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Central bank losses: causes and consequences

by S. El Joueidi, E. Vincent and J. Wauters



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Introduction

"[...] the objective that we have and the mandate that we were given is price stability. It is not to make profit."
ECB President Christine Lagarde, press conference of 14 September 2023

In recent years, central bankers have had to raise interest rates aggressively to contain widespread consumer price pressures. As explained in this article, these hikes caused many central banks to go from turning a profit to recording sizeable losses. This turnaround has stoked debate on the importance of central banks remaining in the black. Journalists, for example, have questioned whether losses can threaten the viability of central bank operations.

This article provides an accessible overview of the drivers and consequences of the losses that major central banks are currently facing. The focus is on the Eurosystem, which is compared with other central banks when relevant.

The article is structured as follows. Section 1 focuses on a central bank's balance sheet, explaining the main types of assets and liabilities. Using data from the consolidated Eurosystem balance sheet, we reveal how the size of the balance sheet and the composition of assets and liabilities have dramatically changed in the euro area. Specifically, central bank balance sheets have ballooned due to monetary policy operations prompted by the global financial crisis, the European sovereign debt crisis and, more recently, the Covid-19 pandemic. The asset portfolio expanded mainly due to purchases of sovereign bonds, financed on the liabilities side by an increase in the reserve balances held by commercial banks with the central bank.

Section 2 links changes in central bank balance sheets to profits and losses. The major source of recent central bank losses in the Eurosystem is a decline in net interest income. Put simply, central banks are earning relatively low interest income on their assets because many of these were purchased when interest rates were low. By contrast, the recent interest rate hikes have raised the cost of servicing the reserves on the liabilities side of the balance sheet. As a result, the interest central banks pay on their liabilities exceeds the interest they earn on their assets. This negative difference is projected to persist for some years to come before we see a return to the "normal" situation of structural profit.

This article is written for general informational purposes on the topic of central bank losses. It is not related to the National Bank of Belgium's official communication on its financial results and may use different terminology. We are grateful to François Biquet, Jef Boeckx, Kristel Buisse, Bruno De Backer, Sébastien Keppens, Arnoud Stevens and Hélène Zimmer for their helpful comments and suggestions and to Alexander Van den Eede for his valuable research assistance.

Sections 3 and 4 explore the implications of the current and forthcoming losses for central banks and fiscal authorities, respectively. We argue that the objective of a central bank should not be to make a profit. Indeed, a central bank can operate for years with negative net worth. That being said, such a situation presents certain risks, as it can compromise the central bank's credibility and independence; in addition, a lack of remittances from the central bank puts a dent in government coffers.

Finally, we conclude that while the current losses are not a major source of concern, it is crucial to understand their potential implications. Clear communication on the causes and consequences of central bank losses is thus desirable. Secondly, a capital injection by the fiscal authorities is currently not required in the euro area. Nonetheless, central banks should be assured of backing by the fiscal authorities in the event more extreme losses arise.

1. Eurosystem balance sheet trends

To understand why many central banks are currently reporting losses, it is crucial to look at how their balance sheets have evolved. The dramatic changes in the size and composition of balance sheets seen since the global financial crisis are particularly relevant in this regard.

We begin by explaining how a central bank balance sheet is structured. We then look at how the main components of the Eurosystem's consolidated balance sheet have evolved since 1999, before turning to the expansion of central bank balance sheets outside the Eurosystem.

1.1 A stylised central bank balance sheet

Table 1 shows a stylised central bank balance sheet with the main categories of assets on the left and liabilities on the right (following Buiters, 2008). For purposes of this article, the consolidated balance sheet shown is that of the ECB and the national central banks of the Eurosystem.

On the assets side, we see treasury debt, private sector debt – which includes loans from the central bank to commercial banks – and a third category comprising gold and foreign exchange reserves. Conceptually, a central bank manages the assets side to pursue its objectives of maintaining macroeconomic and financial stability. The former is typically embodied in a price stability objective; the latter concerns the central bank's role as "lender of last resort" to commercial banks (in exchange for collateral) in times of stress.

Central bank assets are financed by liabilities, listed on the right in the table. The main category of liabilities is so-called "base money", consisting of currency in circulation and commercial banks' reserves with the central bank. These reserves are created when a central bank pays for an asset or makes a loan in its own currency (Tucker, 2022). Other (non-monetary) liabilities include debt (denominated in domestic or foreign currency) and treasury deposits. The difference between the value of a central bank's assets and that of its liabilities is referred to as its (accounting or conventional) "net worth".¹

¹ The term net worth is used in its usual meaning in economic literature. Its use is limited to this study. It is not our objective to clarify the respective situations of the individual central banks that are being discussed. Indeed, these are subject to their respective national legal frameworks and accounting rules and their associated characteristics and particularities.

Table 1

Stylised conventional central bank balance sheet

| Assets | Liabilities |
|---------------------------------------|----------------------------------|
| Treasury debt | Base money |
| Private sector debt (including loans) | Other (non-monetary) liabilities |
| Gold and foreign exchange reserves | Conventional net worth |

Typically, a central bank generates a structural profit from its monopoly on the issuance of base money. This role generates so-called “seigniorage” income for the central bank, meaning revenue from providing national currency (Reich, 2017). In simple terms, the central bank creates base money at low or no cost – for instance, on the liabilities side, the central bank does not have to pay interest on the banknotes it puts into circulation – and uses this liability to acquire assets or provide loans with a positive return.

It is important to note that seigniorage is not defined consistently across economic studies. Many authors consider seigniorage to be revenue generated from base money, which is our preferred definition. Others, however, use an older and narrower concept of this term, defined to include solely revenue from the issuance of banknotes. The word “seigniorage” is derived from the French word seigneur, a feudal lord who had the right to mint coins in medieval times. In the case of the Eurosystem, interest income is covered by the term “monetary income”. This term is defined in the Statute of the European System of Central Banks (ESCB) as “income accruing to the national central banks in the performance of the ESCB’s monetary policy function” and deemed “...equal to its [the national central bank’s] annual income derived from its assets held against notes in circulation and deposit liabilities to credit institutions.”²

After accounting for operational costs and adding to its provisions or reserves (against future losses), a central bank typically transfers its remaining profit to the state. In exceptional cases, such as that of the National Bank of Belgium, where the central bank has private shareholders, specific arrangements are in place to determine how profits are shared between public and private stakeholders.

1.2 The consolidated Eurosystem balance sheet has changed dramatically

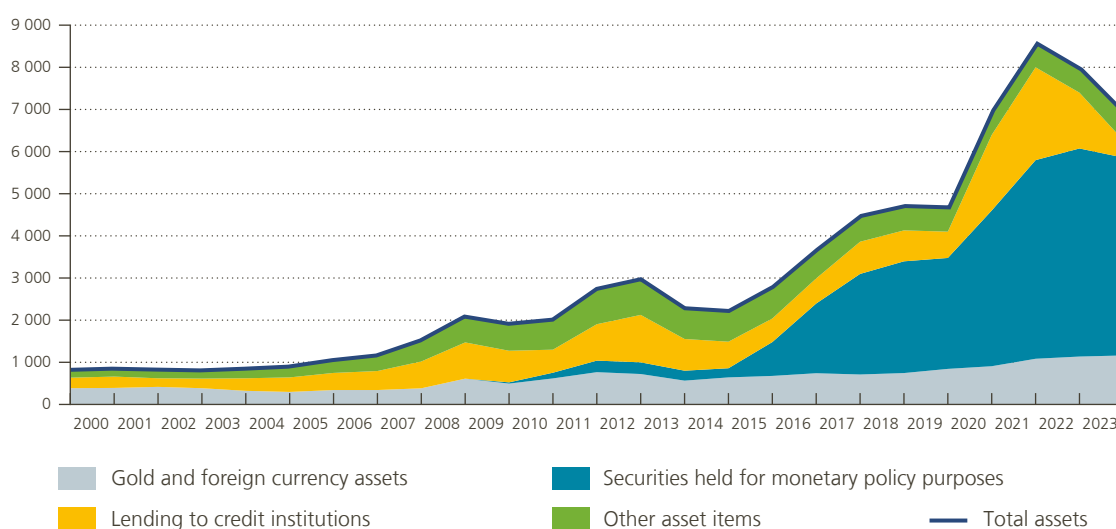
Figure 1 shows how the combined assets of the ECB and the Eurosystem national central banks (as per the consolidated balance sheet) evolved between 1999 and 2023.³ Several phases can be distinguished in this regard. In the first period, from 1999 to 2006, total assets grew moderately. Subsequently, there were successive waves of rapid increases, due to monetary policy measures undertaken in response to crises. First, there was a marked rise in lending to banks (i.e. credit institutions, in yellow on the graph) following the global financial crisis of 2007-2008, the European sovereign debt crisis of 2010-2012, and the Covid-19 pandemic of 2020-2022. As financial market conditions tend to tighten during times of crisis, banks increasingly turned to the Eurosystem for funding during the aforementioned periods. The Eurosystem offered longer-term funding to euro area banks at favourable conditions, including through targeted longer-term refinancing operations (TLTROs), which had a clear impact on the balance sheet during the Covid-19 crisis.⁴

2 See Banca d’Italia (n.d.) and Article 32.2 of the ESCB Statute.
 3 The Eurosystem balance sheet consists of assets and liabilities held by national central banks and the ECB vis-à-vis third parties at year’s end. Claims and liabilities between Eurosystem central banks (intra-Eurosystem claims and liabilities) are netted out and are therefore not shown. The annual data are available [here](#). Reserves consist of “current accounts” (item L2.1) and “deposit facilities” (item L2.2) used by euro area credit institutions.
 4 TLTROs were introduced in series in 2014, 2016 and 2019. Operations had a maturity of four years under TLTRO I (2014) and II (2016) and three years under TLTRO III (2019).

Figure 1

Eurosystem balance sheet: assets

(€ billions)



Sources: ECB and own calculations. Annual data showing values at year's end.

Second, there has been a sharp increase in the level of securities held for monetary policy purposes (in blue on the graph). The Eurosystem started purchasing securities in the context of the first two covered bond purchase programmes (CBPP1 and CBPP2), which have since been terminated, and the Securities Markets Programme (SMP), in 2009 and 2010, respectively. Asset purchases were stepped up under the asset purchase programme (APP), as from 2014, and the Pandemic Emergency Purchase Programme (PEPP), launched in 2020. It should be noted that central banks do not purchase public debt securities directly from their issuers but rather through commercial banks (and certain other financial intermediaries), which obtain liquidity (i.e. central bank reserves) in return. Such bond purchase programmes are used to implement quantitative easing or QE and were launched to stimulate the economy in the aftermath of the corresponding crises, when consumer price inflation was persistently below the ECB's target and the key ECB interest rates were at historic lows, with further rate cuts limited by an effective lower bound.⁵

At the end of 2023, "securities held for monetary policy purposes" comprised 68% of total assets, with the latter about nine times larger than in 1999. A peak was reached in 2021, and total assets have since been declining as the Eurosystem winds down its accommodative monetary policy in the face of rising inflation. The runoff of the Eurosystem's balance sheet has so far mainly been due to maturing and early repayments of TLTROs. In addition, the APP portfolio has declined steadily since March 2023, due to the Eurosystem's decision not to reinvest principal payments on maturing securities. Moreover, since July 2024, the PEPP portfolio has been decreasing slowly as principal payments are only partially reinvested (with reinvestment scheduled to stop altogether at the end of this year).

The remarkable growth in the size and composition of total assets implies concomitant changes on the liabilities side of the balance sheet. Figure 2 illustrates growth in base money on the Eurosystem's balance sheet since 1999.⁶ At the end of that year, banknotes comprised 76% of base money, with the remaining

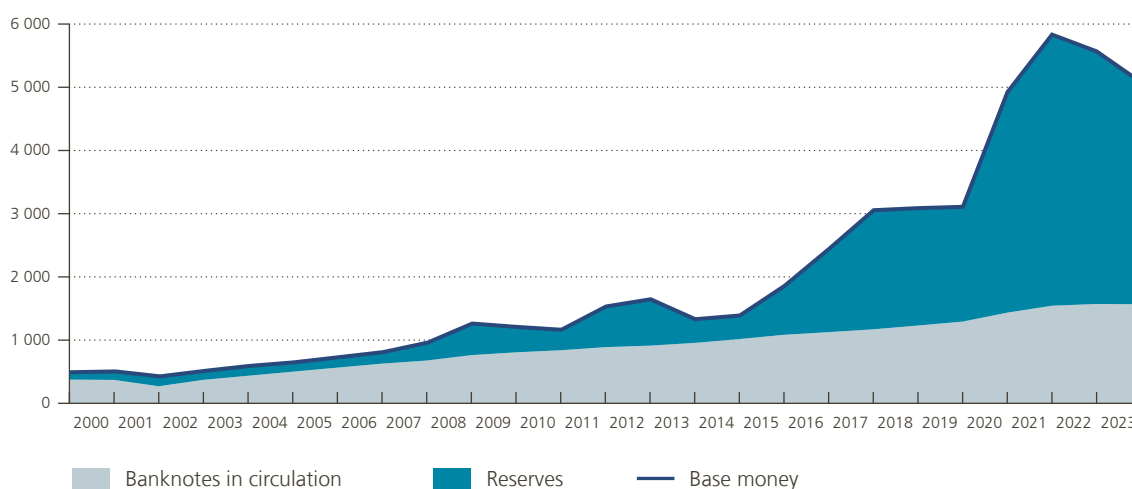
5 The existence of an effective lower bound on interest rates implies that the "traditional" monetary policy instrument – i.e. short-term interest rates – becomes ineffective when policy rates are lowered below this limit.

6 Other items on the liabilities side of Eurosystem balance sheets are discussed in section 3.

Figure 2

Eurosystem balance sheet: base money

(€ billions)



Sources: ECB and own calculations. Annual data showing values at year's end..

24% made up of reserves. However, as the Eurosystem's balance sheet has grown, the relative share (and size) of reserves has increased drastically – with the latter accounting for 69% of base money by the end of 2023. Figure 2 shows how lending to banks and purchases of debt securities were financed by crediting the reserve balances held by (commercial) banks at Eurosystem central banks.

It is worth noting that the total level of reserve balances is essentially determined by the central bank.⁷ Commercial bank operations (including lending to households and firms) cause movements in these funds between banks but do not affect the overall level. For example, if Bank A lends (a portion of) its reserves to Bank B or uses the funds to purchase assets from Bank B, Bank B may deposit the funds received directly with the central bank, making it the holder of this reserve balance with the central bank. Alternatively, Bank B may extend a mortgage loan to a household and, upon purchase of the property, the liquidity ends up with Bank C, which then deposits it with the central bank or uses the funds to finance another transaction with yet another bank. Overall, the liquidity remains in the banking system and is reflected on the central bank's balance sheet.

1.3 Balance sheet expansion outside the Eurosystem

During the global financial crisis and particularly the Covid-19 pandemic, other major advanced economies pursued expansionary monetary policies as well. As was the case in the Eurosystem, these strategies involved extensive asset purchases and credit operations, leading to a significant increase in the size of central bank balance sheets, as shown in Figure 3.

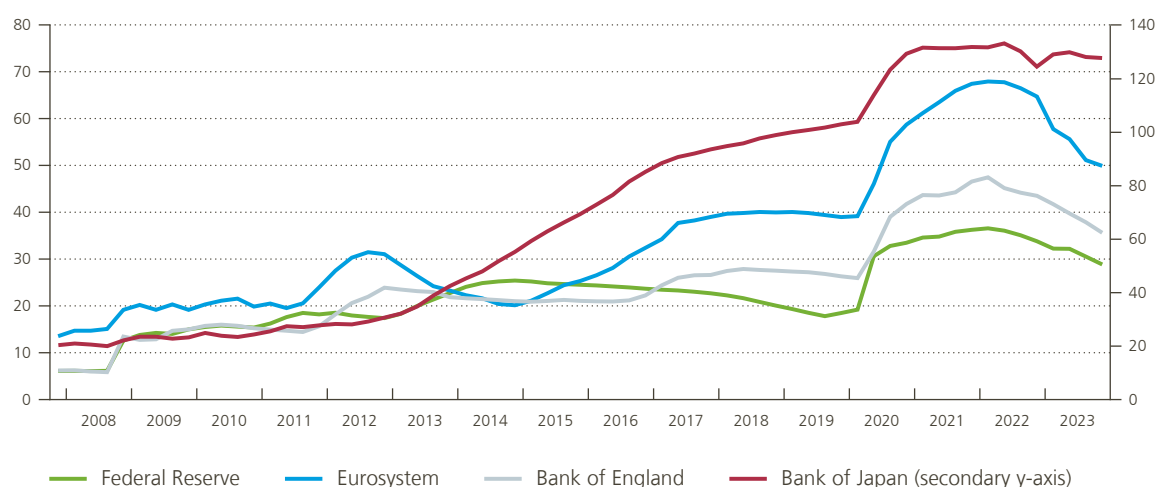
In the United States, the Federal Reserve's balance sheet increased significantly, reaching 37% of GDP at the end of 2021. In the euro area, the Eurosystem saw an even more dramatic rise, with its balance sheet expanding to approximately 70% of GDP by that same point in time. The Bank of England also witnessed a substantial

⁷ Some small movements are beyond its control. For example, a commercial bank can substitute a share of its reserves for currency, should such demand exist (e.g., households decide to hold banknotes instead of placing funds in bank deposits).

Figure 3

Major central bank balance sheet totals

(total assets/nominal GDP)¹



Sources: Eurostat, OECD, LSEG.

1 Quarterly average of total assets and nominal GDP in quarterly data.

expansion, with its balance sheet growing to around 50 % of GDP. The Bank of Japan was an outlier compared with other major central banks due to its unique approach to monetary policy. While other central banks also pursued accommodative measures, the Bank of Japan's strategy was particularly aggressive and unconventional, reflecting the country's distinct economic challenges, notably persistent deflation.⁸ By the end of 2023, the size of its balance sheet amounted to a stunning 130 % of GDP.

Major central banks outside the Eurosystem have also seen asset purchases and credit operations lead to changes in the composition of their balance sheets. Specifically, these operations have resulted in longer-dated assets and, on the liabilities side, an increase in the relative share of short-term debt in the form of commercial bank reserves, thereby exposing central banks to an interest rate mismatch (see next section). It is also worth noting that total assets have been declining as a percentage of GDP in major advanced economies outside the Eurosystem since 2022, due to the normalisation/tightening of monetary policy.

2. Why are central banks currently facing losses?

The changes in the size and composition of the Eurosystem's balance sheet have had major implications for its profitability. We will first examine expenditure and income and then explain how both have influenced overall profits. Finally, we will take a look at central banks outside the euro area.

Unlike with the balance sheet, a consolidated profit and loss statement is not available for the Eurosystem. Indeed, while the Eurosystem can lay down accounting rules to be complied with by all national central banks

⁸ The Bank of Japan was a pioneer in the use of unconventional monetary policies (i.e. quantitative and qualitative easing, yield curve control) and serves as a reference for other central banks. For more information, see Boeckx *et al.* (2015) and Kowalewski and Shirai (2023).

for “core” operations, it cannot impose rules, for example, on how euro area central banks provide for risks or distribute profits; these matters are governed by national law. Therefore, unless otherwise indicated, the figures in the remainder of this article pertain to the consolidated results of the six largest Eurosystem national central banks (i.e. Germany, France, Italy, Spain, the Netherlands and Belgium). Together, these banks represent 84 % of the ECB’s capital paid up by euro area national central banks, meaning they provide a reasonably representative picture of the overall situation in the Eurosystem.

2.1 Policy rate hikes caused a rapid increase in the interest due on excess liquidity

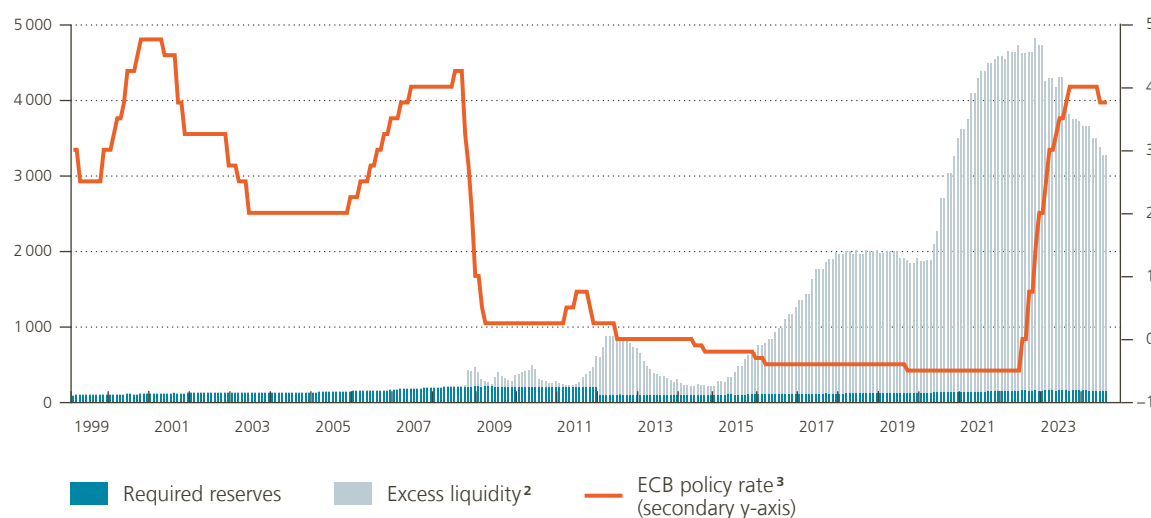
As explained above, one side effect of the accommodative monetary policies implemented in the euro area was a large increase in the reserve balances held by commercial banks with Eurosystem central banks. These funds can be divided into two categories: minimum (or “required”) reserves and “excess liquidity”. Minimum reserves are those that commercial banks must hold with the central bank, usually equating to a specific share of their shorter-term liabilities. These reserves act as a buffer against unexpected liquidity pressures. Excess liquidity refers to the remaining reserves held by commercial banks above the required level. Figure 4 shows the development of minimum reserves and excess liquidity in the Eurosystem since 1999. At the beginning of this period, commercial banks held almost no reserves above the required level as the monetary policy framework was that of a “scarce reserves regime” (Altavilla *et al.*, 2023). However, all this changed with the introduction of unconventional monetary policies. The latter caused excess liquidity to rise, peaking at around €4 500 billion at the end of 2022.

The interest rate on excess liquidity depends on where the funds are held. When commercial banks deposit money overnight with the central bank in the so-called deposit facility, the applicable interest rate is the deposit facility rate (DFR). However, if they place their excess liquidity in their current account with the Eurosystem,

Figure 4

Credit institution reserves held with the Eurosystem¹

(€ billions, %, data through August 2024)



Source: ECB.

1 Credit institutions subject to minimum reserve requirements in the euro area.

2 Excess liquidity comprises both reserves held by credit institutions in their current accounts with the Eurosystem, in excess of their required reserves, and those held in their deposit accounts with the Eurosystem.

3 The main refinancing operations (MRO) rate until September 2008 and the deposit facility rate (DFR) as from October 2008.

along with their minimum reserves, the interest rate is the lower of either zero per cent or the deposit facility rate (DFR).^{9, 10} Consequently, when the ECB lowered the DFR into negative territory in June 2014, excess liquidity represented a source of revenue for central banks.

In the aftermath of the Covid-19 pandemic, a confluence of factors caused inflation to rise in the euro area and globally.¹¹ Central banks worldwide began to tighten their policy stance to combat inflation. Swift and strong policy rate hikes were needed to get inflation back to target. The euro area witnessed its most aggressive monetary tightening cycle in history, with the DFR being raised for the first time in eight years, from -0.5 % to 0 % in July 2022 and then further, to 4 %, in September 2023.

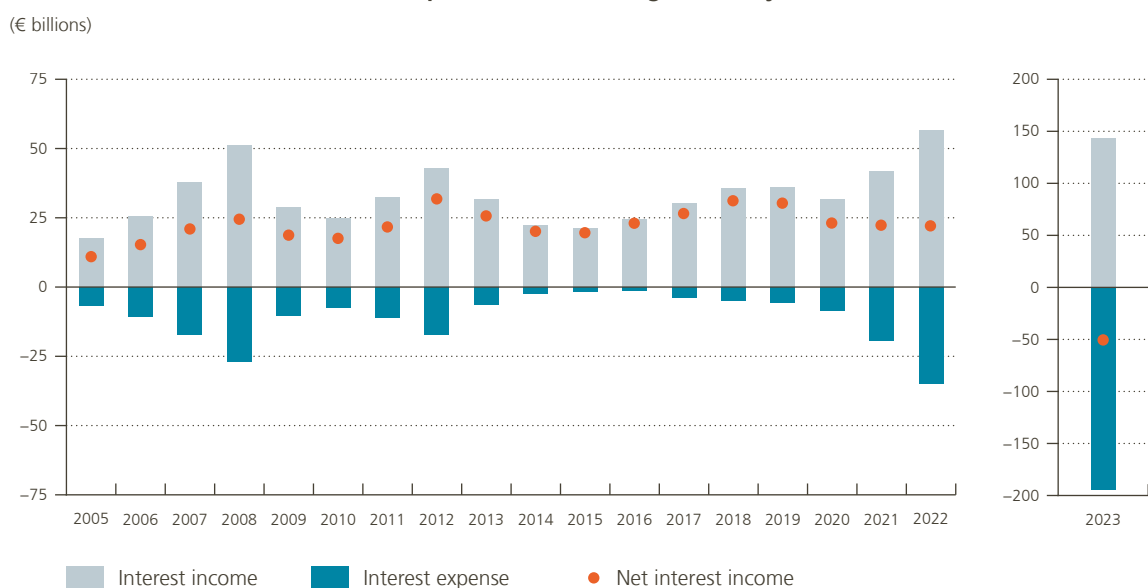
As policy rates were raised, the massive commercial bank reserves held with central banks had to be remunerated at an increasing rate. This occurred after years of very low or, in the case of the euro area, even negative interest rates on these deposits. In the euro area, when the DFR was raised above 0 % in September 2022, banks transferred their excess liquidity *en masse* from their current accounts with the central bank – on which the interest rate is capped at zero – to the deposit facility, remunerated at the DFR. The interest rate on these reserves is adjusted immediately when the DFR is raised. Consequently, after years of very low interest payments, the interest expense of Eurosystem central banks started to increase substantially as from 2022, ballooning to almost €200 billion in 2023 (Figure 5).

9 The interest rate on minimum reserves was previously the main refinancing operations (MRO) rate, i.e. the interest rate banks pay when they borrow money from the ECB for one week. From December 2022 until September 2023, the applicable rate changed to the DFR. Since then, minimum reserves have been remunerated at 0 %.

10 In October 2019, the Eurosystem introduced a two-tier system for the remuneration of euro area banks' current account holdings with the central bank over their required reserves. This system exempted a portion of these "excess reserves" from the then prevailing negative DFR to support the bank-based transmission of monetary policy given compressed bank interest margins. The volume of exempt reserves was set at a multiple of a bank's minimum reserves. Initially, the multiplier was set at six and the interest rate at 0 %. These conditions prevailed until the system was suspended in September 2022 and the DFR was raised above zero.

11 For more information, see De Sloover *et al.*, 2022.

Figure 5
Consolidated interest income and expense of the six largest Eurosystem central banks



Sources: Annual reports of the Deutsche Bundesbank, Banque de France, Banca d'Italia, Banco de España, Nederlandsche Bank and National Bank of Belgium, 2005-2023.

2.2 But interest revenue did not increase to the same extent

Rising interest expenses were not matched by higher interest revenue. For one thing, central banks' asset portfolios were built up when interest rates were low, meaning they include large volumes of low-yield bonds with lengthy maturities. The goal of central banks was indeed to extract duration risk from the financial markets, to weigh on longer-term yields.¹² At the end of July 2024, for example, the (remaining) weighted average maturity of government bonds held in the APP and PEPP portfolios was seven years. As a result, although the yields on equivalent bonds rose smoothly during the recent monetary policy tightening cycle, as shown in Figure 6, central banks did not fully benefit from this repricing. The Eurosystem only partially captured the rise in long-term yields as bonds gradually matured and the redemption proceeds were reinvested. All in all, higher-yield assets account for only a small fraction of the total bonds on central bank balance sheets. With regard to the APP, the reinvestment of principal payments on maturing bonds ended in July 2023.¹³ For the PEPP, full reinvestment took place through June 2024. In the second half of 2024, the proceeds from maturing securities are to be only partially reinvested¹⁴ and will subsequently cease altogether. It is worth noting that the end of such reinvestment implies both lower interest income for central banks and lower excess liquidity (the latter implying less interest expense).

In addition, the third TLTRO programme was a source of interest expense rather than income for Eurosystem central banks, having been launched when interest rates were negative. The conditions on these operations were extremely favourable during the Covid-19 pandemic, with rates as low as -1 % offered to banks that continued to lend to households and firms. In October 2022, the ECB's Governing Council decided to make

12 By buying bonds with a longer maturity, central banks reduce the supply of these bonds and extract so-called duration risk from the private sector, thereby weighing on yields. Duration risk is related to the notion that the price of a longer-term bond is more sensitive to changes in future interest rates (i.e. larger interest rate risk) than a short-term bond, which is reflected in a higher bond risk premium.

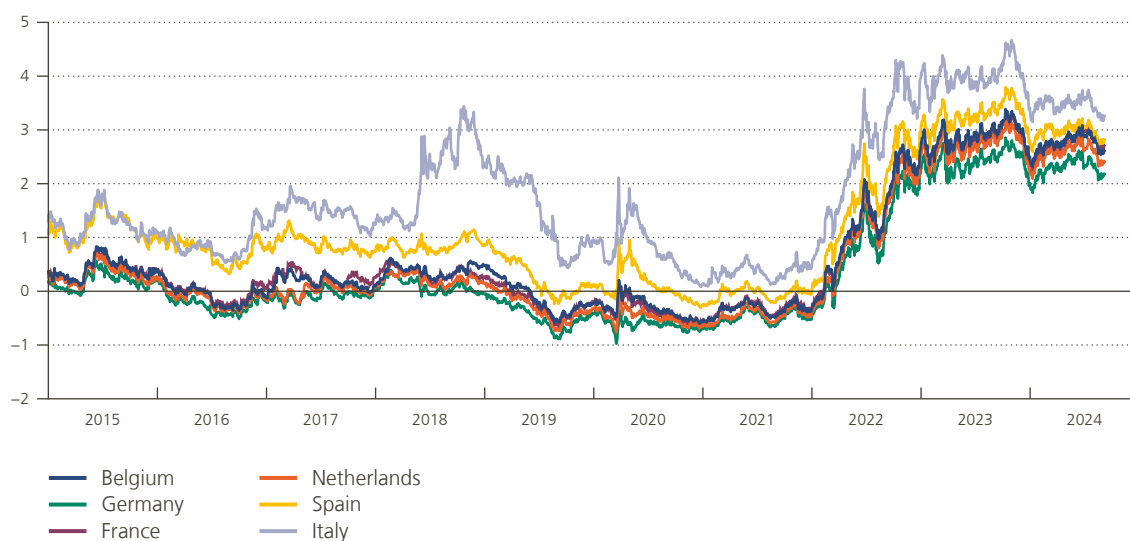
13 Between March and June 2023, the APP portfolio was reduced by €15 billion per month on average, as the proceeds from maturing securities were only partially reinvested. Reinvestments ended altogether in July 2023.

14 In December 2023, the ECB Governing Council decided to reduce the PEPP portfolio by €7.5 billion per month on average in the second half of 2024.

Figure 6

Seven-year sovereign bond yields in the euro area

(%, data through August 2024)



Source: LSEG.

the TLTRO III conditions less advantageous in order to reinforce the transmission of policy rates to bank lending conditions. This adjustment turned the interest charged on TLTRO III operations positive again. Moreover, the maturing and (early) repayment of TLTRO III operations also drained a portion of bank reserves as from the second half of 2022.

2.3 The end result was a compression of central banks' net interest income

Consequently, after two decades of generally positive earnings, Eurosystem central banks recently started to post declining profits or even – sometimes quite significant – losses due to falling net interest income. Figure 7 shows the consolidated profit and loss account of the six largest Eurosystem central banks.¹⁵

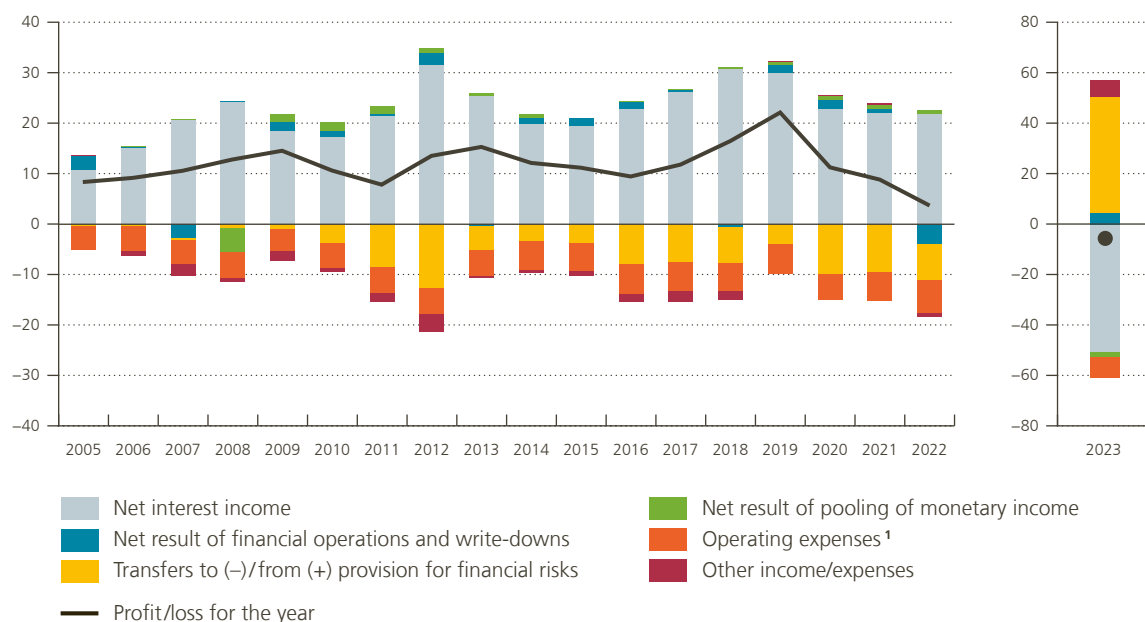
Net interest income – i.e. interest received less interest paid – represents the main item on Eurosystem central bank profit and loss accounts (see the grey bars in Figure 7). With the DFR only slightly positive on average in 2022, a tipping point was reached in 2023, and most central banks saw their net interest income turn negative (with the exception of the Nederlandsche Bank, which had already posted negative net interest income in 2022). In 2023, the six largest Eurosystem central banks posted a consolidated net interest loss of €50 billion and an overall accounting loss of €6 billion.

15 The other items of the profit and loss account shown in Figure 7 are explained further on, i.e. in Box 1 and the next section.

Figure 7

Consolidated profit and loss account of the six largest Eurosystem central banks

(€ billions)



Sources: Annual reports of the Deutsche Bundesbank, Banque de France, Banca d'Italia, Banco de España, Nederlandsche Bank and National Bank of Belgium, 2005-2023.

1 Staff costs and administrative expenses.

The pooling of Eurosystem monetary income

As monetary policy is implemented in a decentralised manner in the euro area, the income from the monetary policy operations of Eurosystem central banks is reflected in their individual profit and loss accounts (mirrored mainly in their net interest income). However, once a year, this income is pooled and then redistributed among national central banks in proportion to their share of the ECB's capital. The difference between the monetary income allocated to a central bank and its actual income – positive or negative – is shown in the profit-and-loss item “net result of pooling of monetary income” (see the green bars in Figure 7). Interest expense, related mainly to the remuneration of commercial bank reserves, is fully shared. While this is also the case for some relevant (or, in Eurosystem jargon, “ earmarkable”) assets held against bank reserves and banknotes in circulation (the latter carrying no remuneration), the income from other assets is calculated based on a reference rate. In the case of sovereign bond holdings in the APP and PEPP portfolios, for example, the income to be pooled is calculated based on the main refinancing operations (MRO) rate.

The cumulative losses of the various central banks will likely be quite heterogeneous and will depend on several factors. For one, central banks can, to varying degrees, cover their losses with funds they have set aside in recent years. These buffers are discussed at more length in the next section, but it is important to already note here that how central banks use these buffers also matters. Indeed, they can either be used before calculation of the annual profit or loss, to lower the year's profit (by transferring funds to the buffer) or to limit losses (by releasing funds from the buffer). Alternatively, they can be used after the annual profit or loss is calculated, to reduce the share of distributed profits. Therefore, to facilitate comparability, Figure 8 shows the (pre-tax) pre-provision profit or loss of the six selected Eurosystem central banks.

Furthermore, certain central banks, such as those of Spain and Italy, benefit from higher average yields on their sovereign bond portfolios (Figure 6, see also Box 1). Consequently, since 2012, they have posted consistently higher pre-tax pre-provision profits, as a percentage of GDP, than the four other central banks considered here – a gap that widened further as asset purchases were stepped up more significantly under the APP and, later, the PEPP. Indeed, while all six central banks posted quite similar profits as a share of GDP until 2012, the Italian and Spanish central banks posted above-average profits of around 0.5 % of GDP between 2015 and 2021. The Belgian and French central banks posted profits close to the average of 0.3 %, while the German and Dutch central banks – which have the lowest-yielding sovereign bond portfolios – posted below-average profits during that period (about 0.1 %).

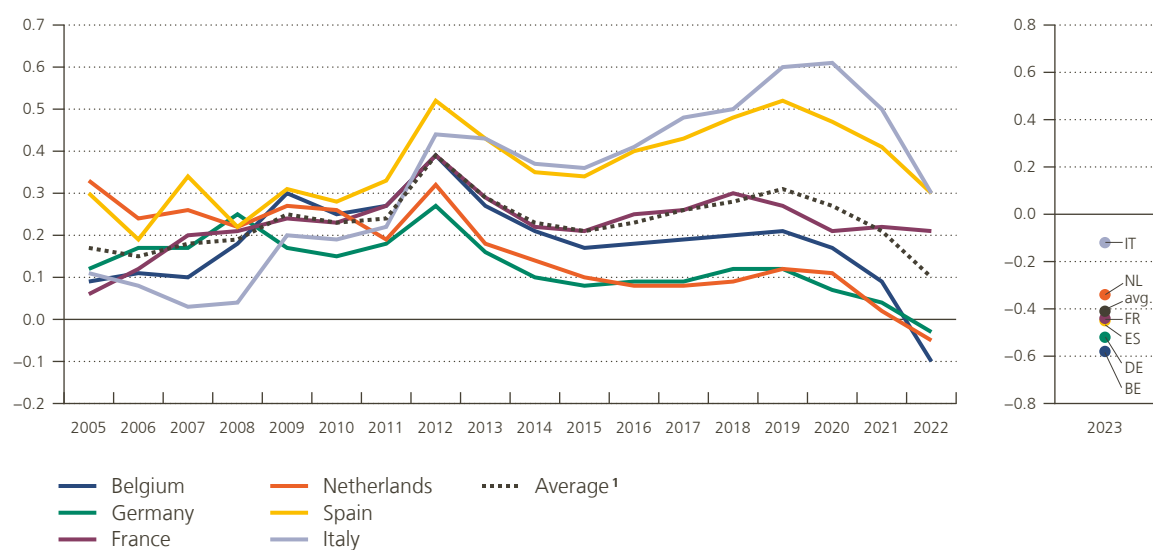
Central banks are expected to continue posting losses in the coming years. The extent of these losses will depend on the size and composition of their balance sheet and future developments in policy rates and is therefore highly uncertain. However, losses are expected to diminish over time for two reasons. First, excess liquidity is projected to decline as TLTROs are repaid (the last operation matures in December 2024) and bonds purchased under the APP and PEPP mature.¹⁶ Second, the financial markets expect the DFR to be lowered again in the coming years as inflation moves closer to the central bank's target.

¹⁶ In this regard, it should be noted that following a review of its operational framework for the implementation of monetary policy, the ECB's Governing Council announced in March 2024 that it would provide liquidity through a broad mix of instruments, including structural longer-term credit operations and, at a later stage, a structural portfolio of securities. This implies that Eurosystem central banks will maintain a larger balance sheet in the long term compared with the situation prior to the start of unconventional monetary policy measures. Hence, the Eurosystem's balance sheet will remain more sensitive to changes in interest rates going forward.

Figure 8

Pre-tax pre-provision profit or loss of the six largest Eurosystem central banks

(% of GDP)



Sources: Eurostat, annual reports of the Deutsche Bundesbank, Banque de France, Banca d'Italia, Banco de España, Nederlandsche Bank and National Bank of Belgium, 2005-2023.

¹ Average of the six selected national central banks.

Only some Eurosystem central banks have released information on the total (pre-provision) losses they expect in the coming years. As noted above, such estimates are, however, subject to considerable uncertainty. If the future trajectory of interest rates turns out to be higher than currently assumed in the scenarios of these central banks, their losses may be more significant. On the other hand, if rates are lower, the opposite will be the case. The Nederlandsche Bank, for example, expects cumulative losses of approximately €9 billion between 2022 and 2028 assuming interest rates develop as priced in by the financial markets.¹⁷ The National Bank of Belgium has indicated that it is likely to post cumulative losses of around €10 billion between 2022 and 2028 under a similar scenario.¹⁸

Belhocine *et al.* (2023) attempt to project the net income of the Eurosystem and its five largest national central banks¹⁹ over a ten-year horizon, starting from the end of 2021. The baseline projections indicate cumulative Eurosystem losses of €55 billion or 0.5% of euro area GDP in 2023-2024, to be fully recovered by 2027.²⁰ The individual losses of the five central banks analysed differ quite significantly, ranging from 0% for Italy to 1.2% of GDP for Germany between 2022 and 2026. Overall, central banks enjoying higher yields on their bond portfolios are expected to post lower losses.

17 See the [letter of September 2022 from the president of the central bank of the Netherlands to the country's finance minister](#) on the capital position of the Nederlandsche Bank.

18 See the [National Bank of Belgium's Corporate Report 2023](#), published in May 2024. The report mentions a loss of €6.1 billion over a five-year horizon starting in 2024, in a scenario with the interest rate environment and market expectations of future interest rates at the balance sheet date. Together with the losses posted in 2022 and 2023, the total cumulative loss by 2028 is projected to amount to around €10 billion.

19 The Eurosystem central banks discussed here, with the exception of the National Bank of Belgium.

20 The assumptions underlying these projections are specified in the paper, and it goes without saying that circumstances have since changed. For example, the baseline DFR trajectory is derived from market pricing of €STR forwards at the end of February 2023, with a peak DFR of 3.5% in mid-2023, falling to 2.6% three years later.

How would a digital euro impact central bank income?

The extent of central bank losses over the next few years is difficult to estimate and will depend on various factors, such as the future evolution of interest rates and the size and composition of central bank balance sheets. With regard to the latter, one factor that could have an impact going forward is the introduction of a central bank digital currency or CBDC. Indeed, several central banks are currently investigating the potential merits of such an endeavour. Like banknotes and coins, a CBDC is a direct claim on the central bank. However, unlike cash, a CBDC is digital, accessible and transferable via electronic means. It is hard to provide an accurate assessment of the potential impact of a CBDC on a central bank's balance sheet and, ultimately, its income, as this will depend on a number of factors. Thus, this box does not purport to estimate that impact but rather to shed light on the various factors that are likely to play a role.

From a central bank's point of view, two aspects are important. First, the extent to which the digital currency is actually used by the public – subject or not to a holding limit – and whether it replaces cash or bank deposits (or a combination of the two) will determine its impact on the size and composition of the central bank's balance sheet. If the CBDC serves as a substitute for cash alone, only the composition of the central bank's liabilities will change. If it replaces bank deposits, however, the effects might be more substantial depending on how banks make up for this loss of funding. For instance, lower deposits could prompt banks to reduce the reserves they hold at the central bank – which would be quite likely in an environment of excess liquidity. As in the case of the CBDC serving as a substitute for cash, this scenario induces a mere composition effect, leaving the size of the central bank's balance sheet untouched. If banks decide instead to increase their central bank borrowing or to sell assets to the central bank in response to a decline in deposits, the central bank's balance sheet will grow. On the liabilities side of the central bank's balance sheet, CBDC holdings will go up, reflected on the assets side by increased lending to commercial banks or assets purchased via open market operations (see also Adalid *et al.*, 2022).

Second, the ultimate impact on the central bank's income will depend on the expense or revenue associated with each of the abovementioned components of its balance sheet. For a CBDC in particular, an important feature is whether it is remunerated or not.

After concluding a two-year investigation phase, the Eurosystem decided in October 2023 to launch preparations for the possible introduction of a digital euro (D€). During the investigation phase, decisions were taken on the most important design features of the potential D€. In particular, while the D€ would, of course, not have a physical form like banknotes and coins, it should have the most important characteristics of cash, including non-remuneration. Thus, to the extent it replaces cash alone, the introduction of a D€ would not have any implications for Eurosystem central bank seigniorage, as it would simply entail a swap between two non-interest-bearing liabilities. However, if the digital euro were to lead to a substitution of reserves by CBDC holdings on the liabilities side of central bank balance sheets, there would be a positive effect on seigniorage if reserves are remunerated at a positive interest rate and a negative effect in the opposite scenario. Likewise, if the introduction of a D€ were to lead to an increase in the Eurosystem's balance sheet, the impact on seigniorage would be positive if the assets held against the CBDC holdings are remunerated at a positive interest rate.

2.4 Other central banks face the same challenges

Higher policy rates (or monetary policy tightening) have had similar implications for other major central banks, including the Federal Reserve (the Fed) and the Bank of England. Further to their monetary policy approach, the Fed holds Treasury securities and agency mortgage-backed securities (MBS) in the System Open Market Account (SOMA), while the Bank of England conducts asset purchases through the Asset Purchase Facility (APF).

As is the case with the Eurosystem, the Fed's net interest income is mainly determined by the difference between the interest revenue generated by its securities holdings (in SOMA) and the interest expense associated with its liabilities. Recent policy rate hikes have thus led to a fall in the Fed's net interest income. The assets side of the Fed's balance sheet includes Treasury securities with original maturities ranging from four weeks to 30 years and agency MBS with primarily 15- and 30-year maturities. On the liabilities side, the Fed holds short-term liabilities, such as bank reserves and repurchase agreements.²¹ The significant asset purchases carried out during the pandemic were mostly financed with interest-bearing liabilities, which increased as a proportion of total Fed liabilities from just under 50 % in early 2020 to around 67 % by the end of March 2022.

In September 2022, SOMA net (interest) income moved into negative territory. In 2023, negative net interest income of USD 114.3 billion was reported. Figure 9 shows that this downward trend is expected to continue in 2024, as the interest expense associated with reserve balances and repurchase agreements will exceed the interest income on the SOMA portfolio. Net interest income is anticipated to turn positive again starting in 2025, primarily due to expected declines in short-term interest rates and increased income from higher-yield securities added to the portfolio through reinvestment and reserve management purchases (Federal Reserve Bank of New York, 2024).

For its part, the APF is funded by loans from the Bank of England, on which interest payments are determined by the policy rate, i.e. the Bank Rate. Thus, changes in the policy rate impact APF cash flows in two ways. First, an increase in the policy rate pushes up the interest due by the APF on loans from the Bank of England. Second, the Bank Rate influences the yield curve (as do the policy rates of the Eurosystem and the Fed), which affects the price of UK government bonds (so-called gilts) in the APF portfolio.

From 2009 to 2022, the APF reported positive net cash flows, which reached GBP 123.8 billion at the end of September 2022. However, since then, the APF has seen negative net cash flows, due to rising interest expense and losses on sales. The APF is projected to incur losses of around GBP 170 billion over its lifetime.

The Bank of England's unwinding of quantitative easing is being closely scrutinised due to the distinctive nature of its QE programme and its aggressive approach to tightening. During the QE era, the Bank of England purchased a proportionally larger amount of government debt with particularly long maturities than other central banks, making it more vulnerable to rises in short-term interest rates. At the peak in 2021, the Bank of England owned over 37 % of all UK government debt, while the Federal Reserve and the Eurosystem held 19 % and 33 %, respectively, of their own government's debt.

Against that backdrop, the Bank of England is actively selling government bonds, unlike the Eurosystem and the Fed, for example, which have been winding down their balance sheets by not reinvesting maturing securities. However, when it sells bonds, the Bank of England locks in valuation losses arising from higher yields (and thus lower prices) than when the bonds were purchased. As a result, the Bank of England is crystallising significant losses on sales, leading to higher cumulative losses compared with other countries.

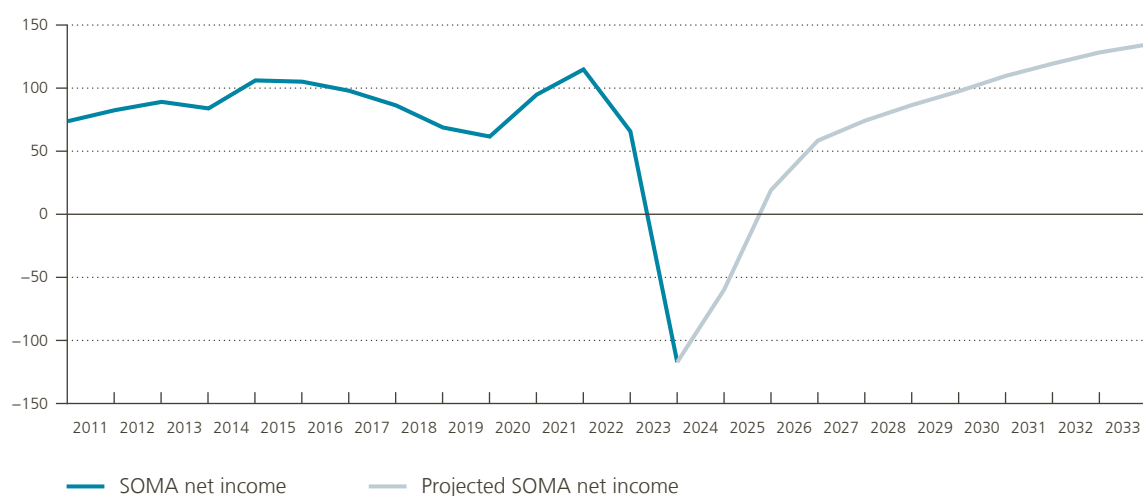
The timing and extent of capital losses on central bank securities holdings depend not only on whether the central bank sells bonds prior to maturity but also on the accounting framework used. For securities held for

²¹ Overnight reverse repurchase agreements.

Figure 9

SOMA net income and projected net income¹

(\$ billions)



Source: Federal Reserve Bank of New York.

1 The projected scenario refers to a ratio of reserves to nominal GDP consistent with balance sheet reduction slowing at around 12 % and stopping at about 11 %, then growing to maintain ample reserves at around 10 %. Figures are rounded annual totals.

monetary policy purposes, Eurosystem central banks and the Fed use an amortised cost accounting approach (subject to impairment). Hence, valuation gains or losses do not affect their income until the securities are sold. Holding onto bonds until maturity gives time for interest rates to return to a lower level, thereby avoiding immediate capital losses. In contrast, the Bank of England, the Swiss National Bank, the Riksbank (the Swedish central bank) and the Bank of Canada, among others, use mark-to-market accounting for their monetary policy portfolios. This means that these securities reflect, at any given point in time, their market value. Consequently, as long-term market rates rose, bond values fell to below their acquisition value. This led to unrealised capital losses on bond holdings, which affected the central bank's reported profit or loss from 2022 onwards.²² For instance, the Swiss National Bank reported a record loss of CHF 132.5 billion for 2022 and a more moderate loss of CHF 3.2 billion for 2023. The Bank of Canada recorded a net loss of CAD 1.1 billion in 2022 and nearly CAD 5.7 billion in 2023. Likewise, the Riksbank reported a significant loss of SEK 81 billion for 2022 but saw a profit of SEK 16 billion for 2023.²³

22 As long as the bonds are on the central bank's balance sheet, capital losses remain unrealised and will, if the bonds are held until maturity, be offset against the redemption proceeds.

23 The Riksbank has been selling government bonds since April 2023. For more information, see [Riksbank website](#).

3. Implications for central banks

3.1 Central banks have built up buffers to absorb losses

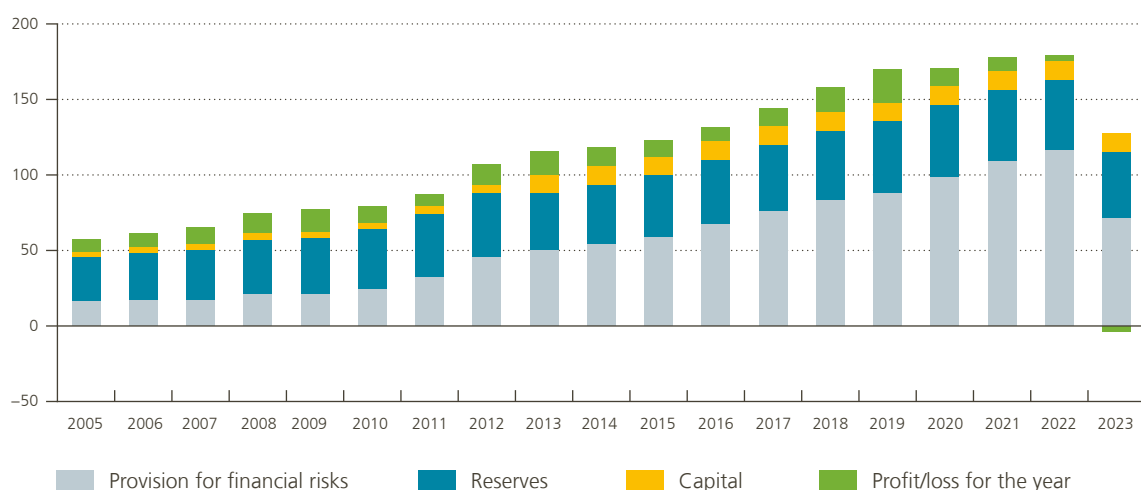
As is the case with a commercial bank or firm, a central bank usually disposes of buffers to protect against losses. As Figure 10 illustrates, Eurosystem central banks’ buffers increased steadily for many years but have declined more recently as a result of losses. These losses did not come as a surprise. Central banks built up buffers as protection against future losses likely to arise from increased interest rate exposure in monetary policy operations.

Both the composition and extent of these buffers vary, however, between Eurosystem central banks, with the rules governing their build-up determined by national law. As indicated in Figure 10, central banks can have different kinds of buffers. Firstly, the (statutory) capital – the portion held directly by shareholders – is usually quite small. Secondly, central banks usually build buffers specifically to protect against financial risks. As explained above, these financial buffers can be classified, in accounting terms, as being either above or below the line, i.e. they are set aside either before or after calculation of the year’s profit or loss. The provision for financial risks is an example of an “above the line” financial buffer: the year’s profit is lowered if funds are transferred to the buffer, but if released from it, they can limit losses. As can be seen from Figure 10, provisions were the main contributor to the build-up of financial buffers over the past years, with four out of the six selected Eurosystem central banks (those of Germany, France, Italy and Spain) relying mainly on this type of protection against financial risks. The Belgian and Dutch central banks, on the other hand, tended to rely (mainly) on reserves as a cushion against risks. Reserves are “below the line” in the sense that they do not lower the central bank’s profits, only the share of profits that is distributed. At their peak in 2022, the aforementioned buffers of the six largest Eurosystem central banks totalled €180 billion.

Figure 10

Consolidated loss-absorbing buffers of the six largest Eurosystem central banks¹

(€ billions)



Sources: Annual reports of the Deutsche Bundesbank, Banque de France, Banca d’Italia, Banco de España, Nederlandsche Bank and National Bank of Belgium, 2005-2023.

¹ For the purposes of this chart and for all central banks considered, losses are accounted for in the year they were incurred.

Note that central banks can also dispose of quite sizeable revaluation accounts on the liabilities side of their balance sheets. At end 2023, these accounts amounted to just under €550 billion for the central banks considered here. Revaluation accounts are accumulated through changes in the value of Eurosystem central banks' holdings of gold, foreign exchange reserves and non-monetary policy securities. Under the Eurosystem's accounting rules and unlike securities held for monetary policy purposes, these holdings are marked to market, i.e. they are booked at market value.²⁴ Gains and losses in the market value of these holdings are, however, recognised in an asymmetric fashion. Valuation losses – due to appreciation of the euro or a fall in the price of gold or securities – are immediately recognised on the income statement, thereby lowering profits.²⁵ Valuation gains, on the other hand, are charged to the revaluation account on the liabilities side of the balance sheet and do not lead to higher profits. This asymmetric treatment of valuation gains and losses was adopted as a prudential measure, to account for the fact that unrealised revaluation gains may not ultimately add to profits. Increases in the price of gold have been the main contributor by far to the build-up of revaluation accounts on the books of Eurosystem central banks. These accounts serve as a first line of defence to absorb valuation losses on Eurosystem central banks' holdings of gold, foreign exchange and non-monetary policy securities.

3.2 But these buffers could be depleted, turning a central bank's net worth negative

While buffers against potential losses generally increased in the past two decades, the extent of this increase varied between Eurosystem central banks. Specifically, some central banks were able to set aside larger buffers over the past decade as they benefitted from relatively high returns on their domestic sovereign bond holdings. Moreover, while all six central banks under consideration recently released (a portion of) these buffers to limit losses, the extent to which they did so also differs, as does the extent of their losses (see above). Any further losses in the coming years could more than deplete central banks' buffers in some cases. In other words, several central banks could be obliged to operate with a negative net worth, possibly for several years.

Several Eurosystem central banks have already warned of such a scenario.²⁶ The central banks of Germany, the Netherlands and Belgium have indicated that, should losses in the coming years exceed their buffers, a loss carryforward would be reported, which would reduce future profits. Similarly, the Fed created a "deferred asset" in 2022 when its costs began to exceed its income. This negative liability represents the cumulative value of the shortfall in earnings. Upon the Fed's return to positive net income, it will gradually lower the value of the deferred asset until it reaches zero, signalling the resumption of Treasury remittances.

3.3 Negative (conventional) net worth is not necessarily a problem for a central bank

Central banks differ from commercial banks in that their primary objective is not to turn a profit but rather to maintain price stability. Moreover, central banks are not subject to capital requirements and cannot be declared bankrupt. A central bank can make losses and have negative (conventional) net worth – i.e. its assets are valued less than its liabilities – for some time without impeding its operations (Nordström and Vredin, 2022). Relevant examples include the Czech National Bank, which has had negative net worth for most of the past 20 years, and certain other central banks that recently reported negative net worth, such as those of Sweden, Chile, Israel, Mexico and Australia.

Conventional net worth, as defined above, is an unreliable indicator of a central bank's solvency as it does not account for the bank's most important source of revenue, namely seigniorage. Indeed, a central bank's monopoly on the issuance of legal tender makes it profitable by nature: in normal times, its base money

24 This does not apply, however, to securities held until maturity. Like those held for monetary policy purposes, these are booked at amortised cost, subject to impairment.

25 The recent increase in interest rates led to losses in the value of mark-to-market securities on central banks' balance sheets. This is illustrated in Figure 7 by the negative "net result of financial operations and write-downs" (blue area) in 2022.

26 See recent annual reports.

liabilities – banknotes and reserve balances – cost less than the return it receives on the assets these liabilities are held against, i.e. loans to banks and securities. This profit can be viewed as a reward for the facilitation of payment settlements through base money.

Therefore, what matters is the central bank's profitability over time, as measured by its comprehensive net worth (Buiter, 2008, 2024; Archer and Moser-Boehm, 2013). Comprehensive net worth consists of a central bank's (conventional) net worth plus the present value of future seigniorage flows – accounting for interest payments on reserves – less the present value of future operating costs and net payments to the government (and other shareholders, if any). Accordingly, a central bank is solvent if its comprehensive net worth remains positive, meaning it can meet its payment obligations over time.²⁷ Unlike the abovementioned concept of accounting or conventional net worth, this notion is forward looking.

Comprehensive net worth explains why a central bank can have negative (conventional) net worth for years without encountering difficulties. For instance, Belhocine *et al.* (2023) project that the Eurosystem's current losses are temporary and recoverable. Therefore, while these losses are sizeable, central banks should recover from the impact on their net worth via future profits. One drawback of this concept is that it is not commonly measured or reported. Indeed, a key component of comprehensive net worth is the present value of seigniorage, which is hard to estimate (Reis, 2015).

Nevertheless, while negative net worth does not imply insolvency (i.e. negative comprehensive net worth), persistently low buffers pose certain risks. In its convergence reports (see, e.g. ECB, 2024)²⁸, the ECB explicitly acknowledges that negative net worth could put a central bank's credibility and independence at risk, noting that the requirement of financial independence²⁹ implies adequate capitalisation. In short, a prolonged period of negative net worth could negatively affect the central bank's ability to perform its tasks and undermine the credibility of the Eurosystem's monetary policy.

Likewise, some authors argue that maintaining an adequate level of buffers is crucial to ensuring a central bank's financial independence (see, for example, Nordström and Vredin, 2022). Certain (Stella, 1997, and follow-up papers) even argue that weakly capitalised central banks are associated with higher levels of inflation. Others suggest, however, that the apparent correlation between a central bank's weak financial position and an inability to fulfil its mandate (e.g. Bindseil, 2004; Benecká *et al.*, 2012) can be explained by the institutional environment in which it operates (e.g. statutory mandate, soundness of other public institutions, etc.).

Finally, the financial strength of a central bank also contributes to protecting its *political* independence. Indeed, a lengthy period of losses or a situation of negative net worth can create a perception or, in some cases, an actual need for the central bank to receive fiscal support. The government could take advantage of such a situation to exert pressure on how the central bank carries out its role. While this scenario may appear less likely in advanced economies where central banks have a long tradition of independence, the possibility cannot be ruled out altogether.

27 Reis (2015) discusses different types of central bank insolvency. Our definition aligns with his "intertemporal insolvency" requirement.

28 Convergence reports examine the progress made by non-euro area EU Member States towards achieving the criteria necessary for a country to adopt the euro.

29 Article 130 of the Treaty on the Functioning of the European Union stipulates, more generally, that the ECB and the national central banks should be independent in the performance of their tasks.

4. Implications for the fiscal authority

4.1 Central banks may require recapitalisation by the fiscal authority

At what point does a central bank need support from the fiscal authority? It is often stated that a central bank can always “print money” (create base money) to meet its payment obligations, thereby shielding it from bankruptcy. In practice, however, a central bank is constrained by its policy objective, which is typically to maintain price stability. Therefore, negative comprehensive net worth can be viewed as a red flag, indicating that the current situation is untenable.

For instance, consider a central bank with permanently negative net interest income. To pay interest on reserves, it adds to the reserve balances of commercial banks. This operation increases its reserves without giving rise to a return-bearing asset (thereby worsening its net worth). Moreover, the central bank has now enlarged the pool of reserves on which it will have to pay interest in the next period. As a result, it will become trapped in a cycle of ever-growing reserves and worsening net worth (Del Negro and Sims, 2015; Reis, 2015). As a way out, the central bank could consider increasing its comprehensive net worth by raising the present value of future seigniorage. To do so, it would have to issue more base money each period to acquire interest-bearing assets (i.e. through bond purchases or the extension of loans with a higher interest rate than that paid on reserves). However, in these scenarios, the central bank increases the money supply and thus inflation more than would be consistent with its mandate of maintaining price stability.

To restore the central bank’s solvency without undermining its policy objective, the government will have to recapitalise it (i.e. a reverse transfer or negative net payment from the central bank to the treasury). Such an operation typically takes the form of a transfer of interest-bearing assets from the public purse to the central bank (Del Negro and Sims, 2015). In this way, the central bank obtains a source of interest income without incurring an additional liability, which should allow it to return to profitability. As mentioned above, given that comprehensive net worth is difficult to estimate, determining the point at which a central bank actually needs fiscal support is also not straightforward. What is crucial here is the assessment that a central bank’s net worth is no longer on a sustainable path as it cannot be restored by future expected profits.

Absent support from the fiscal authority, the central bank will be unable to meet its payment obligations (including transfers to the treasury) while adhering to its policy rule. This situation is what Del Negro and Sims (2015) refer to as “central bank insolvency”.

In conclusion, the current Eurosystem central bank losses are significant but should be temporary assuming a return to profitability within a reasonable timeframe. Hence, capital support from the government is currently not envisaged for Eurosystem central banks. The Czech National Bank thoroughly investigated its own negative net worth and concluded that its accumulated losses could be offset through future profits (primarily from seigniorage). Belhocine *et al.* (2023) support the idea that central banks can credibly operate with negative net worth for an extended period, citing the Czech National Bank as an example.

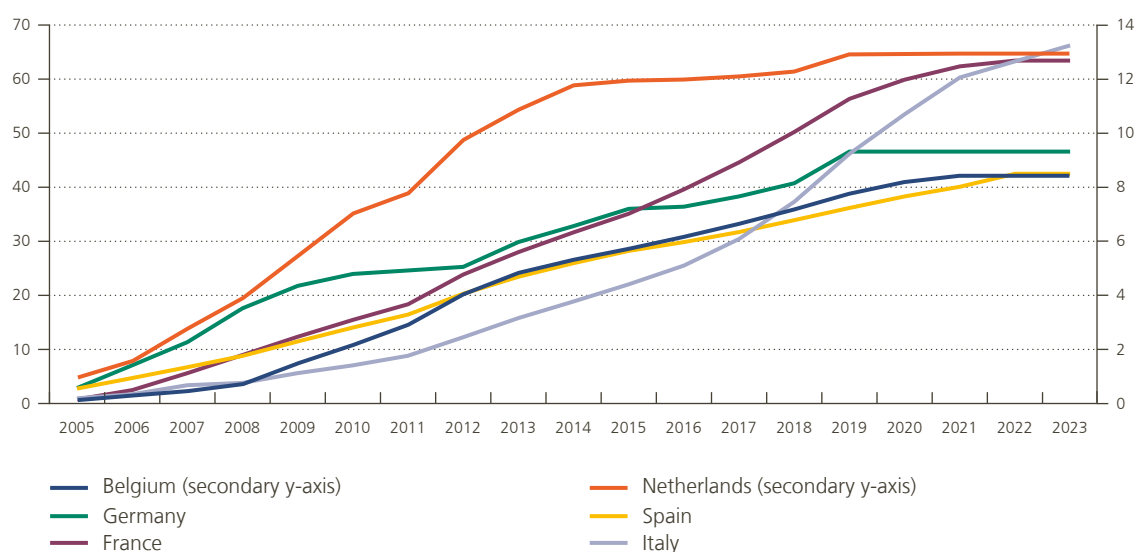
4.2 In any case, central bank losses impact the government budget

Central banks typically transfer (a portion of) their profits to the fiscal authority. For most central banks, the state is indeed their sole shareholder – and potential recipient – of any profits. Some central banks – including those of Belgium and Italy as far as the six central banks considered in this article are concerned – (also) have private shareholders, and country-specific rules determine how their profits are distributed between public

Figure 11

Cumulative government transfers by major Eurosystem central banks

(€ billions, cumulative amounts as from 2005, including taxes)



Sources: Annual reports of the Deutsche Bundesbank, Banque de France, Banca d'Italia, Banco de España, Nederlandsche Bank and National Bank of Belgium, 2005-2023.

and private stakeholders.³⁰ This article focuses solely on the implications of central bank losses for the fiscal authority. Moreover, some central banks also pay taxes, which increases the amount effectively transferred to the government. Of the six Eurosystem central banks focused on in this article, those of France, Italy and Belgium are liable for tax.

As Figure 11 shows, cumulative transfers to the government by the six largest Eurosystem central banks over the past two decades, in absolute terms, have been significant. The Italian and French central banks were able to distribute the largest profits to the government, amounting to around €65 billion over the period 2005 to 2023. Expressed as a percentage of GDP, the Italian and Spanish governments were the biggest recipients of central bank funds, receiving a transfer amounting to around 0.2 % of GDP on average per year between 2005 and 2023. The Belgian and Dutch central banks are the smallest of the six considered here and thus paid less in absolute terms. They transferred to the government funds amounting to 0.1 % of GDP on average per year over the same period, as did the Bundesbank.

Figure 11 also illustrates that central bank transfers to the government have levelled off in recent years, as central banks opted to bolster their provisions or reserves and, more recently, have been facing losses, leaving no room for profit distributions. Moreover, the current context has prompted some central banks to review their provisioning/reserves and profit distribution policies. The national banks of the Netherlands and Belgium, for example, recently amended their policies to ensure that their buffers are restored before any profits are distributed going forward.³¹

³⁰ In the case of the National Bank of Belgium, private shareholders receive, if annual profits and reserves allow, a dividend equal to 6 % of the central bank's capital, possibly supplemented by a second dividend. The remainder of any profit, after transfers to reserves, inures to the state. The private shareholders of the Banca d'Italia receive up to a maximum of 6 % of the central bank's capital. After transfers to reserves and provisions, the remainder of the profits is transferred to the state.

³¹ See [DNB reaches agreement with Dutch State on recovery of capital position following losses](#), December 2023 and [Update of the reserve and dividend policy of the National Bank of Belgium](#), March 2024.

4.3 Loss-bearing arrangements between the central bank and the fiscal authority are often lacking

The treatment of central bank profits and losses is often asymmetric. Unlike for profit distributions, which are usually subject to specific arrangements, explicit provisions governing central bank losses are often lacking. Indeed, in many cases, losses just remain on the central bank's balance sheet to deplete its buffers, as explained above. Once their buffers are depleted, most Eurosystem central banks will indeed carry forward any remaining losses, to be offset against future profits.

The Federal Reserve remits its earnings to the US Treasury weekly after covering operating costs, paying dividends and maintaining surplus. If its net income turns negative, remittances are suspended, creating a deferred asset. From 2011 to 2021, the Federal Reserve remitted USD 5 to 10 billion per month to the Treasury, for a total of over USD 920 billion. However, from 2021 to 2022, remittances decreased from 0.5 % to 0.3 % of GDP due to a USD 30 billion volume reduction and a USD 2 trillion increase in GDP. Since September 2022, remittances have been suspended due to losses. In 2023, the Fed reported a USD 116.7 billion increase in the deferred asset, the value of which totalled USD 133.3 billion at year's end. The Federal Reserve estimates that it will carry this deferred asset until mid-2027, after which time remittances to the Treasury will resume.

Other arrangements are also possible, with more active government involvement in the event of losses. For instance, there may be specific provisions in place for the government to recapitalise the central bank in certain cases. Under this type of arrangement, the central bank can ask the state to restore its net worth when the latter falls below a certain minimum level. In New Zealand, the central bank requested that the Crown provide an indemnity for its large-scale asset purchases (LSAP) programme. These payments, which began in 2022, are intended to offset the loss of net interest income on bonds purchased in 2021 and 2022. In Sweden, the Riksbank requested a capital injection of SEK 43.7 billion at the beginning of April 2024 (around 0.7 % of GDP) to restore its net worth to the statutory base level. In June 2024, the Swedish Parliament proposed an injection of SEK 25 billion, which was welcomed by the central bank as "a first step" in addressing its request. In addition, the Riksbank is reviewing possible measures to improve its self-financing in the long term by increasing its net interest income. These could include changes to the management of foreign reserves and the imposition of fees. The Riksbank justifies the need for capital injections and measures to improve self-financing by explaining that it cannot "ensure financial independence through seigniorage from currency in circulation" (i.e. the specific seigniorage stemming from banknotes as part of seigniorage stemming from base money).³² The Riksbank notes that, in comparison to most countries, "the amount of currency in circulation [in Sweden] is small and has decreased as a proportion of GDP in recent decades due to a reduced demand for cash. Currency in circulation has also fallen as a proportion of the balance sheet, resulting in seigniorage [from banknotes specifically] having made an increasingly smaller contribution to the Riksbank's financial result over a long period of time."

The UK model, on the other hand, involves automatic transfers to the central bank in the event of losses. The Bank of England requires its losses to immediately be made good by the taxpayer. In 2012, an agreement was reached to transfer the APF's net income to the Exchequer on a regular basis. Between 2009 and 2022, the APF's activities generated positive net cash flows to the Exchequer, peaking at a total of GBP 123.8 billion. However, when this arrangement was put in place, it was recognised that reverse payments from the Exchequer to the APF were likely to be needed in the future as the Bank Rate would increase and the APF's government bond holdings could be actively sold. The first such transfer from the Exchequer to the APF occurred in October 2022, with payments made on a quarterly basis thereafter.

In sum, there are three possible types of arrangements between a central bank and the government to deal with central bank losses (see also Belhocine *et al.*, 2023). Structural fiscal backing involves automatic transfers to the central bank to cover losses, as is the case with the Bank of England. Arrangements like those of the Swedish

32 For more details, see [Riksbank website](#).

central bank also entail reliance on the state, but fiscal support is not automatic and is provided on an ad hoc basis, i.e. if deemed necessary to restore the central bank's net worth. A third arrangement aligns with what the Fed is doing and, overall, Eurosystem central banks would do and involves the use of an accounting entry built up when losses are made and wound down as the central bank returns to profitability.

Automatic fiscal support has the advantage of ensuring that the central bank disposes of sufficient means to face losses when they occur, but such arrangements that tightly link the central bank's financial position to the government budget raise the possibility of political pressure. A central bank that is considering unconventional monetary policy measures could come under pressure from the fiscal authority to refrain from doing so, for fear of the potential financial consequences. In addition, such arrangements are liable to put substantial strain on already stressed public finances (Archer and Moser-Boehm, 2013). In more ad hoc arrangements, such as those applicable to the Sveriges Riksbank, (the extent of) fiscal support is not certain upfront.

One of the advantages of using a deferred asset or similar accounting entry is that it smooths out the consequences of central bank losses for the government budget, as such an arrangement does not involve large transfers from public coffers to the central bank when losses occur. Rather, this kind of arrangement implies a suspension of the usual profit transfers from the central bank to the government until such time as the central bank's losses are offset and its buffers rebuilt. When losses are temporary and recoverable, such an arrangement may prove satisfactory. As mentioned above, the provisions and reserves that central banks have built up over the past decades also act as a first buffer against recent losses. A disadvantage of this arrangement is that it may be less transparent, with the true extent of the central bank's losses "hidden" behind an accounting entry (Buiters, 2024). Moreover, it should be noted that, in order to be truly independent in the performance of its tasks in the public interest, a central bank should be certain of government backing in the event of more extreme losses. As Sims (1999) puts it, "[A] truly independent central bank is one that can act, even under inflationary or deflationary stress, without any worry that the necessary fiscal backing for its actions will be forthcoming."

Finally, it should be noted that given the potential fiscal consequences of central bank losses, a number of proposals to limit such losses have been floated. For example, De Grauwe and Ji (2023) propose increasing banks' required reserves and not paying interest on them. While such proposals are sometimes presented as a quick win in the general interest, they demand careful consideration, especially in terms of the possible impact on the effectiveness of (future) unconventional monetary policy measures.

Conclusion

After more than two decades of profitability, several Eurosystem central banks, like those of other major economies worldwide, recently started to post losses. These losses should be viewed against the backdrop of dramatic changes in central banks' balance sheets over the past decade or so, which, in turn, resulted from the unconventional monetary policies introduced by central banks in the aftermath of the global financial crisis. For instance, under their QE programmes, central banks purchased assets on a large scale, implying a massive increase in the reserve balances on the other side of their balance sheets. When policy rates were raised in response to rising inflationary pressures in the post-pandemic period, the interest rate mismatch between low-yield longer-term bonds and these reserve balances, remunerated at the policy rate, resulted in net interest losses.

Central bank losses have stirred public debate since they have consequences for the government budget and thus for taxpayers. Indeed, while major central banks tended to distribute a large share of their profits to the government over the past decades, these transfers have now either been suspended or significantly lowered. Clear communication on the causes and implications of central bank losses is desirable. In this regard, it should also be recalled that the extremely accommodative monetary policy conducted before and during the pandemic

implied above-average central bank profits and, hence, large government transfers. Moreover, low interest rates allowed governments and other economic agents to obtain financing at very favourable conditions, while the positive effects of QE on economic activity raised tax revenue for the fiscal authorities.

The sheer size of the current losses, however, could make it difficult for central banks to convince the public that the unconventional monetary policies they pursued were generally to the public benefit. Importantly, this could have repercussions for the future conduct of monetary policy. When again faced with low inflation and barring a crisis, such as the Covid-19 pandemic, central banks could encounter resistance when considering QE again, with the fiscal authority and the public at large being unwilling to bear the potential consequences.

While the total losses of some central banks may be sizeable, they are expected to be temporary and recoverable. Indeed, as excess liquidity recedes and policy rates fall, losses should diminish and central banks return to profit. Moreover, the current losses were not a bolt from the blue, and Eurosystem central banks have been building up provisions and reserves for years to be used as a buffer. Should these buffers be depleted, any remaining losses will be carried forward and offset against future profits. Consequently, some central banks could have negative net worth for several years. Various historical examples have shown, however, that such a situation is not necessarily problematic. The objective of a central bank is, first and foremost, to maintain price stability. While losses can arise due to policy implementation, central banks can continue to effectively conduct monetary policy and function normally under such circumstances.

This does not mean that more protracted periods of central bank losses cannot pose a problem in the longer term. A central bank cannot continue to “print money” indefinitely, as is sometimes argued, to cover its expenses, as this would run counter to its price stability mandate. Indeed, should a central bank be unable to meet its future payment obligations (including transfers to the treasury) with its expected future income while sticking to its policy rule, recapitalisation by the government would be the only way out. As mentioned above, given that the current losses of Eurosystem central banks are expected to be temporary and recoverable, a capital injection by the state is currently not in order. Nonetheless, to be truly independent in the performance of its tasks, a central bank should be certain that, should more extreme losses arise, it will ultimately be backed by the fiscal authority.

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Conventional signs

| | |
|--------|----------------|
| % | per cent |
| et al. | <i>et alia</i> |
| i.e. | <i>id est</i> |
| n.d. | no date |

List of abbreviations

Countries or regions

| | |
|----|----------------|
| UK | United Kingdom |
| US | United States |

Abbreviations

| | |
|-------|--|
| APF | Asset purchase facility |
| APP | Asset purchase programme |
| CBDC | Central bank digital currency |
| CBPP | Covered bond purchase programme |
| ECB | European Central Bank |
| ESCB | European System of Central Banks |
| Covid | Coronavirus disease |
| D€ | Digital euro |
| DFR | Deposit facility rate |
| Fed | Federal Reserve |
| GDP | Gross domestic product |
| MBS | Mortgage-backed security |
| MRO | Main refinancing operations |
| PEPP | Pandemic Emergency Purchase Programme |
| QE | Quantitative easing |
| SMP | Securities Markets Programme |
| SOMA | System Open Market Account |
| TLTRO | Targeted longer-term refinancing operation |

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