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## **Central Bank Finances and Monetary Policy Conduct**

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## **Central Bank Finances and Monetary Policy Conduct**

### **Abstract**

1. Since the late 1990s, the Bank of Japan, faced with the zero lower bound on interest rates, has implemented various unconventional monetary policy measures. Major overseas central banks have also implemented large-scale asset purchases and other measures since the outbreak of the Global Financial Crisis. Given that such unconventional monetary policies accompanied by large-scale balance sheet expansions have the potential to have a large impact on central banks' finances when monetary policy is tightened, there has been debate on the potential impact on central banks' ability to conduct monetary policy and, by extension, confidence in their currencies.
2. Central banks earn interest income on the government bonds they purchase and short-term loans they provide, while their liabilities -- current deposits at the central bank (required reserves) and banknotes -- are not subject to interest. This structure usually allows them to generate stable profits (seigniorage).
3. When the central bank expands its balance sheet under unconventional monetary policy through, for example, the purchase of government bonds, this leads to increases in holdings of government bonds and other assets on the asset side and in current deposits (excess reserves) on the liability side. While the central bank needs to pay interest on excess reserves, since the interest rate on government bonds purchased usually exceeds the interest rate on excess reserves, interest income and other income increase in line with the rise in holdings of government bonds and other assets, so that the central bank's overall profits increase.

On the other hand, during a phase when monetary policy moves toward tightening and the balance sheet shrinks, holdings of government bonds will decrease on the asset side, while excess reserves will decrease on the liability side. When, during this phase, the

central bank raises the interest rate on excess reserves, interest expenses will increase, putting downward pressure on its profits. Subsequently, however, interest expenses will decline as excess reserves decrease. Furthermore, since government bond holdings will be successively replaced by higher-yielding government bonds, interest income will increase. Therefore, while the central bank may temporarily make losses during this process, even if this occurs, profits will eventually recover.

The extent to which profits fluctuate during a phase of balance sheet contraction can differ substantially depending on factors such as (1) the size of the balance sheet, (2) the extent to which proceeds from the redemption of government bonds at maturity are reinvested, (3) developments in short-term and long-term interest rates, and (4) developments in banknotes in circulation.

4. Under a fiat money system, it is important to consider decreases in the central bank's profits and capital from the perspective of whether and how they affect the conduct of monetary policy. In this regard, there are two schools of thought: one is that they adversely affect monetary policy conduct, and the other is that they do not. There are also a variety of positions regarding the theoretical reasons underpinning these views.
5. Major overseas central banks have recently been tightening monetary policy rapidly and substantially in response to inflation, leading to decreases in their profits and capital. However, in their external communication, they have emphasized that even if they temporarily make losses or have negative equity, this will not impede their ability to conduct monetary policy. Moreover, these central banks have noted that, although their profits are currently decreasing, it is also the case that they increased during the past balance sheet expansion, and that assessments of their large-scale easing policies should focus on the positive effects on the economy overall. Against this backdrop, with a view to avoiding adverse consequences, such as doubts about their ability to conduct monetary policy and a decline in their credibility, these central banks, in recognition of the importance of central bank capital, have maintained their stance to work on restoring their capital over time. Under these circumstances, no particular impediments have arisen in any of the countries or regions in terms of ensuring confidence in their respective currencies through the appropriate conduct of monetary policy.

6. In light of the above, the relationship between central bank finances and monetary policy conduct can be summarized as follows.

Under a fiat money system, confidence in the currency is not directly ensured by the assets held by the central bank or its financial soundness, but by the appropriate conduct of monetary policy with the aim of achieving price stability. Based on this premise, central banks are generally set up in such a way that they make profits from a somewhat longer-term perspective and, moreover, can supply their own means of payment and settlement. Therefore, even if the central bank temporarily makes losses or has negative equity, this does not impede its ability to conduct monetary policy. That said, this does not mean that the central bank can run up unlimited losses and negative equity. If the central bank's financial risks become a matter of undue attention and give rise to unnecessary confusion over monetary policy, there is a risk that this could lead to a decline in its credibility. Therefore, ensuring the soundness of the central bank's finances is important.

The Bank of Japan deems it appropriate to continue with conducting appropriate policy while also paying attention to its financial soundness.

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## **1. Introduction**

In Japan, achieving price stability has been a challenge for a long period of 25 years, since the economy fell into deflation in the late 1990s. In response, the Bank of Japan, faced with the zero lower bound on short-term interest rates, has employed various unconventional monetary policy measures, including influencing longer-term interest rates through large-scale asset purchases, and is currently conducting Quantitative and Qualitative Monetary Easing (QQE) with Yield Curve Control. Since the outbreak of the Global Financial Crisis (GFC) in 2007, major overseas central banks, in addition to cutting policy interest rates, have also implemented unconventional monetary policy measures, such as large-scale asset purchases, to support economic activity and prices.

Given that such unconventional monetary policies accompanied by large-scale balance sheet expansions have the potential to have a large impact on central banks' finances when monetary policy is tightened, there has been debate on the potential impact on central banks' ability to conduct monetary policy and, by extension, confidence in their currencies. Meanwhile, major overseas central banks have recently been tightening monetary policy in response to inflation, and decreases in their profits and capital have in fact been observed. Given this situation, central bank finances and their impact on monetary policy conduct have been attracting growing attention not only from authorities and experts but also the wider public.

Against this background, this paper first describes the structure of a central bank's balance sheet and profits and reviews changes in the Bank's finances over the past 25 years. It then provides an overview of the mechanisms through which central bank profits are affected by both expansions and contractions of the balance sheet. Lastly, it looks at recent developments at overseas central banks and provides an overview of the Bank's basic thinking on central bank finances and monetary policy conduct.

## **2. A Central Bank's Balance Sheet and Profit Structure**

### *2.1 A Central Bank's Balance Sheet*

Starting with an overview of a central bank's balance sheet, the asset side includes government bonds purchased, while the liability and net asset side includes the current deposits of financial institutions, government deposits, banknotes in circulation, and capital.

For example, the Bank of Japan's balance sheet as of the end of fiscal 1998 shows total assets of 79 trillion yen, with 29 trillion yen in Japanese government bonds (JGBs) and 33 trillion yen in market operations-related short-term assets etc., while major items on the liability side were 51 trillion yen in banknotes and 8 trillion yen in current and government deposits etc. (Chart 1).

Chart 1. The Bank's Balance Sheet, End of Fiscal 1998: 79 Trillion Yen

<Assets>	<Liabilities/Net Assets>	
JGBs 29 tril. yen	Current deposits 6 tril. yen	Government deposits etc. 2 tril. yen
	Market operations- related short-term liabilities etc. 13 tril. yen	
Market operations- related short-term assets etc. 33 tril. yen	Banknotes 51 tril. yen	
Other 17 tril. yen	Other 3 tril. yen	
	Capital 4 tril. yen	

Source: Bank of Japan.

Notes: 1. Market operations-related short-term assets etc. include treasury discount bills and bills discounted.

2. Market operations-related short-term liabilities etc. include bills sold.

3. Capital includes paid-up capital, legal reserves, provisions for possible loan losses, provisions for possible losses on bonds transactions, and provisions for possible losses on foreign exchange transactions. The same applies to the charts below.

## 2.2 Characteristics of a Central Bank's Balance Sheet

This subsection provides an overview of the characteristics of a central bank's balance sheet using the Bank of Japan's balance sheet as an example.

### 2.2.1 Banknotes are treated as liabilities

Banknotes issued by the Bank of Japan used to be convertible notes for which convertibility to gold or silver was guaranteed. In other words, the Bank was required to hold gold or silver corresponding to the amount of banknotes issued as specie reserves so as to meet requests

from banknote holders to exchange their banknotes for gold or silver at any time. Since these banknotes could be deemed to represent liability certificates issued by the Bank, the banknotes issued were recorded as liabilities.

Later, with the transition to a fiat money system, the requirement to exchange banknotes for gold or silver was abolished. Instead, the view started to be adopted that the stability of the value of banknotes should be ensured through the appropriate conduct of monetary policy by the Bank, rather than through a direct link with the value of assets held by the Bank.<sup>1</sup> In this sense, banknotes continue to represent liability certificates -- in which confidence must be ensured by the Bank -- and are still recorded as liabilities.

2.2.2 Current deposits from private financial institutions and deposits from the government are recorded as liabilities

The Bank of Japan does not accept deposits from individuals or firms, but as the bank of banks, it accepts current deposits from private financial institutions. In addition, as the bank of the government, it accepts government funds. The Bank is required to pay out such deposits on demand, and like deposits at private financial institutions, current and government deposits are recorded as liabilities.

2.2.3 Current deposits consist of required and excess reserves

Under the reserve requirement system, private financial institutions are required to deposit a certain percentage of the deposits and other assets accepted from customers with the Bank of Japan as current deposits. Deposits corresponding to the amount that must be deposited are called "required reserves," while any deposits in such current accounts in excess of required reserves are called "excess reserves."

While central banks' main policy tool conventionally consisted of controlling short-term interest rates, following the outbreak of the GFC, major central banks, faced with the zero lower bound on short-term interest rates, started to conduct purchases of government bonds and other operations on a large scale. As a result, unlike in the past, large excess reserves have come to exist on a permanent basis. Under these circumstances, many central banks have

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<sup>1</sup> The Financial System Research Council (1997) noted that, under a fiat money system, the value of Bank of Japan notes derives not directly from the assets held by the Bank of Japan and, instead of the "reserve for banknote issuance" system, the stability of the value of Bank of Japan notes requires the appropriate conduct of monetary policy by the Bank of Japan.



introduced systems such as the application of interest to current deposits as a means of effectively controlling short-term interest rates. The Bank of Japan in the past did not apply interest to current deposits, but during the GFC, it introduced the Complementary Deposit Facility in October 2008, under which it applies interest to current deposits (excess reserves).

#### 2.2.4 The balance sheet changes through the issuance of banknotes and market operations

The Bank's balance sheet changes through central banking operations, including the issuance of banknotes (disbursements to private financial institutions) and the supply of funds through market operations such as purchases of government bonds.

##### Issuance of banknotes

When individuals, firms, or other entities need banknotes, they withdraw them from their deposit accounts at private financial institutions. In response to such withdrawals from their customers, financial institutions draw on their current accounts at the Bank of Japan to withdraw the banknotes (issuance of banknotes by the Bank). On the liability side of the Bank's balance sheet, banknotes increase while current deposits decrease. The following chart shows the balance sheet changes for the Bank, private financial institutions, and individuals and firms.

	Bank of Japan		Private financial institutions		Individuals and firms	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Bank of Japan's issuance of banknotes to private financial institutions		Banknotes (+)	Banknotes (+)			
		Current deposits (-)	Current deposits (-)			
Individuals' and firms' withdrawal of cash from financial institutions			Banknotes (-)	Deposits (-)	Banknotes (+)	
					Deposits (-)	

##### Supply of funds through market operations

Current account balances also change as a result of the Bank's supply and absorption of funds through its market operations. For example, to supply funds, the Bank purchases

government bonds from private financial institutions and deposits the proceeds into their current accounts. The following chart shows how the balance sheets of the Bank and private financial institutions change when such transactions are conducted.

Bank of Japan			Private financial institutions	
Assets	Liabilities		Assets	Liabilities
Government bonds (+)	Current deposits (+)		Government bonds (-)	
			Current deposits (+)	

### 2.3 Basic Profit Structure of a Central Bank

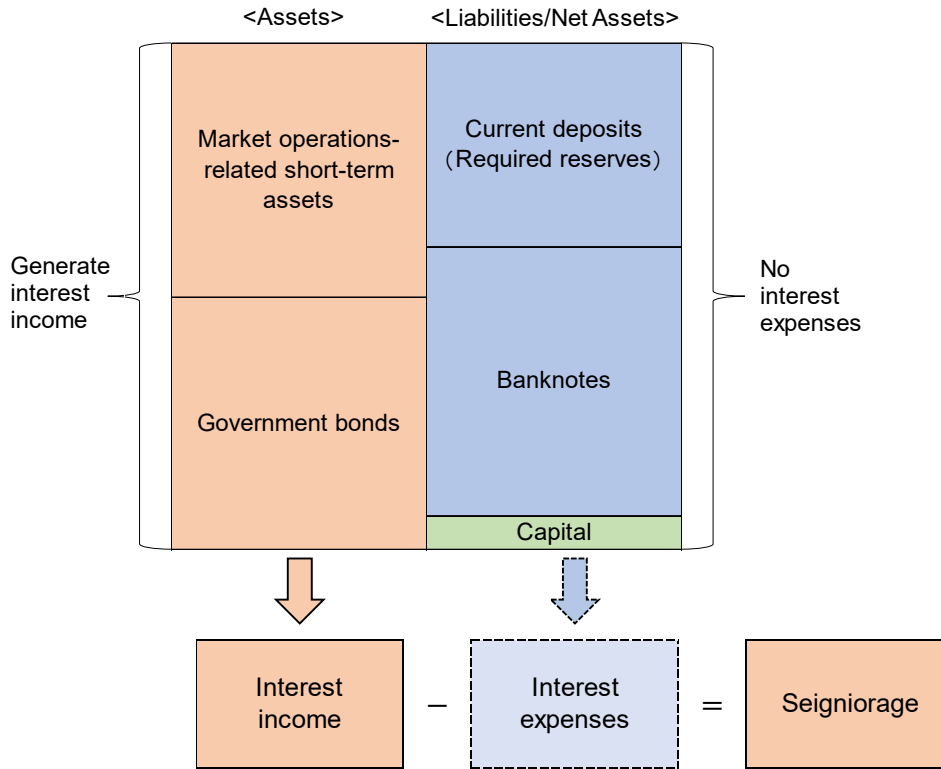
Next, an overview of the profit structure of a central bank in normal times -- that is, before the expansion of its balance sheet due to unconventional monetary policies -- is provided. Major central banks, including the Bank of Japan, earn interest income on their assets -- the government bonds they purchase and short-term loans they provide -- while the cost of their liabilities -- current deposits (required reserves) and banknotes -- is zero in the sense that the central bank pays no interest on them.<sup>2,3</sup> This usually allows the central bank to generate stable profits. This is the basic profit structure of the central bank, and the profits earned in this way are called "seigniorage" (Chart 2).

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<sup>2</sup> Prior to the expansion of balance sheets, the funds supplied by central banks and deposited in private financial institutions' current accounts roughly matched the required reserves of those institutions, so that excess reserves were minimal.

<sup>3</sup> With regard to the paid-up capital (100 million yen as of end-fiscal 2022) out of the Bank's capital (11 trillion yen as of end-fiscal 2022), Article 53, Paragraph 4 of the Bank of Japan Act states that "[t]he Bank of Japan, upon authorization from the Minister of Finance, may pay dividends to contributors out of the surplus resulting from the settlement of profits and losses for each business year; provided, however, that the rate of dividend payments against paid-up capital must not exceed five-hundredths per annum."

Chart 2. Balance Sheet and Profit Structure in Normal Times



The general setup is that the profits earned by the central bank are ultimately transferred to the government (Chart 3). These transfers are based on the profits that arise from the various policies and operations pursued by the central bank, including monetary policy. Therefore, as central bank profits fluctuate, so do the transfers to the government.

Chart 3. Overview of Major Central Banks' Transfers of Profits

FRB	The Reserve Banks remit excess earnings to the Treasury after providing for the cost of operations, payment of dividends, and reserves necessary to maintain an aggregate surplus.
ECB	After deducting the transfer to the general reserve fund, the remaining net profits are distributed to the national central banks.
BOE	< Issue Department > Any gains or losses within the issue department accrue to the Treasury. < Banking Department > The proportion of Banking Department profits payable to the Treasury is determined by the level of loss-absorbing capital held by the BOE. < APF > Any gains or losses within the APF accrue to the Treasury.
BOJ	Net income, excluding transfers to legal reserves and dividends on capital, is transferred to the Treasury.

Sources: Bank of England (BOE); European Central Bank (ECB); Federal Reserve (FRB); Bank of Japan (BOJ).

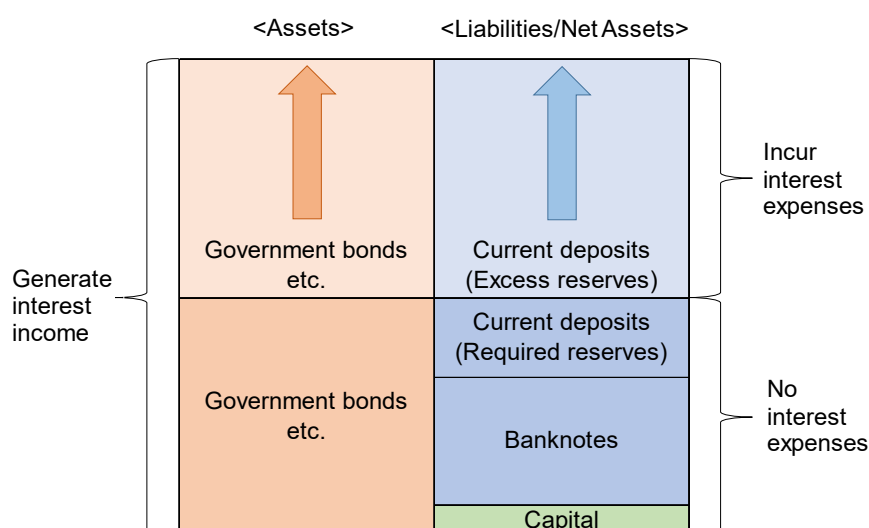
### 3. Changes in the Profit Structure Associated with the Expansion/Contraction of the Balance Sheet

This section reviews changes in the profit structure that accompany the expansion and contraction of a central bank's balance sheet.

#### 3.1 Increase in Profits during a Balance Sheet Expansion

Let us examine the profit structure when the central bank's balance sheet expands due to large-scale monetary easing. Major central banks, including the Bank of Japan, have been supporting economic activity and prices through large-scale purchases of government bonds and other assets. This has led to a large increase in holdings of government bonds and other assets on the asset side and in current deposits (excess reserves) on the liability side. While such balance sheet expansion brings about interest expenses on excess reserves, the interest rate on excess reserves is kept low in order to keep short-term interest rates low. On the other hand, the interest rate on government bonds purchased usually exceeds the interest rate on excess reserves (i.e., the yield spread is positive), so interest income and other income increase in line with the rise in holdings of government bonds and other assets, resulting in an expansion of overall profits (Chart 4).

Chart 4. Balance Sheet and Profit Structure under Large-Scale Monetary Easing



In terms of assets eligible for purchases, major central banks, including the Bank of Japan, expanded the scope of purchases from short-term to long-term government bonds and also made risk assets such as corporate bonds and covered bonds eligible for purchases in order to address policy issues while taking the structure of their domestic financial system into account. The Bank further decided to purchase exchange-traded funds (ETFs) and Japan real estate investment trusts (J-REITs) in order to influence risk premiums (see Box 1).<sup>4</sup>

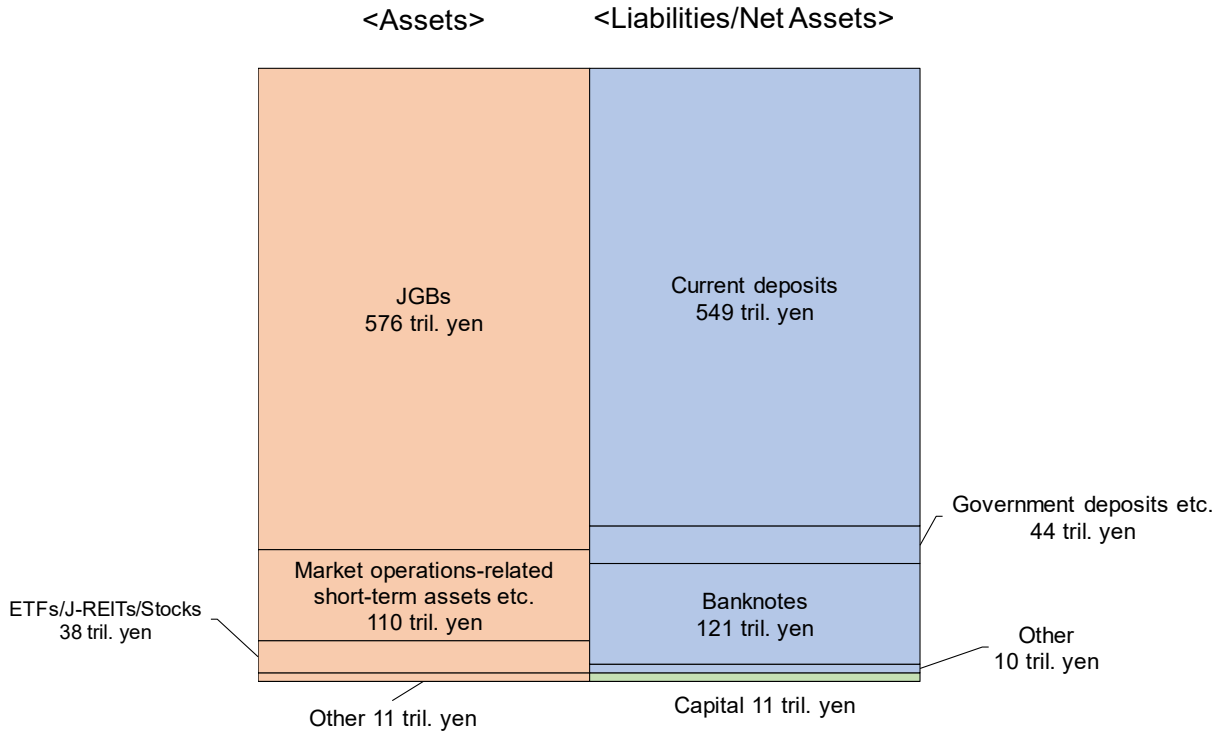
Let us examine the changes in the profit structure resulting from this monetary policy conduct by looking at the example of the Bank of Japan (Chart 5). While its balance sheet as of the end of fiscal 1998, as shown in Chart 1, consisted of total assets of 79 trillion yen, by the end of fiscal 2022, the balance sheet had reached a historical record: total assets stood at 735 trillion yen, with JGBs accounting for 576 trillion yen on the asset side, and current deposits for 549 trillion yen on the liability side.<sup>5</sup> (Compared to the end of fiscal 1998, this represents a roughly ninefold increase. Relative to nominal GDP in fiscal 2022, the ratio of the Bank's assets stood at 131 percent) (Chart 6).

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<sup>4</sup> This paper focuses on the purchases of ETFs and J-REITs (introduced in 2010) that have been conducted as part of large-scale monetary easing. The Bank also conducted purchases of bank-held stocks, but the purpose of these purchases was different in that they were conducted as a prudential policy to help maintain the stability of the financial system (introduced in 2002, resumed in 2009, and terminated in 2010).

<sup>5</sup> Note that the treatment of some items, such as the valuation method for government bond holdings and the accounting method for repurchase agreements, differs between fiscal 1998 and fiscal 2022.

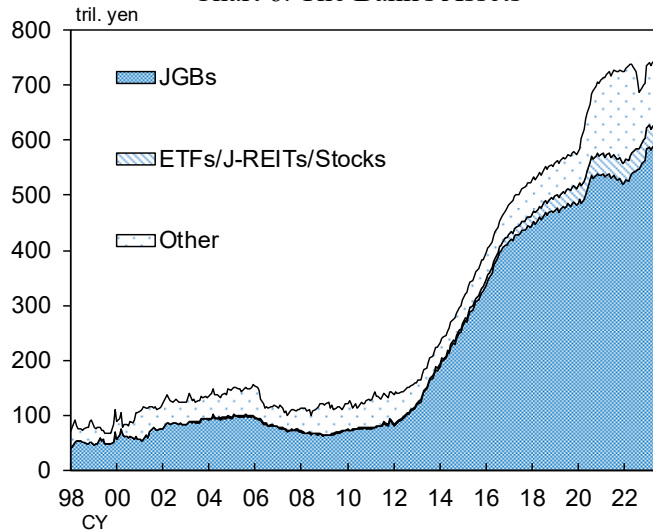
Chart 5. The Bank's Balance Sheet, End of Fiscal 2022: 735 Trillion Yen



Source: Bank of Japan.

Note: Market operations-related short-term assets etc. include loans provided through the Loan Support Program and corporate bonds.

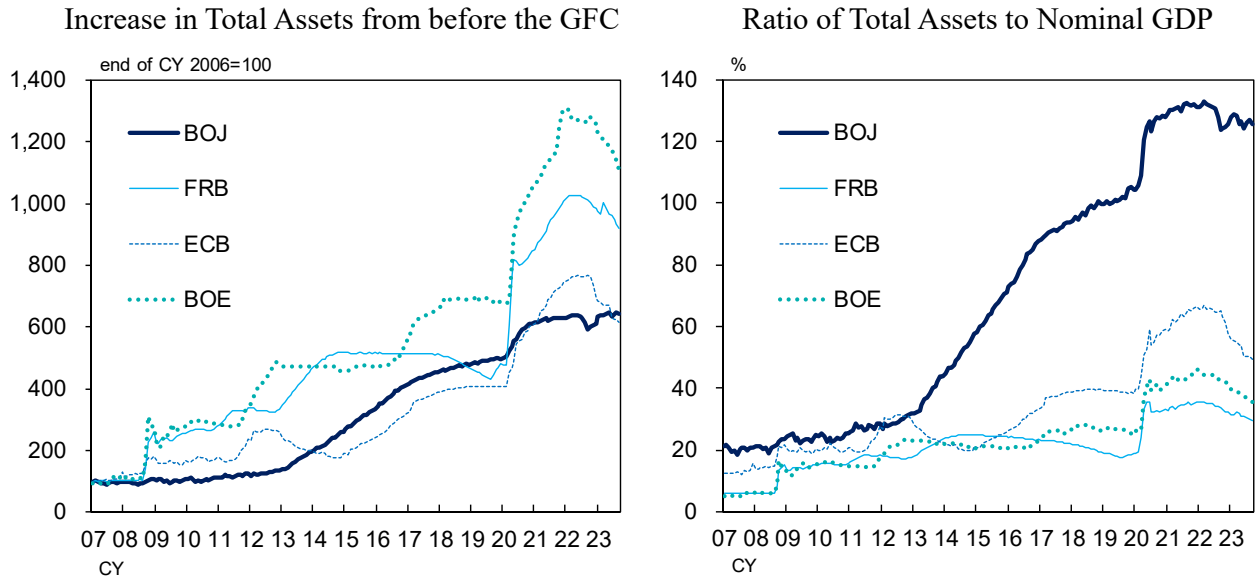
Chart 6. The Bank's Assets



Source: Bank of Japan.

Note: "Other" includes loans provided by the Bank.

(Reference) Total Assets of Major Central Banks

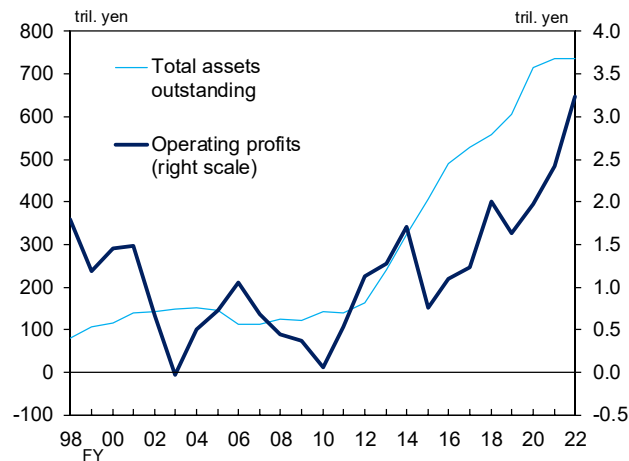


Sources: Haver; Bank of Japan.

- Notes: 1. Where nominal GDP data for the most recent period in the chart are not yet available, figures are calculated using the most recent available GDP data.  
 2. Figures for the BOE until September 2014 are those for its total assets; thereafter, they are the sum of the main components of its assets.

Under such balance sheet expansion, profits have also been on an increasing trend. Specifically, while profits had followed a downtrend -- albeit with fluctuations due to factors such as the impact of developments in foreign exchange rates -- amid the persistently low interest rates since the late 1990s, they turned upward around fiscal 2013, when QQE was introduced. Since then, the level has been rising along with the balance sheet expansion, and operating profits reached a record high of 3.2 trillion yen in fiscal 2022 (Chart 7).

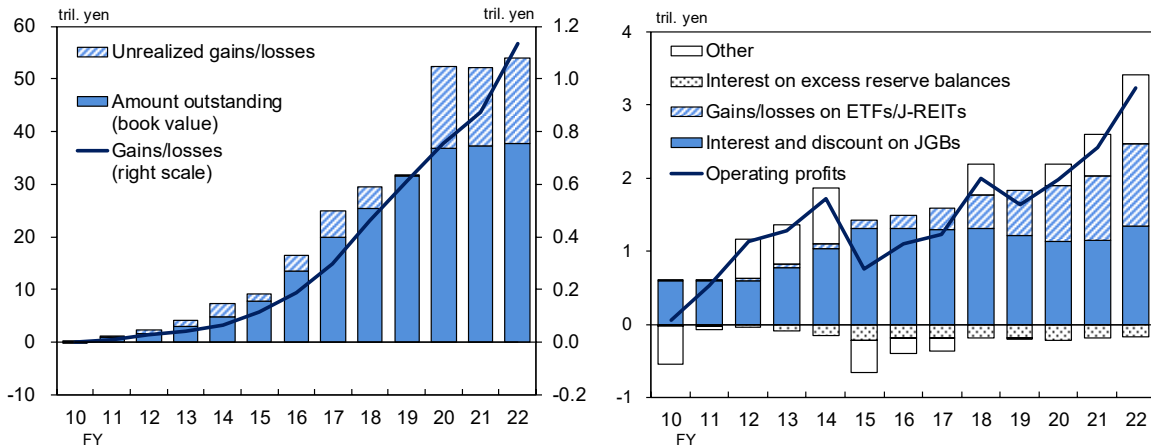
Chart 7. The Bank's Operating Profits



Source: Bank of Japan.

Developments in the Bank's profits have also been greatly affected by the purchases of ETFs and J-REITs conducted by the Bank as part of its large-scale monetary easing. These purchases began in 2010, and through subsequent increases in purchases, the amount outstanding of the Bank's holdings has increased (to a total of 37 trillion yen for ETFs and J-REITs at the end of fiscal 2022). As a result of this rise in the amount outstanding, the dividends received from these assets have reached a sizable amount, making a substantial contribution to profits (Chart 8). Meanwhile, to prepare for the market risk associated with ETF and J-REIT holdings, the Bank has responded by, for example, recording provisions for the difference should the market value at the end of the fiscal year fall below the book value.

Chart 8. Amount Outstanding of ETFs and J-REITs Held by the Bank and Their Contribution to Operating Profits



Source: Bank of Japan.

Note: Interest on excess reserve balances is the interest paid under the Complementary Deposit Facility.

### 3.2 Decline in Profits during a Balance Sheet Contraction

Next, let us consider how the central bank's profits change during the exit phase, when monetary policy moves toward tightening and the balance sheet shrinks. Here it is assumed for simplicity that government bonds decrease on the asset side, while current deposits (excess reserves) decrease on the liability side. When, during this phase, the central bank raises the interest rate on excess reserves to control interest rates,<sup>6</sup> interest expenses will

<sup>6</sup> Raising the interest rate on excess reserves is one way to raise market interest rates. Since private financial institutions can earn interest on their surplus funds deposited in their current accounts with the central bank, when they invest such funds in financial markets, they demand an interest rate that is higher than the one they would receive on their current deposits. Therefore, market interest rates will rise in line with the increase in the interest rate on excess reserves.



increase, putting downward pressure on its profits.

Thus, while profits are boosted by the balance sheet expansion during a phase of monetary easing, they tend to decline during the exit phase due to the increase in interest rates on current deposits and other factors. In light of these characteristics, the Bank has been working to enhance its capital by, for example, expanding measures pertaining to provisions for possible losses on bonds transactions in 2015 in order to reduce the amplitude of profit changes during the monetary easing and exit phases and to ensure its financial soundness (see Box 2).

Meanwhile, if market interest rates rise, the market value of government bond holdings will decline. However, given that, with few exceptions, it does not sell its government bond holdings, the Bank of Japan, like the U.S. Federal Reserve (FRB) and the European Central Bank (ECB), employs the amortized cost method. Under the amortized cost method, the difference between the purchase cost and the face value of a bond is amortized in each period until maturity, and unrealized losses resulting from a decline in the market value of government bonds do not directly affect central bank profits/losses unless the bonds are sold prior to maturity. Unrealized gains/losses -- that is, gains and losses that will not be realized unless government bonds are sold -- and actual profits/losses need to be regarded as two different things.<sup>7</sup> It should be noted that the Bank of Japan, the FRB, and the ECB for reference disclose information on the market value of their government bond holdings on a regular basis.

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While another way for the central bank to raise market interest rates would be to absorb excess reserves through funds-absorbing operations, in this case, interest payments would still be made to private financial institutions that bid in the funds-absorption operations, putting downward pressure on the central bank's profits.

<sup>7</sup> As of the end of March 2023, the FRB had a substantial unrealized loss amounting to 0.9 trillion U.S. dollars. Anderson, Na, et al. (2022) highlight that (1) if this unrealized loss is caused by a higher expected path of policy interest rates, this will imply higher interest expenses in the future, while (2) if it is caused by changes in term premiums, this will not imply higher interest expenses in the future; moreover, (3) in addition to changes in interest rates, the composition of liabilities -- i.e., in terms of interest-bearing and non-interest-bearing liabilities -- is another factor in determining future interest expenses.

(Reference) Major Central Banks' Valuation of Their Government Bonds

	Valuation method
FRB	At amortized cost
ECB	At amortized cost
BOE (APF)	At market value
RBA	At market value
BOJ	At amortized cost

Sources: Bank of England; European Central Bank; Federal Reserve; Reserve Bank of Australia (RBA); Bank of Japan.

### *3.3 Subsequent Recovery*

Once the balance sheet starts to contract, profits will be under downward pressure for a while through the mechanisms described. However, eventually, interest expenses will decline as current deposits (excess reserves) decrease. On the other hand, at some point in time, government bonds -- of which the central bank needs to hold a certain amount -- will mature and the proceeds will be reinvested. As a result, with interest rates rising, holdings of government bonds will be successively replaced by higher-yielding ones and interest income will rise. Thus, while the central bank may temporarily make losses, even if this occurs, profits will eventually recover.

### *3.4 Factors Affecting Profits during a Balance Sheet Contraction*

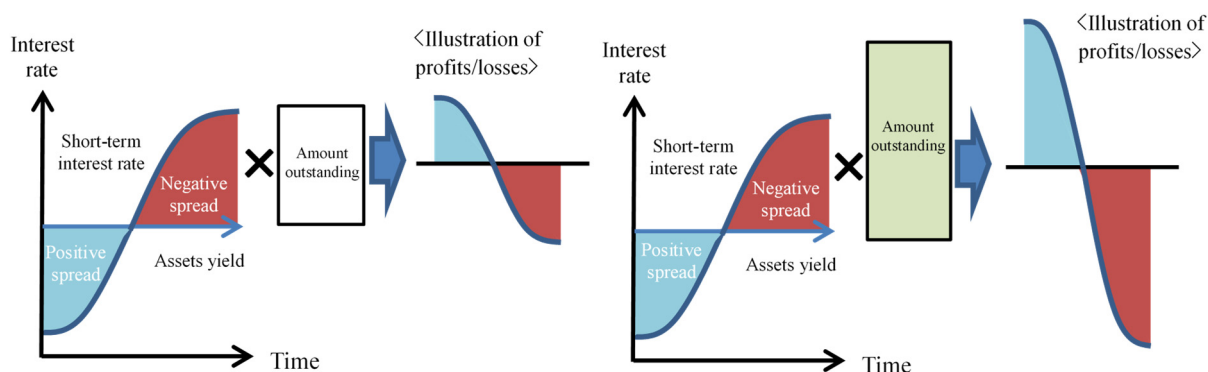
As described above, during a phase of balance sheet contraction, profits fluctuate in that they first decrease and then increase again. However, the extent to which profits change can differ substantially depending on a range of factors. The main factors are (1) the size of the balance sheet, (2) the extent to which proceeds from the redemption of government bonds at maturity are reinvested, (3) developments in short-term and long-term interest rates, and (4)

developments in banknotes in circulation.<sup>8</sup> The following examines the mechanisms through which each factor affects profits.

### 3.4.1 Balance sheet size

During a phase of balance sheet contraction, the central bank is likely to raise the interest rate on excess reserves (short-term interest rate) due to the need to raise market interest rates. In this process, the interest rate on government bond holdings is expected to temporarily fall below the rising short-term interest rate. In this case, spreads will be negative, and the larger the size of the balance sheet before the contraction, the greater the downward pressure on profits (Chart 9).

Chart 9. Balance Sheet Size and Amplitude of Profits



### 3.4.2 Extent of reinvestment of proceeds from redemption of government bond holdings at maturity

The main way through which a central bank contracts its balance sheet is the redemption of government bond holdings at maturity. When government bonds mature, the central bank may allocate a certain proportion of the redemption proceeds to the purchase of new

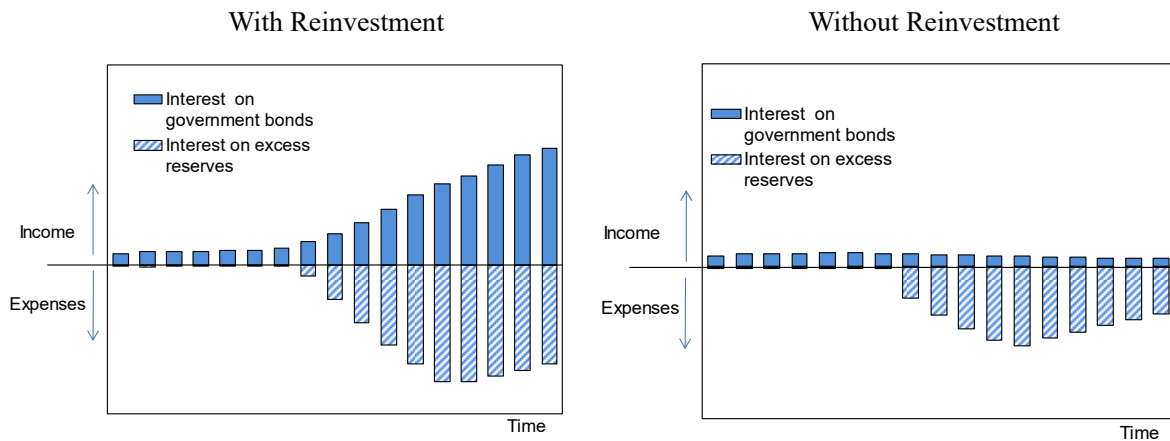
<sup>8</sup> Outside experts have published estimates of the Bank of Japan's profits based on a variety of assumptions regarding these factors. Such estimates are provided, for example, by Ito (2022) for various scenarios with regard to the extent to which redemption proceeds are reinvested and the pace at which short-term interest rates rise and by Samikawa and Nakano (2023) for various scenarios with regard to the pace at which short-term and long-term interest rates rise. Moreover, Fujiki and Tomura (2017) examine the sensitivity of the demand for banknotes to profits assuming that banknotes in circulation fall to 8 percent of nominal GDP, the average in the 1990s.

The results of these estimations differ widely, from prolonged losses to no losses, depending on the assumptions. When looking at these estimation results, it is necessary to pay attention to what assumptions are made regarding the factors described in the main text.

government bonds (i.e., reinvest the proceeds in government bonds) in order to moderate the pace of contraction. Since long-term interest rates are likely to have risen to a fair degree at this stage, such reinvestment will increase the central bank's interest income as government bond holdings are successively replaced by higher-yielding government bonds. In this case, the larger the reinvestment, the greater the impact of improving yields.<sup>9</sup> It should be noted that the manner in which the proceeds from maturing government bonds are reinvested will depend on developments in economic activity and prices as well as financial conditions and on the conduct of monetary policy based on these developments.

If redemption proceeds are reinvested, the pace of decrease in excess reserves will be slower, so interest expenses on excess reserves will also be larger than in the case where redemption proceeds are not reinvested. However, since the interest rate on excess reserves (short-term interest rate) is usually lower than the interest rate on government bonds (long-term interest rate) (i.e., the yield spread is positive), the impact of improving yields on government bond holdings, when averaged out over time, will exceed the impact of the increase in interest payments, so that the central bank's profits will improve to a greater extent than if redemption proceeds are not reinvested (Chart 10).

Chart 10. Illustration of How Reinvestment Affects Profits



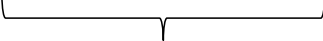
The pace of improvement in yields through reinvestment greatly depends on the maturity composition of assets held. As assets with low yields are redeemed at maturity while new assets with high yields are added to the portfolio, the larger the share of assets maturing in the short term, the faster the pace of improvement in yields.

<sup>9</sup> Profits will also be affected by the term of the newly purchased government bonds through, for example, changes in the maturity composition of assets.

Looking at the Bank's balance sheet (as of the end of fiscal 2022), yen-denominated assets maturing within five years account for 416 trillion yen out of the total assets of 735 trillion yen, or nearly 60 percent of the total (Chart 11). This means that, if redemption proceeds are reinvested, nearly 60 percent of assets will be replaced by higher-yielding assets within five years.

Chart 11. The Bank's Yen-Denominated Assets by Residual Maturity

	Assets denominated in yen with a maturity of			
	up to 1 year	1-5 years	5-10 years	over 10 years
Amount outstanding	106	309	169	100
Share in total assets	14.5%	42.1%	23.0%	13.7%


  
 Up to 5 years  
 416 tril. yen (56.6%)

Source: Bank of Japan.

Note: Figures are as of end-March 2023.

(Reference) Average Residual Maturity of Government Bonds Held by Major Central Banks

	Average residual maturity
FRB	8.8 years
ECB	7.1 years
BOE (APF)	13.3 years
BOJ	6.6 years

Sources: Bank of England; European Central Bank; Federal Reserve Bank of New York; Bank of Japan.

Note: Figures are as of September 2023. The figure for the ECB is that for bonds held under the public sector purchase program.

Of course, as mentioned above, the manner in which the proceeds from maturing government bonds are reinvested will greatly depend on developments in economic activity and prices as well as financial conditions, the outlook for these, and other factors. If proceeds are not reinvested at all, yields will not improve, and profits will be pushed down substantially.

However, at some point in time, government bonds -- of which the central bank needs to hold a certain amount for the conduct of monetary policy -- will mature and the proceeds be reinvested. Under these circumstances, from a somewhat longer-term perspective, government bond holdings will be successively replaced by higher-yielding government bonds, and interest income will increase, so that profits will recover again.

### 3.4.3 Developments in short-term and long-term interest rates

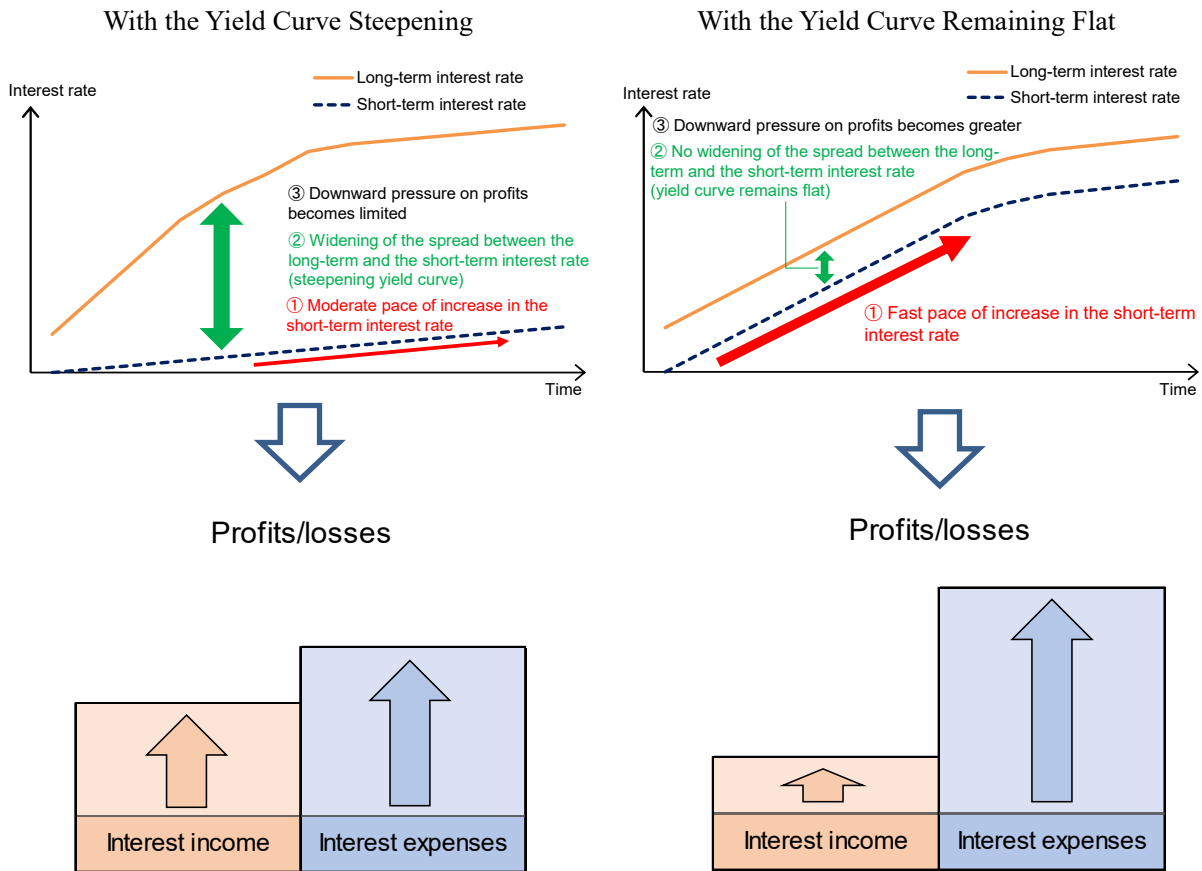
Profits during the balance sheet contraction will also depend on future developments in short-term and long-term interest rates (i.e., the shape of and changes in the yield curve) since, as noted above, both interest expenses and interest income will increase if redemption proceeds are reinvested.

For example, if short-term interest rates increase at a moderate pace and long-term interest rates rise at a somewhat faster pace (i.e., the yield curve steepens), the downward pressure on profits will be limited, since interest income from government bonds will increase while the interest rate on excess reserves will remain relatively low. On the other hand, if long-term interest rates rise at a relatively moderate pace while short-term interest rates rise rapidly (i.e., the yield curve remains flat), the downward pressure on profits will be greater (Chart 12).<sup>10</sup>

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<sup>10</sup> If short-term interest rates become higher than long-term interest rates, that is, the yield curve becomes inverted, the downward pressure on profits will be even larger.

Chart 12. Future Long-Term and Short-Term Interest Rates during the Exit from Monetary Easing and Its Effects on Profits

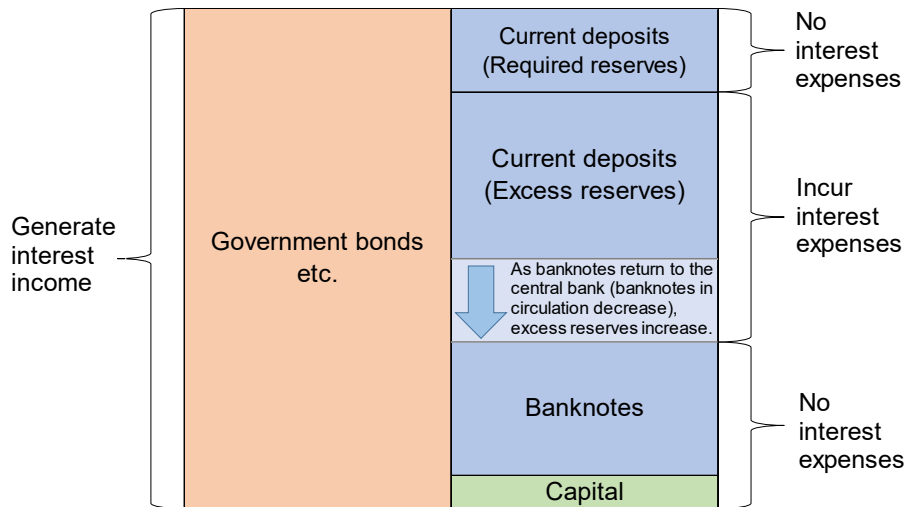


### 3.4.4 Developments in banknotes in circulation

Banknotes are non-interest-bearing liabilities for a central bank. Therefore, what happens on the liability side to the ratio of interest-bearing excess reserves to non-interest-bearing banknotes will also affect profits.

For example, if deposit interest rates at private financial institutions rise during the phase of balance sheet contraction, individuals, firms, or other entities may deposit their banknotes in their bank accounts. The banknotes accepted by private financial institutions will return to the central bank, where they will be deposited in current accounts held by private financial institutions at the central bank. As a result, on the liability side of the central bank's balance sheet, non-interest-bearing banknotes will decrease, and since their share in liabilities will fall, profits will come under downward pressure (Chart 13).

Chart 13. Balance Sheet Changes When Banknotes Return to the Central Bank  
 <Assets> <Liabilities/Net Assets>



However, demand for banknotes depends on a variety of factors, including the size of the economy as well as the level of interest rates on deposits and other assets. Recently, there was a substantial increase in the demand for banknotes during the COVID-19 pandemic, while from a more structural perspective, it is possible that the demand for banknotes may decrease due to the growing trend toward a cashless economy. Overall, it is difficult to predict how banknotes in circulation will change during a phase of balance sheet contraction (see Box 3).

#### 4. The Debate over Central Bank Finances

While this report thus far has touched on the mechanisms by which central banks' profits are pushed down during a contraction of their balance sheets, a key question is why financial soundness is important for a central bank. Under the convertible money system in the past, the central bank's currency needed to be backed by high-quality assets, and the amount of currency that a central bank could issue depended on its holdings of such assets. Today, however, under the fiat money system adopted by many countries, including Japan, the common understanding is that confidence in a currency is not directly ensured by the assets held by the central bank or its financial soundness, but by the appropriate conduct of monetary policy with the aim of achieving price stability. Therefore, when considering the link between central bank finances and confidence in the currency, it is important to consider it from the perspective of whether and how decreases in the central bank's profits and capital affect the



conduct of monetary policy.<sup>11</sup>

There have been various debates over these issues. Some believe that decreases in the central bank's profits and capital adversely affect monetary policy conduct, while others argue that they do not. There are also multiple theoretical reasons underpinning these views, with some combining different positions, so there is a range of positions in the debate over central bank finances. For example, research papers published by the International Monetary Fund (IMF) and the Bank for International Settlements (BIS) and studies by economists in academia present the following views.

Those arguing that decreases in the central bank's profits and capital have adverse effects on monetary policy conduct mainly make the following three points as reasons for their thinking. First, if such decreases occur, confidence in the central bank will decline and the value of the currency will fall; second, the market and the public will expect the government to intervene or the central bank to prioritize improving its finances over price stability in its policy conduct, which will lead to, for example, a substantial rise in inflation expectations; and third, if seigniorage is too small due to factors such as a decline in banknotes in circulation, the central bank's losses or negative equity could persist for a long time.<sup>12</sup>

On the other hand, those arguing that a deterioration in central bank finances has no adverse effects on monetary policy mainly make the following three points. First, damage to a central bank's finances can be eventually repaired through seigniorage; second, the central bank has the ability to issue its own currency as a means of payment and settlement; and third, if the

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<sup>11</sup> This was also highlighted by Ueda (2003), who asked the following: "[T]o what extent does capital inadequacy or, in some cases, insolvency of central banks, hinder the attainment of their primary policy objective?"

<sup>12</sup> For example, Adler et al. (2012) cite the argument that central banks risk being seen by markets and the public as conducting policies that impose a small financial burden since a deterioration in their finances could lead to greater oversight and reduced independence. Moreover, regarding policy conduct, Stella (1997) points out that the central bank may try to make up for losses by issuing currency, while Del Negro and Sims (2015) highlight that it may pursue expansionary policies to increase seigniorage. Meanwhile, using Sweden, the United States, Australia, New Zealand, and the Netherlands as examples, Nordström and Vredin (2022) compare the share of the sum of capital and banknotes in circulation in central banks' total assets to examine their ability to earn profits through seigniorage. They argue that, unlike the central banks of the other countries, Sweden's central bank, the Sveriges Riksbank, is relatively likely to require a capital injection due to its low ability to make profits through seigniorage, given the fact that the ratio of banknotes to nominal GDP has declined.

consolidated government -- i.e., the government and the central bank together -- is financially sound, fiscal resources can be used to deal with the situation.<sup>13</sup>

Many theoretical studies on the issue of decreases in the central bank's profits and capital have used a consolidated government in their models.<sup>14</sup> However, especially since the outbreak of the GFC, the financial risks of central banks have increased, and economists have taken a deeper interest in central banks' soundness and its implications in light of the fact that, in reality, central banks are financially independent from governments and hold their own capital.<sup>15</sup> Empirical research based on econometric techniques has also been conducted.<sup>16</sup>

Meanwhile, looking back at past episodes in which central banks registered negative equity, there are cases where inflation did not increase further as well as cases where inflation did increase (see Box 4). One example of a case in which inflation did not rise further is that of the Deutsche Bundesbank of the former West Germany in the 1970s, which registered negative equity due to large valuation losses on its foreign currency assets caused by the appreciation of the German mark. In the case of the former West Germany, the impact on the inflation rate was small, partly because the currency depreciated in the 1980s, and negative equity was subsequently resolved. On the other hand, the cases of the central banks of the Philippines and Jamaica in the 1980s and 1990s can be cited as examples in which negative equity led to a rise in inflation. In these cases, the central banks experienced a decline in

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<sup>13</sup> Adler et al. (2012) cite the argument that central banks can restore their capital through seigniorage and highlight the view that what particularly matters is the soundness of the consolidated balance sheet of the government and central bank together. Meanwhile, Bell et al. (2023) argue that unlike private financial institutions, central banks are not profit-seeking organizations, and since they can issue their own currency, in principle they cannot become insolvent in the conventional sense. They therefore express the view that central banks can operate even when they have no capital and can withstand losses and negative equity over a long period of time.

<sup>14</sup> For example, many of the models presented in Walsh (2017), a leading textbook on monetary policy theory, assume a consolidated government.

<sup>15</sup> For example, Reis (2015) presents a discussion assuming that the central bank could lose its ability to control the amount of currency in circulation once its future losses are expected to exceed the sum of its capital and future profits.

<sup>16</sup> Adler et al. (2012), for example, conducted a regression analysis of the relationship between central banks' financial strength and monetary policy conduct for 41 countries, using the ratio of capital to total assets as the independent variable and the deviation of the optimal interest rate level under the Taylor rule and the actual policy rate as the dependent variable. The results suggest that while a loss of financial soundness constrains monetary policy conduct, the relationship between the two is nonlinear.

profits -- mainly because loans to private financial institutions became non-performing during a financial crisis -- while at the same time paying high interest for fund-absorbing operations to contain inflation due mainly to fiscal expansion became the norm. For these central banks, the losses caused by the interest payment burden not only led to an increase in negative equity, but also put upward pressure on the money supply, which in turn became an impediment to containing inflation. Although these are rather special cases that occurred under extreme circumstances, such as economic and financial crises, they indicate that there is a mechanism by which damage to central bank finances can affect the ability to conduct monetary policy.

In sum, there is a range of positions in the debate over central bank finances as well as a variety of precedents. Under these circumstances, major overseas central banks share the view that the decreases in the central bank's profits and capital will not have direct adverse effects on their conduct of monetary policy. At the same time, they recognize that ensuring their financial soundness is important in order to avoid adverse political and economic consequences, such as doubts over their ability to conduct monetary policy and/or a decline in their credibility. In fact, while the level of capital that they hold differs, reflecting the nature of their asset holdings, institutional differences, historical background, and other factors, major overseas central banks all hold a certain amount of capital. In addition, although the specifics differ, they seem to have adopted financial measures to deal with the risk that the amplitude of their profits may rise due to the balance sheet expansion during the monetary easing phase.

## **5. Recent Developments at Overseas Central Banks**

Major overseas central banks have recently been tightening monetary policy rapidly and substantially in order to contain inflation. As a result, downward pressure on profits has increased, with some experiencing losses (see Box 5). These decreases in profits and capital of major overseas central banks provide many pointers when considering the likely impact on central bank monetary policy conduct. This section provides an overview of individual cases and then examines the specific responses of individual central banks.

The FRB began raising its policy interest rate in March 2022, and the rate hikes have been more rapid and more substantial than in the past, reaching around 5 percentage points in a little over a year. Under these circumstances, the cost of liabilities, such as on excess reserves, has risen; at the same time, improving investment yields has been difficult under a policy of

contracting the balance sheet with limited reinvestment, resulting in weekly losses since September 2022. Meanwhile, the FRB has been recording a deferred asset on the balance sheet to match the accumulated negative net income, and as of end-September 2023, the deferred asset continued to exceed the amount of capital.

In Europe, the Bank of England (BOE) has conducted large-scale asset purchases through its subsidiary, the Bank of England Asset Purchase Facility Fund Limited (APF). The APF borrows from the BOE at the policy interest rate and uses the funds to purchase assets, with any profits or losses accruing to the government. The BOE has raised its policy interest rate rapidly and substantially, resulting in negative spreads for the APF, and since October 2022, the interest income on government bonds has been insufficient to cover interest payments to the BOE, so that the government has been making transfers to the APF to cover its losses. Similarly, in the euro area, successive policy interest rate hikes meant that the ECB's profits on a non-consolidated basis in the financial statements for 2022 were zero, and there was no profit distribution to the national central banks comprising the Eurosystem. Meanwhile, in the financial statements for 2022, the Bundesbank, which had been actively accumulating provisions to prepare for increased risks such as negative spreads, started to draw down those provisions in line with the purpose for which they had been accumulated.

Moreover, the Reserve Bank of Australia (RBA), after rapidly expanding its balance sheet through measures such as government bond purchases under the yield target adopted in March 2020, subsequently changed its policy framework in November 2021. As a result of successive policy interest rate hikes, its underlying profits have been negative. Moreover, under the fair value accounting it has adopted, the RBA incurred large valuation losses on government bonds as interest rates rose, resulting in negative equity in the June 2022 financial statements.

Thus, major overseas central banks that are exiting from large-scale monetary easing are experiencing net income effects based on the mechanisms described in Section 3. The FRB and the APF have disclosed projections of their finances, including under severe scenarios, by presenting simulations such as those of their net income. Other major overseas central banks currently exiting from large-scale monetary easing have also emphasized in their external communication that even if they temporarily make losses or have negative equity, this will not impede their ability to conduct monetary policy. Moreover, these central banks have noted that, although their profits are currently decreasing, it is also the case that they

increased during the past balance sheet expansion, and that assessments of their large-scale easing policies should focus on the positive effects on the economy overall and not on central bank finances (see Box 6). With a view to avoiding adverse consequences, such as doubts about their ability to conduct monetary policy and a decline in their credibility, these central banks, in recognition of the importance of central bank capital, have maintained their stance to work on restoring their capital over time. Under these circumstances, no particular impediments have arisen in any of the countries or regions in terms of ensuring confidence in their respective currencies through the appropriate conduct of monetary policy. These examples provide a reference for how to deal with central bank finances.

## **6. The Bank of Japan's Basic Thinking on Central Bank Finances and Monetary Policy Conduct**

The discussion so far has shown, for example, that the profit structure of central banks changes as their balance sheets expand and contract, that there is a range of positions in the debate over central bank finances, and that, although major overseas central banks are currently making losses and some have negative equity, they are taking measures to address their finances and are making efforts to provide careful explanations to the public, so that no particular impediments have arisen in terms of ensuring confidence in the currency through the appropriate conduct of monetary policy. Based on the above, the Bank of Japan's basic thinking on central bank finances and monetary policy conduct can be summarized as follows.

Under a fiat money system, confidence in the currency is not directly ensured by the assets held by the central bank or its financial soundness, but by the appropriate conduct of monetary policy with the aim of achieving price stability. Based on this premise, central banks are generally set up in such a way that they make profits from a somewhat longer-term perspective and, moreover, can supply their own means of payment and settlement. Therefore, even if the central bank temporarily makes losses or has negative equity, this does not impede its ability to conduct monetary policy. That said, this does not mean that the central bank can run up unlimited losses and negative equity. If the central bank's financial risks become a matter of undue attention and give rise to unnecessary confusion over monetary policy, there is a risk that this could lead to a decline in its credibility. Therefore, ensuring the soundness of the central bank's finances is important.

The following explains this basic thinking in somewhat more detail. To start with, what underpins confidence in a currency is considered. Under the fiat money system adopted by many countries today, the central bank is not systematically constrained in the amount of currency it can issue by the assets it holds. Nor is it constrained by its profits or level of capital. Confidence in the currency is not directly ensured by the assets held by the central bank or its financial soundness, but by the appropriate conduct of monetary policy with the aim of achieving price stability. In implementing policies and operations necessary to achieve its objectives, the Bank does not give priority to considerations regarding possible negative effects on its finances.

Next, the relationship between central banks' profits and capital on the one hand and their ability to conduct monetary policy on the other are considered. Central banks are generally set up in such a way that they make profits from a somewhat longer-term perspective because they continue to generate seigniorage. Even if short-term fluctuations in profits temporarily damage a central bank's finances, the central bank's finances will eventually recover. Moreover, under a fiat money system, the central bank can supply its own means of payment and settlement (banknotes and current deposits). Given the above, even if the central bank temporarily makes losses or has negative equity, this does not impede its ability to conduct monetary policy. Under these circumstances, monetary policy is conducted with the aim of achieving price stability, and the implementation of necessary policies is in no way impeded by considerations of the central bank's finances or other issues. Moreover, this applies not only to monetary policy but also to the basic role of central banks in general, such as maintaining the stability of the financial system, the stable operation as the government's bank, and the smooth operation of the payment and settlement system. This point is a major difference between central banks on the one hand and private financial institutions and business corporations on the other and is fundamental when considering the relationship between a central bank's finances and its ability to conduct monetary policy. In other words, it is inappropriate to think of central bank finances as analogous to those of private financial

institutions and business corporations.<sup>17</sup> While some of the major overseas central banks currently have incurred or may incur losses and/or have negative equity as a result of factors such as policy interest rate hikes, they have not experienced any particular impediments to their ability to conduct monetary policy, providing evidence that even if the central bank temporarily makes losses or has negative equity, this does not impede its ability to conduct monetary policy.

Finally, the importance of ensuring the financial soundness of the central bank is considered. As noted earlier, central banks have explained that temporary decreases in their profits and capital do not impede their ability to conduct monetary policy. At the same time, they recognize that ensuring their financial soundness is important, bearing in mind that, if the decreases in the central bank's profits and capital become a matter of undue attention and give rise to unnecessary confusion over monetary policy, there is a risk that this could lead to a decline in its credibility. In the case of the Bank of Japan, the current Bank of Japan Act removes the provision in the former Bank of Japan Act for the government to indemnify the Bank for losses, and the Bank is required to operate independently based on sound financial foundations through means such as the management of provisions.<sup>18</sup> Under these circumstances, the Bank has worked to enhance its capital by, for example, expanding measures pertaining to provisions for possible losses on bonds transactions in order to reduce the amplitude of changes in its profits and ensure its financial soundness.

The Bank of Japan deems it appropriate to continue with conducting appropriate policy

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<sup>17</sup> A certain portion of private financial institutions' demand deposits in fact stays for a long period of time (so-called core deposits). For this reason, in, for example, statistical models for the management of profits and interest rate risk, they are sometimes treated as liabilities with low interest rate sensitivity. In contrast, central banks, based on legal provision, have quite large and relatively stable non-interest-bearing liabilities (required reserves and banknotes) and can supply their own means of payment and settlement. Therefore, for central banks, losses or negative equity do not immediately impair their ability to conduct monetary policy in an operational sense. The organizational purpose of a central bank is not to earn profits, and its finances should be assessed from a longer-term perspective. See also Bell et al. (2023) on this point.

<sup>18</sup> Regarding the revision of the Bank of Japan Act, the Financial System Research Council (1997) stated that the importance of the financial soundness of the Bank of Japan remains undiminished even after the termination of the "reserve for banknote issuance" system and that in order to ensure confidence in the value of banknotes, due consideration needs to be given to the Bank's financial soundness as a whole.

while also paying attention to its financial soundness.<sup>19</sup>

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<sup>19</sup> As Japan's central bank, the Bank of Japan has been actively disclosing information such as on its finances and bondholdings in order to increase transparency (see Box 7 for details).



## **Box 1. Expansion of Assets Eligible for Purchase and Long-Term Lending by Major Central Banks**

Faced with the zero lower bound on short-term interest rates, the Bank of Japan since the late 1990s, as well as major overseas central banks since the outbreak of the Global Financial Crisis (GFC), have employed unconventional monetary policy measures -- such as quantitative easing, purchases of a variety of financial assets, and long-term lending -- in line with their particular circumstances.<sup>20</sup>

Looking at qualitative changes in the type of assets that major central banks made eligible for purchase as the size of their balance sheets expanded, what these central banks have in common is that, in addition to increasing purchases of long-term government bonds in order to influence interest rates of those with relatively long maturities, they made CP, corporate bonds, and asset-backed securities (ABSs) eligible for purchase with a view to, for example, ensuring smooth corporate financing. Moreover, in response to particular policy challenges, the structure of the financial system, legal constraints, and other factors specific to each country or jurisdiction, central banks made other financial assets eligible for purchase. This box provides an overview of such measures specific to individual central banks (Chart B1).

### ***Bank of Japan***

Under the comprehensive monetary easing policy introduced in October 2010, the Bank began purchasing exchange-traded funds (ETFs) and Japan real estate investment trusts (J-REITs) in order to influence risk premiums. Its holdings of ETFs and J-REITs then continued to rise through its quantitative and qualitative monetary easing (QQE), QQE with a Negative Interest Rate, and expansion of these asset purchases in response to the COVID-19 pandemic.

### ***U.S. Federal Reserve (FRB)***

Agency mortgage-backed securities (MBSs) and other housing-related securities were made eligible for purchase by the FRB based on the perception that it was important to support the housing market, which had deteriorated due to the subprime mortgage crisis during the GFC. Municipal bonds were also placed on its list of assets eligible for purchase

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<sup>20</sup> An analysis of the expansion of, and change in the composition of, central banks' balance sheets in response to the COVID-19 pandemic, including a comparison with the response to the GFC, is provided by Hooley et al. (2023).

in order to provide support for financing of local governments in response to the COVID-19 pandemic. Purchases of CP during the GFC and of municipal and corporate bonds in response to the COVID-19 pandemic were conducted through special purpose vehicles (SPVs), with regional Federal Reserve Banks providing liquidity backstopped by the U.S. Treasury.

### ***European Central Bank (ECB)***

In the wake of the GFC, the ECB made covered bonds -- one of the main funding instruments for financial institutions under a financial intermediation structure centered on indirect financing -- eligible for purchase in order to further lower interest rates in financial markets, ease funding conditions for financial institutions and firms, and improve liquidity in the private bond market. In addition, during the European debt crisis, the ECB, given that the euro area consists of many member countries, began purchasing member country government bonds and other assets in order to, for example, improve the functioning of bond markets. Furthermore, as the risk of low inflation or deflation increased in the euro area, the ECB made municipal bonds eligible for purchase with a view to improving the sustainability of its asset purchases.

### ***Bank of England (BOE)***

Asset purchases were conducted through the Bank of England Asset Purchase Facility Fund Limited (APF) -- a subsidiary of the BOE established under an arrangement with HM Treasury -- and it was clarified in advance that all profits/losses arising from such purchases would accrue to the government.

In addition to the purchase of various financial assets, some central banks introduced programs to support lending by financial institutions to the private sector in the form of long-term conditional lending programs for financial institutions, in order to ensure that the effects of monetary easing spread widely. Specifically, the Bank of Japan introduced the Fund-Provisioning Measure to Support Strengthening the Foundations for Economic Growth and the Fund-Provisioning Measure to Stimulate Bank Lending, the ECB introduced the Targeted Longer-Term Refinancing Operations (TLTROs), and the BOE introduced the Funding for Lending Scheme (FLS).

Chart B1. Assets Eligible for Purchase by Major Central Banks\*

	BOJ	FRB	ECB	BOE
Government bonds	○	○	○	○
MBSs Covered bonds	×	○ Jan. 2009	○ July 2009	×
Other ABSs	○ Aug. 2003	○** Sept. 2008	○ Nov. 2014	○ Nov. 2010
Municipal bonds	×	○ June 2020	○ Dec. 2015	×
CP	○ Jan. 2009	○ Oct. 2008	○ June 2016	○ Feb. 2009
Corporate bonds	○ Mar. 2009	○ June 2020	○ June 2016	○ Mar. 2009
Stock index-linked ETFs REITs	○ Dec. 2010	×	×	×
Long-term conditional lending	○ Sept. 2010	×	○ Sept. 2014	○*** Aug. 2012

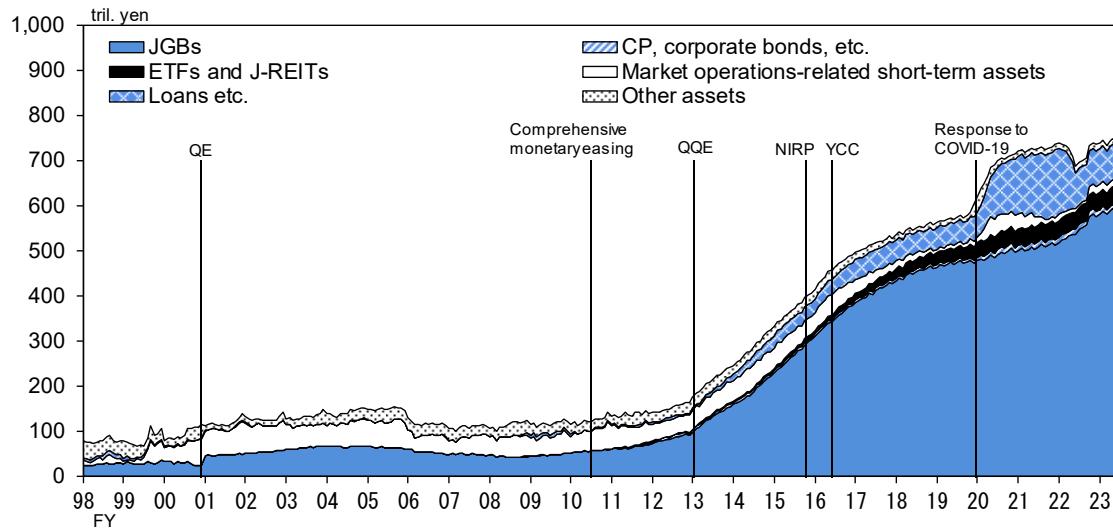
\*The dates in parentheses indicate the start of purchases.

\*\*The category includes non-recourse loans secured by ABSs.

\*\*\*The FLS introduced in August 2012 was designed to encourage banks to expand their lending to U.K. households and non-financial corporations by allowing financial institutions to borrow U.K. Treasury bills at low cost. The quantity and price of these funds was linked to banks' amount of net lending. Also, the BOE launched the Term Funding Scheme (TFS) in September 2016, which provided long-term funding.

(Reference) Size and Composition of Major Central Banks' Assets

BOJ



Source: Bank of Japan.

Notes: 1. NIRP stands for "negative interest rate policy."

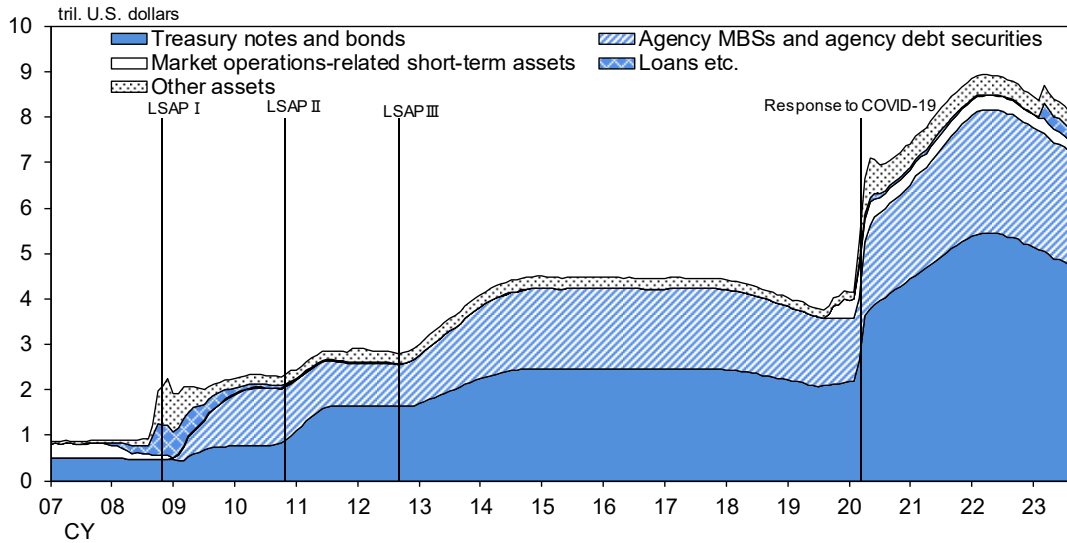
2. "CP, corporate bonds, etc." include ABSs.

3. "Market operations-related short-term assets" include treasury discount bills, loans provided as part of the Funds-Supplying Operations against Pooled Collateral, and JGBs and CP purchased under repurchase agreements.

4. "Loans etc." include loans provided through the Complementary Lending Facility, the Fund-Provisioning Measure to Support Strengthening the Foundations for Economic Growth, the Fund-Provisioning Measure to Stimulate Bank Lending, the Funds-Supplying Operations to Support Financial Institutions in Disaster Areas, the Special Funds-Supplying Operations to Facilitate Financing in Response to the Novel Coronavirus (COVID-19), and the Climate Response Financing Operations.

5. "Other assets" are all other assets not included elsewhere and include underwriting of treasury discount bills, funds provided through the U.S. dollar liquidity-providing operations, and foreign reserves.

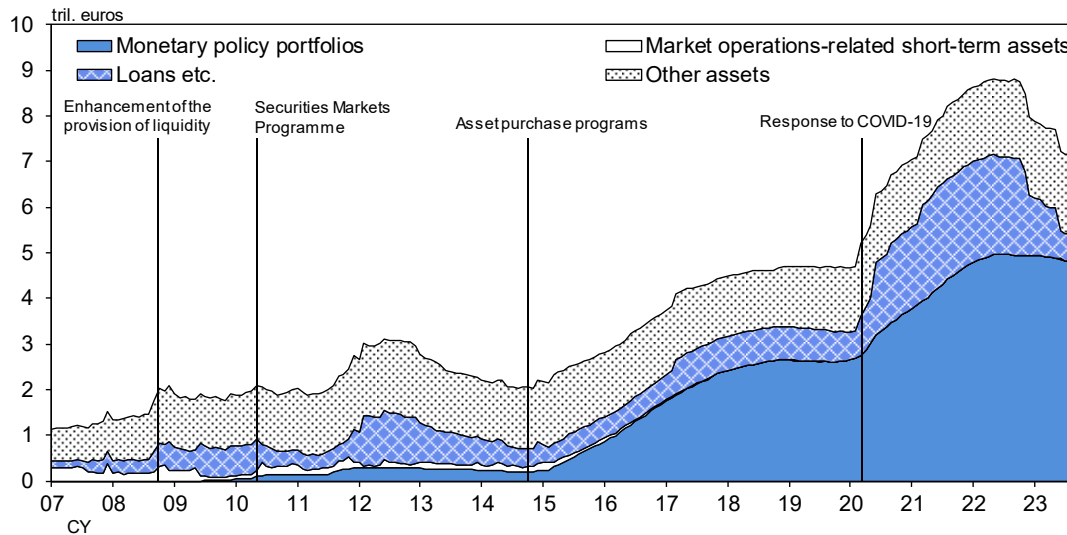
## FRB



Source: Haver.

- Notes:
1. "Market operations-related short-term assets" include Treasury bills and assets purchased under overnight repurchase agreements.
  2. "Loans etc." include loans provided through the Discount Window, the Term Auction Facility, and the Bank Term Funding Program.
  3. "Other assets" are all other assets not included elsewhere and include central bank liquidity swaps, net portfolio holdings of SPVs for emergency facilities, and foreign reserves.

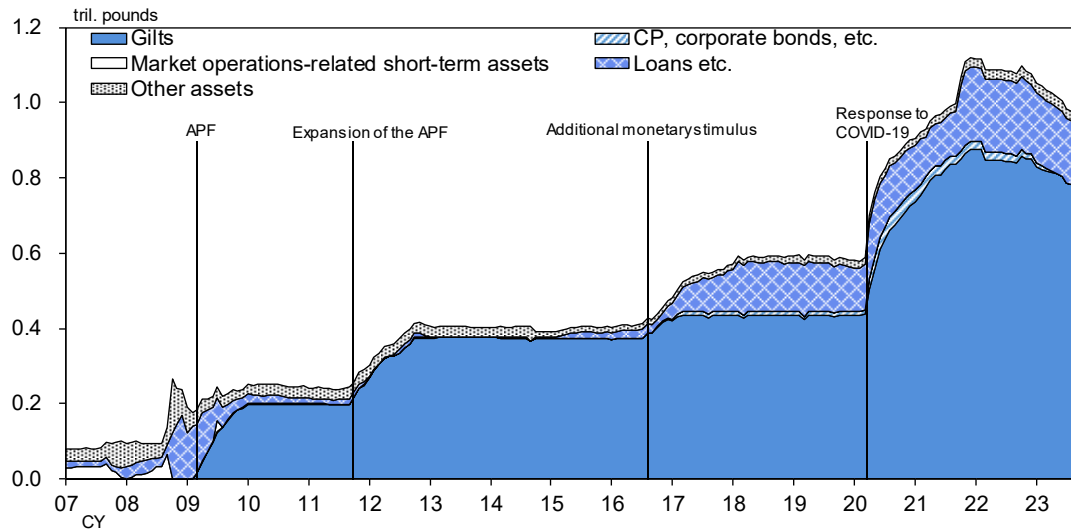
## ECB



Source: Haver.

- Notes:
1. Figures are those for consolidated assets of national central banks in the euro area and the ECB.
  2. "Monetary policy portfolios" consist of central government bonds, regional and local government bonds, CP, corporate bonds, ABSs, covered bonds, etc. held for monetary policy purposes.
  3. "Market operations-related short-term assets" are those related to main refinancing operations and fine-tuning operations.
  4. "Loans etc." include loans through the Marginal Lending Facility, LTROs, and TLTROs.
  5. "Other assets" are all other assets not included elsewhere and include funds provided through the U.S. dollar liquidity-providing operations and foreign reserves.

## BOE



Source: Haver.

Notes: 1. Figures are those for consolidated assets of the BOE and the APF.

2. "Gilts" only include those held by the APF.
2. "CP, corporate bonds, etc." include ABSs.
3. "Market operations-related short-term assets" include one-week repurchase agreements.
4. "Loans etc." include loans through the TFS and the Indexed Long-Term Repo. The FLS is excluded from the chart since it lends U.K. Treasury bills to financial institutions.
5. "Other assets" through September 2014 are all other assets not included elsewhere and include pound-denominated bonds held by the BOE, funds provided through the U.S. dollar liquidity-providing operations, and foreign reserves. Due to data constraints, "other assets" from October 2014 onward consist of pound-denominated bonds held by the BOE and foreign reserves only.

## **Box 2. Overview of Provisions for Possible Losses on Bonds Transactions**

The Bank of Japan introduced QQE in April 2013. As shown in the main text, unconventional monetary policy accompanied by large-scale balance sheet expansions creates fluctuations in central bank profits during phases of monetary easing and tightening. In light of this, the Bank in November 2015 expanded measures pertaining to provisions for possible losses on bonds transactions by changing its accounting rules in order to reduce the amplitude of such profit fluctuations.

Specifically, during a phase when the balance sheet expands, the interest rate on excess reserves is low and the Bank's profits increase. Based on the new accounting rules, the Bank under these circumstances actively transfers funds to provisions for possible losses on bonds transactions. On the other hand, during the exit phase, when monetary policy is tightened and the balance sheet shrinks, the interest rate on excess reserves rises and profits decline; given this, the funds that previously had been transferred to the provisions are drawn down. This allows the Bank to compensate for the decline in profits during the exit phase.

### *Accounting rules before November 2015*

The benchmark for provisions for possible losses on bonds transactions shall be 50 percent of the difference between profits from the sale or redemption of Japanese government bonds (JGBs) and the sum of (1) losses from the sale or redemption of JGBs and (2) losses from the revaluation of JGBs at the end of the fiscal year. In the case of profits, transfers to provision shall be made, while in the case of losses, transfers from provisions shall be made. In making transfers to/from provisions, the capital adequacy ratio and other factors shall be taken into consideration.

### *Accounting rules since November 2015*

For the time being, the benchmark for provisions for possible losses on bonds transactions, in addition to those before the accounting rule change in 2015, shall be 50 percent of the difference between interest income from JGBs held against interest-bearing liabilities (excess reserves, bills sold, etc.) and interest expenses on interest-bearing liabilities. In the case of profits, transfers to provisions shall be made, while in the case of losses, transfers from provisions shall be made. In making transfers to/from

provisions, the capital adequacy ratio, developments in profits/losses, and other factors shall be taken into consideration.

Thus, a portion of profits is set aside during a period of higher profits and drawn down during a future period of lower profits, thereby reducing the amplitude of profit fluctuations and helping to ensure the financial soundness of the Bank. Among overseas central banks, the Deutsche Bundesbank, for example, actively accumulated general risk provisions for the same purpose.

Under this setup of setting aside increased provisions, the Bank of Japan has been accumulating provisions for possible losses on bonds transactions since fiscal 2015, and as of the end of fiscal 2022, the amount outstanding of the provisions stood at 6.0 trillion yen (up 3.8 trillion yen from end-fiscal 2014) (Chart B2).

<Illustration of Provisions for Possible Losses on Bonds Transactions>

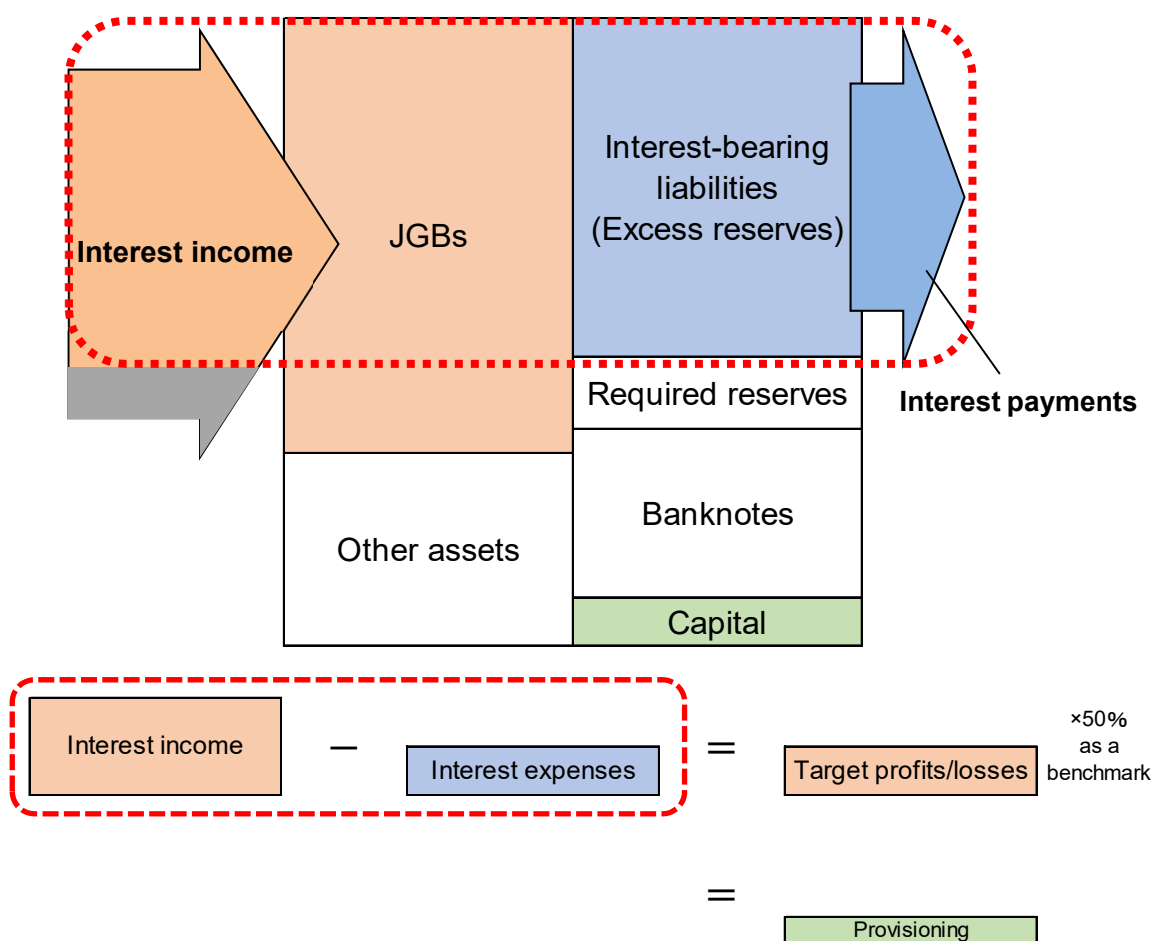
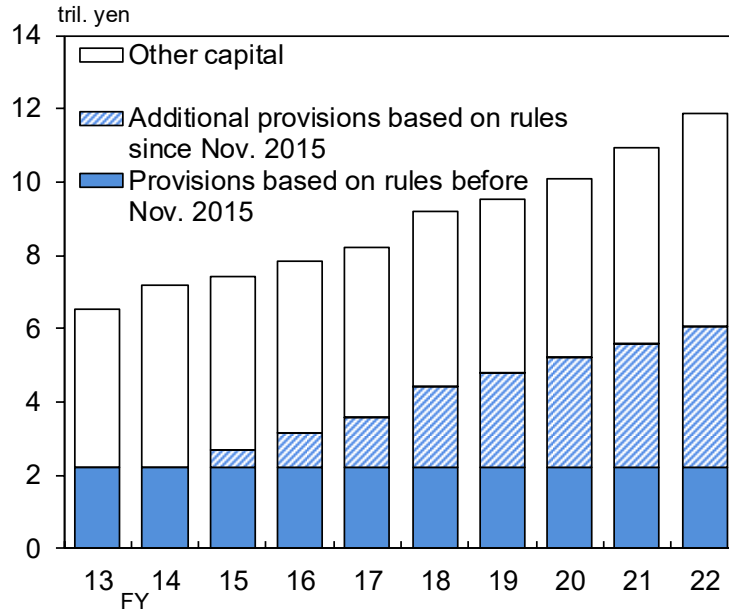




Chart B2. The Bank's Capital



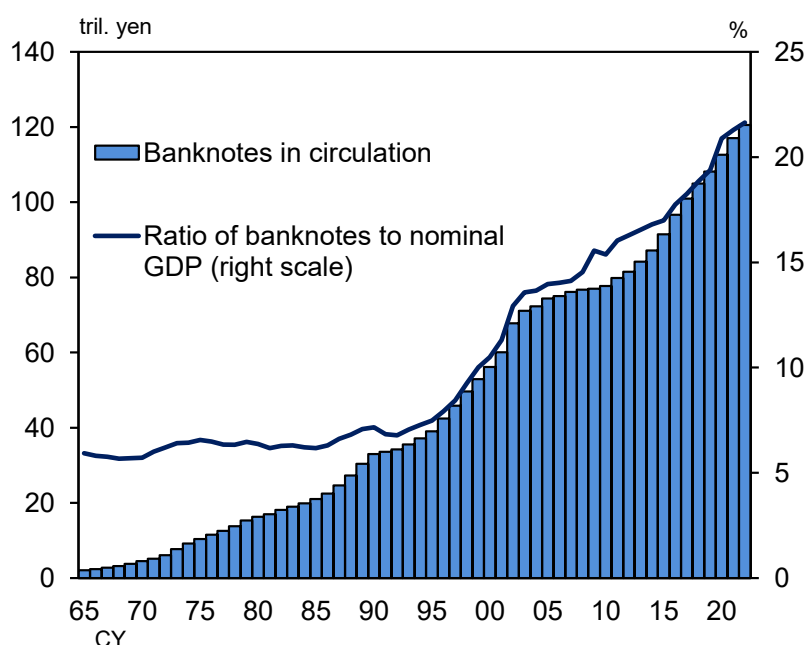
Source: Bank of Japan.

- Notes: 1. "Additional provisions based on rules since Nov. 2015" are additional provisions for possible losses on bonds transactions based on the enhanced accounting rules introduced in November 2015.
2. "Provisions based on rules before Nov. 2015" are provisions for possible losses on bonds transactions based on the accounting rules until November 2015.

### Box 3. Factors Contributing to the Demand for Banknotes

Banknotes in circulation in Japan as a percentage of nominal GDP hovered at around 6-8 percent until the mid-1990s, after which they began to trend upward, and recently have exceeded 20 percent (Chart B3-1). This change in the demand for banknotes can be attributed to a variety of factors, including social, cultural, and historical factors in addition to economic ones.

Chart B3-1. Banknotes in Circulation and Ratio to Nominal GDP



Sources: Bank of Japan; Cabinet Office.

One important factor affecting the demand for banknotes is the size of the economy. If the total amount and frequency of economic transactions are large, the demand for banknotes as a means of payment is likely to be high.

Next, the level of interest rates, such as on bank deposits, can also affect the demand for banknotes. For example, when interest rates on deposits rise, the incentive to deposit banknotes in order to earn interest income increases (i.e., the opportunity cost of holding banknotes increases), and this will reduce the demand for banknotes. Conversely, in Japan, where interest rates have remained low since the late 1990s, this likely increased the demand for banknotes.

Moreover, the higher the uncertainty about future economic conditions and the financial

system, the greater the demand to hold banknotes against unforeseen events (precautionary demand) tends to be. This phenomenon, which is observed especially in times of financial crises, likely had a pronounced impact on the demand for banknotes in Japan during the financial crisis of the late 1990s, when the financial system became increasingly unstable.

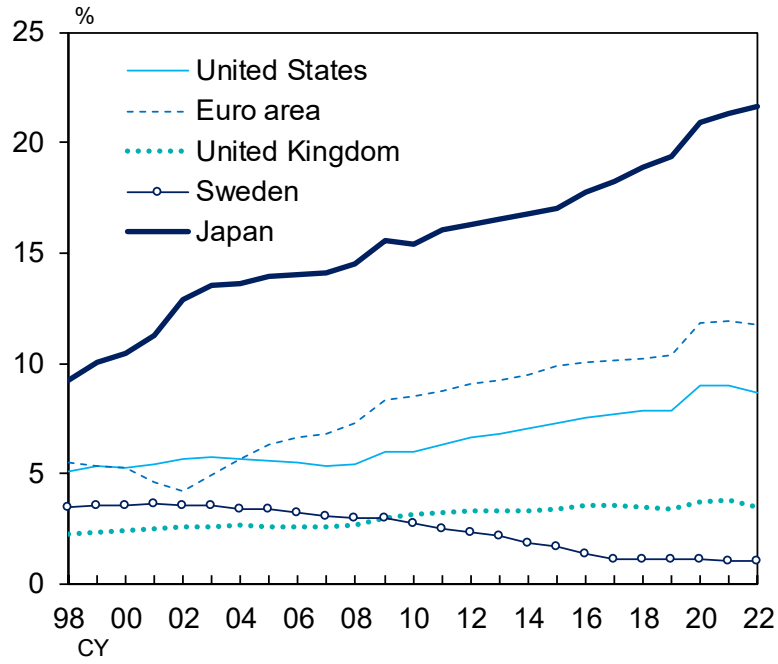
In addition, structural factors such as confidence in the political and economic system, the demographic structure, the state of social infrastructure such as the availability of ATMs, and the level of public safety are regarded as important determinants of banknote demand. For example, in terms of demographic structure, seniors tend to have a relatively strong preference for cash, and, from a macro perspective, in a country like Japan -- where the share of the elderly is high -- this has likely contributed to the strength in the demand for banknotes. In terms of social infrastructure, in Sweden -- where the use of cashless payment is very advanced -- the ratio of banknotes in circulation to nominal GDP has been on a declining trend in recent years. In terms of security, demand for banknotes will be lower in countries where safety is poor and the risk of losing cash due to theft or other crimes is high, while demand for banknotes in countries like Japan that are relatively safe will be higher than in other countries. Furthermore, if there are many counterfeit banknotes and confidence in banknotes is low, demand for banknotes is likely to be low (Chart B3-2).

Meanwhile, during the COVID-19 pandemic, a substantial rise in banknotes in circulation was seen around the world. During the pandemic, the slowdown in the economy and the further increase in cashless payments as a result of the expansion of e-commerce due to stay-at-home consumption have led to a decline in opportunities to pay in cash. On the other hand, self-restraint from going outside and the introduction of public health measures, both due to the spread of COVID-19, likely increased the demand for banknotes, so that, overall, banknotes in circulation increased.<sup>21</sup>

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<sup>21</sup> See Yoshizawa et al. (2021).

Chart B3-2. Ratio of Banknotes in Circulation to Nominal GDP in Selected Economies



Sources: Cabinet Office; Haver; Bank of Japan; Sveriges Riksbank.

#### Box 4. Examples of Past Cases in Which Central Banks Registered Negative Equity

A look at past cases in which central banks registered negative equity shows that the impact on the inflation rate was small when the direct cause was a valuation loss on foreign exchange reserves due to appreciation of the domestic currency.

On the other hand, in cases where central banks' profitability had deteriorated due to, for example, their responses to a financial crisis or to quasi-fiscal policy lending, the central banks were unable to cover interest expenses on central bank bills and other bills issued to absorb excess liquidity using their own income. Some therefore needed to make up the shortfall through an increase in current deposits, while others gave up on absorbing excess liquidity due to concerns about a deterioration in profits. As a result, they were unable to tighten monetary policy sufficiently and contain inflation. This undermined the credibility of these central banks and led to a vicious cycle of further rises in inflation.

##### *Cases in which inflation did not rise further*

	Period	Reason(s) for negative equity	Impact on policy conduct	Average inflation rate
West Germany	1970s	- Valuation losses on the Bundesbank's foreign currency assets due to appreciation of the German mark	None (The German mark depreciated in the 1980s and negative equity was resolved.)	4.9% (1970-1979)
Czech Republic	1990s-2010s	- Valuation losses on the Czech National Bank's foreign currency assets due to appreciation of the Czech koruna	None (The Czech koruna depreciated during 2014-2016 and negative equity was resolved.)	3.1% (1996-2019)
Chile	1990s-present	- Interest rate differential between the Central Bank of Chile's foreign currency assets and	None (No excess liquidity due to government	6.1% (1990-2022)

		<ul style="list-style-type: none"> <li>liabilities denominated in Chilean pesos (negative spread)</li> <li>- The central bank took on financial institutions' assets during a financial crisis.</li> <li>- Valuation losses on the central bank's foreign currency assets due to appreciation of the Chilean peso</li> <li>- Reduction of interest payments on government bonds held by the central bank</li> </ul>	austerity measures)	
Thailand	1990s-present	<ul style="list-style-type: none"> <li>- Valuation losses on the Bank of Thailand's foreign asset holdings due to appreciation of the Thai baht</li> <li>- Interest rate differential between the central bank's U.S. dollar-denominated assets and the means of absorbing funds, such as central bank notes</li> </ul>	None (No rapid increase in the inflation rate)	2.9% (1990-2022)

*Cases in which inflation rose*

	Period	Reason(s) for negative equity	Impact on policy conduct	Average inflation rate	Response
Jamaica	1980s-1990s	<ul style="list-style-type: none"> <li>- The Bank of Jamaica took on the foreign currency-denominated debt of public enterprises and provided exchange rate guarantees etc.</li> <li>- Issuance of certificates of deposit (CDs) for monetary tightening</li> </ul>	<ul style="list-style-type: none"> <li>- Interest payments on CDs led to an increase in liquidity, resulting in continued high inflation.</li> </ul>	22.6% (1980-1999)	<ul style="list-style-type: none"> <li>- The government replenished the central bank's capital through issuing interest-bearing bonds.</li> </ul>
Philippines	1980s-1990s	<ul style="list-style-type: none"> <li>- Provision of preferential foreign exchange rates for financial institutions and other entities</li> <li>- The central bank took on foreign currency-denominated debt.</li> <li>- Development banking loans became</li> </ul>	<ul style="list-style-type: none"> <li>- Interest payments on central bank bills led to an increase in liquidity, resulting in continued high inflation.</li> </ul>	11.8% (1980-1999)	<ul style="list-style-type: none"> <li>- Accumulated debt was transferred to the government and the former central bank was liquidated.</li> <li>- A new central bank was established.</li> </ul>

		<p>irrecoverable.</p> <ul style="list-style-type: none"> <li>- Central bank bills were drawn to contain inflation stemming from expansionary policies.</li> </ul>			
Venezuela	1980s-1990s	<ul style="list-style-type: none"> <li>- Provision of preferential exchange rates for public enterprises</li> <li>- The Central Bank of Venezuela took measures to address a financial crisis, such as taking on private financial institutions' non-performing loans.</li> <li>- Central bank bills were drawn to contain inflation stemming from expansionary policies.</li> </ul>	<ul style="list-style-type: none"> <li>- Absorption of excess liquidity was given up due to growing concerns over losses resulting from the increasing burden of interest payments. High inflation continued.</li> </ul>	29.9% (1980-1999)	None

Sources: Bank of Thailand; Central Bank of Chile; Frait (2005); International Monetary Fund; Lamberte (2002); Stella (2002); Vaez-Zadeh (1991).

Note: Average inflation rates are calculated using the inflation rates for the decades that include the period when the central bank had negative equity.



## **Box 5. Finances of Overseas Central Banks**

### **1. U.S. Federal Reserve (FRB)**

Starting in 2008, the FRB conducted large-scale purchases of assets such as Treasury securities, government agency bonds, and mortgage-backed securities (MBSs) to address various financial and economic challenges (see Box 1).

Since March 2022, in response to higher inflation, the FRB has raised the interest rate on current account deposits (from 0.15 percent in February 2022 to 5.4 percent in September 2023) and has reduced its holdings of Treasury securities and other assets.

#### Policy for reducing holdings of Treasury securities and other assets

Reductions of Treasury security and MBS holdings started in June 2022. From June to August 2022, the monthly pace of reductions was up to 30 billion dollars for Treasury securities and 15 billion dollars for MBSs. From September onward, it has been up to 60 billion dollars for Treasury securities and 30 billion dollars for MBSs. If redemptions exceed these amounts, the proceeds are reinvested.

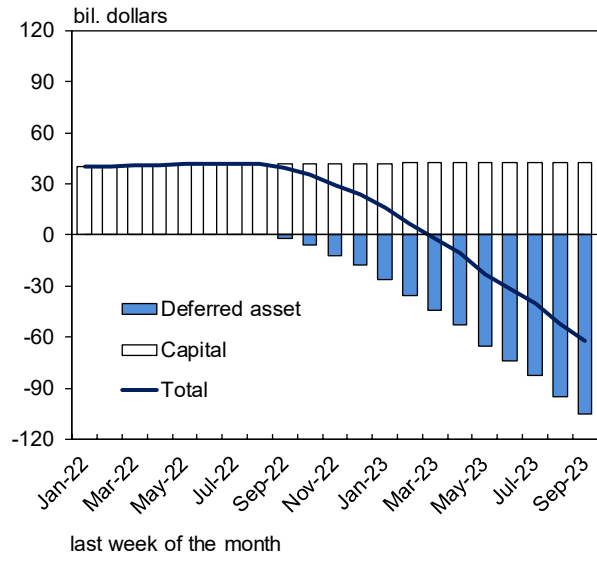
The FRB's current finances show that rapid and substantial hikes of the policy interest rate have resulted in negative net income. Specifically, net income on a weekly basis has been negative since September 2022, and transfers to the Treasury have been suspended. From an accounting perspective, the FRB has recorded accumulated negative net income as a "deferred asset" on its balance sheet and will resume transfers to the Treasury when profits have resolved the deferred asset. As of September 2023, the deferred asset exceeded capital holdings by 62.4 billion dollars (Chart B5-1).

The FRB publishes projections for its finances on an annual basis. The baseline scenario in the most recent projection published in April 2023 forecasts a return to profits in 2025 (Chart B5-2).<sup>22</sup>

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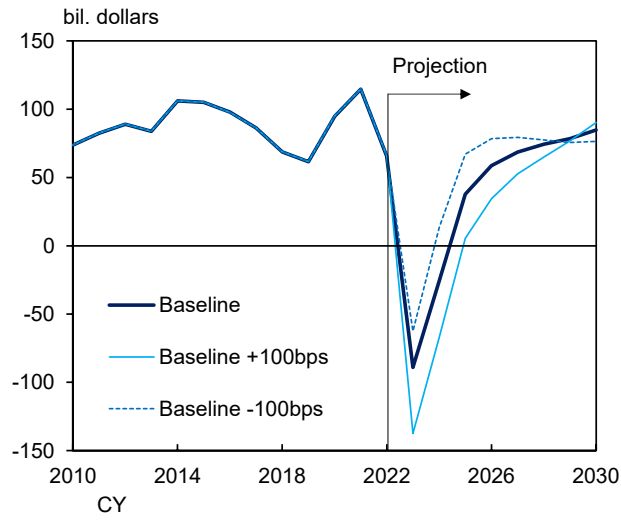
<sup>22</sup> See Federal Reserve Bank of New York (2023).

Chart B5-1. Capital and the Deferred Asset of the FRB



Source: Federal Reserve.

Chart B5-2. The FRB's Profit/Loss Projection



Source: Federal Reserve Bank of New York.

## 2. European Central Bank (ECB)

The Eurosystem has significantly expanded its balance sheet since the European debt crisis of the early 2010s (see Box 1).

However, in order to deal with higher inflation, the ECB suspended all new purchases of government bonds and other assets in June 2022 and has raised its policy interest rate (deposit facility rate) from July 2022 onward (from minus 0.5 percent in June 2022 to 4.0 percent in September 2023), while reducing its holdings of, for example, government bonds and market operations-related long-term assets.

### Policy for reducing holdings of government bonds and other assets

Asset purchase program: Reduction of holdings of government bonds and other assets started in March 2023, at an average monthly pace of 15 billion euros until the end of June 2023 (since redemptions during this period exceeded the specified reduction of holdings, the difference was reinvested). Reinvestment of redemption proceeds was discontinued in July 2023.

Pandemic emergency purchase program: Redemption proceeds will be reinvested until at least the end of 2024.

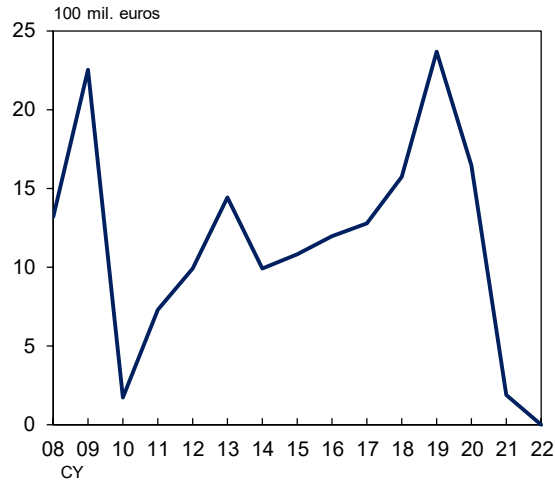
Regarding the finances of the ECB (on a non-consolidated basis), the financial statements for 2022 show that the ECB drew down provisions due to the increase in interest payments on current deposits<sup>23</sup> and valuation losses on securities subject to valuation on a market basis.<sup>24</sup> As a result, profits/losses in the year were zero, and there was no profit distribution to the national central banks comprising the Eurosystem (Chart B5-3). Meanwhile, in the financial statements for 2022, the Deutsche Bundesbank, which had been actively accumulating general risk provisions to respond to financial risks in general, started to draw down those provisions (Chart B5-4).

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<sup>23</sup> More precisely, the interest is applied to TARGET2 liabilities that arise between central banks due to the inflows and outflows of funds as a result of cross-border transfers within the euro area.

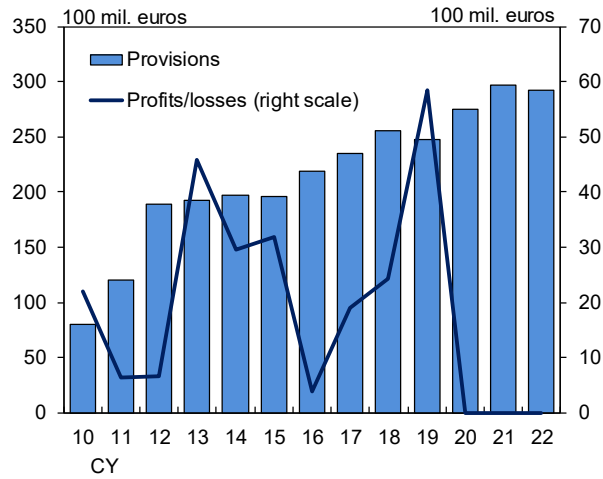
<sup>24</sup> Specifically, losses on euro-denominated assets held as funds to cover expenses and dollar-denominated assets included in funds for foreign exchange interventions. For securities held for monetary policy purposes, the amortized cost method is used.

Chart B5-3. The ECB's Profits/Losses



Source: European Central Bank.  
 Note: Figures are on a non-consolidated basis.

Chart B5-4. The Bundesbank's Provisions and Annual Profits/Losses



Source: Deutsche Bundesbank.

### 3. Bank of England (BOE) and Asset Purchase Facility Fund Limited (APF)

In response to the GFC, the BOE began large-scale purchases of government and corporate bonds through the APF in 2009. Since then, it has significantly expanded its balance sheet to address various financial and economic challenges (see Box 1).

#### Structure of the APF

The APF is a subsidiary established by the BOE under an arrangement with HM Treasury that borrows from the BOE at the policy interest rate to purchase assets. Profits and losses (cash flows) accrue to the government, with surpluses transferred to HM Treasury and deficits indemnified by the government (Chart B5-5).

The BOE has raised its policy interest rate from December 2021 onward (from 0.1 percent in November 2021 to 5.25 percent in September 2023) in response to higher inflation, while the APF has reduced its holdings of government bonds and other assets.

#### Policy for reducing holdings of government bonds and other assets

In February 2022, the APF began reducing its holdings of government and corporate bonds, given that the policy interest rate reached 0.5 percent. Reinvestment in both was terminated in February 2022. Sales of corporate bonds started in September 2022, while sales of government bonds started in November 2022.

Looking at the APF's finances, spreads have turned negative due to the increase in the cost of funding from the BOE (i.e., the policy interest rate). Since October 2022, the government has been making transfers to the APF to cover losses due to the deterioration in the APF cash flow (Chart B5-6).

The APF publishes quarterly projections of future cash flows. The most recent projections published in November 2023 suggest that cash flows are expected to be negative for around 10 years.<sup>25</sup>

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<sup>25</sup> See BOE (2023).

Chart B5-5. Structure of the APF

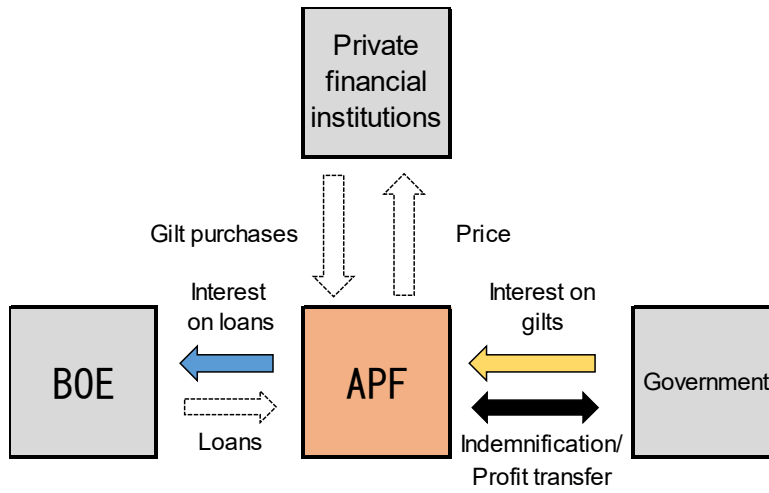
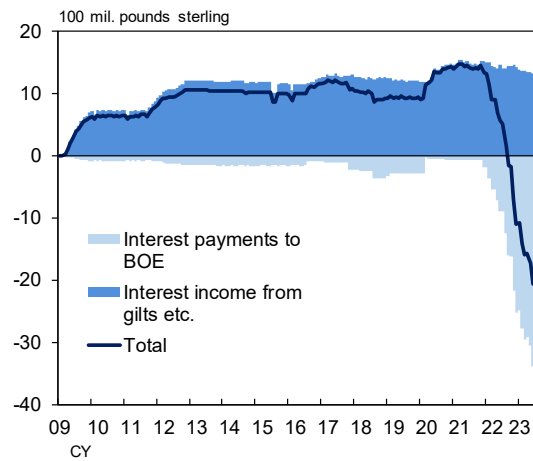


Chart B5-6. Interest Income and Payments of the APF



Source: Office for National Statistics.

#### 4. Reserve Bank of Australia (RBA)

In March 2020, the RBA introduced a target for the yield on 3-year Australian Government bonds in response to the COVID-19 pandemic. Under this policy, the RBA expanded its balance sheet through measures such as government bond purchases and loans to deal with the impact of the pandemic (Chart B5-7).

In November 2021, the RBA discontinued the target in response to higher inflation and market interest rates. It has raised the policy interest rate (the interest rate on Exchange Settlement balances) from May 2022 onward (from 0.0 percent in April 2022 to 4.0 percent in September 2023), while reducing its holdings of, for example, government bonds and pandemic-related loans.

Policy for reducing holdings of government bonds and other assets

Reinvestment has been suspended since February 2022.

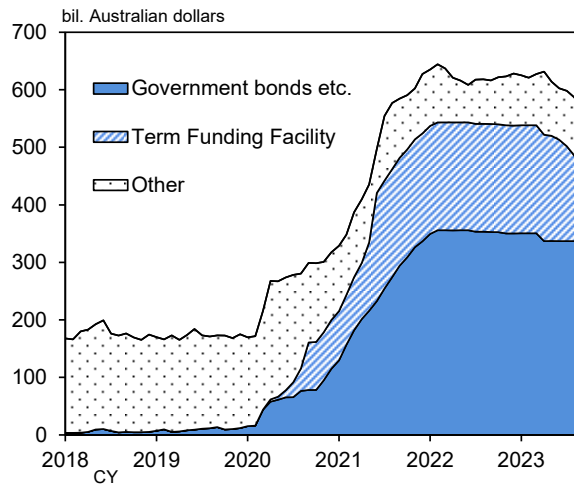
Looking at the RBA's finances, under the fair value accounting it has adopted, the RBA incurred large valuation losses on government bonds as interest rates rose, resulting in negative equity in the fiscal year ending June 2022 and a suspension of transfers to the government (Chart B5-8).

As part of its "Review of the Bond Purchase Program" released in September 2022, the RBA published projections of its future finances. The RBA expects that the negative spread between the interest income from government bonds purchased under the program and the corresponding interest payments on the current deposits will last for 10 years or more.<sup>26</sup>

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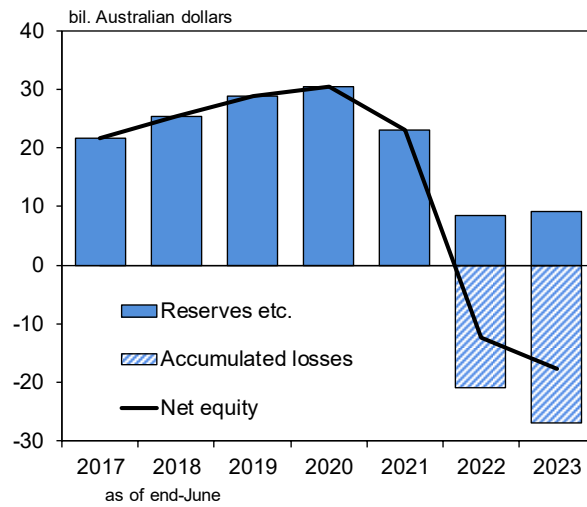
<sup>26</sup> See RBA (2022).

Chart B5-7. The RBA's Balance Sheet



Source: RBA.

Chart B5-8. The RBA's Capital



Source: RBA.



## Box 6. Statements on Central Bank Finances by Executives of Overseas Central Banks

### (1) On the effect of the decreases in profits and capital on monetary policy conduct

U.S. Federal Reserve: Chair Powell (June 2022, June 2023)	
	<ul style="list-style-type: none"> <li>▪ "These are paper losses and have absolutely no effect on our ability to conduct monetary policy or really on the economy. It's just an accounting thing." (June 2023)<sup>27</sup></li> <li>▪ "[T]hose kinds of unrealized losses have played no role in our decision making, have no effect at all on our ability to conduct monetary policy." (June 2022)<sup>28</sup></li> </ul>
European Central Bank (ECB): President Lagarde (December 2022, September 2023)	
	<ul style="list-style-type: none"> <li>▪ "I will dispose of the second question first because I think it is going to be a fast response to the point about whether the likelihood or possibility of national central banks or the ECB to make a loss impacts on the decision-making process and our decision. The answer to that is no. . . . [M]y definition of credibility is that we deliver on our mandate." (September 2023)</li> <li>▪ "I think when you look at history and what has happened to other banks around the world, central banks can actually operate despite being in a loss position, and some of them have operated with negative equity as well." (December 2022)</li> </ul>
ECB: <i>Convergence Report</i> (June 2022) <sup>29</sup>	
	<ul style="list-style-type: none"> <li>▪ "In particular, any situation should be avoided whereby for a prolonged period of time [a national central bank's (NCB's)] net equity is below the level of its statutory capital or is even negative. . . . Any such situation may negatively impact on the NCB's ability to perform its [European System of Central Banks]-related tasks but also its national tasks."</li> </ul>
Sveriges Riksbank: Deputy Governor Flodén (December 2022)	
	<ul style="list-style-type: none"> <li>▪ "The fact that capital is shrinking or even becoming negative need not be a problem for a central bank."</li> <li>▪ "However, problems may arise if the central bank loses its long-term earnings capacity. . . . Since the demand for cash is very low in Sweden, the so-called seigniorage -- the surplus from the monopoly on issuing money -- is insignificant."</li> </ul>

<sup>27</sup> U.S. Congress (2023a).

<sup>28</sup> U.S. Congress (2022).

<sup>29</sup> ECB (2022).

<p>Bank of Canada: Governor Macklem (November 2022)</p> <ul style="list-style-type: none"> <li>• "The size and duration of the losses will ultimately depend on a number of factors, including the path of interest rates and the evolution of both the economy and the balance sheet. The losses do not affect our ability to conduct monetary policy. I would also stress that our policy decisions are driven by our price and financial stability mandates. We do not make policy to maximize our income."</li> </ul>
<p>Reserve Bank of Australia: Deputy Governor Bullock (September 2022)</p> <ul style="list-style-type: none"> <li>• "Unlike a normal business, there are no going concern issues with a central bank in a country like Australia. . . . Furthermore, since it has the ability to create money, the Bank can continue to meet its obligations as they become due and so it is not insolvent. The negative equity position will, therefore, not affect the ability of the Reserve Bank to do its job."</li> <li>• "Despite the fact that the Bank can continue to operate with negative equity, the Board's view is that it is important that the Bank return to positive equity over time. The Board has communicated this to the government. While it has not sought a capital injection, the Board has indicated to the government that it expects that future profits will be retained by the Bank until the Bank's capital is restored."</li> </ul>

(2) Assessment of large-scale monetary easing in light of central banks' finances

<p>Federal Reserve: Chair Powell (June 2023)<sup>30</sup></p> <ul style="list-style-type: none"> <li>• "[I]n the era of QE, those profits were enormous. We remitted something like \$1.2 trillion in profits to the Treasury Department. . . . What we're managing to is maximum employment and price stability, and we're using our tools to achieve that. So, we don't think of ourselves as trying to attain some kind of fiscal goal one way or the other."</li> </ul>
<p>Federal Reserve: FEDS Notes (July 2022)<sup>31</sup></p> <ul style="list-style-type: none"> <li>• "In all its actions, the Fed seeks to achieve its congressional mandate of maximum employment and stable prices. If the Fed had not taken these actions, the risk of experiencing a period in which net income turns negative would be lower than it is at present, but the economic position of households, businesses, the U.S. government, and taxpayers would be far worse off."</li> </ul>

<sup>30</sup> U.S. Congress (2023b).

<sup>31</sup> Anderson, Marks, et al. (2022).

Bank of England: Tenreyro, member of the Monetary Policy Committee (April 2023)

- "Particularly in times of crisis, such as in 2009 and 2020, QE purchases were an essential part of the policy response necessary to hit the inflation target, preventing even larger recessions. These macroeconomic benefits of QE are likely to dwarf the direct fiscal implications of QE. Moreover, indirect fiscal implications of QE, such as higher tax revenues owing to shallower recessions, are likely to outweigh any direct fiscal implications of QE."

Reserve Bank of Australia: Deputy Governor Bullock (September 2022)

- "So just considering the financial loss, if you like, in isolation, I don't think is particularly helpful. I think you have to think about it across government and across the economy."
- "[T]he economic stimulus from the BPP contributed to higher revenues for the government, helping to reduce the budget deficit relative to earlier expectations. It also resulted in government debt being issued at a lower fixed cost than otherwise."

## **Box 7. Disclosures by Major Central Banks on Their Finances**

The Bank of Japan, as the central bank of Japan, has made every effort to ensure that it is transparent in its conduct of policies and operations. In addition to the regular disclosure of financial statements as stipulated in the Bank of Japan Act, the Bank also discloses with high frequency changes in its balance sheet resulting from its daily operations and lending. Moreover, in order to promote the provision of financial market information, and taking the needs of market participants into account, the Bank has been disclosing information such as on specific JGBs held by the Bank.

The main financial information disclosed by the Bank of Japan is as follows:

### Balance sheet overall

- Bank of Japan Accounts (three times a month)
- Financial Statements (twice a year)
- Semiannual Report on Currency and Monetary Control (twice a year)
- Annual Review (once a year)

### Details on securities held by the Bank of Japan

- Japanese Government Bonds Held by the Bank of Japan (three times a month)
- Financial Statements (market values of JGBs, ETFs, J-REITs, corporate bonds, etc.; twice a year)

### Profits/losses and payment to the government

- Financial Statements (twice a year)

### *Reference*

- Monetary Base and the Bank of Japan's Transactions (once a month)
- Bank of Japan's Transactions with the Government (once a month)

The FRB, the ECB, and the BOE's APF disclose generally similar information regarding their finances (Chart B7).

Chart B7. Financial Disclosure by Major Overseas Central Banks

		FRB	ECB	APF
Balance sheet		Weekly	Weekly	Quarterly
Details of securities held	Amount outstanding of holdings of individual government bond issues	Weekly	—*	Trade date basis
	Market value	Quarterly	Annually**	Annually
Profit/Loss and transfers to the government		Weekly	Annually	Quarterly
Simulation of future profit/loss		Annually	—	Quarterly

\*Average residual maturities by issuing country are disclosed monthly.

\*\*The ECB discloses its own holdings on a non-consolidated basis and the Bundesbank, the Banque de France, etc. disclose their own holdings individually.

Sources: Bank of England; European Central Bank; Federal Reserve; Federal Reserve Bank of New York; Banque de France; Deutsche Bundesbank.

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