Sayuri Shirai: Japan's monetary policy in a challenging environment

Speeches by Ms Sayuri Shirai, Member of the Policy Board of the Bank of Japan, at the Bank of Italy and at the Eurasia Business and Economics Society Conference, Rome, 11–12 January 2013.

* * *

I. Introduction

It is indeed a great honor to have this opportunity to address you today. In my presentation, I would like to focus on Japan's macroeconomic performance, monetary policy, and the environment surrounding the conduct of monetary policy. Some of the issues I will raise today – such as population aging and associated macroeconomic and structural issues – are traditionally regarded as long-term issues for central banks, and they thus tend to be treated as issues beyond the framework of monetary policy. Nonetheless, a number of European countries, such as Italy and Germany, are currently facing a rapidly aging population in a similar manner to Japan. Therefore, I believe that those issues will be actively debated in Europe in the near future as factors affecting the conduct of monetary policy. For this reason, deepening the understanding of Japan's experience may provide useful inputs, especially for countries whose economies have entered a mature stage. Cultivating a more profound insight into Japan's experience may also promote innovative ways of thinking about the conduct of monetary policy.

Let me briefly outline the content of this presentation. The main purpose of my talk is to describe the accommodative monetary policy that the Bank of Japan (hereafter the Bank) has been conducting for almost all of the past two decades since its first cut in the policy rate in 1991 in response to the bubble burst in real estate and stock prices. Owing to the limited time available, I would like to shed light on two types of *nonstandard* monetary easing adopted by the Bank under the zero lower bound on nominal interest rates: (1) the first round of monetary easing – the so-called quantitative easing (QE) during 2001–06; and (2) the second round of monetary easing – the so-called comprehensive monetary easing (CME) from 2010 until the present. The final part of my presentation will focus on structural issues and associated macroeconomic performance. The issue of the effectiveness of the conduct of monetary policy in the current challenging environment will also be explored. I am very much looking forward to active discussions with you after my presentation.

II. First round of monetary easing under the quantitative easing (QE) policy (2001–06)

Let me start my presentation by providing you with a brief summary of the economic performance since the 2000s and the experience under QE of 2001–06.

A. Framework for the QE policy

Before falling into a prolonged mild deflation phase, Japan experienced the collapse of the bubble in real estate and stock prices in the early 1990s, and the subsequent financial crisis in the second half of the 1990s. Over the same period, Japan suffered from a prolonged recession and negative output gap notwithstanding several short-lived recovery phases (Chart 1). The growth rate of the headline consumer price index (CPI) and core CPI (defined as all items except fresh food) gradually dropped and shifted to a continuous modest decline from 1998 (Chart 2). Moreover, the economy was adversely affected by the bursting of the U.S. IT bubble in 2000. Exports and production dropped sharply in early 2001, while CPI-based price changes remained in negative territory.

Under this environment, the Bank adopted a new monetary easing framework – the so-called QE policy – in March 2001 with a view to stemming the continuous price decline and setting

the basis for sustainable economic growth.[1] This unique policy was a nonstandard monetary policy since it was introduced in the presence of a virtually zero uncollateralized overnight call rate or very short-term money market interest rate.[2] It consisted of the following three main elements.

First, the main operating target was shifted from the policy rate (uncollateralized overnight call rate) to the *current account balance at the Bank* – a transformation from *interest rate targeting* to *reserve targeting*. The target balance was then increased gradually by expanding excess reserves (Chart 3). To be precise, the target amount was raised nine times from the initial 5 trillion yen (which is higher than the required reserve level of 4 trillion yen) to around 30–35 trillion yen in January 2004 in response to the deteriorating economy. The same target amount was then maintained until the end of the QE policy. The attempt was made to achieve this reserve target mainly through money market operations with various maturities of one year or less.

Theoretically, this measure, which led to an expansion of the Bank's balance sheet (or the monetary base), was supposed to affect the financial and capital markets through the following: (1) the *portfolio rebalance effect* (lowering the risk premiums of financial assets that are imperfect substitutes for the monetary base); and (2) the *signaling effect* (lowering the expectations for the future path of short-term interest rates), as indicated in Chart 4. The portfolio rebalance effect refers to the channel through which expansion of the Bank's balance sheet helps reduce the *risk premiums of riskier assets*, thereby inducing financial institutions and investors to invest more actively in those assets. This action may raise their prices, thus indirectly stimulating business fixed investment and consumption – and hence general prices. The signaling effect refers to the situation in which a central bank sends out a signal to the market through an expansion of the balance sheet, which leads to *expectations that the future path of short-term interest rates will remain low for a longer period*. Since central banks can control the future path of short-term nominal interest rates, the expansion of the balance sheet signals the Bank's future monetary policy conduct. Such expectations then affect various expectations for longer-term interest rates and the yields of other financial assets in the financial markets.

Second, the Bank made a clear commitment to maintaining this policy until the condition of the core CPI registering "*stably 0 percent or a year-on-year increase*" was met.[3] This innovative monetary policy tool is nowadays often referred to as "forward guidance." Theoretically, this policy is supposed to lower future short-term interest rates through the signaling effect – by promoting *market expectations* that the virtually zero interest rate will be maintained for some time in the future even after economic conditions improve.[4]

---

1 Previously, the uncollateralized overnight call rate (targeted policy rate) was lowered to 0 percent in February 1999 to cope with deteriorating economic conditions and deflation risk. The zero interest rate policy was then abandoned, and the policy rate was raised to 0.25 percent in August 2000 with a view of reduced deflationary pressures driven by weak demand. In February 2001, the increase in the policy rate ceased, and it was lowered to 0.15 percent.

2 Under the QE policy, the uncollateralized overnight call rate stayed at around 0 percent owing to the ample liquidity provision. To be precise, the interest rate under the QE policy declined to 0.001 percent – a level even below the 0.02-0.03 percent that prevailed during the zero interest rate policy.

3 The forward guidance was clarified further in October 2003 by introducing two exit conditions: (1) the most recently published core CPI registers 0 percent or above and such a tendency is confirmed for over a few months; and (2) the projected core CPI does not register below 0 percent. These conditions were regarded as necessary so that there may be cases that the Bank will judge it appropriate to continue with QE even if these two conditions are fulfilled.

4 See Eggertsson, Gauti B., and Michael Woodford, "The Zero Bound on Interest Rates and Optimal Monetary Policy," Brookings Papers on Economic Activity, 1, pp. 139-211, 2003; and Reifschneider, David, and John C. Williams, "Three Lessons for Monetary Policy in a Low-Inflation Era," *Journal of Money, Credit and Banking*, 32 (4) Part 2, pp. 936-66, 2000.

Third, it was decided to increase the outright purchase of (long-term) Japanese government bonds (JGBs) if deemed necessary to facilitate meeting the targeted current account balance at the Bank. Indeed, the amount of JGBs purchased rose steadily. Theoretically, this measure aims at altering the composition of the Bank's balance sheet without changing its size and is sometimes referred to as a "credit easing" policy. Like measures to expand the current account balance at the Bank, the expected effects could be decomposed into the portfolio rebalance and signaling effects. In practice, though the increase in the current account balance at the Bank was mainly conducted through relatively short-term market operations, this measure was regarded as an additional tool to ensure that the targeted balance would be met.

B. Economic recovery setting the stage for exit from the QE policy

Over the same period of 2001–06, expansionary economies overseas contributed to an increase in Japan's export growth. Thus, Japan's economy was finally able to enter a recovery phase after the trough in January 2002. Corporate profits grew during this period despite the rise in imported crude oil prices and other material prices. Reflecting growing production capacity constraints caused by active production activities, business fixed investment – especially in the export manufacturing sector – recorded high growth; however, the level of investment remained below the scale of cash flow. Household income rose moderately owing to an increase in employment, but also partly thanks to a moderate per-worker nominal wage increase (driven mainly by rising working hours), an increase in dividend income, and the rise in stock prices, thereby supporting consumption activities.

The economy was recovering steadily after the beginning of 2002, and the recovery trend was getting stronger (Chart 1). It seemed that the economic growth would continue for the foreseeable future. It was clear that the main engine for the growth was exports and associated domestic business fixed investment activities, which had been supported by favorable worldwide economic growth and the depreciation of the yen. The yen's depreciation, especially vis-à-vis the U.S. dollar and the euro, was promoted mainly by the growing yen carry trade (selling yen and buying foreign currencies) in the face of interest rate differentials and the risk-taking behavior of investors (Chart 5). This view is consistent with the fact that both large and small and medium-sized firms in the manufacturing sector indicated more favorable sentiment over business conditions than their counterparts in the nonmanufacturing sector.

Regarding price developments, the core CPI – having moved into negative territory since the late 1990s and remained more or less in a mild deflation phase – finally turned positive toward late 2005 (Chart 2). This was followed by larger increases after the beginning of 2006.[5] Several firm-based surveys indicated that companies faced very strong capacity constraints in terms of capital stock and employment, which suggested that the negative output gap had mostly been eliminated (Chart 1). Since the economy was expected to expand at a pace above its potential, it was thought that the output gap would likely become positive and then widen moderately. One concern was that unit labor costs (ULCs) continued to decline since increases in hourly productivity had been large. However, wages began to increase in 2005 in the presence of a tighter supply and demand balance of labor over a relatively wide range of industries, while the rate of productivity increase was expected to slow down in the prolonged stage of economic recovery. Thus, it was projected that in the near future, ULCs would stop declining and start increasing moderately. Moreover, various

[5] To be precise, the core CPI growth rate turned positive in November 2005, and the rate for January 2006 announced in early March was 0.5 percent (though that of the headline CPI remained in negative territory over the same period of 2005 and shifted to a positive 0.5 percent in January 2006). However, these figures were retroactively adjusted downward, and the previously positive figures fell into negative territory in August 2006, when the base year for the CPI was shifted from 2000 to 2005. The scale of downward adjustment was greater than with the past trends and was thus beyond the projected one.

surveys indicated that firms and households were adjusting inflation expectations upward for both the short term and the medium to long term.

Like other advanced countries, Japan had been witnessing the phenomenon of the rate of increase in the CPI becoming less sensitive to changes in the output gap over recent years – the so-called flattened Phillips Curve. Nonetheless, the Bank assessed that the CPI inflation was likely to rise gradually based on the already-mentioned considerations: (1) an expected further improvement in the output gap; (2) expected tighter labor market conditions, partly as a result of growing economic activity; and (3) rising inflation expectations of firms and households. The increase in international commodity prices and the yen's depreciation also contributed to the rising inflation prospects.

Based on these observations, it was expected that the uptrend in the CPI would probably be achieved, even though those movements would be partially offset by downward pressures stemming from intense competition among domestic firms, intensified cross-border competition under deepened globalization, and advances in information and telecommunication technology. The growth rate of the core CPI was thus estimated to be within the range of 0–1 percent in fiscal 2006 and would approach the level of slightly below 1 percent in fiscal 2007.

In March 2006, the Bank thus concluded that it was time to exit the QE policy since the conditions laid out in the commitment had been fulfilled.[6] Therefore, the decision was made to reintroduce the standard uncollateralized overnight call rate as an operating target for money market operations instead of the outstanding balance of current accounts at the Bank. Also, the new target for the uncollateralized overnight call rate was set at effectively 0 percent.

At the same time, the Bank adopted a new framework for the conduct of monetary policy by setting the "*understanding of medium- to long-term price stability*." This is the level of the CPI inflation rate currently recognized as price stability by each member of the Policy Board of the Bank. An agreement was made among board members that a range of such an inflation rate would remain *approximately between 0 and 2 percent with the median of 1 percent*. It was also agreed that the rate would be reviewed annually. You may wonder why the range of inflation was lower than that of many other advanced countries. This is because the Bank found it important to take into account past price movements: namely, the average rate of inflation over the previous few decades had been lower than that of major overseas economies and had been low even during the bubble period of the 1980s. In addition, Japan had experienced a prolonged period of lower rates of inflation since the 1990s. Under such a low inflation environment, it was regarded as likely that the rate of inflation at which households and firms perceived price stability would also be low.

After March 2006, the level of interest rates turned positive as a result of the Bank's decision to raise the policy rate twice in light of favorable developments in economic activity and prices: from 0 percent to 0.25 percent in July 2006, and further to 0.5 percent in February 2007. This level of the policy rate was maintained until October 2008.

C. Was the QE policy effective?

This unique monetary policy contributed to rapid expansion of the monetary base, both in terms of the absolute amount and as a percentage of GDP. After the size of the monetary base was expanded from 38 trillion yen in 1990 (9 percent of GDP) to 65 trillion yen (13 percent of GDP) just prior to initiation of the QE policy, it further swelled to 110 trillion yen

[6] Since the core CPI growth rate (before the adjustment) registered positive from November 2005 through January 2006 and given the already-mentioned assessment over economic and price developments, it was judged that the conditions appeared to have been met.

(22 percent of GDP) by March 2006. The scale of monetary accommodation contrasted with that in the United States and the euro area at that time (Chart 6).

Empirically, the effects of the QE policy can be examined by decomposing the transmission mechanism into the following two stages: (1) the transmission mechanism from monetary easing to financial and capital markets (first stage); and (2) the transmission mechanism from the first stage to the real economy and prices through financial and capital markets (second stage). This is conceptualized in Chart 7. Ugai (2006)[7] summarizes existing empirical analyses of the QE policy related to the first stage by focusing on the aforementioned three features of that policy: (a) the effect of expanding the size of the Bank's balance sheet (or the monetary base) by increasing the current account balance at the Bank; (b) the effect of the forward guidance policy on the expected future path of short-term interest rates; and (c) the effect of altering the composition of the Bank's balance sheet by increasing the purchases of JGBs (Chart 4).

To summarize the research results, the effect of the QE policy was traced mainly through the forward guidance policy by pushing the yield curve downward (namely, through the signaling effect). The portfolio rebalance effect meanwhile had mixed results, depending on the types of assets. In particular, the purchase of JGBs had little impact on lowering risk premiums. However, some research analyses demonstrated the presence of the portfolio rebalance effect through the channel of cross-border capital flows. Namely, the QE policy induced capital outflows, whose funds were then reinvested in Japanese stocks by foreign hedge funds, and they contributed to raising those stock prices.

With regard to the second stage, a small number of empirical studies have examined the impact of QE on macroeconomic performance. Some demonstrated that an expansion of the Bank's balance sheet had a limited impact on aggregate demand and prices; other studies showed that there was a statistically significant positive impact of QE on industrial production, but no statistically significant impact was found on the core CPI.[8]

The overall assessment of the QE policy was made by the then Bank Governor Fukui in 2006.[9] First, the policy stabilized the financial system through the ample liquidity provision at a time when there were strong concerns over its stability. The ample liquidity provided by the Bank met rising liquidity demand by financial institutions, and it thus successfully avoided a repetition of the large-scale credit crunch that occurred during the 1997–98 financial crises. Second, the policy created and maintained a very accommodative environment that supported the recovery of Japanese firms through the commitment to continue zero interest rates. In particular, bank lending rates and interest rates on corporate bonds continued to decline as a result of the flattening of the yield curve as well as the gradual decrease in credit risk premiums. Meanwhile, the Bank stressed that a side effect of the QE policy was shrinkage of the interbank markets owing to fewer arbitrage transactions and reduced demand for fund-raising from the market. This led to a decline in credit lines among financial institutions and a cut in resources allocated to the interbank market business within financial institutions. The function of the interbank market appears to have been impaired.

Moreover, it was clear that such an accommodative monetary policy could not promote active lending activities by banks (Chart 8). This was mainly attributable to the size of

---

[7] See Ugai, Hiroshi, "Effects of the Quantitative Easing Policy: A Survey of Empirical Analyses," Bank of Japan Working Paper Series No. 06-E-10, 2006.

[8] See Adachi, Seiji, "*Yen no Ashikase*," Toyo Keizai Inc., 2007; and Fujiwara, Ippei, "Evaluating Monetary Policy When Nominal Interest Rates Are Almost Zero," *Journal of the Japanese and International Economy*, Vol. 20 (3), pp. 434-53, 2006.

[9] See Fukui, Toshihiko, Opening remarks at the conference organized by the Institute for Monetary and Economic Studies entitled "Financial Markets and the Real Economy in a Low Interest Rate Environment," 2006.

negative shocks triggered by the bursting of the bubble and their subsequent impact on the financial system. Policies for dealing with the deteriorating balance sheets of financial institutions caused by ample nonperforming loans were very slow; this was partly because there was hope for a reversal of the real estate and stock price decline, which would remove the possibility of a financial crisis or stagnation of the economy. Even at a later stage, when experts finally agreed on the need to provide public support for financial institutions, measures to inject public funds into those institutions met with public opposition (Shirakawa 2012).[10] At the same time, the drag on aggregate demand was severe owing to the balance sheet problems of firms and three types of excesses – employment, investment, and debt. Nonetheless, it was pointed out that the liquidity provided by the Bank exerted a small, but still positive, effect on banks' lending activities (Bowman *et al.* 2011).[11]

III. Second round of monetary easing under the comprehensive monetary easing (CME) policy (2010 to the present)

That was a brief summary of how the Bank coped with difficult economic situations in around the first half of the 2000s. The next issue is the Bank's most recent policy framework – the CME policy that has been adopted since October 2010. But before addressing that issue, I would like to talk about how the Bank reacted to the global recession triggered by the Lehman shock in September 2008 prior to the introduction of the CME policy.

A. Quick ending of the normalization period of monetary policy

Global economic conditions deteriorated sharply after autumn 2008 with the intensification of turmoil in the U.S. and European financial systems as well as in global financial markets. Exports decreased significantly owing to a sharp downturn in overseas economies. Business fixed investment also declined substantially, which reflected the deterioration in corporate profits and financial conditions. Moreover, the yen began to appreciate against the U.S. dollar in summer 2007 with the weakening of the global risk appetite and the unwinding of the yen carry trade (Chart 5). As a result, the nominal exchange rate of the yen shifted drastically. In the household sector, private consumption weakened against a backdrop of deterioration in consumer sentiment and in the employment and income situation. Therefore, it seemed likely that the economic growth rate for 2008 would deteriorate. Meanwhile, the headline and core CPIs rapidly increased in summer 2008, which was due mainly to the surge in commodity prices. Thereafter, the effects of commodity prices gradually waned, and the headline and core CPIs started to moderate by late 2008.

Against this background, a series of accommodative monetary policy measures was adopted. First, the level of the policy rate was lowered twice: from 0.5 percent to around 0.3 percent in October 2008 and further to around 0.1 percent in December 2008. Thus, a period of raising the policy rate was sustained only during 2006–08. Similarly, the interest rate applied to the *complementary lending facility* (a backstop to provide liquidity to financial institutions) was cut from 0.75 percent to 0.5 percent in October 2008, and further to 0.3 percent in December 2008.[12] In October 2008, the *complementary deposit facility* was established and the interest rate applied to excess reserves was set at 0.1 percent.

---

[10] See Shirakawa, Masaaki, "Deleveraging and Growth: Is the Developed World Following Japan's Long and Winding Road?," Lecture at the London School of Economics and Political Science, 2012.

[11] See Bowman, David, Fang Cai, Sally Davies, and Steven Kamin, "Quantitative Easing and Bank Lending: Evidence from Japan," International Finance Discussion Papers No. 1018, Board of Governors of the Federal Reserve System, 2011.

[12] After the interest rate applied to the complementary lending facility was lowered from 0.25 percent to 0.1 percent in September 2001, the same rate was maintained during the QE policy. It was then raised to 0.4 percent in July 2006 and further to 0.75 percent in July 2007 in accordance with an increase in the policy rate.

Second, the Bank newly adopted a *three-month funds-supplying operation* at the fixed target interest rate (0.1 percent) against pooled collateral up to a total amount of 10 trillion yen in December 2009. This operation aimed at promoting a further decline in longer-term interest rates in the money market. In March 2010, the amount of this operation was raised to 20 trillion yen. In August 2010, an additional *six-month funds-supplying operation* was introduced with the maximum amount of 10 trillion yen. Thus, the total amount provided under this operation reached 30 trillion yen.

Third, the "*Special Funds-Supplying Operations to Facilitate Corporate Financing*" was established in December 2008 to ensure stability in the financial markets and facilitate corporate financing. The Bank provided financial institutions with an *unlimited* amount of funds over the fiscal year-end against the value of corporate debt pledged as the standing eligible collateral at a policy rate. It was extended three times and the implementation period ended in March 2010. Corporate bonds and CP were also purchased in 2009.

Fourth, the expression of the "understanding of medium- to long-term price stability" (introduced in March 2006) was clarified further in December 2009 by eliminating the possibility of 0 percent rate of price change. Namely, the expression was changed to "*in a positive range of 2 percent or lower with a midpoint of around 1 percent*." This measure aimed at removing public concern that 0 percent inflation would be tolerated by the Bank.

B. Framework for the CME policy

After the Lehman shock, overseas economies temporarily leveled out and showed a sharp recovery from the second half of 2009 thanks to active fiscal and monetary policies adopted collectively by major economies. However, the pace of growth began to slow somewhat after mid-2010, mainly because of the waning demand-boosting effects of fiscal policy measures. Moreover, global investors became increasingly risk averse in 2010 as the sovereign debt problem in some peripheral European countries grew into a focus of concern and uncertainty heightened over the outlook for the global economy, especially in the United States. Consequently, credit spreads on corporate bonds mainly in the United States and Europe have widened since 2010, and stock prices in many countries, including Japan, became unstable.

With regard to Japan's economy, signs of a moderate recovery were evident in 2009, but the pace began slowing down as the growth in exports and production decelerated in mid-2010. The slow pace of recovery was also expected in the near future due to the continued slowdown in overseas economies, the ending of demand-boosting fiscal policy measures to promote expenditure on durable consumer goods, and the continued appreciation of the yen. The yen continued to appreciate since it has been viewed as a relatively safe currency (Chart 5).

Given this background, the Bank introduced the CME policy in October 2010. This policy comprises the following three pillars. First, the guideline (or targeted policy rate) for money market operations was changed from "around 0.1 percent" to "around 0–0.1 percent." This policy could be regarded as a virtually zero interest rate policy. In addition, the interest rate applied to the complementary lending facility was maintained at 0.3 percent and that to the complementary deposit facility at 0.1 percent.

Second, the Bank newly introduced the forward guidance policy and made the commitment to a zero interest rate policy being maintained until the price stability defined under the "understanding of medium- to long-term price stability" was in sight.[13] The expression describing price stability was maintained as *in a positive range of 2 percent or lower with a*

[13] This commitment will be pursued under the condition that no problem is identified when examining risk factors, including the accumulation of financial imbalances. The same condition applies to all other revised commitments.

midpoint of around 1 percent. In February 2012, an important decision was made to revise this framework in two steps. The first step was to introduce "*the price stability goal in the medium to long term*," which would be "*within a positive range of 2 percent or lower*," while setting the goal "*at 1 percent for the time being*." The definition of this goal was to be examined in principle once every year. The second step was to strengthen the forward guidance policy by committing to the CME policy through the virtually zero interest rate policy and the Asset Purchase Program, which I will describe later, until the Bank judged that the *1 percent goal was in sight*.

I believe that these changes constitute a considerable departure from previous practices for two reasons. One is because medium- to long-term price stability is now defined as a "goal" and is uniformly set through the consensus of all members of the Policy Board. Previous price stability was defined as an "understanding" in a manner that embraced differing views of price stability by each member, or it was simply a collection of the board members' various views. The other reason is that at both the market and individual level, the word "goal" may be viewed as a sign of stronger action on the part of the Bank than the word "understanding" would suggest, even though the Bank's determination to conquer mild deflation is intact. It is true that some people regarded the term "understanding" as being too passive, and it did not indicate positive action by the Bank. For this reason, these changes accompanied the decision to increase the total size of the Asset Purchase Program by 10 trillion yen, partly to demonstrate the Bank's strong commitment and also to ensure the path toward economic recovery. I take the view that these actions helped promote public understanding of the Bank's determination to overcome mild deflation.

Third, the Bank introduced the Asset Purchase Program to promote the decline in *longer-term interest rates* and various *risk premiums*. The assets to be purchased under the program covered JGBs (with a remaining maturity of one to three years),[14] treasury discount bills (T-Bills), commercial paper (CP), corporate bonds, exchange-traded funds (ETFs), and Japan real estate investment trusts (J-REITs). The existing three- and six-month funds-supplying operations are still in effect. The total outstanding amount of assets to be purchased and funds-supplying operations (hereafter called simply the amount of the Asset Purchase Program) was initially set at about 35 trillion yen, and it was decided to meet the target by the end of 2011. Since then, monetary easing has been repeatedly strengthened. The total amount of the program was increased eight times from the initial 35 trillion yen to the current target of 101 trillion yen (to be completed by the end of 2013), as shown in Chart 9. During 2012, the program was expanded five times (February, April, September, October, and December). The increase has been conducted mainly through the purchase of JGBs (from an initial 1.5 trillion yen to 44 trillion yen) and T-Bills (from an initial 2 trillion yen to 24.5 trillion yen).

C. What are the differences between the QE and CME policies?

The CME policy differs from the QE policy in several ways. First, the Asset Purchase Program covers a wider range of financial assets than those of the QE policy and those of other central banks with nonstandard monetary policies. This reflects the view that the direct purchase of various financial assets may encourage the further decline in longer-term interest rates and risk premiums through possibly greater portfolio rebalance and signaling effects (Chart 10).

Second, the CME policy directly aims at lowering longer-term interest rates and risk premiums through an emphasis on asset purchases – the *asset side of the Bank's balance sheet*. This is a sharp contrast from the QE policy, where the main focus was on the size of

[14] In addition to the Asset Purchase Program, the Bank regularly purchases JGBs (with the remaining maturity of up to 30 years, including that of one year or less) at the rate of 21.6 trillion yen per year to counterbalance the increased amount of banknotes in circulation.

the current account balance at the Bank – the *liability side of the Bank's balance sheet*. It is important to note that the volume of the current account balance is less emphasized here than in the QE policy. Instead, with the CME policy it is important to examine whether there is room for further monetary easing by encouraging a further decline in longer-term interest rates and risk premiums. Thus, the size of excess reserves is no longer a target and is endogenously determined as a result of market operations.

Third, the positive interest rate of 0.1 percent applied to the *complementary deposit facility* (introduced in October 2008) remains under the CME policy, while the policy target was set in the range of around 0–0.1 percent. This differs from the QE policy, where no such a facility was present under the zero short-term interest rate environment. The Bank pays an interest rate of 0.1 percent on banks' excess reserves with the Bank for several reasons. First, as pointed out earlier with respect to the assessment of the QE policy, shrinkage of the interbank markets may generate a situation in which financial institutions are unable to raise funds promptly from the markets when most needed. As a related issue, since this interest rate forms the floor for interbank market interest rates, the Bank is able to smoothly provide sufficient liquidity to the market without causing large fluctuations in the interbank market rates. Moreover, as a future issue, it has also been pointed out by Svensson (2012)[15] that maintaining such a deposit facility interest rate makes it easier for a central bank to conduct an exit strategy smoothly by containing excessive inflation risks within the phase of economic recovery. If such a rate already exists, a central bank may be able to raise the deposit facility interest rate, thereby leading to higher interbank market interest rates even if there are ample excess reserves.

However, positive aspects related to removing the interest rate have been pointed out. For example, a positive impact on the yen's depreciation could be expected by further lowering short-term interest rates. One issue over which there is a lack of clarity concerns the impact of removing the deposit facility interest rate on financial institutions' lending behavior. There is a view that removing such an interest rate may increase their lending since there is no gain from placing excess reserves with the Bank. On the other hand, it has been stressed that such removal would lower financial institutions' profitability and thus rather stifle the incentive to take credit risks by increasing lending activities. Such pros and cons related to the deposit facility interest rate need to be better understood and properly discussed in light of the impact on overall economic and price movements.

Similarly, the Federal Reserve applies a positive interest rate on the deposit facility at 0.25 percent while the target policy rate is set in the range of 0–0.25 percent. This is a possible reflection of maintenance of the interbank market function being regarded as essential in the United States. Meanwhile, the European Central Bank (ECB) dropped the deposit facility interest rate from 0.25 percent to 0 percent in July 2012 while lowering the interest rate charged on marginal refinancing operations from 1 percent to 0.75 percent. This can probably be attributed to the limited adverse impact of such a rate cut on the interbank market given that financial institutions already depend heavily on central bank liquidity provisions; this is a result of the segmented, malfunctioning interbank market in the euro area since the deepening of sovereign debt problems.

D. Is the bank's framework different from inflation targeting?

Globally, a number of central banks adopt inflation targeting, such as those in Canada, New Zealand, Norway, Sweden, and the United Kingdom. It is widely known that inflation targeting actually refers to *flexible inflation targeting* for these countries, as clarified by Dr. Lars E.O. Svensson, the distinguished scholar in the field of finance theory and deputy governor

[15] See Svensson, Lars E. O., "Practical Monetary Policy: Examples from Sweden and the United States," NBER Working Paper Series No. 17823, 2012.

of the Riksbank in Sweden. Flexible inflation targeting is different from the original strict interpretation of inflation targeting, which focuses solely on price stability. Flexible inflation targeting refers to the conduct of monetary policy that attempts to choose a policy rate path such that the corresponding forecasts for inflation and output gap (or other resource utilization measures) seem best for stabilizing inflation around the inflation target and output gap around a sustainable level. Thus, rather than simply achieving the inflation target at any cost, flexible inflation targeting aims to attain a better balance between securing inflation stability and reducing negative output gap. In this sense, achieving the inflation target will be attempted in the medium to longer term by taking into account various shocks that occur unexpectedly and considering their impacts on economic growth performance. Namely, monetary policy is conducted flexibly.

Moreover, the global financial crisis has woken central banks to the fact that adhering to inflation targets was unable to avoid the financial crisis triggered by the Lehman shock. Thus, there is an increasingly shared view among central banks that attending to financial imbalances is an important element in conducting monetary policy. For these reasons, flexibility in monetary policy is stressed under the current flexible inflation-targeting framework, in which a number of central banks permit deviation of actual inflation from inflation targets. Sometimes, such deviations can last quite a long time.

The Bank does not adopt an inflation-targeting framework, but it conducts monetary policy flexibly in the manner of a central bank under a flexible inflation-targeting framework by taking into account the impact on economic growth performance and financial imbalances. There are a number of other similarities between its policies and such a framework.

First, the medium- to long-term price stability goal is set within a positive range of 2 percent or lower. This indicates that the numerical goal of 2 percent (the level of inflation often adopted as an inflation target under the flexible inflation-targeting framework) is not rejected, but the range of inflation is broad to allow consensus among board members holding differing views. The short-term goal was set at 1 percent for two main reasons: (1) to take into account past price movements (or price perceptions among households and firms); and (2) to accommodate the view that a longer-term goal could be achieved in conjunction with efforts to strengthen potential economic growth by various constituents, including the government, the Bank, financial institutions, and firms. If such collective efforts bear fruit, it is very possible to achieve the inflation rate above 1 percent. Regarding the medium- to long-term price stability goal, Mr. Shirakawa, the governor of the Bank and chairman of the Monetary Policy Meeting, gave instructions at the meeting in December 2012 that the definition of price stability as well as its numerical expression could be discussed at the next meeting in January, as almost a year would pass since the price stability goal was introduced in February 2012.

Second, the Bank makes a strong commitment to maintaining the CME policy with the aim of achieving the 1 percent goal. Since this is a promise to markets and individuals, the degree of the Bank's determination to cope with current economic difficulties is no different from that of other central banks in adopting flexible inflation targeting. However, if such an intention is not well received, the Bank may need to seek better communication strategies.

Third, the Bank and other central banks have defined their perspectives on economic growth and general prices for the next few years by means of regular reports. In the case of the Bank, the report called the "Outlook for Economic Activity and Prices" is published twice a year (April and October) and describes the baseline scenario and examines the likelihood of this scenario coming about. In addition, the report analyzes whether the Japanese economy is likely to return to a sustainable growth path with price stability in the longer run. At the same time, the Bank examines the risks related to the conduct of monetary policy (i.e., financial imbalances, uncertainty related to global demand, and tail risks arising from other countries). The medium-term review over those prospects is conducted in January and July each year.

Fourth, as a related issue, it should be noted that both the Bank and other central banks under flexible inflation targeting adopt an *inflation forecast approach*, not an *actual inflation approach* in conducting monetary policy. This reflects the fact that "current" inflation is essentially predetermined by the following: (1) previous decisions by firms and households; (2) past wage contracts; and (3) several shocks and other factors (such as value-added tax [VAT] and sales taxes). Thus, central banks have imperfect control over "actual" inflation, as explained by Dr. Svensson (1996).[16] Moreover, both markets and individuals may find it difficult to monitor and evaluate monetary policy, since the impact of monetary policy appears with a lag of about one and a half to two years depending on economic circumstances and thus they have to wait that length of time before any proper evaluation can be made.

For these reasons, the reality is that central banks can affect only *future inflation* or an *inflation forecast* – not actual inflation, as Dr. Svensson pointed out. And such an inflation forecast becomes an *intermediate target* toward achieving the inflation target (or goal). The main point here is to bring the inflation forecast closer to the inflation target (or goal) within a certain period. In this sense, the expression used by the Bank for describing the forward guidance policy – maintaining the CME policy until the Bank judges that the "*1 percent goal is in sight*" – could be interpreted as adopting an inflation forecast approach. This inflation forecast approach is a standard approach adopted by many central banks around the world. However, some people regard the term "in sight" as having a passive connotation and not signaling the Bank's strong determination to achieve that 1 percent goal. Thus, how to signal the Bank's intention correctly to the market and the general public could be one of the issues for further discussion.

E. Was the CME policy effective?

The CME contributed to a large expansion of the monetary base and exceeded the maximum level observed during the QE period of 2001–06 (Chart 6). Please recall that the Bank had already expanded the size of the monetary base significantly since the 1990s by conducting a series of accommodative monetary policy measures in response to various negative shocks. Thus, the size of the monetary base as a percentage of GDP was already higher than those of the United States and the euro area when the Lehman shock occurred. In response to the financial crises, the United States and the euro area injected massive liquidity to the market. Japanese financial institutions, on the other hand, avoided the financial crisis this time owing to the relatively sound balance sheets after having experienced the crisis in the 1990s. Nonetheless, the size of the monetary base expanded under the CME and currently exceeds 26 percent of GDP – higher than those of the United States (17 percent of GDP) and the euro area (18 percent of GDP).

In the current very accommodative monetary environment, domestic financial markets have remained favorable. In the money market, the overnight call rate remains at extremely low levels. Interest rates on term instruments and lending rates have declined further (Chart 11). As a whole, firms' funding costs through bank loans and the issuance of CP and corporate bonds have declined to record low levels. Moreover, long-term bond yields have been declining steadily. In particular, the yields on JGBs up to three years have declined and flattened. Furthermore, the financial market remained resilient after the Great East Japan Earthquake of 2011, partly because the Bank reacted quickly with a prompt injection of massive liquidity to the financial system in order to preempt possible deterioration in investors' confidence.

By means of an event study, it has been empirically demonstrated that the CME policy has a positive impact on financial markets. Following the monetary easing events, that study

[16] See Svensson, Lars E. O., "Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets," NBER Working Paper No. 5797, 1996.

determined that the yields on JGBs declined across all maturities. Similarly, corporate yields decreased across investment grades, and bond issuances also improved. The prices of J-REITs surged. The Bank's monetary easing fended off a further appreciation of the yen and supported stock prices. Most of the impact on financial markets arose from the announcement of new easing measures, rather than from subsequent actual purchases. This suggests that investors tend to price the expected impact of the Bank's subsequent operations or purchases immediately upon an announcement being made.[17]

Meanwhile, firms' demand for external funds remains weak in the presence of improved cash flow and limited domestic and foreign demand. The amount of outstanding bank loans in the private sector has recently showed an increase, though at a very moderate pace (Chart 8). During the previous QE period, it was viewed that banks' lending activities remained sluggish mainly because of the balance sheet problems of banks and firms. However, even after the soundness of their balance sheets was restored and financial institutions' lending attitude became favorable, lending activities remained moderate. This mainly reflects a shortage of credit demand arising from sluggish economic activities and could be partially attributable to the structural issues that I would now like to discuss.

IV. Structural issues related to the conduct of monetary policy

In this final section, I would like to point out some structural changes that have been affecting the environment surrounding the conduct of monetary policy as well as the Bank's efforts to cope with the various issues.

A. Structural issues affecting macroeconomic performance

To begin with, demographic changes are one of the most important ongoing structural issues that Japan faces. Globally, Japan is taking the lead in dealing with demographic trends and associated macroeconomic issues. It is well known that Japan has faced a decline in its working-age population (15–64 years) in absolute terms since the mid-1990s. The trend of a declining total population began in 2011 (Chart 12). As a result, Japan has become the most advanced aging society in the world. The rapid reversals in the growth rates of the working-age population and total population seem unprecedented at the global level.

Why are Japan's demographic changes occurring so fast and taking the lead in the world? This situation is due to a low level of the fertility rate, limited migration inflows, and longevity being simultaneously present. Let us look first at the total fertility rate (average number of children that would be born to a woman over her lifetime). Chart 13 shows that there is a sharp difference between Japan (1.39) and the United States (2.01). Though the rates of Germany (1.39) and Italy (1.41) are comparable to that of Japan, some advanced European countries have higher rates, as exemplified by France (2.03), the United Kingdom (1.98), Sweden (1.98), and Finland (1.87). In Asia, some economies have total fertility rates that are even lower than Japan's; they include South Korea (1.22), Singapore (1.15), Hong Kong (1.11), and Taiwan (0.90). So Japan is not unique in terms of its low fertility rate. However, the reason for Japan taking the lead in demographic changes arises from a low *net migration rate* and the rapid growth of the elderly population. The net migration rates (defined as the difference between immigrants and emigrants divided by 1,000 inhabitants) are very high in Singapore (15.62), Italy (4.67), and the United States (3.62). Although the rate in Germany (0.71) is relatively low, it exceeds Japan's (0).

With regard to aging, the *elderly dependent ratio* – defined as the ratio of the elderly population (aged 65 years and above) to the working-age population – in Japan has been quickly rising (Chart 14). The ratio is higher than that of other economies, such as Germany

[17] See for example Lam, W. Raphael, "Bank of Japan's Monetary Easing Measures: Are They Powerful and Comprehensive?," IMF Working Paper WP/11/264, 2011.

and Italy, whose rate of aging is faster than in other European countries. This reflects the fact that Japan's life expectancy at birth is greater than in other countries (Chart 15). Moreover, the ratio of the elderly population to the total population (the *elderly population ratio*) is the highest in Japan (23 percent), followed by Germany and Italy (20.6 percent each). These levels are much higher than in France (17 percent) and the United States (13 percent). Also, Japan's elderly population ratio is much higher than the aforementioned Asian economies whose total fertility rates are low: Hong Kong (13 percent), South Korea (11 percent), Taiwan (11 percent), and Singapore (9 percent). This is why aging issues tend to be regarded in Asia (excluding Japan) as being on the future structural agenda in spite of frequently reported articles and growing awareness.

It is clear that the main issue for Japan is how the society will cope with the rapidly declining rates of its working-age and total populations (charts 16 and 17). Though Germany follows Japan with regard to declining trends in working-age and total populations, those trends could be partially mitigated by net immigration flows. Moreover, it has been noted that there is no sign of a decline in the working-age and total populations in the United States. In other words, it may not be appropriate to compare Japan with the United States when the impact of demographic changes on the macroeconomic performance or the environment surrounding the conduct of monetary policy is being examined.

B. Why are structural issues so important for the conduct of monetary policy?

The following question naturally occurs: how do demographic changes affect Japan's macroeconomic performance? In answering that question, let us first examine Japan's *economic growth* trend. Demographic changes – especially the decline in the working-age population – have been depressing Japan's potential growth and thus its actual economic growth over the past decade (Chart 18). The impact of these changes occurs in various ways, including a direct decrease in the labor force, slow growth in labor productivity, and a shift in the consumption structure from manufacturing to nonmanufacturing. Moreover, demographic changes affect the economic growth performance by contributing to sluggish *expectations for economic growth* (namely, slow sales market growth expected domestically by firms and limited income growth expected by households), and reduced demand for business and residential investment (Chart 19).[18] Therefore, it is essential for Japan to raise productivity growth (namely, the rate of per-worker growth in real GDP), which mitigates the negative impact of growth in the labor force (Chart 18) and, simultaneously, find ways to cope with the rapid pace of demographic changes.

In addition to economic growth, Japan's *output gap* has remained negative for almost the entire period since the mid-1990s (Chart 1). Generally, the negative output gap (excess supply) is regarded as being caused by cyclical factors or temporary shocks to the economy, such as natural disasters. Indeed, the output gap has deteriorated following a series of domestic and external shocks, such as the collapse of the asset bubble in the early 1990s, the Japanese financial crisis and East Asian currency crises in the second half of the 1990s, the collapse of the IT bubble in the United States during the early 2000s, the global financial crisis of 2008, the European sovereign debt problems since 2010, the Great East Japan Earthquake and Thailand floods of 2011, and the spreading effects of recent developments in the relations between Japan and China. Except for a short period, this series of shocks has prevented the negative output gap from narrowing quickly to positive territory.

---

[18] See Shirai, Sayuri, "Have Demographic Changes Affected Japan's Macroeconomic Performance? – Some Implications for Monetary Policy –," Speeches at the Bank of Finland, the Riksbank, and Stockholm University, Bank of Japan, 2012; and Shirai, Sayuri, "Demographic Changes in Asia and Japan's Economic and Financial Developments," Summary of a Speech at a Meeting with Business Leaders in Kumamoto, Bank of Japan, 2012.

In addition, structural issues have also contributed to the long-standing negative output gap. Some may argue that the output gap is likely to shrink quickly if firms adjust their production plans in response to a shortage in demand. However, this may not necessarily be the case in Japan. Let us imagine an economy in which firms in existing, declining industries survive despite declining demand and profitability and do not rapidly adjust their business models to cultivate newly emerging or potentially large markets (i.e., goods and services related to the elderly population, medical treatment, pharmaceuticals, robotics, and energy). Such structural rigidity may be sustained because of various regulations, a lack of adequate support in developing new industries, and slow corporate responses. In such a case, the negative output gap is likely to persist in existing industries, while newly emerging or potentially large markets do not promptly develop to stimulate new demand (and possibly, generate a positive output gap). This may lead not only to a persistent negative output gap, but also to sluggish economic growth even after the output gap has been eliminated.

Furthermore, the phenomenon of long-standing *mild deflation* could be associated with such structural issues. To conquer deflation, it is essential to mitigate these structural issues and give rise to the following situations: (1) a permanent shift of the output gap from negative (excess supply) to positive (excess demand); (2) a rise in expectations for future economic growth that lead to higher inflation expectations; and (3) stable income and wage growth without adversely affecting firms' competitiveness and profitability. Though those situations are interrelated, an improvement in expectations for economic growth – as described in situation (2) – may be essential since it could exert a favorable effect in both situation (1) and situation (3), thereby setting the stage for stable price increase (charts 19 and 20).

C. Banks' efforts to stimulate potential economic growth and credit demand

In the light of this situation, the Bank has been examining how monetary policy could contribute to mitigating the structural issues and associated macroeconomic performance. With a view to promoting potential growth from the perspective of monetary policy, the Bank introduced a new facility called the *Growth-Supporting Funding Facility* in 2010 (Chart 21). This facility aims at providing financial institutions with longer-term funds (with a maturity of one year, but this can be rolled over up to three times). The interest rate is low – currently 0.1 percent. The funds will be provided to financial institutions based on their applications for loans and investment extended by them in *growth-oriented* sectors. The maximum amount of funds available under this facility is 3.5 trillion yen. Under this facility, the Bank also provides separate funds for financial institutions if they perform *asset-based lending* ([ABL] up to 500 billion yen) and small-lots investments and loans (up to 500 billion yen). Moreover, U.S. dollar lending is provided by using the U.S. dollar reserves held by the Bank (up to 12 billion U.S. dollars).

In October 2012, the Bank decided to establish the framework for the *Stimulating Bank Lending Facility* by way of supporting active lending activities by financial institutions, thereby stimulating credit demand by firms and households (Chart 21). This facility, which will be introduced in 2013, will provide long-term yen-denominated funds at a low cost (0.1 percent) to financial institutions up to an amount equivalent to the *net increase in their lending to firms and households*. With this new facility, the coverage of eligible loans extended to financial institutions is wider than with the Growth-Supporting Funding Facility. The duration of each loan will be one, two, or three years, and it will be possible for the loans to be rolled over for up to four years. The total amount of funds provided by the Bank will be *unlimited*. Financial institutions eligible for loans under this facility include foreign branches of domestic financial institutions and both their yen-denominated and foreign currency-denominated lending can be covered. This reflects the view that the growth potential of financial institutions and firms is closely linked to their overseas activities in this globalization era and that their enhanced competitiveness would indirectly boost the growth of the Japanese economy. Given that the actual annual increase in loans extended by financial institutions amounted to 15 trillion yen, it is possible that this facility could invite more than that amount. The Bank designated this

facility, together with the aforementioned growth-supporting funding facility, the *Loan Support Program*. Both facilities will be maintained until the end of March 2014.

V. Conclusions

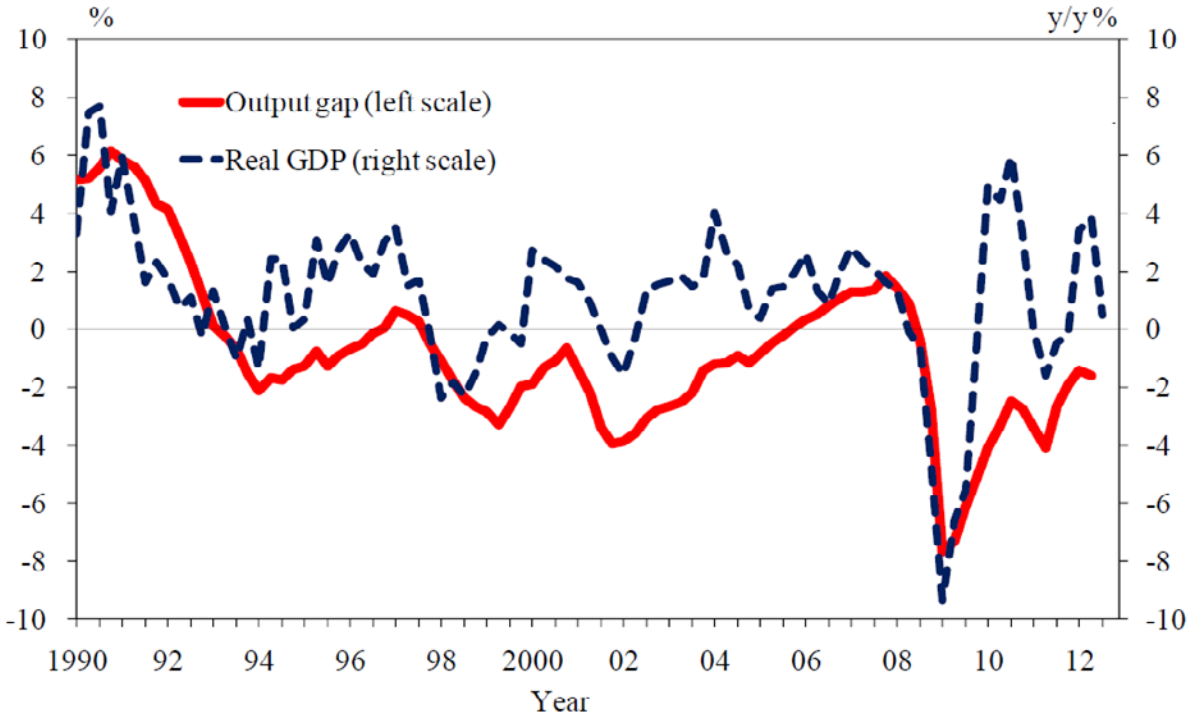
Finally, I would like to stress that I remain optimistic that the issues of low potential economic growth, negative output gap, and mild deflation can be overcome in the medium term. This is because many Japanese firms are striving to become more innovative and competitive in addition to exploring new sources of demand, both at home and abroad. With their high technology level and experience, I believe Japanese firms can take the lead in developing innovative, higher value-added goods and services in such areas as robotics, medical treatment and elderly care, medical supplies, biotechnology, and energy. Many newly developed goods and services are likely to contribute to creating a more convenient, comfortable life for the elderly. Such business opportunities can also be explored globally – especially in Europe, where the pace of aging is rapidly progressing, and in Asia's high-income aging economies. The competitiveness of Japanese firms is likely to be strengthened further if a more business-friendly environment is created.

The Bank will continue to support the business community by ensuring an accommodative monetary environment and providing long-term funds through financial institutions. The Bank recognizes that Japan's economy faces the critical challenge of overcoming deflation as early as possible and achieving sustainable growth with price stability. Meanwhile, I will continue to devote myself to considering how the Bank can best respond to the current challenging environment without being biased in advance to possible measures. In addition, I would like to make greater efforts to improve the communication strategies in order to facilitate an understanding of the Bank's monetary policy both in Japan and abroad.

Thank you very much for your kind attention.

Chart 1

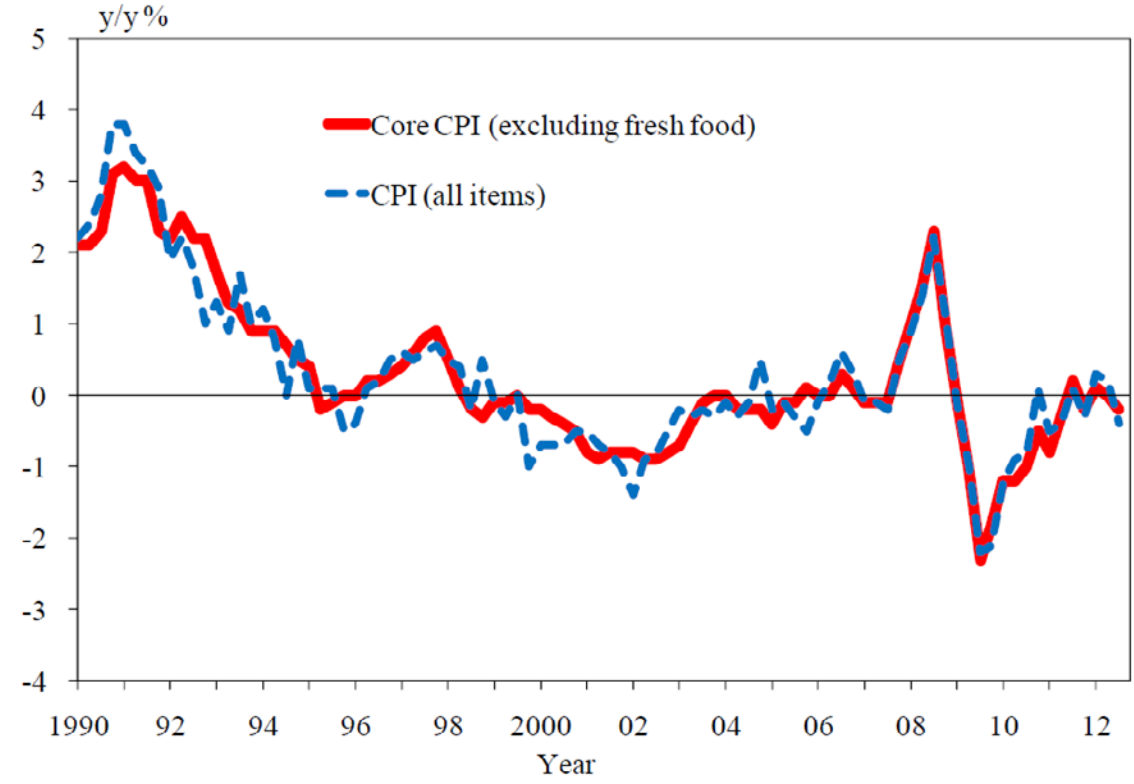
Real GDP Growth Rate and Output Gap



Sources: Cabinet Office; Bank of Japan.

Chart 2

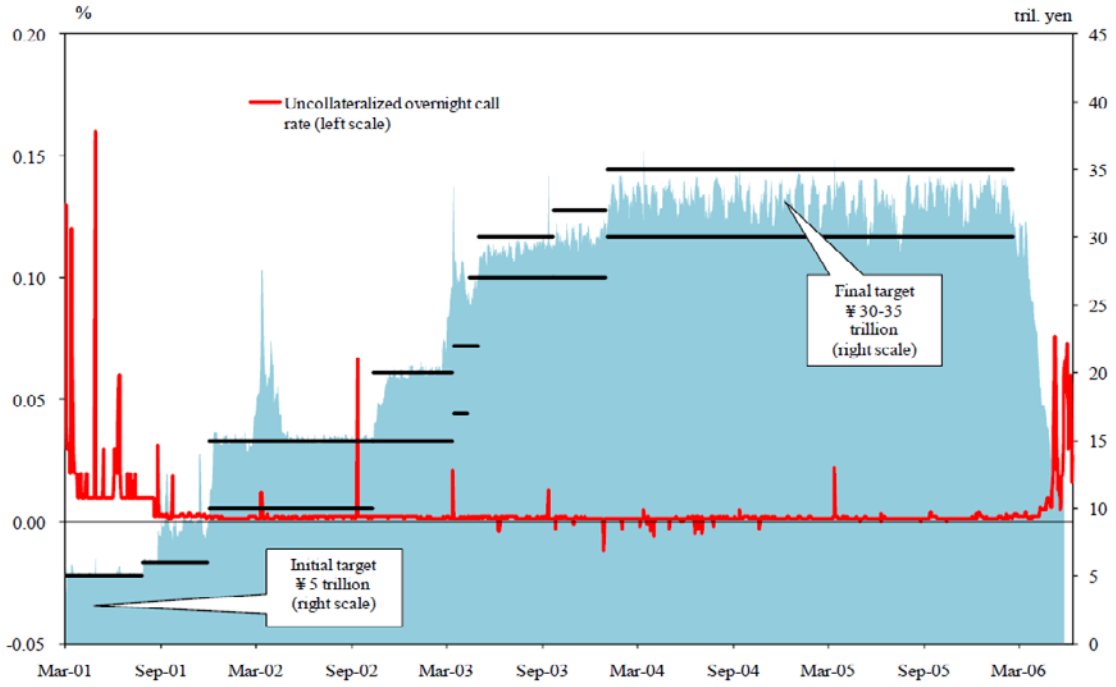
Price Developments



Source: Ministry of Internal Affairs and Communications.

Chart 3

Current Account Balance at the Bank of Japan and Overnight Call Rate



Source: Bank of Japan.

Chart 4

Impacts of the Quantitative Easing (QE) Policy

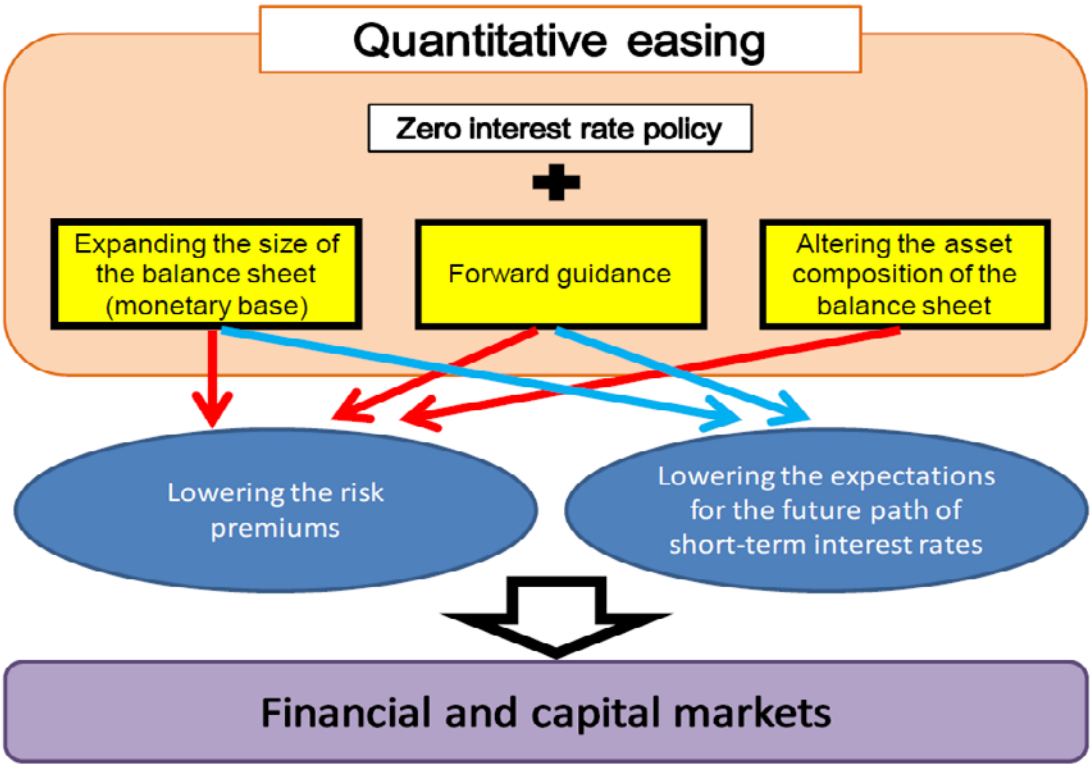
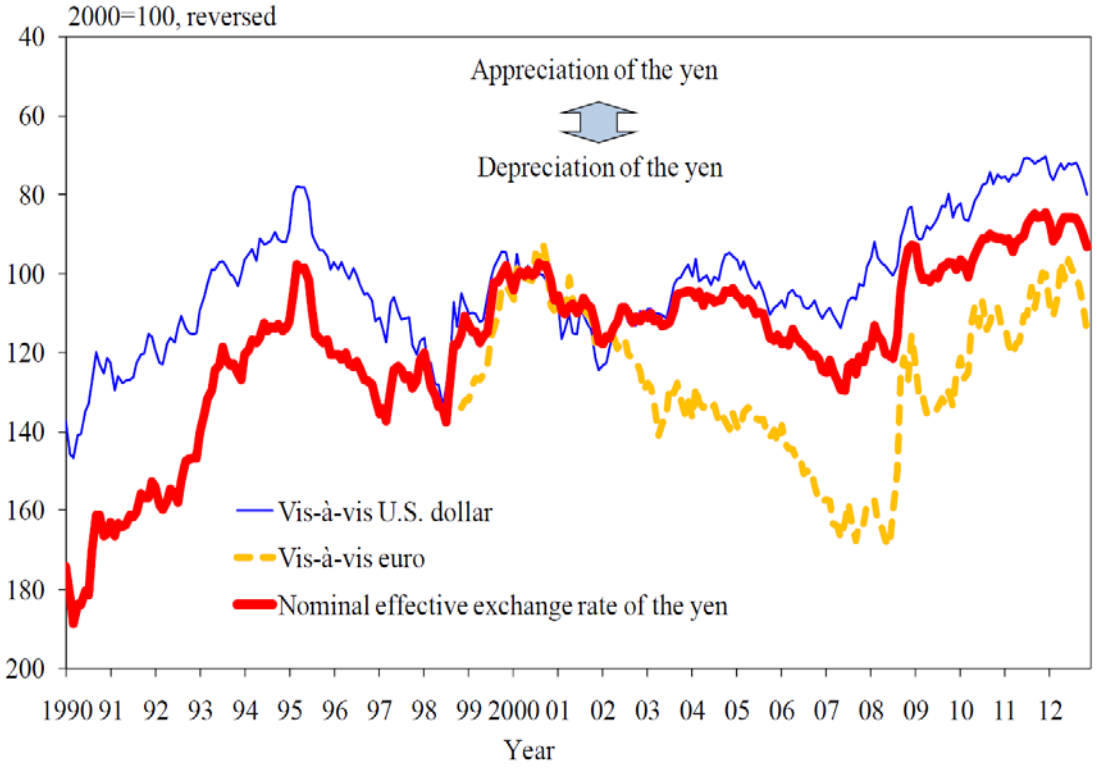


Chart 5

Japanese Yen Exchange Rates

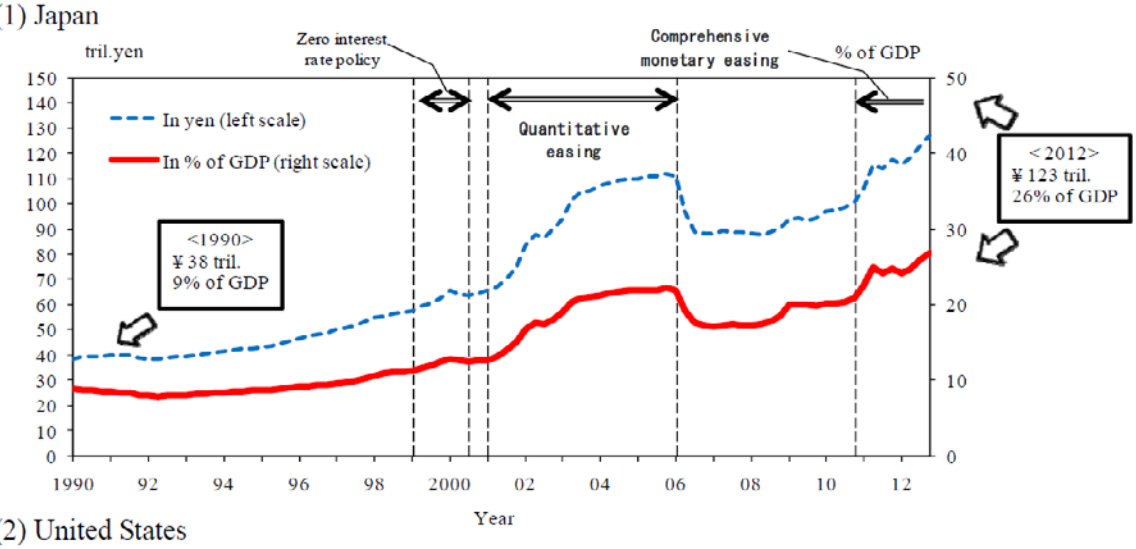


Source: Bloomberg.

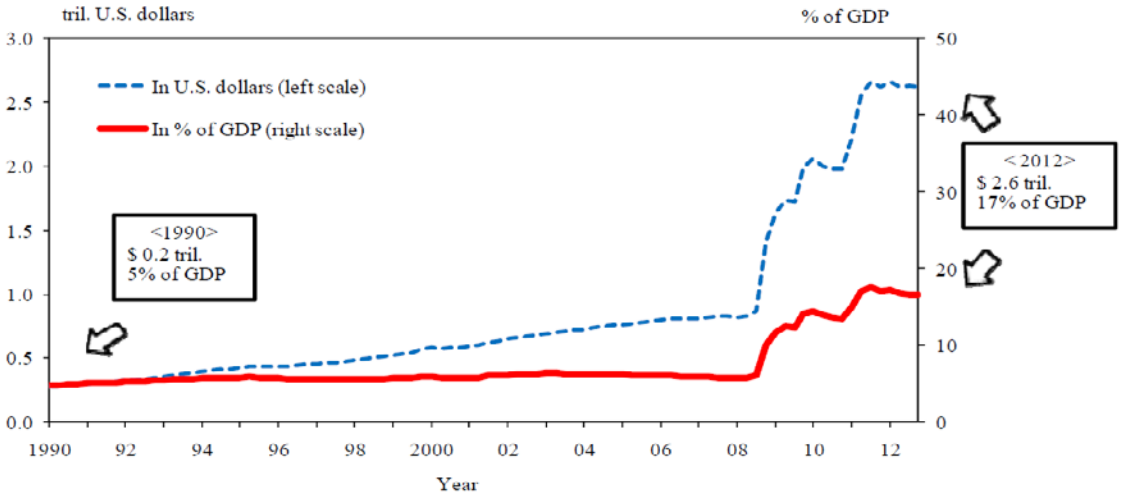
Chart 6

Monetary Base in Major Economies

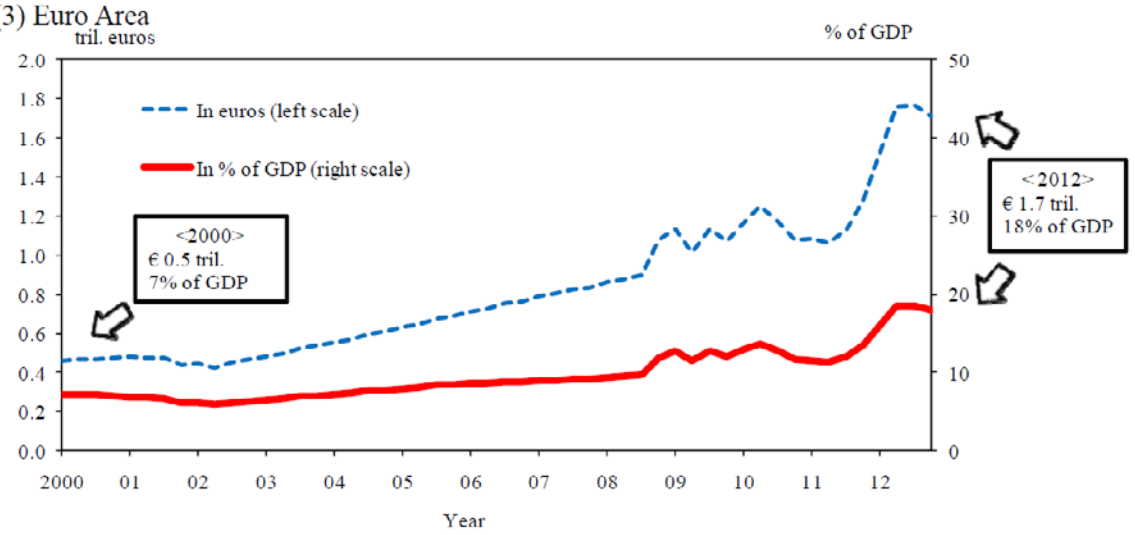
(1) Japan



(2) United States



(3) Euro Area



Sources: Cabinet Office; Bank of Japan; Federal Reserve; European Central Bank; Eurostat.

Chart 7

Transmission Mechanism of Quantitative Easing (QE)

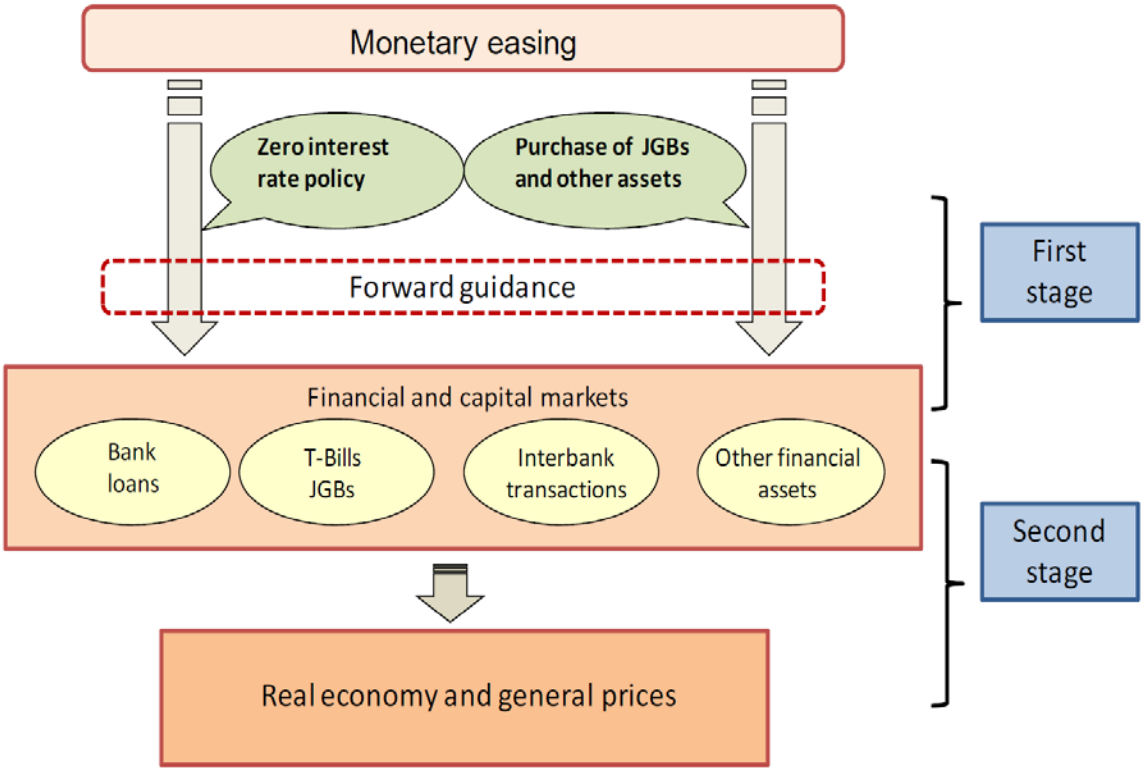
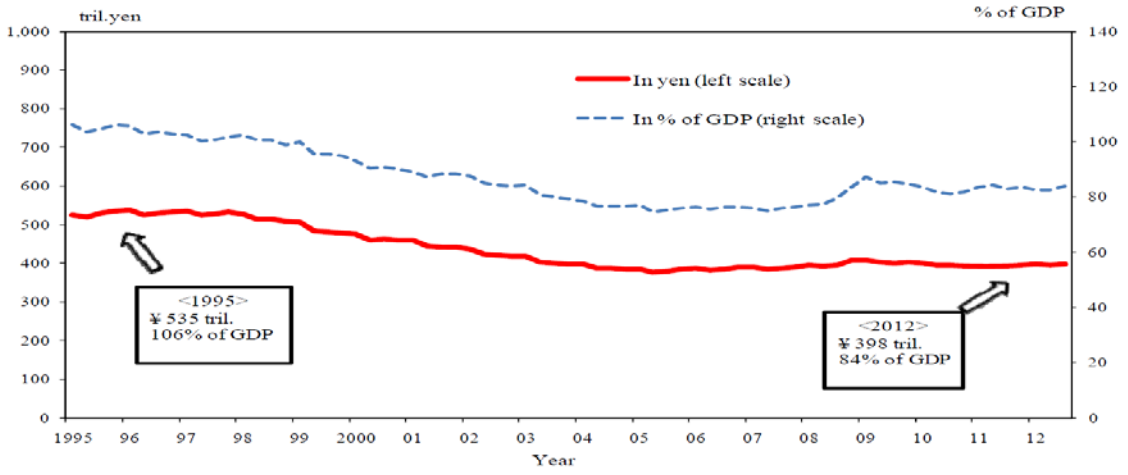


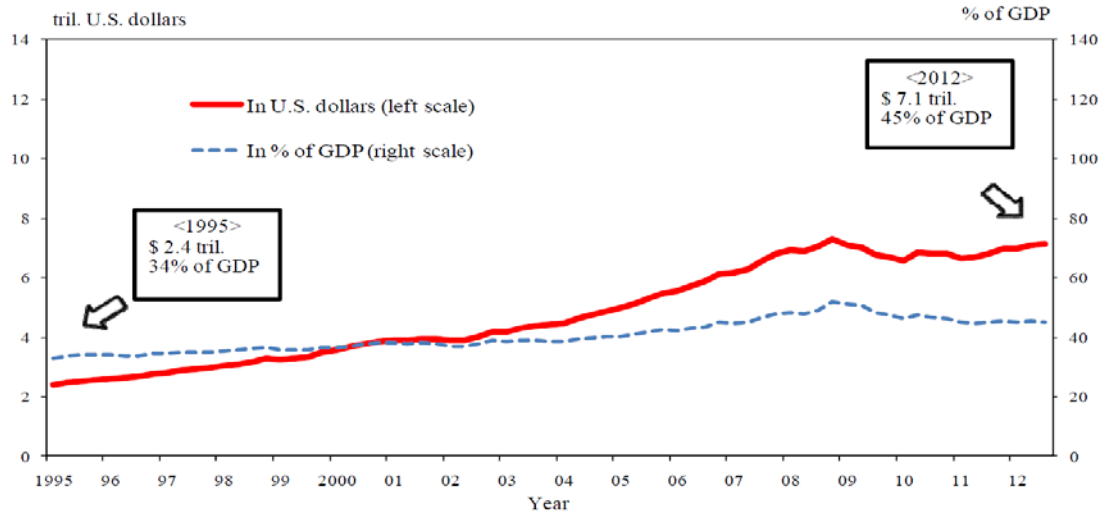
Chart 8

Bank Loans in Major Economies

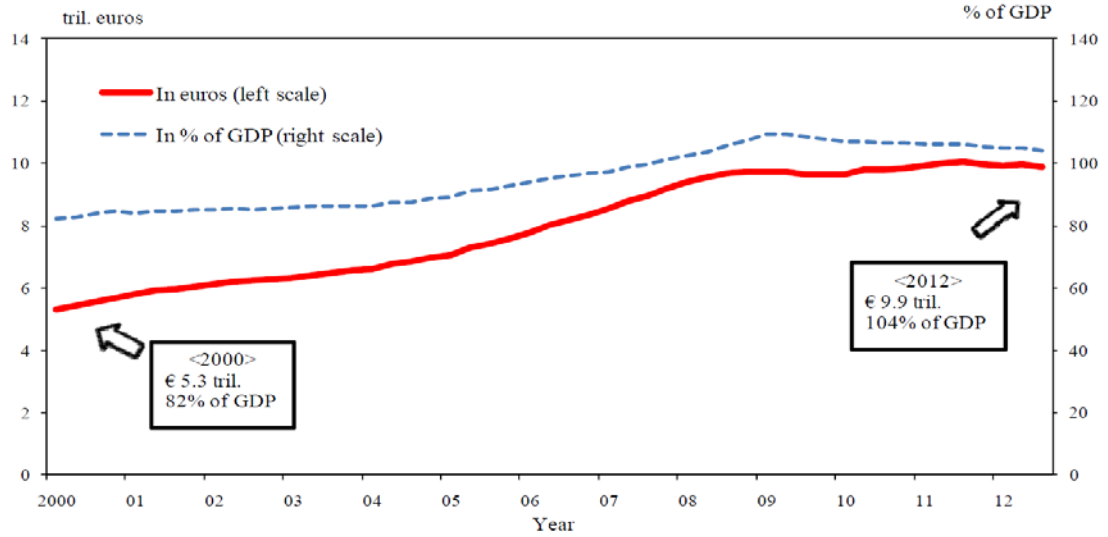
(1) Japan



(2) United States



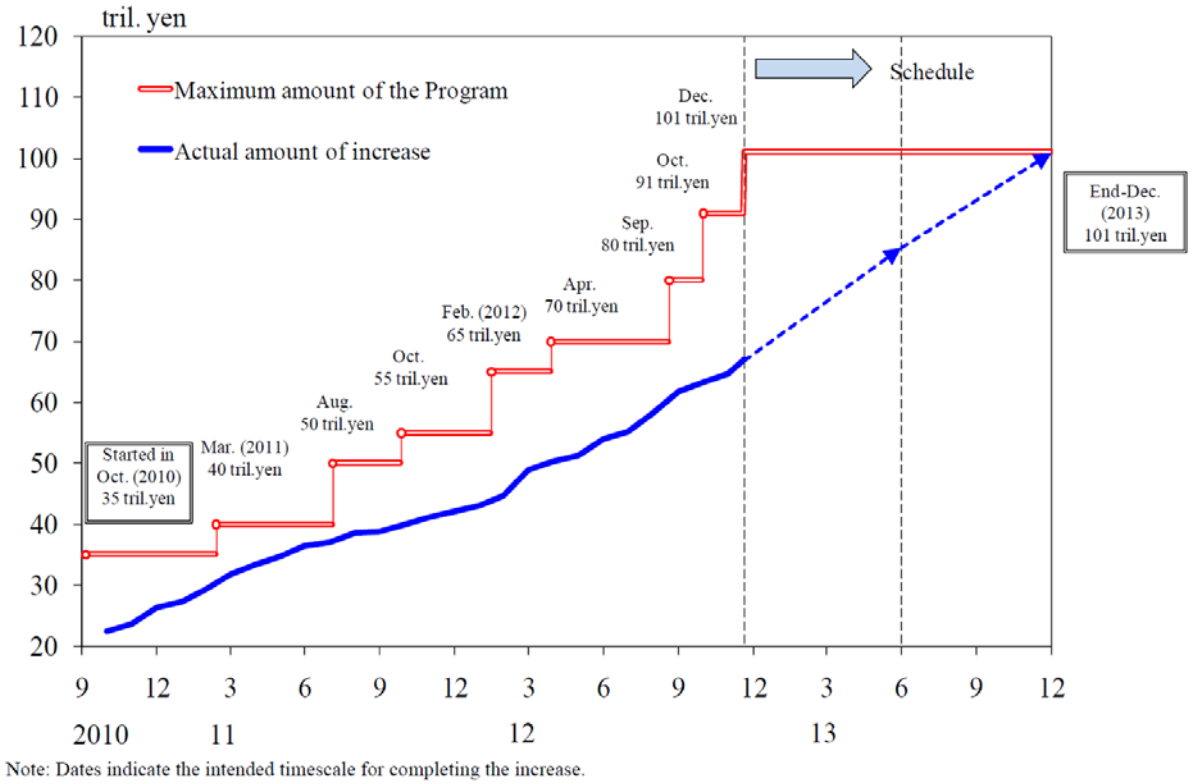
(3) Euro Area



Sources: Cabinet Office; Bank of Japan; Federal Reserve; European Central Bank; Eurostat.

Chart 9

Size of the Asset Purchase Program



Note: Dates indicate the intended timescale for completing the increase.

Chart 10

Transmission Mechanism of the Comprehensive Monetary Easing (CME)

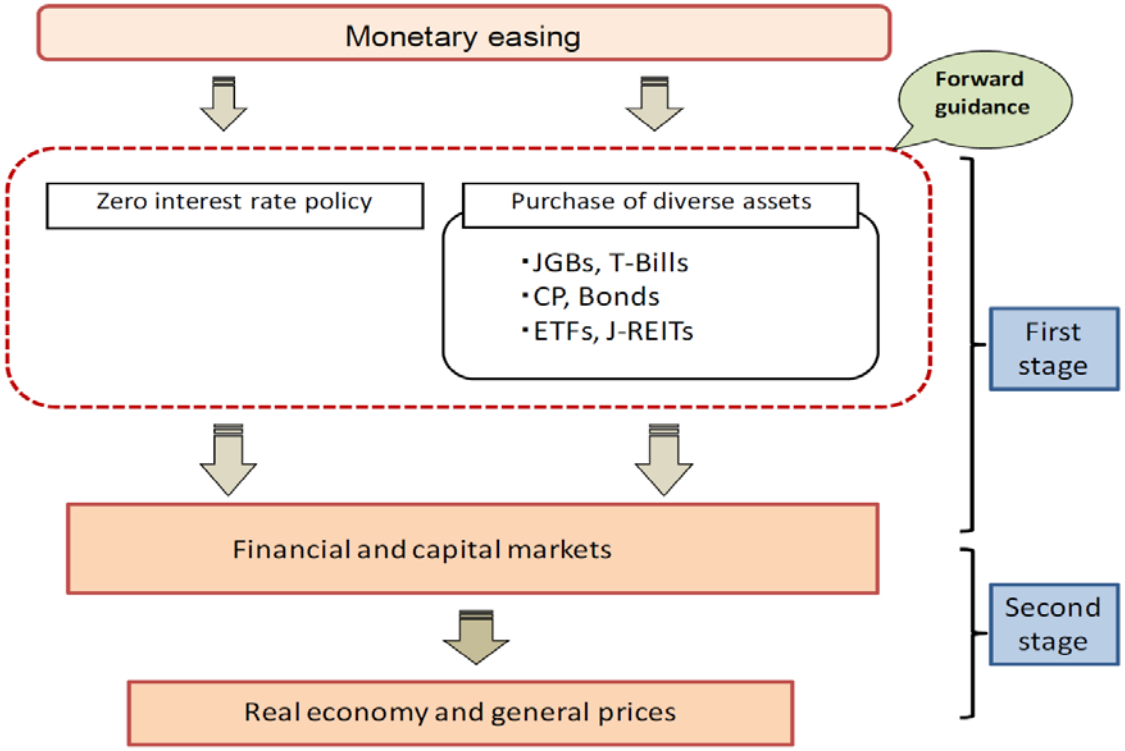
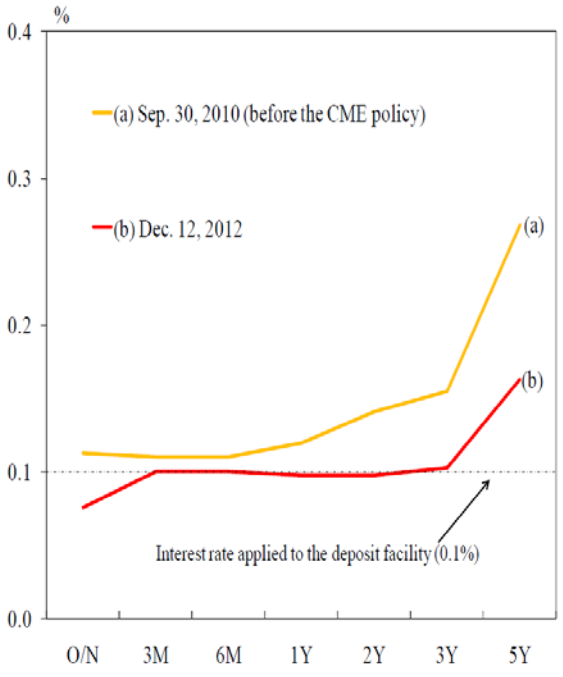


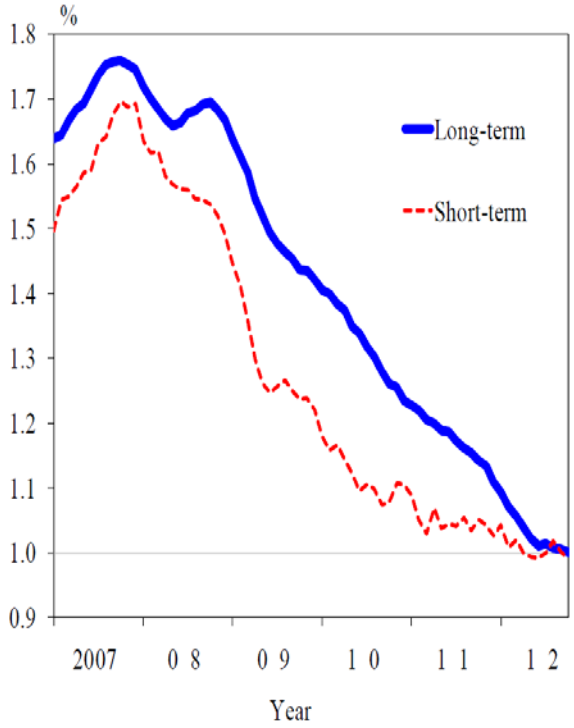
Chart 11

Interest Rates

(1) Bond Yield Curves



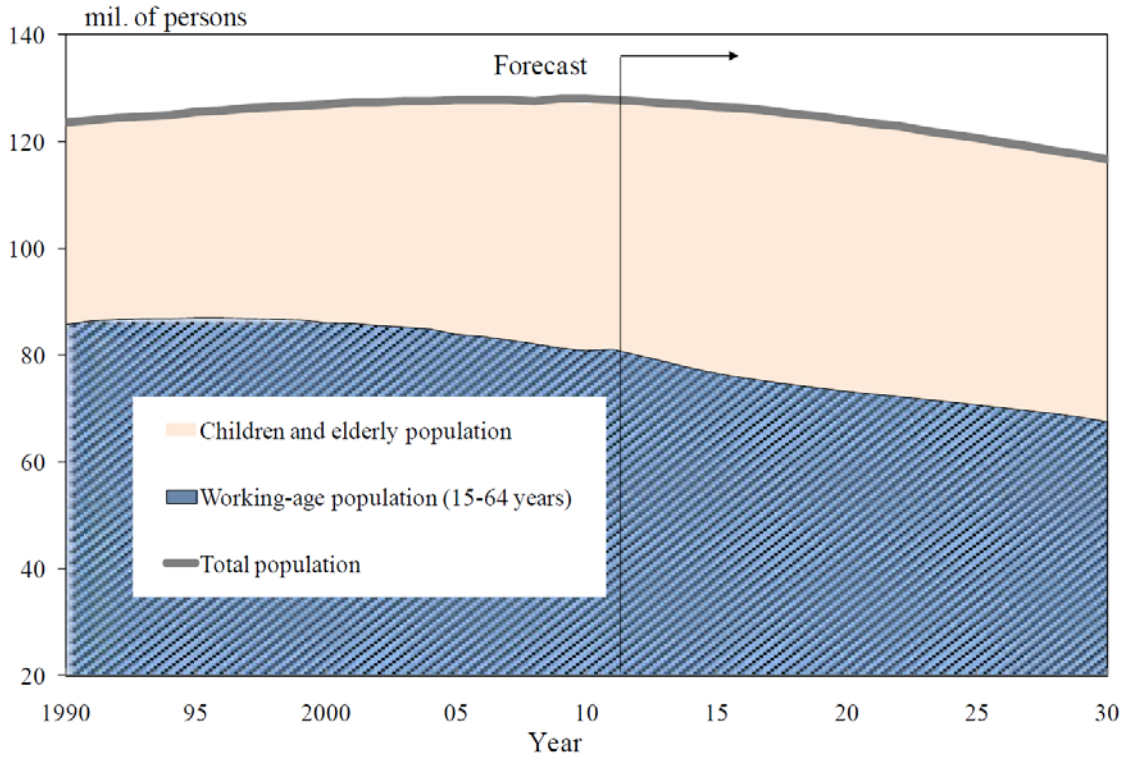
(2) Lending Rates on New Loans



Sources: Bank of Japan; Bloomberg.

Chart 12

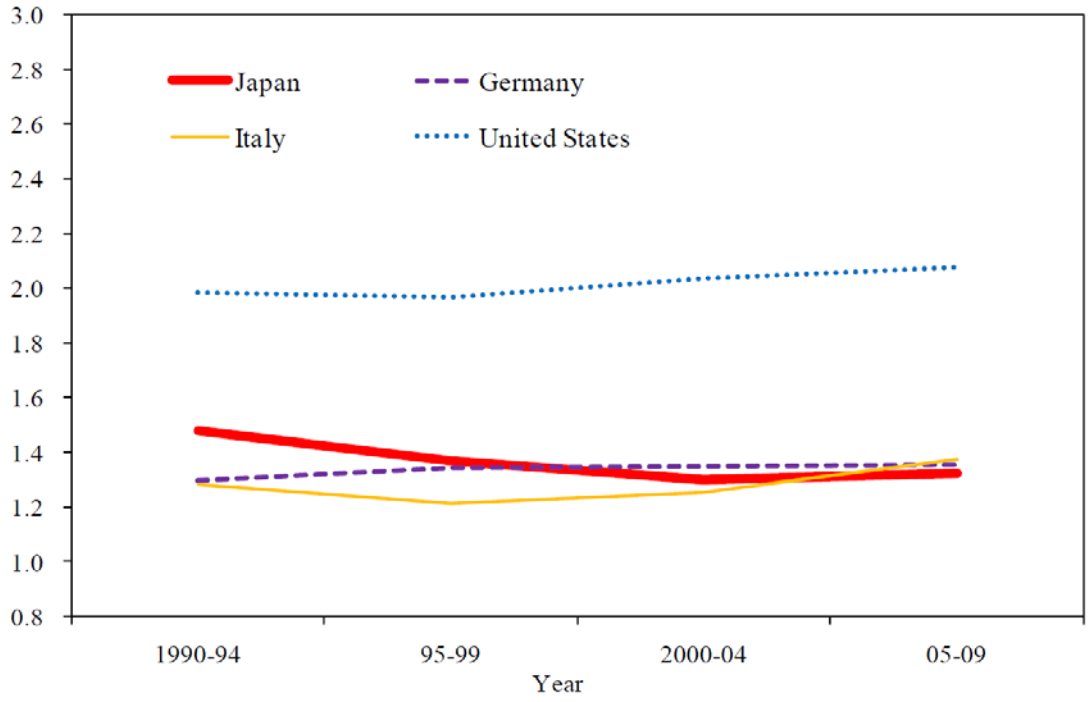
Demographic Changes in Japan



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

Chart 13

Total Fertility Rates in Japan, the United States, and Europe

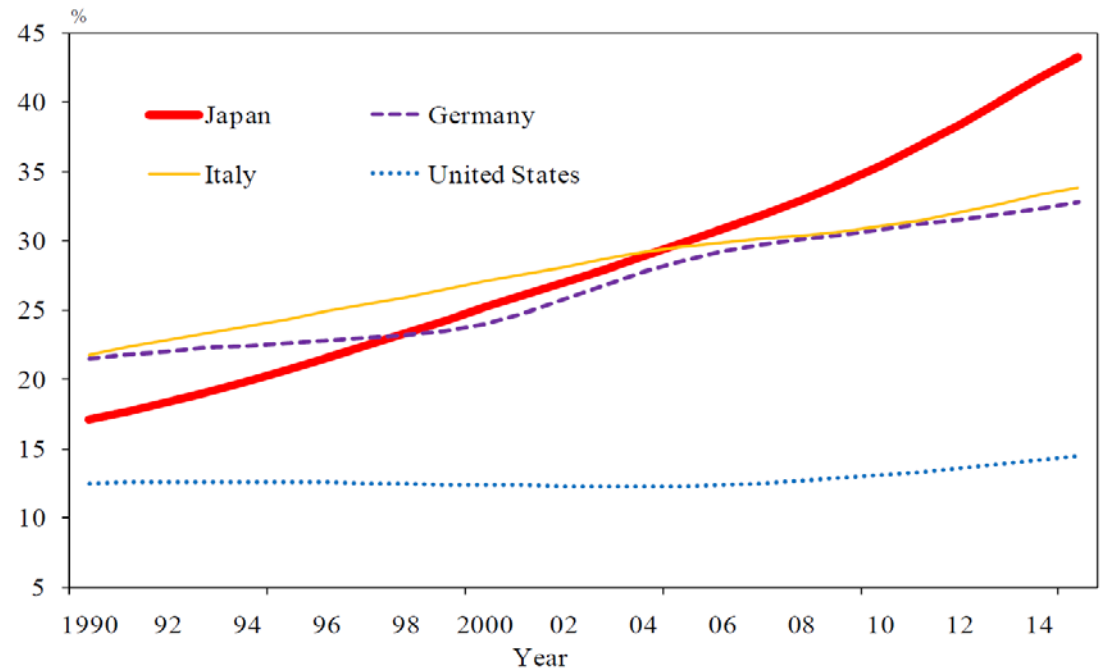


Note: The figure refers to the number of children per woman if she bears children in accordance with current age-specific fertility rates.

Source: United Nations.

Chart 14

Elderly Dependent Ratios in Japan, the United States, and Europe



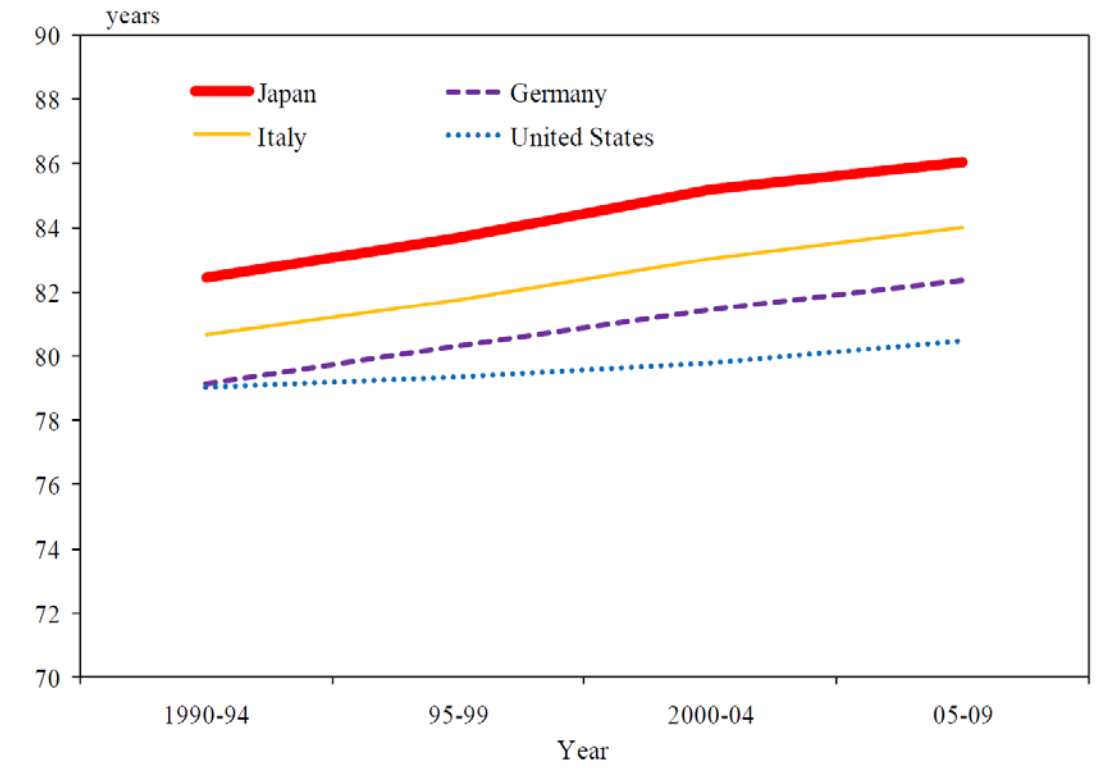
Note: The figure refers to the ratio of the elderly dependent population (65 years and over) to the working-age population (15 to 64 years).

Source: United Nations.

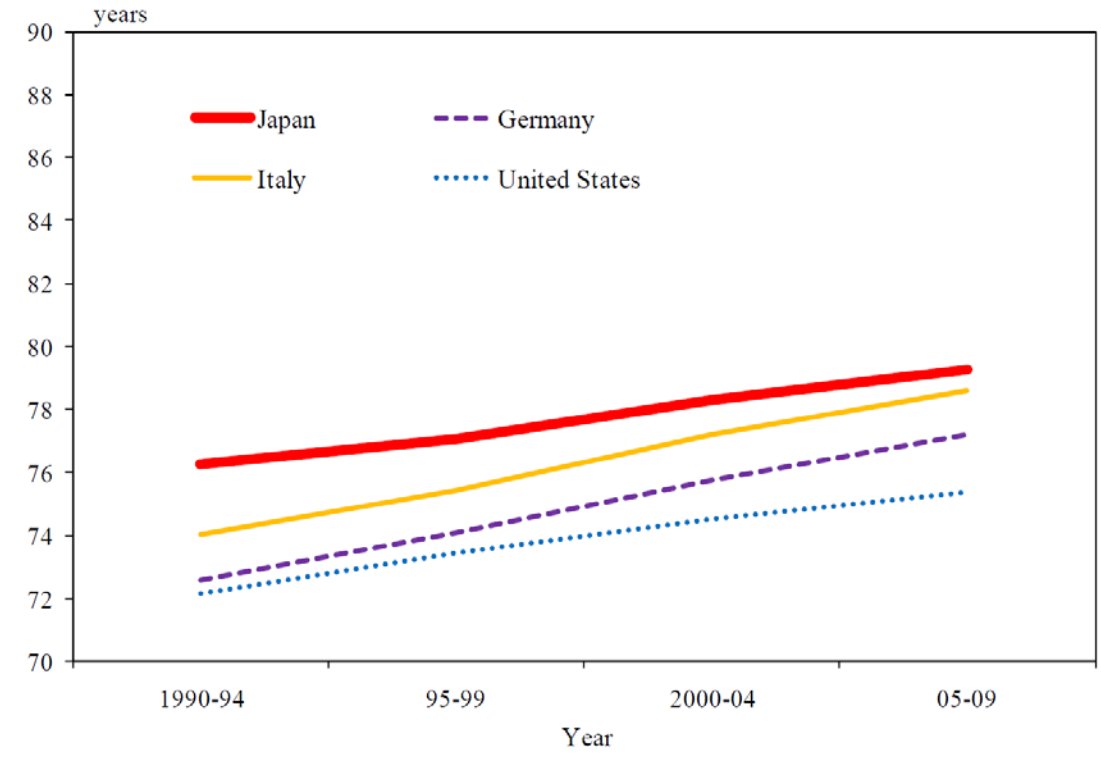
Chart 15

Life Expectancy at Birth in Japan, the United States, and Europe

(1) Female



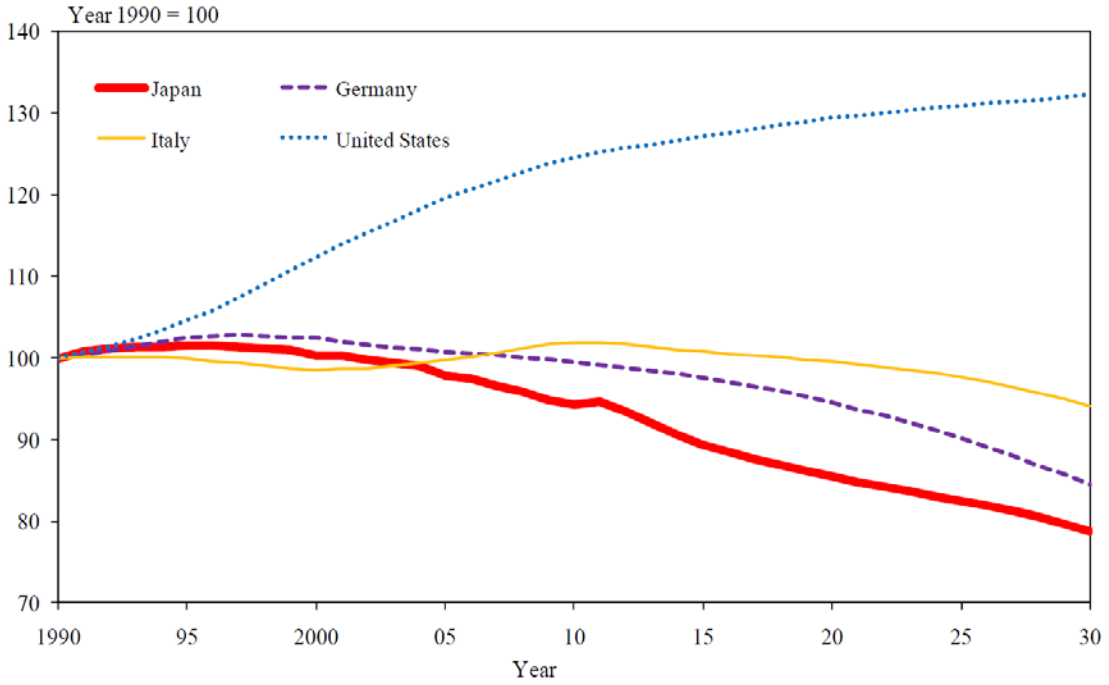
(2) Male



Source: United Nations.

Chart 16

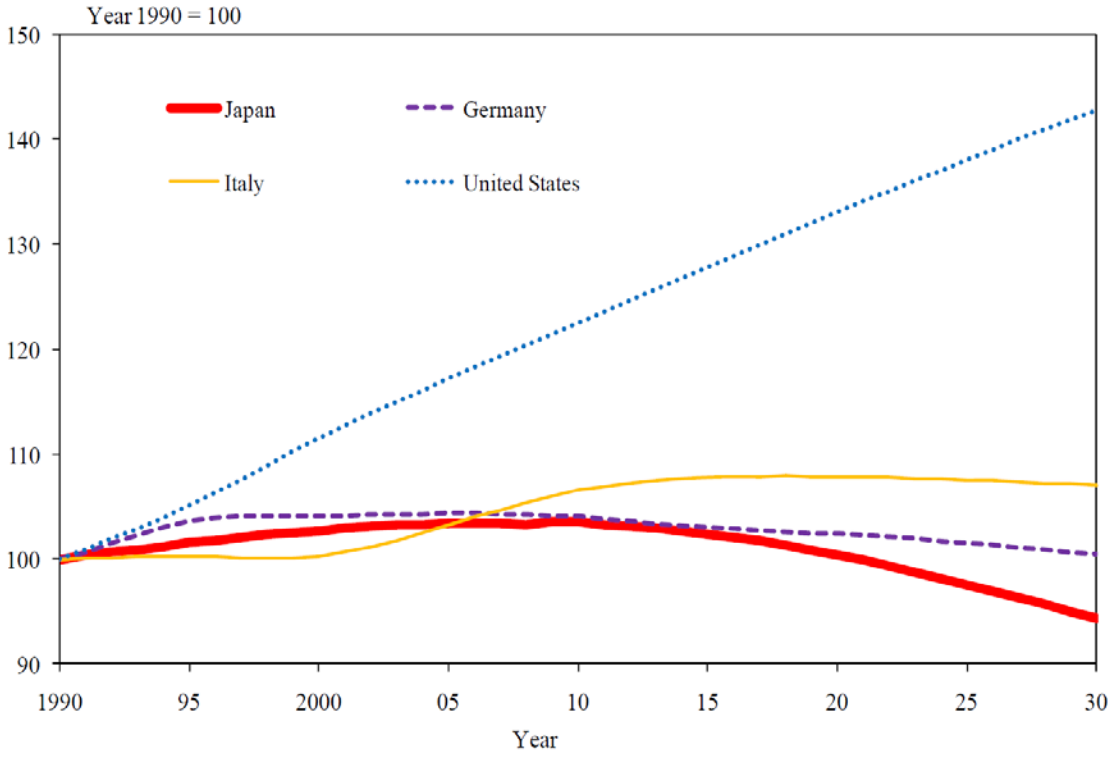
Projected Working-Age Population Trends in Japan, the United States, and Europe



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

Chart 17

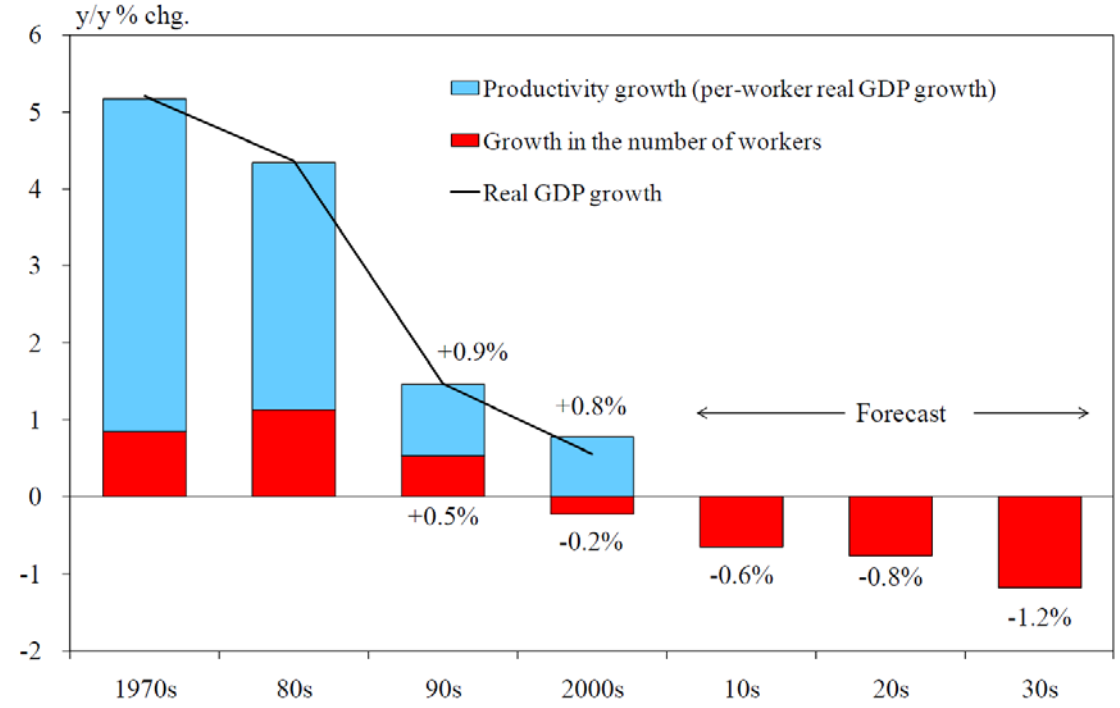
Projected Total Population Trends in Japan, the United States, and Europe



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

Chart 18

Real GDP Growth Rate in Japan

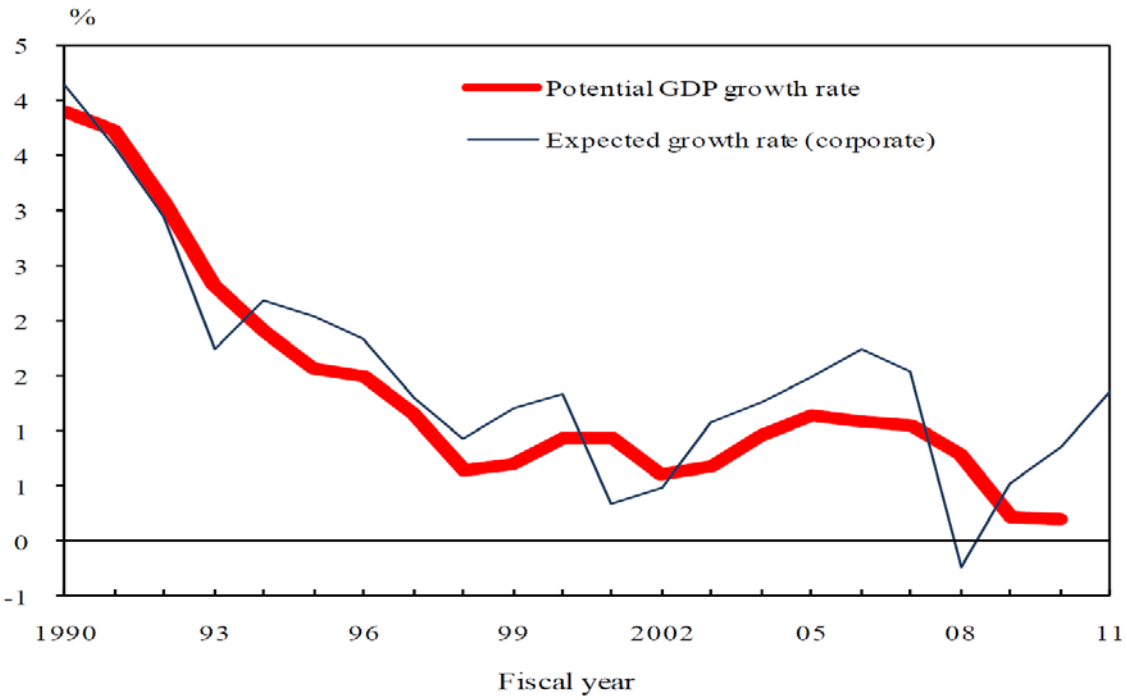


Note: The growth rate in the number of workers from 2011 onward is calculated using the projected future population (medium variant) and labor force participation rates (assuming that the labor force participation rates in each age/sex group remain the same as in 2010).

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

Chart 19

Potential Economic Growth and Firms' Economic Growth Expectations

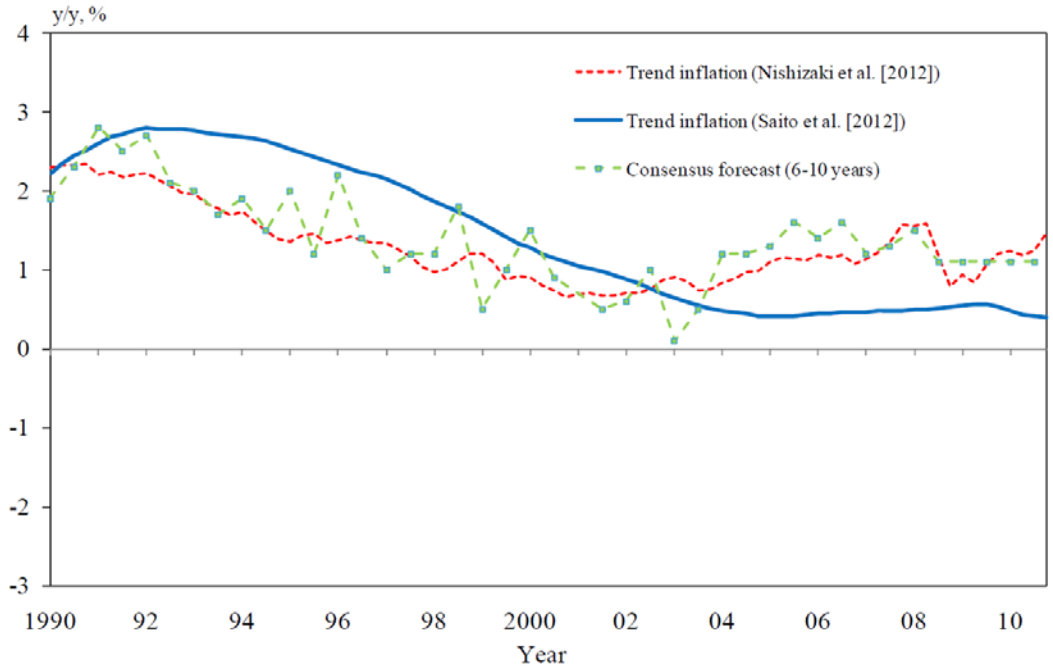


Note: Expected growth rate (corporate) refers to the outlook for real demand growth rate three years ahead for industry in the Annual Survey of Corporate Behavior (Cabinet Office).

Sources: Bank of Japan; Cabinet Office.

Chart 20

Inflation Expectations in Japan



Sources: Nishizaki, Kenji, Toshitaka Sekine, and Yoichi Ueno, "Chronic Deflation in Japan," Bank of Japan Working Paper Series, No. 12-E-6, 2012; Consensus Economics Inc.

Chart 21

Bank of Japan's Efforts to Cope with Structural Issues