three rules of "comprehensive", "progressive", and "efficient".
- In realizing a desirable electric power supply portfolio, ensure balance between risk diversification and cost efficiency.
- With regard to the nuclear power plant issue, make cool-headed operational decisions focusing on reactor age and enhance energy-saving, cogeneration, and electricity conservation, thus easing the situation of a resource-importing nation.
- Realize stable electricity demand and supply through the introduction of smart meters and expansion of service areas.

1. Measures based on the three rules of "comprehensive", "progressive", and "efficient"

As a result of the Great East Japan earthquake and Fukushima nuclear power plant accident, Japan is facing unprecedented large energy constraints. To resolve this situation, fundamental revision of long-term energy policies, atomic energy policies, and electric power policies is urgently required. However, extremely dualistic and emotional discussions lacking rational judgment have also arisen, and so robust and comprehensive policies that will demonstrate a high degree of consistency in the long-term need to be formulated. To this end, here we propose three rules for considering power supply portfolios that will form the foundation of energy, atomic power, and electric energy policies.

First of all, rather than falling into the dichotomy of "anti-nuclear power" versus "pro-nuclear power", the issues must be investigated and considered comprehensively and multilaterally ("comprehensive response"). Secondly, rapid changes in the power supply portfolio would bring about major side-effects in terms of the burden on the public and the stable supply of electricity. Such changes also may be accompanies by large-scale investment, and so change must be implemented over time ("Progressive response"). Thirdly, in order to determine the best portfolio, needless to say, attention must also be paid to efficiency through minimization of costs by rationally and carefully evaluating costs ("efficient response").

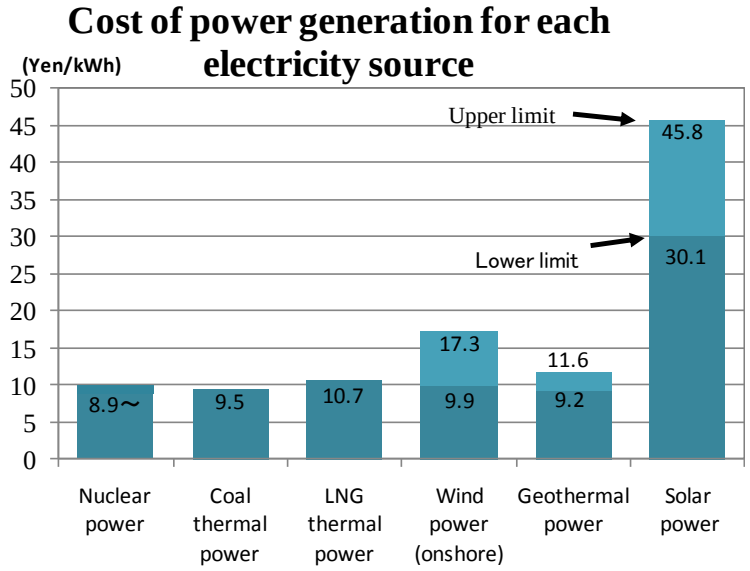
2. Realization of a power supply portfolio that balances risk diversification and cost efficiency

Under the "Energy Basic Plan" formulated in 2010, more than half of the power supply portfolio in 2030 relied on nuclear power, but this target, which relies excessively on nuclear energy, might be problematic from the perspective of creating a balanced power supply portfolio, regardless of the occurrence of the nuclear power plant accident. In future, it is anticipated that the percentage of nuclear power within the power supply structure will decrease, but discussions should be conducted rationally based on data. Looking at renewable energy, the cost of solar energy is still high—approximately three times the cost of thermal power.[19] The cost of wind power and geothermal power compared with the cost of thermal power make them possible options, but there are problems with respect to uneven distribution and stable supply, and so electricity transmission needs to be expanded and strengthened and grids need to be stabilized. Considering this situation, too, increasing

reliance on thermal power is unavoidable, and since—even taking global warming measures into consideration—the costs for coal and LNG in particular are on par with that of nuclear power, these are expected to become even more important sources of electric power. However, excessive reliance also brings risks related to security assurance with the countries from which the energy resources are being imported.

Accordingly, in considering future power supply portfolios, rather than relying excessively on certain electric power sources or conversely ruling out certain sources, Japan should seek to increase efficiency and minimize costs while addressing various risks through diversification of energy sources.

(Figure 4-6-1)
A power supply portfolio that balances risk diversification and cost efficiency needs to be constructed



(Source) Reprinted from the National Policy Unit, "Report of the Cost, Etc., Verification Committee"; preliminary calculations for a model plant in 2010

3. Response to nuclear power issue: rational operational decisions focused on reactor age and efforts to loosen restrictions for resource importer countries

The cause of the Fukushima nuclear power plant accident was the neglect of two overlapping problems: inadequate tsunami countermeasures and aging (more than 30 years since the plant began operations). Had either of these problems been resolved (tsunami countermeasures put in place, or a reactor aged less than 30 years installed), it would have been possible to achieve cold shutdown of the reactors when the Great East Japan Earthquake occurred and the accident would not have occurred.[20] Accordingly, if we were to learn something from this accident, it would be firstly that the process for generally decommissioning reactors at aging nuclear power plants should be strengthened. In future, keeping in mind the possible nationalization of nuclear power plants, in seeking to move from shutting down all nuclear power plants to operating selected plants, focus should be on reactor age as the standard for decision-making. In particular, as the construction of new nuclear power plants is in

reality becoming difficult, thorough consideration needs to be given to the risk of accidents occurring when aging power plants continue operation. Considering that Japan is a resource-importing country facing nuclear energy issues, in future we must inevitably face such risks as increases in fossil fuel prices and security assurance issues. In order to ease energy constraints for Japan as a resource-importing nation, it is imperative that greater efforts be made in such areas as energy-saving, gas cogeneration, and electricity conservation.

4. An electric power system that realizes stable supply and demand

Following the Great East Japan Earthquake, nuclear power plants—i.e. large-scale power sources—shutdown. This series of events revealed the deeply regrettable fact that "stable supply" the most important goal in Japan's power supply system had been just a myth. The electric power supply system needs to be considered separately from the nuclear power issue and its fundamental structure and functioning revised in order to construct an electric power system that realizes stable supply and demand.

First of all, with respect to the demand side, an issue that has been identified as being a problem is that the only measures for controlling demand in situations where demand-supply balance is tight were mandatory measures such as rolling blackouts and restrictions of electricity usage. The introduction of mechanisms for controlling electricity demand through market mechanisms is absolutely necessary, and the introduction of smart meters and fee services that respond in careful detail to the demand situation should be carried out as early as possible. Moreover, with respect to the supply side, a problem was that the electricity supply system was unable to respond adequately to the risks presented by a major accident. It is clear that the limited sources for procuring electricity in Japan—including the difference in frequency between West Japan and East Japan—led to a concentration of risks. From the standpoint of diversifying risks, electricity suppliers should expand service areas. Moreover, in the future standardization of frequencies is also necessary.[21] In addition, with regard to electric power supply, in order to achieve diversification of the power supply portfolio, diversification of supply is also needed to enable electricity consumers to choose between suppliers. This should be realized as it would promote competition between suppliers and electricity power sources, but at the same time special care must be taken that the securement of reserve supplies by the power generation sector is not made more difficult by changes in the competitive environment. The means by which the neutrality of the electricity transmission and distribution sector is secured also should be examined when considering such trade-offs.

Column 1. Invigoration of Elderly People through IT: the "Genki Bus" in Tamaki Town, Mie Prefecture

- Secures greater efficiency of elderly-friendly transportation methods using IT
- Contributes to the maintenance of elderly people's health by "making them go out"
- Provides a sense of security for elderly people that they are "being protected" through emergency call buttons on smartphones, etc.

Tamaki Town is located in the central part of Mie Prefecture. Covering an area of 6 square kilometers, the Tamaki is a compact town with a population of approximately 15,000. The town's aging rate is 21.8%, and aging is not progressing rapidly, with the population tending towards a net increase due to the town inviting companies to establish plants there.

(1) What is the "Genki Bus"?

- As the town was unable to maintain regular bus services, it introduced an on-demand bus service where passengers reserved pick-up times and locations; currently three busses are in operation.
- Town office employees responsible for bus services learned about the University of Tokyo's "on demand bus system" and in March 2010 applied to the Ministry of Internal Affairs and Communications for a "ICT Hometown Invigoration Project (2009)" grant. With the support of the University of Tokyo, the "Genki Bus" system began operation in December 2010.

(2) Characteristics of the "Genki Bus" system

- Unlike the conventional analog response system where operators take reservation calls, consider routes, and dispatch busses, the instant operators or users input the necessary data into the terminal the bus route and traveling times are calculated and the most appropriate bus is dispatched.
- Smartphone terminals with "Genki Bus" reservation applications are distributed free of charge to residents aged 60 years or above who wish to have one (users pay the communication charges).
- Reservations can be made up to two weeks in advance; the busses operate between 8:45 and 17:15, seven days a week. With 153 bus stops throughout this compact town, the bus service covers virtually the entire town.
- In addition to the "Genki Bus reservation" application, the smartphone terminals also have an "emergency call" button. If this button is pressed, a message is sent to not only the operator but also Genki Bus reservation terminals installed in local hospitals and shops as well as the person's relatives and/or neighbors (who have been pre-registered). Locational information is also provided via Google.
- If a person's use of the Genki Bus suddenly stops or an aberration in the "Alive signal" occurs, an operator from the social welfare council contacts the person to check on their well-being.

(3) Effects of the "Genki Bus"

- The "Genki Bus" is a highly convenient form of transport for elderly people who cannot drive.
- The service contributes to the maintenance of elderly people's health by "making them go out". Although a quantitative assessment is difficult, the "Genki Bus" has been confirmed to have had the effect of doubling the number of participants at nursing care prevention seminars compared to before the service was introduced.
- Elderly people are able to feel a "sense of security that they are being protected" due to the emergency call button and calls from social welfare council operators to check on their well-being.

Tax, Public Finance and Social Security

Stop procrastinating; it's now or never for restoring fiscal health and reforming the social security system

A swift return to fiscal soundness is essential in order that the Japanese economy does not follow the pessimistic scenario (a decline in growth following worsening public finances). Urgent measures should be taken to create a tax system that can be balanced with economic growth, a sustainable social security system, social systems responding to the ageing society, and disparities must be corrected.

Issues and Recommendations (7)

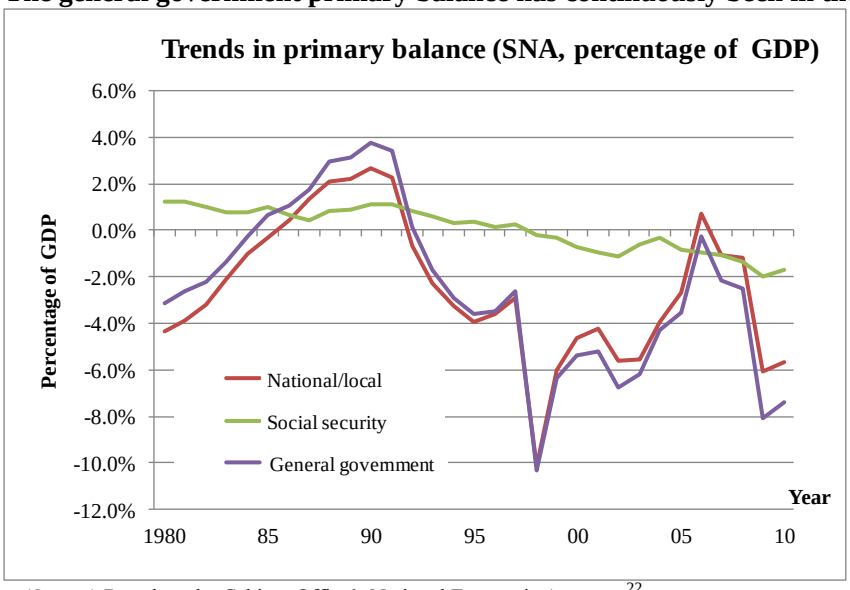
Adhere to government policies without postponing restoration of fiscal health.

- It is essential to restore fiscal health so that the primary balance is kept in the black for 30 years.
- The creation of a tax system that encourages economic growth is essential, and the best method for this is consumption tax.

1. Transition of primary balance

The Fiscal Management Strategy decided upon by the Cabinet in June 2010 cites the targets of getting the national and regional primary balance (the basic fiscal revenue and expenditure) back into the black by the year 2020 at the latest, and steadily lowering the proportion of public debt to GDP from the year 2021 onwards. 'Primary balance' is the revenue from taxation etc. (not including bond revenue) minus expenditure (not including principal and interest redemption); when the primary balance is in the red outstanding debts outstrip interest payment costs.

(Figure 4-7-1)
The general government primary balance has continuously been in the red since 1993



(Source) Based on the Cabinet Office's National Economic Accounts[22]

Figure 4-7-1 shows the transition of the primary balance to GDP over the past 30 years. The line for the general government level (the combination of national and regional government plus the social security funds) has been in the red ever since 1993. Over this period, government debt has continued to balloon. Moreover, since the social security funds[23] are undermining the pension reserves they have declined in recent years, so we are now in a state in which even if, for the sake of argument, debts can be maintained at a stable level, net debt will still continue to rise.

2. Pushing the primary balance into the black at an early stage

Ordinarily, a fiscal deficit is not necessarily a bad thing. In cases such as the encouragement of

economic growth through infrastructure development, drops in tax revenue when the economy stagnates, or when costs are incurred by recovery and restoration efforts following a natural disaster, a fiscal deficit can probably be tolerated. However, the vital question is whether or not this is a temporary deficit; if it goes on for a long period of time then debts spiral, and can potentially become uncontrollable.

In addition, conducting sustainable fiscal management while at the same time tolerating temporary deficits requires a surplus large enough to meet the deficit. In simple terms of years, since we have continued to have a deficit for 20 years we will subsequently have to maintain a further 20-year period in the black. Or, if we finally go back into the black in the year 2020, Japan will then have to stay there for the next 30 years. Therefore, there is a need for us to get the primary balance back into the black as soon as possible, and be prepared to keep it there for the next 20 to 30 years. It is absolutely vital that we achieve the first stage of this endeavor, namely the joint reform of taxation and social security.

By implementing reform and dispelling the Japanese people's anxieties about pensions and the social security system it is hoped that precautionary savings can be abated and individual consumption increased. It is therefore imperative that reforms are implemented at an early stage.

3. Assimilation of government debt

According to standard economics textbooks interest rates rise when government bonds are issued, and private sector investment is pushed aside. However, until now in Japan, vast quantities of bonds have been assimilated with long-term interest rates (10-year borrowing costs) maintained at a low level of around 1%.

The background to this is that while the family budget's financing surplus continued to expand, from 2000 onwards businesses' lack of funds were reduced but instead the government's lack of funds increased. In other words, one reason for the fact that huge amounts of bonds were assimilated despite low interest rates was that in addition to the increase in household savings, independent to the ballooning government debt was the separate movement of declining business investment. Ironically, the stagnation of the Japanese economy was supporting government bonds.

However, because of the impact of falling birthrates and an ageing society household savings are starting to reach their peak, and this is not a situation that can continue indefinitely. The path to reform has to be shown before it becomes difficult to assimilate Japan's government bonds within the country.

4. The need to rationalize expenditure

Restoring fiscal health is not something that can be achieved merely by encouraging economic growth. It is essential that improvements be made to fiscal revenue and expenditure through a tireless review of spending and revenue. There is a voluble school of thought that suggests that before raising taxes we should cut out wasteful budgets. Quite naturally, there will doubtless be calls to cut the remuneration of public servants if it greatly outstrips the levels earned by those in the private sector.

Neither should social security costs be treated as a sacred cow. The collaboration of medical treatment and nursing care should be strengthened, and rationalized and streamlined in order to better services at better prices.

One of the problems with the current collaboration between medical and nursing care that can be cited is that since patients are not able to secure nursing care after being discharged from hospital the time they spend hospitalized becomes extended, which leads to wasteful medical benefits. In order to curb medical benefits and at the same time delver good services we must pursue a strengthening of collaboration between medical and nursing care while making full use of IT. Moreover, there is also a need to examine measures to suppress pension benefits by, for example, reducing the basic pensions of those on high incomes.

5. A taxation system to encourage economic growth

Though in order to restore fiscal health it is not possible to preclude tax rises and cuts in expenditure, if errors in the methods and timing are made both the economy and the public finances will collapse; some very careful decisions are therefore required.

One long-term issue is the need to strengthen the taxation base while at the same time creating a tax system that is impartial with regard to resource distribution or encourages economic growth. In this respect consumption tax does not obstruct capital creation (savings) or impinge upon the manufacturing process, and is impartial in terms of industry's international competitiveness. In order to respond to issues that Japan will have to face in the future such as falling birthrates, the ageing society and globalization, consumption tax is more appropriate than income tax or corporate tax. However, since it is not really suited to rectifying income disparity, there will be a need to improve income reallocation functions through the introduction of refundable tax credits et cetera with regard to income tax (see Page 86), and effective corporate tax rates will have to be gradually reduced so businesses can cope with globalization.

6. Lessons from the United Kingdom

With regard to restoring fiscal robustness, the following are deeply rooted traditions and practices in the United Kingdom. 1) The taxation system can be altered at the responsibility of the government; 2) although there is an upper and lower house system it tends not to become deadlocked; 3) transitions from one administration to another run smoothly; 4) decision making is centralized in the ruling party, and the system enables senior party figures to formulate and execute policy at their own responsibility; 5) the parties' manifestos detail major approaches and policy direction. It is a system that does not put issues off or impishly politicize them. The system arose out of the United Kingdom's long history, and while Japan has the restrictions of its constitution and such as system could not be introduced overnight, this is a theme that certainly deserves our consideration.

Issues and Recommendations (8)

Establish a social security system that restores the trust of young people and is secure and sustainable.

- Securing sustainability is essential in order to establish a social security system that gives young people and the citizens' peace of mind.
- Apply the pension's automatic adjustment function (=macroeconomic slide) to the benefit and burden of the social security system, including health/nursing care, making the system sustainable through this expansion, correct inter-generational disparities; expand/improve measures to counteract the declining birthrate.

1. Social security system and peace of mind

The main part of social security benefits consists of social insurance such as pensions, healthcare and nursing. These are all preparations for risks that individuals face such as long life, illness and the need to be cared for. They can be described as mechanisms that reduce anxiety about the future or, in other words, provide peace of mind. Incidentally, 'long life risk' ('survival risk') denotes the uncertainties about a person's length of life. When people live for a long term they lead a life in which they are burdened with worries about not having enough financial resources to fund their daily lives. The mechanism that removes or alleviates these anxieties and provides a certain amount of benefits as long as they live is the old age pension system.

Nonetheless, peace of mind cannot be obtained without any cost. There is first of all a need to shoulder the burden of benefit resources through insurance payments and taxation. Next, responses are also required for the side effects generated by peace of mind. In the cases of healthcare and nursing, if it became possible to receive benefits that cover just the amount being used by the beneficiary there is no doubt that excessive usage of services would arise. In order to deal with this problem a certain amount of out-of-pocket payment must be made by the beneficiaries themselves, and the fact that people's peace of mind will be slightly reduced is something that has to be tolerated. Subsequently, while the social security system is a mechanism for reducing various anxieties, it should be recognized that it is not a system that provides complete and utter peace of mind.

2. Sustainability of the social security system

Even so, pursuing peace of mind as far as possible while at the same time seeking a balance among an array of factors, is of course a perfectly natural stance in constructing a social security system. In doing so, it is the sustainability of the system that should be assured. If there is a possibility that the social security system that is intended to reduce the public's anxieties could collapse in the future, then their anxieties are likely to be exacerbated rather than alleviated.

The system is currently in danger in Japan, due to the following background: 1) the demographic structural problems of falling birthrates and more elderly people; 2) the systematic issue of the pay-as-you-go method[24]; 3) the problem of whether or not the economic elements that are the prerequisite for the pensions system are appropriate in the light of the economic situation; and 4) the

issue that the burden of costs in each system – particularly healthcare – have become complicated and it is hard to see the relationship between benefit and burden.

With regard to healthcare insurance and nursing insurance, although the older a person is the likelier it is that they will receive benefits, a system in which the insurance payment burden for young and old people is not much different – or in which the younger people are actually paying more – becomes a structure where the insurance payments of the young are in effect supporting the benefits of the elderly. In a society with falling birthrates and more elderly people, since the proportion of the elderly people who are the recipients increases while the proportion of younger people who shoulder the financial resources decrease, it is quite clear that if you are going to sustain the per-capita benefits and burden you will go into the red, and it is therefore essential that in order to secure sustainability benefits will have to be cut and financial burdens increased.

The macroeconomic slide introduced with the 2004 reforms to the pensions system automatically adjusts benefit levels in line with the rate at which the wage bill of the overall economy rises, and it merits some praise for its contribution to improving the sustainability of the system. However, there is still a need to raise the age at which pensions become payable and the age at which contributions no longer have to be made in line with the rises in life expectancy; an examination must be made of creating an automatic mechanism for this too. Furthermore, the physical abilities of elderly people these days are younger than in the past[25], and the definition of old people 'aged 65 years or over' should be reexamined.

Looking closely at these functions, a positive examination needs to be made of whether or not we can employ some sort of automatic adjustment function such as the macroeconomic slide not only to pensions but also to the whole social security system including healthcare and nursing. Moreover, a tireless review should be made of the prerequisites of the 2004 reforms to the pension system, namely economic elements such as wages rises, the number of people insured, expected investment returns and so on, and whether or not they are appropriate in the light of the subsequent economic situation and long-term economic simulations.

In terms of the financial burden, the segregation of roles between taxation and insurance charges should be clarified. In particular, insurance charges should be directly aligned with the rises in benefits, and in the event that insurance charges are inadequate a structure must not be allowed to develop in which benefits are maintained by propping them up with taxes. With regard to the healthcare system, the relationship between the benefits and burdens has become complicated and hard to understand for the people paying insurance, as it is a system that takes contributions from all insured people for the elderly healthcare system. This is an issue that will require simplification in the future.

3. Correcting the generational gap

In the midst of a situation such as this, the burden placed upon future generations will be great and their benefits will dwindle; the generational gap will therefore increase in terms of net gains (i.e. benefits versus the burdens incurred). It is feasible that it is this that is the catalyst behind young people's mistrust of the social security system. In the case of pensions, as an alternative mechanism to

the pay-as-you-go system there is also the funded pension, in which the benefits of elderly people are covered by the insurance payments they accumulated when young. This method is judged to be impartial to the demographic structure. However, if a transition from the pay-as-you-go to the funded pension system were made, the benefits for the elderly people after the transition and the insufficient funds of the younger generation prior to the transition would have to be compensated for through taxation or government bonds, and a colossal sum of financial resources would be necessary. In the case of healthcare and nursing too, an alternative system wherein intergenerational assistance is abandoned and the relationship between benefit and burden is finalized within single generations is feasible, but problems similar to those of pensions such as benefits for elderly people after the transition to the new system would also arise.

In the event that the transition to a funded system is difficult, possible methods to alleviate the intergenerational gap include asking the elderly to bear a greater burden by increasing tax on pensions or raising healthcare and nursing charges. In addition, the consumption tax is a stable financial resource that is not greatly affected by the state of the economy, and since elderly people have to pay it too it also contributes to correcting the intergenerational gap. However, consideration must be given to elderly people who are not well equipped to bear the financial burden, and such a move should be coupled with increases to the burden placed on those with high incomes.

With regard to the intergenerational gap in the future, quantitative data on the gap should be clarified each year, and an examination of a mechanism that prevents the expansion of that intergenerational gap should be made in tandem with the above-mentioned considerations of the automatic adjustment function regarding benefits and burdens in the social security system.

4. Improvements to countermeasures against the falling birthrate

There is also a need to directly deal with the problem of the falling birthrate. Although the total fertility rate, which had fallen to 1.26 in the year 2005, recovered to 1.39 in 2010, and there is a sense that it is no longer in freefall, this figure is still a long way behind the replacement level of 2.07. Countermeasures against the falling birthrate can be broadly split into two types – appropriate measures to deal with the lack of labor, and easing measures aimed at the falling birthrate itself. But the vital factor when these two types of measure are considered together is reducing the lost income that is the opportunity cost of childbirth and raising children. In other words, by providing an environment in which children can be brought up while their parents work, we need to prevent declines in labor participation rates during times of childbirth and child rearing, and create an atmosphere in which parents will think more positively about having children. Efforts that favor young people are also an important measure for restoring their faith in the social security system.

A variety of measures are actually already underway from this perspective, but while there appears to have been some progress in the extent to which people are taking leave from work to look after their children, there are still many issues such as the problem of long waiting lists for childcare facilities. Further efforts should be made to encourage private sector participation in childcare centers by relaxing regulations. At the same time, we should think about creating incentives to have children

through all sorts of measures, including transferring income to young people by relaxing donation tax and reinforcing inheritance tax.

Issues and Recommendations (9)

Change the social system in response to the aging of society with a community-based effort.

- Innovations are needed to increase opportunities for action so that health older people can take up support roles.
- Measures to cope with an ageing society should be taken at local level, including infrastructure improvements such as town planning and residential environments.

1. Infrastructure in the ageing society

One of the important roles that should be played by the public sector is improving infrastructure. While there are changes in the roles that are expected from time to time such as in the industrial infrastructure that supported Japan's rapid economic growth, the prioritized regional investment that aimed for 'equitable development throughout Japan' in order to combat depopulation and overcrowding, and the recession countermeasures implemented after the collapse of the bubble economy, basic infrastructure demand – including disaster prevention investment – is something that always continues unchanged. However, due to the worsening public finances there has been no choice but to make public works a target for cuts as a discretionary expenditure, and we are now in a situation in which public works have been reduced more or less every single years since the end of the 1990s, with the exception of the recession countermeasures introduced after the Lehman crisis. In the future, responses will be required for new needs including the ageing society, and even tougher choices will have to be made.

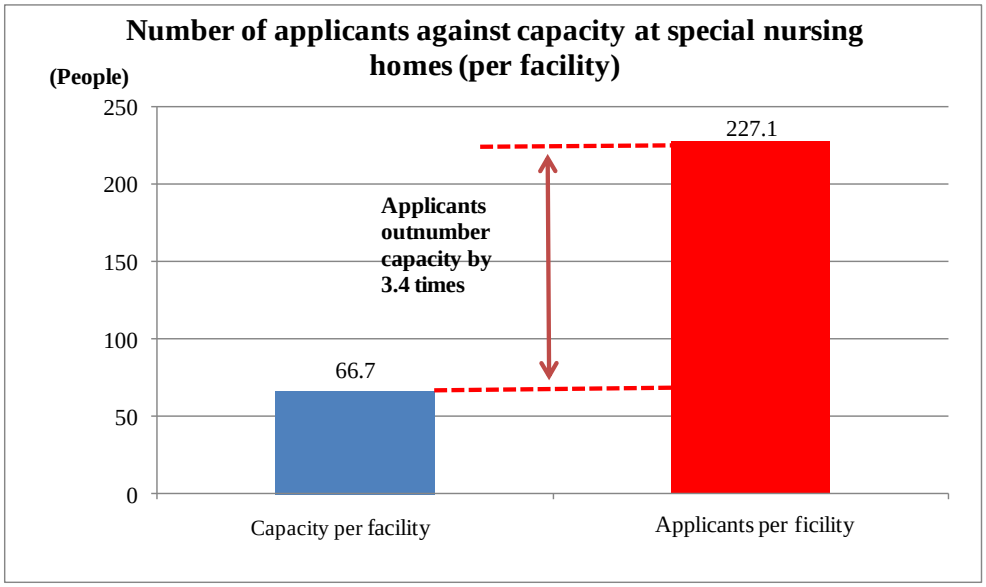
It is predicted that by the year 2050 there will be an ultra ageing society in which around 40% of Japan's population will be accounted for by elderly people, 25% of whom will be over the age of 75; the reconstruction of the social infrastructure to meet this ageing society will become necessary. The current social infrastructure supposes a pyramid-shaped demographic structure in which there are many young people and few elderly people, and this will not function adequately in the future.

In a groundbreaking attempt to face the ultra ageing society taken in the city of Kashiwa, in Chiba Prefecture, under the guidance of the University of Tokyo, the Urban Renaissance Agency (UR), local farmers, the doctors' association and businesses have joined together to promote a project called 'town planning aimed at a long-living society' (refer to Page 92). In concrete terms, the project seeks to convert a large housing estate built for workers into residences for elderly people, and improve the at-home care system. In addition, projects are being set up to employ elderly people and give them a sense of purpose in life, in which healthy elderly people are employed by private sector businesses. These efforts include, for example, growing vegetables on fallow land, English language lessons for children given by former trading house employees, picture book reading sessions at kindergartens, and domestic support for people who require nursing care. We should try to build a society where attempts such as these, propelled by the ingenuity of individual local authorities and placing no burden on the public purse, can help elderly people to feel a sense of enrichment.

In addition, although the ageing society means rising demand for healthcare and nursing

facilities, and housing for elderly people, from the point of view of these elderly people whose modes of transport are restricted due to it becoming difficult for them to drive cars et cetera, it is preferable that these facilities are located in clusters in close proximity to them. This sort of 'compact city' also has benefits in terms of rationalizing and streamlining infrastructure investment and administrative costs, and every effort should be made to construct cities like this.

(Figure 4-9-1)
There is a lack of special nursing homes, and applicants outnumber capacity by 3.4 times



(Source) Documents of the 78th Meeting of the Subcommittee on Nursing Benefits of the Ministry of Health, Labour and Welfare's Social Security Council (2011)
Compiled from the Research into the State of Applications for Special Nursing Homes, conducted in 2010 by the Institute for Health Economics and Policy's Project to Improve the Health of Elderly People

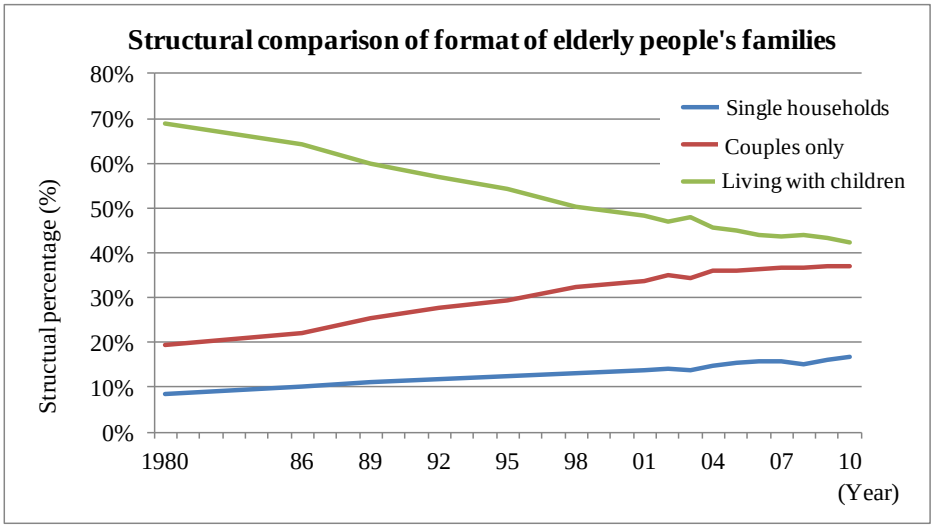
2. Turning the elderly into supporters

Figure 4-9-2 shows the longitudinal data concerning the makeup of families of people aged 65 or over according to the National Livelihood Survey. In the year 2010 17% of elderly people were living alone, and 37% as couples; the trend is towards a decline in the number of elderly people living with their children. In order for elderly people to avoid dying alone, some sort of interaction with other people is necessary, and rather than just applying themselves to instructing and helping others the healthy old people can also have a role in supporting other old people.

In order that healthy elderly people can take part in many different activities, as well as preparing an employment environment, it is also important to encourage community-based activities such as local neighborhood associations and clubs. Measures such as providing information and places for activities, hosting events, and fostering and supporting the NPOs that carry out these activities have hitherto been taken, and these will continue to become even more vital in the future.

(Figure 4-9-2)

The number of elderly people living with their children has dropped to 40%, and single person households have risen to 17%



(Source) Compiled from the Ministry of Health, Labour and Welfare's National Livelihood Survey[26]

3. Local communities are the leaders of the ageing society

The infrastructure to cope with increasing numbers of elderly people, and the measures to boost opportunities for healthy elderly people to remain active will mean that even more careful section and ingenuity will be required in order to effectively use limited space, manpower and financial resources. The role that the government can play here is by no means a small one, but it is to be hoped that there will be reforms in which universities and the business sector enthusiastically collaborate and rally around the leaders of local communities. The government should research the nationwide situation and provide information, check that there are no regulations that are placing unwarranted restrictions upon regional governments, and limit itself to a role of providing backup support.

The local communities also have a great role to play in healthcare and nursing collaborations. Since it is necessary that the government continues to implement the basic design of both healthcare and nursing insurance a certain degree of leadership is to expected from it, but in order to respond rapidly to regional circumstances, including the IT environment and housing conditions, selections made at the responsibility of local communities are surely essential. Services for obtaining the best peace of mind should, as much as it is possible, be catered for by local financial resources, and any interregional differences that arise as a result of this will have to be treated with equanimity.

With regards to the administrative entities that should be at the heart of healthcare and nursing, from the perspective of building collaborative systems with an array of medical institutions, in the case of healthcare it should be the prefectures. In the case of nursing, it would be more appropriate for the municipalities to be at the center as they are able to enter into close collaborations with local communities. Finally, with regard to public pensions, from the perspective of the complete participation of the public and the insurance principle of stably managing those pensions, considering the elimination of adverse selection, and the law of large numbers, the government should continue to take responsibility for the operation of the pension system.

Issues and Recommendations (10)

Reduce income disparity/poverty issues through employment promotion and income redistribution.

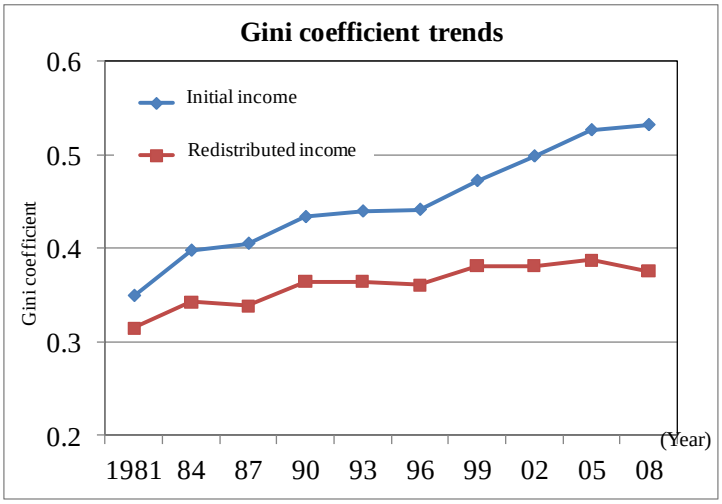
- Collaboration among pensions, healthcare insurance and labor policy is essential to the reform of the public assistance system.

- Refundable tax credits are an effective tool for improving the redistribution of income tax.

1. The rise of Japan's Gini coefficient

Is income disparity on the rise? Figure 4-10-1 shows the movement of Japan's Gini coefficient according to income redistribution research. Gini coefficients are a leading indicator that measures the degree of equity in income et cetera, wherein the higher the number is the greater the income disparity is. The household unit Gini coefficient has tended to rise since the year 1981.[27]

(Figure 4-10-1)
While the Gini coefficient rises, it is flat after redistribution



(Source) Compiled from the Ministry of Health, Labour and Welfare's Survey of Income Redistribution

However, the interpretation of this trend requires some caution. This is because it is possibly a reflection of the impact of the ageing society. For example, if we look at the Gini coefficient in the year 2008 it was 0.53 overall, but a look at the coefficient for elderly households (in which the head of the household was aged 65 years or over) it was 0.81. When the disparity in income is greater among older households than in younger households, if the proportion of older households rises then the overall income disparity will also grow. On the other hand, a look at redistributed income, in which the tax burden is subtracted from initial income and social security benefits added, shows that the trend of rising disparity disappears. In other words, when pension benefits and so on are considered it is not possible to claim that income disparity has grown.

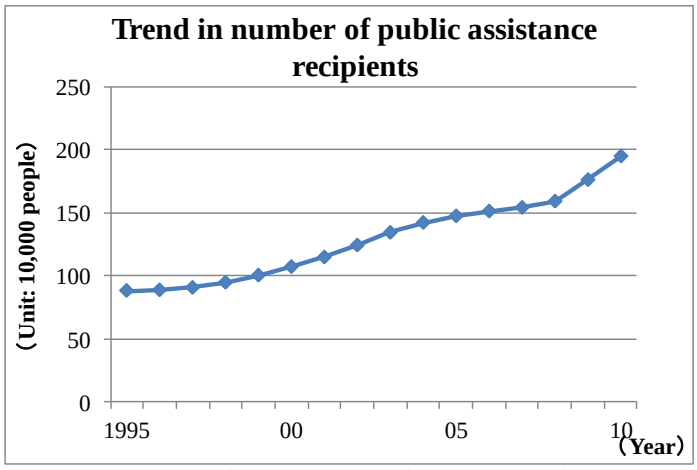
2. The increasing number of public assistance recipients

At the same time, the number of public assistance recipients has shown a marked increase (Figure 4-10-2.) Over the period from 2008 to 2010 there has been a particularly spectacular annual rise of over

10% in the number of claimants.[28]

Known as a 'final safety net,' public assistance provides the function of supplementing the various social security forms of old age pensions, healthcare insurance and unemployment insurance. For example, around 40% of the households receiving public assistance are elderly households (Figure 4-10-3), and this assistance helps them to make up the amounts that they cannot cover with their old age pensions. Subsequently, in this area too, an increasingly ageing society means that the number of public assistance recipients will inevitably rise. Elsewhere, another group that has grown tremendously in recent years is the 'other' households. While the makeup of these households is not entirely clear, it is thought that they are comprised mainly of unemployed people. The relationship with healthcare insurance is also important as around half of the costs of public assistance are accounted for by healthcare assistance (Figure 4-10-4).

(Figure 4-10-2)
Public assistance recipients rose steeply from 2008, to around double the 1995 level



(Source) Compiled from the Ministry of Health, Labour and Welfare's *Report* on Social Welfare Administration and Services

(Figure 4-10-3)
Around 40% of households receiving public assistance are elderly households

Composition of households receiving public assistance (%)

Year	Elderly	Mother & child	Injured/disabled	Others
1995	42.3	8.7	42.0	6.9
2000	45.5	8.4	38.7	7.4
2005	43.5	8.7	37.5	10.3
2010	42.9	7.7	33.1	16.2

(Source) Compiled from the Ministry of Health, Labour and Welfare's *Report* on Social Welfare Administration and Services

(Figure 4-10-4)
Around half of public assistance is for healthcare assistance

Composition of public assistance (%, National initial budget)

Year	Livelihood support	Housing support	Medical support	Others
1995	31.0	8.1	56.2	4.7
2000	33.8	8.9	55.1	2.2
2005	33.0	12.8	50.1	4.1
2010	33.7	14.8	46.3	5.2

(Source) Compiled from the Ministry of Finance's Monthly statistics on finance and banking

3. Integrated reform with the social insurance system

The increase in public assistance recipients signifies the growing number of those who cannot be covered by the current social insurance system. In order to improve this state of affairs an examination of integration with other systems is necessary. With regards to old age pensions, while universal pensions are advocated there are still some people who have not made pensions payments or do not subscribe to the pensions system, and who may become recipients in the future. The public assistance system maintains the principle of unprejudiced and equitable coverage, without asking any questions about the reasons why people have fallen into difficulties in their lives; there is, however, a need to either loosen this principle, or to boost the power to make pension payments coercive.

With regard to healthcare, one vital issue requiring examination is the fact that public assistance recipients are detached from the insurance system and pay no insurance costs and no personal costs when receiving medical treatment. In particular, when no personal costs are incurred it is feasible that excessive benefit payments and excessive medical care will escalate.

Furthermore, once a person has received public assistance their volition to work declines. In order to address this problem a connection must be made with labor policies such as employment insurance and occupational training (refer to Page 53).

It should be noted that public assistance system management requires that authority for this sphere is passed on to the local municipalities, the party ultimately responsible for it.

4. Utilization of refundable tax credits

It has been pointed out that the current income tax system does not make full use of its tax redistribution functions. In particular, from the perspective of how consideration should be paid to low earners when implementing a consumption tax rise to boost social security resources, there is much to be hoped for from a strengthening of the redistribution functions of the income tax system.

Under the present income tax system, the amount of tax payable is calculated by subtracting certain exemptions from the payer's income and then applying the appropriate tax rate, but when the figure is a negative sum no other benefits are imparted to the low earners by the income tax system. The idea of refundable tax credits is to change the income exemptions to tax exemptions and provide a benefit when the amount of tax payable is a negative figure.

Tax credits are currently cited as a measure for lightening the burden of low earners when a consumption tax rise is made, and in the future the issue of how they can be tied in with mechanisms for the lowest earners, such as the public assistance system discussed above, will probably become an important one. It is thought that there is a danger that the current public assistance system obstructs the volition to work. A mechanism that does not damage the will to work could be created if, instead of a format in which the public assistance recipients' benefits are reduced when they start to earn a slightly higher working income, a format is introduced whereby take-home income increases as working income rises in the form of tax credits. From this perspective, reforms to the redistribution functions of the income taxation system are required.

It will be necessary to precisely ascertain the exact income of every citizen in order to

introduce a tax credits system, and it is greatly hoped that the draft proposals put before the Diet in February 2012 for a taxpayer and social security number program (the so-called 'my number proposal') will be passed.

Issues and Recommendations (11)

Revise the division of roles between national and local government.

- A wide-region governmental body is required in order to deal with the interregional external issues arising from decentralization of power to local authorities.
- Review local taxes so they are levied according to the principles of contribution and benefit.
- The independence of regional authorities should be encouraged by clarifying the allotting of roles among national and local government, and separating the two functions of local allocation taxes.

1. Hitherto regional decentralization reforms

In order to respond to social changes such as globalization, falling birthrates and an ageing society, and the worsening fiscal balance, there will have to be a reexamination of how roles are allotted between national and local government. In particular, ingenuity and creativity must be encouraged by improving the discretionary powers of local authorities, and reforms of the fiscal adjustment system should be launched so that fiscal responsibility is reinforced.

The regional decentralization reforms that have hitherto been carried out have not really changed the fiscal system to any great extent, and have gone no further than symbolic reforms such as abolishing assigned functions (the year 2000 Devolution of Power Law). No real attempts have been made to tackle the question of the national and regional governments' spheres of authority, and there has been little more than fine tuning of fiscal distribution such as the abolishment and reduction of national government subsidies or the transfer of tax revenue sources (the so-called 'tripartite reforms'). In response to this, a momentum is building that focuses on bold reforms, with the Devolution Strategy Outline agreed upon by the Cabinet in June 2010 including the abolishment in principle of governmental outpost agencies, and the examination of a 'Doshu' regional system of government, in which the present 47 prefectural governments are replaced by a smaller number of broader regional administrative blocs.

2. The necessity of a wide-region governmental body

Nonetheless, it would probably be a fantasy to imagine that regional decentralization will somehow make everything work perfectly, as we can see from the example of the European Union, which pursued integration as a problem-solving measure for all sorts of issues, and in which it would appear that the present European fiscal crisis may well stem from the fact that political integration policies has made no progress (and that debt regulation did not go far enough). One concept that is absolutely essential when considering the allotment of roles between national and local government is the question of interregional externality. In other words, when the decision making of one regional has an effect outside of that region, there are no assurances that the regional government representing the people of that region will adequately consider the benefits or costs incurred to society as a whole when they make decisions. The resultant effect of this, that the effective allocation of resources is not achieved, is known in the field of economics as 'decentralization failure.'

If the central government's outpost agencies are abolished, a considerable amount of the administrative work hitherto conducted by the government is passed on to the regions; the problem that then arises is how to cope with this interregional externality. While it is possible to impose strict restrictions on the discretionary powers of regions through laws and ordinances et cetera, this then makes it hard to encourage the inventiveness of local authorities. Instead, discretionary powers could be improved by the entrusting of an inter-prefectural collaboration in the form of a wide-region alliance. The merger of the prefectures into a 'Doshu' regional system of government is a format that pushes this concept one stage further. In any event, some sort of wide-region governmental body that straddles multiple prefectures will become a necessity.

3. The establishment of a self-sustaining local tax system

Decentralized regional governments ('Doshu' governments, basic local authorities) will obviously require the financial resources for exercising their authority and implementing their administrative services. Rather than following the present zero sum game format in which tax resources are transferred from the national government, (tax resource transfers with no tax rises), costs should be covered through the levying of taxes by local governments, for which they themselves are accountable and which are directly based on the principles of contribution and benefit.

The main taxes here will be individual residential taxes and fixed asset taxes on land, both if which can be levied according to the benefits of residents in their own region. In addition, as well as local consumption taxes for the financial resources for social security, a linchpin local tax system should be created under local government finance.

The interregional disparity of the tax income of these taxes is relatively small. The reason why interregional disparity is so large under the current regional tax system is that it relies heavily on corporate taxes such as corporate inhabitant tax, enterprise tax and fixed asset taxes on depreciable property.

Through a regional tax system based on these taxes, it is to be hoped that a type of regional fiscal management will be developed, in which thought is given to the self-sustaining balance of administrative service quality, scale and taxation burden, even if the taxation rate varies from one local authority to another.

4. Reconstruction of the fiscal adjustment system

Since there are fears that if regional decentralization continues economic disparity between economically strong and economically weak regions will spread, there is a school of thought that argues the need for a system to correct the fiscal power gap between regions. However, even if there is some meaning in correcting disparity between the incomes of individual people, correcting the income disparity of local authorities is an exercise of dubious significance.

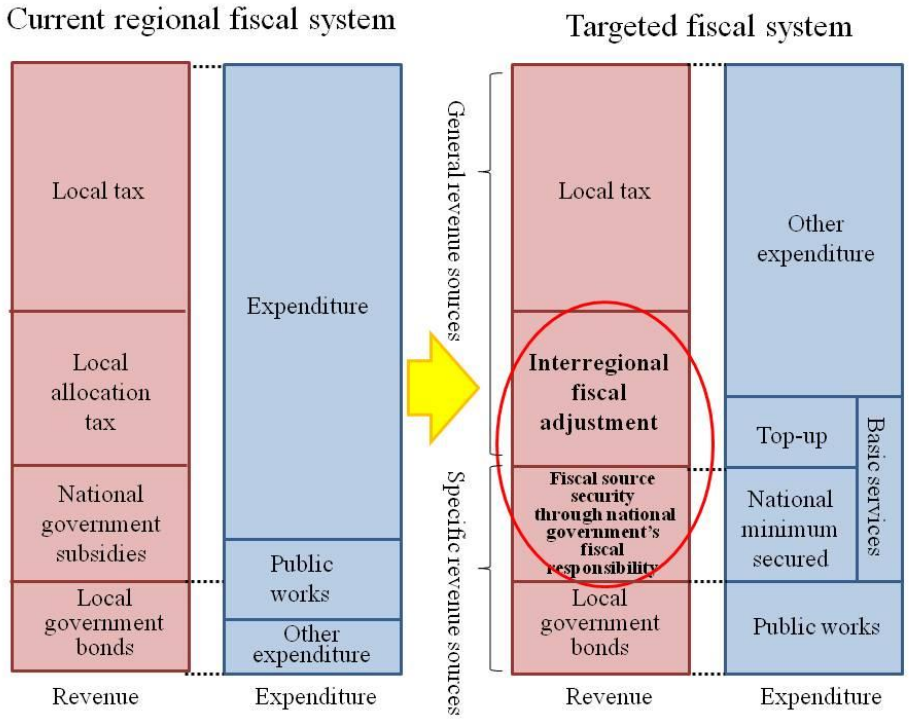
Under the current local allocation tax system, a person earning just 2 million yen per year and living in Tokyo, which is not allotted any of the allocation tax, will not benefit at all from the taxes, but a person earning 8 million yen per year and living in Hokkaido, which *is* allotted the allocation tax,

will reap its benefits. As can be seen from this example, such disparities should be corrected on an individual basis, and any such efforts to do so between local authorities should be kept to a minimum.

Furthermore, since the local allocation tax system is a mechanism for dealing with the fiscal power disparity in terms of both the disparity in fiscal demand requisite for implementing standard public services and the disparity in fiscal incomes deriving mainly from local taxes, many faults in the system have been pointed out. Firstly, the allotment mechanism does not reward efforts to reduce expenditure or efforts to revitalize local economies. Moreover, local authorities can become excessively dependent upon allocation tax, resulting in the advent of a 'poverty trap.' One reason that can be cited for this is the vagueness of the borderline between the two functions expected from local allocation tax, namely fiscal adjustment and fiscal security. There is also the problem of the opacity of the fiscal resources that should be targeted for security and the division of roles between national and local government.

This state of affairs must be resolved at the earliest possible opportunity. Doing so will require fundamental reforms that do not discount the abolishment of local allocation tax. Ideally, the reform process should include the clarification of the roles to be played by the national and local governments, the separation of the two functions of the local allocation tax (fiscal adjustment and fiscal security), with subsidies to secure fiscal adjustment being secured at the responsibility of the national government, and the fiscal resources for subsidies aimed at fiscal adjustment coming under the remit of the regions (refer to Figure 4-11-1). In such a case, the local authorities with the most economic power will contribute the funds for subsidies aimed at fiscal adjustment.

(Figure 4-11-1)
There is a need to separate the fiscal adjustment and fiscal security functions in the fiscal transfer system from national to region, and restore fiscal discipline in local authorities. (The scope of the national government's responsibilities and involvement should be clarified as securing a national minimum level in basic services*.)



(Source) Adapted from Akai, Iwamoto, Sato & Doi's Fundamental Reforms to Local Public Finance towards "regional Sovereignty' (2010)

* 'Basic services' refers to services for which supply should be secured at the same level throughout the nation, and for which there are fears that a negative impact could be imposed on the whole of Japan in the event that some regions, using their discretionary powers, fail to provide them on an adequate basis. Concrete examples of these services include fire fighting, police, compulsory education, the bare minimum of social welfare, restoration work following disasters and so on.

Column 2. Town planning in a long-living society: The project underway for town planning and work with a sense of motivation at the Toyoshikidai housing estate in Kashiwa City, Chiba Prefecture

- **A project is underway with the collaboration of Institute of Gerontology at the University of Tokyo, Kashiwa City, the Urban Renaissance Agency and private sector businesses, centered mainly on the Toyoshikidai housing estate**
- **The project is putting into practice town planning for a long-living society, by making the residences barrier-free and effectively positioning welfare centers and so on**
- **The project kills 'three birds with one stone' by creating a sense of motivation and opportunities for action for elderly people through work, complementing the social insurance system by providing them with a cash income, and allowing them to act as social backup workers in education, childcare and nursing et cetera**
- **It is important to prepare a working environment for elderly people in order to unearth older members of the community with talents**

Kashiwa City's Toyoshikidai housing estate contains around 4,700 dwellings and was constructed in 1964 during the period of high economic growth. The people who moved into the estate after completion and stayed there form a group of elderly people, which accounts for over 40% of its population. The same rate in the vicinity of the estate is just under 20%.

(1) Town planning on the Toyoshikidai housing estate

- The estate is gradually being refurbished by the Urban Renaissance Agency. Before the refurbishments there were no elevators in the five-storey buildings, but in order to cope with the elderly people living there improvements are underway including making buildings barrier-free, constructing service apartments for the elderly, and preparing regional welfare centers including nursing care providers. These efforts are also being extended to medical care at home.
- An attempt is being made to achieve the optimal balance between residents throughout the district by proving the land, that has become unused due to refurbishment to high-rise buildings, to private sector companies, and providing homes for the younger generation.

(2) The project for work with a sense of motivation centering on the Toyoshikidai housing estate

- Seven working models have been created from the four aspects of agriculture, food, childcare and livelihood support, and the establishment of sustainable business operations is being pursued. The private sector pays the wages, and getting the business onto a level foothold is a prerequisite.
- The intention is that eventually a manual will be created covering the processes of development and operation for 'second life' employment projects, and that the concept will become popularized in other communities.
- Some concrete examples of the projects underway in Kashiwa include livelihood support services for elderly people requiring nursing, directing traffic at the time of day children are going to their kindergartens and reading stories to them, providing somewhere for the children to stay after school (after-school care), and projects to help people start farming by using land that as fallen into disuse.
- Some of the elderly workers represent manpower with an extraordinarily high level of experience, including people from major trading companies who have worked for a long time in the United States, and former systems engineers in the robot industry. By providing opportunities for work in this manner it is highly likely that excellent human resources can be discovered within a community.

Foreign Policy and National Security

Active Engagement in Shaping the International Order and Promoting Asia-Pacific Prosperity, with Japan-US Ties as the Cornerstone

The Japan of 2050 will find itself sandwiched between two superpowers, the United States and China, each with an economy six times Japan's in scale. While seeing to its own security through a combination of self-help and mutual assistance, Japan must play an active part in promoting stability and prosperity in the Asia-Pacific region.

Issues and Recommendations (12)
Global governance: Maintain an open, rule-based international order.

- Recognize the historic power shift now underway.
- Maintain an open, rule-based international order.
- The capabilities of the state will be important.

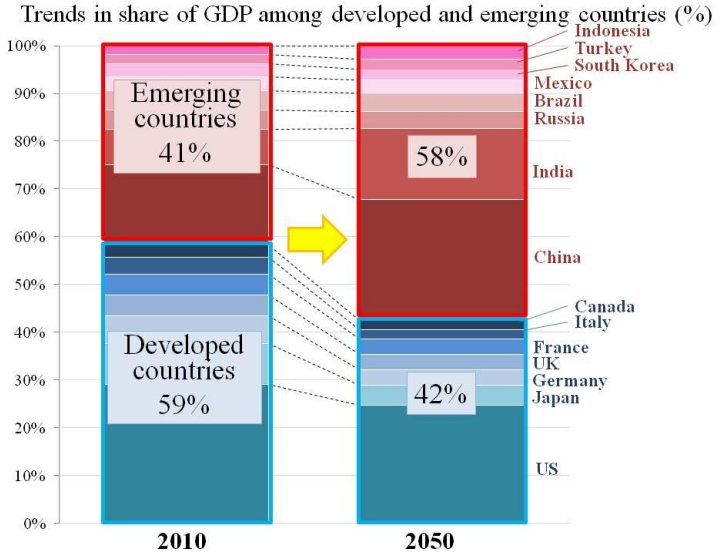
1. A historic power shift

We are now experiencing a historic power shift. Back in the nineteenth century, the United States and Japan were what we might now call "emerging" countries, and their rise transformed the international power structure previously dominated by the European powers. The second half of the twentieth century brought a shift to a new structure, one of East-West ideological confrontation between two superpowers, the Soviet Union and the United States. And now, the rapid rise of a new set of non-Western emerging countries is bringing about another shift, seen in the changing global and regional distribution of wealth and power. This ongoing shift appears to constitute an irreversible long-term trend.

One indicator by which we can measure the change is gross domestic product. If we look at the GDP figures for seven major advanced countries and eight major emerging countries as presented in the attached graph (Figure 4-12-1), we see that as of 2010 the advanced countries accounted for almost 60% and the emerging countries for just over 40% of the 15-country total. But the emerging countries' share is expected to overtake that of the advanced countries in 2030 and to be close to 60% of the total in 2050. In other words, the two groups' positions will reverse.

In terms of individual countries' rankings, as of 2010 advanced countries accounted for five of the seven biggest economies, but by 2050 only the United States, Japan, and Britain are expected to rank among the top seven. And China is seen as overtaking the United States to become the world's biggest economy in 2025.[29]

(Figure 4-12-1)
From 2010 to 2050 the GDP shares of the advanced and emerging countries are expected to reverse.



(Source) From Chapter 2, World Economy Simulation

2. The wobbling system of global governance

This power shift will engender a major change in the systems of global governance. The existing international order was constructed under US leadership at the end of World War II. In 1944, as the war was nearing its end, the participants in the Bretton Woods conference agreed on the framework for the postwar economic order, including the creation of the International Monetary Fund and the World Bank, and the following year the United Nations was established. The systems of global governance that were set up at this time constituted an *open, rule-based international order*, and this helped give them the durability that has allowed them to continue for over six and a half decades.

The power of the United States declined in relative terms with the passage of time, as seen in the end of the dollar's convertibility to gold in the early 1970s. But other major advanced nations subscribing to the same set of values, norms, and interests as the United States, notably its Western European allies and Japan, joined it in support of the existing order; this collective endeavor was institutionalized in the form of the annual economic summits among the major advanced nations, the so-called Group of Seven. The Cold War structure also contributed to the solidarity of these countries as members of the Western camp.

The emerging countries of the twenty-first century, however, cannot be counted on to fully share the interests, values, and norms of the existing camp of advanced nations. We can imagine two scenarios for the years to come: The first is a scenario that we might describe as "multipolarity without multilateralism." The rise of the emerging countries is bound to lead to a multipolar world. The question is whether these countries will take on some of the responsibility for maintaining the systems of global governance and accept a common set of behavioral norms. If they do not, the existing multilateral frameworks will atrophy, and we are liable to see intensified rivalry among the emerging nations over issues like resource procurement as the leadership position of the United States declines.

The second scenario is one in which the various existing multilateral frameworks constructed under US leadership are maintained in recognition of their durability and common utility. This is a scenario of "evolution" in these frameworks, with the emerging countries being drawn in as new participants in their operation.

Which of these scenarios comes to pass will depend firstly on the strategic choices made by China and other emerging nations and secondly on the actions taken by Japan and the other countries that have an interest in maintaining and strengthening the existing open, rule-based international order.

Japan needs to join with its partners in the West and in the Asia-Pacific region in an attempt to persuade China and other emerging countries of the importance of extending this open, rule-based order. The existing frameworks, notably the seats for permanent members on the United Nations Security Council and the quotas assigned to members of the IMF, continue to be tilted toward the power structure of the mid-1940s period when they were created—a structure centered on the United States and Europe. To persuade today's emerging countries to commit themselves seriously to these frameworks, it will be necessary to reform them and make them evolve, while at the same time maintaining their effectiveness.

3. Coping with constraints on resources and environmental concerns

The rapid economic growth of the emerging economies is leading to surges in demand for energy (particularly to power their industrialization), food (to satisfy the wishes of increasingly affluent consumers), and water (to meet the needs of both businesses and individuals). In the years to come we are likely to see tightness in the markets for resources like these on a global level.

If we look at energy consumption, for example, we find that the global figure rose from 8.1 billion tons (crude oil equivalent) in 1990 to 11.2 billion tons in 2009.[30] During the 1990s crude oil cost less than $20 a barrel, but as of 2011 it was going for around $90 a barrel. Though the price movement may be partly attributable to the impact of speculative activity, it seems reasonable to see the rise as reflecting the change in the structure of supply and demand resulting from the advance of the emerging countries[31].

For Japan, this state of affairs may offer business opportunities powered by technological innovations that can ease the tightness in energy markets by making it possible to do more with less energy consumption. But it also presents a threat, namely, that in tandem with the wobbling of the existing systems of global governance, it will accelerate the shift toward a world of "multipolarity without multilateralism." In addition, the industrialization of emerging countries has a major impact on global warming and other strains on the environment. A key question in this connection also will be whether countries are able to take joint action based on a shared set of norms and values.

4. Testing the capabilities of the state

In the years between now and 2050, the capabilities of the state to handle issues seem likely to come increasingly under test. The progress of globalization will mean that strengthening international competitive power will be a major issue for countries around the world, but at the same time governments will face rising domestic pressure to undertake income redistribution in response to demands for social equality. Politics will play an important role in shaping policies to balance these two pulls. This balance will be particularly important for the maintenance of social stability in the fast-growing emerging countries.

In addition, we are seeing a rapid spread of the concept of "security," from the traditional type of national security provided at the level of the state to nontraditional forms of security, such as human security and societal security, provided not just by the state but through a combination of self-help, mutual assistance, and public assistance. In places like the Middle East and Africa, meanwhile, exploding populations, rising numbers of young people, and urbanization are highly likely to cause instability. The traditional approach of promoting economic development and democratic governance may well be inadequate to cope with this prospect.

The shape and role of the state is being called into question with respect to every sort of issue in this age of globalization, and strengthening the capabilities of the state will be an important matter to consider as we head toward 2050.

Issues and Recommendations (13)
Regional governance: Enhance Asia's stability and prosperity.

- Asia is on the front lines of the power shift.
- Strengthen the open, rule-based order while maintaining dynamic equilibrium.
- Minimize the causes of instability.

1. The front lines of the power shift

Asia is on the front lines of today's global power shift. This is because of the rise of China and India and the rapid growth of Indonesia, Vietnam, and other ASEAN members. China overtook Japan in terms of GDP in 2010, and it is expected that India's economy will also surpass Japan's and take third place in scale behind the United States and China by 2050. The impact of these developments on the regional order in Asia will be immense, making change inevitable.

We do not know whether the transformation will be radical and revolutionary or gradual and moderate. As the rise of countries like China and India changes the distribution of wealth and power in Asia, the regional order will change too. The question is whether this change can take place dynamically without critically impairing the existing regional systems—in other words, whether it will be possible to maintain dynamic equilibrium during the process of changing the existing order. The key determinant in this respect will be the strategic involvement of the United States. The rise of China in recent years has been the inverse of the relative decline in America's East Asian presence since 9/11, as the United States has focused its resources on the "war on terror" and the attendant conflicts in Iraq and Afghanistan. US President Barack Obama's renewed emphasis on America's strategic involvement in the Asia-Pacific is highly welcome from the perspective of maintaining dynamic equilibrium in this part of the world. Japan, while working in partnership with the United States, should take the initiative in promoting regional stability and prosperity and strengthening the relevant regional frameworks.

2. An open, rule-based order for Asia

While maintaining dynamic equilibrium, we need to maintain and strengthen the open, rule-based order in Asia. The United States and Japan have an extremely important role to play as partners in this connection, but we must also strengthen our dialogue and partnership with other countries in the region that share the same set of values, norms, and interests, including South Korea, Australia, and Indonesia. Only with this sort of broader partnership will it be possible to maintain and strengthen dynamic equilibrium and create the appropriate rules for the region.

At the same time, Japan must take every opportunity to engage China, conduct repeated dialogue with the Chinese, and work to convince them that an open, rule-based international order is desirable for their country as well. People within China are advancing various arguments about their country's strategic direction. Japan needs to consider ways of engaging China that will help strengthen the voices of the domestic camp in favor of international cooperation.

It is also necessary to promote the formulation of international codes of maritime behavior so

as to avoid the emergence of power vacuums and keep China from acting unilaterally in dealing with disputes over rights in the East China Sea and South China Sea. China's highhanded behavior in the South China Sea is in part a reflection of the overwhelming superiority it enjoys over its Southeast Asian neighbors in naval strength and coercive capability.

Japan must both work to prevent the emergence of a power vacuum in its own territorial waters and cooperate with the United States in stepping up support for building up the capabilities of the countries facing the South China Sea. We should make it clear that the objective of such efforts is not to "contain" China but rather to restrain it from highhanded acts and help rein in the political forces within China that favor such behavior. In addition, Japan should further expand and deepen its economic partnerships with other Asian countries so that all in the region can enjoy even greater benefits from the open, rule-based order. Involving the United States in this undertaking is extremely important as well, and doing so will help guarantee the US strategic involvement that is essential in order to maintain the region's dynamic equilibrium over the long term.

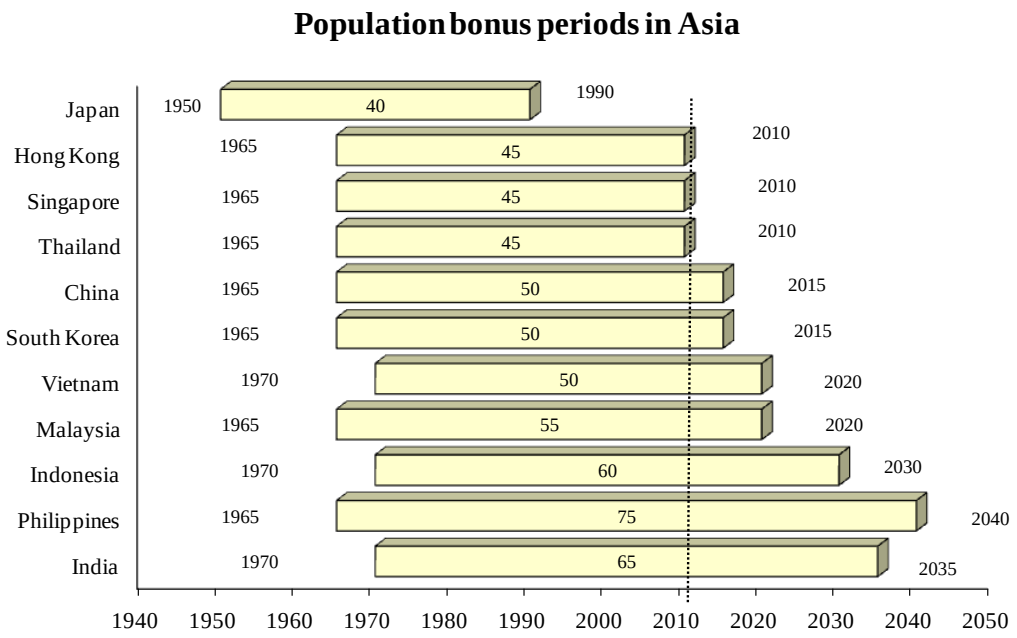
3. Minimizing causes of instability

Asia is today the most dynamic region of the world economically. But we cannot be complacent about the prospects for the region's future. The task of balancing the need to strengthen competitiveness in the age of globalization with the domestic pressure for income redistribution is likely to become the most important and difficult issue for Asia's fast-growing countries. This issue underlies the political unrest that has emerged in recent years in Thailand, which was previously seen as the most politically stable country of Southeast Asia. It will also be a major factor in determining the future of China's one-party system of government.

Meanwhile, the "population bonus" that has helped support rapid growth up to now in many Asian countries will end sooner or later. If rapid growth ends before domestic disparities have been corrected, countries are liable to experience grave social crises and political instability. And if wealth and human talent become concentrated in the cities, rural areas will experience population aging under conditions of poverty. Here also the capabilities of the state will be tested. Also, Japan will need to adjust the assistance it extends to other countries in the region to match the changing needs resulting from this set of issues.

Twenty years after the end of the Cold War, Asia still has divided countries, namely, Korea and China. North and South Korea are both Japan's neighbors, and so are mainland China and Taiwan. Meanwhile, further destabilization in Pakistan and Afghanistan poses a major threat to security in South Asia—and in Asia as a whole. Constant efforts will be required to build frameworks that can keep accidental incidents from escalating into military conflicts.

(Figure 4-13-1)
From 2010 on, the population bonus will be ending in countries around Asia.



(Source) United Nations, World Population Prospects: The 2004 Revision
Japan Center for Economic Research's *A Long-term Forecast in Japan and Asia*（2007）
*1：The population bonus period is the period during which the ratio of dependent population continues to decline. Measured in five-year figures.
*2：Data from 2006 onwards is based on forecasts by the Japan Center for Economic Research

Issues and Recommendations (14)
National governance: Security through self-help and mutual assistance.

- Achieve Japan's security through self-help and mutual assistance.
- Incorporate the vitality of Asia into Japan.
- Play an active role in global governance.

1. Self-help and mutual assistance in national security

Asia—particularly the region in which Japan is located—is on the front lines of the current global power shift. So Japan must adjust its own national security framework in line with this shift. First of all, in the area of self-help, it must strengthen its own defense capabilities, along with the industrial, technological, and economic capabilities that provide the foundations for defense. Japan's public finances are highly strained, but there are some policy changes that can produce effects in this connection without requiring additional government spending. Examples include further revision of the Three Principles on Arms Exports, adjustment of the personnel composition of the Japan Self-Defense Forces and consolidation or closing of existing bases, exercise of the right of collective self-defense, and participation in UN collective security activities.

In the area of mutual assistance, the first item on the agenda is to strengthen the Japan-US alliance. Moves to consider revising the Three Principles on Arms Exports and allowing the exercise of collective self-defense will also be effective as means of strengthening this alliance. It is also important to conduct Japan-US dialogue aimed at coordination of defense strategies, such as by considering how to link the "Dynamic Defense Force" set forth in Japan's 2010 National Defense Program Guidelines with the "Air-Sea Battle" and other strategies of the United States.

Also in the area of mutual assistance, as set forth in the 2010 NDPG, Japan needs to boost its cooperative ties with South Korea, Australia, Southeast Asian countries, India, and others, aiming to establish a network that will serve to maintain and strengthen the dynamic equilibrium centering on the Japan-US alliance. As part of its efforts in this connection, Japan should step up its defense-related cooperation with other countries and offer assistance in enhancing the defense capabilities of the countries facing the South China Sea.

At the same time, Japan needs to work at confidence-building with China and create crisis-management mechanisms to keep accidental occurrences from turning into serious problems. There is also a need for efforts devoted to bilateral dialogue that includes the military.

2. Incorporating the vitality of Asia

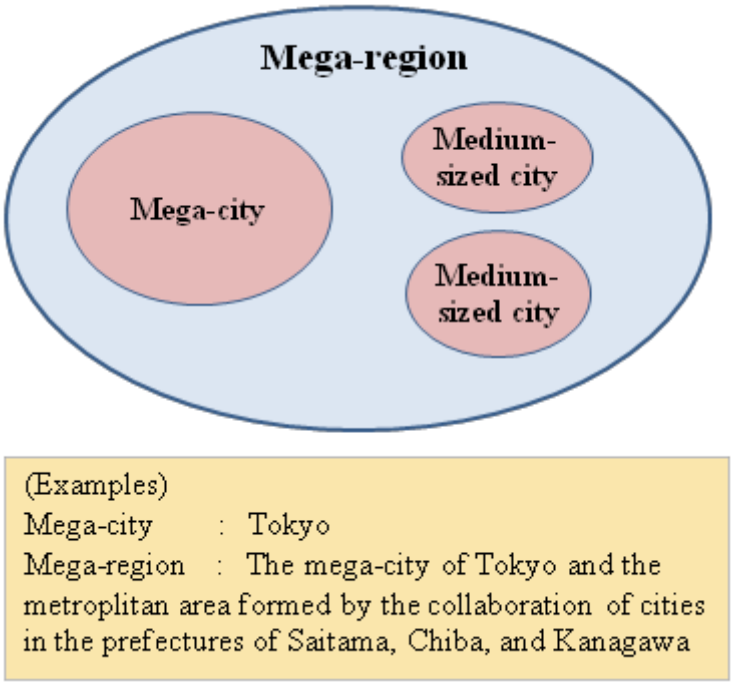
Geographical proximity to the fast-growing economies of Asia is a major asset for Japan. In the past the Japanese tended to think of "Japan and Asia," in effect setting their country apart from its neighbors. But now the prevalent image is that of "Japan in Asia." For Japanese corporations, other Asian countries are not only production bases but also increasingly prominent as markets with great growth prospects. Japan should aim to incorporate the economic vitality of Asia by aiming for expansion of

two-way trade and investment through the further enhancement of its free trade and economic partnership agreements with other Asian countries. The Trans-Pacific Economic and Strategic Partnership (TPP) is also important as an initiative in line with this agenda.

In order for Japan to incorporate the vitality of Asia, it is extremely important to undertake the strategic building of "megaregions" that are wide open to the rest of the world, with big cities at their core. These cities will feature accumulations of industry and finance, research and education, healthcare, and other institutions, including internationally competitive corporations; they will also attract human resources of international caliber. Such megaregions will be uniquely able to serve as wellsprings of prosperity in an age of globalization. Locations with international potential within Japan include the regions of Tokyo, Osaka-Kyoto-Kobe, Nagoya, northern Kyushu, Sendai, and the greater Sapporo area. Tokyo is now seen as Asia's only truly global city, a metropolis ranking alongside New York and London in terms of world-class global functions. But if we fail to work at enhancing Tokyo's added value, it may lose this status before long to Singapore or Shanghai.

The task of building internationally competitive megaregions will entail a strategic and organic combination of trade policy, economic cooperation, public investment, and policies regarding scientific and technological innovation, higher education, healthcare, and immigration. This will result in "regionally distinctive national land development" combining synergy among the regions and the tapping of the comparative advantages of each region in Japan. Accomplishing this, however, will require reform of Japan's system of governance. In this respect as well, the capabilities of the state and the leadership ability of our politicians will be tested.

(Figure 4-14-1)
Japan should build internationally competitive "megaregions" that are open to the world and incorporate the vitality of Asia.



(Source) Compiled from *Consuming Asia*, by Keiichiro Oizumi

3. Engagement in global governance activities

The various frameworks that serve as the basis for global stability are now in a period of major transition. Japan seems to be ideally suited to the role of convincing the fast-rising emerging countries of the significance and utility of preserving the open, rule-based international order. Japan's own history since the mid-nineteenth century is one of struggling to adapt to the international order that originated in the West, and Japan's success at this endeavor is evidence of the fact that the order is by no means the exclusive property of Western nations.

Given this historical mission, Japan should become more engaged in the formation and maintenance of the systems of global governance. Our country should play a more active part than it has so far, for example, in the maintenance and strengthening of the frameworks supporting the global economy, including the World Bank and IMF, and in global initiatives to deal with climate change. And in order to participate from the drafting stage in the work of building global frameworks, Japan must develop human resources with strong networking and message-delivery capabilities.

Official development assistance is an important tool for Japan's engagement in global governance activities. The Japanese government should deepen its involvement in the provision of assistance to places like Africa as a matter of global responsibility, and at the same time it should place even greater emphasis on strategic partnerships with Japanese businesses, human resources development, environmental conservation, and other activities directed at other Asian countries, many of which are currently in the process of achieving "more developed" status.

Democracy and human rights are becoming increasingly important issues for global governance. Japan's active involvement is very important as a way of showing that these are global values, not the exclusive property of Western countries. Japan should also work even harder at promoting its own concept of "human security."

A permanent seat for Japan on the UN Security Council would be a major source of strength for the fulfillment of these responsibilities, and it would also be highly meaningful in terms of broadening the horizons of Japan's domestic politics and public opinion, which have tended to become inward-looking.

In this context, the setting of international standards for industry and the formulation of international rules for sports are similarly important, and it is to be hoped that those in the relevant fields within Japan will engage themselves actively in such processes.

[1]Refers to the social group whose income is half or less than that of the income of the median group (group in the middle between the top and bottom groups). Refer to Oshima (2012), "Insecure families—overcome the downfall society where people cannot work" (Chapter 3), Nikkei Publishing, Inc.

[2]Refer to OECD (2008), "Growing Unequal?"

[3]With regard to the points -based system for accepting highly skilled foreign-national human resources, refer to the Ministry of Health, Labour and Welfare Committee on Criteria for the Implementation of a Points System for Highly Skilled Foreign Human Resources, "Summary of Discussion Points Regarding Criteria for the Implementation of a Points System for Highly Skilled Foreign Human Resources.

[4]As another pressing issue, the system for accepting Indonesian nurses, etc., which is showing to be defective, needs to be revised urgently.

[5]Even within the sciences, there have been analyses that indicate that people who choose physics later earn significantly higher incomes (Nishimura et al (2012), "The impact on employment of science learning in high school; evidence from income data of university graduates in employment", RIETI DP No. 12-J-001)

[6]For example, refer to the efforts of the Keio University Faculty of Economics Professional Career Programme (PCP)

[7]In particular, in tertiary education the disparity between national /public universities and private universities is shrinking substantially. Enrollment and tuition fees for national /public universities have in the long-term also risen by far above the rate of increase in the consumer price index, and enrollment fees for some national/public universities are higher than those for private universities. In addition, the percentage of privately funded expenses comprised by educational expenses is 66.7% for tertiary education—extremely high compared with the average rate for OECD countries of 31.1% (OECD, "Education at a Glance 2011").

[8]For a discussion of the future outlook for the current-account balance and issues that would arise were a current-account deficit to occur, especially pointing to the connection between a current-account deficit and a fiscal deficit, refer for example to Takao Komine, "One-class higher Japanese economic theory/reasons we must be concerned about a current-account deficit: discussion of the international balance of payments—current situation No. 3" and "Nikkei Business Online", July 20, 2011, (http://business.nikkeibp.co.jp/article/money/20110715/221507/?P=4; accessed January 4, 2012).

[9]Rodrick Dani (2004), "Rethinking Growth Policies in the Developing World" indicates that, looking at successful cases in other countries, globally orientated growth strategies are a kind of first-class, fail-proof growth strategy.

[10]Fukinari Kimura, "The meaning of TPP participation—Part 1—Participation is imperative from the viewpoint of international obligation", Nihon Keizai Shimbun Economics Class (October 21, 2011) and others point out that in order to supply the international public goods of a free trade system, Japan is required to fulfill reasonable obligations.

[11]Baldwin and Wyployze (2003) and Baldwin (2004) point out that in the process of expanding the EEC and the EU, companies in non-participating countries increased pressure on their national governments to participate in the free economic zone, creating a domino effect.

[12]For details, refer to Daisuke Hiratsuka and Kaoru Nabeshima (2011), "TPP as a path to realizing the Free Trade Area of the Asia-Pacific (FTAAP)".

[13]For a discussion of the meaningfulness of TPP in terms of security assurance, refer to Yoshiyuki Kasai (2011), "Insights into the world: participation in TPP negotiations".

[14]Some leading businesses are also proactively localizing their products. For example, Panasonic's development of 20,000 yen 32 inch LCD televisions for Indonesia and 28,000 yen air-conditioners for India (Nikkei Business; November 28, 2011) as well as Benesse's sale of "Shimajiro" learning materials for young children in China and Lixil's M&A China strategies (Nikkei Business; December 5, 2011) can be said to be case examples of localization promotion.

[15]Hiratsuka and Nabeshima (2011) discuss the export potential for agricultural products from the standpoint of quality competition in international trade.

[16]In the past, generating high added value for digital cameras meant increasing pixel count, but nowadays can also be said to include new functions that appeal to consumers' sensitivities such as the "smile shutter function" with which digital cameras launched by Sony in 2007 were equipped. JR East Water Business next-generation vending machines and other machines are new products that are gaining attention in the drink vending machine field, where there has been no notable innovation in recent years.

[17]When Apple's iPod was launched, its shiny stainless-steel form drew attention, and the fact that the polishing technology used was a technology used in the production of Western tableware in Tsubame City, Niigata Prefecture, also became a widely discussed topic.

[18] Obento TV, a group of 500 small businesses in Hachioji City that take orders for home-delivered obento lunch boxes, can be said to be a good example of this.

[19]This and following cost comparisons are based on the Energy and Environment Council Cost, Etc., Verification Committee, "Report of the Cost, Etc., Verification Committee", December 19, 2011 (Figure 4-6-1).

[20]Kainou (2011), "Accident at the Fukishima Daiichi Nuclear Power Plant and its impact on energy policies", RIETI Special Report

[21]Tanaka (2012), "Thoughts on the revision of Japan's energy policies", Agora Column, explains that when renewing power generators in East Japan, which are relatively few in number, machines that can generate electricity at both 50Hz and 60Hz should be used, and a decade or so after all of the generators have been replaced, East Japan should switch to 60Hz, the same voltage as West Japan, for standardization.

[22] The figures for 1980 – 2000 use the actual reported levels in 2009, and those for 2000 – 2010 use the actual reported (novel series) levels for 2010. It should be noted that in addition to 'general government' there are also public companies and public financial institutions; for example, the 27 trillion debts assumed from public companies (such as the JNR Settlement Corporation) in 1998 (equivalent to 5.4% of GDP) suppressed general government expenditure, while in 2006 the 12 trillion (2.4% of GDP) transferred from public financial institutions (the Fiscal Loan Fund Special Account) raised expenditure.

[23] The 'social security fund' is a concept in the system of national accounts (SNA) that extracts and groups the national and local governments' social security related expenditure and income.

[24] The 'pay-as-you-go' system is one of the methods for operating a public pensions system, in which the benefits provided at any one time to the elderly people are financed by the insurance payments of the younger people at that time.

[25] "The Ultra-ageing Society in 2030", Institute of Gerontology, the University of Tokyo (2010)

[26] The 2010 Ministry of Health, Labour and Welfare's National Livelihood Survey contains figures for the years 1980, 1986, 1989, 1992, 1995, 1998, and each year between 2001 and 2010.

[27] The Gini coefficients cited here are those for household units. Though it is possible to obtain Geni coefficients for per capita household income (from 1993 onwards), regardless of whether they are looked at in terms of initial income or redistributed income the longitudinal trends are the same as for household income.

[28] The values for each year are the average values for the monthly data within each year, and if the end-of-year values are looked at they show a total of 1.87 million people in March 2010 and 2.02 million people in March 2011.

[29] Chapter 2 World Economy Simulation (Basic scenario 1)

[30] "Statistical Review of World Energy", BP (2010)

[31] "Reading Resources", by Akio Shibata, Marubeni Research Institute, published by Nikkei Publishing Inc., (2009). Reference 30 and 31 re-quoted with pages 196-199 of Consuming Asia, by Keiichiro Oizumi, published by Chuo Shinsho (2011).

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