Monetary Policy and Structural Reforms
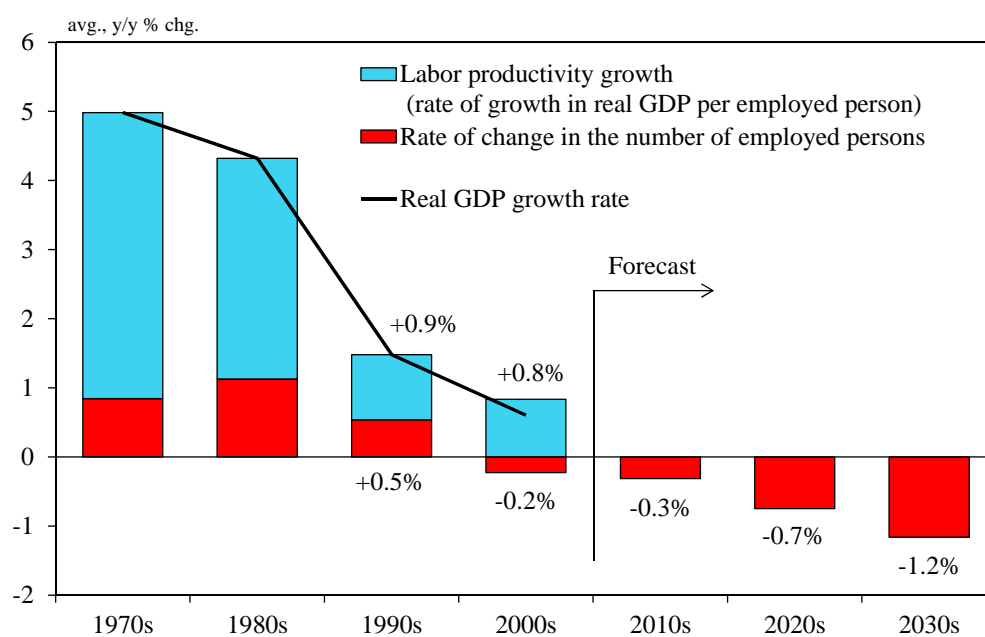
Speech at the Japan Society in New York

February 12, 2016

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Japan's Real GDP Growth

Note: Fiscal-year basis. The rates of change in the number of employed persons from 2015 onward are calculated using the population outlook
(medium variant) and projected labor force participation rates (assuming the labor force participation rate for each age/sex group remains
the same as in 2014).
Sources: Cabinet Office; Ministry of Internal Affairs and Communications; National Institute of Population and Social Security Research.

Labor Productivity Growth Necessary to Achieve 2% Real GDP Growth

avg., y/y % chg.

	Japan				United States	
	FY 1980 -2014	FY 1990 -2014	Projections for FY 2015-2040		CY 1980 -2014	CY 1990 -2014
			Assumption regarding labor participation			
			Status quo scenario	Optimistic scenario		
Real GDP	2.0%	1.1%	2.0%		2.6%	2.4%
Labor productivity	1.6%	0.9%	2.9%	1.6%	1.5%	1.5%
Number of employed persons	0.4%	0.1%	-0.9%	0.4%	1.1%	0.9%

Notes: 1. The status quo scenario is based on the assumptions that the labor force participation rate for every age and sex remains unchanged from that in 2014.
  2. The optimistic scenario is based on the following two assumptions:
   (1) The labor force participation rates for women aged 25-59 rise by 2040 to the labor force participation rates in Sweden in 2010.
   (2) The labor force participation rates of those aged 60 and above rise by 2040 to a level at which all healthy elderly work.
Sources: Cabinet Office; Ministry of Internal Affairs and Communications; National Institute of Population and Social Security Research; OECD;
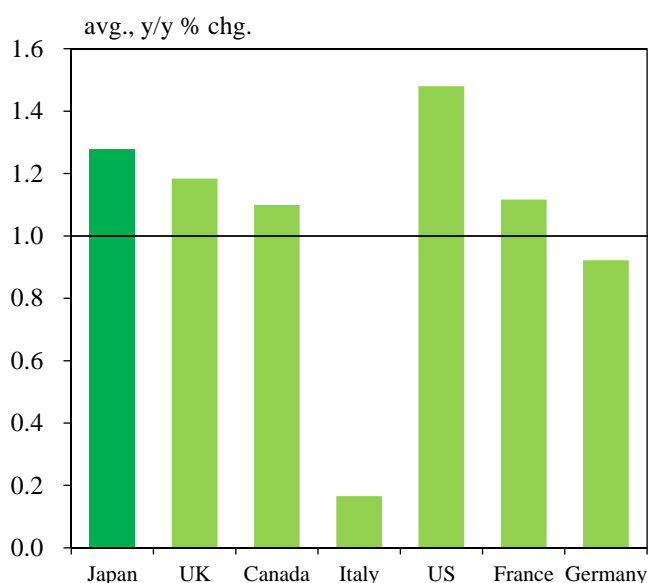 Bureau of Economic Analysis; Bureau of Labor Statistics.

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International Comparisons of Labor Productivity
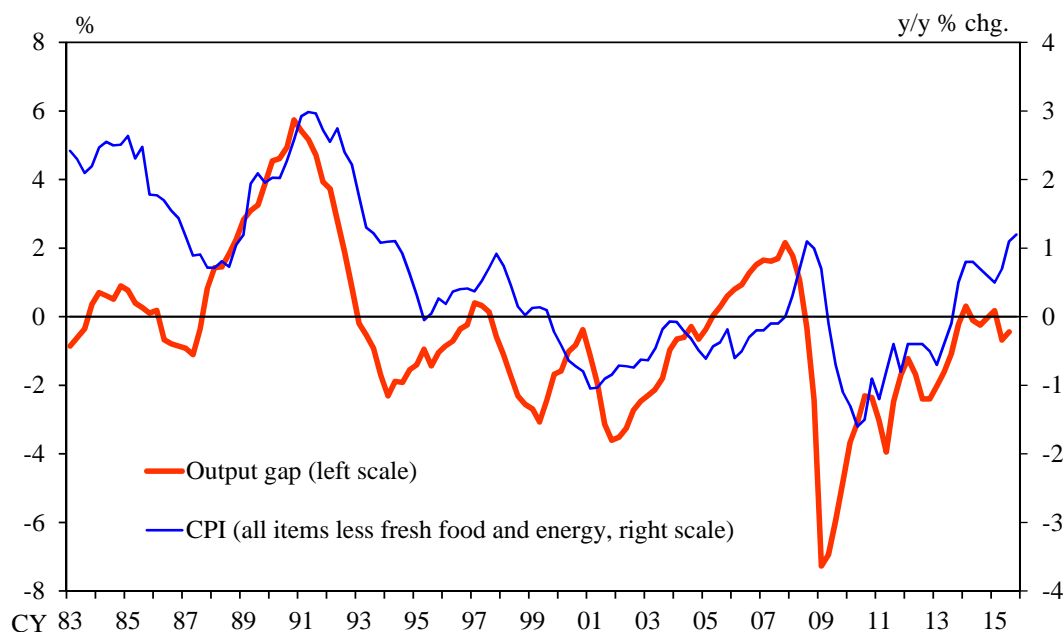
Productivity Level
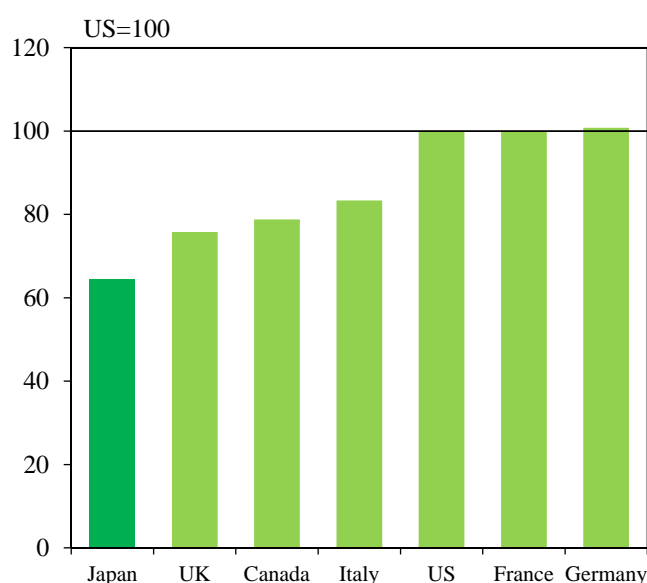
Productivity Growth Rate

Notes: 1.The left panel shows the nominal GDP per hour worked as of 2014.
  2.The right panel shows the average year-on-year rates of change in the real GDP per hour worked from 2000 to 2014.
Source: UK Office for National Statistics.

3

Output Gap and Consumer Price Index

Notes: 1. The output gap is estimated by the Research and Statistics Department, Bank of Japan. For details of the estimation procedures,
see Hara *et al*. (2006), "The New Estimates of Output Gap and Potential Growth Rate," Bank of Japan Review Series, 2006-E-3.
2. Figures for the CPI (all items less fresh food and energy) are calculated by the Research and Statistics Department, Bank of Japan.
Figures are estimated adjusting for the direct effects of the consumption tax hike.
Sources: Ministry of Internal Affairs and Communications; Cabinet Office, etc.

# Natural Rate of Interest and Potential Growth Rate
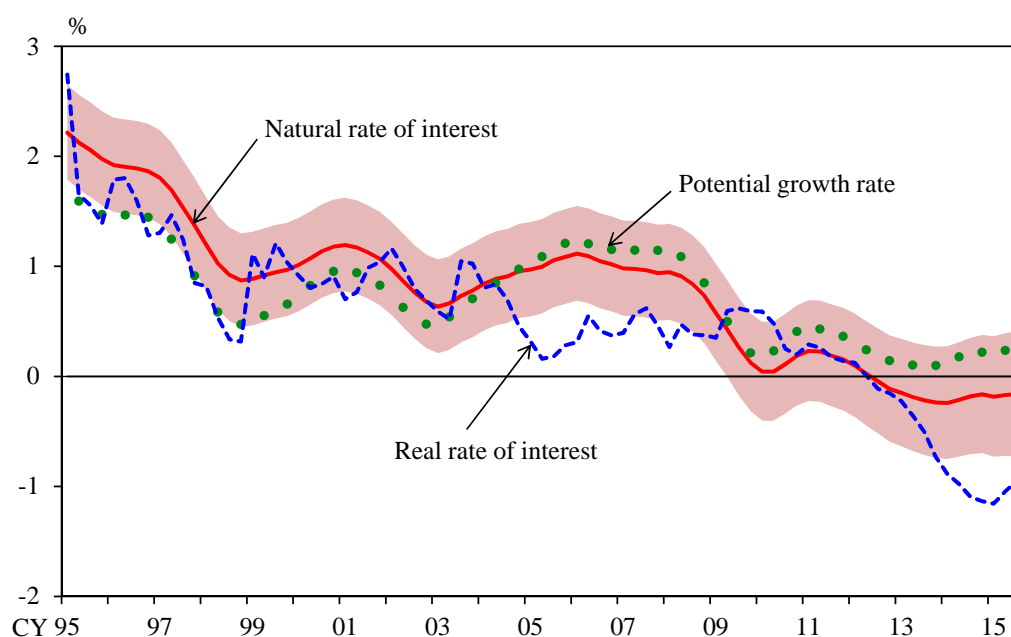
Notes: 1. The natural and real rates of interest are calculated based on 10-year government bond yields.
2. The shaded area indicates the 95 percent confidence interval for the natural rate of interest.
3. For details of the estimation procedures, see Imakubo *et al*. (2015), "The Natural Yield Curve: Its Concept and Measurement,"
Bank of Japan Working Paper Series, 15-E-5. For the estimation procedures of the potential growth rate, see Note 1 in Slide 4.
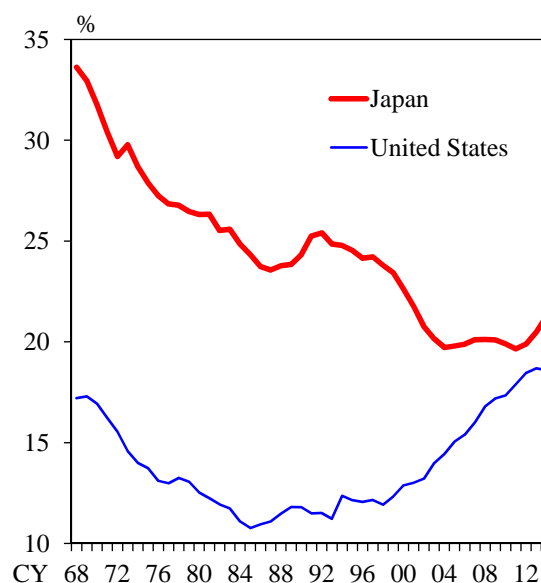
Labor Force Participation Rate

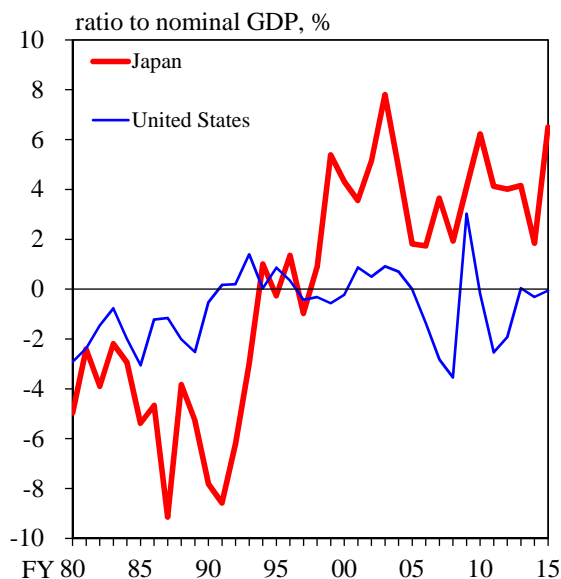### Women (aged 25-34)
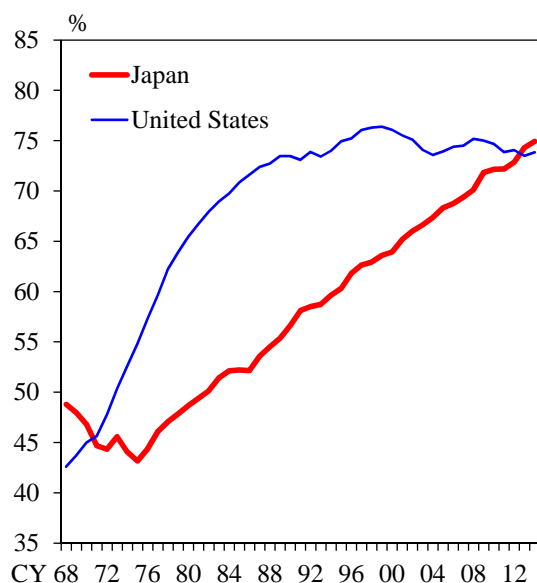
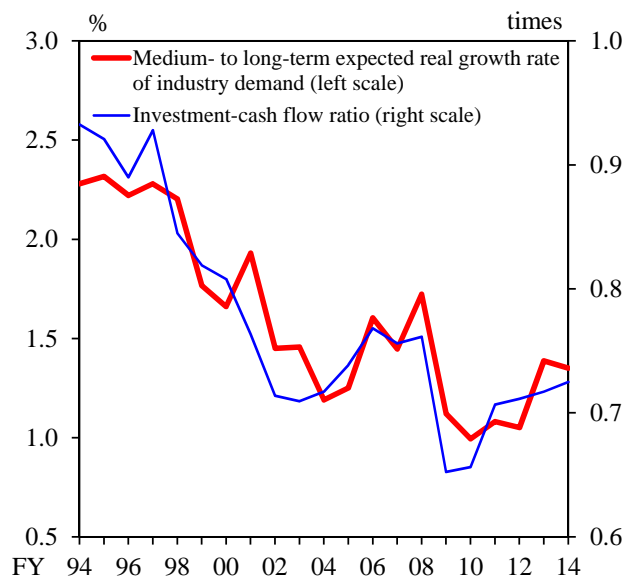### Elderly (aged 65 and above)

Source: OECD.

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Corporate Sector

Financial Surplus and Deficit of Private Nonfinancial Corporations

Expected Growth Rate and Investment-Cash Flow Ratio

Notes: 1. Figures for 2015 are the sum of the 2nd and 3rd quarter of 2015.
2. The medium- to long-term expected real growth rate is the expected real growth rate for the five years ahead, calculated using the forecasts of real growth rates of industry demand from the "Annual Survey of Corporate Behavior."
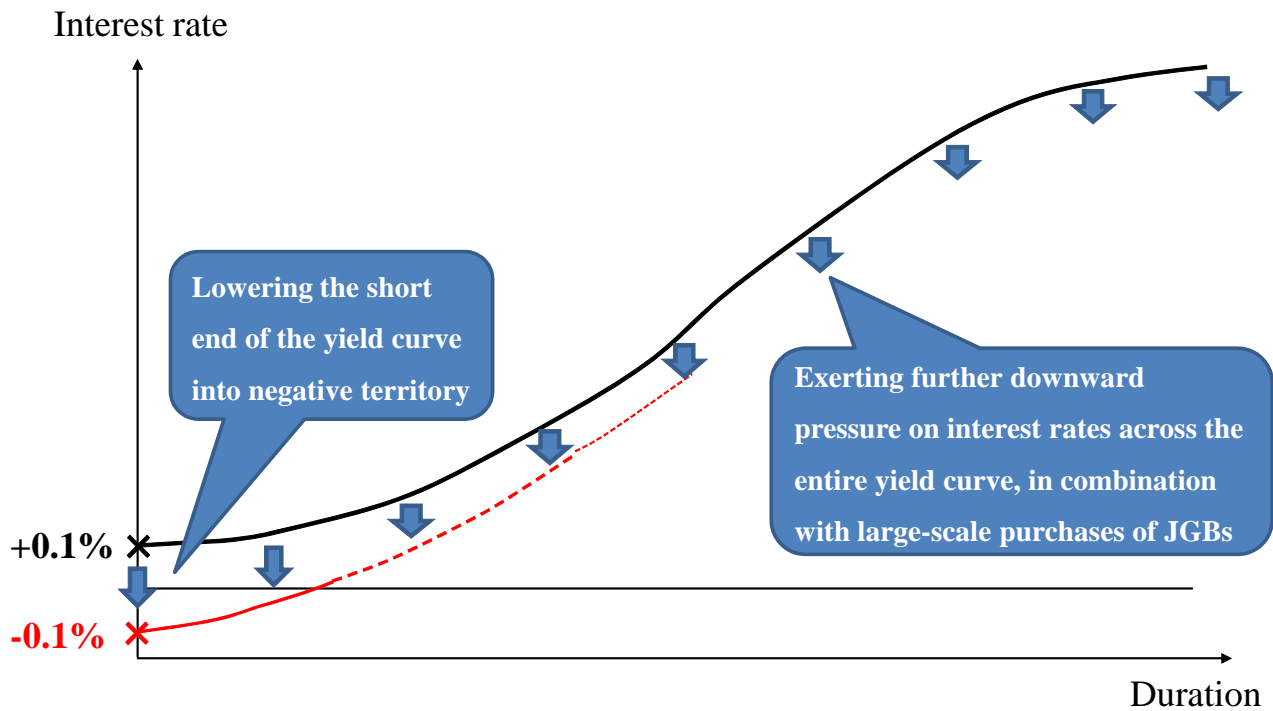3. Cash flow = consumption of fixed capital + (operating surplus + net property income) / 2.
Sources: Bank of Japan; Cabinet Office; Research Institute of Economy, Trade and Industry; Bureau of Economic Analysis; FRB.

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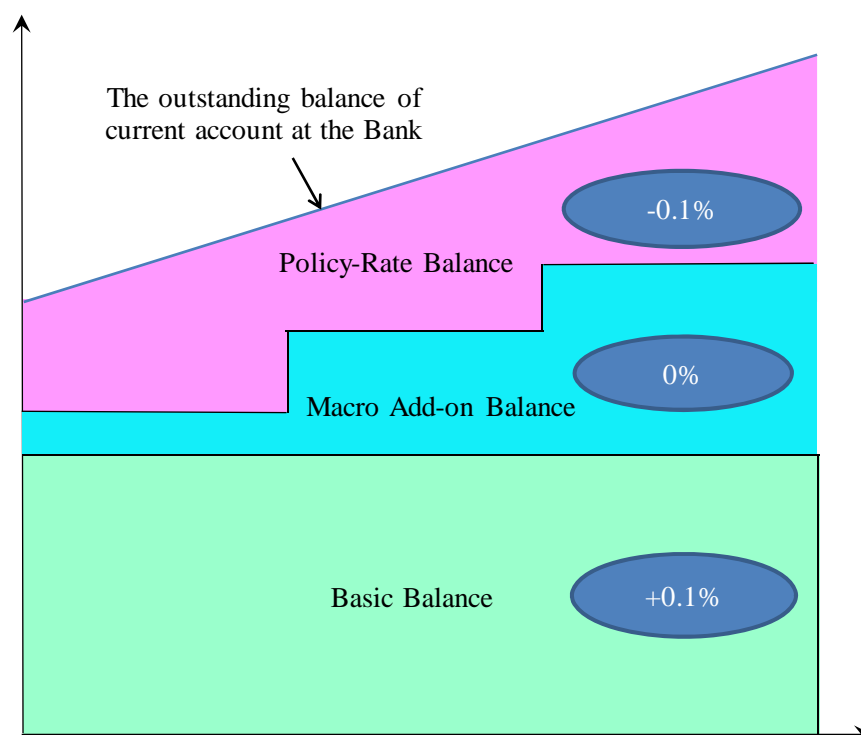Quantitative and Qualitative Monetary Easing with a Negative Interest Rate

Three-Tier System