



April 14, 2011  
Bank of Japan

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**Great East Japan Earthquake: Resilience of Society  
and Determination to Rebuild**

*Remarks at the Council on Foreign Relations in New York*

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## **I. Introduction**

I am privileged to have the opportunity to speak before the Council on Foreign Relations today. Before beginning my speech, I would like to extend my heartfelt gratitude to the government and people of the United States for the support and encouragement concerning the tragic Great East Japan Earthquake. The situation in the areas close to the earthquake epicenter, particularly coastal areas that were hit hard by the tsunami, is disastrous. The disaster claimed about 13 thousand lives and more than 15 thousand people are still missing. Residents of areas near the Fukushima Daiichi nuclear power plant have been directed to evacuate, and are forced to spend restless days and nights in shelters. In this way, Japan has faced a trying time since the earthquake struck. At the same time, however, Japanese society has shown resilience. The work of rebuilding has started to get under way, gradually but steadily. In my remarks today, I will talk about the situation in Japan in the month after the earthquake and the work being done to rebuild Japan's economy.

## **II. Experience in the Month after the Earthquake**

A good place to start is what happened in the financial markets, the area I am familiar with. The earthquake struck at 2:46 p.m. on Friday, March 11. At the time, I was being briefed by staff in preparation for the Monetary Policy Meeting scheduled to be held at the beginning of the following week. Even in Tokyo, about 250 miles away from the earthquake epicenter, the shaking from the earthquake was the strongest that I had ever experienced and continued for more than two minutes. The earthquake's magnitude at the epicenter was 9.0, which makes it the largest on record in Japan, and the energy released was enormous (Chart 1). Based on previously formulated emergency procedure, the Bank of Japan immediately set up a disaster management team with me as head. This task was completed 14 minutes after the earthquake struck. The most important thing for a central bank during a crisis is to ensure the stability of settlement systems and financial markets. The Bank of Japan Financial Network System, or BOJ-NET -- Japan's core settlement system for funds and government securities -- has been operating without any problems the entire time since the earthquake struck. The Bank of Japan's Fukushima branch, which is about 40 miles away from the Fukushima Daiichi nuclear plant, has been conducting its business as usual, and has been providing cash, including on the weekend immediately after

the earthquake. Financial market stability has been maintained. I would also note that trading on the Tokyo Stock Exchange has been perfectly normal.

Looking beyond the world of settlement systems and financial markets, the people in the disaster areas have been calm and composed and full of a spirit of mutual cooperation, despite such a difficult living environment. In Tokyo, although electricity shortages are causing some inconvenience, people have accepted these new realities and adapted immediately. One of the visible changes is that people are increasingly deciding themselves to cancel parties or other events, as a mark of respect to the victims of the disaster and out of consideration for the feelings of the people affected. Another change is a substantial decline in visitors from overseas.

### **III. Effects on Japan's Economy**

Next, let me turn to the effects on Japan's economy of the disastrous events -- namely, the earthquake, tsunami, and nuclear accident. Something that has not been recognized so much is that Japan's economy in 2010 performed best among the G-7 economies in terms of both growth rate and unemployment rate (Chart 2). The disaster occurred at a time when Japan's economy was gradually returning to a recovery path, albeit a moderate one. In the short run, it is inevitable that the earthquake will significantly affect production and other economic activity through its damage to supply capacity. The four prefectures most affected by the earthquake and tsunami in total account for about 6 percent of Japan's GDP (Chart 3). In the case of the Kobe Earthquake, which occurred in January 1995, real GDP did not decline, even in the quarter when the earthquake occurred. In contrast, the March 11 earthquake will have a greater impact on production for the following reasons.

First, this was not just an earthquake that was huge in magnitude and geographically widespread. It also triggered tsunami, which, together with the earthquake, caused a nuclear accident.

Second, hard-to-replace parts and material produced in factories in the disaster areas are integral to supply chains. A typical example is electronic parts, the shortage of which has been having a severe impact on automobile production even in non-affected areas. The

effects might go beyond the domestic sphere. The economies of Japan, China and the United States have become interdependent, in that Japan produces the parts, China assembles them, and the United States develops the finished consumer products. Therefore, the impact on supply chains could spread internationally (Chart 4).

Third, Japan's power generating facilities have been significantly impaired. The problems associated with nuclear power generation have been a subject of intense scrutiny due to the accident at the Fukushima Daiichi nuclear power plant, but it is worth noting that the earthquake also caused serious damage to thermal power plants (Charts 5 and 6). Measures are currently being taken to curtail demand through various efforts such as asking businesses and households to conserve electricity, and at the same time, steps are being taken to restore generating capacity. The power shortages will be temporarily eased due to seasonal factors, but electricity could run short again in Tokyo Electric Power Company's service area when demand peaks in the summer. For historical reasons, Japan has two frequency domains and there is little room for surplus electricity to be delivered across domains.

The impact of such supply constraints will be serious in the short term. But at the same time, we should remember that the impact of the disaster can be mitigated by human wisdom and determination. Let me give you two examples of how the impact is being and will be mitigated.

First, top priority is now being placed on fixing the production and supply bottleneck of parts and materials, with the cooperation of the firms using them. At the same time, we are now seeing signs that alternate production has started in domestic factories located in places other than the affected areas. And on the electricity front, efforts are being made to devise effective measures for curtailing energy use during the high-demand period in summer when electricity could run short.

Second, as time passes, demand will also emerge for restoring damaged capital stock such as roads, factories, and houses. While it is difficult to accurately forecast the amount and time path of rebuilding demand at present, the amount of damage to capital stock due to the

earthquake and tsunami will be about 3 to 5 percent of nominal GDP and 1 to 2 percent of total capital stock, according to government estimates (Chart 7).

Taking these factors into account, most private economists believe that Japan's GDP growth rate will turn positive again from the third quarter of 2011 onward. Moreover, from a longer-term perspective, new demand is expected to emerge. For example, the recent experience of disruption to supply chains has made us aware of a concentration of risks in particular regions or with respect to particular firms. This new awareness, through a rethinking of business strategies, could generate new investment in, for example, computer centers and distribution depots. The accident at the Fukushima Daiichi nuclear plant has triggered active global discussion on nuclear power policy, which will highlight the importance of energy conservation and environmental technologies. And as Japanese firms have an edge in those areas, such as high-end batteries, there will be great room for them to make contributions.

#### **IV. Tasks Ahead for Japan's Economic Rebuilding**

Various challenges lie ahead on the road to overcoming the adverse effects of the earthquake and rebuilding Japan's economy.

The first challenge is ensuring the necessary financing for rebuilding. In this regard, Japan has continued to have a current account surplus. In other words, Japan has had an excess of savings over investment for a protracted period, which means that, from a macroeconomic perspective, this financing will not be difficult (Chart 8). Japan's capacity for foreign currency funding is extremely strong, given that the country is the biggest creditor nation in the world, with net external assets of 2.9 trillion U.S. dollars, or 57 percent of nominal GDP. Private financial institutions are fully able to meet an increase in financing demand for rebuilding. Rumors have circulated that Japanese insurance companies would sell foreign currency assets due to an increase in payments of insurance claims relating to the earthquake and subsequent events. These companies have ample short-term liquid assets, so they do not need to sell their foreign currency assets in order to make the payments. Meanwhile, Japanese government bonds have been issued quite smoothly and long-term interest rates have remained stable at low levels compared with

other countries. As long as Japan continues to work tirelessly toward rebuilding, it is unlikely financing problems will arise.

The second challenge is raising Japan's potential growth rate. Since 2000, Japan has had one of the highest GDP growth rates per worker among G-7 countries, although slightly lower than the United States (Chart 9). However, the decline in the working-age population in Japan is proceeding at a pace that has no precedent in modern economic history (Chart 10). As a result, Japan's economic growth has been on a downtrend. Raising the potential growth rate was the biggest challenge for Japan's economy even before the earthquake, but the efforts to do so by raising both the labor participation rate and productivity have now become all the more important. As Japan seeks to rebuild its economy, efforts to raise the potential growth rate have become even more important. These are certainly not easy challenges, but we have to take them on with great determination.

## **V. The Bank of Japan's Response**

Finally, let me briefly touch on the Bank of Japan's response after the earthquake struck. As was the case in the financial markets immediately after the failure of Lehman Brothers, when people's lives and safety are at risk, they sometimes tend to become excessively risk averse, which makes things worse. Incidentally, while foreign nationals residing in Tokyo increasingly left Japan for fear of radiation risk, it has tended to be overlooked that the radiation levels in Tokyo are roughly the same as in other major cities around the world, such as Paris and Berlin, or they were exposed to more radiation on the airplane than they would have been exposed to in Tokyo. In the money markets, financial institutions' precautionary demand for liquidity surged. Rumors have spread among the foreign financial community that the Tokyo financial markets would close due to fears of radiation risk. The Bank of Japan has been asked whether there was any truth to the rumors that the Bank of Japan was planning to retreat to a backup site in the western part of Japan. Of course, these rumors were and are groundless. As I said, the financial infrastructures are fully functional and there is no reason for us to relocate from Tokyo.

In such times, the first priority is ensuring calm among market participants, and in this

regard the Bank of Japan has provided ample liquidity on an unprecedented scale day after day. The very next business day after the earthquake, we decided to significantly increase the amount of its asset purchases, mainly of risk assets, with a view to preventing any deterioration in business sentiment or excessive increase in risk aversion from adversely affecting economic activity. As a result of these measures, financial markets, which became somewhat jittery in the period immediately after the earthquake occurred, have regained stability. Needless to say, the Bank of Japan's mission is to ensure price and financial system stability, thereby contributing to the sustainable growth of Japan's economy. We will continue to take appropriate measures as the central bank in order to achieve this mission.

## **VI. Concluding Remarks**

As I mentioned earlier, nothing is more heartening in a crisis than the encouragement and support of friends overseas. I would like to conclude by thanking you once again for your friendship. With the resilience of Japanese society and the determination to rebuild, I am absolutely convinced that Japan's economy will overcome this trying time, successfully rebuild and become even better placed with greater growth potential. With that, I would like to conclude my remarks. Thank you for your attention.

# Great East Japan Earthquake

## Resilience of Society and Determination to Rebuild

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Chart 1

The earthquake's magnitude is the largest on record in Japan.

		Magnitude
<b>Great East Japan Earthquake</b>	<b>March 11, 2011</b>	<b>9.0</b>
Kobe Earthquake	January 17, 1995	7.3
Great Kanto Earthquake	September 1, 1923	7.9
Indian Ocean Earthquake	December 26, 2004	9.1
Chile Earthquake	February 27, 2010	8.8
Northridge Earthquake (Los Angeles Earthquake)	January 17, 1994	6.7



In 2010, Japan's economy performed best among the G-7 economies in terms of both growth rate and unemployment rate.

%

	<b>Japan</b>	United States	Germany	France	United Kingdom	Italy	Canada
Real GDP growth rate	<b>3.9</b>	2.9	3.6	1.5	1.3	1.2	3.1
Unemployment rate	<b>5.1</b>	9.6	7.7	9.8	7.9	8.4	8.0

Notes: 1. Figures are the calendar 2010 averages.  
 2. Figures for real GDP growth rate are changes on a year-on-year basis.

The four prefectures most affected by the earthquake and tsunami account for 6.2 percent of Japan's GDP.

share, %

	Ibaraki Prefecture	Miyagi Prefecture	Fukushima Prefecture	Iwate Prefecture	<b>Total</b>
Nominal GDP	2.2	1.6	1.5	0.9	<b>6.2</b>
Land size	1.6	1.8	3.6	4.0	<b>11.1</b>

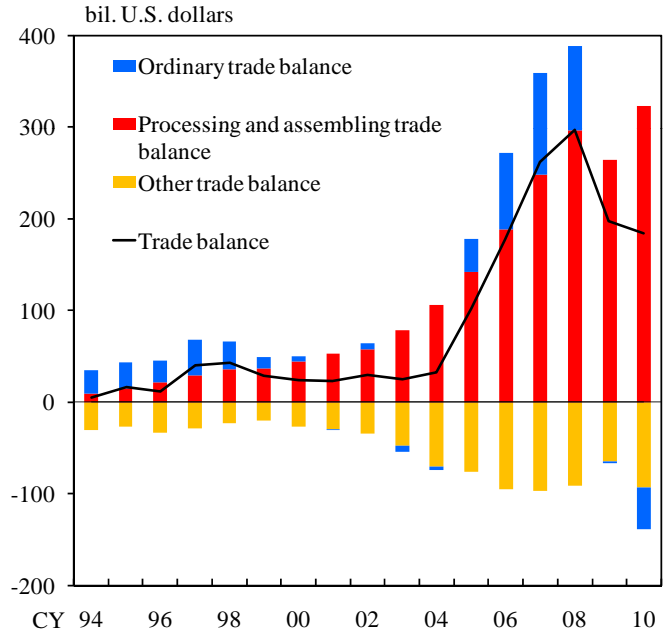
Notes: 1. Figures for nominal GDP are as of fiscal 2007.  
 2. Land size refers to land area as a percentage of Japan's overall size.  
 Sources: Ministry of Internal Affairs and Communications, "Statistical Handbook of Japan 2010"; Cabinet Office, "Kenmin Keizai Keisan Nenpo (Annual Report on Prefectural Accounts)".

## The impact through supply chains could spread internationally.

China's Exports and Imports

Exports		Imports	
share, %			
United States	18.0	<b>Japan</b>	<b>12.7</b>
Hong Kong	13.8	South Korea	9.9
Japan	7.7	Taiwan	8.3
South Korea	4.4	United States	7.3
Germany	4.3	Germany	5.3

China's Trade Balance



Notes: 1. Figures for export and import share are those for calendar 2010.

2. Ordinary trade balance represents the balance between import goods for the domestic market and export goods manufactured using domestically produced material. Processing and assembling trade balance represents the balance between import goods for processing and the subsequent re-exports and export goods manufactured using such import goods.

Source: CEIC Data Company.

## Tokyo Electric Power Company's supply capacity has declined due to damage to its power plants.

Frequency	Regional electric power companies	Supply capacity of power plants (including the capacity of facilities closed for inspection)		(b)/(a) (%)
		Before the earthquake (a) (mil. kW)	After the earthquake (b) (mil. kW)	
50Hz	Hokkaido	7.4	7.4	100
	<b>Tohoku</b>	<b>17.0</b>	<b>11.4</b>	<b>67</b>
	<b>Tokyo</b>	<b>65.0</b>	<b>50.1</b>	<b>77</b>
60Hz	Chubu	32.6	32.6	100
	Hokuriku	8.0	8.0	100
	Kansai	34.3	34.3	100
	Chugoku	12.0	12.0	100
	Shikoku	6.7	6.7	100
	Kyushu	20.0	20.0	100
	Total	203.0	182.5	90

Note: Figures for supply capacity after the earthquake are as of end-March.

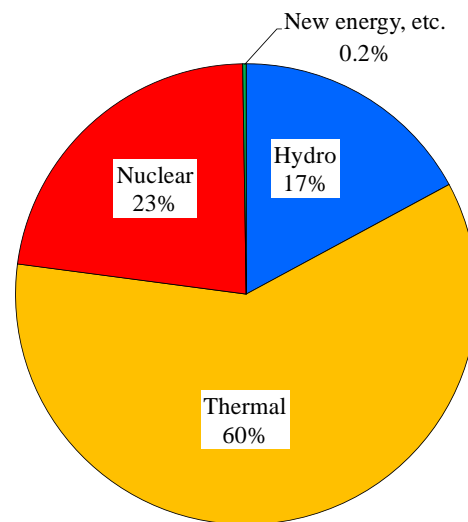
Sources: The Federation of Electric Power Companies of Japan; regional electric power companies.

## Electricity could run short in the summer in Tokyo Electric Power Company's service area.

Outlook for Future Electricity Demand and Supply under TEPCO Service Area  
 [as of April 8]

Pre-quake supply capacity	52 million kW
Supply capacity right after the earthquake	31 million kW
Estimated supply capacity in the coming summer	About 46.5 million kW
Estimated peak demand in the coming summer	About 55 million kW

Electricity Generating Capacity by Energy Source



Notes: 1. Pre-quake supply capacity is the maximum capacity excluding the capacity of facilities closed for inspection.

2. Data for electricity generating capacity by energy source is for the period of April 2009-March 2010.

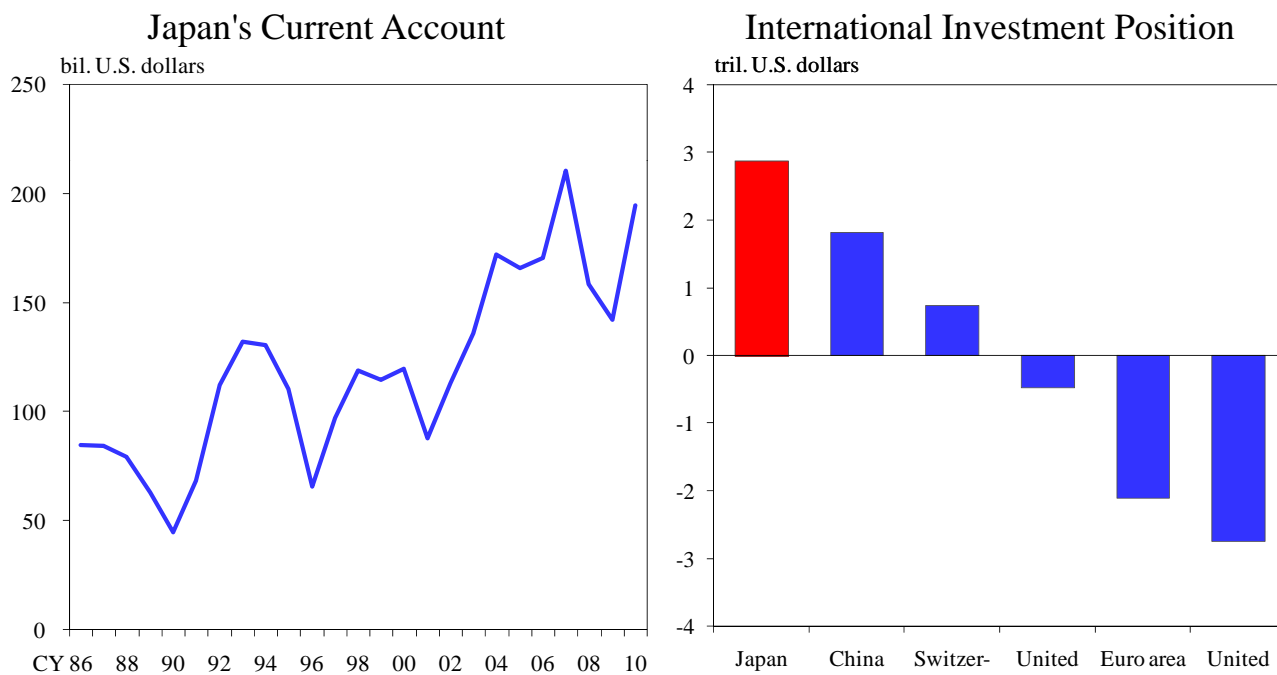
Sources: Tokyo Electric Power Company (TEPCO); The Federation of Electric Power Companies of Japan.

## The amount of damage to capital stock is estimated to be 3 to 5 percent of nominal GDP.

	Amount of damage to capital stock	Ratio of amount of damage	
		Ratio to nominal GDP	Ratio to total capital stock
<b>Great East Japan Earthquake (2011)*</b>	<b>16-25 trillion yen</b>	<b>3-5%</b>	<b>1.4-2.2%</b>
<b>* Figures do not include the effects of the nuclear accident.</b>			
Great Kanto Earthquake (1923)	4.6 billion yen	29%	9%
World War II (1941-45)	64.3 billion yen	86%	25%
Kobe Earthquake (1995)	9.9 trillion yen	2%	0.9%

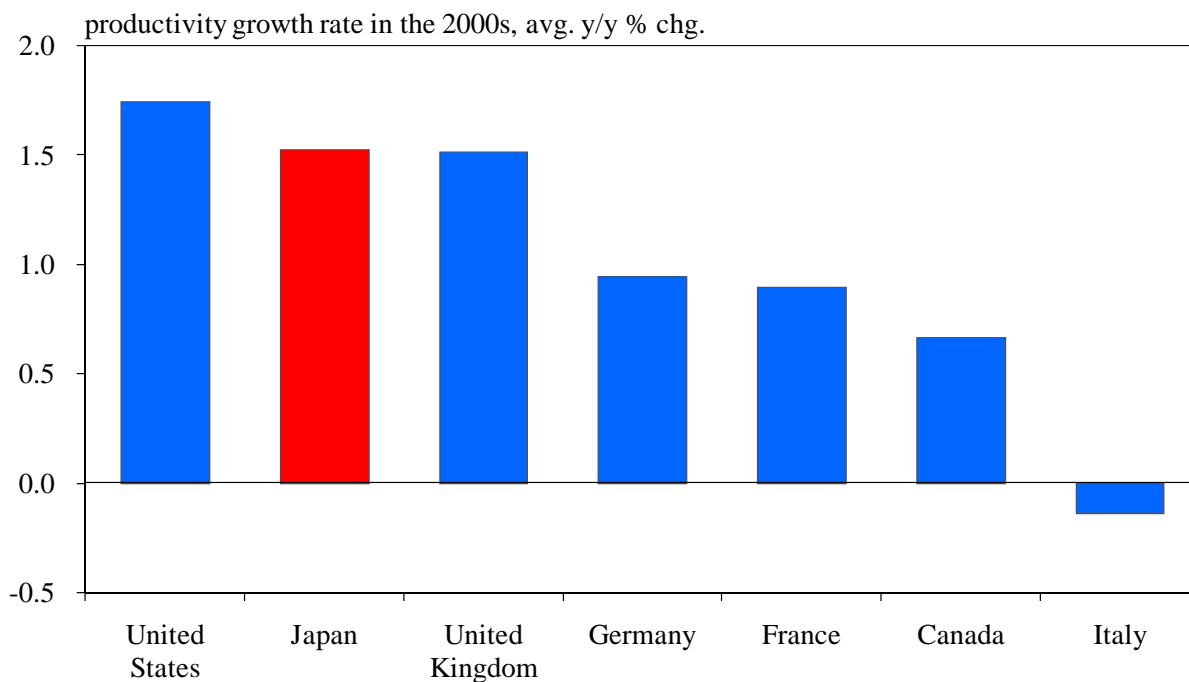
Sources: Cabinet Office; Hyogo Prefecture; Bank of Japan, etc.

With its continuing current account surplus, Japan is the biggest creditor nation in the world.



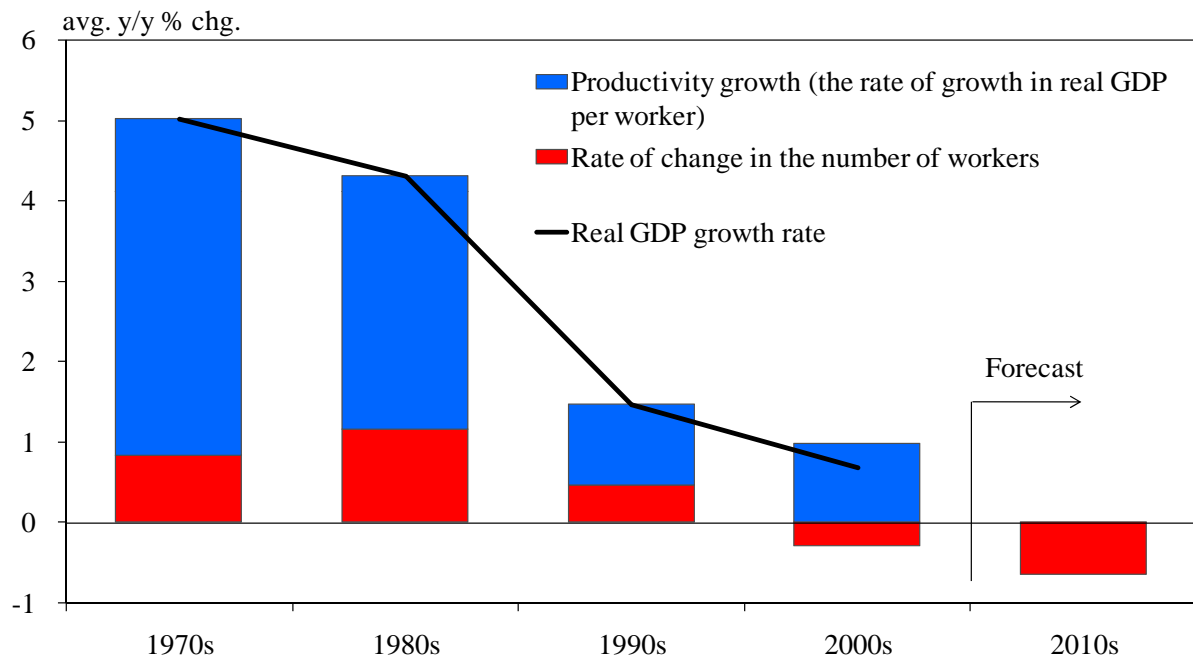
Note: Data for international investment positions are as of end-2009.  
 Sources: Ministry of Finance, "Balance of Payments," "International Investment Position of Japan"; national statistical offices.

Japan's productivity growth rate in the 2000s is one of the highest among G-7 countries.



Notes: 1. Productivity growth is defined as the rate of growth in real GDP per worker.  
 2. Data are calendar 2000-2008 averages to exclude the effects of the financial crisis after the failure of Lehman Brothers.  
 Source: OECD.

# The decline in working-age population is a major challenge for Japan's economy.



Notes: 1. Data are on a fiscal-year basis.

2. The rate of change in the number of workers in the 2010s is calculated using the projected future population (medium variant) and the projected labor force participation rate (assuming that the labor force participation rate in each age/sex group remains the same as that in 2009).

Sources: Cabinet Office, National Accounts; Ministry of Internal Affairs and Communications, Labour Force Survey; National Institute of Population and Social Security Research, Population Projections for Japan: 2006-2050.