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Bank of Japan

Unconventional Monetary Policies of the Bank of Japan and European Central Bank

Remarks at the Panel Discussion "Monetary Policy and Central Banking: A Global Outlook" at the Bruegel Annual Meeting (Brussels, September 8)

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I. Introduction

Thank you very much for inviting me as a panelist to the discussion on monetary policy at the Bruegel Annual Meeting. Recently, the directions of monetary policy among advanced economies have become increasingly divergent. Whereas the U.S. Federal Reserve has begun considering normalization of its policy interest rates, the Bank of Japan (BOJ) and European Central Bank (ECB) continue their large-scale asset purchase programs. As one of the policy makers at the BOJ, I have closely monitored developments in the global economy and the monetary policies of major central banks. I would therefore like to talk today about the features of monetary easing of the two central banks (BOJ and ECB) as well as about developments regarding inflation expectations in Japan and the euro area. Let me stress that the views expressed here are entirely my own and do not necessarily represent those of the BOJ.

II. Unconventional Monetary Policies -- Common Features of the BOJ and ECB

The monetary-easing instruments adopted by the two central banks have several features in common. They are (1) large-scale asset purchases centered on government bonds, (2) forward guidance used to indicate a future monetary-easing stance, and (3) a conditional long-term lending facility (Chart 1 and Reference Chart).

Regarding the first instrument, the large-scale asset-purchase program is referred to as a "balance sheet policy." This enables a central bank to expand the size of its balance sheet to a predetermined level and to maintain that size over a relatively long period. One of the expected results here is a *portfolio rebalancing effect*. This policy aims at promoting holders of government bonds to shift away from those bonds and invest in riskier assets, such as loans and corporate bonds, stocks, foreign securities, and real estate, thereby affecting a wide range of markets and energizing economic activity.

Since April 2013, the BOJ has adopted an aggressive balance sheet policy by setting a target on the annual pace of the monetary base increase under *quantitative and qualitative monetary easing* (QQE). The BOJ has been increasing the monetary base at an annual pace of about 80 trillion yen. It has also been purchasing Japanese government bonds (JGBs) so that their amount outstanding will increase at an annual pace also of about 80 trillion yen. With a view to encouraging a decline in interest rates across the entire yield curve, JGBs with all maturities, including 40-year bonds, are eligible for the BOJ's purchase and the average remaining maturity

of government bonds to be purchased is currently targeted in the range of seven to ten years. In addition to government bonds, the BOJ makes such purchases as exchange-traded funds (ETFs) and Japan real estate investment trusts (J-REITs). This balance sheet policy has contributed to an expansion of corporate profits and employment together with a stock price hike and depreciation of the yen, which have helped improve the output gap by about 2 percentage points.

The ECB (as well as European national central banks) has purchased euro-denominated bonds issued by euro-area governments, agencies, and European institutions since March 2015 in an effort to restore the size of its balance sheet to that of March 2012 -- or about 3 trillion euros. In conjunction with covered bonds and asset-backed securities (ABS) purchased since October 2014, the monthly pace of the combined asset purchase is set at about 60 billion euros. Except for very long-dated assets, the remaining maturity of eligible public sector assets to be purchased must be within two to 30 years. In principle, the assets need to be investment grade (above BBB-). This policy may be regarded as a reaction to growing concerns over the potentially weakened effectiveness of monetary easing as a result of the shrinking balance sheet amid a decline in some inflation expectation indicators. Although the interest rate applied to a central bank's asset purchases is generally determined through supply and demand forces in the relevant market, the ECB applies the deposit facility rate of minus 0.2 percent as a floor rate.

With regard to the second common monetary-easing instrument, forward guidance has been adopted by the two central banks with the objective of indicating a future direction for the ongoing monetary easing. This is expected to produce *a signaling effect*. The most commonly observed form is to signal the intention to maintain a significantly low policy interest rate over a long period. This instrument is supposed to exert downward pressure on the short- to medium-term yield curve to achieve additional monetary easing. Moreover, forward guidance could also be used to signal a central bank's future stance over an ongoing asset purchase program, and thereby exert downward pressure mainly on the long-term yield curve (albeit dependent on the remaining maturity spectrum of purchased assets).

Unlike the Federal Reserve, the BOJ has had no forward guidance related to a policy interest rate since the BOJ switched its main operating target for money market operations from the uncollateralized overnight call rate to a monetary base when it introduced QQE in 2013. The BOJ thus applies forward guidance to indicate its future stance over the continuation of QQE as

a package (monetary base targeting together with the size and type of assets to be purchased). Forward guidance is expressed mainly according to the following outcome-based statement: *The Bank will continue with QQE, aiming to achieve the price stability target of 2 percent, as long as it is necessary for maintaining that target in a stable manner.* That statement is followed by a qualifying clause, which declares that both the upside and downside risks to economic activity and prices will be examined and that adjustments to QQE will be made as appropriate. The BOJ's forward guidance therefore signals a condition that determines continuation of QQE provided no major risks materialize. Given that the short- to medium-term yield curve was lowered substantially under the previous *comprehensive monetary easing* (October 2010 to March 2013), the intention with the forward guidance related to QQE is to exert downward pressure on the longer-term yield curve.[1] At the same time, this form of forward guidance is expected to raise inflation expectations -- considering that maintaining a price stability target of 2 percent in a stable manner is equivalent to anchoring inflation expectations at around 2 percent.

With the ECB, forward guidance was first applied to policy interest rates in July 2013. It was achieved in terms of the following statement: "The Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time." In September 2014, when the ECB cut policy rates by 10 basis points -- to 0.05 percent for the main refinancing operations (MRO), 0.3 percent for the marginal lending facility, and minus 0.2 percent for the deposit facility -- ECB President Mario Draghi reported that further downward adjustments would no longer be possible. Thus, the ECB's present forward guidance refers to the duration of maintaining the ongoing low policy interest rates. The ECB also adopted forward guidance in March 2015 to signal its future stance over combined monthly asset purchases of about 60 billion euros with the following remark: "Intended to be carried out until the end of September 2016 and will, in any case, be conducted until we see a sustained adjustment in the path of inflation which is consistent with our aim of achieving inflation rates below, but close to, 2 percent over the medium term."

The third common monetary-easing instrument is a conditional long-term lending facility. The BOJ provides low-cost funding (fixed at 0.1 percent) to financial institutions up to an amount that is twice the net increase in their lending -- with a maximum of four years under the

[1] The BOJ also purchases short-term treasury bills and maintains a 0.1-percent interest rate on excess reserves (IOER). Those moves have helped promote market expectations that very short-term market interest rates would remain substantially low for a long period.

Stimulating Bank Lending Facility. This measure is planned to continue until June 2016.

Similarly, the ECB launched Targeted Longer-Term Refinancing Operations (TLTROs) in September 2014. Since March 2015, TLTROs have provided low-cost funding (at interest rate on MRO) to financial institutions up to an amount three times as much as the net increase in lending to non-financial firms and households (excluding loans to households for house purchases). Currently, the maximum is three years; TLTROs are scheduled to continue until June 2016. Both Japan and the euro area are characterized by a system of bank-based financial intermediations; thus, the ultimate goal with these instruments is to promote bank lending to the private sector. At the same time, they could also help expand the central bank's balance sheet.

III. Unconventional Monetary Policies -- Differences between the BOJ and ECB

I would now like to examine differences in monetary-easing policies (Chart 2).

A. Background to the ECB's Adoption of a Negative Deposit Facility Rate

The ECB adopted its first negative deposit rate of minus 0.1 percent in June 2014, followed by minus 0.2 percent the following September. I believe that three main factors contributed to the ECB's decision to maintain the negative interest rate up to the present. First, there are many nonresident holders of government bonds in the euro area: their holdings account for over 50 percent of outstanding bonds issued. The types of nonresident investors are also diverse, ranging from short-term-oriented hedge funds to long-term-oriented institutional investors and foreign central banks. Some of those investors are therefore likely to sell government bonds to the ECB in search of capital gains without being overly affected by the negative interest rate or with the need to rebalance their portfolios, giving higher weight to corporate bonds and stocks in the euro area. Second, as long as potentially large demand exists for credit among firms and households, financial institutions in the euro area could be encouraged to extend credit to the private sector in an attempt to avoid a negative deposit rate, or they may be able to charge a higher lending rate without restraining credit demand. Consequently, financial institutions may achieve profits that will more than offset the negative interest rate by promoting credit creation. Third, given the presence of segmentation in the cross-border interbank markets in the euro area after the global financial crisis, the negative interest rate policy is unlikely to harm the behavior of liquidity-abundant financial institutions.

B. The BOJ's Decision to Hold a Positive Interest Rate on Excess Reserves (IOER)

By contrast, the BOJ has maintained a 0.1-percent IOER since 2008. I would like to explain the broad background behind this decision. That is, it is important to note that QQE was adopted in an environment that provided little room for further cuts in short- to medium-term interest rates. To generate a large-scale monetary-easing effect, therefore, the BOJ decided to adopt a strategy of exerting downward pressure on real long-term interest rates; it did so through a decline in nominal long-term interest rates and an increase in inflation expectations. This strategy is more accommodative than a policy of seeking further marginal cuts in shorter-term interest rates.

That said, I will give three reasons for the decision to keep a positive IOER. First, it reflects the view that further cuts in the IOER could give rise to a more challenging environment for the BOJ in terms of smoothly fulfilling the targeted amount of asset purchases. Unlike in the euro area, there are substantial numbers of resident holders of JGBs: the amount of their holdings accounts for over 90 percent of outstanding bonds issued. Many of those investors are long-term-oriented financial institutions. With such a market structure, a positive IOER may have the effect of inducing those holders to sell government bonds to the BOJ.

Second, a negative IOER may incur the risk of undermining the intermediary function of financial institutions by lowering profitability in the banking system. Banks may be unable to pass the increased cost (caused by the negative interest rate) on their retail depositors by lowering the deposit interest rate (which, at around 0 percent, is already low). Alternatively, financial institutions may attempt to raise their lending rates in an effort to maintain profits; however, that may discourage credit demand and thus undermine lending activities. Some European central banks charge a negative interest rate on both the deposit facility rate and on the main lending (refinancing) policy rate. Some of those financial institutions apparently apply a negative interest rate on the deposits of large clients and interbank markets as well as charging a higher lending rate for some corporate clients; they do this while maintaining a positive interest rate on retail deposits. This practice is unlikely to occur in Japan given that the loan-to-deposit rate remains around 70 percent and competition for lending is fierce. Banks may ultimately absorb the increased cost by squeezing their profit margins, thereby somewhat stifling the incentive to take credit risks by increasing lending activities.

Third, it is important to support the function of interbank markets to a certain degree by allowing arbitrage in interest rate transactions between banks holding current account balances at the BOJ and those without access to such accounts. Such transactions also enable market interest rates to function relatively effectively as reference interest rates, which are conducive to

various other related financial transactions and monetary policy judgments.[2]

More importantly, the ECB faced a decline in some inflation expectation indicators and the accumulated disinflation risk in the second half of 2014, when a negative deposit facility rate was in place. This suggests that a positive impact of raising inflation expectations that the BOJ emphasizes could not really be expected at any significant level from a negative interest rate policy. Thus, although the feasibility of lowering the IOER should not be denied, such a policy needs to be better understood and properly discussed in light of differences in the financial market structures of each country and region.

C. Differences in Importance of Credit Easing between the BOJ and ECB

Another difference between the ECB and BOJ is that the ECB's monetary easing generally entails an element of credit easing. Recently, the lending rate charged on the private sector has dropped and credit growth has turned positive in the euro area. Nonetheless, small and medium-sized enterprises (SMEs) in some peripheral countries still face restrictive lending criteria, higher funding costs, and limited access to the credit volume. For these reasons, TLTROs aim to promote financial institutions' lending activities by reducing their funding costs, thereby indirectly lowering the lending rates charged on the private sector. In addition, the ABS purchase program was initiated to activate the market through purchases of securities and promote the securitization market for bank loans, including those for SMEs. The ECB thus continues to place the priority on credit easing as the banking system has not yet fully recovered its financial intermediary function arising from the global financial and European debt crises.

By contrast, Japan experienced a decline in the functions of the CP and corporate bond markets immediately after the global financial crisis. That caused the BOJ to purchase those assets as a credit-easing policy in 2009. However, Japan did not face a banking crisis, and the balance sheet of the banking sector generally remains sound. Even before QQE, SMEs had therefore enjoyed an accommodative monetary environment, such as with low funding costs and availability of credit volumes. Credit easing has now become a less important element of monetary easing.

IV. Inflation Expectations in Japan and the Euro Area

Let me now proceed with inflation expectations -- a key to achieving the price stability target -- starting with those of economists and market-based indicators before turning to those of

[2] In a speech I delivered in Italy in January 2013, I touched on the pros and cons of a cut in the IOER and suggested the positive impact of such a cut on correcting the yen's excessive appreciation. However, after QQE, those arguments no longer apply. See Shirai, Sayuri, "Japan's Monetary Policy in a Challenging Environment," Speeches at the Bank of Italy and the Eurasia Business and Economics Society Conference Held in Rome (January 11-12), Bank of Japan, 2013.

households and firms.

A. Japan's Agenda -- Restoring Inflation Expectations to around 2 Percent

According to economists whose long time-series data are available, their inflation expectations stood at around 2 percent before Japan entered the era of long-standing mild deflation (Chart 3). Medium- to long-term inflation expectations (i.e., five years ahead) remained around 2 percent in the first half of the 1990s. The year-on-year rate of change in the consumer price index (CPI) and short-term inflation expectations (i.e., one year ahead) were also around 2 percent until the early 1990s. From around 1992, after the collapse of the asset bubble, however, the rate of change in the CPI began to drop, turning negative from around 1999. The first half of this period coincided with a declining trend in real GDP growth rates. Since these rates were mostly lower than potential GDP growth rates, which had been on a declining trend, the output gap deteriorated significantly, generating downward pressure on actual prices (Chart 4). Short-term inflation expectations dropped in line with actual price performance: they turned negative around 1999 and subsequently fluctuated at about 0 percent before QQE.[3]

One interesting feature of medium- to long-term inflation expectations is that they were unstable from the second half of the 1990s to 2012, with year-on-year movements ranging from around 0.5 percent to 2 percent. It was evident that those inflation expectations were insufficient to raise the rate of change in the CPI and short-term inflation expectations. Inflation expectations thus did not fully play anchoring role. The BOJ's expression of price stability may be attributable to the instability in medium- to long-term inflation expectations. In 2006, the BOJ introduced the concept of *the understanding of medium- to long-term price stability* and described price stability as, in terms of the year-on-year rate of change in the CPI, *approximately between 0 and 2 percent with the median of 1 percent*. The BOJ's description was clarified somewhat in 2009 to *a positive range of 2 percent or lower, with a midpoint of around 1 percent*, thereby eliminating the possibility of a 0-percent price change. In 2012, the BOJ introduced the *price stability goal in the medium to long term*, describing it as *a positive range of 2 percent or lower in terms of the year-on-year rate of change in the CPI*, while setting the goal *at 1 percent for the time being*. Despite these statements, it was not wholly clear whether the BOJ was ultimately pursing a 2-percent level or a lower one. Against this background, the BOJ adopted the 2 percent target and QQE in 2013 to restore medium- to long-term inflation expectations back to around 2 percent -- the level that had been achieved over 20 years earlier. Since the introduction of QQE, medium- to long-term inflation expectations of economists and

[3] It must be noted that the year-on-year rate of change in the CPI, as well as short-term inflation expectations, rose substantially, owing to consumption tax hikes in 1997 and 2014, and the surge in commodity prices in early 2008.

the inflation swap rate (implied five-year forward rate, five years ahead) have risen moderately and remain around 1 percent today. Nevertheless, the 2 percent target remains distant (Chart 3).

From Japan's experience, it is essential first to make a continuous improvement in the output gap and thereby steadily raise the rate of change in the CPI. In this regard, the output gap estimated by the BOJ turned positively to 0.1 percent in the January-March quarter of 2015. After a temporary deterioration projected for the April-June quarter, the output gap is expected to gradually improve in positive territory from the July-September quarter this year and increase its upward pressure on prices. The change in the core CPI (all items less fresh food) is currently about 0 percent. However, the CPI excluding food and energy is about 0.6 percent, which exceeds the core CPI. The proportion of items whose prices have risen among all core CPI-composing items has increased to around 65 percent (Chart 5). Moreover, some price hikes have accompanied increased sales. For those reasons, it is fair to say that there has been no deterioration in the underlying trend in prices. The BOJ projects that the rate of change in the core CPI will begin to rise from the second half of fiscal 2015. Once the rising trend of the core CPI becomes stable, inflation expectations are projected to rise gradually toward around 2 percent.

B. Euro Area's Inflation Expectations: Broadly Consistent with the Price Stability Target

By contrast, in the euro area, the medium- to long-term inflation expectations of economists have been more or less stable at around 2 percent since the initial phase of adopting the euro (Chart 6). This is evident in two ways: one is that the rate of inflation had already moved to around 2 percent a few years prior to the euro adoption; the other is that the ECB initially defined price stability as inflation rates *below 2 percent over the medium term*. Medium- to long-term inflation expectations appear to have stabilized more firmly after the ECB further clarified its definition in 2003 as *inflation rates below, but close to, 2 percent over the medium term*.

This situation changed somewhat after 2012, when the rate of change in the Harmonized Index of Consumer Prices (HICP) began to decrease continuously. The decline occurred across a wide range of goods and services in the face of a re-deterioration in the output gap and a price drop in various commodities (Charts 7 and 8). Nevertheless, the HICP excluding food and energy remains at around 1 percent. Following the decrease in HICP, short-term inflation expectations declined significantly, whereas medium- to long-term inflation expectations decreased

moderately; they currently stand at around 1.8 percent. The inflation swap rate (implied five-year forward rate, five years ahead) strengthened a declining trend from mid-2014 and reached around 1.5 percent by early 2015, which triggered concerns over the risk of disinflation. Thereafter, the inflation swap rate has increased moderately and recovered to around slightly below 2 percent, owing to the impact of the ECB's asset purchase program (including an announcement effect) and the greater-than-expected performance of economic activity and prices. But most recently, the gap from the target has somewhat widened, partly owing to the recent re-drop in crude oil prices (Chart 6). A recent decline in the inflation swap rate is also observed in Japan. This might be a reflection of a decrease in inflation risk premium associated with declining oil prices rather than declining inflation expectations.

C. Gap between Households' Price Perception and Price Performance in Japan: Different Feature from the Euro Area

I would now like to turn to households' price expectations and spending patterns. Owing to the lack of comparable data, I will use short-term data (about one year ahead). From the BOJ's *Opinion Survey on the General Public's Views and Behavior*, the following data are available from June 2006: (1) *the perception diffusion index (DI) of present price levels* (the present price perception DI); (2) the one-year-ahead price DI; and (3) the one-year-ahead spending DI. From the European Commission's *Business and Consumer Surveys*, I will use the following data from 1999: (1) the price trend DI over the previous twelve months; (2) the price trend DI over the next twelve months; and (3) the spending expectation DI for major purchases (such as furniture and electrical or electronic devices) over the next twelve months.

As a commonly observed feature, households in Japan and the euro area tend to perceive that the present price level represents an increase -- except for a short period immediately after the global financial crisis -- and they tend to expect higher price levels about one year ahead (Charts 9 and 10). Moreover, those households commonly tend to expect to spend less in the near future. From these features, it may be said that households plan to reduce their spending about one year ahead because they expect a tighter budget as a result of expected higher prices.

A different feature is evident with regard to the relationship between actual price performance and households' present price perception (as well as their one-year-ahead price expectation). In the euro area, households' present price perception and price expectation DIs are roughly in line

with actual price performance. By contrast, Japanese households' present price perception (except for a short period immediately after the global financial crisis) and price expectation DIs remained positive even when mild deflation prevailed from 2009 to mid-2013. More recently, despite the rate of change in the core CPI having dropped to around 0 percent, the rising trend in the present price perception DI has been firm and the relatively high level of price expectation DI has been sustained. Thus, Japanese households' price perceptions and expectations constantly differ from the movements of official price statistics. On this front, it is known that Japanese households' price perceptions and expectations are heavily affected by the price movements of daily necessities and gasoline, resulting in an upward bias. This could be interpreted as a sign of a strong defensive action against the anticipated tighter budget. If so, households may perceive a rate of actual inflation of much higher than 2 percent in the process of approaching the 2 percent target, and regard such price rises as unacceptable. Thus, it is important for the BOJ to promote public understanding that its objective is to achieve a moderate price rise and a sustainable increase in household spending. Additionally, households' tolerance for price rises needs to improve in accordance with a sustainable income rise.

D. Euro Area Firms' Price Expectations Becoming Comparable with Those of Japan

With respect to firms' price expectations, the sales price expectation DI for three months ahead is available from the BOJ's *Tankan* (Short-Term Economic Survey of Enterprises in Japan) and the European Commission's surveys (Chart 11). One interesting finding is that in *Japan*, firms' sales price expectation DI has fluctuated in negative territory since the first half of the 1990s, when the rates of change in the CPI remained positive. Among those firms, the DI of *manufacturing firms* remains negative today even though there has been improvement after the global financial crisis. By contrast, *the euro area's* sales price expectation DI mostly moved in positive territory before the global financial crisis, which suggests that European manufacturing firms found it relatively easy to raise sales prices. However, especially after 2012, when the European debt crisis deepened, the sales price DI became sluggish and has since remained around 0 percent. This implies that European manufacturing firms now find it more challenging to raise their sales prices and are in a similar position to Japanese firms. An exception is *Germany*, where the sales price expectation DI has remained in positive territory despite a drop in the present sales price DI. This may indicate that German firms continue to provide more differentiated, higher value-added products than other firms in the euro area.

With regard to the sales price expectation DI of *non-manufacturing firms*, the DI in *Japan* turned moderately positive after QQE, and it remains positive although low. The sales price expectation DI in *the euro area* has become stagnant -- albeit with large fluctuations -- following the European debt crisis. In three non-manufacturing sectors, the current DIs in services and retail trade are moderately positive, albeit at low levels, like those of Japanese firms. The DI of construction has mostly been in significantly large negative territory since the global financial crisis. In the case of *Germany*, the sales price expectation DI of services has shown a remarkable recovery and already exceeds the pre-crisis level. Nonetheless, the DI of retail trade has recently been at a low level, although moderately positive, which suggests that consumption activities have not yet fully recovered. The DI in construction has been sluggish and was often negative even before the global financial crisis; the current level is low.

E. Conclusions

In the euro area, short-term price expectations of households and firms dropped after the financial crises and are currently stagnant; the medium- to long-term inflation expectations of economists and market-based indicators are somewhat below, but roughly in line with, the price stability target. This may suggest that the sluggish households' and firms' price expectations are temporary and that those expectations will eventually begin to rise as economic conditions improve.

In Japan, the medium- to long-term inflation expectations of economists and market-based indicators remain around 1 percent. This is partly because the price rising trend -- except for the oil price -- seems to have been settling. This may imply that firms' short-term sales price expectations, although still low, may begin to rise as the recovery process improves. Moreover, households' price expectations tend to be substantially high owing to the upward bias, and they deviate substantially from actual price performance. However, such an upward bias may be corrected in the future once households' tolerance for price rises gradually improves together with a sustainable income rise and more widespread understanding of the 2 percent target. That said, it is important for the BOJ to maintain an accommodative monetary environment to support economic recovery and make greater efforts to increase public awareness of that target and the BOJ's intention.

Thank you very much for your kind attention.

Chart 1

Common Features of Unconventional Monetary Policy Instruments of the BOJ and ECB

	BOJ	ECB
Balance sheet policy (asset purchases)	(1) Government bonds (2) ETFs (3) J-REITs (4) CP, corporate bonds, etc.	(1) Bonds issued by goverments, etc. (2) Covered bonds (3) ABSs
Forward guidance	Future stance on the continuation of QQE	(1) Duration on maintaining the low policy interest rates (2) Future stance on the continuation of asset puchases
Conditional long-term lending facility	Stimulating Bank Lending Facility (twice the amount of the net increase in lending)	TLTROs (three times the amount of the net increase in lending)

Chart 2

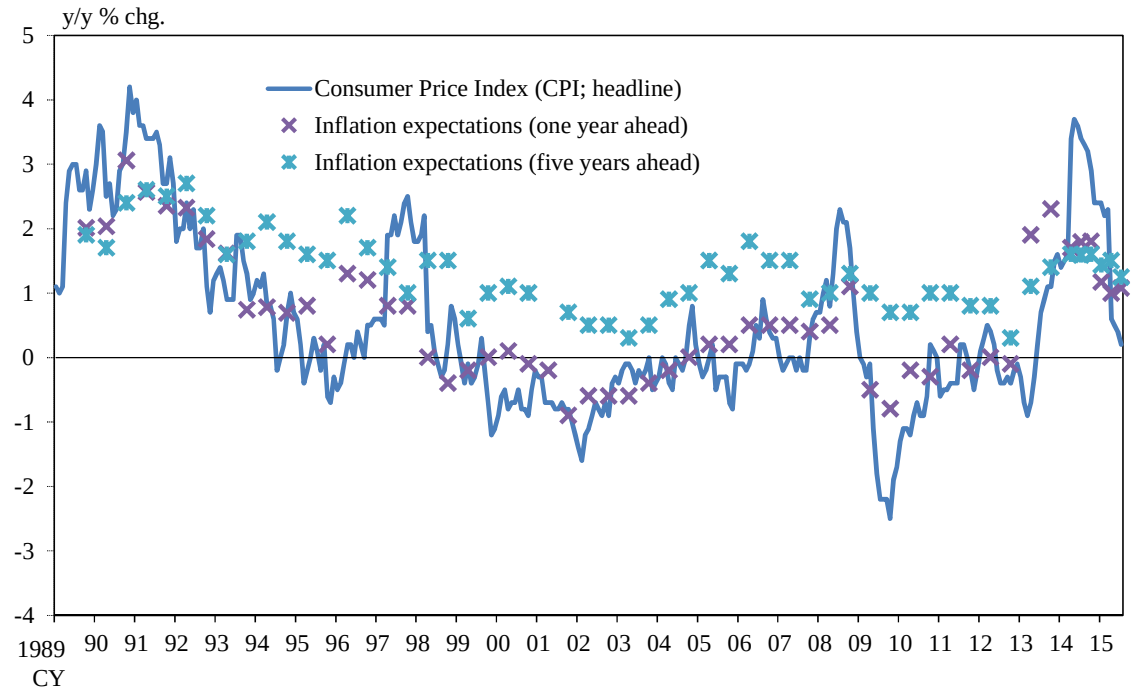
Differences between the Monetary Easing of the BOJ and ECB

	BOJ	ECB
Deposit facility rate	Positive IOER (+0.1 percent)	Negative deposit rate (-0.2 percent)
Importance of credit easing	Less important	Remains important (TLTROs, ABSs)

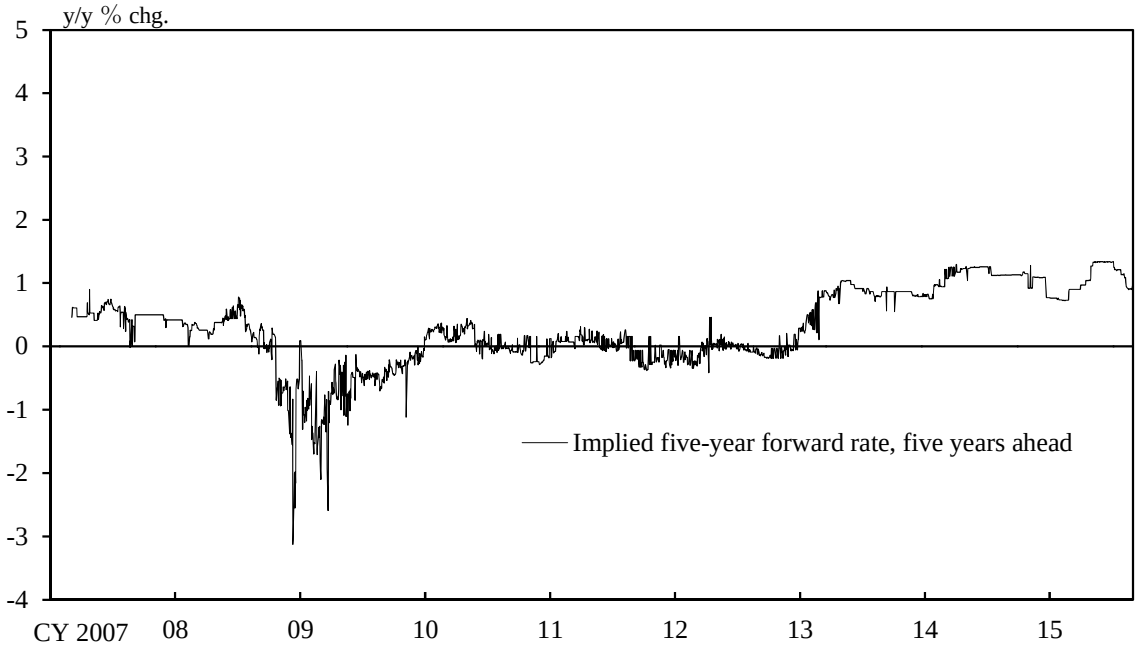
Chart 3

Japan: Medium- to Long-Term Inflation Expectations

(1) Economists (Consensus Forecasts)



(2) Inflation Swap Rate



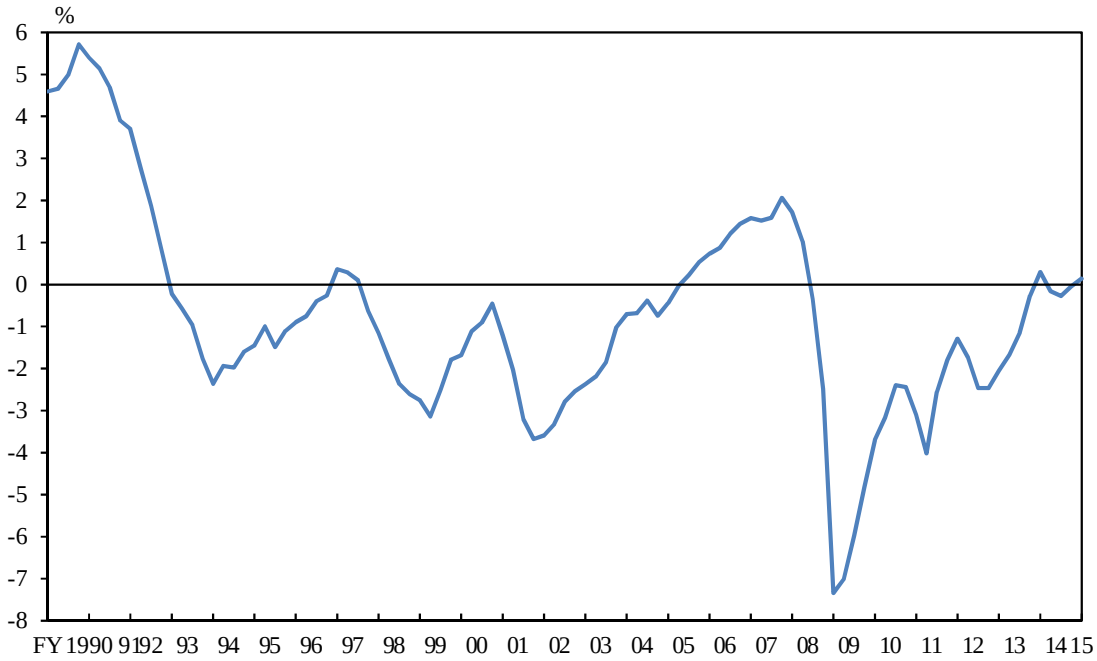
Note: The inflation swap rate is the fixed interest rate of the zero coupon inflation swap. The latest figure is as of August 31.

Sources: Consensus Economics Inc., "Consensus Forecasts;" Ministry of Internal Affairs and Communications; Bloomberg.

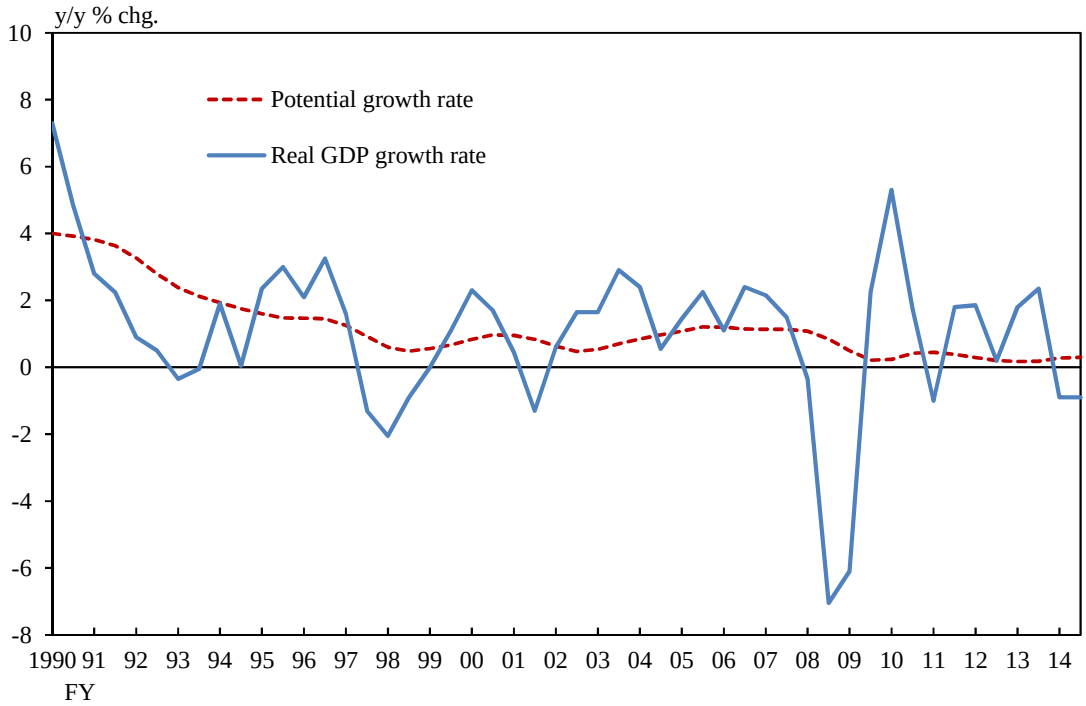
Chart 4

Japan: Output Gap and Potential Growth Rate

(1) Output Gap



(2) Real GDP Growth Rate and Potential Growth Rate



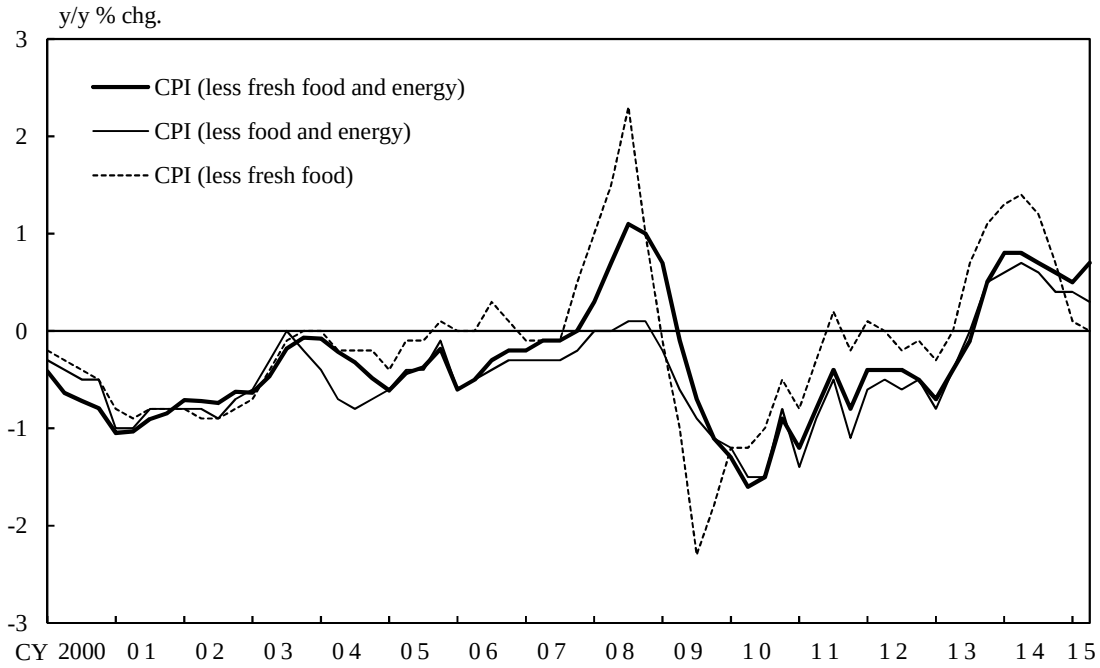
Note: The latest estimates are for October-December 2014 for the potential growth rate and for January-March 2015 for the output gap.

Source: Bank of Japan.

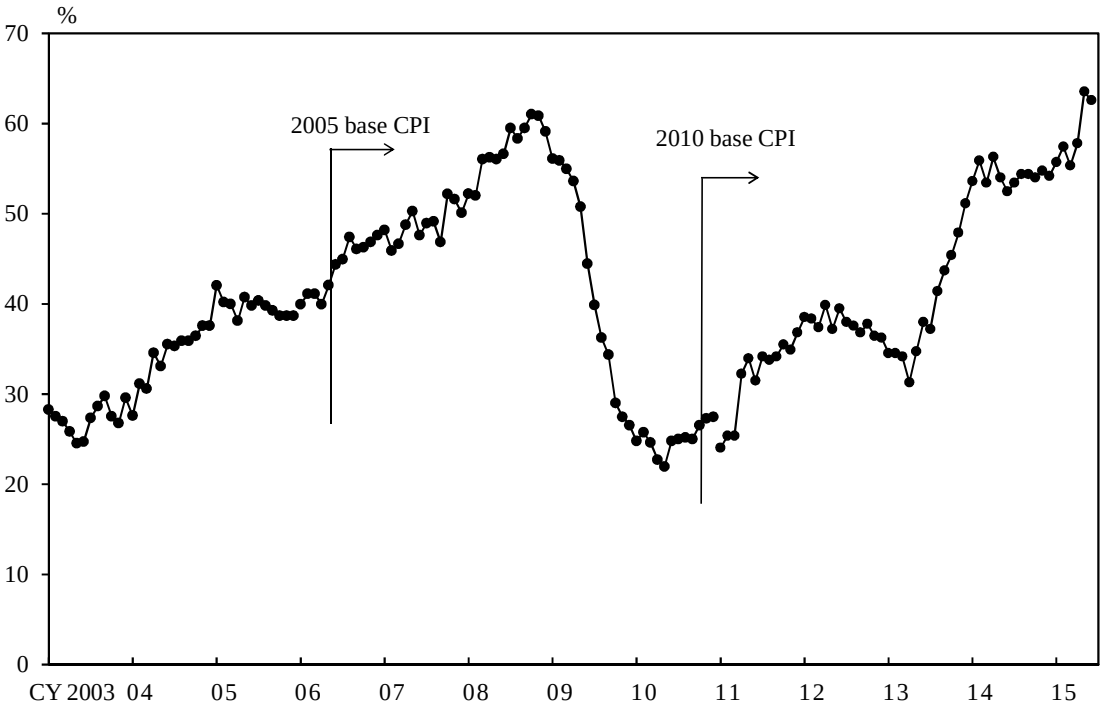
Chart 5

Japan: Price Developments

(1) Changes in CPI



(2) Ratio of Increasing Items (Core CPI)

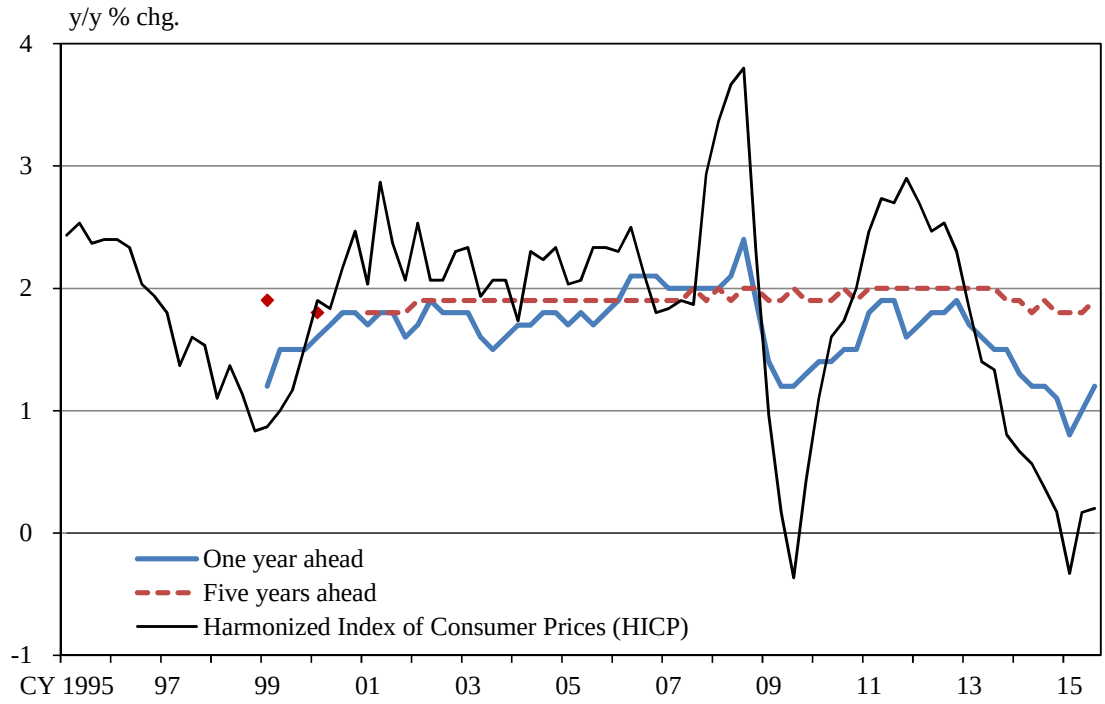


Note: Figures after April 2014 exclude the direct effects of the consumption tax hike.
Sources: Ministry of Internal Affairs and Communications; Bank of Japan.

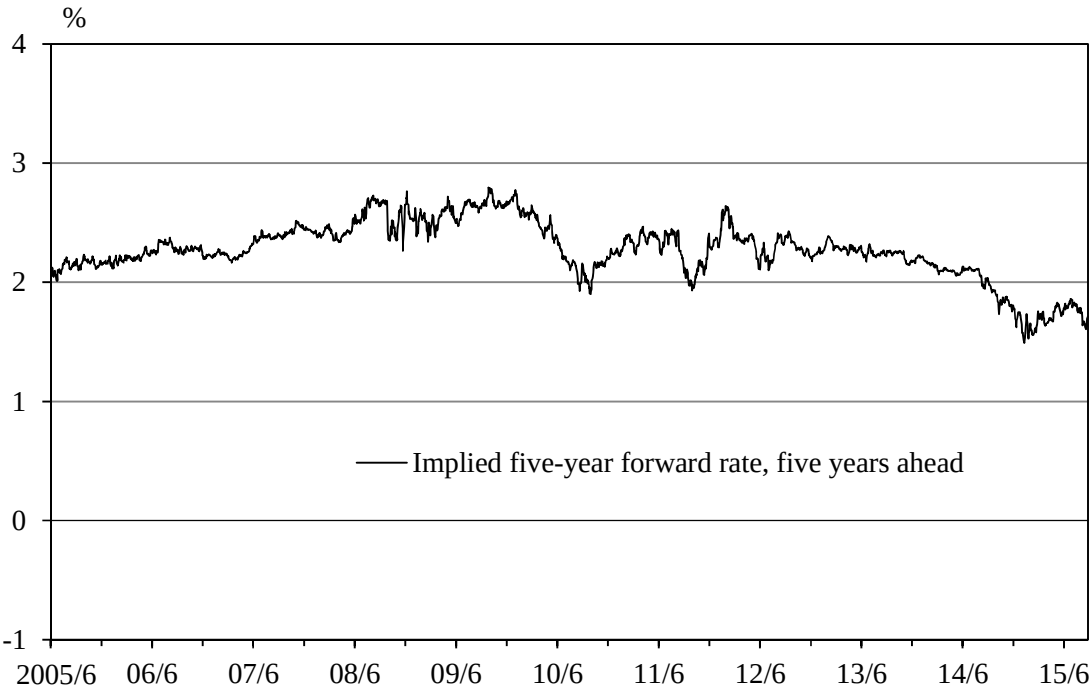
Chart 6

Euro Area: Medium- to Long-Term Inflation Expectations

(1) Economists (ECB SPF)



(2) Inflation Swap Rate

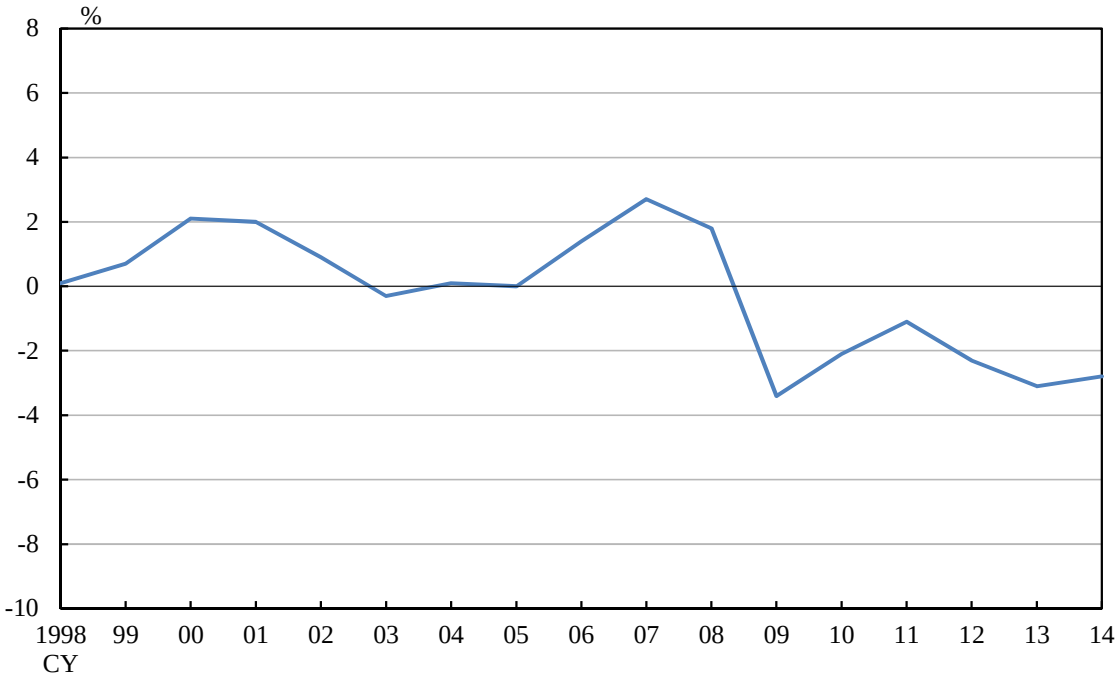


Note: The latest figure for inflation swap rate is as of August 31.
Sources: ECB; Eurostat; Barclays Live.

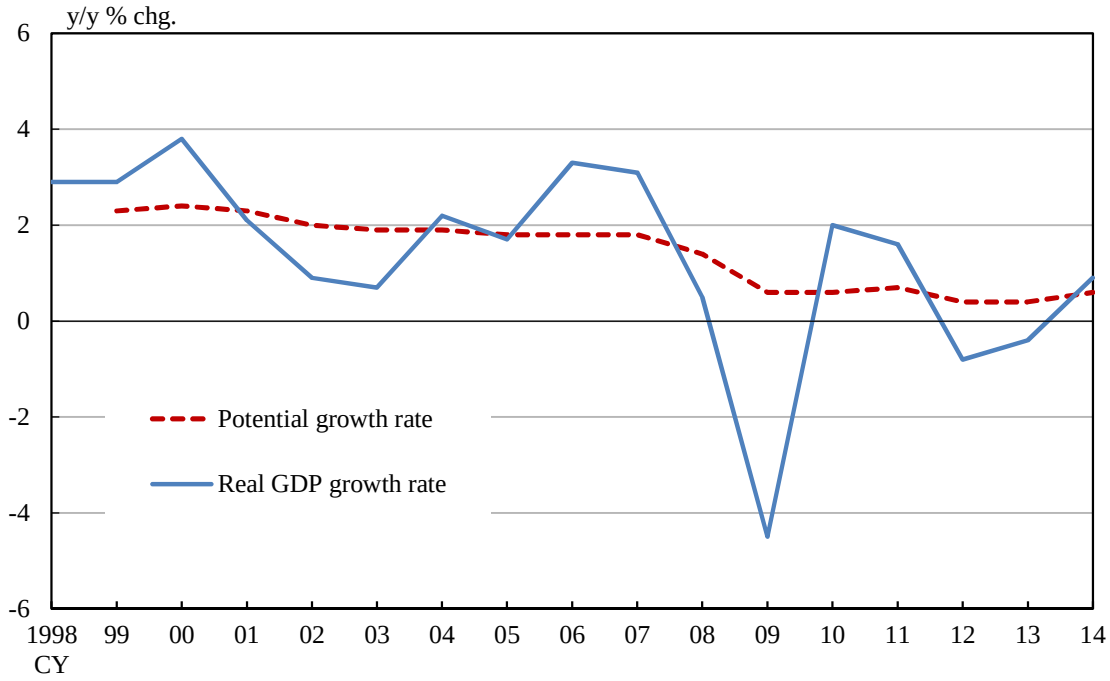
Chart 7

Euro Area: Output Gap and Potential Growth Rate

(1) Output Gap



(2) Real GDP Growth Rate and Potential Growth Rate

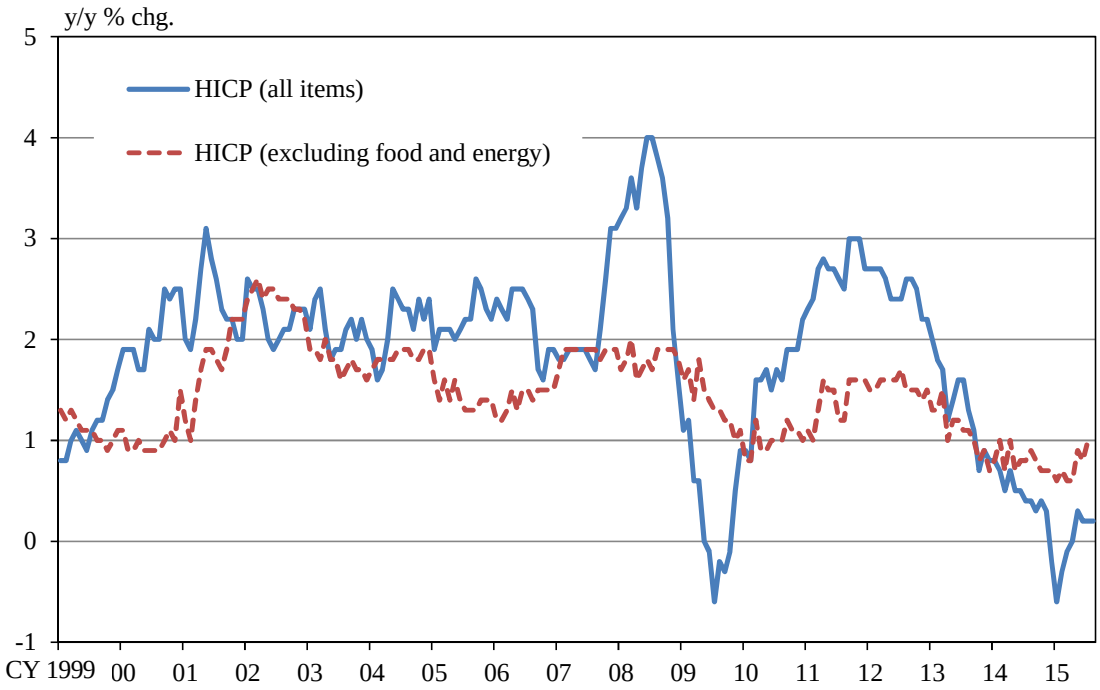


Source: European Commission.

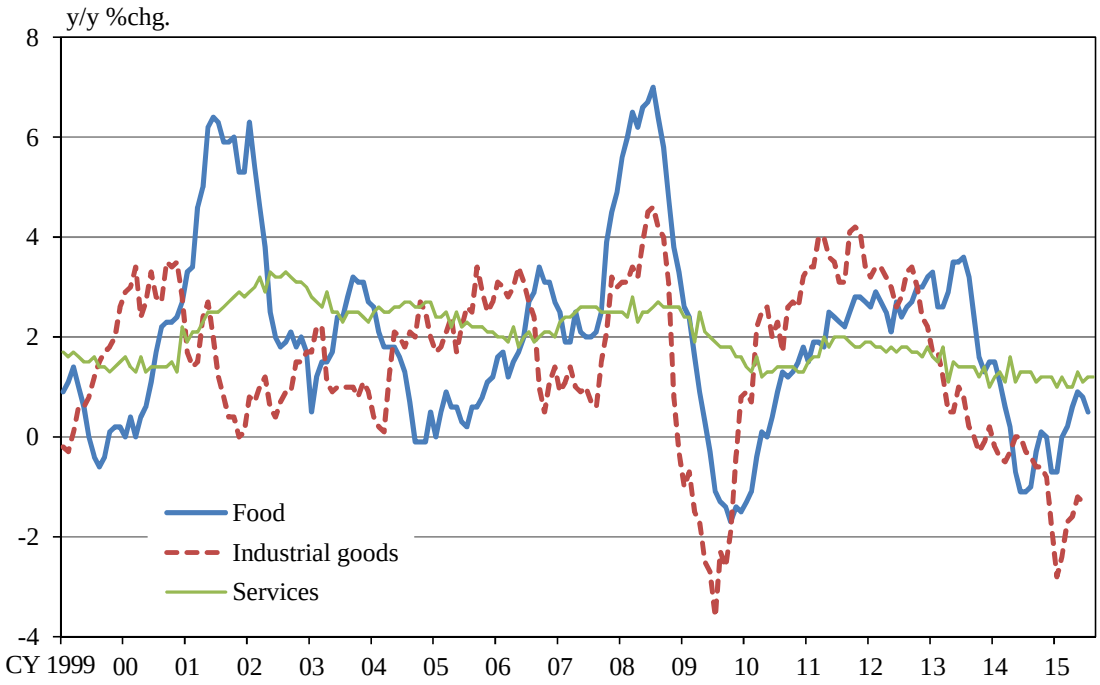
Chart 8

Euro Area: Price Developments

(1) Changes in HICP



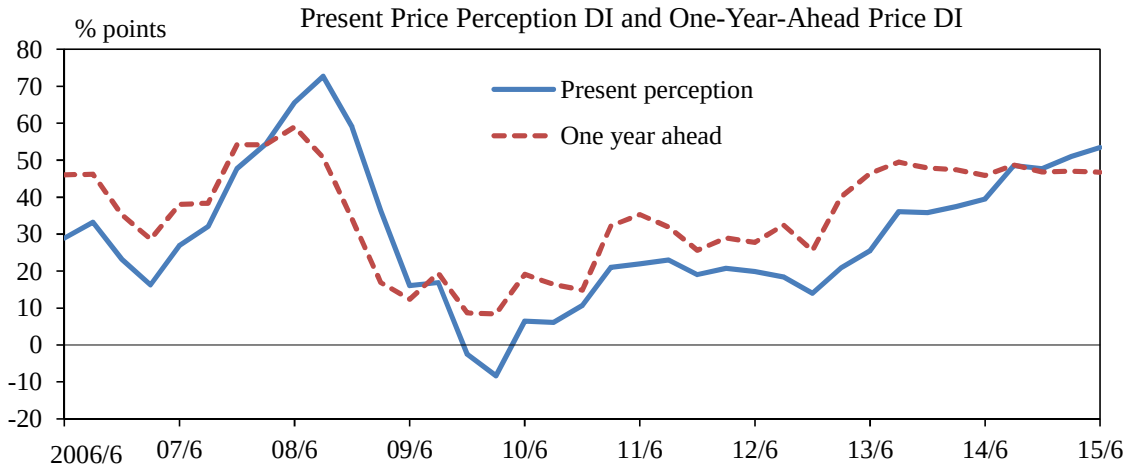
(2) Food, Industrial Goods, and Services



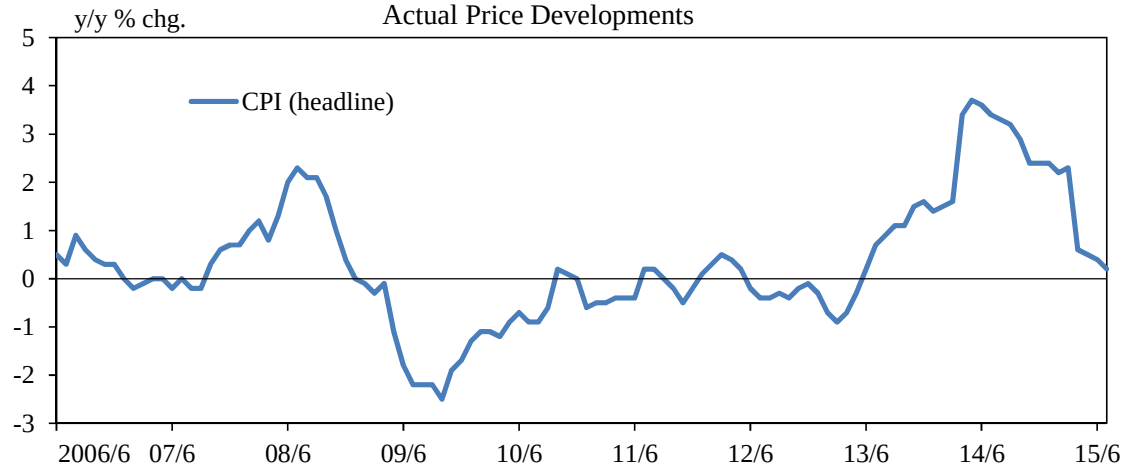
Source: Eurostat.

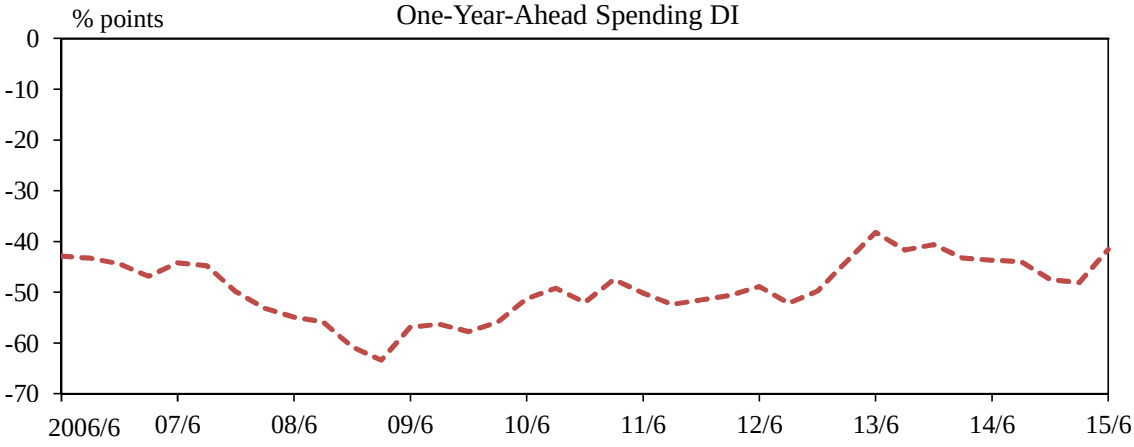
Chart 9

Japan: Households' DIs on Prices and Spending



Note: DI = ("have gone up [will go up] significantly"*1 + "have gone up [will go up] slightly"*0.5) - ("have gone down [will go down] slightly"*0.5 + "have gone down [will go down] significantly"*1)



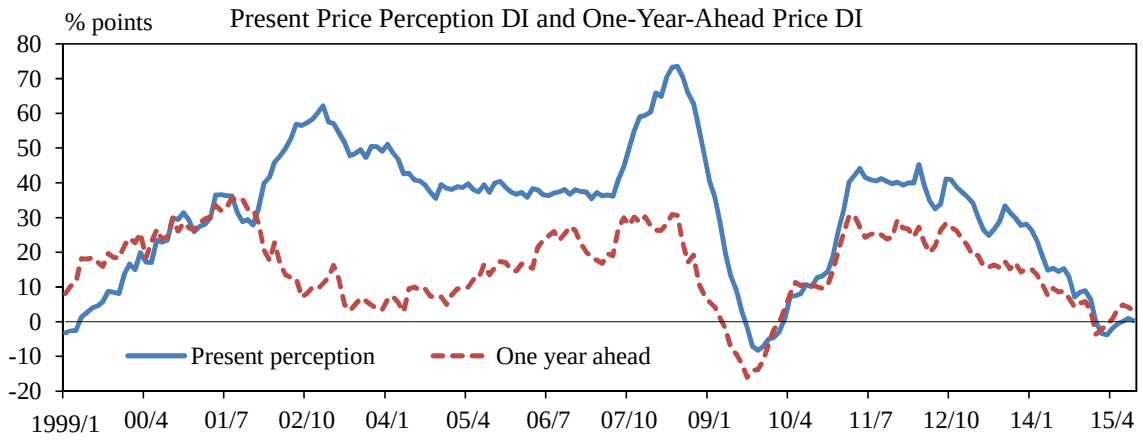


Note: DI = "increase" - "reduce"

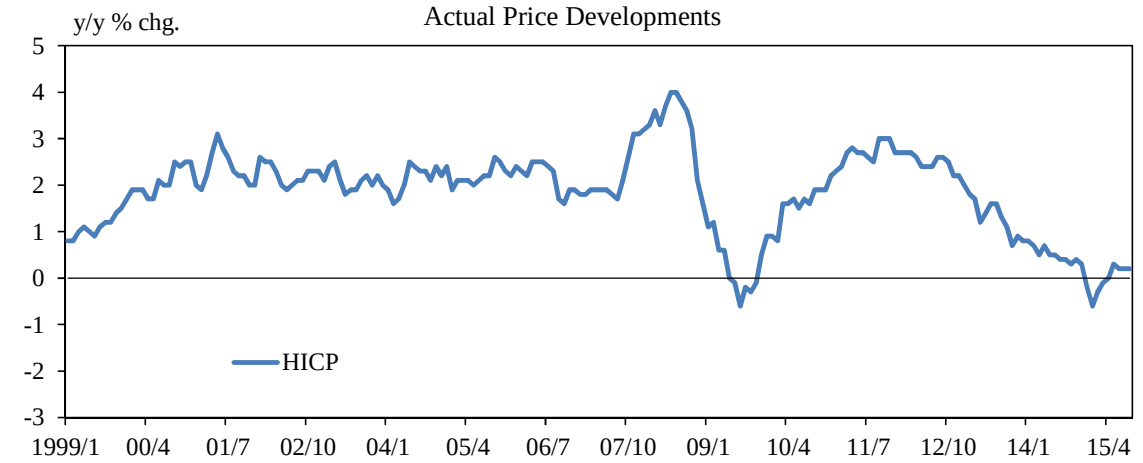
Sources: Bank of Japan; Ministry of Internal Affairs and Communications.

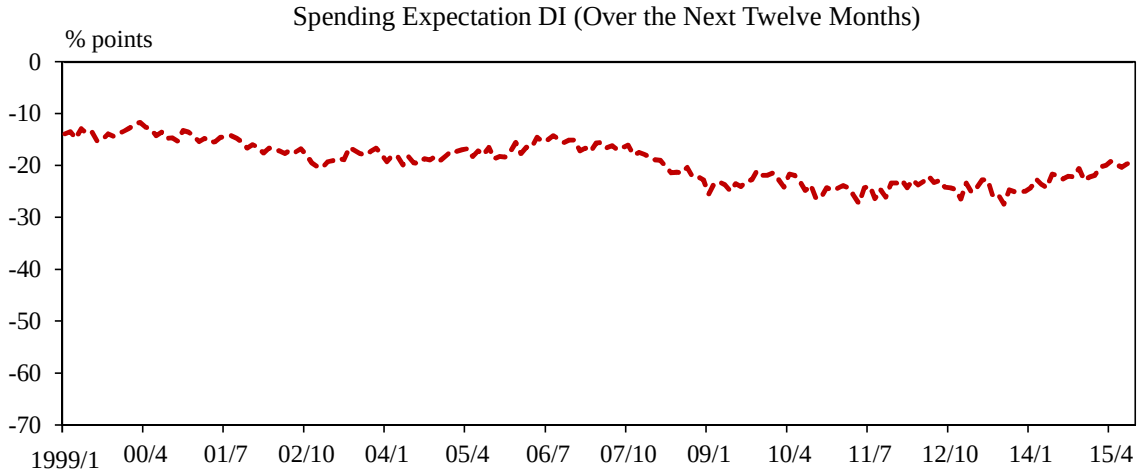
Chart 10

Euro Area: Households' DIs on Prices and Spending



Note: DI = ("risen a lot [increase more rapidly]"*1 + "risen moderately [increase at the same rate]"*0.5) - ("stayed about the same [increase at a slower rate]"*0.5 + "fallen [fall]"*1)





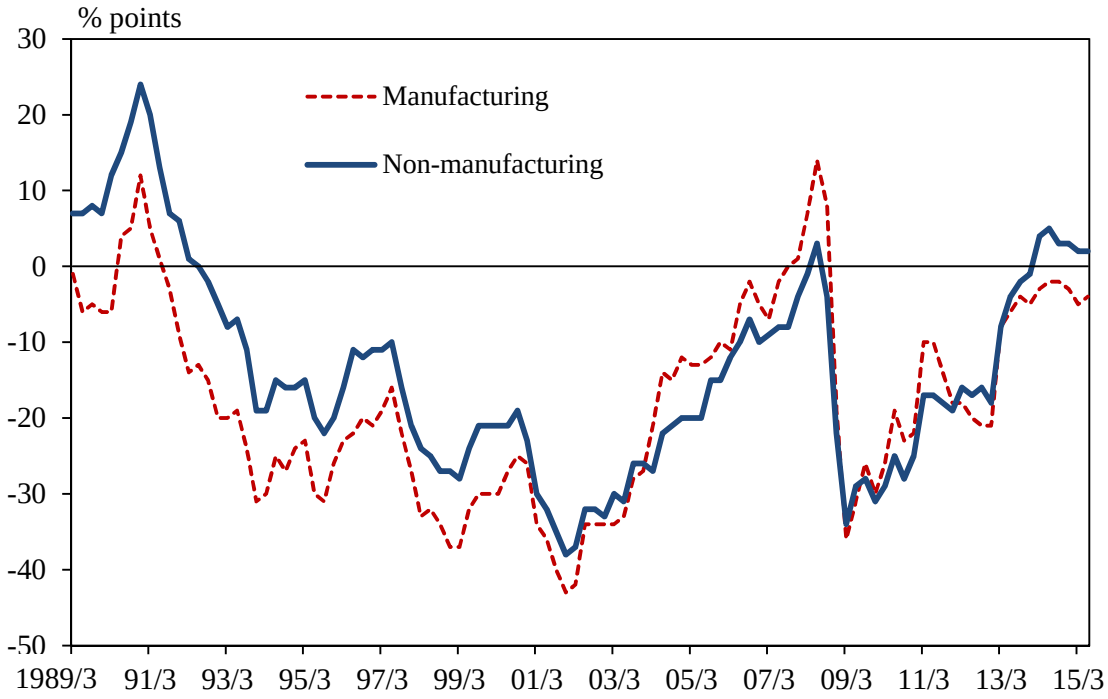
Note: DI = ("much more"*1 + "a little more"*0.5) - ("a little less"*0.5 + "much less"*1)

Sources: European Commission; Eurostat.

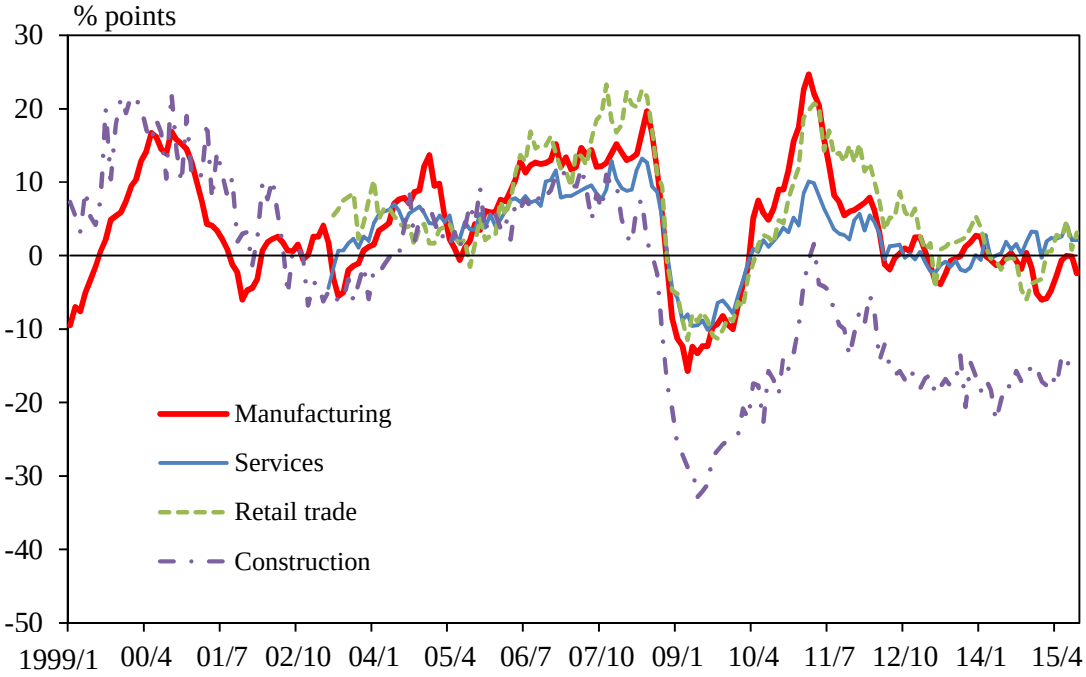
Chart 11

Japan and Euro Area: Firms' Sales Price Expectation DIs

(1) Japan: Three Months Ahead



(2) Euro Area: Three Months Ahead



Sources: Bank of Japan; European Commission.

Reference Chart

Monetary Policy Measures of the ECB and BOJ

		ECB	BOJ
Asset purchases	Types of assets	(1) Euro-denominated securities issued by euro area governments and agencies and European institutions —Maturity between 2-30 years —Basically, investment-grade securities (above BBB-) (2) ABSs (3) Covered bonds	(1) Japanese government bonds (JGBs) —All maturities including 40-year bonds are eligible for purchase. —Average remaining maturity of about 7-10 years (2) ETFs (3) J-REITs (4) CP and corporate bonds (with the amount outstanding maintained at about 2.2 trillion yen and about 3.2 trillion yen, respectively)
	Purchase amounts	—Combined monthly purchases of public- and private-sector securities of 60 billion euros	—JGBs: An annual pace of increase of about 80 trillion yen —ETFs: An annual pace of increase of about 3 trillion yen —J-REITs: An annual pace of increase of about 90 billion yen
	Effective period	—From March 2015, until at least September 2016 (covered bond purchases from October 2014, and ABS purchases from November 2014) —It will be conducted until the ECB sees a sustained adjustment in the path of inflation which is consistent with its aim of achieving inflation rates below, but close to, 2 percent over the medium term.	—From April 2013, expanded in October 2014 —The Bank will continue with QQE, aiming to achieve the price stability target of 2 percent, as long as it is necessary for maintaining that target in a stable manner. It will examine both upside and downside risks to economic activity and prices, and make adjustments as appropriate.
Other policy measures	Measures to support bank lending	—TLTROs (the interest rate on the main refinancing operations has been applied from March 2015)	— Fund-Provisioning Measure to Stimulate Bank Lending (0.1 percent) — Fund-Provisioning Measure to Support Strengthening the Foundations for Economic Growth (0.1 percent)
	Major policy rates	—Main refinancing operations (0.05percent) —Marginal lending facility (0.3 percent) —Deposit facility (minus 0.2 percent)	Guideline for money market operations: Increase the monetary base at an annual pace of about 80 trillion yen. —Fund-Supplying Operations against Pooled Collateral (0.1 percent) —Basic loan rate (0.3 percent) —Complementary deposit facility (0.1 percent)

Note: Figures in parentheses are the applicable interest rates.
Sources: Bank of Japan; ECB.