A future-fit operational framework for the European Central Bank

Uuriintuya Batsaikhan, Sebastian Diessner
and Jordi Schröder Bosch

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List of Abbreviations

APP	Asset Purchase Programme
BoE	Bank of England
DF	Deposit Facility
ECB	European Central Bank
EONIA	Euro Overnight Index Average
ELB	Effective Lower Bound
€STR	Euro Short-Term Rate
GFC	Global Financial Crisis
LTRO	Longer-Term Refinancing Operations
MLF	Marginal Lending Facility
MRO	Main Refinancing Operations
OMT	Outright Monetary Transactions
PEPP	Pandemic Emergency Purchase Programme
SMP	Securities Market Programme
TLTROs	Targeted Longer-Term Refinancing Operations
TPI	Transmission Protection Instrument

Executive Summary

- **The European Central Bank (ECB) has recently revised its operational framework**, as have other central banks, including the Bank of England and the US Federal Reserve. The operational framework encompasses the measures and intermediary targets that central banks use to implement their monetary policy stance. These measures include how liquidity is provided, which counterparties are eligible and the rules on collateral use, among others.

- **The way the ECB sets up its operational framework has far-reaching consequences for its capacity to conduct monetary policy in the coming years**, including for the flexibility with which it can use its balance sheet and for its ability to support the green transition.

- **The ECB's new operational framework has three main characteristics**: (1) the operational target will be steered between the main refinancing operations and the deposit facility rates; (2) banks' aggregate liquidity needs will primarily be met through refinancing operations based on banks' demand; (3) remaining liquidity needs will be addressed through a diverse range of instruments, including a structural portfolio of securities and longer-term refinancing operations.

- **This paper assesses the ECB's revised operational framework and formulates three main critiques. Firstly, the framework is not robust**, as its main characteristics are not compatible with monetary policy interventions that increase the ECB's balance sheet substantially in the future. Hence, it is not an operational framework 'for all seasons'. **Secondly, its priorities are misplaced**: aiming for a lean balance sheet to spur 'market discipline' does not consider how the latter failed before the global financial crisis, nor how money markets have changed over the last decades. **Thirdly, this misplaced prioritisation limits policy space** for achieving the ECB's objectives, including supporting the green transition.

- **We provide an alternative framework that addresses these critiques**. **We propose a floor system with an ample and flexible balance sheet**. Most of the liquidity provision would be achieved through a securities portfolio and green-targeted longer-term refinancing operations, which would be supply determined by the ECB. It would also apply a flexible remuneration to bank reserves through tiered remuneration so as to avoid undesirable windfall profits.

- **Our alternative framework entails several benefits**: promoting stability in sovereign bond markets, enhancing monetary policy transmission, accommodating financial stability interventions, providing more policy space to support the green transition and enabling robust responses by the ECB to increasingly frequent shocks.

1. Introduction

'...the operational framework is not and never will become 'final'.'

—Sirkka Hämäläinen (2000)

Central banks across the globe have grappled with a set of similar problems and challenges in recent years, due to the relatively abrupt end of the period of extraordinarily low inflation which had persisted since the global financial crisis (GFC) of 2008. In particular, the sudden return of inflation has raised the question of whether and how to unwind the measures that had been put into place to fight below-target inflation, and whether and how to preserve the use of such measures now and in the future. Like other major central banks, the European Central Bank (ECB) has recently conducted a review of its operational framework for monetary policy-making in order to respond to these challenges.

However, the ECB's review leaves a number of key questions unanswered that will need to be decided at a later stage (Demertzis and Papadia, 2024). This policy paper thus aims to present an alternative roadmap for the ECB's operational framework. We argue that the ECB's revision, by targeting a lean balance sheet, diminishes the policy space required to tackle key issues such as the green transition, the dangers that climate change poses to price stability and fragmentation risks in the Eurozone. Our proposal, aiming for an ample and flexible balance sheet, would endow the ECB with more policy space to tackle these and other challenges.

The paper is structured as follows. Section 2 provides an overview of the evolution of the ECB's operational framework from its inception to the present day. In Section 3, we review similarities and differences between the ECB's framework and that of the Bank of England and the Federal Reserve. Section 4 provides an outline of the ECB's recently proposed operational framework. Sections 5 and 6 present our own proposal for the ECB's monetary policy operations and the benefits it could bring to the Eurozone economy. Finally, Section 7 compares the ECB's new framework with our own proposal.

2. The ECB's monetary policy operational framework: past and present

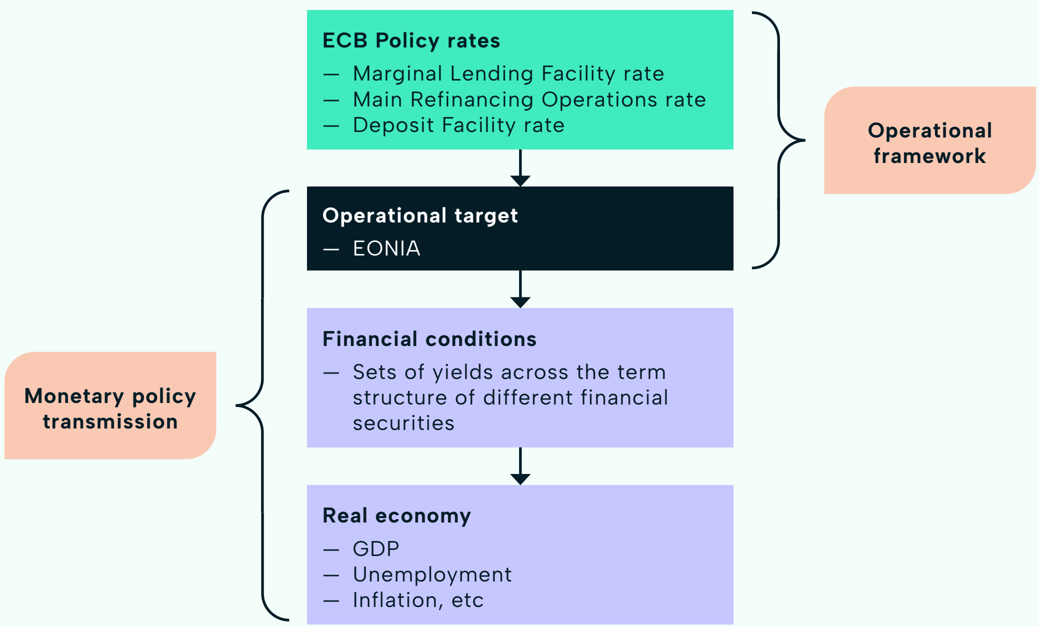
The ECB's primary mandate is price stability. In order to reach its price stability mandate, the ECB sets the operational target, which is the short-term money market lending rate. The operational target can be readily influenced by the ECB on a daily basis through its monetary policy instruments and has a direct impact on market financing conditions (Figure 1). The ECB's operational framework focuses on how the operational target of monetary policy is met.

The operational framework involves two crucial aspects: defining the operational target and determining the measures employed to attain it (Cœuré, 2016). The latter considers how liquidity is provided, which counterparties are eligible and the rules regarding collateral, from haircuts to eligibility (van't Klooster, 2022).

Figure 1 shows a schematic overview of how monetary policy worked in conventional times before the GFC and the role that the operational target played in it. The ECB's operational target is the overnight rate in the money market, the Euro Overnight Index Average (EONIA), which was replaced by the Euro short-term rate (€STR) in October 2019. The ECB directly influences the operational target (EONIA/€STR) by setting three policy rates. The marginal lending facility (MLF) rate is a rate at which eligible counterparties obtain overnight liquidity from the Eurosystem using eligible assets as collateral. The main refinancing operations (MRO) rate is a rate at which banks can borrow on a weekly basis against eligible collateral. Finally, the deposit facility (DF) is the interest rate at which banks' deposits within the Eurosystem are remunerated.

After setting the operational target, the transmission of monetary policy is meant to unfold through three processes. Initially, the operational target influences financing conditions, which subsequently affects the real economy, with the ultimate aim of meeting the ECB's primary objective, that of price stability.

Figure 1: Schematic representation of ECB monetary policy implementation pre-GFC

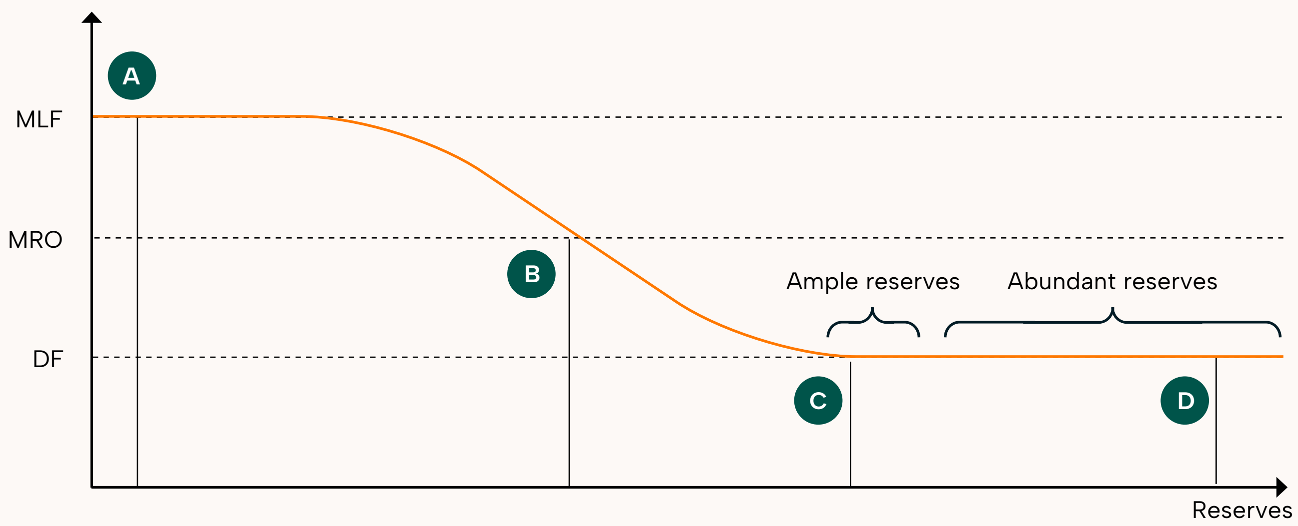


2.1. The operational framework before the GFC

In the era before the GFC, there was a relatively stable pass-through from the operational target to financial conditions. This meant that the ECB focused solely on setting the operational target for the Eurozone as a whole, despite the heterogeneity of the monetary union. Initially, the ECB set its operational target through a so-called 'corridor system', where the MLF rate served as the 'ceiling' and the DF rate as the 'floor', with the MRO rate in the middle. The aim of monetary policy was to keep overnight market interest rates – the EONIA rate at the time – in the middle of the corridor, aligning with the MRO rate.

Once the main policy rates are set, and in order to keep the operational target in the middle of the corridor, the ECB needs to manage the aggregate reserves that banks hold. The ECB supplied, against eligible collateral, a fixed amount of reserves through the MROs. Figure 2 illustrates how the operational target is set. The ECB had to provide the correct amount of reserves for the operational target to be in the middle of the corridor (Point B). If the banking sector lacked reserves relative to its daily needs, those banks that are in deficit would not be able to borrow from banks in a surplus. This scenario would drive the operational target upwards toward the ECB's MLF rate, that is to the ceiling (Point A). Conversely, if the banking sector had excess reserves, the operational target rate would fall to the DF rate, that is to the floor (Point C).

Figure 2: Corridor system of policy rates and reserves interaction to reach the operational target1



In the run-up to the GFC, the corridor system broadly worked. The operational target consistently remained near the middle of the corridor, aligning with the MRO rate, notwithstanding a degree of volatility (Figure 3). In the aftermath of the crisis, however, the ECB eventually had to move to a so-called abundant reserves system (illustrated by Point D), as explained in the following sections.

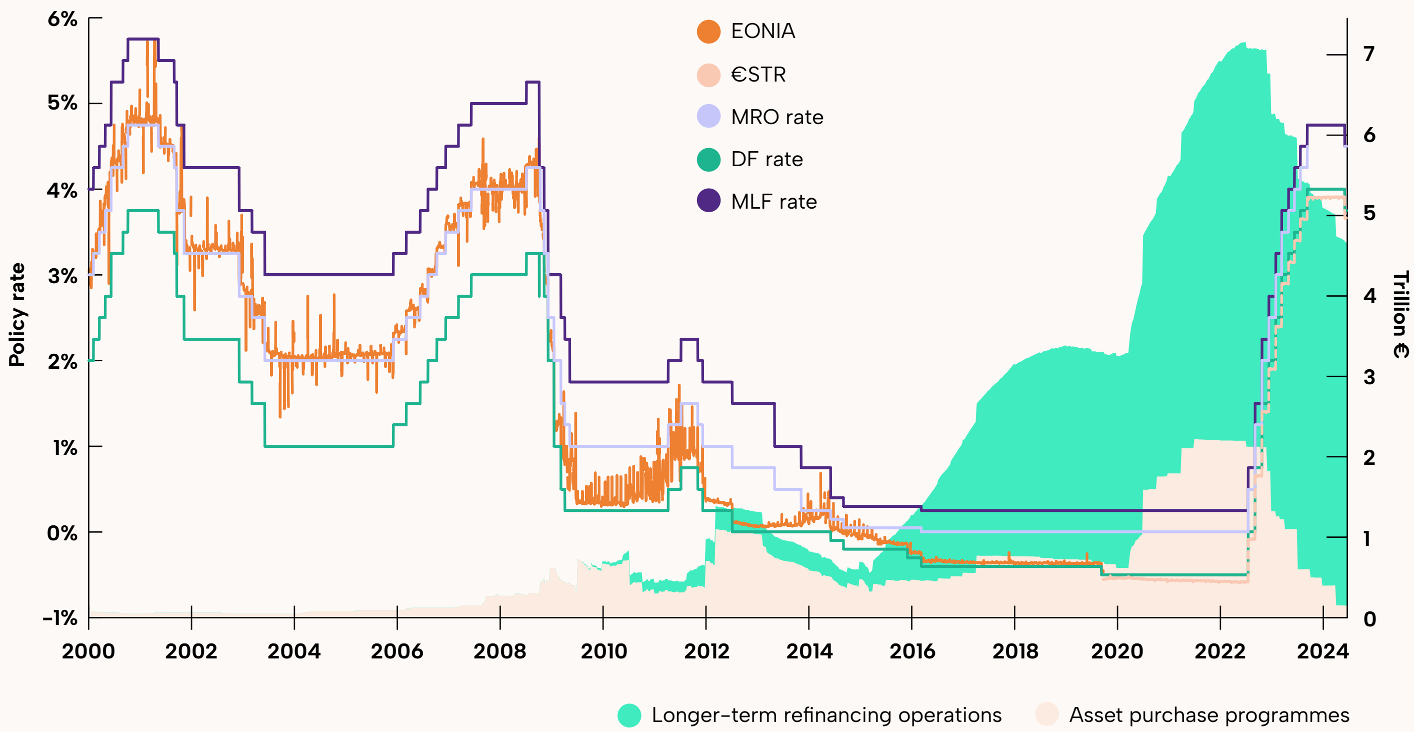
1. The distinction between ample and abundant reserve systems lies in the responsiveness of the operational target to changes in reserve levels. In an abundant reserve system, a change in the volume of reserves does not affect the operational target. In other words, the operational target is inelastic to changes in the level of reserves. On the other hand, in an ample reserve system, the operational target remains at the floor but it is responsive to changes in the level of reserves.

2.2. The operational framework after the GFC

The GFC brought instability to the financial markets, leading to a drying up of the interbank lending market (Cœuré, 2012). In response, the ECB made significant changes to its operational framework. First, the ECB started providing liquidity through a 'fixed rate and full allotment' approach. This marked a shift from the pre-GFC period, where the ECB set the exact volume of liquidity it provided; now, banks could demand as much liquidity as needed at the rate fixed by the ECB. Additionally, the ECB injected liquidity through 6-month and 1-year longer-term refinancing operations (LTROs), which are long-term secured loans to banks with maturities ranging from 6 months to a year. Beginning in 2010, the ECB also initiated government bond purchases under the Securities Market Programme (SMP), albeit in low volumes. As shown in Figure 3, this injection of liquidity by the ECB shifted the operational target to the floor of the corridor.

The arrival of Mario Draghi as president of the ECB, in the midst of the Eurozone crisis in late 2011, not only led to the ECB's famous pledge to purchase sovereign bonds in unlimited quantities to restore the monetary policy transmission mechanism, but also to an increased injection of liquidity through 3-year LTROs (Rostagno et al., 2019). As these longer-term loans matured, the operational target shifted back to the middle of the corridor (Figure 3).

Figure 3: ECB's key policy rates and the operational target



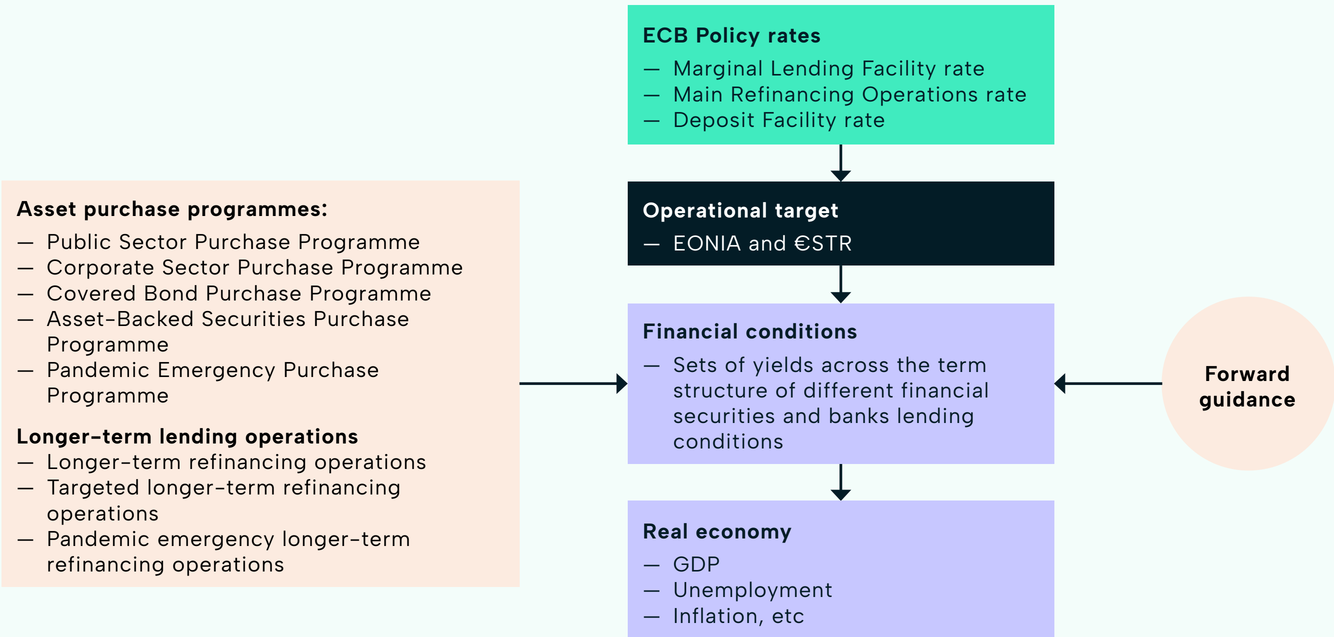
Source: ECB. Own elaboration.

As a response to the protracted crisis, the ECB lowered its key policy rates to near zero in 2014 and to zero in 2016. With successive interest rate cuts, the ECB reached the so-called effective lower bound (ELB), when short-term nominal interest rates are at or below zero, rendering the monetary policy transmission mechanism powerless to take the economy out of the crisis mode.

Starting from 2015, when inflation remained below target and the key interest rate had reached the ELB, the ECB implemented a new round of unconventional monetary policies. These included the targeted longer-term refinancing operations (TLTROs), which provided long-term advantageous financing rates to banks that lent to the 'real economy' above a certain threshold, and the asset purchase programmes (APPs), which involved purchasing public and private sector securities. As a result, the operational target moved to the floor of the corridor and has remained there to the present moment.

Figure 4 illustrates the complexity of the monetary policy operational framework during the post-GFC period. The ECB aimed to directly impact financial conditions through its unconventional monetary policies, shifting away from relying solely on the short-term operational target for monetary policy transmission. These policies continued and were expanded further in response to the Covid-19 pandemic shock, which increased the ECB's balance sheet to record levels, as can be seen in Figure 5.

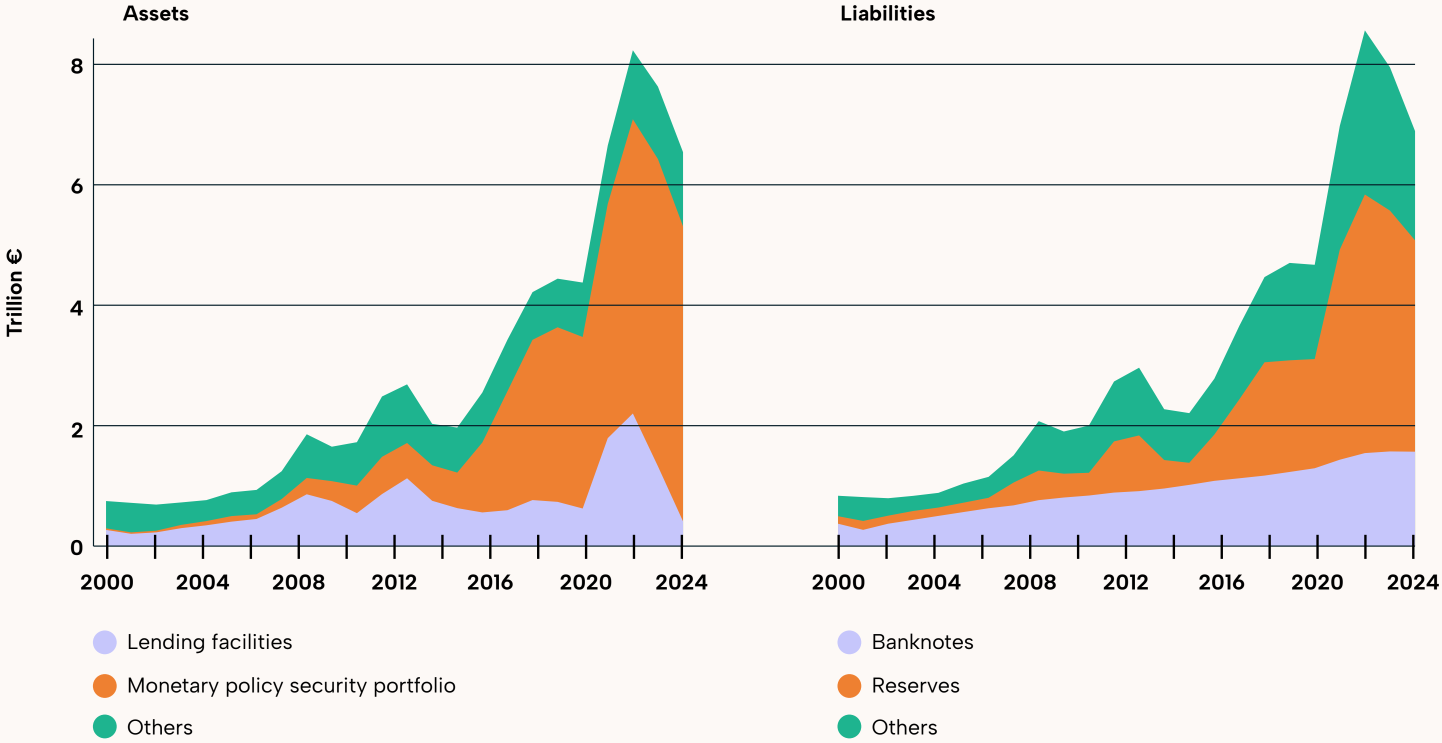
Figure 4. Schematic representation of ECB monetary policy implementation post-GFC



2.3. The operational framework in the aftermath of the Covid crisis

With the supply-chain bottlenecks from the Covid pandemic driving production costs up, followed by the energy shock as a result of Russia's invasion of Ukraine, the euro area experienced a surge in inflation starting in 2021 and peaking at 10.6% in October 2023. In response, the ECB raised its policy rates by 450 basis points. It is the steepest rate increase the euro area has experienced since the introduction of the euro and interest rates still remain elevated as of the beginning of 2024 (Figure 3).

Figure 5. Consolidated balance sheet of the Eurosystem



Source: ECB. Own elaboration. Others contains 'gold and gold receivables', 'claims on non-euro area residents denominated in foreign currency', 'claims on euro area residents denominated in foreign currency', 'general government debt denominated in euro', 'liabilities to other euro area residents denominated in euro' and 'liabilities to non-euro area residents denominated in euro', among others.

Along with interest rate increases, the ECB also engaged in quantitative tightening of its balance sheet to reduce excess liquidity in the market. This included retroactively increasing interest rates on TLTRO loans from November 2022 to incentivize early repayment by banks.[2] By December 2024, all TLTRO III loans will have reached maturity.[3] Additionally, the ECB ceased reinvestments of its APP in July 2022 and announced in December 2023 that the pandemic emergency purchase programme (PEPP) reinvestments would cease completely by the end of 2024.[4]

The main aim of the ECB in 'normalising' its balance sheet seems to be the desire to reduce its market footprint (Schnabel, 2023a). However, commercial banks' reserves held with the national central banks and the ECB still stand at €3.35 trillion[5] as a legacy of unconventional monetary policy operations, compared to around €1 trillion in the times before the global financial crisis (Figure 5). The 'normal' future level of the balance sheet depends on the choice of the operational framework (Altavilla et al., 2023).

Accordingly, the ECB announced a revision of its operational framework in March 2024.[6] Before delving into the ECB's revision, we will examine the operational framework changes implemented by the Bank of England (BoE) and the Federal Reserve in the next section, in order to highlight important similarities and differences between the major central banks' approaches, which can be instructive for the ECB's own changes to its operational framework.

2. See: https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr221027_1~c8005660b0.en.html
3. See: https://www.ecb.europa.eu/mopo/implement/omo/pdf/TLTRO3-calendar-2021.en.pdf
4. See the ECB Governing Council's monetary policy decision on December 2023: https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.mp231214~9846e62f62.en.html
5. As of June 2024. See: https://www.ecb.europa.eu/press/annual-reports-financial-statements/wfs/2024/html/ecb.fst240618.en.html
6. See: https://www.ecb.europa.eu/press/pr/date/2024/html/ecb.pr240313_1~a3a50a9add.en.html

3. Charting its own path

In light of the recent inflationary surge, an important debate has been taking place across major central banks in terms of the appropriate size of their balance sheets. Yet, despite this common challenge on the surface, it is worth recalling that the underlying reasons for the increases in central banks' balance sheets – as well as their implementation and broader ramifications – have differed substantially between central banks, at least initially.

One notable difference – compared to both the Federal Reserve and the Bank of England – is that the ECB engaged in considerably more bank lending and credit easing in private markets before and during the GFC and Eurozone crisis, in particular through several rounds of (T)LTROs. These operations accounted for the bulk of the increase in the Eurosystem's balance sheet until late-2014 (see Figure 5), when the ECB eventually started to purchase assets on a similar scale as other major central banks (Reichlin et al., 2024).[7] This discrepancy is usually explained by the fact that financing in the euro area was, and still is, more 'bank-based' than in the US and the UK (the ECB's counterparties are more than 2,000 financial institutions, while the Fed engages with a select group of 20 primary dealers, for example), as well as by the ideological predispositions of ECB monetary policy-makers (Bateman & van't Klooster, 2023).

By contrast, both the Federal Reserve's and the Bank of England's post-crisis balance sheet operations have primarily revolved around purchases of government bonds and mortgage-backed securities (for the Fed) or government bonds (for the BoE). In the case of the US, these purchases are thought to be coordinated implicitly between the Federal Reserve and the US Treasury, including in terms of the duration of the securities to buy. The Bank of England, on the other hand, conducted its purchases – and now conducts its sales – of gilts through a special purpose vehicle, the Asset Purchase Fund Limited, which amounts to a separate balance sheet that is coordinated with and guaranteed ('indemnified') by the UK Treasury. One might be tempted to argue that such a high degree of monetary-fiscal coordination would be harder to achieve in the euro area, where the fiscal 'counterpart' of the ECB is not a unified treasury but a collective of 20 finance ministries.[8]

While the Federal Reserve decided, in its operational framework review of 2019, to maintain a sizeable bond portfolio on its balance sheet for liquidity purposes (Reichlin et al., 2024: 26; see also Lane, 2023), the Bank of England seems poised to reduce the size of its balance sheet to a minimum through outright quantitative tightening (that is, by actively selling off assets). On the liability side, the BoE plans to follow a 'demand-driven' approach, where the volume of reserves within the system is determined by banks' demand (Hauser, 2023). Conversely, across the Atlantic, the Federal Reserve will pursue a 'supply-driven' approach. In this framework, the Federal Reserve takes the lead in determining the volume of reserves, rather than leaving it to the discretion of banks (Perli, 2023). It will provide those reserves through an ample balance sheet, keeping the operational target at the floor.

It is worth noting that the Bank of England's approach of outright asset sales has come with the (predictable) side effect of large *realised* losses for the central bank. These losses are exacerbated by higher interest rates

7. Note, however, that even when the ECB began to buy assets on a similarly large scale, it did so by not only purchasing public sector (government) bonds but also private sector (corporate) bonds, as opposed to the Bank of England and the Federal Reserve.
8. What is arguably more important for successful monetary-fiscal coordination than the existence of a unified fiscal counterpart, however, is the recognition that explicit coordination between monetary and fiscal authorities can in fact be compatible with central bank independence in the first place (see Diessner, 2023).

(due to the fact that the value of government bonds falls when their yields rise), as well as by the indiscriminate remuneration of central bank reserves (which has led to large windfall profits for commercial banks). Although most major central banks have experienced substantial losses in recent years, what is unique in the case of the Bank of England is that its losses are indemnified in whole by the UK Treasury. This has led to a highly questionable situation in which sizable fiscal transfers are now taking place from the Treasury to the central bank, unduly constraining the government's room for fiscal manoeuvre.[9,10] One way to mitigate losses that is currently being considered both in the UK and in the EU is to differentiate (or 'tier') commercial bank reserves so as to create not only more flexibility in monetary policy operations, but also limit transfers to the banking sector. We shall return to these considerations when discussing our proposal for the ECB's future operational framework in Section 5 below.

9. The practice of indemnification and outright fiscal injections from the Treasury to the Bank of England is currently being reviewed and called into question in both UK Houses of Parliament (see House of Commons Treasury Committee, 2024).
10. Other central banks, including the Federal Reserve, the Bank of Canada or even the German Bundesbank throughout the 1970s, have demonstrated that there are more elegant ways of dealing with balance sheet losses, including carrying them forward on the central bank's balance sheet or recording them as a deferred asset until monetary policy operations return to profitability in the future (Diessner, 2023).

4. The ECB's new operational framework

The ECB has recently announced changes to its operational framework[11] which incorporate elements from both the Bank of England's and the Federal Reserve's frameworks, while also featuring a number of unique characteristics. The new operational framework has three main features (ECB, 2024; Schnabel, 2024).

First, liquidity provision to meet banks' aggregate liquidity needs will primarily occur through refinancing operations. These operations will be carried out via the MRO facility and 3-month LTROs. Banks' aggregate liquidity needs with respect to the central bank are equal to the netting of autonomous factors – items within the central bank's balance sheet that are not related to monetary policy operations but inject or absorb liquidity from the banking system – and minimum reserves (see Figure 6). Banks have further sources of demand for liquidity, including those related to regulatory requirements and unexpected contingencies (Altavilla et al., 2023).

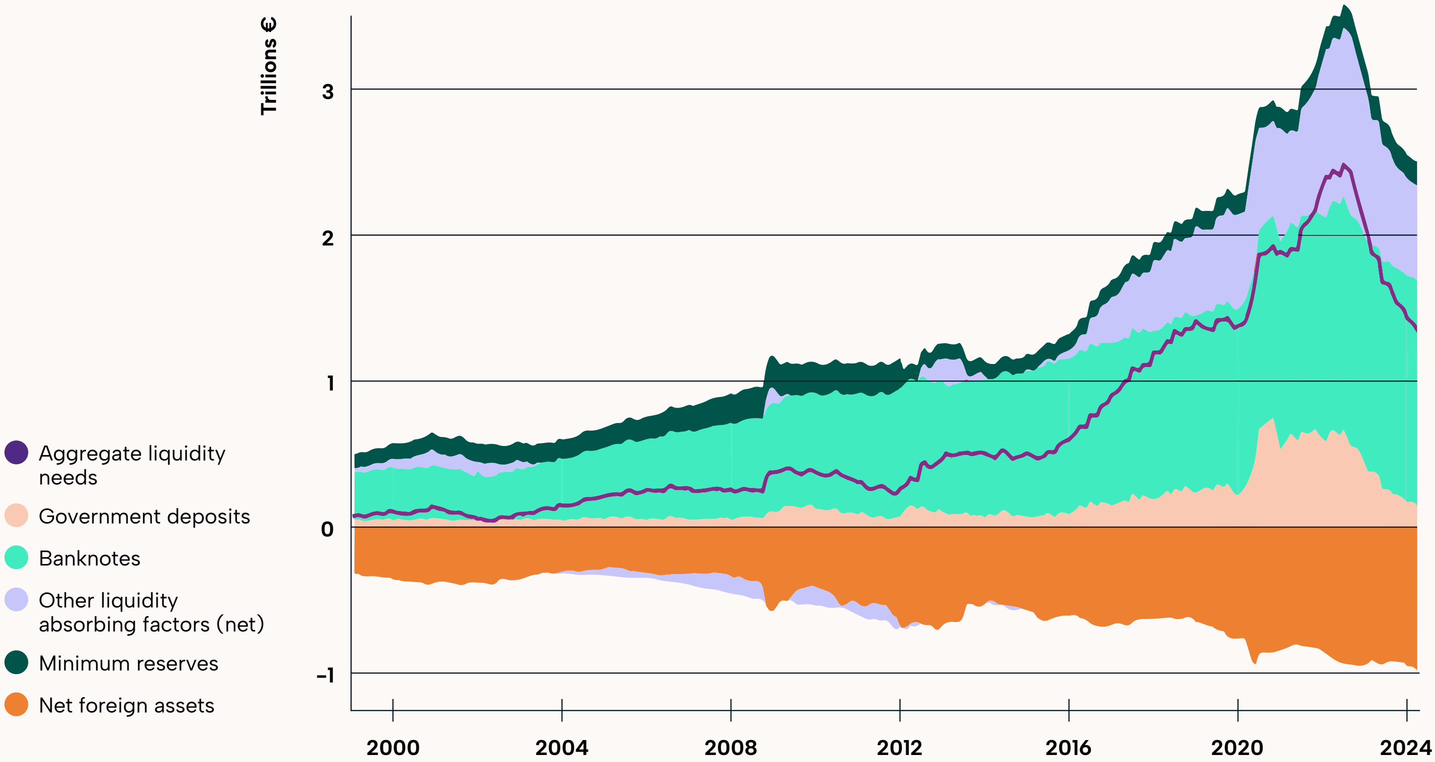
Second, a share of banks' aggregate liquidity needs will be met through a diverse range of instruments, including structural refinancing operations and a structural portfolio of securities. The specifics of this liquidity provision, including design, volume and composition, are yet to be determined. The ECB has announced that it seeks to minimise the impact on its monetary policy stance and to fulfil its secondary mandate by supporting the green transition (Schnabel, 2024), but it remains unclear how exactly this will be achieved.

Finally, the ECB will steer the operational target between the main refinancing operations and the deposit facility rates, tolerating a certain level of volatility. To control this volatility, the spread between both rates will be cut to 15 basis points. As the ECB's balance sheet shrinks, the operational target will shift between these rates. The ECB has named this approach a 'soft floor'.

In this new framework, a share of the provided reserves will be supply driven. However, these will not cover the full liquidity needs by banks. Therefore, banks will need to borrow the remainder of required reserves through refinancing lines. Ultimately, as the 'marginal unit of reserves is provided on demand through the ECB's refinancing operations' (Schnabel, 2024), the ECB argues that the system is of a demand-driven nature.

11. See: https://www.ecb.europa.eu/press/pr/date/2024/html/ecb.pr240313_1~a3a50a9add.en.html

Figure 6: Banks' aggregate liquidity needs[12]



Source: ECB. Own elaboration

Through this design, the ECB aims to stimulate interbank market activity and keep its balance sheet 'as lean as possible' (Schnabel, 2024). This reflects the general importance central banks attribute to price discovery and market discipline in interbank markets playing an important role in the functioning of the financial system (Brandão-Marques & Ratnovski, 2024; Schnabel, 2024b). At the same time, the review leaves many questions unanswered, such as the desired amount of excess liquidity or the specific design of the structural liquidity provision tools (Demertzis & Papadia, 2024).

Having a lean balance sheet is a prerequisite for the ECB's operational framework to function as intended. For the framework to be demand led, banks must maintain a structural liquidity deficit relative to the ECB, requiring them to rely on ECB refinancing facilities to fulfil their demand for reserves. However, this approach presents its own challenges. First, it significantly limits the ECB's policy space for critical interventions, such as supporting the green transition, as these policies would be constrained by the need to maintain a lean balance sheet. Additionally, interventions that necessitate a sudden increase in the balance sheet, such as lender-of-last-resort interventions,[13] could be incompatible with the ECB's operational framework working as intended in the new revision.

In the next section, we will present our proposal for the ECB's operational framework, which is tailored to the specific economic needs and institutional characteristics of the euro area, not least in terms of its largely bank-based financial system, as well as its more complicated architecture for achieving monetary-fiscal coordination. In Section 7, we will discuss the pros and cons of our proposal compared to the new ECB's framework.

12. For further details on the bank's aggregate liquidity needs, see ECB (2002) and Solonar & González da Silva (2024).
13. The ECB acts as a lender of last resort whenever it steps in to provide liquidity to stabilise the financial system.

5. A roadmap for the future operational framework

More than a decade of unconventional monetary policies and the resulting balance sheet expansion have impacted the conduct of monetary policy across various dimensions (Altavilla et al., 2021). The fact that these tools were recognized as integral components of the ECB toolbox[14] during the 2021 strategy review underscores that paradigm shifts in central banking operations have already taken place.

We propose an operational framework with an ample and flexible balance sheet. In this framework, the operational target remains at the floor, while liquidity management will be achieved through a structural bond portfolio and refinancing operations on the asset side, and reserve management through tiered remuneration on the liability side (Figure 7).

Figure 7: Ample and flexible balance sheet – a schematic view

Note: This is a schematic figure focusing on monetary policy operations and largely leaving out autonomous factors within the central bank's balance sheet (e.g. banknotes or foreign securities).

Keeping the operational target at the floor. In an ample balance sheet system, the operational target remains aligned with the deposit facility rate, as is the case under the current abundant reserve system. The distinction between ample and abundant reserve systems lies in the responsiveness of the operational target to changes in reserve levels. In an ample reserve system, the objective is to provide a volume of reserves that is sufficient to align the operational target with the DF rate (Point C, Figure 2), but without overshooting the amount of reserves needed. Under an abundant reserve system, the volume of reserves provided is well above what is needed to keep the operational target at the floor but far from the inflexion point in which it would start to be affected by the level of reserves (Point D, Figure 2).

To reach the ample point, the ECB first needs to continue winding down its balance sheet, as it is currently doing. Once the sources of liquidity for the abundant reserves are depleted, the ECB can primarily provide reserves through the structural liquidity operations.

14. ECB: https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monpol_strategy_overview.en.html.

Providing structural liquidity through outright purchases and refinancing operations. Under our proposed framework, the biggest share of the liquidity provision would be supply determined by the ECB. Part of this structural liquidity provision would be conducted through a structural bond portfolio (Figure 7). This could be divided into green bonds, supranational bonds[15] and sovereign (green) bonds, as also advocated by Schnabel (2023b). The rest would be conducted through longer-term refinancing operations. Moreover, the ECB would maintain its short-term refinancing operations through the MRO to manage short-term fluctuations in banks' liquidity needs.

Reserve management through tiered remuneration on the liability side. Given the excess liquidity in the banking system and persistence of high interest rates, banks are currently profiting unduly from extraordinary transfers from the Eurosystem (Batsaikhan & Musschoot, 2022; De Grauwe & Ji, 2023a). To avoid this, the ECB should be able to adjust reserve remuneration terms through changes in minimum reserves and/or by implementing a tiered reserve system (De Grauwe & Ji, 2023b, 2024; Whelan, 2024).[16] Changes in remuneration schemes are not unprecedented; the ECB has previously decreased minimum reserves in 2011[17] and introduced a tiered reserve system in 2019 (Boucinha et al., 2022), both aimed at supporting bank profitability. Most recently, the ECB set the remuneration of minimum reserves to 0%.[18]

The above proposals demand a certain degree of flexibility, meaning that the ECB should stand ready to modify the conditions, size and composition of its balance sheet. Presently, it is extremely difficult to estimate the banking sector's demand for reserves due to regulatory changes and shifts in banks' behaviour, along with an increased willingness from banks to hold reserves (Åberg et al., 2021; Lane, 2023; Schnabel, 2023a). This means that cutting the spread between the main refinancing operations and the deposit facility rates – as the ECB has done – is desirable so as to avoid changes in the operational target spurred by unforeseen changes in banks' liquidity demand.

There are important differences between our proposal and the new ECB operational framework, as we illustrate below (Table 1). First, we propose an operational framework that operates through an ample balance sheet, while the ECB advocates for keeping a leaner balance sheet. Our proposal would keep the operational target at the floor, while the ECB proposes a soft floor, where the operational target moves between the main refinancing operation and the deposit facility rates. Finally, within the ECB's framework, most of the liquidity is provided through refinancing operations (MRO and LTROs), while we propose that liquidity provision takes place mostly through structural liquidity provision tools, including TLTROs and securities portfolios. In the next section, we outline arguments for our proposal of an ample and flexible balance sheet based on past policy responses and future policy challenges.

15. A larger share of supranational bonds are already green (Schnabel, 2023b).
16. Similar proposals for the UK have been put forward by the New Economics Foundation, for example (see Caddick 2023; 2024).
17. See https://www.ecb.europa.eu/press/pr/date/2011/html/pr111208_1.en.html
18. See https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr230727~7206e9aa48.en.html

Table 1: Main characteristics – ECB's new operational framework versus alternative framework

Characteristics	ECB	Alternative
Operational target position	Soft floor: the operational target can (and will be allowed to) deviate from the DF.	Floor system: the operational target stays at the DF.
Liquidity provision mechanisms	Larger share of reserves is provided through regular refinancing operations (MRO and LTROs). This is complemented by structural operations (structural bond portfolio and longer-term refinancing operations), which play a secondary role.	Larger share of reserves is provided through structural operations (see Figure 7). Regular refinancing operations play a secondary role, fulfilling short-term fluctuations in banks' demand for reserves.
Determination of volume of reserves	The actual size of the balance-sheet is demand driven, since structural operations do not cover all demand for liquidity.	The actual size of the balance sheet is supply driven, as structural operations cover all demand for liquidity.
Balance sheet size	Lean	Ample
Reserve remuneration	No changes.	Flexible reserve remuneration to limit banks' windfall profits.

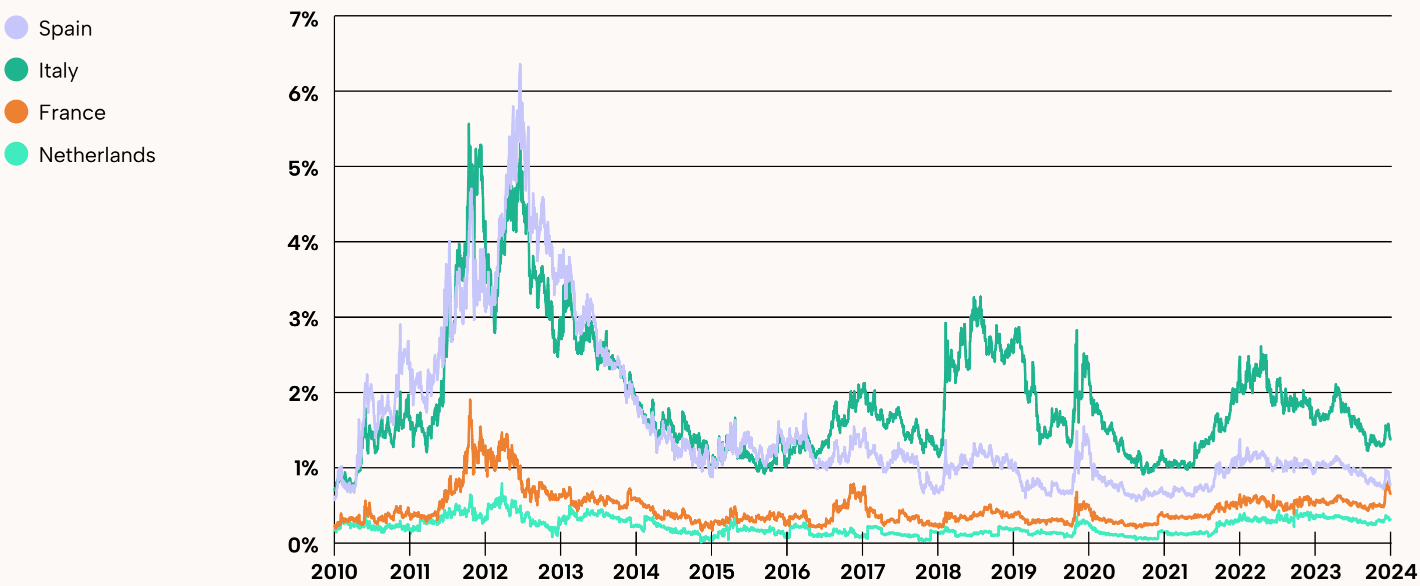
6. Benefits of an ample and flexible balance sheet

In this section, we examine the various benefits of maintaining an ample and flexible balance sheet, which, by allowing for a greater volume of reserves in the system, would provide greater policy space for the ECB. It would enable the implementation of diverse policies beneficial for propelling the green transition, intervening during financial stress and addressing monetary policy issues unique to a monetary union. This is contrary to the ECB's new approach, which necessitates a lean balance sheet to work as intended. This lean balance sheet offers limited policy space for initiatives such as accelerating the green transition. It also means that interventions necessitating a sudden increase in the ECB's balance sheet, such as lender-of-last-resort actions, would be difficult to reconcile with the framework's intended operation (see Section 4).

6.1 Keeping fragmentation in check in sovereign bond markets

Central banks have played a historic and pivotal role in stabilising sovereign debt markets (van't Klooster & Bateman, 2023; Ugolini, 2017). During the Eurozone crisis, the unwillingness of the ECB to fulfil that role resulted in increasing spreads in sovereign bond yields (Figure 8). Borrowing conditions deteriorated for Southern European countries compared to non-euro area countries with similar macroeconomic conditions but where the latter had a supportive central bank (De Grauwe & Ji, 2013). The instability in sovereign bond markets came to an end with Mario Draghi's 'whatever it takes' statement in July 2012, which later became formalised through the ECB's Outright Monetary Transactions (OMT) programme.[19]

Figure 8: Spreads – difference between euro area 10-year government bond yields and the German Bund



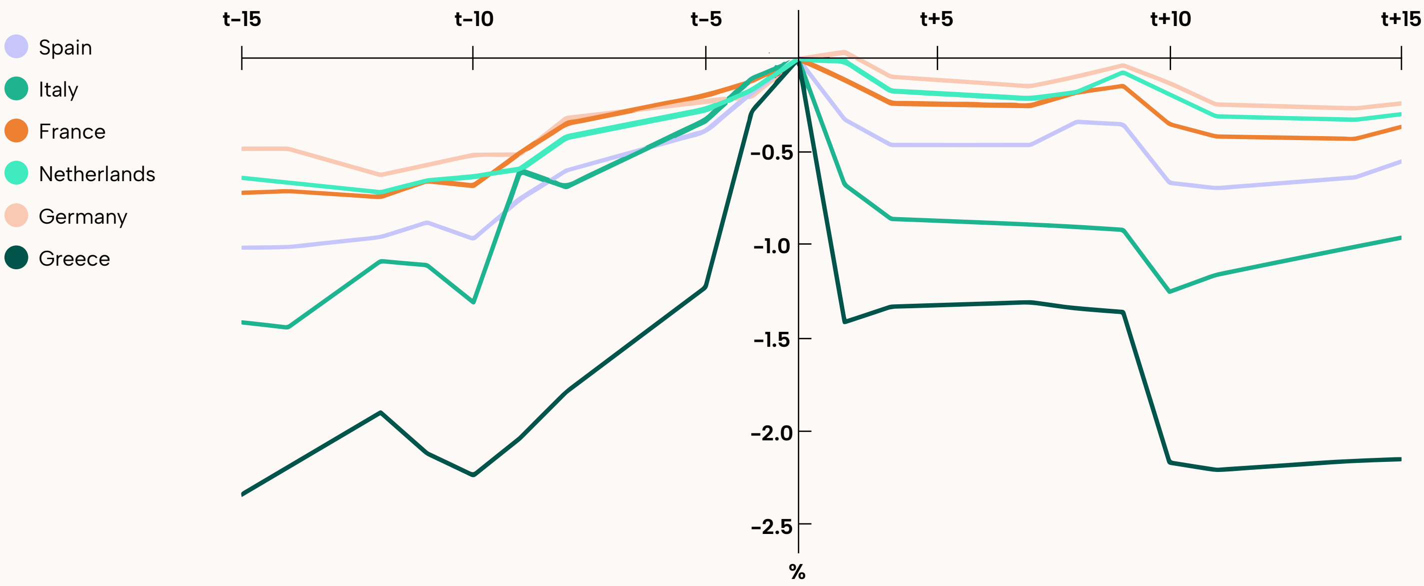
Source: Investing. Note: Missing daily data has been interpolated. Own elaboration.

19. Through OMT, the ECB pledged unlimited purchases of government bonds on the secondary market as long as a number of conditions are fulfilled.

Furthermore, as a response to the Covid-19 pandemic, the ECB took decisive action to stabilise sovereign bond markets by implementing the PEPP. This had a very direct impact on sovereign bond yields, especially those of Southern European countries, who saw their bonds' yields fall more markedly compared to their peers.

Figure 9 illustrates the significant drop in government bond yields immediately following the implementation of the PEPP. This decrease was particularly pronounced in Greece, Italy and Spain. For instance, within 10 days of the intervention, 10-year Greek bonds had fallen by more than 200 basis points. This came alongside an anti-cyclical stance in its collateral framework, reducing haircuts and broadening collateral eligibility, including the 'Greek waiver', namely the decision to suspend the application of minimum credit ratings to Greek government bonds (Bakker et al., 2022). These measures enabled governments to pursue the necessary policies to respond to an overwhelming global health emergency. Furthermore, reinvesting the bond portfolio flexibly – as has been the case with the PEPP – could also serve as a first barrier against fragmentation risks across Eurozone countries.

Figure 9: The impact of PEPP on 10-year government bond yields



Source: Investing. Note: Missing daily data has been interpolated. t=0 refers to the day of implementation of the PEPP. Own elaboration.

As such, an ample and flexible balance sheet would provide stability in sovereign bond markets in the face of unexpected shocks. Meeting the liquidity needs through a structural bond portfolio, partially composed of sovereign bonds, involves purchasing them during normal times. This practice would contribute to reducing spreads (Committee on the Global Financial System, 2023). Moreover, it would allow conducting asset purchases again in the future without further changes to the operational framework.

In July 2022, the ECB put forward the Transmission Protection Instrument (TPI).[20] Under the TPI, the ECB will buy government bonds if a country's financing conditions deteriorate beyond what is justified by economic fundamentals, thereby jeopardising the proper transmission of monetary policy. For the TPI to be credible, the ECB must remain committed to expanding its balance sheet when necessary. Unlike the ECB's new framework, which

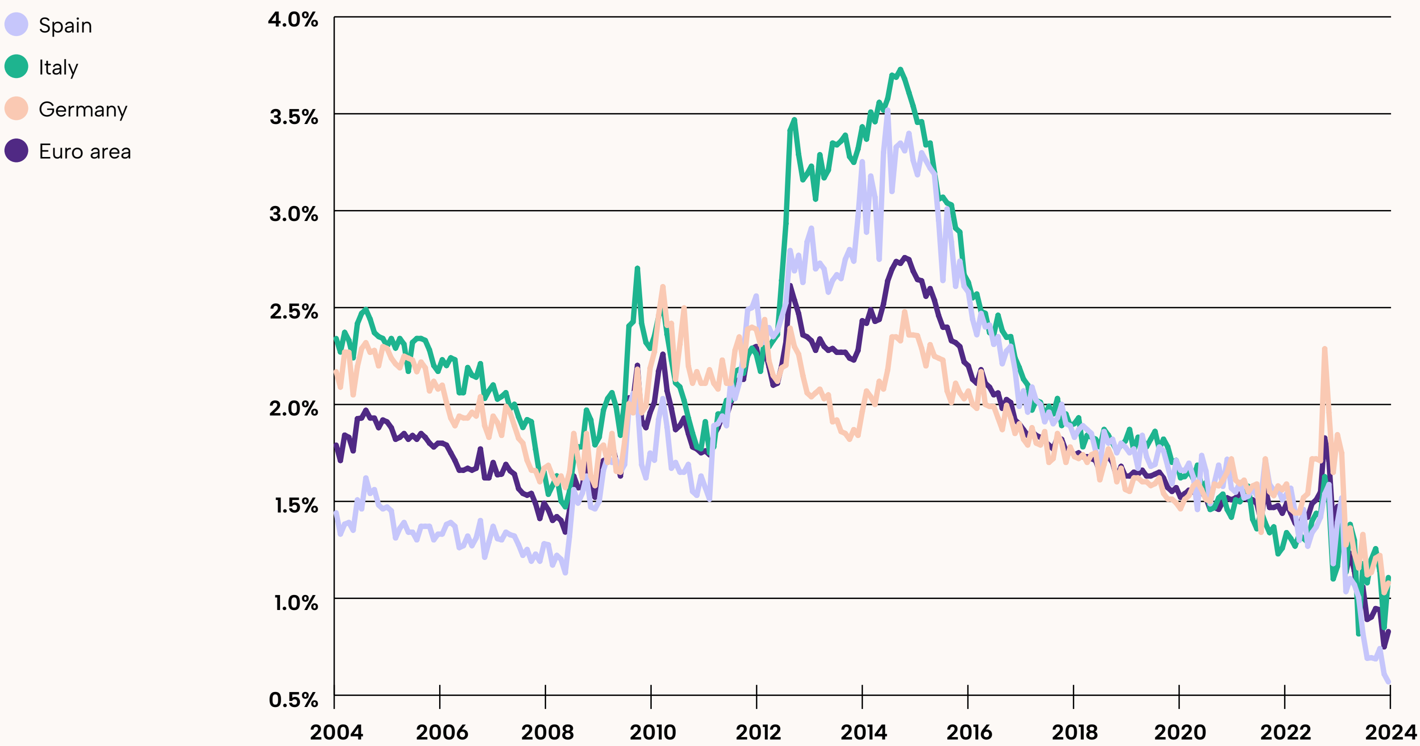
20. See: https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220721~973e6e7273.en.html

is hard to reconcile with interventions that increase the size of the balance sheet substantially, an ample balance sheet framework is resilient to such interventions (Perli, 2024a, 2024b).

6.2 Better transmission of monetary policy

To effectively implement monetary policy, the ECB depends on an effective pass-through from the operational target to financing conditions.This pass-through broke down during the GFC, as firm funding conditions starkly diverged across countries (Figure 10). It did so in some jurisdictions more than others, with Italy experiencing a particularly pronounced increase in the difference between the cost of funding and the operational target. The ECB's unconventional monetary policy interventions in the post-GFC period stabilised the relationship between the operational target and financing conditions across countries, effectively halting fragmentation in the Eurozone. This demonstrates how a flexible balance sheet is crucial for a successful monetary policy pass-through.

Figure 10: Difference between the operational target and firm funding conditions



Source: ECB. Own elaboration.

The proposed floor system with ample reserves can accommodate a flexible balance sheet without necessitating changes in the operational framework. Additionally, with an ample balance sheet, the ECB could still wield influence over the entire yield curve, even if its market footprint were smaller relative to an abundant balance sheet scenario. This influence enables the ECB to affect the pass-through across different jurisdictions and maturities of financial securities.

6.3. Accommodating financial stability interventions

During times of financial distress, when market participants panic, two types of liquidity shortages emerge. First, a shortage of funding liquidity, where lenders are reluctant to keep providing funds. Second, a shortage of market liquidity, making it hard to sell certain financial assets, and if they can be sold, it is often at a loss because there are few buyers available.

These shortages of funding and market liquidity worsen each other and amplify the initial shock, also known as a 'liquidity spiral' (Brunnermeier & Pedersen, 2009; De Vette et al., 2023). The lack of funding liquidity can trigger fire sales, where assets are sold quickly at low prices, worsening balance sheets, increasing the risk of defaults and reducing collateral values. This, in turn, leads to further reluctance from lenders to provide funds.

To break this cycle, central banks need to step in as lenders of last resort, using their capacity to increase their balance sheets flexibly to provide liquidity (Buiter et al., 2023). These types of interventions can also be required in times when interest rates are not at the ELB. For instance, during the UK's Liability-Driven Investment crisis, pension funds sold off gilts en masse, causing panic in financial markets (Alexander et al., 2023). The Bank of England had to intervene in the gilt market, while being in the middle of the monetary policy tightening cycle. During the last financial market panic, sparked by the run on Silicon Valley Bank, President Christine Lagarde stressed that even if the ECB was raising interest rates, it would still need to use other facilities to stabilise the market.[21]

6.4. Supporting the green transition and fulfilling the secondary mandate

By allocating a portion of structural liquidity through TLTROs, the ECB can shield strategic sectors from rate hikes, particularly those involved in the green transition. TLTROs were first implemented in 2014, with the aim of stimulating bank lending to the real economy amidst below-target inflation. Contingent upon commercial banks extending credit to non-financial corporations and households, excluding loans to households for house purchases, these operations provided commercial banks with long-term funding at favourable rates. TLTROs augmented lending volumes by improving the terms on which non-financial corporations and households borrow (BIS, 2023).

TLTROs can be used to offer advantageous conditions to sectors strategic to the green transition (van't Klooster & van Tilburg, 2020; Batsaikhan & Jourdan, 2021). These sectors, being capital intensive, are disproportionately affected by rate hikes (Batsaikhan, 2022; IRENA, 2023). This would also allow the ECB to pre-emptively tackle future inflation risks stemming from climate and fossil fuel shocks (Barmes & Schröder, 2024).

It is a positive development that the ECB has acknowledged the secondary mandate to support the green transition as one of the guiding principles of its new operational framework. However, the volumes of green lending and green bond purchasing would be limited and will only become relevant in a few years' time after the ECB has completed the wind-down of its balance sheet.

21. See the 16 March 2023 press conference. Response to question beginning at 41:50: https://www.youtube.com/watch?v=eqwfatWtILg. It is worth noting, nevertheless, that such interventions should ideally be limited ex ante by means of effective macroprudential policies, as they can create moral hazard, a condition of excessive risk taking by the financial system due to their expectation of being bailed-out.

By contrast, our proposed approach would grant the ECB more leeway to prioritise sectors related to the green transition, utilising both TLTROs and a structural green bond portfolio to reduce the risk premia of long-term sustainable investments (Välimäki, 2023). This would improve the ECB's compliance with the Paris Agreement, which it is formally bound to as an EU institution (Verheyen, 2021), as well as the achievement of its primary mandate, given the risks that climate change poses to both price and financial stability (Emambakhsh et al., 2023). Additionally, it would expand the ECB's policy space to address its historically neglected secondary mandate.[22]

6.5. Change in the nature of shocks

We are living in a world of overlapping emergencies (Weber et al., 2024), with shocks ranging from accelerating climate change to geopolitical tensions resulting from wars, supply chain disruptions and global pandemics. These structural events increasingly manifest themselves as negative supply shocks that reduce output and increase prices. According to Boissay et al. (2023), rate hikes by central banks in response to supply-driven inflation are more prone to inducing financial stress than those in response to demand-driven inflation.

A structural bond portfolio with flexible reinvestments as well as targeted credit operations would allow the ECB to maintain more control over financing conditions, enabling it to influence the term premium by absorbing both credit and duration risks on its balance sheet. This would create more room for manoeuvre, both when interest rates are at the ELB and when they are high. A flexible balance sheet would enable the effective transmission of monetary policy by directly impacting financing conditions whenever these are not responsive to changes in the operational target.

22. This would also involve improved coordination with EU institutions, as discussed in van't Klooster & de Boer (2023).

7. Comparing approaches – principles and implications

The design differences in both frameworks respond to different priorities. This section discusses the implications of each framework in light of the guiding principles that the ECB has set for itself: effectiveness, robustness, flexibility, efficiency, open market economy and secondary objective.[23]

Principle of robustness. Robustness refers to the suitability of the framework to different monetary policy configurations and financial and liquidity conditions. As we have argued, our proposed approach is robust with regard to these different contexts. For instance, if monetary policy reaches the ELB, the ECB would be able to increase the amount of liquidity it provides through its structural liquidity provision tools (see Figure 7). The workings of the framework would not be altered by this ramp-up in liquidity provision. This is not the case with the ECB's currently proposed framework. In a context where liquidity provision has to be ramped up – be it due to financial instability, reaching the ELB or tensions in sovereign bond markets calling for the deployment of the TPI – none of the ECB's three main characteristics of the new operational framework would hold (see Section 3). First, if the ECB had to ramp up liquidity provision to a point in which it covers liquidity demand by banks (Figure 6), the system would stop working in a demand-driven manner. Second, in such a scenario, conventional refinancing lines would not be the main source of liquidity, being substituted by asset purchase programmes and/or targeted longer-term refinancing operations. Finally, the operational target would switch from a soft floor to a conventional floor. Thus, contrary to our proposed framework, the main characteristics of the ECB's framework do not seem to appear robust enough to respond to changes in monetary policy or liquidity and financial conditions.

Principle of the secondary mandate. Supporting the green transition as part of the ECB's secondary mandate is another guiding principle of the new operational framework, which we believe is a much-welcome development. However, our proposal would bring considerably more policy space to deliver on that front, compared to the ECB's proposed lean balance sheet. We argue for an ample balance sheet with a strong role for structural liquidity provision, which would be partly undertaken through green TLTROs, green bond purchases and supranational purchases.

Principle of an open market economy. The ECB places great emphasis on the importance of a functioning interbank market (Schabel, 2024a, 2024b). The ECB's choice to maintain a lean balance sheet needs to be understood as a way to 'revive' interbank markets. As such, it is important to critically assess this particular priority of the new operational framework.

In principle, the interbank market is meant to foster market discipline, since interbank lending prompts banks to monitor each other. This takes place through price discovery,[24] with interbank rates containing signals on the borrower's financial health (Brandão-Marques & Ratnovski, 2024; Schnabel, 2024b). There are several reasons for which the interbank market may not fulfil these goals, however. First, large segments of the interbank market have moved from unsecured lending with borrower-sensitive rates to secured repurchase agreement (repo)

23. See: https://www.ecb.europa.eu/press/pr/date/2024/html/ecb.pr240313~807e240020.en.html
24. The ECB argues that operating under the principle of an open market economy favours an effective discovery mechanism in money markets. See: https://www.ecb.europa.eu/press/pr/date/2024/html/ecb.pr240313~807e240020.en.html

lending (ECB, 2023; Brandão-Marques & Ratnovski, 2024).[25] The latter consists of short-term borrowing in which the borrower sells a security for cash in order to repurchase it later in time. In this type of lending, rates depend particularly on the type of collateral used, and not on the borrower's characteristics. Hence, in secured markets, bank supervision of other banks is substituted by reliance on collateral.[26]

Second, market discipline within money markets is often anti-cyclical and typically occurs *ex-post*, exhibiting complacency in good times and leading to rapid withdrawals of funding during times of stress. As observed during the GFC, market discipline did not succeed in preventing the build-up of financial risk. To the contrary, market discipline emerged *ex-post*, once financial risk had already been built up (Min, 2015). When panic spread across the financial system, actors in the interbank market ceased lending to one another, enforcing a liquidity spiral and obliging the central bank to step in. As such, interbank market discipline tends to arrive late, and when it arrives, it has undesired effects. One lesson of the GFC is that banks' creditworthiness is better transmitted through bond markets (Brandão-Marques & Ratnovski, 2024; Reichlin et al., 2023). However, market discipline cannot substitute for proper supervision and financial regulation (Min, 2015). Against this backdrop, the alleged benefits of trying to revive the interbank market through a lean balance sheet would seem vastly inferior to the benefits of an ample balance sheet that we have sought to highlight throughout this report.

Principle of efficiency. Efficiency means 'respecting proportionality and taking into account net side effects' (Schnabel, 2024a). The current risk-free transfer to banks to the tune of €120 billion per year as a result of interest rate hikes is a significant side effect that remains unaddressed in the ECB's new framework (De Grauwe & Ji, 2024). As the ECB intends to maintain a lean balance sheet, it does not seem to concern itself with future distributive issues that may arise from a flexible balance sheet. By contrast, our approach proposes to tackle distributive issues more effectively through reserve tiering.

Overall, we advocate for an operational framework fit for the 'new normal', that is, an ample, flexible balance sheet consisting of a careful 'mix' of instruments. This is necessary not only for technical reasons, such as heightened interest rate sensitivity due to regulatory changes (Åberg et al., 2021), but also for addressing the challenges of central banking in the 21st century: climate-related financial and price stability risks, geopolitical and supply chain risks, and the risk of foreseeable and unforeseeable shocks to the financial system (Minsky, 2008). For the ECB, this involves facilitating and accelerating the green transition, addressing the broader objectives within the secondary mandate, accommodating Eurozone idiosyncrasies, preparing for potential physical and transition shocks in the future, and responding to systemic financial disruptions as they emerge.

25. In 2023, the secured segment of the European money market represented 56% of total transactions, while the unsecured segment accounted for 12% (ECB, 2023).
26. On top of that, 70% of the secured transactions in European money markets were conducted through central clearing counterparties (ECB, 2023), which are anonymous.

8. Conclusion

The ECB's revision of its operational framework has taken place at a critical juncture for the euro area, in light of a changing economic landscape and amid unexpected and persistent shocks. This report has outlined the evolution of the ECB's operational framework from the pre-GFC era to the present day.

As the ECB moves forward, it is essential that the lessons learnt in the past years and the unique characteristics of the euro area's financial system and institutional architecture are incorporated into future revisions.

This paper advocates for an operational framework centred around an ample and flexible balance sheet. In particular, this entails maintaining the operational target at the floor, while liquidity management is achieved through a combination of structural bond portfolios, refinancing operations and tiered remuneration. Such an approach not only addresses technical challenges, but also allows for effective responses to broader societal challenges, ranging from facilitating the green transition to addressing systemic financial risks.

By embracing an operational framework fit for the 'new normal' and rooted in the specific needs of the Eurozone, the ECB can pave the way for a resilient and sustainable monetary policy that serves the interests of the European economy and its people.

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Positive Money EU
Rue Ducale 67
1000 Brussels
Belgium

www.positivemoney.org

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