Back to the old normal? Monetary policy implementation in a landscape of rising interest rates and a shrinking Eurosystem balance sheet

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The past two years have seen a strong surge in inflation. In response, the European Central Bank (ECB) has tightened its monetary policy considerably: the key ECB interest rates have been raised by altogether 4.25%, and securities holdings and the volume of credit granted to banks have been allowed to shrink significantly. With monetary policy normalisation proceeding, the ECB has begun a review of how it will implement monetary policy in the future. Will the deposit facility rate continue to be the key tool to control the level of financing costs? And how far should the Eurosystem balance sheet be allowed to shrink? Maintaining a larger Eurosystem balance sheet than before would enable the consideration of climate factors in the years ahead.

‘Old normal’ in monetary policy

Monetary policy aimed at ensuring price stability is ultimately all about the central bank pursuing a particular policy stance that it believes will bring inflation to its target in the medium term, and this means setting key interest rates, or policy rates, at the required level. The monetary policy framework, in turn, is made up of actions and procedures with which the central bank seeks to bring short-term money market interest rates in line with its policy rates.

A prerequisite for the efficient transmission of monetary policy is that the central bank is able to steer market interest rates to a level that meets its policy objective and that the risk premia in market rates are sufficiently stable. In this regard, euro area monetary policy and its implementation were very effective up to the 2008 global financial crisis.[1]

By keeping banks’ central bank reserves scarce, it was possible to steer short-term money market interest rates[2] efficiently towards the level of the main refinancing operations rate[3] and to minimise the size of the Eurosystem balance sheet[4]. Through limiting the balance sheet size, the aim was to minimise the central bank’s market footprint and its market risks.

How did the deposit rate become the ECB’s most important policy rate?

The ECB’s monetary policy framework changed considerably after the global financial crisis as it sought to respond to the later financial market crises and the era of persistently low inflation and slow growth.

Central banks cannot cut their nominal interest rates very far into negative territory, because the negative side effects of such a policy could increase significantly. The effectiveness of this interest rate floor in times of crisis is revealed by analyses based on the Taylor rule and shadow interest rates, among other things. In 2014, the ECB began making extensive asset purchases, which were used to affect longer term interest rates directly and indirectly via expectations and to improve the capacity of financial markets for ensuring that the easing of financing conditions is transmitted to the real economy.

The Eurosystem purchased a substantial amount of securities from the markets. The

1. See e.g. Papadia and Välimäki (2018).
2. The euro area’s main overnight market rate was previously the EONIA (euro overnight index average) rate. In October 2019, the €STR (euro short-term rate) replaced the EONIA rate.
3. Before the global financial crisis, interest rate control in the Eurosystem was based on an *interest rate corridor*. The upper and lower limits of the interest rate corridor were formed by the ECB’s marginal lending facility rate and its overnight deposit facility rate paid on banks’ reserves. The ECB then lent banks, at the main refinancing operations rate set at the middle of the corridor, an amount of reserves at which the banks had an equal probability of having to deposit money with the central bank at the day’s end as having to borrow reserves in the marginal lending facility to meet their minimum reserve requirement on average across the reserve maintenance period.
4. In practice, the balance sheet was not expanded beyond what was required by the central bank’s natural liabilities (e.g. banknotes and net assets).

asset purchases were funded through an increase in the volume of central bank deposits made by banks (reserves). When there is an abundance of central bank money in the system, banks will no longer need to borrow money from the Eurosystem but will instead deposit excess reserves with national central banks. This was the case at the Bank of Finland as well, where the balance sheet expanded substantially.

As a consequence of the growth in the amount of reserves, the deposit facility rate paid to banks became the ECB's principal money market policy rate, in place of the main refinancing operations rate charged to banks. Judging by data on, for example, interest rate volatility, the transmission of the central bank's policy rate to money market rates was not weakened by this change, which had been brought on by force of circumstances. In recent years, the overnight euro short-term money market rate (€STR) has closely followed the ECB's deposit facility rate.

Return to interest rate control

The economy and the price outlook have experienced a fundamental change over the past two years. First, the COVID-19 pandemic disrupted demand and supply factors in the economy, and later Russia's illegal war in Ukraine quickly produced a further powerful surge in inflation.

During 2022, euro area inflation climbed to just over 10%, and despite a significant slowing, it is still distinctly above the 2% target.

In this transformed environment, the Eurosystem began to tighten its monetary policy.[5] Monetary policy net purchases of securities have been ended completely, reinvestments of maturing assets have been largely discontinued[6], and the volume of low interest loans granted to banks during the pandemic is declining rapidly[7]. Raising key ECB interest rates has therefore returned to the focus of monetary policy.

Many of the operating mechanisms in the economy and in the financial markets have changed fundamentally in the past 15 years. It is not clear whether, in the future, the pre-financial crisis approach to controlling interest rates would be effective or even possible. Factors contributing to the changed environment include a decline in the equilibrium real interest rate, significant growth in indebtedness in all sectors of the economy, the euro area's vulnerability to interest rate differentiation between member countries and between banks, and stricter regulation concerning financial markets and especially banks. Central bank balance sheets have also expanded and their composition has altered in comparison with the situation 15 years ago.

Due to the changes in the operating environment, the ability and willingness of banks to

5. For more detail, see article by Ilmanen, Järvinen and Paavola: Eurojärjestelmän tase pienenee rahapolitiikan kiristyessä ('Eurosystem balance sheet shrinking as monetary policy tightens').
6. Reinvestments under the Eurosystem's monetary policy purchase programmes were discontinued in July 2023, with the exception of the pandemic emergency purchase programme (PEPP). The ECB's Governing Council intends to continue PEPP reinvestments until December 2024.
7. The volume of outstanding targeted longer-term refinancing operation (TLTRO) loans has fallen in less than a year to approximately EUR 600 billion from just over EUR 2 trillion.

distribute liquidity between them on unsecured money markets has diminished considerably and may no longer return to the level on which interest rate control was based before the global financial crisis. Due to the uncertainty surrounding liquidity, among other things, banks ought to find it advantageous to keep more liquid assets (reserves) on their balance sheet than before.

In today's circumstances, it is no longer possible for the central bank to assess accurately the demand for reserves within the entire banking system by anticipating developments in its own balance sheet. The effectiveness of the previous operating model, which was based on regulating the amount of central bank reserves, relied heavily on efficiently functioning financial markets and the predictability of the demand for reserves. There is good reason for the Eurosystem to examine how the operating model for controlling interest rates should be 'normalised' in a situation where the balance sheet is being reduced and interest rate control is again at the focus of the monetary policy stance.[8], [9]

Monetary policy implementation in the future

In the future, too, monetary policy implementation will take place amid great uncertainty. The policy implementation arrangements will therefore need to be, above all else, flexible. The Eurosystem will have to be able to tighten and loosen financing conditions under all kinds of circumstances, and in a manner consistent with the price stability objective.

Control of money market interest rates and the transmission of these rates to the real economy remain the most important goals for monetary policy implementation. In practice, however, a central bank must balance the tightness of its interest rate control against its market footprint (balance sheet size).

When contrasting the expansion of central bank balance sheets following recent crises with their ongoing contraction, the question arises as to whether a return to pre-crisis balance sheet levels is a prerequisite for monetary policy normalisation and effective interest rate policy. Furthermore, is such a goal even desirable given the size of central banks' balance sheets currently and the effectiveness of interest rate policy.

The Eurosystem can control the formation of short-term interest rates both through its central bank lending operations and its deposit facility. The experience of recent years still supports the notion that a central bank should maintain a slim balance sheet to avoid creating an unintended market footprint.

It is also clear that price stability and financial stability occasionally require that the central bank step up its role by conducting market operations and refinancing operations that increase the Eurosystem's assets and banks' reserves considerably. Here it is important to understand the interaction between a central bank's control of interest rates and the management of its balance sheet.

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8. See Bulletin article by Herrala and Tötterman: How will the European Central Bank control interest rates in the future?

9. In December 2022 the ECB's Governing Council announced that it would be reviewing the arrangements with which it controls the path taken by short-term interest rates.

If the future monetary policy stance does not require new measures that substantially affect the central bank's balance sheet, then the current floor system of interest rate control based on the deposit facility rate may well remain effective for the next few years. In other words, money market interest rates would be determined by the central bank's deposit facility rate without any undue volatility.

The situation will change over time as the Eurosystem's previously acquired securities begin to mature and the volume of banks' excess reserves begins to shrink towards levels determined by their demand for buffers. It will then become more likely that banks will again begin participating increasingly in the central bank's main refinancing operations.

In this situation, the respective weights of the ECB's main refinancing operations rate (lending rate) and its deposit facility rate in determining money market rates may fluctuate even over a short period, potentially resulting in a significant increase in daily market rate volatility. This, in turn, could complicate the communication and assessment of the monetary policy stance considerably.

The Eurosystem has several options for preventing such an outcome. It could take steps to weaken the response of market rates to changes in the volume of banks' reserves, for example by narrowing the gap between its lending rate and deposit facility rate (*interest rate corridor*) or by ensuring that the quantity of excess reserves in the banking system will, in practice, always continue to exceed banks' demand for reserves (*structural operations*).[10]

Towards a narrow interest rate corridor?

As a result of the higher uncertainty surrounding banks' demand for reserves, the ECB may find it rather difficult to estimate the quantity of reserves needed for balancing the money market. If the central bank wished to, it could directly offset the resulting rise in market rate volatility by narrowing its interest rate corridor. Sveriges Riksbank has followed this approach.[11] In Sweden, the width of the interest rate corridor is 0.2 percentage points, which corresponds to just one tenth of the euro area's normal interest rate corridor width before the global financial crisis.

In the current environment, where there is an abundance of excess reserves in the banking system, virtually all banks deposit excess reserves with the central bank, and so the width of the interest rate corridor makes little difference. In these circumstances, the deposit facility rate will control the money market irrespective of the corridor's width.

As the volume of excess reserves in the banking system eventually shrinks towards levels

10. Aside from these measures, the averaging provision for minimum reserves was an important tool for curbing volatility in the shortest rates in the early years of the Eurosystem. The mechanism did well in an environment where the money market operated efficiently, banks did not have significant demand for reserve buffers, and reserve holdings were remunerated at the main refinancing operations rate, which corresponded to the market rate. All of these factors have since changed, so the Eurosystem must evaluate the effectiveness of its minimum reserve system in the current environment as part of the review of its operational framework for controlling interest rates.

11. For more details, see the Bulletin article by Herrala and Tötterman.

consistent with banks' neutral demand, banks in need of additional reserves will tend to borrow them from the central bank, and those with excess reserves will tend to deposit them with the central bank. With a narrow interest rate corridor, both will take place at virtually the same interest rate.

Although the benefit of a narrow interest rate corridor is reduced market rate volatility, the downside is that there is reduced scope for interbank money market activity and at least some of this activity 'shifts' onto the central bank's balance sheet. The ECB will have to weigh the pros and cons of these effects as it considers its future operational framework.

Structural refinancing operations for stronger interest rate control and improved financial stability

Structural operations can prevent a rise in market rate volatility and potentially diminishing control over interest rates caused by maturing monetary policy assets. They would ensure that the banking system has sufficient reserves to essentially anchor the shortest money market rates at the level of the central bank's deposit rate, as is currently the case. These operations might take the form of longer-term refinancing operations or securities purchases on the markets.

In the Eurosystem, credit is only provided to banks against collateral. The Eurosystem accepts a considerably broader range of securities as collateral than the euro area repo market and even accepts bank loans. In order to avoid undue risk, the Eurosystem applies valuation haircuts to these assets based on their creditworthiness and liquidity characteristics.

Because the financial markets in the euro area are fragmented and because the regulation of banks has been tightened, it can be assumed that a larger proportion of banks will seek funding from the central bank in the future and will also hold liquidity buffers in the form of reserves.

The Eurosystem could take advantage of the higher demand for reserves and strengthen the deposit facility rate's position as the main policy rate by providing longer term refinancing to banks under its current broad collateral framework.

The provision of longer term refinancing against illiquid collateral would raise the level of demand in the central bank's refinancing operations, which, in turn, would guarantee an abundance of reserves in the banking system. Consequently, the deposit facility rate would function as the main policy rate, setting the floor for money market interest rates.

If the structural refinancing operations were conducted as variable rate procedures and within the maximum level set by the ECB, then the more extensive pool of collateral (compared with the money market) and the longer maturities (compared with the one week for main refinancing operations) would be taken into account directly in the price of the funding received by banks. This would help offset the risk carried by the central banks and would prevent the operations from having an undesirable impact on market risk premia.

Structural refinancing operations could also be combined with a narrow interest rate corridor if so desired. The central bank would be able to exert maximal control over market rates if it were willing to both receive deposits and provide short-term refinancing at its main policy rate.[12] In order that tight control of interest rates does not lead to financial intermediation shifting excessively onto the central bank's balance sheet and to supporting banks' liquidity requirements, this approach would require a significant reduction in the ECB's current pool of collateral for its weekly main refinancing operations. In effect, eligibility would be limited to assets that are accepted as collateral against repos on the money market and which are classified as high quality liquid assets in the liquidity regulatory framework.[13] Once calibrated correctly, the use of structural refinancing operations and the separation of collateral criteria by operation type would prove effective in tightening the control of market rates and strengthening the financial stability of the euro area banking system.

Structural securities portfolio could strengthen control of interest rates

If the ECB's ability to control interest rates and transmit its monetary policy stance to the economy were to be impaired due the reduction in its monetary policy asset portfolios, then the simplest response from the Eurosystem would be to set up a structural securities portfolio instead of engaging in monetary policy asset purchases. A structural securities portfolio would, in practice, allow the current monetary policy implementation framework to continue even as previously acquired assets reach maturity. This is the model which the US Federal Reserve is currently striving to use for implementing its interest rate policy.

Calibrating the size of the structural securities portfolio would not be a simple exercise due to the uncertainty associated with the banking sector's demand for buffers of reserves. If the portfolio were too small, it would not prevent an increase in market rate volatility, but if it were unnecessarily large, it would strengthen the Eurosystem's impact on the market beyond the needs of monetary policy. In addition, setting up a structural securities portfolio in the euro area would not be as straightforward as in the United States, where the structural portfolio consists of low-risk federal bonds with fairly short maturities.

The quantitative easing conducted by central banks in the form of large-scale asset purchases has been criticised more recently due to losses generated. Following the easing of monetary policy during the prolonged period of below-target inflation, long-term interest rates were at their lowest level and, correspondingly, long-term bond prices at their highest. In these circumstances, central bank operations sought to transfer interest rate risk from the markets to the central bank balance sheet. This would not be the case with structural portfolios, since purchases would generally be conducted in all the interest rate environments. Interest rate risk would also be easier to manage by, for

12. Last year the Bank of England adopted an approach where it offers reserves to banks at the same interest rate with which it remunerates deposits.
13. In the Liquidity Coverage Ratio (LCR) framework, high quality liquid assets (HQLA) comprise excess reserves deposited with the central bank, sovereign bonds, and certain other securities with restrictions applied, including covered bonds, corporate bonds and asset backed securities.

example, acquiring bonds with shorter maturities.

In addition to market risk, attention should also be paid to credit risk in structural portfolios. The Eurosystem's asset purchases have traditionally focused on a considerable range of issuers. This is in line with the principle applied in the Eurosystem's collateral framework, namely that the Eurosystem may not favour public sector over private sector issuers.

A portfolio that consists of public and private issuers should be able to meet a variety of partially conflicting requirements. A structural portfolio should be market neutral in a way that asset purchases do not impair the efficient functioning of the bond market, distort price formation, adversely affect incentives for responsible management of finances or weaken market liquidity. The ECB's new monetary policy strategy, adopted in 2021, also highlighted the key importance of tackling climate change. By setting up a structural securities portfolio, the ECB could take concrete measures to reduce climate risks in the Eurosystem's balance sheet by minimising the carbon footprint of monetary policy implementation. At the same time, development of green finance in the euro area could be promoted. With these factors in mind, the rest of the article below focuses on the consideration of climate risks in a central bank's securities holdings.

Climate risks can be taken into account in times of balance sheet reductions, too

The Eurosystem's primary objective is to maintain price stability. Climate risks and the green transition are interlinked with the general trend in the euro area economy and prices, and therefore with the operating environment for monetary policy. Consequently, climate change also impacts the risks in the Eurosystem's balance sheet and the value of its assets, especially in the long term.[14]

Although the majority of the Eurosystem's monetary policy purchases have focused on euro area public sector debt securities[15], the size of the corporate bond portfolio acquired under monetary policy purchase programmes is substantial, at approximately EUR 390 billion. In climate risks related to the Eurosystem's monetary policy purchases, the current focus is on these corporate bond purchases.[16]

Most of the corporate bond holdings are maturing, but securities maturing from the pandemic emergency purchase programme (PEPP) are being reinvested for the time being. This will lead to a rapid reduction in the portfolio's absolute carbon emissions by the end of the decade. However, as total carbon emissions do not adequately capture

14. For more details, see the article Rahapolitiikan yrityslainaostojen hiilijalanjälki pienenee ('Carbon footprint of corporate bond purchases under monetary policy growing smaller') by Virtanen in this issue of the Bank of Finland Bulletin's Finnish equivalent, Euro & talous.
15. Euro area government bonds and bonds issued by recognised agencies and supranational organisations account for approximately 85% of the Eurosystem's total bond holdings.
16. Public sector bond purchases are allocated according to monetary policy considerations. The purchases are largely guided by the capital key of each country, reflecting country-specific population and gross domestic product (GDP) figures. In the future, it is possible that climate risks will be addressed more directly in purchases of public sector bonds, too (Virtanen, 2023).

climate impacts, the ECB has begun to measure the carbon intensity of these holdings.

Until October 2022, besides being based on the issuer's credit rating, the allocation of the Eurosystem's corporate bond purchases under monetary policy purchase programmes was principally based on the amount of eligible bonds a company had in the market. At that time, a company-specific climate score was included as a factor determining corporate bond purchase limits, the overall climate score depending on the company's current emissions, the level of ambition of its emission targets and the quality of its emission disclosures. This change has proved to be a very successful, effective and quick method to reduce the carbon intensity of monetary policy portfolios, and therefore to reduce the environmental burden of monetary policy purchases.

The sizeable reduction and eventual discontinuation of new monetary policy purchases will slow the decrease in the portfolio's carbon intensity. At the same time, the Eurosystem's ability to manage climate risks associated with the portfolio will weaken. Although progress in reducing climate risks in the Eurosystem corporate bond portfolio seems good at present, in some scenarios the carbon content of the holdings will, over time, be inconsistent with the emission goals of the Paris Agreement. How can the Eurosystem prevent this and keep the portfolio aligned with the Paris Agreement?

As new bond purchases are no longer being made – except for the PEPP reinvestments – the level of the portfolio's climate risks largely depends on the actions of businesses themselves to improve their carbon footprint. Although there has recently been a favourable trend in this respect, the matter cannot be left in the hands of external actors alone.

The Eurosystem could actively tilt its holdings in the maturing portfolio towards issuers with a better climate performance. In this alternative, the profile of the existing portfolio would be adjusted by selling bonds of 'brown' businesses and purchasing green corporate bonds on the basis of, for example, company-specific climate scores. There are, however, some open questions regarding this approach. There would likely be a rise in the financing costs of the issuers whose bonds are being sold, on account of the increase in sales. It would therefore be important for the central bank to assess whether the scale of impacts would conform with the principle of proportionality, whether the corporate bond market could absorb the incoming bonds without problems, and whether the measure would serve the green transition without jeopardising the objectives of monetary policy.

There is also the question whether the potential rise in brown companies' financing costs would be beneficial or detrimental to the green transition itself. Businesses which do not currently meet the sustainability criteria but have the potential to do so by making changes in their business practices would be a key part of the green transition and the related need for financing. Nevertheless, portfolio rotation would be a viable option if carefully planned, and could ensure that the portfolio remains aligned with the goals of the Paris Agreement.

The climate impacts of the Eurosystem's current corporate bond portfolio are of a fixed duration, whereas climate change is a long-term issue.[17] So how can the ECB, within its

17. See Mark Carney: Breaking the tragedy of the horizon - climate change and financial stability (bis.org).

mandate, mitigate climate change in the longer term, too?

Price stability is practically essential for the success of the green transition. Therefore, unquestionably the most important and the most effective channel through which the ECB can support the green transition and combat climate change is its primary objective – maintenance of price stability. Where there is price stability, the level of inflation and inflation expectations will be moderate, and fluctuations will not be excessive. This will avoid disruptions to the consumption and investment decisions of consumers, businesses and the public sector.

A structural, or permanent, securities portfolio promoting a green transition will have many appealing features that nevertheless require further research. As stated earlier, a structural portfolio could allow the ECB to prevent a future increase in interest rate volatility stemming from a decrease in excess reserves. At the same time, by adjusting the portfolio's composition, the ECB could manage the allocation of central banks' assets across asset classes and climate parameters. With a separate structural portfolio, the ECB would also have the option to take a more active role in supporting the green transition and in mitigating climate change.

The composition of the structural portfolio could be tailored in a very flexible way in respect of its risk parameters: portfolio size, construction of the portfolio and the related timetable, acceptable asset classes and instruments, maturity limits and other risk limits – all these factors could be determined according to targets and risk preferences. In the case of corporate bonds, for example, it would be natural to use the company-specific climate score in the allocation of purchases, as this has already proven its value. By focusing the portfolio's purchases on businesses with a high climate score, the costs of finance for these firms could be reduced. This would provide them with a positive incentive (carrot rather than stick) for reducing their carbon footprint, setting climate targets and publicly disclosing their climate risks.

Conclusion

The surge in inflation has brought interest rate control back to the focus of monetary policy. As the Eurosystem no longer grants financing to banks under low interest terms or purchases securities in support of monetary policy, the size of its balance sheet will shrink substantially. For this reason, the ECB will need to reassess the future policy arrangements for implementing its monetary policy stance in the markets.

Monetary policy normalisation does not necessarily mean a return to the old monetary policy implementation framework. Despite the changes in the operating environment, the need to ensure the ECB's ability to control interest rates will remain the key element in the implementation framework. This can be achieved with a variety of arrangements. One method of containing excessive volatility in short-term interest rates and simultaneously limiting bank exposures to liquidity risk could be a combination of significantly narrowing the central bank's interest rate corridor between the lending rate and the deposit facility rate, and differentiating collateral eligible for central bank refinancing operations by collateral type.

As the monetary policy asset portfolios are diminishing, this will pose a challenge for

keeping them consistent with the goals of the Paris Agreement in the future. The Eurosystem could address the foreseeable increase in the carbon intensity of its holdings by setting up a structural securities portfolio. The size of this could be determined on the basis of banks' structural liquidity needs, and its composition could take climate considerations into account.

Tags

ECB, monetary policy framework, ESTER, monetary policy