

Global Japan: 2050 Simulations and Strategies

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- 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=Population, (2) Capital=Investment, (3) Productivity) while taking exchange rate fluctuations into consideration.

1) Premise for World Economy Simulations

(1) Labor=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)

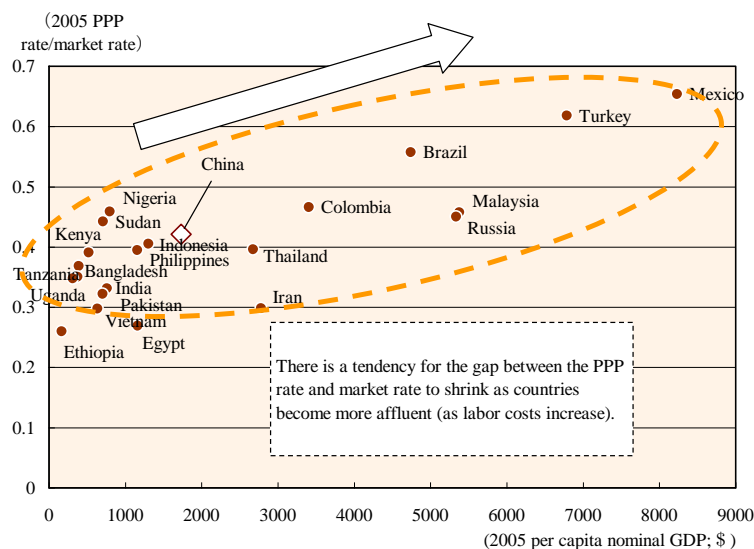
	1981 -90	1991 -00	2001 -10	1991 -2010	2011-20	2021-30	2031-40	2041-50
Base 1 (average developed country productivity)					1.05% (0.7%)	1.15% (0.8%)	1.2% (0.8%)	1.2% (0.8%)
Base 2 (continuing the "Lost 20 Years")	2.28%	-0.01%	1.00%	0.5%	0.5% (0.3%)	0.5% (0.3%)	0.5% (0.3%)	0.5% (0.3%)
Pessimistic scenario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



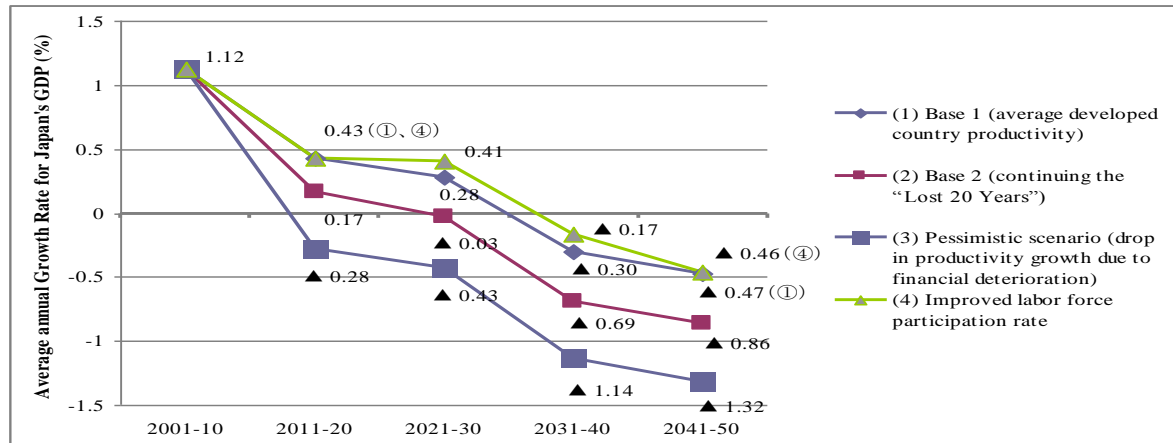
Example: PPP rate/market rate		
China	0.42 in 2005	→ 0.68 in 2050
Japan	1.18 in 2005	→ 1.16 in 2050

(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

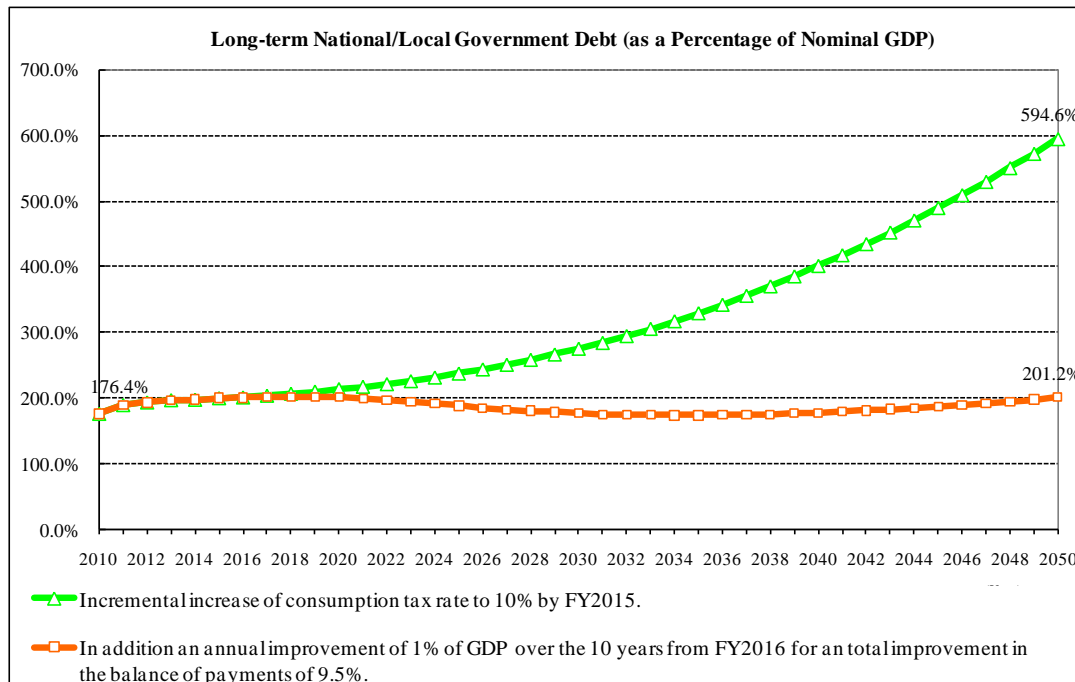
(3) GDP China, the United States, and now India have assumed the throne of world superpowers. If the scale of Japan’s GDP drops to below that in 2010 to No. 4 in the world (Base Scenario 1), its scale will be one-sixth that of China and the United States and less than one-third that of India, with Japan’s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

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

Ranking	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 (*).



- 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.

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

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

Recommendation (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.

Recommendation (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”.

Recommendation (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/Industry: Efforts to Incorporate the Asia-Pacific Region Vitality and Strengthening of the Japanese Economy's Growth Potential

Recommendation (4): Incorporate the growth of emerging Asian countries such as China

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.

Recommendation (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”.

Recommendation (6): Comprehensively resolve the “post March 11” energy constrictions

Make rational decisions based on the 3 rules of “comprehensively”, “progressively”, and “effectively”, promote decentralization of power sources in accordance with risk.

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

Recommendation (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 tax deductions with benefits, and lower corporate tax for the globalization of the Japanese economy.

Recommendation (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 (=macro economic 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.

Recommendation (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.

Recommendation (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 tax deductions with benefits

Recommendation (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) Diplomacy/Security: Actively Contribute to Formation of an International Order Centered on Japan-US Relations and Asia-Pacific Region Prosperity

Recommendation (12): Global governance—maintain “a rule-based open international order”

Be aware of historical power shifts; involve China and other emerging countries as new members of the international order, complying with international rules

Recommendation (13): Regional governance—strengthen a “stable, prosperous Asia”

Asia is at the forefront of power shifts; construct an “an open global order based on rules” while maintaining balance of power.

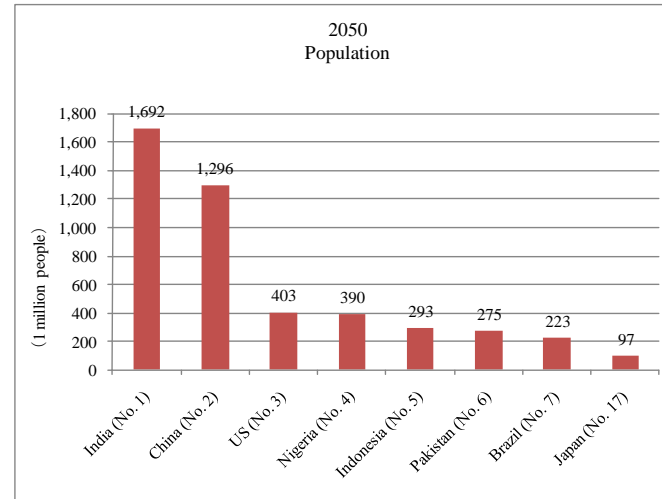
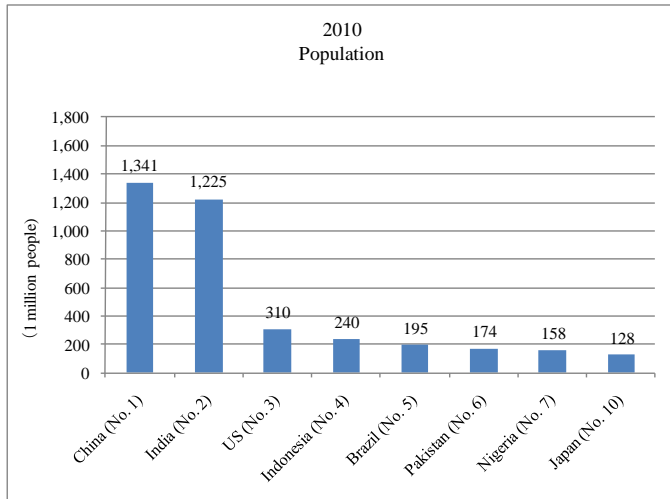
Recommendation (14): National governance—Japan must assure its own security through “self-help” and “mutual assistance”

Strengthen the Japan-US alliance while strengthening Japan's own security, and be actively involved in global governance.

4. World Power Shifts

1) Population

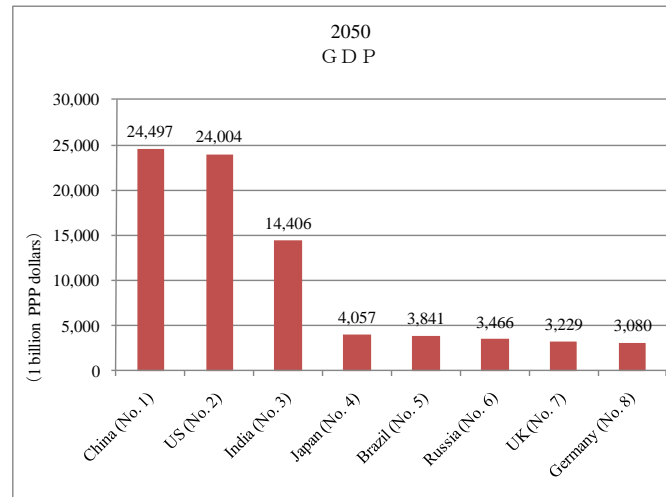
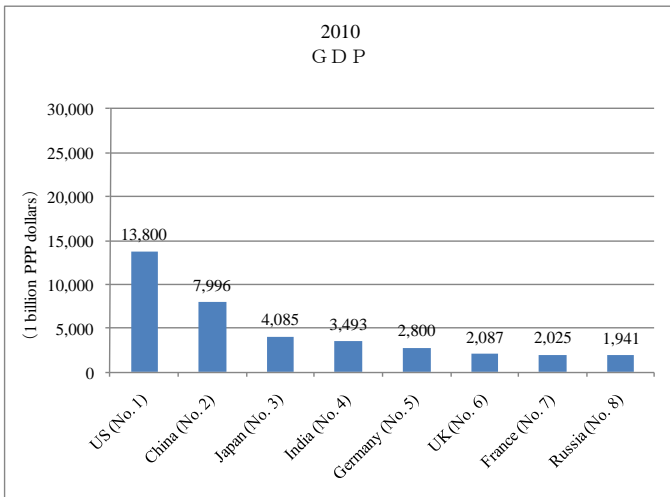
- India and China continue to be the population superpowers of more than 1 billion people. The United States is showing robust growth uncommon for a developed country.



(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

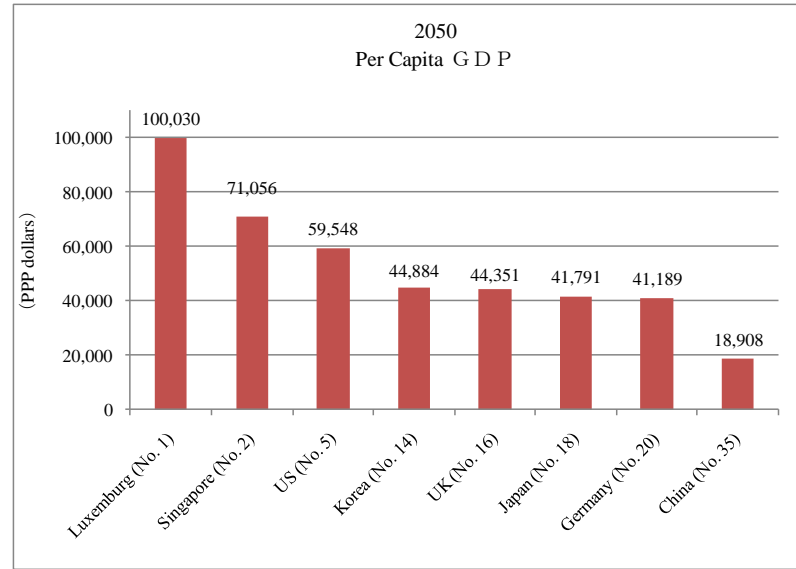
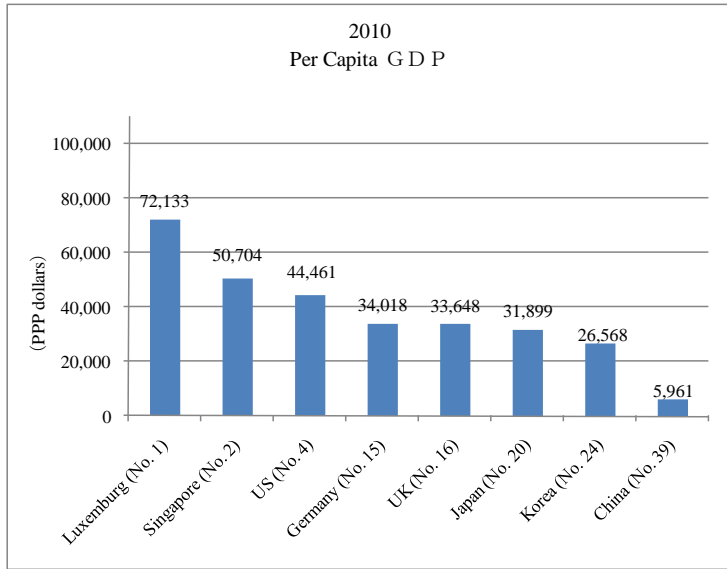
- Japan's GDP will fall below the 2010 level and the United States and China will have overwhelming economic power, with GDPs 6 times the size of Japan's GDP



(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)