

September 20, 2017

< *Exit from QQE* >*What loss will the BOJ incur if it exits QQE right now?**Ikuko FUEDA-SAMIKAWA (Principal Economist)**
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The argument over the “exit” from unconventional monetary policy, the quantitative and qualitative monetary easing (QQE) that the Bank of Japan (BOJ) commenced in April 2013 has been growing heated in Japan. Adding to the fact that the US Federal Reserve and European Central Bank (ECB) are now exploring how to exit, or at least how to start “tapering” their bond purchases, it has been asked whether the BOJ should continue purchasing assets including Japanese government bonds (JGBs) and exchange traded funds (ETFs), despite the fact that massive losses could be incurred in the future. In 2013, just after the BOJ started QQE, the author (Samikawa) and the Financial Research Team of the Japan Center for Economic Research attempted to estimate the future losses occurring at its exit, as the assumption was based on the rather optimistic outlook that Japan’s consumer price inflation rate would reach 2% in two years as announced by the BOJ at the beginning of the QQE.

The situation has changed drastically since then. The BOJ’s balance sheet expanded to a level comparable to Japan’s nominal gross domestic product (GDP), and as a percentage of GDP it is much larger than the balance sheets of the Federal Reserve and the ECB. When introducing QQE, the BOJ was aiming to “double the monetary base and the holdings of government bonds in two years,” but even after four years the exit is still not visible and the balance sheet has more than tripled.

In April, the Administrative Reform Promotion Headquarters of Japan’s ruling Liberal Democratic Party asked the government to examine the risk of the BOJ’s exit strategy¹. Following this, the BOJ’s Deputy Governor Kikuo Iwata said at the House of Councilors’ Financial Affairs Committee Meeting on April 25, “We have been calculating the potential losses at the time of exit.” Governor Haruhiko Kuroda also said at the Financial Affairs Committee Meeting of the House of Representatives on May 10, “If the long-term interest rate rises by 1%, the valuation loss of the BOJ’s JGB holdings will reach about 23 trillion yen.” On the other hand, Kuroda still remains wary about explicitly showing the way to the exit, saying, “It is difficult at this moment to concretely show the exit method or process².” In this report, as a result, we will consider what loss will be incurred if the BOJ starts exiting immediately. Since the longer the monetary easing continues, the larger the loss that can be expected, the amount of loss estimated below may be regarded as the bottom line of the BOJ’s future losses.

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Why will the exit from the current monetary policy cause losses to the BOJ?

Since the beginning of QQE in April 2013, the BOJ has supplied the monetary base by purchasing assets such as long-term JGBs from the secondary market. The monetary base refers to the amount of currency supplied by the central bank to the economy. It is defined as the sum of the banknotes in circulation, the coins in circulation, and the current account deposits held by financial institutions at the central bank.

How did the BOJ's balance sheet change under QQE? Table 1 shows that the Bank's total assets have expanded from 164 trillion yen as of end of March 2013 just prior to the start of QQE to 490 trillion yen at the end of March 2017, nearly tripling in four years. Among the asset items, government bonds are increasing rapidly. The outstanding balance increased from 125 trillion yen before QQE to 417 trillion yen at the end of March 2017, or 3.3 times. At the end of May, the total assets exceeded 500 trillion yen for the first time, and the BOJ's balance sheet had expanded to a scale comparable to Japan's nominal GDP. It is prominent even compared with other major central banks.

On the liabilities side, the current account deposits held by private financial institutions account for about 70% of the BOJ's balance sheet. In other words, what expanded under QQE was mainly government bonds on the asset side and current account deposits on the liability side.

Under the "inflation-overshooting commitment," the BOJ commits itself to expanding the monetary base until the year-on-year rate of increase in the observed Consumer Price Index (CPI) exceeds the price stability target of 2% and remains stably above the target. The growth rate CPI core excluding fresh food for July is 0.5%, a positive increase for the seventh consecutive month. However, given the weak prospects for crude oil prices and geopolitical risks, the outlook for Japan's inflation is uncertain, and the means of achieving the 2% target is not readily apparent.

Table.1 The changes in the BOJ's balance sheet before and after QQE

ASSETS	FY2012		FY2016		Monetary Base (Billion yen, %)				
	Value	Share	Value	Share	LIABILITIES/NET ASSETS	FY2012	Share	FY2016	Share
Gold	441	0.3	441	0.1	Banknotes	83,378	50.6	99,800	20.4
Cash	324	0.2	203	0.0	Deposits	58,320	35.4	356,379	72.7
Japanese government securities	125,356	76.1	417,711	85.2	Deposits of the government	1,494	0.9	21,751	4.4
Commercial paper	1,246	0.8	2,036	0.4	Payables under repurchase agreements	14,505	8.8	3,425	0.7
Corporate bonds	2,887	1.8	3,214	0.7	Other liabilities	287	0.2	207	0.0
Stocks held as trust property	1,378	0.8	1,188	0.2	Provisions	3,539	2.1	4,861	1.0
Exchange-traded funds	1,544	0.9	12,935	2.6	Capital	0	0.0	0	0.0
J-REIT	119	0.1	382	0.1	Legal reserve	2,713	1.6	3,159	0.6
Loans and bills discounted	25,487	15.5	44,665	9.1	Special reserve	0	0.0	0	0.0
Foreign currency assets	5,526	3.4	6,608	1.3	Net income	576	0.3	507	0.1
Others	505	0.3	705	0.1	Total liabilities and net assets	164,813	100.0	490,089	100.0
Total assets	164,813	100.0	490,089	100.0					

Note: "Japanese government securities" on the asset side are the sum of short and long-term government bonds.

Source: Bank of Japan, *Financial Statements for the 132nd Fiscal Year/Fiscal 2016*, *Financial Statements for the 128th Fiscal Year/Fiscal 2012*

When the BOJ reaches the exit, the interest payment to the current account deposits will increase. Meanwhile, the remaining maturity of the government bonds held by the BOJ, especially long-term JGBs, is more than seven years on average, and the share of JGBs issued at an ultra-low interest rate

has been increasing. As the policy rate hike by the BOJ means raising the interest rate on its current account deposits, especially on excess reserves, its interest payment will increase when the BOJ turns to a rate hike in the future. If the range of interest rate increases is large, the BOJ's margin could soon become negative. If this situation continues, the Bank is likely to become insolvent.

On the other hand, it has been pointed out that there would not be any problems because under normal conditions, the central bank obtains revenue from bank note issuance, i.e. *seigniorage*. No matter how many banknotes the central bank issues, no interest payment burden arises because there is no interest on the banknotes. The central bank holds government bonds in line with the banknotes, and the interest income is obtained from these bonds, so this margin becomes *seigniorage*.

Nevertheless, the BOJ currently pays interest on current account deposits that comprise the majority of the Bank's liability. Under the negative interest rate policy that the BOJ first announced in January 2016, the current account deposit is divided into three tiers, of which the BOJ still pays a positive interest rate of 0.1% to "Basic Balances." Among the hierarchical structure, zero interest rate is applied to the "Macro Add-on Balance" and a negative interest rate of minus 0.1% is applied to the "Policy-Rate Balance." In other words, those financial institutions depositing money to the Policy-Rate Balance must pay the interest to the BOJ.

The BOJ transfers the amount of surplus after the deduction of reserves and dividends to the government every year. In FY2016 ended March 2017, the BOJ's national treasury payment was 481.3 billion yen. About 95% of its surplus was transferred to the national treasury.

BOJ's JGB purchasing at negative rate -- loss generated before the exit

Although the outstanding amount of JGBs held by the BOJ has been increasing continuously, its interest revenues appear to have stopped increasing. In FY2016, the holdings of government bonds increased by 19% to 417.7 trillion yen, while interest revenues fell by 7.8% to 1,186.9 billion yen, falling below the previous year's results for the first time in five years. What is happening with interest on government bonds, which has long been the major income source for the BOJ? First of all, those JGBs with higher interest rates that the BOJ purchased in the past have reached maturity one after another, and have been replaced by JGBs issued at low interest at the 0% level. Since the BOJ states that it "will conduct purchases more or less in line with the current pace—an annual pace of increase in the amount outstanding of its JGB holdings at about 80 trillion yen" as its goal, the portion that has fallen from the balance sheet due to maturity must be replaced with other JGBs.

However, the larger factor is that under the negative interest rate policy that commenced in February 2016, the BOJ purchased JGBs at a significantly higher price than the face value. The BOJ adopts an accounting method called the "amortized cost method," in which the difference between the acquisition cost and the face value of long-term JGBs is amortized evenly until maturity. For example,

suppose the BOJ purchases a JGB with a face value of 100 yen, with five years remaining until maturity at 105 yen. During the five years to maturity, the Bank deducts 1 yen each year from “Interest income.”³ In line with this, the book value of the JGBs recorded in the balance sheet is also reduced by 1 yen each year. The annual amortization amount, 1 yen in the above example, is called the “Interest adjustment amount.” In the BOJ’s income statement, the interest on government bonds after deducting the interest adjustment amount ((1) in the following formula) is recorded.

If the BOJ’s holdings of interest-bearing government bonds increase, interest income (2) will increase, so the interest on government bonds in (1) will also increase. However, the purchase of government bonds in the phase of declining interest rates means purchasing at a price exceeding the face value, and the negative interest adjustment amount of (3) also expands. In particular, in purchasing government bonds with a negative interest rate, the negative amount of (3) becomes larger than (2), which makes the net interest receipt on government bonds (1) negative as a result.

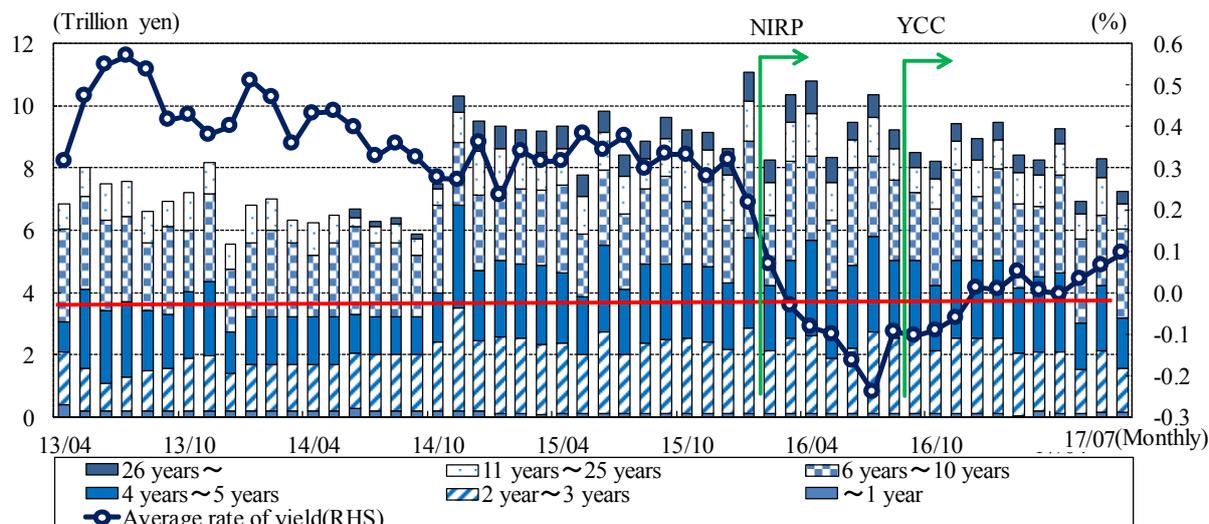
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Note: The interest adjustment amount becomes negative if the purchase price of bond exceeds the face value, whereas it becomes positive if the purchase price is lower than the face value.

Figure 1 illustrates the details of BOJ’s purchase of JGBs since the start of QQE. Looking at the line chart showing the weighted average of the winning bid yield, i.e. the average purchase price for the BOJ, the BOJ’s purchase of JGBs appears to have taken a different approach with the introduction of the negative interest rate policy. Until then, even if the BOJ purchased JGBs at a price that exceeded the face value, the Bank could cover the negative interest adjustment amount with the fixed interest income for that year. Nonetheless, after the introduction of the negative interest rate policy, the BOJ’s purchase price of JGBs rose far above the face value, and it could no longer be covered with fixed interest income from those JGBs (the circled part in Figure 1).

Since the amortized cost method is based on the premise of holding bonds until maturity, the BOJ does not need to post valuation losses of the JGBs in each accounting term, even if the long-term interest rate rises (the price of long-term JGBs declines). However, after the introduction of the negative interest rate policy, the yield on JGBs declined sharply, and the yield on 20-year JGBs fell into negative territory. As a result of the increase in purchasing JGBs at negative yields, the BOJ incurred losses for nine months from March to November 2016, even before it reached the exit. However, when the 10-year JGB yield is suppressed to around 0% under yield curve control (YCC), the average yield at the time of purchase by the BOJ gradually returned to positive territory. The average winning bid yield in July 2017 is 0.095% (estimated by the authors).

Fig. 1 BOJ's Purchase of JGBs under QQE - Average yield turned positive after YCC



Note: 1. The bar chart shows the amount of BOJ's purchase of JGBs, and the line chart (RHS) shows the average rate of the winning bid yield.

2. As for the detailed estimation method, see the appendix⁴ and Iwata et al. (2017).

Source: Bank of Japan, *Japanese Government Bonds Held by the Bank of Japan, Operations*, The Japan Securities Dealers Association, *Reference Statistical Prices (Yields) for OTC Bond Transactions/Rating Matrix*

In addition, the redemption loss from discount bills that the BOJ purchased at a negative yield also put pressure on the BOJ's profits in FY2016. According to the official statement of business performance of the BOJ, the operating profit from discount bills was negative 123 billion yen in FY2016, showing that the Bank incurred redemption losses from holding discount bills. As will be discussed later, the loss generated at the exit of QQE is regarded as being caused by an increase in the interest rate on the liability side. However, in the environment of negative interest rates, loss has occurred from the declining yield of discount bills and long-term JGBs, which are on the asset side of the BOJ's balance sheet.

What happens if the BOJ stops buying JGBs right now and heads towards the exit?

Losses arising from the BOJ's purchase of JGBs stopped increasing with the introduction of YCC, although the BOJ's balance sheet is expected to expand further in the future, considering the long road ahead to achieve the price stability target of 2%. As the estimation of future losses for the BOJ could vary depending on assumptions, it is desirable to eliminate uncertain factors as much as possible to simplify the assumption. In order to see what loss will occur in the future, we assume that the BOJ stops purchasing JGBs immediately and approaches the exit by raising the interest rate. To avoid the future scenario becoming complex, we assume that the BOJ will not reinvest in JGBs and simply allow its balance sheet to decrease in size.

There are roughly two ways for the BOJ to reduce the size of its balance sheet. One way is the JGB selling operation, and the other is to stop purchasing JGBs by not reinvesting even when they reach maturity. With regard to the former, considering the fact that the BOJ already holds 40% of the total

issuance of JGBs, it may have a risk of unintentionally raising long-term interest rates, and it appears difficult to sell its JGBs in the JGB market. A realistic scenario is therefore the latter; to gradually reduce the reinvestment of JGBs that have reached maturity. This is the process currently being followed by the US Federal Reserve. Nonetheless, as a number of assumptions regarding the outlook for interest rates and the future debt management strategy are necessary, we simply consider the situation where the BOJ stops purchasing JGBs immediately. At the end of July 2017, the BOJ holds JGBs worth 387 trillion yen on a face-value basis.

As we saw in Table 1, the BOJ has been increasing the supply of the monetary base mainly by purchasing long-term JGBs under QQE. The assets other than JGBs are therefore to be deselected from our analysis. The large proportion of JGBs purchased by the BOJ before QQE has already reached maturity. As of the end of July 2017, the existing JGBs only account for 6.7% of the total JGBs held by the BOJ. The BOJ doubled the purchase amount of JGBs and thus massively increased the holding of JGBs after QQE. In addition, the Bank has improved the disclosure of information about purchasing and holding JGBs since the start of QQE, making it easier for us to estimate the interest adjustment amount for each JGB it holds. We will therefore focus on those JGBs that the BOJ purchased after QQE.

The BOJ will receive interest income of about 1 trillion yen annually from its JGB holdings

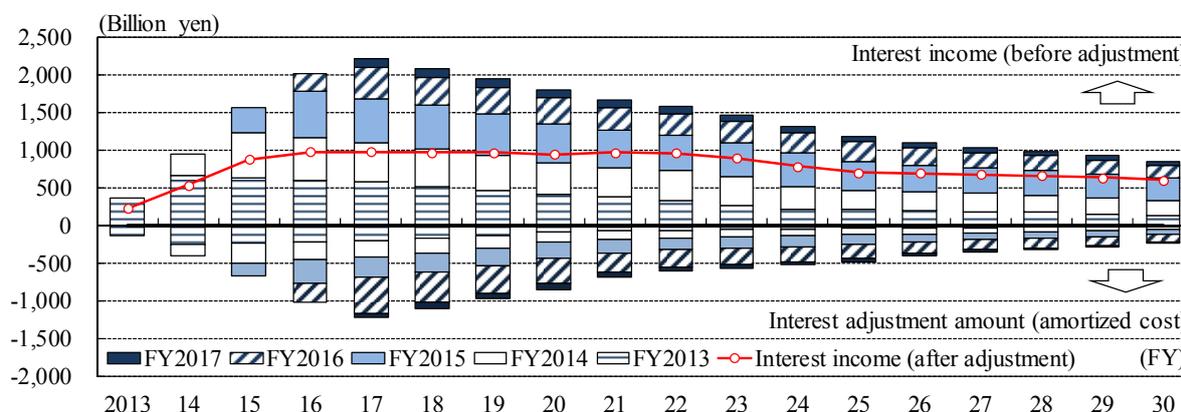
Figure 2 illustrates the gross interest income and interest adjustment amount arising from JGBs purchased after QQE. This is a summary of information such as the BOJ's purchase price of long-term JGBs, the years remaining until maturity, and the nominal coupon rate. Inflation-indexed bonds and floating-rate bonds are excluded from the analysis because the yield (price) fluctuates during the holding period.

In Figure 2, the line chart indicates the adjusted interest receipts, i.e. the sum of the interest income from JGB holdings (the bar chart in the plus area) and the interest adjustment amount (the bar chart in the minus area). The adjusted interest receipts from the JGB holdings are listed on the BOJ's income statement. Since the reinvestment in JGBs is not taken into account in this analysis, the amount of interest earned from the JGB holdings gradually decreases.

On the other hand, looking at the interest adjustment amount, the dip into negative territory becomes greater in FY2017. This is due to the fact that the negative interest rate policy commenced at the end of FY2016 and the BOJ increased its purchases of JGBs at a higher price, exceeding the face value. Of course, along with the JGBs reaching maturity, the amount of interest adjustment naturally increases (the dip into negative territory shrinks). Moreover, the BOJ has been purchasing JGBs with a positive yield since the start of YCC, and the negative range of the interest adjustment will gradually decrease from FY2018.

As a result, even assuming that the BOJ stops buying immediately and does not reinvest in JGBs, the Bank will be able to declare interest revenue from JGBs of about 1 trillion yen in each accounting year until around FY2022. In addition, even if the BOJ continues to purchase JGBs for the time being, interest revenues may increase very little unless the BOJ buys JGBs whose remaining maturity is longer than 10 years. Under the current YCC, the BOJ purchases JGBs so that the 10-year JGB yields will remain more or less at around 0%, and thus the yields of JGBs of less than 10 years have been negative. But the BOJ has been purchasing JGBs with an average maturity of less than 10 years, so unless it reinvests in JGBs in the exit phase, the BOJ's future interest revenue will not increase.

Fig. 2 Interest income from JGBs purchased by the BOJ under QQE



Note: The details of amortized cost are explained in Section 2.

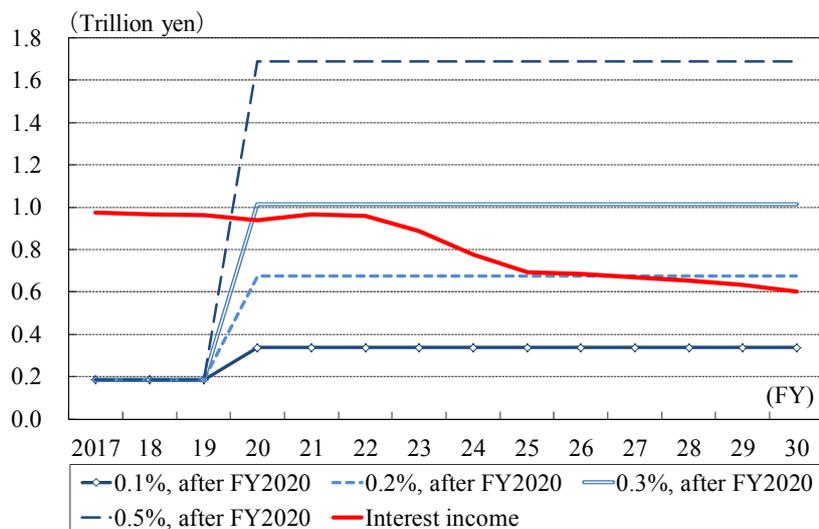
Source: Bank of Japan, *Japanese Government Bonds Held by the Bank of Japan, Operations*, The Japan Securities Dealers Association, *Reference Statistical Prices (Yields) for OTC Bond Transactions/Rating Matrix*

If the interest rate increases to 2%, an annual loss of 6 trillion yen occurs - can the BOJ handle this?

Up until now, we have seen the impact of a decrease in size of the BOJ's balance sheet at the exit phase. Next, we will consider the influence of interest rate increases. Financial institutions such as banks are currently depositing huge amounts of funds in the current account deposits of the BOJ⁵, exceeding the minimum level required by law. The portion of the current account deposits excluding the reserve requirement is called excess reserve. For financial institutions, the BOJ's current account deposits are the safest means of investing their funds for a short period of time with a low credit risk. Since the interest rate for the excess reserve is regarded as the lower limit of the overnight interest rate, the BOJ will likely raise the short-term interest rate by increasing the interest rate on excess reserves in the exit phase.

Figure 3 shows the interest revenue from the JGBs seen in Figure 2 and the outlook for the interest payment if the BOJ raises the interest rate on excess reserves in FY2020. The reason why the rate hike starts in FY2020 is because the BOJ showed in the latest inflation outlook report "Outlook for Economic Activity and Prices" published in July 2017 that the CPI inflation rate would reach 2% in "around FY2019."

Fig. 3 BOJ's interest payment and interest income generated at the exit
--based on the JGB holdings as of the end of July 2017



Note: 1. The BOJ assumes that the exit will raise the apportionment for excess reserves (the portion of the BOJ's current account, excluding the necessary preparations).

2. Interest revenue is calculated as interest earned from government bonds held by the Bank at the end of July 2005. We do not consider buy-in or purchase reductions after this.

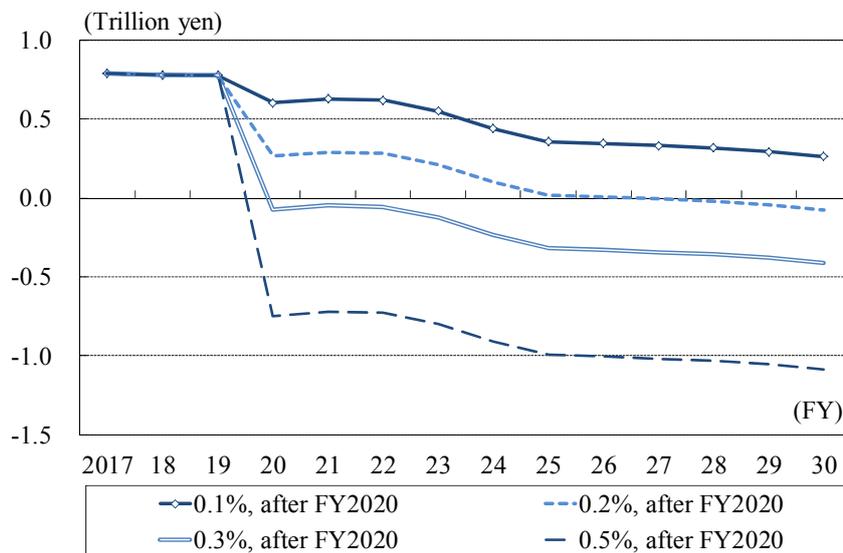
Source: Bank of Japan, *Japanese Government Bonds Held by the Bank of Japan, Operations, BOJ Current Account Balances by Sector*; The Japan Securities Dealers Association, *Reference Statistical Prices (Yields) for OTC Bond Transactions/Rating Matrix*

In Figure 4, the difference between the interest revenue from JGB holdings and the interest payment for the excess reserves is shown as profit and loss. In the above example, we saw the case where the BOJ raises the interest rate on the excess reserves by 0.1%, to 0.5%. However, assuming the current inflation-overshooting commitment under which the BOJ is expected to continue expanding the monetary base until the year-on-year rate of increase in the observed core CPI (all items less fresh food) exceeds 2% and remains above that target in a stable manner, our inflation rate will likely consistently exceed 2% when the Bank exits QQE in the future. For this reason, in order for the BOJ to induce the real interest rate—the nominal interest rate minus inflationary expectations—to achieve positive territory, it needs to raise the nominal interest rate by more than 2%. If the BOJ raises the short-term interest rate by 2%, the BOJ could incur losses of around 5.8 trillion yen in FY2020.

As for the BOJ's loss amount, there is a trial calculation focusing on the valuation loss of the JGBs held by the BOJ (Fukao (2016), etc.)⁶. The amount of the potential loss is estimated by the BOJ's JGB holdings multiplied by the duration and the increase in nominal interest rates, although the loss will not appear in the BOJ's accounting even if interest rates rise. The average remaining maturity of JGBs (excluding inflation-indexed bonds and floating-rate bonds) held by the BOJ is approximately 7.4 years at the end of July 2017⁷. Assuming this as the duration of JGBs held by the BOJ, the appraisal loss of JGBs will be about 59 trillion yen when long- and short-term nominal interest rates rise by 2%. The amount of the loss is about 10% of nominal GDP.

Looking at the BOJ's balance sheet, the interest rates on long-term JGBs on the asset side are fixed rates, and the interest rates on excess reserve on the liability side are variable rates. Moreover, the average yield for the long-term JGBs of about 343 trillion yen in the average balance for FY2016 was as low as 0.381%. When the policy rate starts rising, the Bank will soon fall into a negative spread.

Fig. 4 Outlook for profit and loss from JGBs held by the BOJ as of the end July 2017



Note: The outlook for profit and loss is based on the assumption of the exit shown in Figure 3.

Source: Bank of Japan, *Japanese Government Bonds Held by the Bank of Japan, Operations, BOJ Current Account Balances by Sector*; The Japan Securities Dealers Association, *Reference Statistical Prices (Yields) for OTC Bond Transactions/Rating Matrix*

What does the central bank's loss and insolvency mean?

BOJ board member Yutaka Harada stated in a speech on June 1, "It is of course possible that the Bank may register losses" in the exit phase from the current new phase of monetary easing, "the Bank will not make a loss in the long run that could pose a danger," and "the central bank will always make a profit in the long run." In addition, at the press conference held on June 16, Governor Kuroda acknowledged the possibility of the BOJ's entering into the red and said, "Even if the Bank's profit fluctuates in the short term, I don't think it will damage the credibility of the central banks and their currencies."

The BOJ set aside the reserves and provisions for future losses. Of these, "provision for losses on bond transactions" can be withdrawn even if the financial results are not in the red. In FY2016 ending March 2017, as a result of increasing the provision for losses on bond transactions by 461.5 billion yen, the balance of that provision increased to 3,155 billion yen at the end of FY2016. In addition, the Bank's capital including reserves and provisions amounted to 7.8 trillion yen. However, once the interest rate rises to 2%, for instance, the deficit of nearly 6 trillion yen will occur only by paying interest on excess reserves while receiving interest from the JGBs it holds. If this is the case, the Bank's capital may run out in one and a half years.

The current Bank of Japan Law does not explicitly stipulate any arrangement on the occurrence of a loss incurred by the Bank. Unless the government compensates for the deficit, the BOJ may hesitate to head towards the exit. Meanwhile, the future losses will continue. However, what benefits from ultra-low interest rates (or negative interest rates) is the government that raises funds at low interest rates by issuing fixed-rate JGBs. Since JGBs have been issued at interest rates below the nominal GDP growth rate, the ratio of government debt to nominal GDP does not deteriorate even if the primary balance (basic fiscal balance) is in the red.

If the benefits from the ultra-low interest rates have been accumulated in the form of future losses of the BOJ, the government needs to proceed with fiscal reconstruction by seeking to achieve a primary balance surplus, taking into consideration the future compensation for losses to the BOJ. In addition, the government must practice fiscal discipline when the monetary policy approaches the exit, because otherwise there may be a risk of long-term interest rates rising sharply once the BOJ stops buying JGBs. What is the fiscal cost of Japan's unconventional monetary policy? We will discuss this in our next report.

In this report, although the interest revenue and adjustment for the JGBs held by the BOJ are calculated for each JGB issue, we had to make bold assumptions on the liability side because there are a number of uncertain factors. What remains to be discussed are, for example, how sharply the BOJ should raise the interest rate on excess reserves (the speed and timing as well as how much to raise it), and how the balance of current account deposits will change after the BOJ stops buying JGBs. These will be analyzed in greater detail in subsequent reports.

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¹ On April 19 2017, the ruling LDP’s administrative promotion office presented the policy proposal “Discussion of a case of the BOJ’s monetary policy” to the chief cabinet secretary Yoshihide Suga.

² At the regular press conference with the Governor of the BOJ held on June 16, 2017.

³ Conversely, if the BOJ bought a JGB at 95 yen, 5 yen below the face value, the Bank would add 1 yen to its annual interest receipts and increase the book value of the bond by 1 yen each year until maturity.

⁴ The Bank of Japan publishes “Balance by Government Bonds by Bank of Japan” three times a month, disclosing the issue and the balance of the government bonds held. As the BOJ has not sold government bonds since starting QQE, if JGBs outstanding increase within a certain period of time, it can be considered that the BOJ bought them in its operations. In addition, if the balance of a certain stock is decreasing, it can be considered that the balance sheet has fallen due to maturity.

The Bank of Japan publishes details of the results of operations each time an offer and offer back occurs. From the result of the operation, information such as (1) offer date, (2) type of operation, (3) execution date, (4) successful bid amount, and (5) average bid yield (price) difference can be obtained. Of these, the average bid yield (price) difference in (5) is the difference between the yield of government bonds that the BOJ purchased from financial institutions, etc. and the yield previously assumed by the BOJ based on market conditions. If the yield difference is positive, it means that the BOJ has bought government bonds at a higher yield (lower price) than assumed. According to Shirota (2017), “It is said that the Bank of Japan’s interest rate (price) in consideration of prevailing market prices, etc. ‘means’ public corporate bonds over-the-counter sales reference statistics released by the Japan Securities Dealers Association. It will be done.” In this analysis, in reference to this, we use the public corporate bond over-the-counter sales statistics published by the Japan Securities Dealers Association when the BOJ offers an operation as the expected yield of the BOJ.

By combining the above, it is possible to estimate to what extent the Bank of Japan purchased (yield) which stocks in the operation. The detailed procedures are provided in Samikawa et al. (2017) Chapter 3, Box 2.

⁵ The required reserve amounts to roughly 96.7 trillion yen (the average amount for a deposit period) as of the end of July 2017. With the decision on the negative interest rate policy in January 2016, the BOJ divided its current account deposits into three tiers: Basic Balance, Macro Add-on Balance, and Policy-Rate Balance. The Bank applies interest rates of plus 0.1% to the Basic Balance, 0.0% to the Macro Add-on Balance, and minus 0.1% to the Policy-Rate Balance.

⁶ Fujiki and Tomura (2017) estimated the BOJ’s losses by looking at the interest revenue and interest paid to the excess reserves.

⁷ A member of the House of Representatives, Naoki Kazama of the Democratic Party regularly publishes the details of the BOJ’s JGB holdings on his website: i) the balance outstanding, ii) the proportion of the BOJ’s holdings to the total JGBs issued, and iii) the average remaining maturity of the JGBs held by the BOJ (<http://www.kazamanaoki.com/>). According to the documents, the outstanding amount of the BOJ’s JGB holdings is 387 trillion yen on a face-value basis (the amount includes inflation-indexed bonds and floating rate bonds). The weighted average remaining maturity of those JGBs is around 7.4 years.

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