

Why a central bank's bottom line doesn't matter (that much)

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Rationale

Central banks in some developed countries have started to record, or will soon record, losses. These losses are due to the structural changes in their balance sheets after the exceptional measures adopted during the economic crises of recent years, which were necessary to maintain price stability. This article explains why these losses are expected to be temporary and why central banks can continue to perform their functions and deliver on their mandate even when incurring losses.

Takeaways

- A central bank's aim is not to maximise profits, but instead to use monetary policy to achieve price stability.
- Central banks cannot be insolvent as they issue the currency (base money) with which they continue to cover their operating expenses and meet their present and future payment obligations.
- There are numerous examples of central banks that have continued to deliver on their mandates even when incurring losses. In these cases, a robust legal framework that protects central banks' autonomy is key.

Keywords

Central banking, profit and loss, Eurosystem, price stability, monetary policy.

JEL classification

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Authors:

Enrique Esteban García-Escudero Operations Department Banco de España Luna Azahara Romo González Operations Department Banco de España

Introduction

Most central banks' primary objective is price stability.² To deliver on this mandate, they perform activities that generate income and incur losses which are recognised in the profit and loss account. The bottom line at year-end should be viewed as a consequence, or by-product, of the performance of their functions, not as an end in itself. This means that, unlike the private sector, a central bank is not driven by profit maximisation, but rather by the fulfilment of its public mandate - price stability - through monetary policy conduct.

That said, as public institutions central banks must manage their resources prudently. They should also have sufficient capital to ensure their financial independence, which, alongside a robust legal framework, wards off possible external pressures and a loss of credibility that could jeopardise fulfilment of their mandate and the smooth functioning of the monetary system as a whole.

However, exceptional circumstances arise in which, temporarily, and despite prudent resource management, central banks may incur losses as a result of the monetary policy conducted to achieve their primary objective (price stability). Central banks may have to take greater risks than usual during crises. This was the case at the main central banks in the wake of the 2008 financial crisis and, more recently, in the COVID-19 pandemic, when they were forced to adopt extraordinary decisions to deliver on their mandates and avoid the economic fallout from not doing so. Indeed, after the policy interest rate rises of 2022 and 2023, some of these central banks have started to record temporary losses, or will do so in the near future, because the risks taken are now materialising.

This article is structured as follows. The first section explains central banks' accounting prudence and transparency measures, taking as reference the main advanced economies' central banks and, in particular, the Eurosystem. The second section clarifies how these central banks generate profits in normal times and how the structure of their balance sheets has changed in recent years, in order to explain current and future profit and loss account developments. It also sets out why central banks' losses, and even negative equity, tend to be temporary. The third section explains why central banks cannot be insolvent, as they can always meet their payment obligations. The fourth section analyses how short-term losses and even negative equity do not generally prevent central banks from effectively achieving their price stability objective. Lastly, our conclusions are presented in the fifth section.

¹ The authors are grateful to Juan Ayuso, Ricardo Gimeno and José Ignacio Martínez Sempere-Matarredo for their comments and suggestions.

The Eurosystem has a single mandate: price stability. However, other central banks have more than one. For example, in the United States the Federal Reserve System's dual mandate includes achieving maximum employment.

Central banks: specific accounting frameworks and financial risks

A central bank's aim is not to maximise profits but to ensure price stability, which can either be its sole objective or it can be combined with other public policy goals. Yet this does not mean that central banks treat financial matters frivolously. Indeed, advanced economy central banks attach considerable importance to ensuring their financial independence so as to maintain their credibility and reputation and fend off external interference (European Central Bank (ECB), 2022). To do so, they manage risks prudently, appropriately and, in turn, transparently (vis-à-vis the general public and other authorities, so that their use of public funds can be properly controlled).

As regards central banks' duty to be transparent, private sector accounting frameworks, such as the International Financial Reporting Standards (IFRSs) or the Generally Accepted Accounting Principles, are designed for profit-seeking firms. Accordingly, they are not intended to reflect the nature and specific goals of central banks. Central banks therefore tend to stray from private sector accounting frameworks in some respects, adopting accounting rules that are compatible with their unique nature, their objectives and their risks.

For example, the Eurosystem has a common accounting and reporting framework applicable to all euro area national central banks (NCBs) which differs from the IFRSs with respect to the treatment of core central bank operations³ (ECB, 2012; Bunea, Karakitsos, Merriman and Studener, 2016). Particular prominence is given to two accounting principles:⁴ prudent income recognition and rainy day provisioning. The former consists of treating unrealised gains and losses asymmetrically: unrealised gains are not recognised in the profit and loss account or distributed as profits to shareholders and/or governments,⁵ while unrealised losses are included in the profit and loss account. The latter principle involves the recognition of general provisions against certain risks to cover future losses (Archer and Moser-Boehm, 2013). These provisions are considered to be part of the central bank's equity, lower the amount of net profit distributable to shareholders and/or governments and enable buffers against possible losses to be set up. Therefore, in the event losses are incurred, most NCBs' main line of defence will be their rainy day provisions and reserves.

The main financial risks facing central banks in the performance of their operations and that might give rise to losses are as follows (Banco de España, 2023; Mascareñas Pérez-Íñigo, 2002):

 Credit risk: the risk of incurring losses due to instances of contractual non-compliance (such as defaults) by the issuers of securities the central bank has purchased, by

³ The accounting treatment of non-core operations is governed by the local central bank law or by the IFRSs. In addition, each NCB has its own rules for profit distribution and loss coverage and rainy day provisioning.

⁴ Under the general IFRS framework applicable to the private sector provisions can only be set up against general risks under certain circumstances and gains and losses are treated symmetrically.

⁵ Central bank shareholders are typically governments, although in some cases central banks have private shareholders (such as the Bank of Greece and the Banque Nationale de Belgique) or they are even fully private (Banca d'Italia), although in these cases they can also distribute profits to their respective governments.

counterparties and by the depositaries of its financial assets. This risk affects, for example, all central bank securities⁶ held for monetary and non-monetary policy purposes, and is mitigated through the application of eligibility criteria, due diligence procedures and limits that differ across portfolios (ECB, 2023).

- Market risk: the risk of loss due to fluctuations in financial asset (and gold) prices. In turn, market risk may also be:
 - Interest rate risk: the risk stemming from interest rate fluctuations. If it materialises, the losses can be due, first, to the decline in a fixed-income security's market value because of the inverse relationship between bonds' prices and yields (effect on the price stemming from interest rate risk) and, second, to income being lower than expenses (structural risk on the balance sheet). The latter loss can materialise when the interest rate paid on liabilities rises faster than the interest rate earned on assets.
 - Currency risk: this risk refers to the fluctuation in the exchange rates of foreign currencydenominated bonds.⁷
 - Climate change risk: the risk of assets losing value due to the effects of climate change.
 Eurosystem central banks are working to incorporate this risk into monetary policy conduct, and to include sustainable and responsible investment principles in own funds portfolio management.

In addition to the above-mentioned financial risks, central banks also manage others, such as operational and governance risks.

At this stage it is important to highlight that the Eurosystem values at amortised cost (subject to impairment) the securities in its monetary policy portfolios, i.e. those securities purchased under the asset purchase programme or the pandemic emergency purchase programme. This means that, unless they are sold or become impaired, these assets are not subject to interest rate risk, understood as a decline in value stemming from interest rate rises, or to market movements or credit rating downgrades. Like the Eurosystem, the securities purchased by the Federal Reserve System and the Bank of Japan for monetary policy conduct are also valued at amortised cost. The reasons for doing so lie in avoiding volatility in these portfolios' valuations and in providing a more transparent link between the assets acquired for monetary policy purposes and the reserves created on the liability side.

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⁶ It also affects the securities provided as collateral in central bank credit operations.

⁷ This risk can affect above all emerging market economy central banks.

⁸ The ECB Governing Council adopted this decision in 2014 and it affects other prior portfolios, such as the securities markets programme (SMP) and the first and second covered bond purchase programmes (CBPP1 and CBPP2, respectively). Euro-denominated own funds portfolios and foreign currency reserves can be valued at market prices, although some are also valued at amortised cost if they are held to maturity. Monetary policy portfolios can also be valued at market prices, but in practice they do not tend to be.

^{9 &}quot;SOMA's Unrealized Loss: What does it mean?".

In short, central banks manage their funds particularly prudently, which is reflected in the asymmetric treatment of gains and losses and in rainy day provisioning. As explained in the following section, central banks are typically structurally profitable. However, under certain circumstances and despite such prudence, they may temporarily incur losses as a result of the materialisation of the financial risks taken in the performance of their functions.

Effects of monetary policy on a central bank's bottom line

As mentioned above, a central bank's primary objective is typically price stability. Any profits generated in the pursuit of such mandate should not be considered to be the institution's goal, but rather a by-product of its conduct. Conversely, it could sometimes be said that losses are "the price to pay" for being able to deliver on the mandate (Carstens, 2023; Nordström and Vredin, 2022).

Under normal economic conditions, i.e. in the absence of any type of crisis requiring extraordinary central bank intervention, monetary policy conduct is always profitable; in other words, central banks are structurally profitable (Bindseil, 2023).

To get a better grasp of this idea, some prior knowledge of what a central bank's balance sheet is like is useful. Our analysis in this article focuses specifically on the most important items from a monetary policy standpoint, but it is important to consider that a normal balance sheet will also include other assets (e.g. own funds and foreign currency and gold holdings) and other liabilities (such as government deposits placed with the central bank). Movements in these items will also affect the profit and loss account. In addition, our analysis focuses solely on the gains and losses stemming from the materialisation of interest rate risks, as in the coming years interest rate risk will possibly be the main determinant of the course of the profit and loss accounts of the advanced economy central banks.

From a monetary policy standpoint, the important items on the asset side of the balance sheet are the credit operations and financial asset portfolios. Both serve to create the reserves of commercial banks, meaning their liquidity needs in this article. These two types of operations are also a central bank's main source of income. When reserves are created through credit operations, such operations incur interest payable by the participating commercial banks at a particular rate. When reserves are created through financial asset purchases, these assets bear interest at a market rate or coupon, which will be the return that the central bank earns on such assets.

On the liability side, the relevant items from a monetary policy standpoint are the accounts of the commercial banks in which the reserves created by the central bank (via the operations on the asset side, as explained above) are reflected and banknotes (the central bank monopoly on the

¹⁰ Prior to the 2007-2008 financial crisis the Eurosystem did not have asset portfolios that acted as monetary policy instruments. However, NCBs have always had own funds portfolios that, while not intended for monetary policy purposes, create reserves in the same way, albeit with an imposed limit so that they do not influence the single monetary policy.

issuance of banknotes as legal tender is common knowledge).¹¹ Reserves tend to be remunerated by the central bank (although at a lower rate than the credit operations). However, banknotes are not, as, by definition, they are a non-interest-bearing liability.

Commercial banks request banknotes based on customer demand, exchanging their central bank reserves for cash. In other words, before a commercial bank receives banknotes, it must have deposited reserves in its current account at the central bank. This is how a central bank generates "seigniorage income". It creates reserves for which it receives interest income in exchange for issuing a zero-interest-bearing liability (the banknotes).

Having analysed these central bank balance sheet concepts, we now show how central banks conduct monetary policy in normal times, ¹³ using as an example the functioning of the Eurosystem prior to the 2007-2008 financial crisis.

During this period, reserves were created via credit operations. There are several types of credit operations in the Eurosystem,¹⁴ but, for the sake of simplicity, we will focus exclusively on main refinancing operations (MROs). These are always remunerated at a higher rate than reserves, which were remunerated at an average rate combining the MRO rate (for minimum reserve requirements)¹⁵ and the deposit facility rate (DFR) at which the excess reserves are remunerated.

Symmetrically, when describing the Eurosystem's liabilities, the vast majority of these reserves, created through MROs, ultimately became banknotes, i.e. a non-interest-bearing liability, incurring no cost for the central bank.¹⁶

Figure 1 shows, on the one hand, the credit operations generating interest at the MRO rate and, on the other, the banknotes, which incur no cost for the central bank, and the reserves (which account for a much smaller volume than the banknotes), with the portion corresponding to the minimum reserve requirements remunerated at the MRO rate and the small excess remunerated at the DFR (which, by definition, is lower than the MRO rate). This figure clearly conveys the idea that a central bank is structurally profitable in normal times, as the interest income on MROs is higher than the rates (0% or the DFR) at which the liabilities are remunerated.

However, in times of crisis or deflation risks, central banks may adopt extraordinary measures to fulfil their mandates that may ultimately lead them to report losses.

¹¹ As is the case in the Eurosystem, central banks do not normally issue legal tender coins. They are not discussed in this article for the sake of simplicity, as the message remains conceptually the same.

¹² For more information, see "What is seigniorage?".

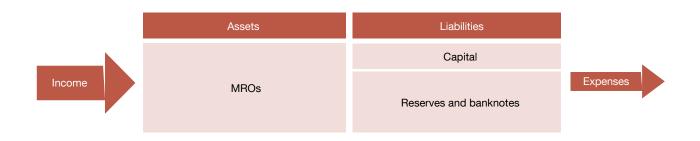
¹³ The Eurosystem is currently reviewing its framework for monetary policy conduct. In this article by "monetary policy in normal times" we mean the monetary policy conducted prior to the 2007-2008 financial crisis. Accordingly, no conclusions on the outcome of such review can be drawn from this article.

¹⁴ For further information, see: MROs, longer-term refinancing operations (LTROs), marginal lending facility (MLF) and targeted longer-term refinancing operations (TLTROs).

¹⁵ They were remunerated at the MRO rate up to December 2022, when they switched to the DFR. Since September 2023 they have been remunerated at 0%.

¹⁶ The manufacturing cost is excluded from the scope of this article as it would only complicate matters and conceptually the message does not change.

Figure 1 Return on items on a stylised central bank balance sheet in normal times (before QE)



Thus, for example, central banks responded to the 2007-2008 financial crisis and subsequent crises by lowering policy interest rates, in some cases even moving them into negative territory, as occurred in the euro area between June 2014 and July 2022. The problem with cutting interest rates is that there is an effective lower bound (ELB), beyond which the effects of further rate cuts would be harmful for the economy.¹⁷

To prevent this from happening, central banks incorporated new monetary policy tools, specifically, asset purchase programmes (known as quantitative easing 18 or QE). Their effect on the balance sheet (see Figure 2) was a significantly expanded financial asset portfolio on the asset side, and an also very significant increase in (excess) reserves on the liability side, resulting in the relative size of the different balance sheet items changing considerably with respect to the pre-QE situation.

Thus, the balance sheet went from having MROs as the most significant items in terms of volume on the asset side (entailing practically no interest rate risk), and banknotes on the liability side, to assets and liabilities being dominated by asset purchase programmes and reserves, respectively. This had a significant impact on central banks' profit and loss accounts, since a non-interest bearing liability item, such as banknotes, was replaced by an interest-bearing one,19 as the new (excess) reserves were remunerated at the DFR.20 Moreover, upon analysing the asset side, we see that reserves are no longer created through MROs, the rate on which is always higher than the DFR. The majority are now built up through financial asset purchases for monetary policy portfolios, which generate interest that depends on the prevailing market rates.

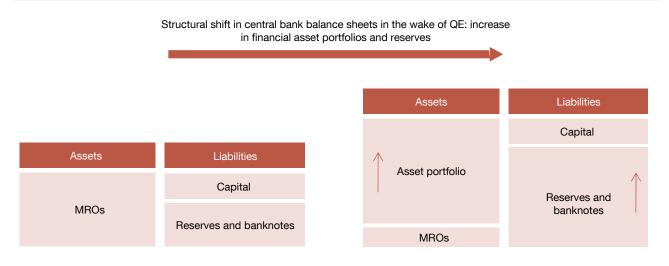
¹⁷ For further information, see "What is the effective lower bound (ELB) on interest rates?".

¹⁸ For further information, see "What are the asset purchase programmes?".

¹⁹ When the deposit facility rate was negative, the remuneration of excess reserves did not incur a cost for central banks, but instead generated income.

Although excess reserves held in central bank accounts are currently remunerated at 0%, in practice, most commercial banks hold their reserves in the Eurosystem's daily deposit facility, and thus obtain the deposit facility rate.

Figure 2 Stylised central bank balance sheet (after QE)



With this new balance sheet structure, while the average interest rate at which financial assets have been purchased remains above the rate at which reserves are remunerated (the DFR), central banks will continue to post profits. However, this new composition entails greater risks for central banks than they assumed in normal times. Specifically, interest rate risk, which materialises when central banks begin to raise policy rates and no longer reinvest all or part of their monetary policy portfolio securities in higher-yield bonds (quantitative tightening).²¹

This is precisely the risk that materialised across many advanced economies' central banks in 2022, when the majority had to raise policy rates sharply and swiftly²² to curb the inflationary pressures that were affecting the economy. In the Eurosystem, rates were hiked by 450 basis points within about a year. In addition, central banks began to reduce the pace of asset purchases or reinvestments.

An interest rate hike (see Figure 3) instantly drives up central bank costs, as the remuneration on reserves increases. However, it has practically no bearing on income, despite the rise in the MRO rate, since the relative weight of these operations in the balance sheet is negligible. Since portfolio assets have long maturities and only a portion (or even none) are renewed at higher rates, the related return remains practically unchanged.²³ Income from debt portfolios hardly

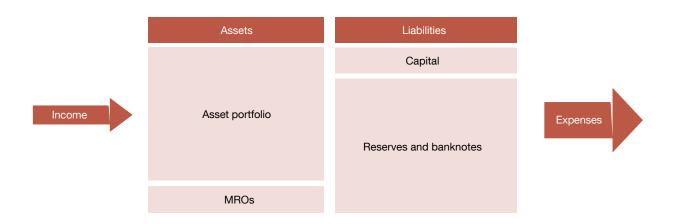
²¹ As explained earlier, such bonds are usually recorded as held-to-maturity investments, and thus valued at amortised cost. Therefore, they are not subject to the risk of loss in underlying value as a result of interest rate hikes.

²² In the Eurosystem, the three key interest rates are: the MRO rate, the DFR, and the rate on the MLF. For more information, see "What are the key ECB interest rates?".

²³ In particular, this risk arises when assets and liabilities have very different durations (structural risk on the balance sheet) since QE shifted duration risk from the private sector to the asset side of central banks' balance sheets (Belhocine, Bhatia and Frie, 2023). That is, their income is dependent on high-duration financial assets with interest rates that do not rise in step with policy rates, as they tend to have fixed coupons and longer maturities than the liabilities.

Figure 3

Return on items on a stylised central bank balance sheet after QE



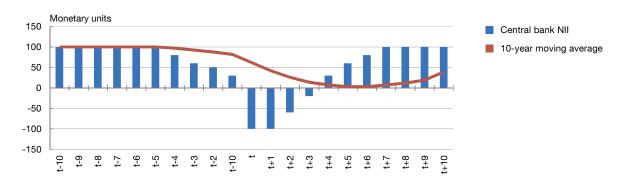
varies, but the costs of reserves on the liability side are increasingly greater. Thus, some of the monetary policy decisions that were necessary for central banks to fulfil their mandates in changing conditions (QE, followed by interest rate hikes) may ultimately lead to negative net interest income (NII) and losses at central banks owing to the structural changes in their balance sheets.

Central banks can cover these losses with specific provisioning or even their capital. If these prove insufficient, losses may be carried forward, which in practice leads to negative equity or to the recording of a specific liability. Such losses would be offset against future income or claims on central government (a deferred asset), which would entail not paying dividends for a time (as in the case of the Federal Reserve). Lastly, central banks can request direct recapitalisation by the government (Bunea, Karakitsos, Merriman and Studener, 2016).

However, the tight policies of central banks mean that losses and negative NII do not last long. Going back to the example of Eurosystem central banks, as the excess liquidity injected during the crisis years drains off, the amount of reserves remunerated at the DFR also decreases, bringing down interest expenses. The latter also decline when central banks cut interest rates, once the risk of inflation remaining permanently above target fades. Moreover, income from monetary policy portfolio securities will gradually adjust to the new interest rate levels and income from credit operations will increase as these operations regain prominence as monetary policy instruments if normalisation is accompanied by a reduction in the size of the monetary policy portfolios. In short, the exceptional central bank losses will be temporary, as they will be recouped once these institutions again become structurally profitable. Indeed, the profits reported in recent years, when smoothed over time, show that central banks are, on average, always profitable (see Chart 1). A conservative provisioning or dividend distribution policy would also help smooth profits over time.

Chart 1

Stylised change in profits of central banks with losses after interest rate rises (a)



SOURCE: Banco de España calculations.

a Fictitious data assuming that in normal years central bank profits are 100 monetary units, that the maximum losses are 100 monetary units and that profits recover the fourth year after the first losses were recorded.

Central banks cannot be insolvent

As we have seen, central bank losses are temporary and exceptional, but this raises the question of what happens in the years when central banks do report losses. It is essential to bear in mind that central banks do not operate under the same rules as private firms. As explained earlier, unlike the private sector, they are not profit-oriented but seek to serve the public interest, in this case, by ensuring price stability.

Monetary policy conduct is precisely what protects central banks from insolvency – meaning defaulting on their payment obligations or operating costs – even when they have negative equity or their assets are worth less than their liabilities (balance-sheet insolvency).²⁴ This is because central banks do not need to take on debt or raise funds from third parties, but can create their own liabilities, by issuing money (monetary base), either in physical (banknotes) or electronic (reserves) form. With these liabilities, they can continue to cover their operating costs and present and future payment obligations.

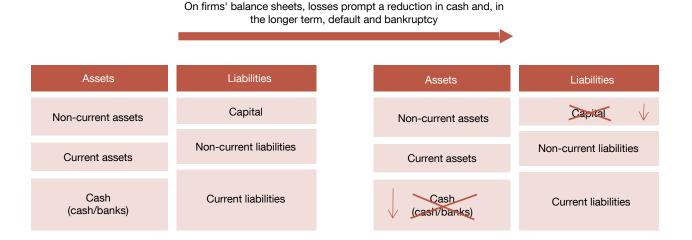
For a better understanding of this idea, from a didactic standpoint, it is useful to think about what happens when a private firm reports losses (see Figure 4). Simply put, if it generates less income than costs, it will incur losses that will result in lower equity and reduce the volume of cash on the asset side.

If this situation persists, the firm will have difficulties meeting its payment obligations and might try to obtain bank financing or sell some of its assets to liberate more cash. However, if it continues to report losses, the size of its balance sheet will gradually shrink and the losses will ultimately deplete all its cash holdings, which will lead to default and insolvency and, ultimately, bankruptcy.

²⁴ See "Is the Fed's negative capital a problem?".

Figure 4

Stylised balance sheet of a loss-making private firm (a)



a Cash is a current asset, but it is depicted separately for didactic purposes.

By contrast, a central bank's balance sheet works very differently. First, central banks' assets do not include "cash or cash equivalents", as is the case in any private firm. This is because central banks do not need to accumulate money to meet their payment obligations, since they themselves create money in the form of banknotes and reserves.

Thus, the income and expenses generated by a central bank's activities will always prompt changes in reserves, since reserves are how they make and receive payments. The interest income (representing profit) they receive from commercial banks reduces the reserves on the liability side (when the central bank withdraws them from the commercial banks' accounts), and increases equity, with the size of the balance sheet remaining unchanged. Likewise, interest payments (representing losses) by central banks to commercial banks translate into larger reserves on the liability side (as central banks create further reserves to meet these payments) and a decrease in equity, with the size of the balance sheet again remaining unchanged (see Figure 5). A good understanding of these dynamics makes it easier to grasp why central banks will always be able to meet their payment obligations in their own currency.²⁵

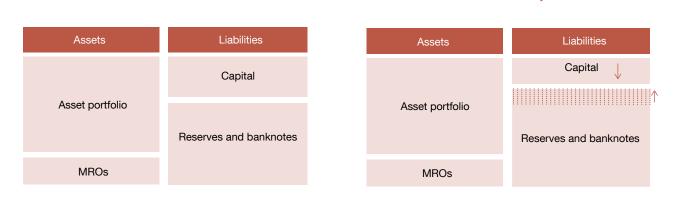
Do losses affect a central bank's capacity to maintain price stability?

We have now seen how it is technically possible for a central bank to continue performing its functions while incurring losses or even recognising negative equity. However, it is equally

Not only can central banks create money to cover their operating costs, but they are not required to meet capital requirements – as commercial banks are – and cannot be subject to court-ordered insolvency proceedings.

Figure 5 Stylised balance sheet of a loss-making central bank

On central bank balance sheets, losses increase reserves without changing the size of the balance sheet: they can have negative equity and continue to meet their payment obligations by creating reserves



SOURCE: Devised by authors.

important to pose the following question: can a central bank deliver on its price stability mandate if the losses and/or negative equity persist over a lengthy period?

First, the impossibility of fulfilling its mandate could be because creating reserves or issuing banknotes to fund its operating costs enters into conflict with the tight monetary policies that could be necessary in the event of inflationary pressures. Second, not distributing profits, ceasing to pay in taxes (if the central bank does) or asking for further capital contributions could prompt external interference that could divert central banks from their mandate (Chiacchio, Claeys and Papadia, 2018; Reis, 2013).

In practice, the first scenario is unlikely to materialise because a central bank's operating costs are negligible in comparison to the size of the economy where it operates, although this matter cannot be ruled out if the losses persist.²⁶ The second could arise if the central bank does not have a robust legal framework protecting its independence or if the negative, or insufficient, capital resulted in a loss of credibility in the eyes of the society where it operates.

Numerous examples exist of central banks that have fulfilled their mandate and objectives despite having negative equity (e.g. Chile, Czech Republic, Slovakia, Israel and Mexico) (Bell, Chui, Gomes, Moser-Boehm and Tejada, 2023). More recently, others, such as the Reserve Bank of Australia, have reported negative equity as a result of losses. As stated in Belhocine, Bhatia and Frie (2023), "policy solvency", meaning the strength of central banks and the monetary policy framework, is what matters most in these cases, not the financial condition of the central bank per se.27

²⁶ At end-2022, the operating costs of the Eurosystem as a whole represented a mere 0.14% of its total assets.

See Pinter (2018) for a review of the literature.

In sum, central banks can report losses and even have negative equity for a time without this preventing them from fulfilling their mandate. What matters in these cases is that the central bank continues adopting the necessary monetary policy measures effectively and efficiently in order to fulfil its mandate and ensure its credibility, irrespective of its financial position (Belhocine, Bhatia and Frie, 2023). Furthermore, central banks should double down on communication in these cases to prevent some of their short-term or more strategic decisions from being suspected of owing more to protecting their bottom line than to delivering price stability (Organisation for Economic Co-operation and Development, 2023).

Conclusion

A central bank's aim is not to maximise profits but to maintain price stability. In normal times, central banks are structurally profitable and such profits are managed prudently and transparently on account of central banks being public institutions. With this in mind, many central banks have robust risk management policies and create provisions that protect them against potential losses. However, the measures adopted to ensure price stability during successive economic and financial crises in recent years have substantially changed the structure of their balance sheets, which will lead many of them to report losses in the coming years. The capital and provisions built up will allow them to absorb some of these losses and, in any event, it is not unprecedented for central banks to continue discharging their functions and to be able to fulfil their mandate even with negative equity.

In any case, the losses that many central banks are going to report as a result of the sharp and swift rise in policy interest rates since 2022 are very likely to be temporary and be offset in the medium term.

In short, the extraordinary losses will not prevent central banks from continuing to adopt the measures required to achieve price stability and deliver on their public mandate.

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