

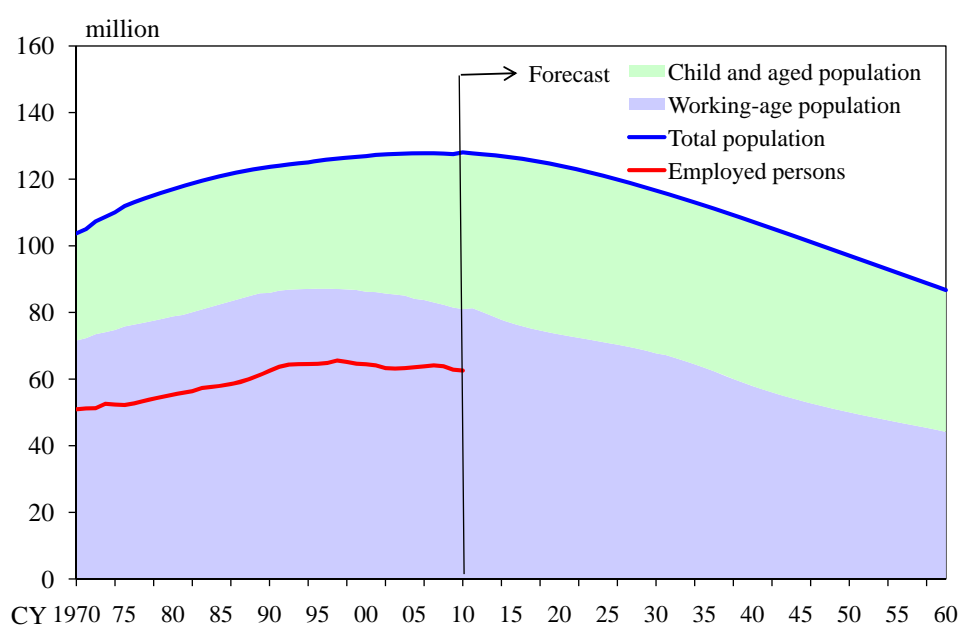
# Demographic Changes and Macroeconomic Performance: Japanese Experiences

May 30, 2012  
BOJ-IMES Conference

Masaaki Shirakawa  
Governor of the Bank of Japan

Chart 1

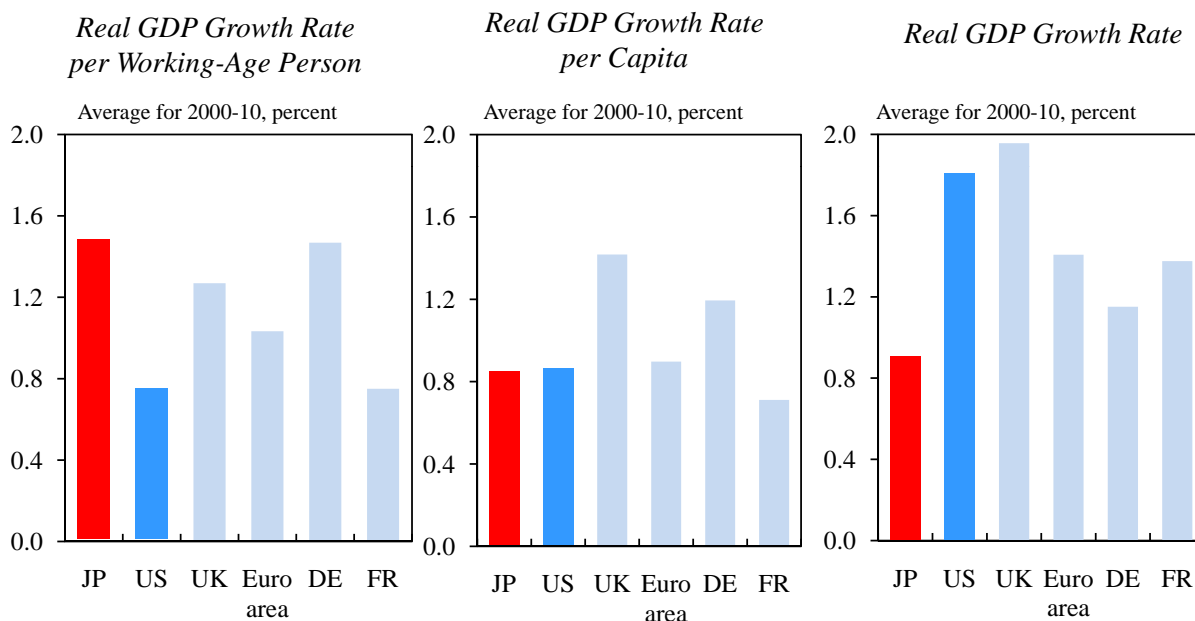
## Demographic Changes in Japan



Note: Child population, working-age population, and aged population refer to the number of persons under 15 years, those between 15 and 64 years, and those over 64 years, respectively.

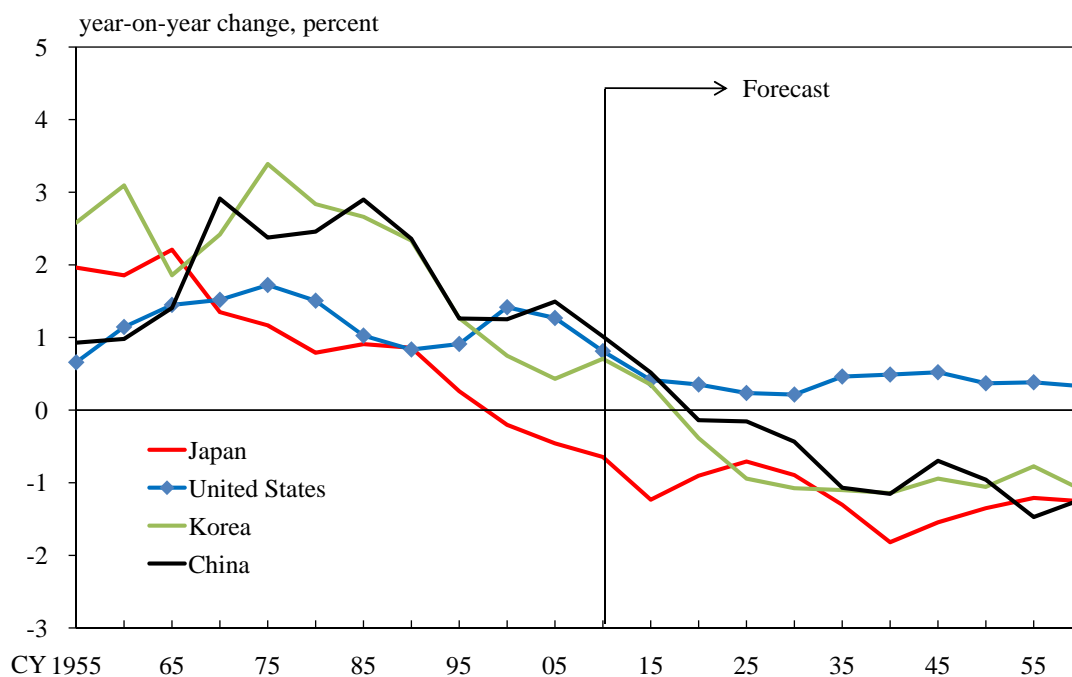
Sources: National Institute of Population and Social Security Research; Ministry of Internal Affairs and Communications.

## Effects of Rapid Population Aging



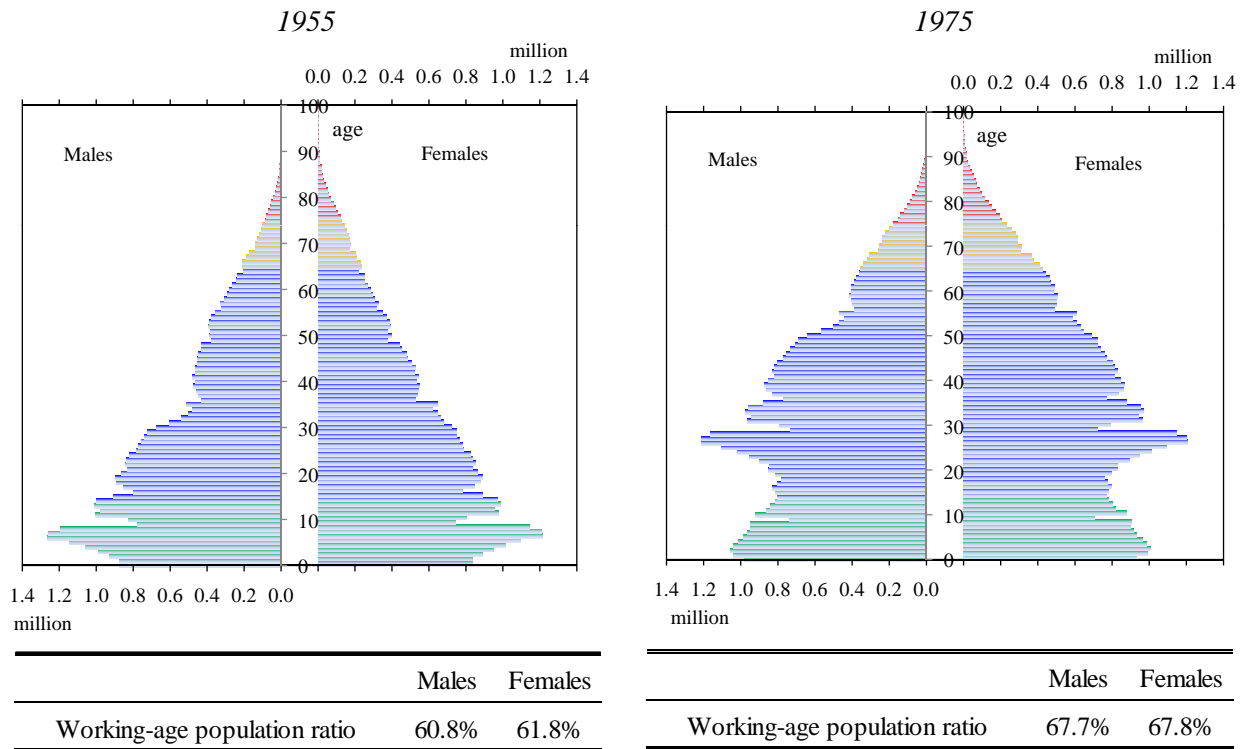
Note: A working-age person refers to those between 15 and 64 years old.  
Sources: World Bank; Haver.

## Growth Rate of Working-Age Population



Sources: National Institute of Population and Social Security Research; United Nations.

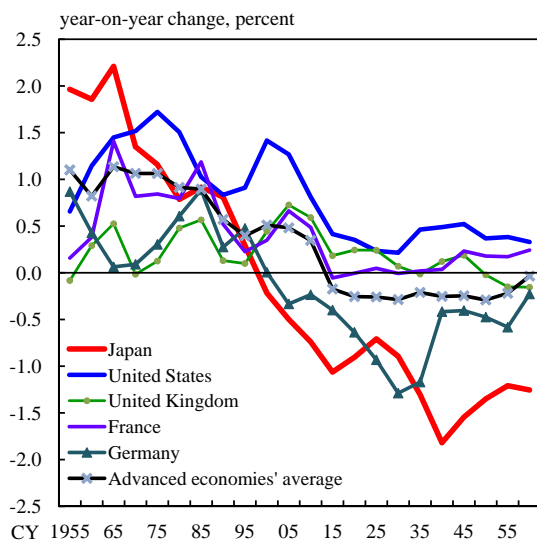
## Japanese Age Structure in the High-Growth Era



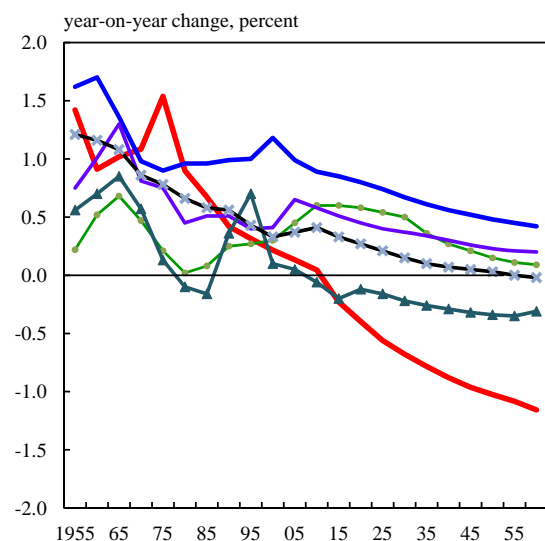
Source: Ministry of Internal Affairs and Communications.

## Total and Working-Age Population

*Growth Rate of the Working-Age Population*



*Growth Rate of the Population*

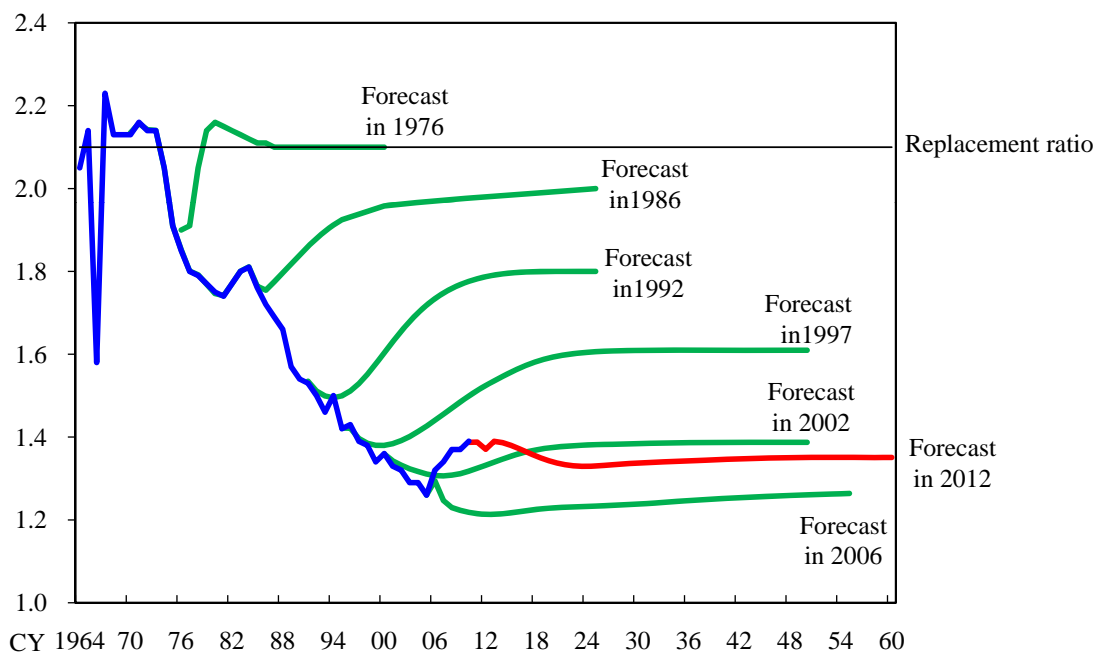


*Growth Rate in 2010, percent*

	Japan	United States	United Kingdom	France	Germany	Advanced economies' average
Working-age population	-0.74	0.81	0.59	0.49	-0.23	0.35
Total population	0.05	0.89	0.60	0.58	-0.06	0.41

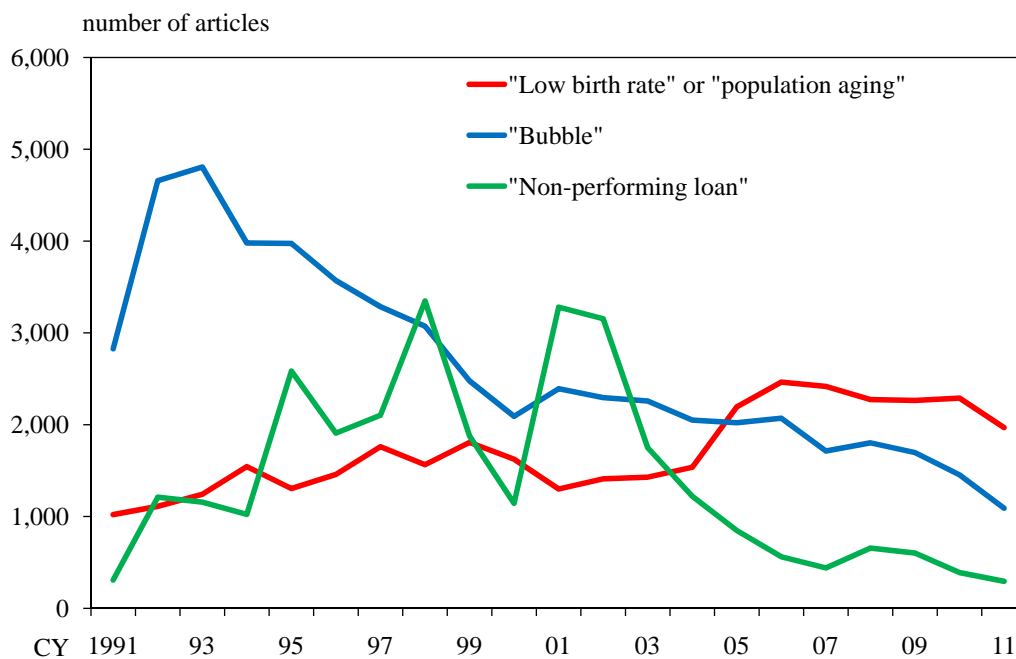
Sources: United Nations; National Institute of Population and Social Security Research.

## Revisions in the Japanese Total Fertility Rate Forecast



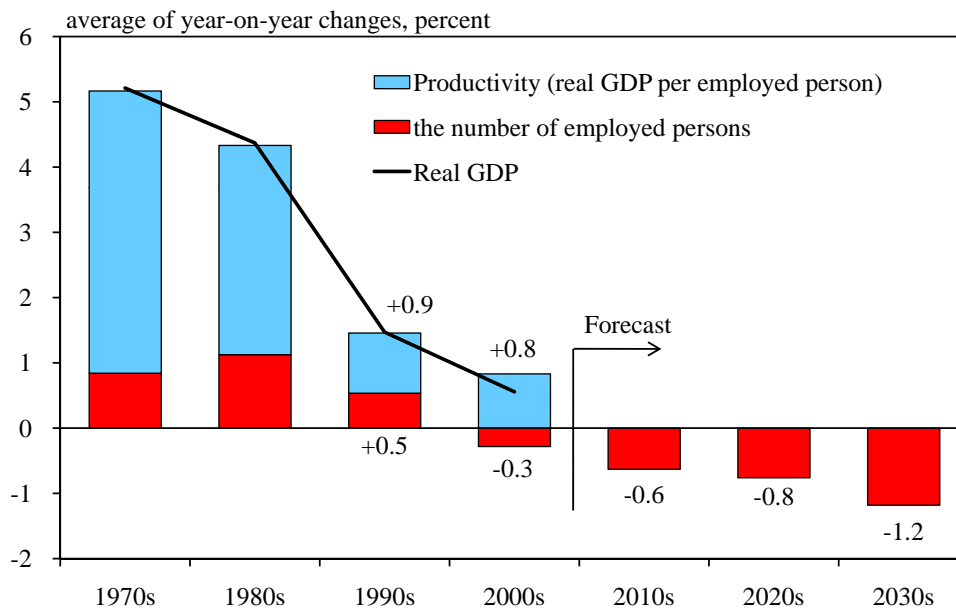
Sources: Ministry of Health, Labour and Welfare; National Institute of Population and Social Security Research.

## Newspaper Citations on Low Birth Rate and Population Aging



Note: Number of articles found in *The Nikkei*, *The Nikkei Business Daily*, and *The Nikkei MJ*.  
Source: Nikkei Telecom.

## Decomposition of Real GDP Growth in Japan

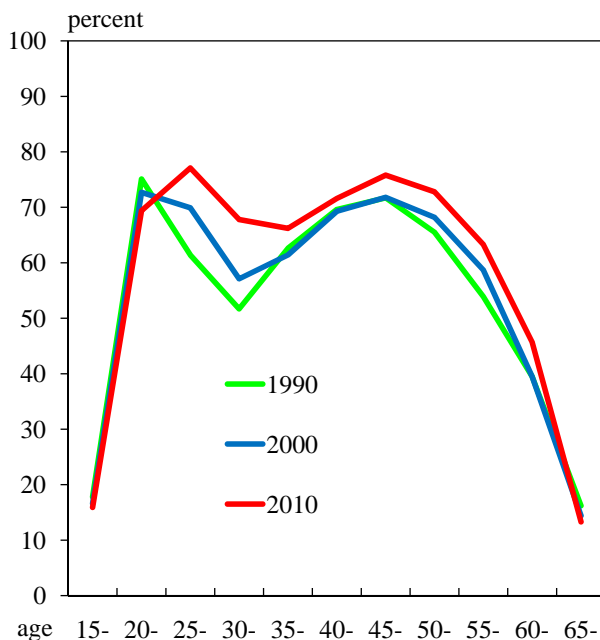


Note: Fiscal-year basis. The rates of change in the number of employed persons from the 2010s onward are calculated using the population outlook (medium variant) and the projected labor force participation rates (assuming the labor force participation rates in each age/sex group to remain the same as those in 2010).

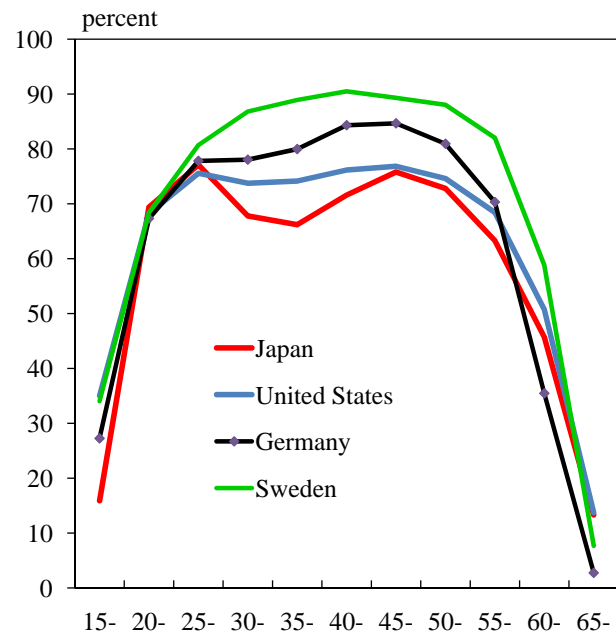
Sources: Cabinet Office; Ministry of Internal Affairs and Communications; National Institute of Population and Social Security Research.

## Labor Participation of Female Workers

*Labor Participation of Female Workers in Japan*

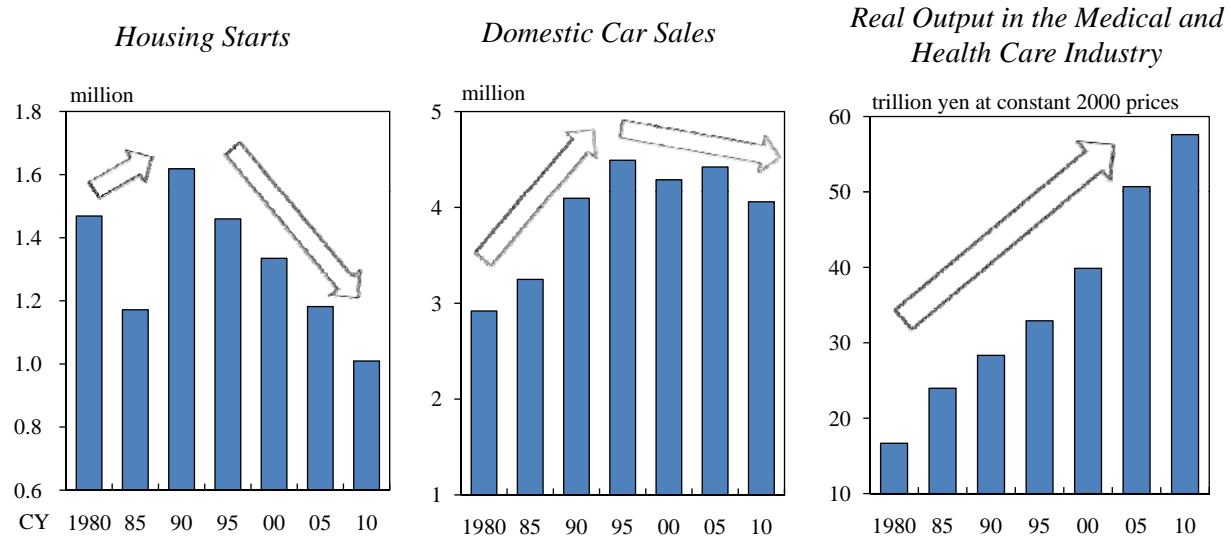


*Comparison of Labor Participation of Female Workers in 2010*



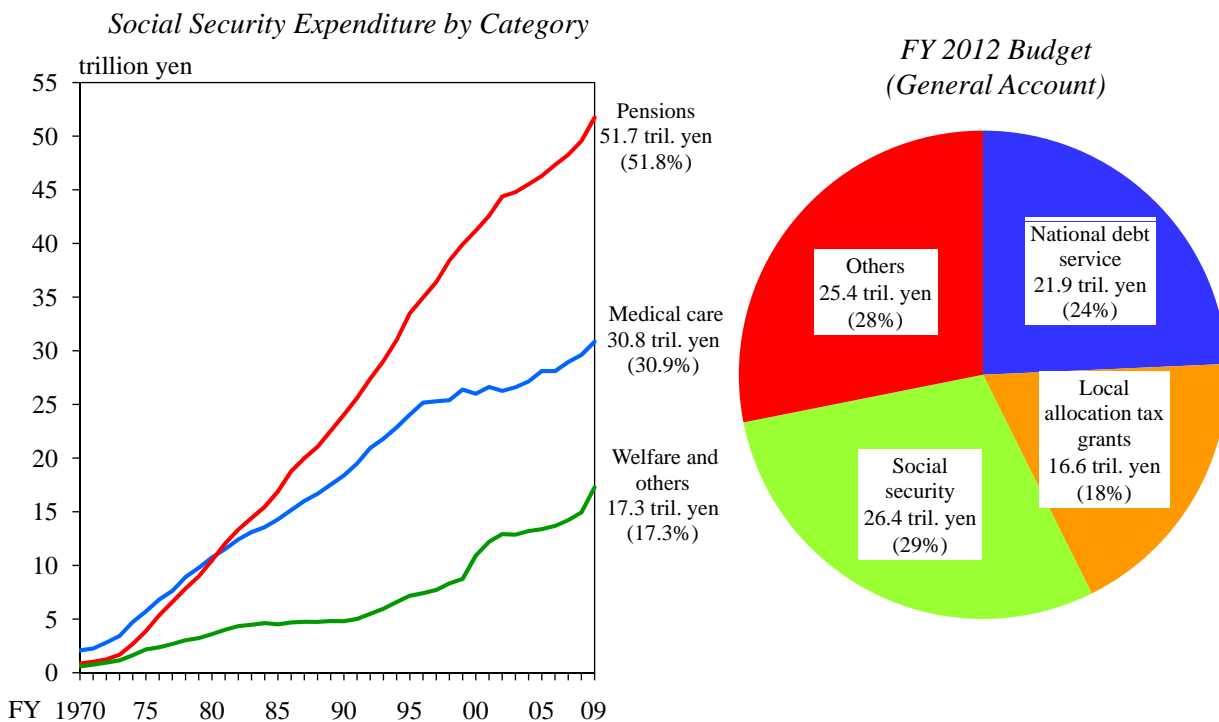
Sources: Ministry of Internal Affairs and Communications; OECD.

# “The Spending Wave”



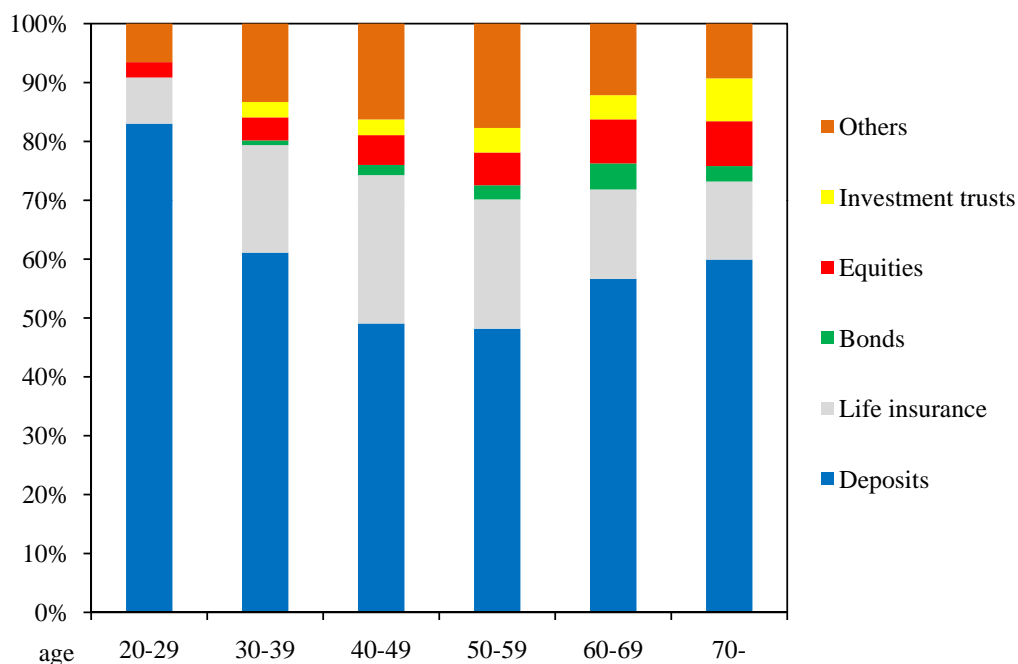
Note: Average in the last five years. The value in 2010 for “Real Output in the Medical and Health Care Industry” is calculated using year-on-year changes from 2006 to 2008.  
 Sources: Ministry of Land, Infrastructure, Transport and Tourism; Japan Automobile Dealers Association; Japan Mini Vehicles Association; Research Institute of Economy, Trade and Industry.

# Fiscal Balance in Japan



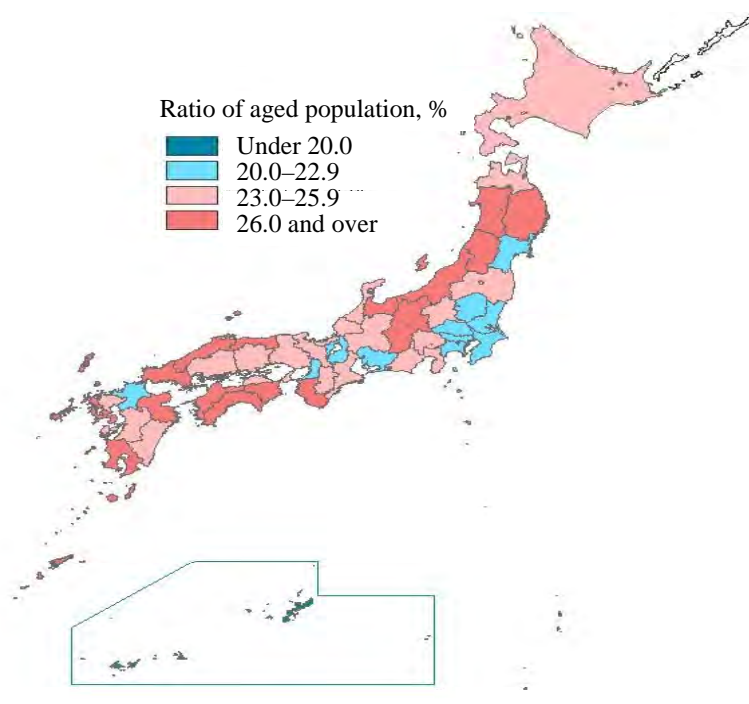
Note: The scope of social security expenditure is based on the International Labor Organization standards for international comparison.  
 Sources: National Institute of Population and Social Security Research; Ministry of Finance.

## Household Financial Assets



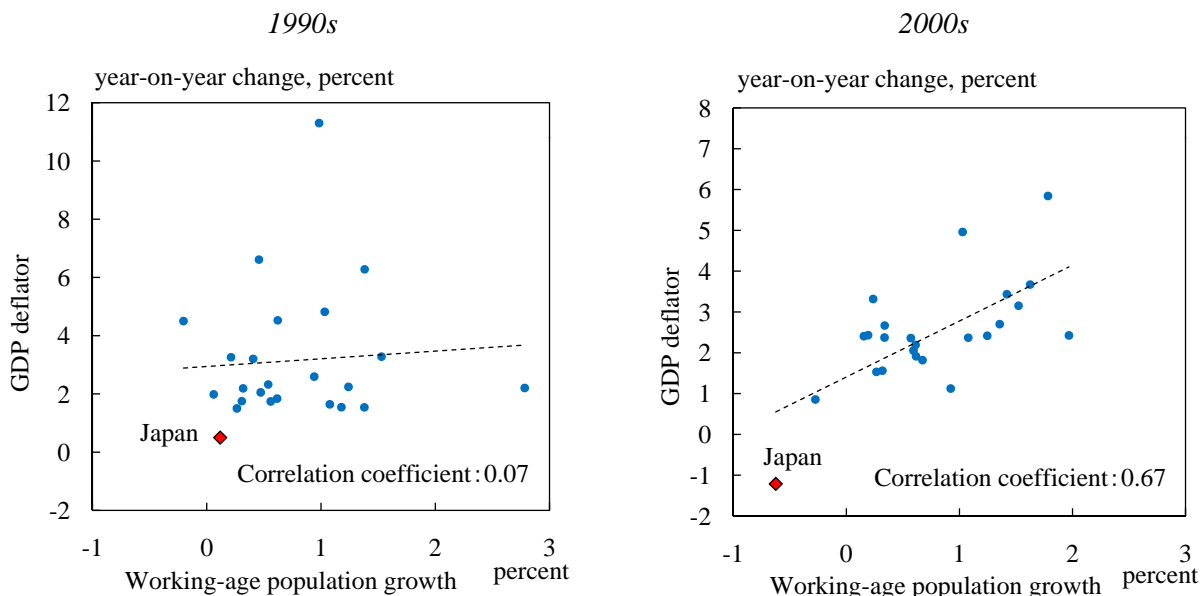
Note: As of 2011.  
Source: Central Council for Financial Services Information

## Ratios of Population over 65 Years by Region



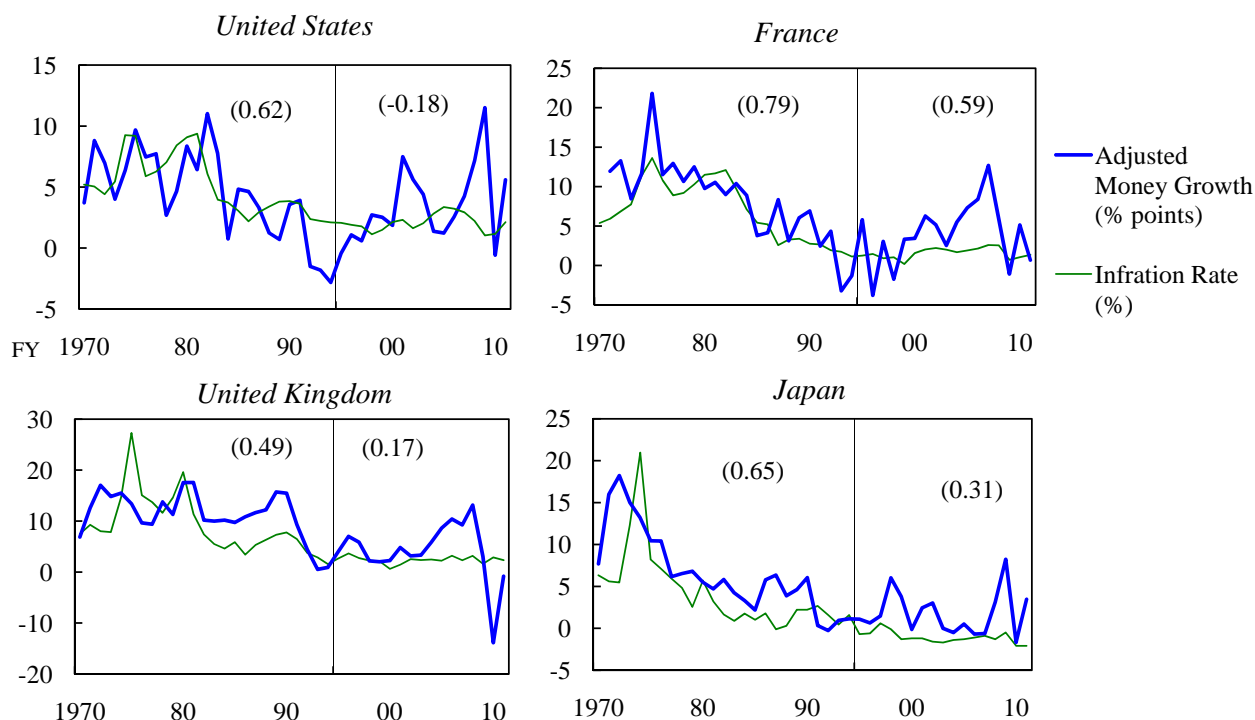
Note: As of 2010.  
Source: Ministry of Internal Affairs and Communications.

## Working-Age Population Growth and Inflation: Cross-Country Comparison



Note: For the 24 countries where the data are available among those that joined the OECD by the 1990s.  
Source: OECD.

## Money Growth and Inflation

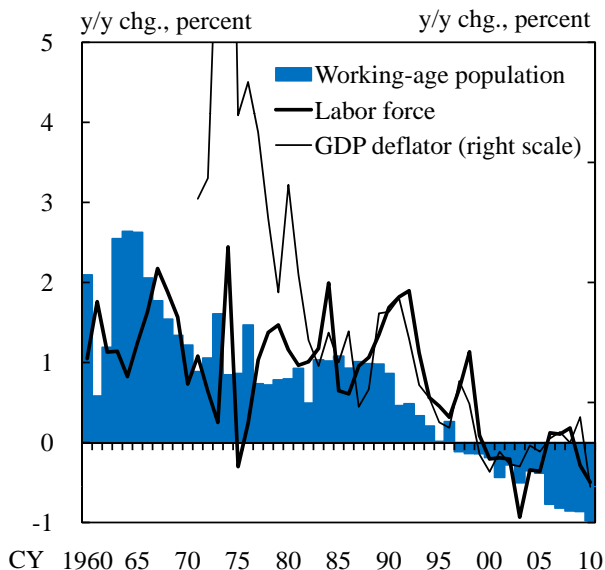


Notes: 1. Figures in parentheses are correlation coefficients of 1970-1994 and 1995-2011.  
2. Money growth is selected as M2 for the US and Japan, M3 for France, and M4 for the UK, respectively. Adjusted money growth is defined as money growth minus real GDP growth.  
3. Because of the data discontinuity of Germany in 1990's, French is selected as the representative of the euro area.  
Sources : International Monetary Fund; Statistics by individual countries.

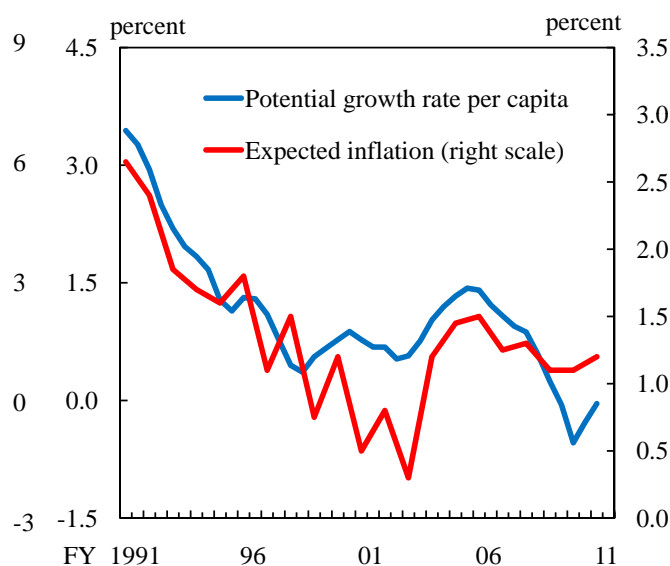


# Population Growth and Inflation in Japan

Population and the GDP Deflator



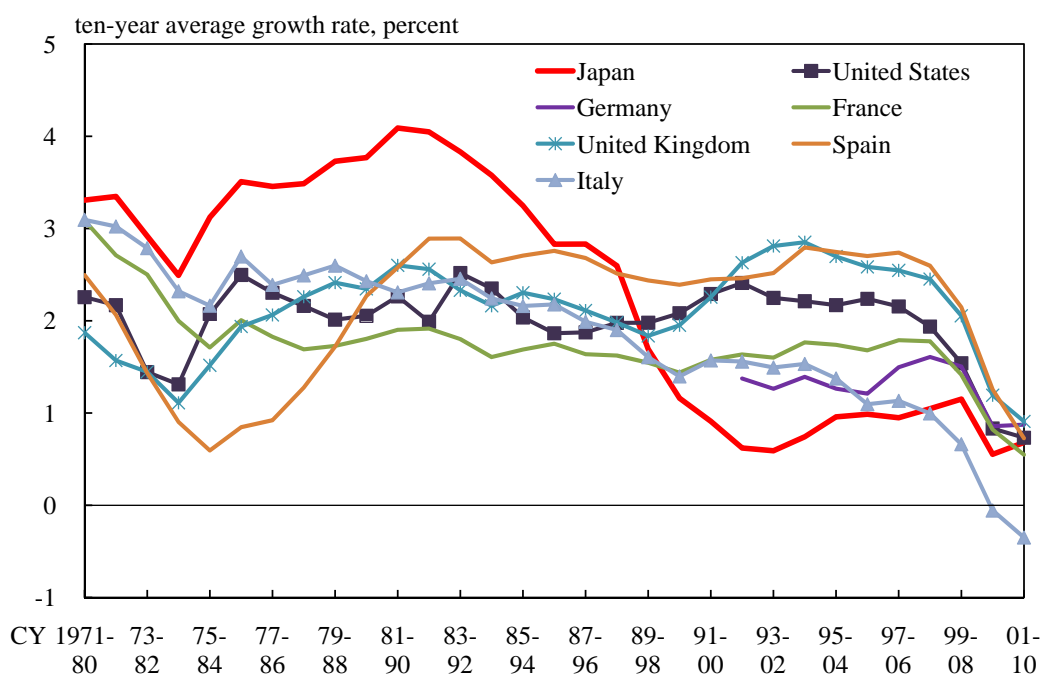
Potential Growth Rate and Expected Inflation in the Medium to Long Term



Note: Lagged values are used for population growth because they precede inflation by a year. Expected inflation is the inflation outlook for CPI in the next 6 to 10 years by the Consensus Forecast (average of the April and October surveys in each year). The potential growth rate is calculated by the Bank of Japan.

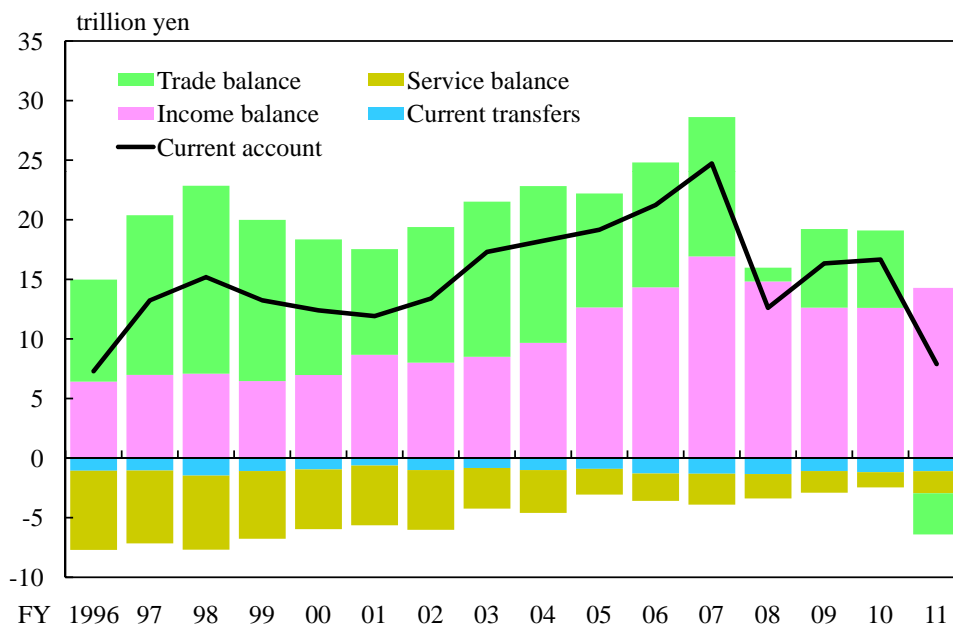
Sources: Bank of Japan; Consensus Forecast; Ministry of Internal Affairs and Communications.

# Real per Capita GDP Growth Rate in Advanced Economies



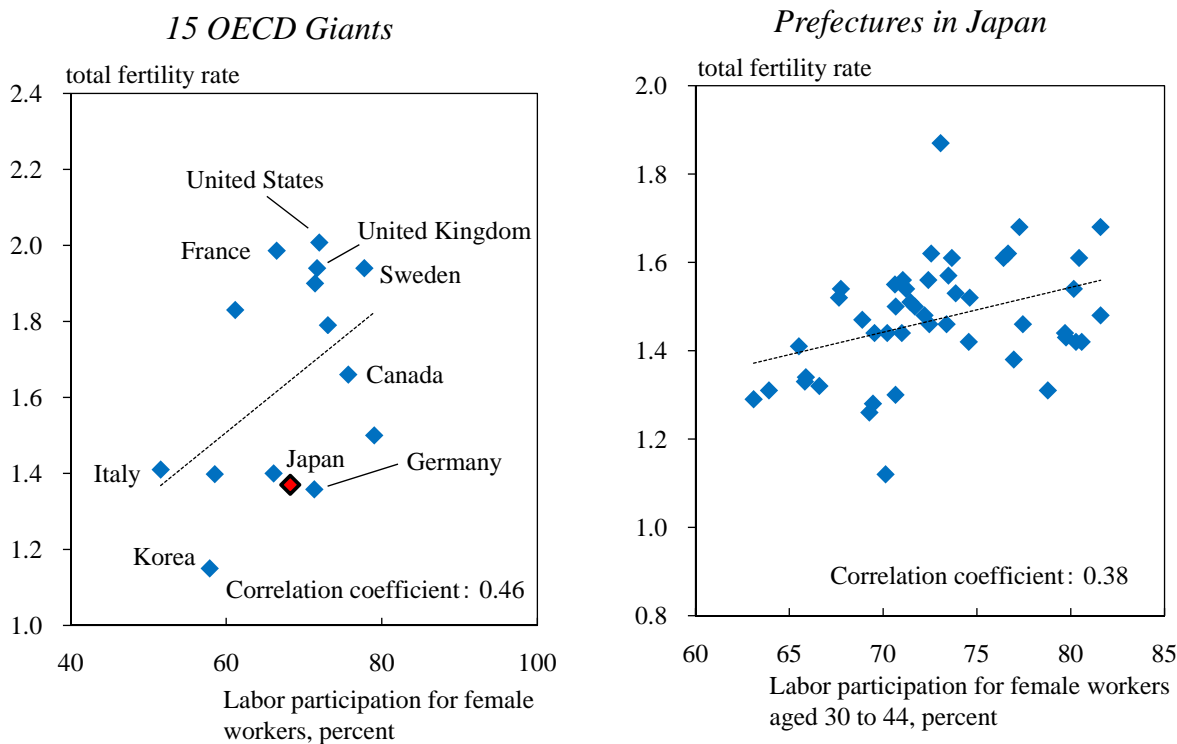
Sources: United Nations; Statistics by individual countries.

# Current Account, Trade Balance and Income Balance



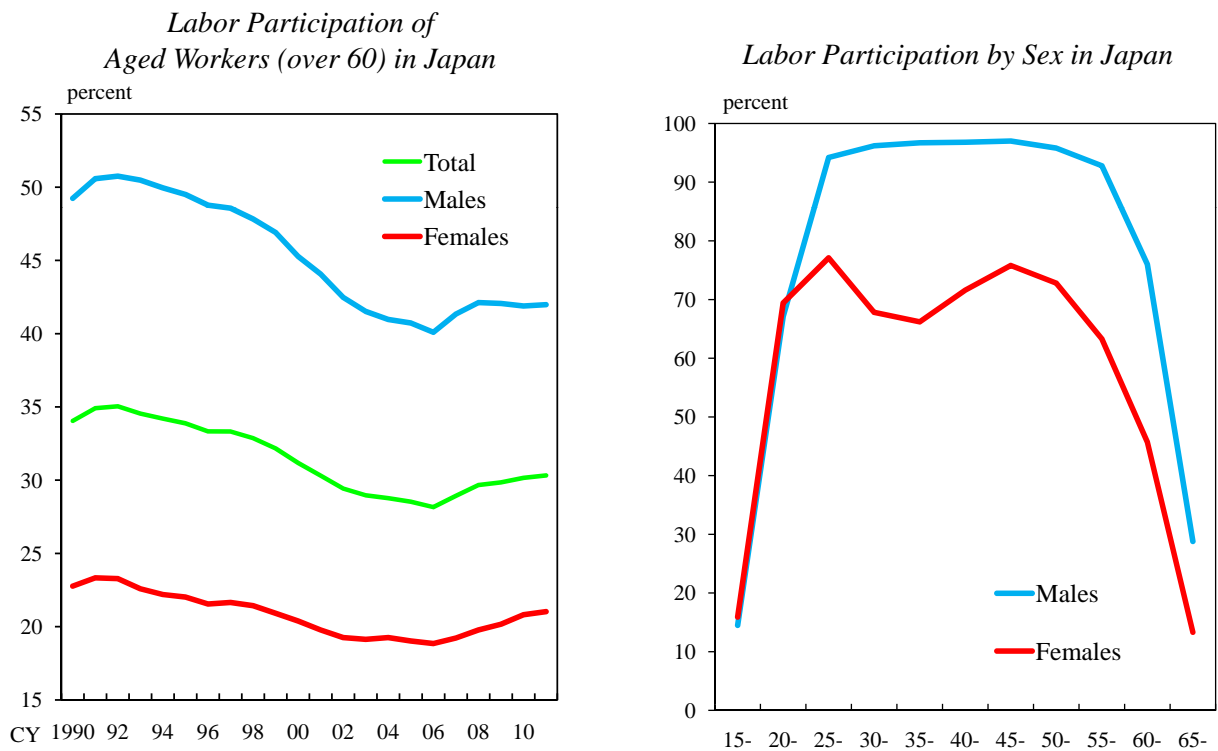
Sources: Ministry of Finance; Bank of Japan.

# Labor Participation of Female Workers and Fertility Rate



Note: The left panel includes the 15 largest countries in terms of nominal GDP in 2009. The right panel shows the values in 2010.  
Sources: National Institute of Population and Social Security Research; Ministry of Internal Affairs and Communications; OECD.

## Labor Participation of Aged Workers



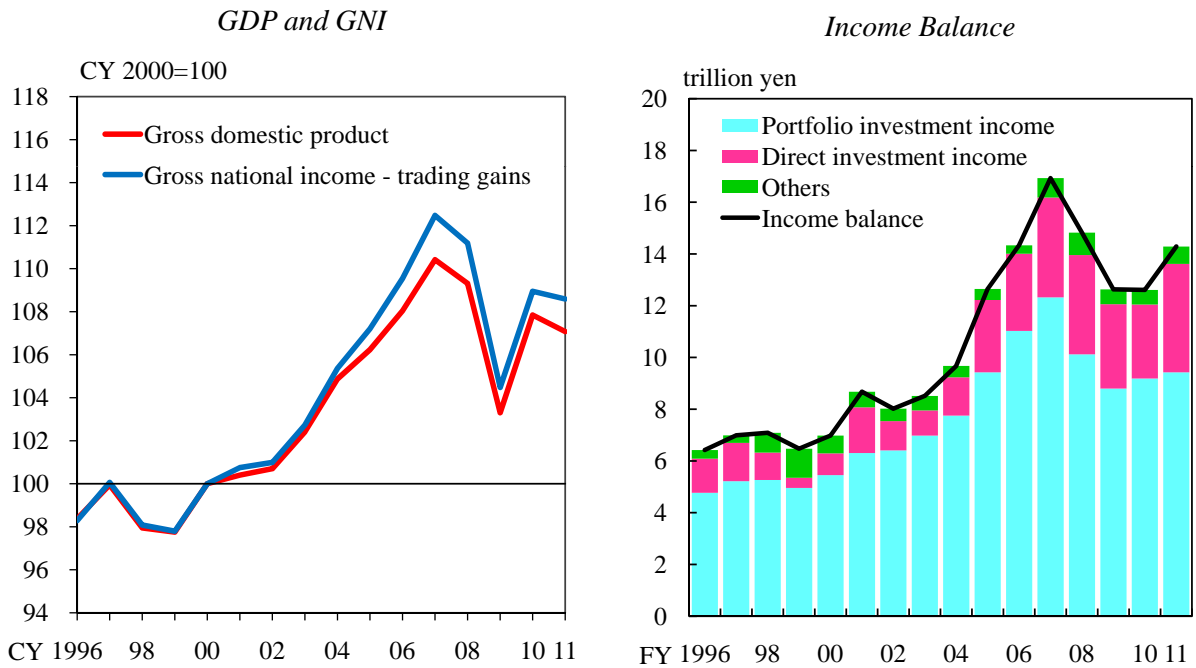
Note: The statistics do not include the data for Fukushima, Miyagi, and Iwate prefectures in 2011.  
Source: Ministry of Internal Affairs and Communications.

## Population Aging and Health Care Expenditure

	Japan	Germany	United States	France	United Kingdom
Population over 65 Years (Change from 2000 to 2010, percent)	33	25	16	11	11
Expenditure for Health Care (Change from 2000 to 2008, percent)	11	25	74	49	85

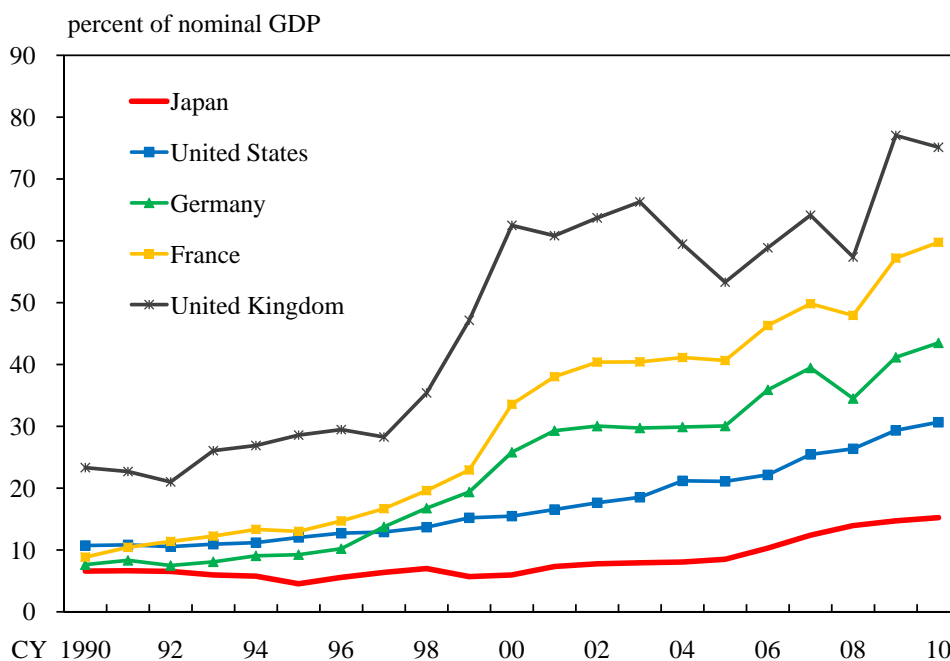
Source: United Nations; OECD.

# Gross Domestic Product and Gross National Income in Japan



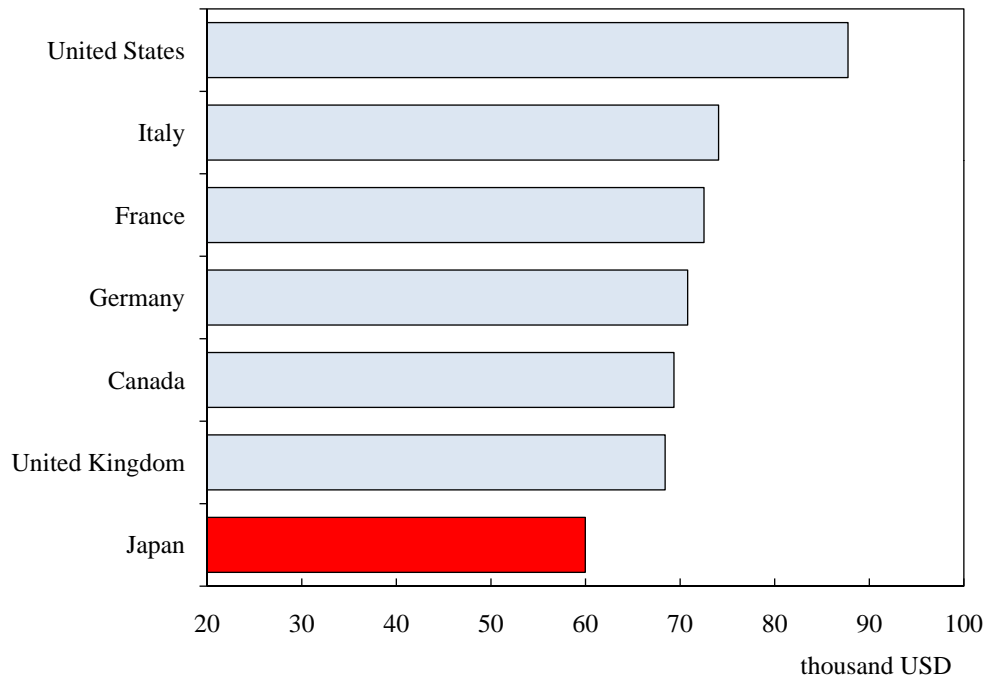
Sources: Cabinet Office; Ministry of Finance; Bank of Japan.

# Foreign Outward Direct Investment



Source: OECD.

## Labor Productivity per Employed Person by Country



Note: Average in 2000s.  
Source: World Bank.