Quantitative and Qualitative Monetary Easing Effects and Associated Risks — FY2013 JCER Financial Research Report: General Remarks —

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<Abstract>

○ The BOJ has dramatically expanded its purchases of long-term Japanese government bonds (JGBs) under a policy of quantitative and qualitative easing to encourage declines in long-term interest rates. This new policy is significantly different from past quantitative easing policies in the sense that the remaining maturity of the BOJ’s long-term JGB holdings has lengthened. Abenomics and the introduction of “a new phase of monetary easing” have had certain effects on asset prices including foreign exchange rates and stock prices.

○ In the meantime, on the issue side, it has been pointed out that the redemption periods of JGBs have lengthened, weakening monetary easing effects. Monetary policy and JGB management policy need to be managed consistently.

○ Even if the Japanese economy will escape deflation and, interest rates rise in the future, the BOJ will not sustain a loss of the valuation of JGBs. If anything, the BOJ’s balance sheet impairment risk is on the liabilities side. This is because the burden of interest payments on the outstanding current account balance exceeding the required reserves (so-called excess reserves) will expand.

○ In the QQE exit phase, the BOJ’s remittances to Treasury may be zero for around 3 years at least. The reduction in remittances to Treasury will lead to a national burden. If, at this time, the BOJ is tied up with maintaining its own financial health, this will increase the risk of delay in monetary tightening and unwanted inflation. The BOJ and the government need to come to some prior arrangement concerning the allocation of risks or gains that will arise at the end of the unprecedented monetary policy.

○ Market volatility is more likely to increase in a rising interest rate environment than in a falling interest rate environment. When advanced economies start to end unconventional monetary policies, this may lead to market turmoil and may have an adverse impact on fund flows and the real economy in Asia. For Asian central banks which have a high share of foreign currency dominated assets, this poses the risk of a bank capital crunch.

○ In the medium-to-long term, the crucial question will be how to strike a balance between price stability (monetary policy) and fiscal sustainability (fiscal management including JGB management policy).

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1. Introduction

It will shortly be one year since the second Abe cabinet took office and the policy package known as Abenomics, consisting of bold monetary policy, flexible fiscal policy, and growth strategy to encourage private investment, was revealed. Monetary policy, the first of the three arrows released by the Abe administration, entered a new phase in April this year, referred to as the policy of quantitative and qualitative easing (QQE).

The FY2013 JCER Financial Research Team examined the effects that this QQE will have on financial markets and fund flows in Japan and abroad, comparing the latest policy with three unconventional monetary policies introduced by the BOJ in the past – the zero interest-rate policy pursued from February 1999 to August 2000, the quantitative easing policy pursued from March 2001 to March 2006, and the comprehensive easing policy pursued from October 2010 to March 2013. The Group particularly focused on JGB management policy as, in Japan, with its growing mountain of government debt, the effectiveness of monetary policy needs to be seen in relation to fiscal management. Also, with the BOJ’s balance sheet expanding dramatically due to the introduction of QQE, the Group also studied the kind of potential risks that lie beyond the time horizon of two years indicated by Governor Kuroda. This is because given that, under Abenomics, which makes ending more than 15 years of deflation and tepid growth its top priority, QQE is a “new phase” of “bold” monetary easing, the Group considered it meaningful to deepen understanding of the risks and side effects that QQE may cause and to prepare for them in advance. This report outlines the effects and side effects of QQE.

2. Verification What occurred in the new phase of monetary easing?

2-1. What was the “new phase of monetary easing”? -- The BOJ expanded its balance sheet 1.3 fold in half a year

QQE is “quantitative easing” in the sense that it consists in (1) changing the main operating target for money market operations from the uncollateralized overnight call rate to the monetary base, (2) conducting money market operations so that the monetary base will increase at an annual pace of about 60-70 trillion yen, and (3) doubling the monetary base and holdings of long-term JGBs, commercial paper, corporate bonds, exchange-traded funds (ETFs) and real estate investment funds (J-REITS) in 2 years. It is also “qualitative easing” in the sense that it consists in making JGBs with all maturities including 40-year bonds eligible for purchase, and more than doubling the average remaining maturity of JGB purchases to seven years, which is equivalent to the average maturity of the amount outstanding of JGBs issued.
The outstanding amounts of the BOJ’s long-term JGBs and the monetary base expanded dramatically due to the introduction of QQE, hitting new all-time highs (see Fig. 2-1). Compared with the end of March, long-term JGBs increased 38% from 91 trillion yen to 126 trillion yen, and the monetary base jumped 27%, from 146 trillion yen to 186 trillion yen. Also, due to purchases of other assets such as CP and corporate bonds, the BOJ’s total assets rose to 208 trillion yen at the end of September, and its balance sheet ballooned almost 1.3 fold in half a year. While the size of the balance sheet expanding 1.3 fold in five years under quantitative easing, and 1.4 fold in one-and-a-half years under comprehensive easing, the rate of expansion has increased further3.

Fig. 2-1  BOJ expands monetary base and outstanding of JGBs to hit new all-time highs

![Graph showing the expansion of monetary base and outstanding of JGBs](image)

*Source:* “Monetary Base and the Bank of Japan's Transactions,” and “Bank of Japan Accounts”, Bank of Japan

According to the BOJ, at the end of 2014, the monetary base is expected to reach 270 trillion yen, which is equivalent to double the monetary base at the end of 2012 (138 trillion yen), and long-term JGBs are also expected to more than double from 89 trillion yen to 190 trillion yen at the 2014. In the half year from April to the end of September, the BOJ bought 7.6 trillion yen of JGBs per month from the market on a gross basis (see Fig. 2-2). Calculating back from the forecast outstanding amount of JGBs at the end of 2013 of 140 trillion yen, the BOJ is expected to buy around 6.7 trillion yen on JGBs per month until the end of 2013 and around 6.2 trillion yen in JGBs per month in 2014, in order to reach its target.

3 In FY1988, at the peak of the Japanese bubble a quarter of a century ago, the total assets of all banks expanded 25% in the space of a year. Currently, the BOJ’s balance sheet is expanding at twice that rate.
The BOJ, which has been buying as much as 7 trillion yen of JGBs per month, has been the biggest player in the bond market since April. According to the Flow of Funds Accounts Statistics, in the June quarter, while the BOJ was a net buyer of 19 trillion yen of long-term JGBs, domestic banks (bank accounts of city banks, long-term credit banks and trust banks) were a net seller of almost 17 trillion yen of long-term JGBs (see Fig. 2-3). This appears to be because, under QQE, domestic banks actively put in bids in the BOJ’s purchasing operations and sold their long-term JGB holdings.

A similar trend was also seen in the June quarter of 2001, directly after the BOJ introduced the quantitative easing policy (see Fig. 2-3). Back then also, the BOJ was a net buyer of 11 trillion yen of long-term JGBs, while domestic banks were a net seller of more than 10 trillion yen of JGBs. On this occasion, both the amount of net purchases by the BOJ and the amount net sales by domestic banks are double the amounts back then.

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Note: The blue bars are actual purchases and the red bars are BOJ’s forecasts.

Source: “Japanese Government Bonds held by the Bank of Japan,” “Bank of Japan Accounts (Every Ten Days),” Bank of Japan

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4 According to the Guide to Flow of Funds Accounts Statistics provided by the Research and Statistics Department of the BOJ, JGBs excluding treasury discount bills, and financing bills issued by the Special Account for Fiscal Investment and Loan Program are included in long-term JGBs. Also, since financing bills (FBs) and treasury bills (TBs) were integrated and issued as "Treasury Discount Bills" in February 2009, TBs are included in "JGBs and financing bonds".

5 Under the comprehensive easing policy pursued from October 2010 to March this year, both the BOJ and domestic banks were net buyers of long-term JGBs.
### Fig. 2-3  Amount of BOJ’s net long-term JGB purchases hit a new all-time high

![Graph showing BOJ's net long-term JGB purchases](image)

**Source:** Statistic of Flow of Funds Accounts, Bank of Japan

In the United States, Carpenter, Demiralp, Ihrig and Klee (2013a) have confirmed from the flow of funds accounts statistics that it was the household sector including hedge funds that sold large amounts of long-term treasury securities and mortgage backed securities to the U.S. Federal Reserve Board (FRB) under the asset purchase program initiated in 2008 and that, after the sale of treasury securities, it switched to corporate bonds, CP and local government bonds. Carpenter et al. (2013a) say, in the light of demonstration results, that “preferred habitat theory” suggesting that different bond investors prefer one maturity length over another holds in the United States and that a portfolio rebalance effect came into play as a result of the FRB’s asset purchases.

The presence of the BOJ in the bond market has also increased dramatically in terms of the outstanding amount of its long-term JGB holdings. At the end of June this year, the BOJ’s long-term JGB holdings (112 trillion yen) topped those of domestic banks (102 trillion yen) for the first time in five years (see Fig. 2-4). If the BOJ’s presence increases on both the flow and stock fronts of bond market, as captured by the expression “the whale in the pond”7, this will increase the risk that bond prices will fluctuate dramatically as a result of the BOJ’s bond-buying operations8 and the risk that

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6 According to Carpenter et al. (2013a), sellers of long-term JGBs were households, brokers and dealers and insurance companies.

7 The Nikkei (Nihon Keizai Shimbun) – Article on the 5th page of the morning edition titled “Erratic fluctuations in stock market show no signs of abating”

8 In this regard, the BOJ is devising ways to soften the shock to the bond market by, for example, making the amount of purchases per operation smaller and increasing the frequency of operations.
long-term interest rates will rise (bond prices will fall sharply) at the mere suggestion of the sale of long-term JGBs by the BOJ.

Fig. 2-4  BOJ’s long-term JGB holdings topped those of domestic banks for first time in 5 years

Source: Statistic of Flow of Funds Accounts, Bank of Japan

2-2. Both quantitative forward guidance and interest rate forward guidance are necessary.

According to expectancy theory concerning the term structure of interest rates, in the case of bonds with the same creditworthiness of short-term JGBs and long-term JGBs, long-term interest rates will equal expected short-term interest rate plus a term premium. A term premium can be thought of as “a premium reflecting consideration for the risk associated with uncertainty and the preferences of market participants” (Shiratsuka and Fujiki (2001)). For example, if interest rates rise unexpectedly, long-term bond prices will fall, and when an unforeseen situation arises and funds are urgently required, cash conversion costs may arise. The return on long-term bonds needs to be higher than the return on short-term bonds to cover such interest rate risks and liquidity risks.

Monetary policy aims to have an impact on longer term interest rates by working on both expected short-term interest rates and the term premium. More specifically, forward guidance impacts on expected short-term interest rates, and quantitative expansion has an impact on the term premium (Stein (2012)). According to Kiley (2012), decline in expected short-term interest rates has a greater impact on the real economy than quantitative expansion. In contrast, decline in the term premium

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9 According to Okina (2013a), in the case of bonds with different creditworthiness such as government bonds and corporate bonds, a premium added to interest rates according to the credit risk of the borrower (credit risk premium) is also taken into consideration.
works to push up asset prices (Iwata (2013)).

Utsunomiya, Iwata and Fueda-Samikawa (2013) have verified the effects of unconventional monetary policies to date, including QQE. More specifically, they have grasped from news analysis whether or not the impact of unconventional monetary policies was seen in long-term interests rate and asset prices in Japan, and confirm that QQE has to some degree had the effect of lowering not only short-term interest rates but also long-term interest rates and the effect of pushing up asset prices (stock prices and foreign exchange rates). They have also concluded that similar effects were not seen with the unconventional monetary policies pursued in the past.

Under the current QQE policy, forward guidance that is both state-contingent and calendar-based, expressed in the statement “Our goal is to achieve 2 percent inflation as soon as possible with a two-year timeline as a reference point”, was revealed. However, while quantitative forward guidance of doubling the monetary base was revealed, interest rate forward guidance was not made clear. As Iwata (2013) has also pointed out, “introducing clear and trustworthy forward guidance on interest rates” has become an unavoidable issue for the BOJ, since if it wants to have an impact on the investment behavior of the non-financial sector, it will have to work on expected future short-term interest rates.

2-3. **BOJ extended the maturity of its long-term JGB holdings for the first time**

Under QQE, JGBs with all maturities, including super long-term 40-year bonds, were made eligible for purchase. With respect to its monthly purchases of long-term JGBs, the BOJ explained that the Bank had decided to extend the average remaining maturity of the Bank's JGB purchases from slightly less than three years to about seven years, which is roughly equivalent to the average maturity of the amount outstanding of JGBs issued. The flow of purchases based on the amount outstanding of the Bank's issue-by-issue holdings of JGBs at the end of each month and adjusted for redemption and buyback and retirement by the Government Debt Consolidation Fund shows that, since April, the BOJ has bought large quantities of medium-term and long-term JGBs with 4-15 years remaining to maturity (see Fig. 2-5).

Also, the BOJ began buying 30-year bonds and 40-year bonds, which it hardly ever bought before, and, as a result, the average remaining maturity of long-term JGBs bought from the market suddenly lengthened from 3.1 years before QQE implementation (from October 2012 to March this year) to an

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10 Ueda (2013), published during the work of this analysis, explains that “QQE has not worked as theoretically expected, and the structure is fragile in that the weak yen and stock prices are underpinned by speculative investors with a short-term perspective.”

11 Woodford (2012) explains that non-state-contingent guidance is unwise.

12 Forms of forward guidance are based on Shirai (2013). Shirai comments that “forward guidance expressions may change as time passes.”

13 Release dated April 4, 2014, titled “Introduction of the "Quantitative and Qualitative Monetary Easing"”
average of 7.2 years after implementation (see the red box in Fig. 2-5). Since the long-term JGBs on the BOJ’s balance sheet are JGBs excluding treasury discount bills, it needs to be considered that, in the case of a bond issued as 10-year interest-bearing JGB, for example, even if the remaining period to maturity is less than 1 year, it will still be classified as a long-term JGB.

**Fig. 2-5** JGBs with all maturities, including 40-year bonds, were made eligible for purchase

![Chart](http://www.jcer.or.jp/)

**Note 1:** The increase in the outstanding amount from the end of the previous month was calculated for each JGB issue and this was taken as the flow of purchases. However, since adjustment for reduction in the outstanding amount as a result of redemption, and buyback/retirement is made, the amount of purchases is on a gross basis.

**Note 2:** Oct 2012 to Mar 2013 data is average data for the period from October 2012 through March this year. Includes JGBs purchased through the asset purchase fund.

**Note 3:** The red box is the average remaining maturity of long-term JGBs bought per month by the BOJ. **Source:** Trial calculations of authors based on the Bank of Japan's Issue-by-Issue Holdings of JGBs by Amount Outstanding published by the BOJ and Auction Results for JGBs and Buyback Auction Results published by the Ministry of Finance.

The BOJ has bought longer term JGBs from the market and, as a result, the average remaining maturity of long-term JGBs both in terms of flow (amount of purchases per month) and in terms of stock (outstanding amount of JGB holdings) has also lengthened dramatically. The red line in Fig. 2-6 shows the average remaining maturity of the BOJ’s JGB holdings calculated by matching the Bank of Japan's Issue-by-Issue Holdings of JGBs by Amount Outstanding published monthly by the BOJ and JGB-related data published by the Ministry of Finance. According to the trial calculations of the authors of this report, remaining maturity increased from 3.9 years at the end of March this year to 4.9

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14 Nakazawa, Furukawa (2011) and Saito, Sudo (2009) are used as references for the approach to maturities.
years at the end of September, that is, the average remaining maturity of long-term JGBs grew as much as one year in the space of half a year after introduction of QQE. If the current rate of purchases continues, the average remaining maturity of JGBs held by the BOJ is expected to exceed seven years by the end of 2014.

Likewise, in the days of quantitative easing and comprehensive easing, the amount outstanding of the BOJ’s long-term JGB holdings expanded due to the increase in value of long-term JGB buying operations but, if anything, the average remaining maturity based on amount outstanding shortened. In contrast, after the introduction of QQE, alongside an increase the amount outstanding of long-term JGBs, the remaining maturity has also lengthened. As shown by the red line in Fig. 2-6, the remaining maturity grew shorter by around one year under comprehensive easing, but recouped this in the space of just half a year after the introduction of QQE. Compared with the past two phases of quantitative easing, this is a change in the opposite direction, and it is precisely herein that the “new phase” lies.

**Fig. 2-6  Remaining maturity of the BOJ’s long-term JGBs shortened in past easing phases**

*Note 1:* Face value basis. Including JGBs purchased through the asset purchase fund.

*Note 2:* Long-term JGBs are JGBs excluding treasury discount bills, and there is no distinction in terms of time period left to reach maturity (remaining maturity)

*Source:* Trial calculations of authors based on the Bank of Japan's Issue-by-Issue Holdings of JGBs by Amount Outstanding published by the BOJ and Auction Results for JGBs and Buyback Auction Results published by the Ministry of Finance.

Under the quantitative easing policy pursued from March 2001 to March 2006, the BOJ gradually raised the target amount of the outstanding balance of current accounts at the Bank from 5 trillion yen
to 30 ~ 35 trillion yen. In step with this, the BOJ also repeatedly increased purchases of long-term JGBs per month from 400 billion yen at the outset to 1.2 trillion yen (October 2002). However, since, during this time, the JGBs which the BOJ bought from the market were mainly JGBs with 3 years or less remaining to maturity, the average remaining maturity of JGBs held by the BOJ shortened from 5.4 years in June 2001, for which public data exists, to 3.8 years temporarily in September 2005. As explained later, the fact that the BOJ made medium-term bonds (2 to 6 years) eligible for purchase in its bond-buying operations from June 2001 may have had an impact on the shortening of the remaining maturity.

As shown in Fig. 2-7, the BOJ continued to buy more than 14 trillion of long-term JGBs per year after the end of quantitative easing. The reason the amount outstanding of long-term JGB holdings decreased at this time at this time in spite of such purchases may be that the shorter-term JGBs bought under the quantitative easing policy successively matured and disappeared from the BOJ’s balance sheet. As a result, the remaining maturity of the BOJ’s long-term JGB holdings gradually lengthened from around half a year before quantitative easing was ended through to September 2008 when the Lehman shock occurred. If the BOJ had expected quantitative easing to have the effect of encouraging declines in long-term interest rates, it should have examined operations that would lengthen the remaining maturity of its long-term JGB holdings. 

Fig. 2-7  BOJ continued to buy more than 14 trillion yen of long-term JGBs per year after QE

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Amount of long-term JGB purchases (Trillion yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 1999 to August 2000</td>
<td>5.4</td>
</tr>
<tr>
<td>2000</td>
<td>5.3</td>
</tr>
<tr>
<td>2001</td>
<td>7.9</td>
</tr>
<tr>
<td>2002</td>
<td>13.4</td>
</tr>
<tr>
<td>2003</td>
<td>14.8</td>
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<td>14.5</td>
</tr>
<tr>
<td>2008</td>
<td>15.5</td>
</tr>
<tr>
<td>2009</td>
<td>22.0</td>
</tr>
<tr>
<td>October 2010 to March 2013</td>
<td>22.9</td>
</tr>
<tr>
<td>2011</td>
<td>27.5</td>
</tr>
<tr>
<td>2012</td>
<td>44.9</td>
</tr>
<tr>
<td>April 2013 to the present</td>
<td>45.6</td>
</tr>
</tbody>
</table>

Note: Figures for the year of 2013 is the total from April to September
Source: “Sources of Changes in Current Account Balances at the Bank of Japan and Market Operations,” Bank of Japan

15 Ueda (2013) mentions that purchases of long-term JGBs through asset purchase funds under comprehensive easing were restricted to JGBs with remaining maturities not exceeding 3 years and that these were to all intents and purposes assets close to the monetary base, and states that “in some respects, the BOJ conducted operations selecting JGBs which in themselves would have little effect.”
Under the comprehensive easing policy pursued from October 2010 to March this year, (1) purchases of long-term JGBs by newly created asset purchase funds and (2) previously conducted purchases to boost the money supply and ensure the stable supply of funds to markets consistent with the upward trend in bank note demand associated with economic growth (21.6 trillion per year, so-called Rinban operations) were handled as completely separate operations in terms of purpose and type of holding. Fig. 2-6 above showed the amount outstanding and remaining maturity for the two operations combined and it is clear that, even including Rinban operation purchases of JGBs with relatively longer terms, the remaining maturity of the BOJ’s JGB holdings shortened once again under comprehensive easing. This appears to be because, at the time, the BOJ limited long-term JGBs bought from the market via asset purchase funds to those with maturities of 1 or 2 years. The term of long-term JGBs eligible for purchase was extended in April 2012 “from the viewpoint of effectively influencing longer term interest rates”, but even so it was still “1 to 3 years”. In the two-and-a-half years from October 2010, when the comprehensive easing policy was introduced, to March this year, the remaining maturity of long-term JGBs on the BOJ’s balance sheet shortened from 4.9 years to 3.9 years.

2-4. The remaining maturity of Fed’s holdings of Treasury securities also lengthened

Under QQE, the remaining maturity of the BOJ’s JGB holdings has lengthened. Likewise, in the United States, the average remaining maturity of the Federal Reserve’s holdings of Treasury securities lengthened as a result of Operation Twist implemented by the FRB in the fall of 2011. According to Bernanke, Reinhart and Sack (2004), in the United States, for at least the past 50 years, the average remaining maturity of the System Open Market Account’s (SOMA) Treasury holdings has been between 1 year and 4 years, but, all of a sudden, this lengthened by more than 3 years from 7.0 years at the end of 2011 to 10.4 years at the end of 2012 (FRB (2013)). The average remaining maturity grew 3 fold compared with before the Lehman shock. This is because the FRB sold short-term treasury securities with a remaining maturity of less than 3 years, while at the same time buying long-term treasury securities from the markets to curb longer term interest rates. At the end of 2012, Treasury securities with 6 years or more remaining accounted for around 60% of total Treasury securities held in the SOMA portfolio and the remaining share was Treasury securities with duration of 3 to 5 years (Treasury securities with a remaining duration of less than 3 years virtually

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16 Statement of BOJ Monetary Policy Meeting showing the size of the increase in the amount of purchases by asset purchase funds, etc. clearly stated in notes that “In addition to purchases under the Asset Purchase Program, the Bank regularly purchases Japanese government bonds at the pace of 21.6 trillion yen per year.”

17 Release dated April 27, 2012 titled “Enhancement of Monetary Easing”
disappeared). Under the credit easing policy pursued by the FRB in the wake of the Lehman shock\textsuperscript{18}, both the average remaining maturity and duration, which the weighted-average maturity of a Treasury security's cashflows, were comparatively stable, but, from the introduction of Operation Twist onwards, both lengthened. On the balance sheets of both the BOJ and the FRB, the mismatch between the terms of asset and liabilities has increased (means that the weight of long-term assets increases on the assets side and the weight of short-term liabilities increases on the liabilities side).

2-5. **Due to the removal of bank-note rule, BOJ needs to ensure confidence in monetary policy**

The BOJ instituted the so-called bank-note rule in March 2011, when it embarked on quantitative easing. This rule limits the BOJ's long-term JGB buying to the amount of bank notes in circulation. This rule is intended to maintain balance in the maturity structure of the BOJ’s assets and liabilities. Also, for the BOJ, which had embarked on an unconventional monetary policy, the bank-note rule can also be construed as “the central bank’s final indication of discipline” (Saito, Sudo (2009)) against political pressure, to prevent any misunderstanding that the purchases of long-term JGBs were for the purpose of fiscal financing, as the underwriting of government bonds by the BOJ is prohibited under Article 5 of the Finance Act.

With the introduction of the comprehensive easing policy in October 2010, the BOJ decided to apply the bank-note rule only to so-called Rinban operations, that is, purchases of long-term JGBs in response to the upward trend in bank notes associated with economic growth. At the time, the rule was not applied to purchases of long-term JGBs through asset purchase funds, which were positioned as extraordinary temporary measures. The scale of Rinban operations was gradually increased from the introduction of quantitative easing onwards, reaching 1.8 trillion yen per month in March 2009 (21.6 trillion yen per year) (see Fig. 2-8). Meanwhile, in recent years, year-on-year growth in the circulation of bank notes has remained stable at around 3%, except for around April 2002, when the payoff suspension was partially lifted. It is clear from the data for Rinban operations alone (purchases of 1.8 trillion yen of JGBs per month) that it was a matter of time before long-term JGBs, which continuously showed year-on year double digit growth, would break through the ceiling of the bank notes in circulation.

\textsuperscript{18} Whereas the BOJ's quantitative easing policy was a policy that focused on the liabilities sides of the balance sheet, that is, deposits in BOJ current accounts, the FRB’s credit easing policy focused on the assets side of the balance sheet.
The Bank-Note Rule and the amount of long-term JGB purchases by BOJ

<table>
<thead>
<tr>
<th>Date of Decision</th>
<th>Amount per Month</th>
<th>Amount per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100 Million Yen</td>
<td>Trillion Yen</td>
</tr>
<tr>
<td>2001</td>
<td>Mar 19</td>
<td>4,000</td>
</tr>
<tr>
<td></td>
<td>Aug 14</td>
<td>6,000</td>
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<td></td>
<td>Dec 19</td>
<td>8,000</td>
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<td>2002</td>
<td>Feb 28</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>Oct 30</td>
<td>12,000</td>
</tr>
<tr>
<td>2008</td>
<td>Dec 19</td>
<td>14,000</td>
</tr>
<tr>
<td>2009</td>
<td>Mar 18</td>
<td>18,000</td>
</tr>
<tr>
<td>2013</td>
<td>Apr 4</td>
<td>Temporary Removal of the Bank-Note</td>
</tr>
</tbody>
</table>

Source: Generated from the executive summary of BOJ Monetary Policy Meeting etc.

With the introduction of QQE, the BOJ decided to temporarily drop the bank-note rule. As of the end of September 2013, the BOJ held long term JGBs (126.1 trillion yen) equivalent to 1.5 times the bank notes in circulation (83.6 trillion yen) (see Fig. 2-9). The minutes of the BOJ Monetary Policy Meeting held in April record the comments of one member who said that “the Bank could facilitate communication to the public in a clear and intelligible manner if the JGB purchases to be introduced at this meeting were interpreted as simultaneously pursuing the objective of Rinban operations -- to supply currency consistent with the underlying steady development of the economy -- and that of the Program -- to overcome deflation.” However, as also pointed out by Okina (2013), if long-term JGBs expand in a way that is not consistent with the so-called “continuous snow cover” of bank notes and the BOJ’s current account deposits, it will become more difficult for the central bank to make monetary adjustments flexibly in line with fluctuations in the excess or shortage of funds.” Now that the bank-note rule has stopped being applied, albeit temporarily, the BOJ must make clear that the purpose of purchases of long-term JGBs is not to prop up JGB prices or to monetize government debt, and to continue to ensure confidence in monetary policy.

BOJ long-term JGB holdings are 1.5 times bank notes in circulation

Note: Including JGB from Asset purchase program
Source: “Bank of Japan Accounts”, Bank of Japan
2-6. BOJ also abolished the JGB purchase rule and is buying new issues in its operations

To coincide with the start of bond-buying operations in 1967, the BOJ established the JGB purchase rule\(^{19}\), prohibiting it from purchasing bonds issued within the past year in its bond-buying operations (the so-called “one-year rule”). Later, in response to the zero interest-rate policy introduced in February 1999, the BOJ relaxed the JGB purchase rule and extended the scope of its buying operations from 20 issues from among 10-year bonds and 20-year bonds to all issues of 10-year bonds and 20-year bonds (see Fig.2-10). Also, in response to the quantitative easing policy introduced in March 2001, in May 2001, the BOJ made medium-term bonds, which includes 2-year bonds, 4-year bonds, 5-year bonds and 6-year bonds, eligible for purchase and, in January 2002, abolished the one-year rule and made all fixed-rate JGBs with all maturities, except for recent two issues, eligible for purchase. Then, in April this year, with the introduction of QQE, the BOJ completely abolished the JGB purchase rule.

**Fig. 2-10** JGB purchase rule: history up to its complete abolition

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1967</td>
<td>JGBs are eligible for purchase once one year has elapsed since issue.</td>
</tr>
<tr>
<td>March 25, 1999</td>
<td>All issues of 10-year bonds and 20-year bonds are eligible for purchase, in principle.</td>
</tr>
<tr>
<td>May 18, 2001</td>
<td>Medium-term bonds (2-year bonds, 4-year bonds, 5-year bonds and 6-year bonds) are made eligible for purchase.</td>
</tr>
<tr>
<td>January 16, 2002</td>
<td><strong>One-year rule</strong> was abolished. All fixed-rate JGBs with all maturities, except for recent two issues, were made eligible for purchase.</td>
</tr>
<tr>
<td>December 19, 2008</td>
<td>30-year bonds, floating-rate bonds, inflation-indexed bonds were made eligible for purchase.</td>
</tr>
<tr>
<td>April 4, 2013</td>
<td><strong>JGB purchase rule was completely abolished</strong>. All long-term JGBs including 40-year bonds and new issues (recent 2 issues) were made eligible for purchase.</td>
</tr>
</tbody>
</table>

**Source:** Generated from the “History” of BOJ’s website, Financial Markets Department of BOJ (2004) and executive summary of BOJ Monetary Policy Meeting

Because the BOJ made newly issued JGBs eligible for purchase in its bond-buying operations, the bond market started to see “BOJ trades” where the bank that is the primary dealer sells newly issued bonds to the BOJ shortly after their issue as part of bond-buying operations. This is because “though the profit margin is small, the bonds are sure to sell straight away for a profit.”\(^{20}\) Due to the increase in BOJ trades, in the case of the 329th 10-year JGB issue, for example, two trading days after the issue, the BOJ had bought 30% of the issue value (See Fig. 2-11). Under QQE, it was revealed that the BOJ planned to buy long-term JGBs equivalent to 70% of the new issues per month but, besides purchases

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\(^{19}\) According to the release dated January 16, 2001 titled “(Reference) Points of Recent Decision”, the official name of the JGB purchase rule is the Rule for Selection of Issues Eligible for Purchase in JGB Buying Operations”.

\(^{20}\) Nikkei Veritas, Article on page 2 of the October 6, 2013 edition titled “All quiet on the JGB front- the dangerous sense of confidence created by BOJ trades”
on the scale of 7 trillion yen of JGBs per month also in terms of the concentration of issues bought, the impact on the liquidity of JGBs is likely to be considerable. While financial institutions judge for themselves which issues to sell in operations, if a situation in which the BOJ sucks up almost half the JGBs from the market in just a few months after their issue occurs frequently, this may give the market the idea of underwriting of JGBs by the BOJ which is prohibited by the Finance Act. In this sense also, the BOJ needs to send out a clear message to the markets and the Japanese people that monetization is not the purpose of its JGB purchases.

Fig. 2-11 BOJ Trades-In some cases the BOJ holds more than 40% of new JGB issues

Source: Generated from the Japanese Government Bonds held by the Bank of Japan and “Market Operations” of BOJ, Auction Results of JGBs of Ministry of Finance

3. To escape deflation, consistency between monetary policy and JGB management policy is required.

3-1. Increase in JGB issues and lengthening of redemption periods weakened monetary policy effects

As shown in Fig. 2-6, under QQE, the average remaining maturity of the BOJ’s long-term JGB holdings has grown dramatically. In the meantime, the redemption periods of JGBs issued each year has also lengthened (see Fig. 3-1). The average redemption period grew 3 years, from 4 years and 10 months in FY1999 to 7 years and 11 months in FY2013 based on the initial projection. This is because, wanting to reduce the burden of interest payments caused by mounting government debt, Japan attempted to issue longer-dated JGBs while interest rates were low to prepare for future rate increases (see Fig. 3-2).
Fig. 3-1  Redemption periods of JGBs also grew dramatically (based on annual JGB issuance)

Note 1: Includes short-term JGBs (6-month and 1-year Treasury Bills).
Note 2: FY2013 figure is based on initial projection
Source: Debt Management Report, Ministry of Finance

Fig. 3-2 BOJ will shift to buy long-term bonds in phases of issuance of JGBs and low-interest rate

Note 1: Left figure shows flow (JGB issuance), and right figure shows stock (Outstanding JGBs).
Note 2: FY2013 figures are based on initial projections.
Source: FY2013 JGB Issuance Plan published by the MOF

Fujikawa, Iwata and Fueda-Samikawa (2013) have attempted an analysis focusing on the possibility that the effects of past quantitative easing policies were offset by a supply side factor other than the increase in the amount of JGB issuance, that is, the lengthening of the redemption period. Chadha, Turner and Zampolli (2013) have shown empirical results to the effect that when the average remaining maturity of U.S. Treasury securities in financial markets becomes shorter because the FRB bought long-term securities from the market, this strengthened downward pressure to their long-term interest rate. The FRB gradually raised the target interest rate from June 2004, but this did not lead to a rise in long-term interest rates, which former Federal Reserve chairman Alan Greenspan expressed
by the term “conundrum” at the time. The prevailing view was that the savings of emerging economies had built up in the safe assets of advanced economies in the form of foreign reserves, but the shortening trend of the remaining maturity of treasury securities held by the U.S. private sector may also have had an impact (see Fig. 3-3).

Fig.3-3 In the United States, privately held Treasury securities continued to shorten after the rate hikes in 2004, and the rise in long-term interest rates was curbed.

![Graph showing US Treasury securities]

**Note:** Bar charts show the private sector’s JGBs (by term) and the line chart shows the average remaining maturity.

**Source:** U.S. Department of the Treasury “Treasury Bulletin”

In Japan, with the introduction of QQE, the BOJ started to buy large amounts of long-term bonds, but, in the meantime, on the issue side, the average redemption period of JGBs has lengthened, and so the average remaining maturity of the long-term JGBs held by the private sector (= not the BOJ) has lengthened under the impact from the issue side (see Fig.3-3). At the end of September 2013, whereas the average remaining maturity of the BOJ’s long-term JGB holdings was 4.9 years, the average remaining maturity of JGBs held by the private sector was much longer than this, at 8.3 years\(^{21}\).

Fujikawa, Iwata and Fueda-Samikawa (2013) have confirmed through empirical analysis that the effect of past monetary easing policies of curbing longer term interest rates was weakened as a result of the lengthening of redemption periods of JGBs. From 2001, when the quantitative easing policy

\[^{21}\text{In the United States, the duration of Treasury securities held by the private sector (= not the FRB) is more than double that of the SOMA’s holdings of treasury securities (FRB (2013)). This is a bigger gap than in Japan (1.7 times).}\]
was implemented, the lengthening of the redemption periods pushed long-term interest rates up almost 0.5-0.9 percentage points. This result suggests that JGB management policy offset the quantitative easing effect. While it is rational behavior for Japan to issue long-dated JGBs in a low interest rate environment, under Abenomics which makes escape from deflation its top priority, JGB management policy consistent with monetary policy that attempts to curb interest rates across the yield curve is required.  

**Fig. 3-4 Average remaining maturity held by non-BOJ sectors has extended for long time**

![Graph showing average remaining maturity held by non-BOJ sectors](image)

*Source:* Trial calculations of authors based on Bank of Japan's Issue-by-Issue Holdings of JGBs by Amount Outstanding published by the BOJ and JGB Auction Results published by MOF

3-2. Arrangement between the Bank of England and HM Treasury

In March 2009, the Bank of England, which is the central bank of the United Kingdom, established the Asset Purchase Facility as part of its financial stability measures, and embarked on quantitative easing. In response to this, Alistair Darling, who was Chancellor of the Exchequer at the time, sent an open letter to Bank of England Governor Mervyn King, saying that “I recognize the importance of ensuring that debt management policy is consistent with the aims of monetary policy. I am today

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22 On this point, Komiya (2002) says that “If changing the maturity structure of privately held debt securities is expected to have some kind of desirable effect in relation to macro-economic policy, then this should be done through government bond management policy by the financial authorities. Especially as things are in Japan, judging from the size of the amounts of issuance, redemptions, and sales and purchases of medium-term and long-term bonds, the influence of the BOJ is but slight compared with that of the MOF”.

confirming that the Government’s debt management policy remains to minimize, over the long term, the costs of meeting the Government’s financing needs, taking into consideration account risk, whilst ensuring that debt management policy is consistent with the aims of monetary policy. • • • (Omitted) • • • However, the Government will not alter its issuance strategy as a result of the asset transactions undertaken by the Bank of England for monetary policy purposes.” To further enhance the effects of QQE, a cooperative arrangement between the Japanese government and the BOJ is required.24

4. The BOJ’s financial health needs to be ensured through a loss coverage provision

4-1. BOJ’s balance sheet risk is on the liabilities side

As seen above, on the BOJ’s balance sheet, the maturity mismatch between assets and liabilities is expanding. The lengthening of the average remaining maturity of long-term JGBs on the assets side is directly linked to the lengthening of duration. The lengthening of duration means there is a higher risk of bond prices falling if interest rates rise, but since, in FY2004, the BOJ changed the long-term JGB valuation method from lower of cost or market to the amortized cost method25, “even if the market value of JGB holdings falls due to a rate rise, there is no valuation loss” (Planning Office, Bank of Japan (2004)). The amortized cost method is a valuation method applied to held-to-maturity debt securities under corporate accounting standards, and the BOJ records the face value of long-term JGBs on the assets side of the balance sheet and amortizes the difference between the acquisition cost and the face value equally every period until maturity.

If anything, the BOJ’s risk of impairment of its balance sheet as a result of rising rates is on the liabilities side. This is because, under the supplemental reserve facility26, the BOJ pays 0.1% interest on the balance of current account deposits at the Bank exceeding legal reserve requirements of around 8 trillion yen (so-called excess reserves). The risk may materialize when the 2% CPI price stability target has been reached and the BOJ has raised in the rate of interest on these excess reserves. Under QQE, the balance of current account deposits at the BOJ is expected to rise to 175 trillion yen at the end of 2014. When the time comes for the BOJ to raise the interest rate on excess reserves after tapering easing, the BOJ’s interest payments will increase and may squeeze its current account surplus. If the BOJ’s surplus declines, this may also lead to expansion in the public burden through decline in

24 Iwata (2010) mentions with respect to foreign exchange intervention that “consistency between monetary policy management and intervention policy not only enhances the effects of intervention policy but also enhances the effects of monetary policy”

25 The difference between the acquisition cost and face value is recorded as “JGB interest payment” in P/L.

26 The BOJ has paid 0.1% interest on the current account deposits held by financial institutions at the Bank that exceed legal reserve requirements since October 2008 after the Lehman shock.
remittances to Treasury.

4-2. In the United States, it is feared that the FRB’s interest payments and losses on sales of securities will balloon due to rate hikes after the tapering of easing

The FRB also has similar concerns concerning the decline in remittances to Treasury. Carpenter, Ihrig, Klee, Quinn and Boote (2013) estimate the impact on financial statements should the FRB continue its current asset purchase program (purchases of 45 billion dollars of U.S. treasury securities per month and purchases of 40 billion dollars of MBS per month ) until the end of 2013. According to their estimates, if the FRB purchases 1 trillion dollars of assets in 2013, by the end of 2013, the FRB’s assets will expand to 3.75 trillion dollars and the outstanding balance of current-account deposits will expand to 2.7 trillion dollars. Also, assuming that the FRB raises the benchmark interest rate half a year after it stops asset purchases, starts selling MBS another half a year after that, and spends 3 to 4 years reducing the amount outstanding of MBS to zero, due to expansion in interest payments and losses, remittances to Treasury would have to stop for 4 years. During this time, the FRB would record deferred tax assets. If interest rates are 1 percentage point higher than the baseline scenario, the period during which remittances to Treasury would stop would increase to six-and-a-half years.

Carpenter et al. (2013) conclude that the more the central bank’s balance sheet expands due to asset purchases and the more long-term interest rates rise, the greater the burden of interest payments on excess reserves and losses on sales of MBS will be, and so the period during which the FRB’s profits are squeezed, preventing remittances to Treasury will lengthen. Given this situation, Chairman of the Federal Reserve Ben Bernanke said in his testimony to Congress on February 26 this year that “remittances to the Treasury could be quite low for a time in some scenarios, particularly if interest rates were to rise quickly”.

4-3 Side effects of QQE – Possibility that remittances to Treasury will be halted in an exit

In light of Carpenter et al. (2013), Inagaki, Fueda-Samikawa and Iwata (2013) have analyzed the risks Japan will face when it starts to exit QQE. Under QQE, the BOJ will continue to purchase

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27 Bernanke (2012) has said that one possible exit strategy besides selling asset holdings is to exert upward pressure on short-term interest rates by raising the interest paid on on deposits (reserves).
28 At the time of writing (November 2013), most analysts expect that the timing of the tapering of easing will be postponed until 2014.
29 Strictly speaking, this is the outstanding amount of assets in SOMA (the System Open Market Account).
30 With respect to the FRB’s halting of MBS purchases and their sale, Krishnamurthy and Vissing-Jorgensen (2013) say that selling MBS which are scarce has a greater impact on the private sector than selling JGBs which mainly impacts on the government’s financing costs.
31 http://www.federalreserve.gov/newsevents/testimony/bernanke20130226a.htm
around 7 trillion yen of long-term JGBs per month until March 2013, and if it can achieve its target of 2% inflation in two years as forecast, the BOJ will have to make its next move and start to taper easing. Here, the first phase of the exit strategy is considered to be the reduction of purchases, and the BOJ will reduce the amount of long-term JGB purchases per month by 380 billion yen every month over a period of one-and-a-half years. It is assumed, however, that bond-buying operations to boost the money supply will continue after the tapering of easing. Next, as the second phase, let us assume that, from April 2014, half a year after it stops reducing its purchases, the BOJ gradually raises the rate of interest on excess reserves from its current level of 1% to 2.5%\(^{32}\). At this time, interest payments per year will increase to a peak of around 2.6 trillion yen\(^{33}\). Meanwhile, many of the long-term JGBs on the assets side are low-interest long-dated bonds, and even if interest rates start to rise, interest income will not increase significantly. The increase in interest payments will squeeze the BOJ’s profits, and, unless provisions are reversed, the current account surplus will turn negative for around 3 years from FY2019 (see Fig. 4-1). Since this will also prevent the payment of dividends even if legal reserves are set aside, the BOJ may be unable to make remittances to Treasury\(^{34}\) for around 3 years.

If the benchmark interest rate is raised from 0.1% to 3%, interest payments will peak over 3 trillion yen, and remittances to Treasury will be halted for around 4 years. Also, if achievement of the inflation account deficit will persist for around 5 years, and, during this time, remittances to Treasury will stop. It was ascertained from the results of analysis that, in an exit from QQE, the more interest rates rise and the more the BOJ’s balance sheet expands, the greater the decline in the current account surplus will be. As for higher-than-expected interest rates and extension of the period of purchases, the size of the deficit will be greater in the case of the former and the period of suspension of remittances to Treasury will be longer in the case of the latter.

This analysis has not taken extraordinary income or loss arising from foreign exchange loss or gain or the disposal of fixed assets, etc., which fluctuates dramatically every year, into consideration, but, for example, if the yen value of foreign debt securities declines due to a stronger yen and a loss on disposal of fixed assets occurs, profits will be pushed down further. As envisaged by Carpenter et al.

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\(^{32}\) Monetary tightening through long-term JGB selling operations was not included in the scope of this analysis on the grounds that it was unrealistic in view of the shock to the bond market, but Carpenter et al. (2013) have analyzed to what extent losses on the sale of MBS would squeeze the FRB’s profits. Also, here, fund absorption through the sale of bills is regarded as synonymous with raising the rate of interest on excess reserves in the sense that the BOJ incurs interest payments.

\(^{33}\) The BOJ’s “Other ordinary expenses” (includes interest payments on excess reserves) were 43.2 billion yen in FY2012.

\(^{34}\) Remittances to Treasury are the current account surplus after payment of corporate, inhabitant, and enterprise taxes less the transfer to the statutory reserve (5% of the current account surplus) and dividends (5 million yen per year, 5% of amount of paid-in investment). Remittances to Treasury are tax deductible.
(2013), if the FRB bank embarks on the sale of its asset holdings (in the case of the BOJ, its long-term JGBs) in a rising interest rate environment, a loss on the sale of debt securities will arise. The BOJ needs to explain to the Japanese people in advance and ask them to understand that if remittances to Treasury are dragged down to zero by such a combination of factors, this will increase the public burden.

Fig. 4-1 BOJ’s remittance could be sown to zero in the phase of exit from QQE

Note: Extraordinary profit or loss arising from foreign exchange factors, the disposal of fixed assets, etc., which fluctuates considerably every year, is not taken into consideration.

4-4. Escape from deflation is the priority, and the BOJ’s financial health should be ensured by the government

Under the new Bank of Japan Act enacted in 1998, the independence of the BOJ was ensured, and the loss coverage provision in the supplementary provisions of the old Bank of Japan act was eliminated. Under the old Act, if the BOJ’s current account surplus turned negative (despite the reversal of reserves, etc.), the government had to supply an amount equal to the shortfall, but, under the new Act, this provision disappeared, and the BOJ itself is responsible for its financial health.

However, in a rising interest environment in the future, the BOJ’s ordinary income may turn negative. While it depends on the size and duration of the deficit, when the reversal of provisions and reserves is not enough to cover the shortfall, the current account surplus turns negative and the remittances to Treasury can no longer be made, if the BOJ is tied up with maintaining its financial health, monetary tightening may be delayed. This is because, as also pointed out by Ueda (2003), if the BOJ attempts to overcome the excess of debt with its own operations, it will need to earn a large amount of “seigniorage” (i.e. profits from printing money) and this will necessitate a high money
supply rate and inflation. The BOJ’s accounting regulations stipulate that the BOJ must operate so that its own capital adequacy ratio is within the range of 2 percentage points above or below 10% (Furuichi and Mori (2005)), but the BOJ’s capital adequacy ratio has been around the 7% mark since FY2002 (7.5% in FY2012). Also in view of the fact that the capital adequacy ratio is already below the lower bound of the guideline level, the more importance the BOJ attaches to its financial health at the exit, the more likely the scenario of unwanted inflation and difficulties managing monetary policy.

To begin with, under the new Bank of Japan Act, revenues from purchases of long-term JGBs conducted by the BOJ as part of monetary policy are paid to the national treasury, but the BOJ must assume responsibility for disposing of any losses. On this point, Okina (1999) says that “from the point of view of clarification of responsibility, it is only natural that the cost of the central bank’s actions bounce back to the central bank”, but there are limitations when it comes to the BOJ assuming responsibility for disposing of the losses arising from “a new phase of” measures like the current phase. The gains arising as a result of the irregular monetary policy and subsequent losses must be seen comprehensively, and the Japanese government and the BOJ must also come to some prior arrangement concerning their allocation.

4-5. There is also the risk of increased uncertainty in the inflation and interest rate outlook

As explained above, the BOJ needs to continue explaining to the market that the purchases of long-term JGBs are not for the purpose of monetization. Let us examine the type of factors that cause changes in the current account balances at the BOJ according to BOJ statistics (see Fig. 4-2).

According to the BOJ’s definitions, Banknotes (A) and Treasury funds and others (B) give rise to a Surplus/Shortage of Funds (C), which is subject to BOJ Loans and Market operations (D). The amount remaining after market operations (the sum of the Surplus/Shortage of funds (C) and Market operations (D)) will be the change in current account balances at the BOJ. Examination based on the period from FY2000 when unconventional monetary policies were implemented shows that the BOJ bought long-term JGBs and treasury discount bills from the market mainly to cover the shortage of funds arising from “Treasury funds and others” originating from net JGB issuance (Redemptions – Issuance).

Also, recently, the long-term JGBs and the treasury discount bills bought by the BOJ in its market

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35 Okina also argues for the revival of the loss coverage provision from the same perspective.
36 The BOJ could also raise the cash-deposit ratio to reduce the burden of interest payments on excess reserves. However, in this case, since private banks would essentially be subject to taxation by being forcibly made to hold reserve deposits with super low-interest rates (Fukao (2013)), this may have an impact on the corporate sector and household sector in the form of a premium added to lending interest rates.
operations are reaching maturity, and since redemption payments which were supposed to have been made by the government to private financial institutions (current account balances at the BOJ) are being paid to the BOJ, the shortage of funds due to Treasury funds and others appears to be expanding (Financial Markets Department, Bank of Japan (2013)).

Fig.4-2 BOJ buys JGBs to cover the shortage of funds by the fiscal factor etc.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>2000</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banknotes (A)</td>
<td>1.0</td>
<td>9.9</td>
<td>3.2</td>
<td>-0.3</td>
<td>3.3</td>
<td>3.3</td>
<td>0.9</td>
<td>0.9</td>
<td>0.6</td>
<td>0.4</td>
<td>0.3</td>
<td>0.1</td>
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<td>Treasury funds and others (ID)</td>
<td>-52.2</td>
<td>-53.7</td>
<td>-63.1</td>
<td>-58.7</td>
<td>-65.0</td>
<td>-38.4</td>
<td>-38.8</td>
<td>-39.0</td>
<td>-36.0</td>
<td>-35.8</td>
<td>-34.3</td>
<td>-28.4</td>
<td>-38.7</td>
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<tr>
<td>LT JGBs issued</td>
<td>-98.6</td>
<td>-116.5</td>
<td>-125.3</td>
<td>-151.0</td>
<td>-171.0</td>
<td>-158.3</td>
<td>-163.7</td>
<td>-156.8</td>
<td>-107.0</td>
<td>-112.8</td>
<td>-121.6</td>
<td>-198.0</td>
<td>-158.8</td>
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<td>LT JGBs redeemed</td>
<td>53.1</td>
<td>47.2</td>
<td>56.7</td>
<td>63.9</td>
<td>60.5</td>
<td>51.2</td>
<td>58.5</td>
<td>69.4</td>
<td>75.6</td>
<td>69.5</td>
<td>60.9</td>
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<td>Treasury discount bills issued</td>
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<td>-79.1</td>
<td>-103.5</td>
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<td>Treasury discount bills redeemed</td>
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<td>-9.2</td>
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<td>Surplus/shortage of funds (C)=(A)+(B)</td>
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<td>58.4</td>
<td>60.8</td>
<td>87.6</td>
<td>86.7</td>
<td>52.2</td>
<td>82.6</td>
<td>39.9</td>
<td>39.5</td>
<td>50.7</td>
<td>35.5</td>
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<td>37.6</td>
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<td>Outright Purchase of LT JGBs (E)</td>
<td>8.5</td>
<td>7.0</td>
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<td>14.8</td>
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<td>14.4</td>
<td>14.5</td>
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<td>0.1</td>
<td>0.8</td>
<td>0.4</td>
<td>1.2</td>
<td>0.8</td>
<td>1.7</td>
<td>3.0</td>
<td>2.0</td>
<td>1.7</td>
<td>6.0</td>
<td>32.2</td>
</tr>
<tr>
<td>Others (G)</td>
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<td>-11.1</td>
<td>-0.1</td>
<td>-1.7</td>
<td>10.5</td>
<td>-0.5</td>
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<td>9.3</td>
<td>9.3</td>
<td>5.3</td>
<td>16.5</td>
<td>18.5</td>
<td>-12.2</td>
</tr>
<tr>
<td>Net change in current deposit (H)=(D)+(E)</td>
<td>-13.2</td>
<td>21.8</td>
<td>3.2</td>
<td>5.4</td>
<td>5.6</td>
<td>4.8</td>
<td>19.1</td>
<td>2.6</td>
<td>7.9</td>
<td>1.3</td>
<td>17.3</td>
<td>8.0</td>
<td>23.7</td>
</tr>
</tbody>
</table>

**Note:** Issuance of JGB is shown by minus as it takes money out of the market and redeeming JGBs is shown by plus as it returns money to the market.

**Source:** Sources of Changes in Current Account Balances at the Bank of Japan and Market Operations (Final Figures)

If the amount of JGB issuance continues to increase in the future and redemption periods lengthen, the difference between the amount of long-term JGB issuance and the amount of redemptions shown in Fig. 4-2 will expand further and may cause further expansion in the shortage of funds (parts shaded blue in Fig. 4-2). If a situation develops where the BOJ buys long-term JGBs to ensure financial sustainability, this could be seen as fiscal financing and also lead to instability in financial markets. As also shown by the analysis results of the BOJ (2013), an asymmetric relationship exists between long-term interest rates and volatility such that, at times of rising interest rates (falling prices), sales to avoid losses are more likely to occur and volatility increases. Due to this asymmetry, in rising interest rate environments, the risk of the destabilization of financial markets also tends to increase. It may also be necessary to envisage in advance the risk of increased uncertainty in the inflation and interest rate outlook.

5. Tapering of easing in the United States and Japan may also cause a reversal of money flows from Asia

If the United States undertakes monetary tightening at the time Japan starts to look for an exit, this may have an impact on money flows around the world especially in Asian emerging economies. When FRB Chairman Ben Bernanke Chairman commented on June 19 this year that the United States was...
likely to start tapering the third round of quantitative easing (QE3) by the end of the year, bonds and shares of Asian countries were sold and money flowed out of these countries.

According to the empirical results of Toji, Iwata, and Fueda-Samikawa (2013), as a result of the comments of Ben Bernanke in June rising long-term interest rates and falling stock prices were confirmed in South Korea, the Philippines and Singapore, rising long-term interest rates were observed in Malaysia and falling stock prices were observed in Indonesia. In the meantime, money flows appear to have reversed into the US from Asian emerging economies. Later, in September, when the Federal Open Market Committee decided to postpone the tapering of QE3, this time, long-term interest rates fell in Thailand and Hong Kong and the local currencies of Malaysia and Indonesia strengthened against the dollar. As a result of validation, in all cases, a statistically significant relationship with the postponement of QE3 tapering was observed. The first round of quantitative easing (QE1), pursued by the FRB from November 2008 to March 2009, was also confirmed to have brought about a flow of funds into Asian countries, lowered long-term interest rates in Asia, and strengthened Asian currencies. Meanwhile, Japan’s QQE caused the currencies of Malaysia, the Philippines, Singapore and Thailand to rise against the Japanese yen.

In Asian countries, generally speaking, foreign currency denominated assets account for a larger share of the central bank’s total assets than in Japan, the United States and Europe. This is because in many countries in Asia, the central bank engages in exchange intervention on its own account and, since domestic financial markets are underdeveloped, the central bank has no choice but to carry out market operations in the foreign exchange market (Nishihara (2005)). Meanwhile, on the liabilities side, locally denominated debt such as banknotes accounts for the majority of debt, and due to the currency mismatch of assets and liabilities, these countries have a relatively high level of interest rate risk exposure. Given that, especially since the Lehman shock, the local currencies have strengthened as a result of inflows of funds from advanced economies, the Asian economies have increased their foreign currency reserves. Part 4 pointed out that the mismatch in the maturities of assets and liabilities on the BOJ’s balance sheet has grown and this has increased the risk of impairment of the balance sheet, but Asian central banks face the risk of impairment of their balance sheet due to the “currency mismatch” of assets and liabilities. Problems with central banks’ balance sheets are also occurring in Asia.

37 In Japan, since the government holds the majority of foreign currency reserves, the risk of impairment of the BOJ’s balance sheet due to currency mismatch is not as high as for Asian central banks.

38 On the assets side of the balance sheet, relatively low interest United States Treasury securities have increased, while on the liabilities side, liabilities denominated in the local currency have expanded, and, on the basis of the interest rate differential alone, there is a strong possibility that central banks face a negative spread.
When quantitative easing tapering starts in earnest in the United States and Japan in the future, there is the risk that the bonds and shares of Asian countries will be sold, triggering sudden fund outflows from Asia. In this event, if Asian central banks start to protect their currencies, absorbing the local currency though exchange intervention, there is also the risk that bank lending to domestic corporations and households will be reduced and Asian economies will cool down. The spill-over effects that the monetary policies of advanced economies have on the management of monetary policy and the real economy in Asian countries also need to be monitored carefully.

6. Conclusion

This report has examined the impact that the policy of quantitative and qualitative easing, the first arrow of Abenomics, has had on financial variables in Japan and abroad. In contrast to the numerous unconventional monetary policies introduced in the past, QQE launched in April this year had a certain effect on long-term interest rates, exchange rates and stock prices. However, to make the policy effects extend to real investment, the BOJ needs to lower the term premium though quantitative easing and issue a clear and trustworthy forward guidance on interest rates.

The BOJ expected QQE to have the effect of lowering the share of long-term JGBs held by the private sector and curbing rises in interest rates. Since, in the meantime, the government issued long-term JGBs and attempted to curb interest payment expenses, the remaining maturity of the long-term JGBs held by the private sector increased around 2 years in a period of 10 years. In light of confirmation of the possibility that the JGB management policy of lengthening redemption periods weakened monetary policy effects, consistency between monetary policy and government bond management policy will be required in the future. The arrangement made between the Bank of England and HM Treasury in March 2009 might serve as a reference.

One of the risks associated with QQE is the BOJ’s balance sheet problem. Since during its QQE program, the BOJ is increasing its long-term JGB holdings, the interest income earned from them is expanding, pushing up profits (current account surplus). However, when, in an exit, the BOJ raises interest rates on excess reserves, there is the risk that the BOJ’s remittances to Treasury will stop for at least around 3 years, increasing the public burden. The greater the extent to which achievement of the inflation target is delayed and the BOJ’s balance sheet expands, and the greater the extent to which inflation exceeds expectations and short-term interest rates rise, the more the amount of interest payments on excess reserves will swell and the more the BOJ’s profits (current account surplus) will be squeezed. If the BOJ is tied up with maintaining its own financial health when this happens, monetary tightening may be delayed. The BOJ and the government ought to come to a prior arrangement on the allocation of risks or gains arising at the end of the irregular monetary policy.
In a rising interest rate environment, the risk that financial markets will become unstable tends to increase. It is also necessary to envisage in advance that any change in monetary policy in the United States and Japan will increase the volatility of Asian financial markets and cause a change in global money flows.

If a situation develops where the BOJ purchases long-term JGBs to ensure financial stability, this could be seen as fiscal financing and lead to instability in financial markets. The critical question is how to strike a balance between price stability in the medium-to-long-term (monetary policy) and fiscal sustainability (fiscal policy, including JGB management) while fully considering the risk of increased uncertainty in the inflation and rate outlook.
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