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Central banking beyond 2021: Analyzing unconventional policies and preparing for future challenges

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Motivation

- **Let's assume we have tamed inflation in the Euro Area, US, and similar places in a few months/years down the road**
  - Can we go back to conventional monetary policy (CMP) before 2008, when short-term policy interest rates (and reserve requirements) dominated the MP tool box?
  - Or do we have to apply again recent unconventional monetary policy (UMP) – with learnings from recent past and perhaps new unconventional instruments to address too low inflation?
  - The answer will depend on the prospects for the natural rate of interest (r*) that has fallen in recent decades toward zero, with recent estimates signaling modest re-increase
  - Without a re-rise in the natural rate, we seem to be confined to resort to UMP in the current or revised and hopefully less distortionary format, with main challenges for central banks
- **This lecture offers selected considerations about these options and their prospects**

Roadmap

- Unconventional monetary policy: How they were expected to work and what they achieved
- Unwelcome implications of UMP for central banks – sustained losses and flaring inflation?
- What are the monetary policy alternatives to UMP?
- Preliminary conclusions …including non-monetary alternatives

Unconventional monetary policy: how it should have worked and what it actually did

a. Why unconventional monetary policies became necessary

- Main (conventional) monetary policy tools:
  Interest rates for
  - (a) deposit facility, (b) main refinancing facility, and (c) marginal lending facility
  - Application via floor or corridor system

  Minimum reserve requirements, as level of deposits commercial banks need to hold with the central bank (remunerated or unremunerated)
- In a strong recession, nominal interest rates (essentially short term deposit facility) may not be lowered beyond a certain point (**the effective lower bound ELB**) due to the existence of a **reversal rate** → threat of a deflationary spiral if central bank's instruments are constrained
- Quite long **ZLB** episode around most of the world since the Great Financial Crisis → need for alternative measures to increase inflation to pursue stabilization mandates
- Rapid escape from **ZLB** due to the sharply increased inflation in 2022 → but no guarantee that it won't happen again!

b. UMP tools include

1. **Negative interest rate policies (NIRP)**

   Negative interest rate on deposit facilities to fall below the zero lower bound (ZLB) which introduces costs for saving / reduces further costs for borrowing

2. **Asset purchasing programmes (*quantitative easing - QT*)**

   Buying financial assets by CB (mostly public and private bonds) increases their demand and reduces their (medium and long-term) interest rates

3. **Funds for Lending (low interest or subsidized loans, FFL)**

   Providing CB financing to credit institutions at attractive conditions (including negative interest lending rates) to be passed on to households and enterprises

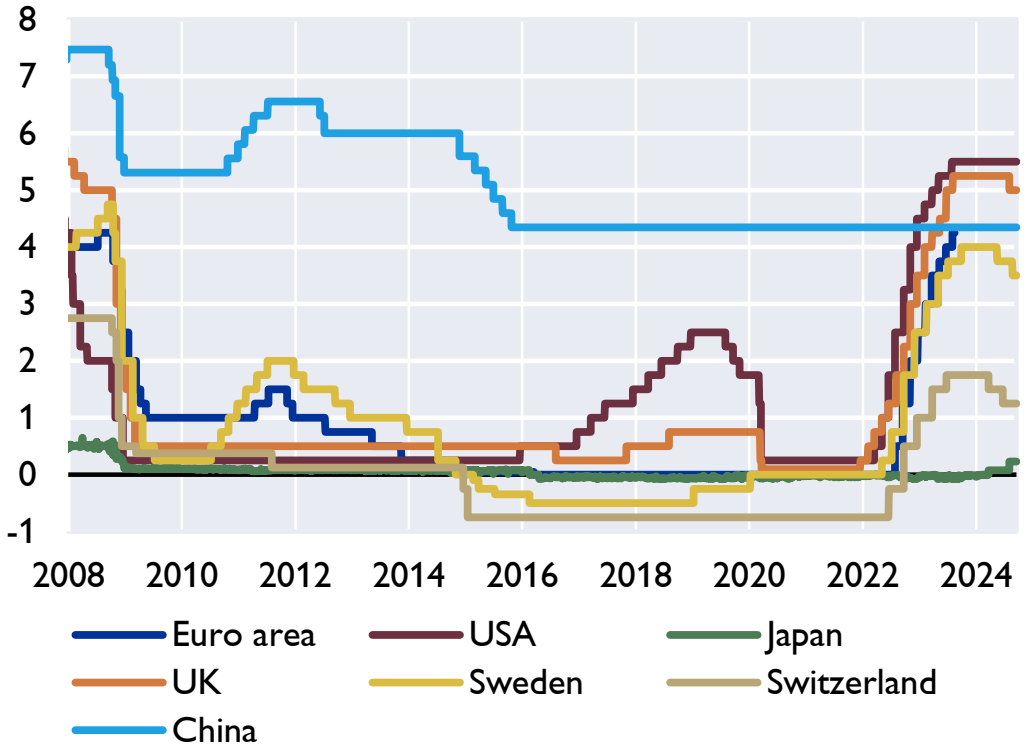
4. **Forward guidance (FG)**

   Providing information about future monetary policy intentions, based on its assessment of the outlook for price stability (Delphic or Odyssean). To be differentiated from revealing the policy reaction function of CB …

Negative interest rates over time – policy and deposit rates

Monetary policy interest rates worldwide

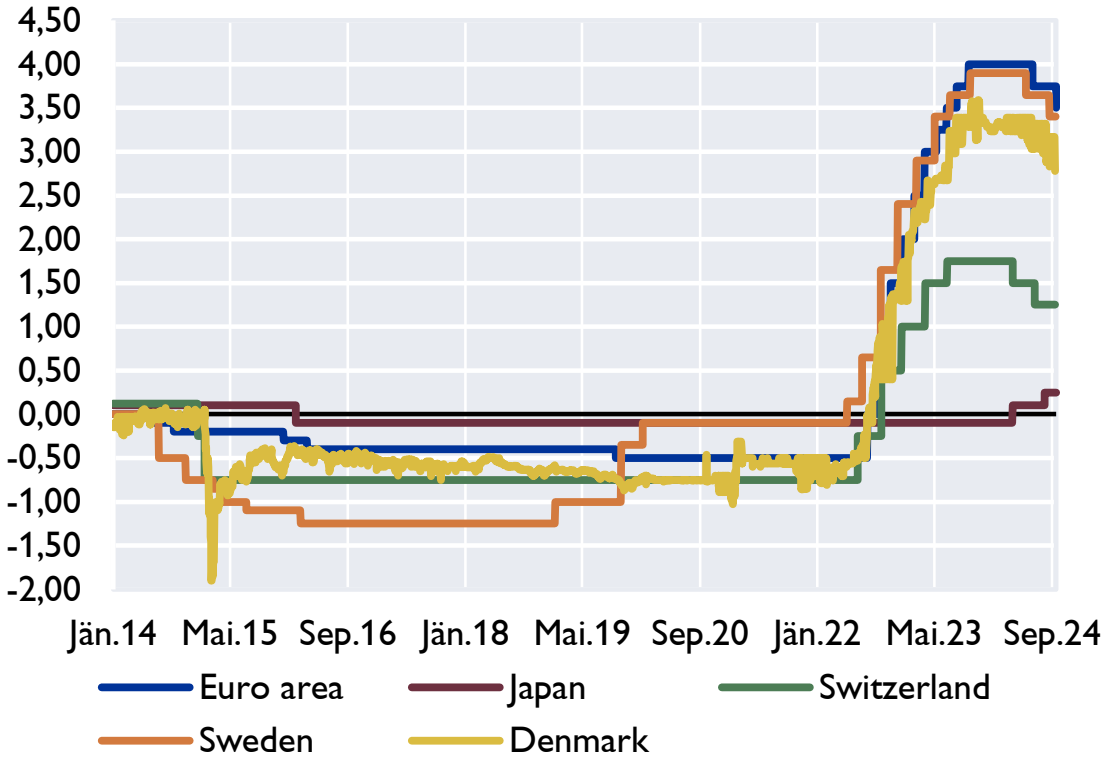
in %



Source: Macrobond.

Deposit rates in selected currency areas

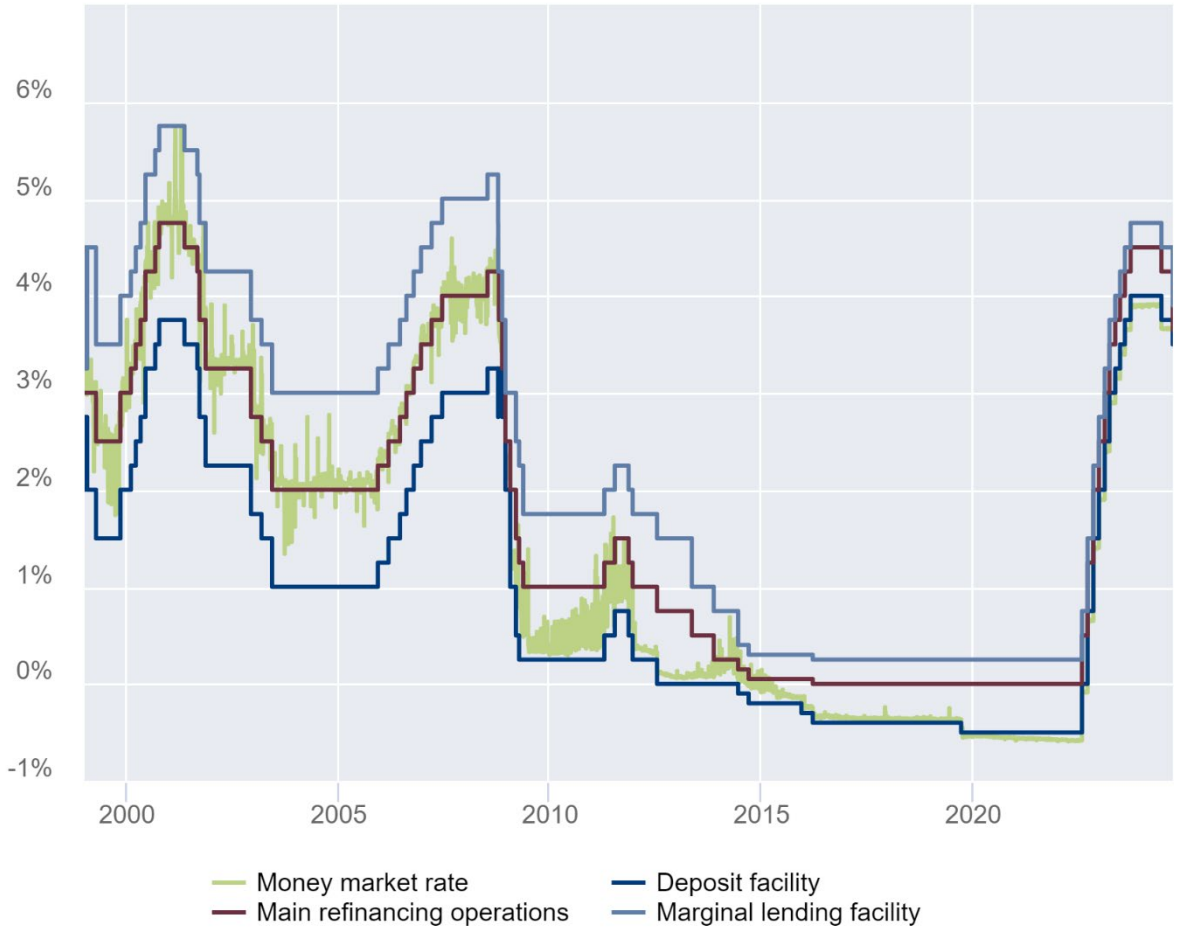
Deposit rates in %



Source: Macrobond.

ECB key interest rates and balance sheet expansion

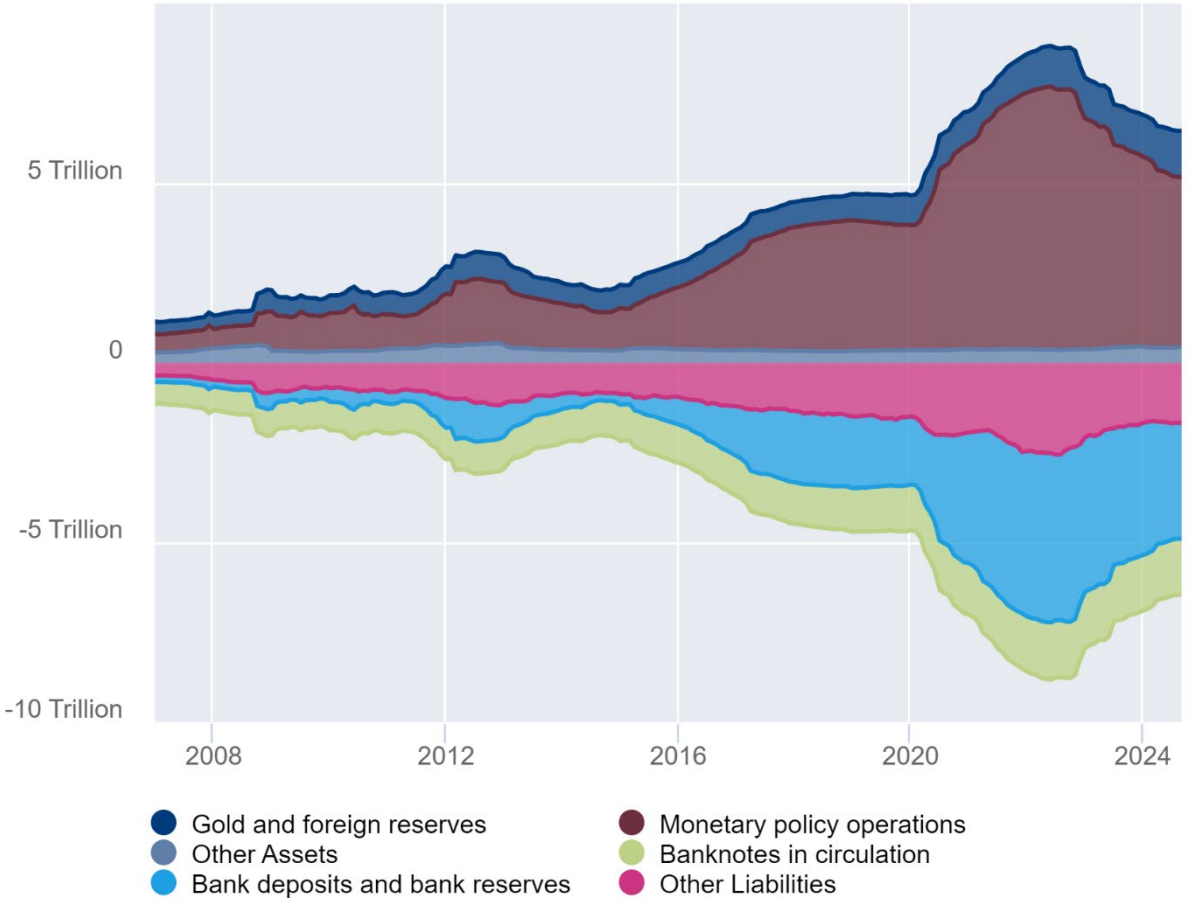
Key ECB interest rates and money market rates



Source: ECB SDW (public).

Assets vs. Liabilities

Consolidated financial statement of the Eurosystem

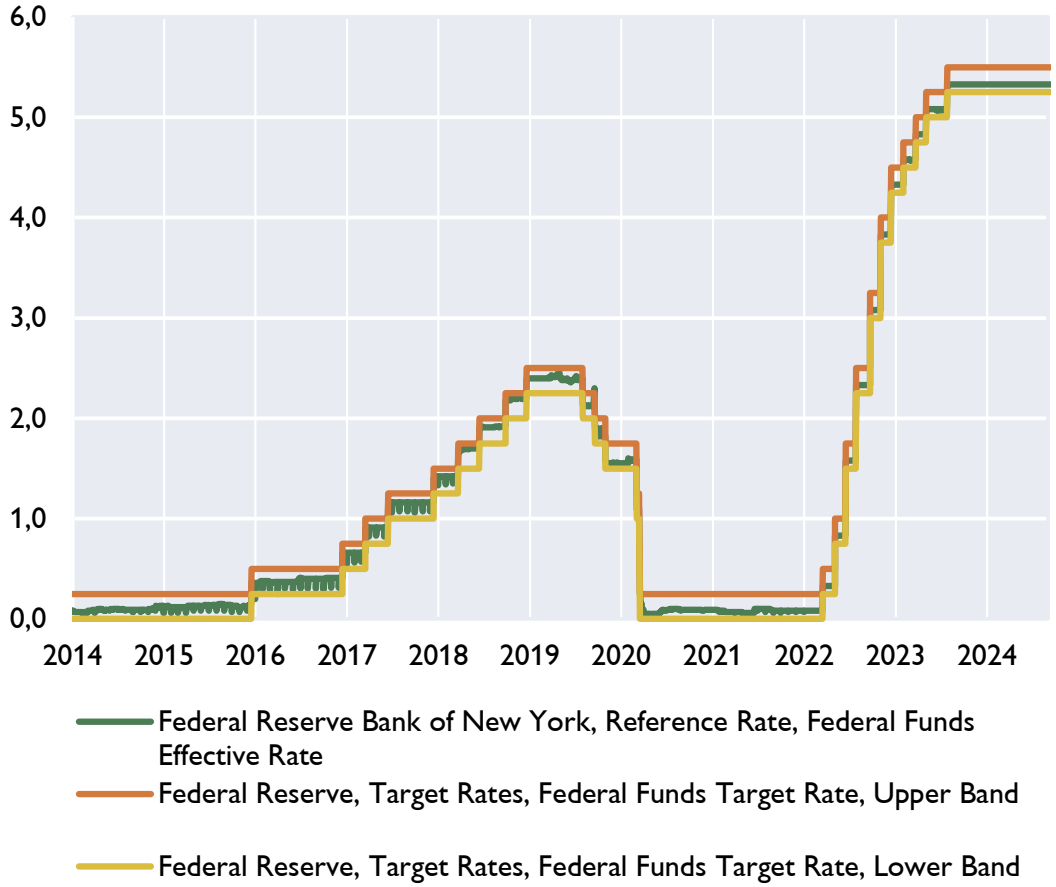


Source: ECB SDW (public).

Federal Reserve key interest rates and balance sheet expansion

USA: Federal funds rate

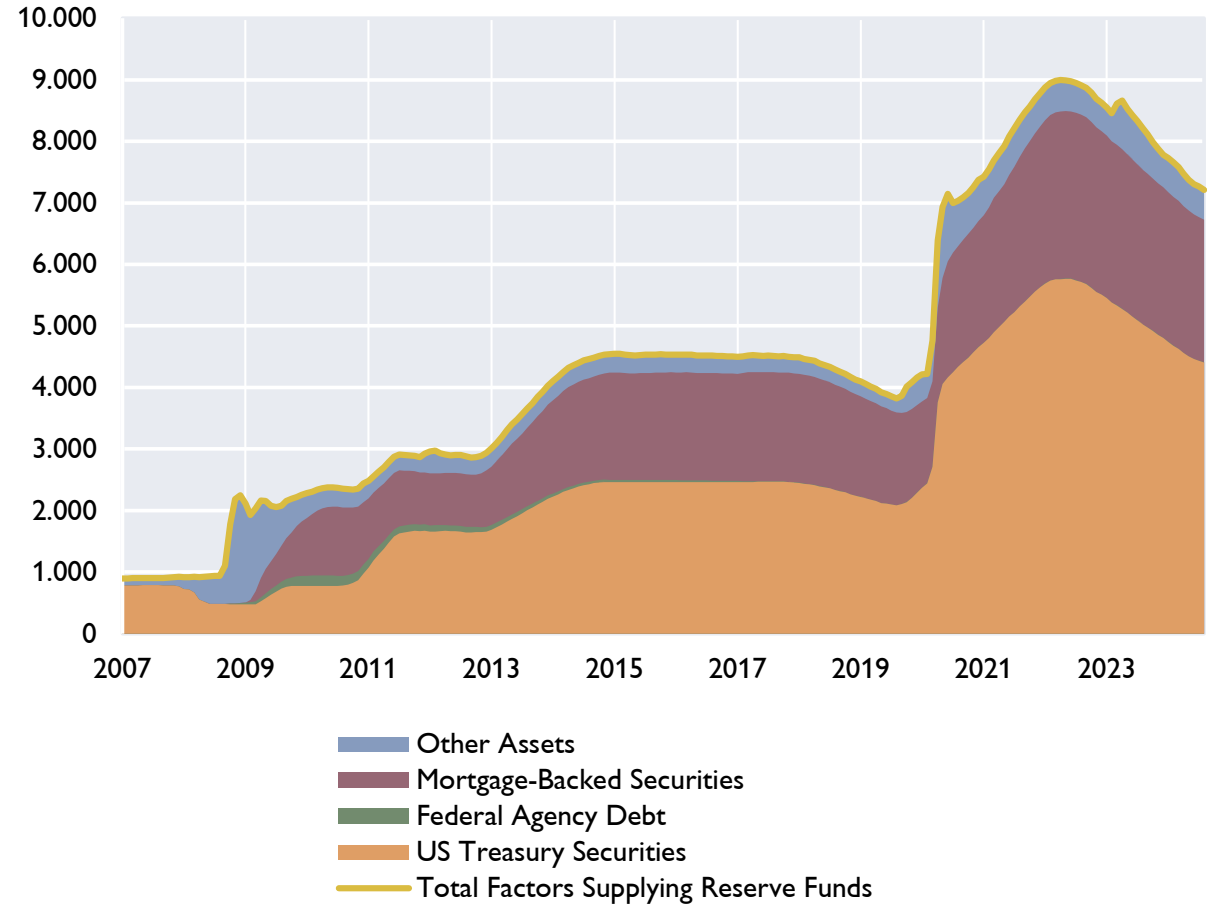
in %



Source: Macrobond.

USA: Central bank balance sheet

US$ billion

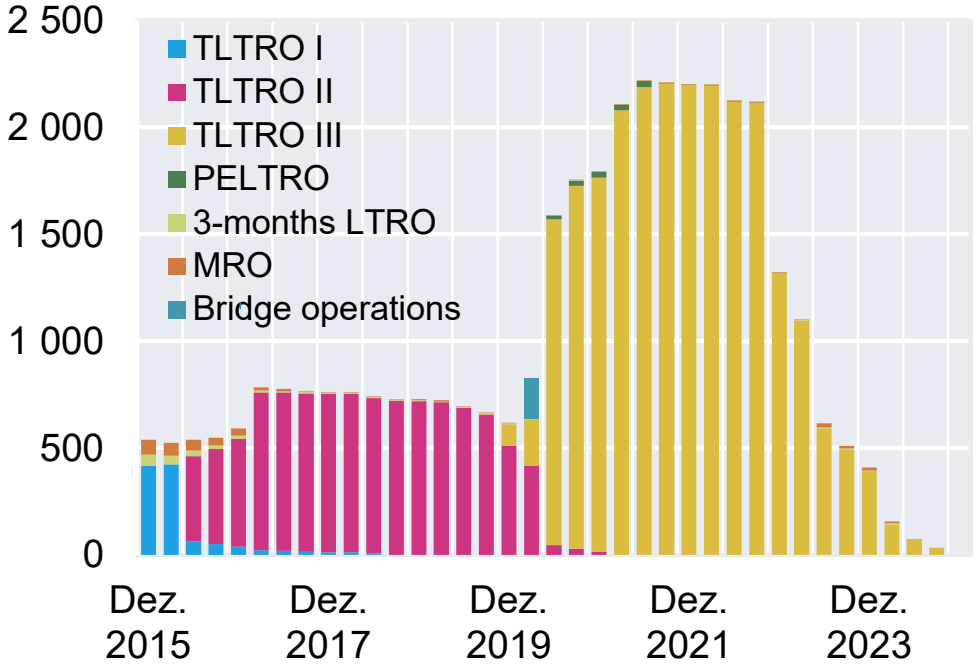


Source: Macrobond.

ECB's Refinancing operations (FFL) and Asset purchase programs (QE)

Eurosystem's refinancing operations

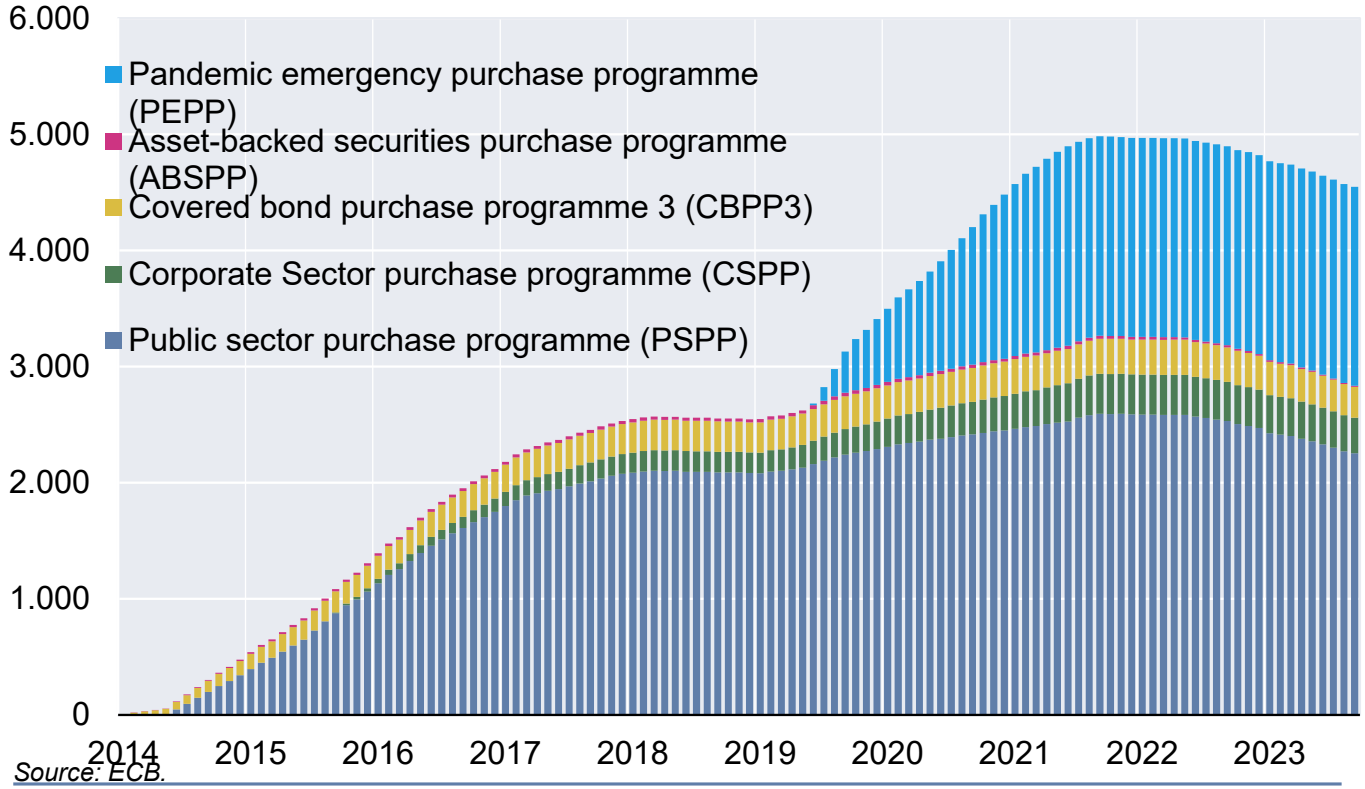
EUR, billion (stocks at quarter ends)



Source: ECB.

Monetary Policy Asset Purchase Programmes in the Euro

EUR, in billion



Source: ECB.

c. Intended *positive* effects …

- **Negative interest rate policy (NIRP)**
  - Expected to lead to a reduction of cash holdings, incentivize (bank) lending towards businesses and households, and have positive wealth effects on bonds and shares.
- **Forward Guidance (FG)**
  - Promise of lower for longer rates depresses long-term rates and reduces ex-ante real rates
  - Signaling effects to reduce uncertainty about economic and financial outlook
  - Active communication of strategy / type of FG (e.g., state-contingent, time-contingent, and open-ended forward guidance) as supportive tool to QE
- **Quantitative Easing (QE)**
  - Overcome (effective) zero lower bound constraints
  - Lower interest rates across the yield curve (e.g., cheaper sovereign lending)
  - Signalling effects to reduce uncertainty
  - Facilitating homogeneous monetary transmission mechanism across the Euro area (PEPP)
- **Funds for Lending (FFL)**
  - Provide additional liquidity at attractive conditions to banks, often subsidized
  - Preserve favourable borrowing conditions and stimulate lending to the real economy: households and enterprises

d… but also conjectured *negative* side effects

Zero and Negative Policy Interest Rates (NIRP)

- Impairment of monetary policy transmission mechanism
- Sustained near-zero rates could affect bank profitability
- Contributes to the creation of zombie firms

Funding for Lending (FFL)

- Reduced incentive of financial institutions to hold adequate liquidity buffers (can be corrected)
- Major (unintended) subsidy to the banking sector
- Limited volume effects

Forward Guidance (FG)

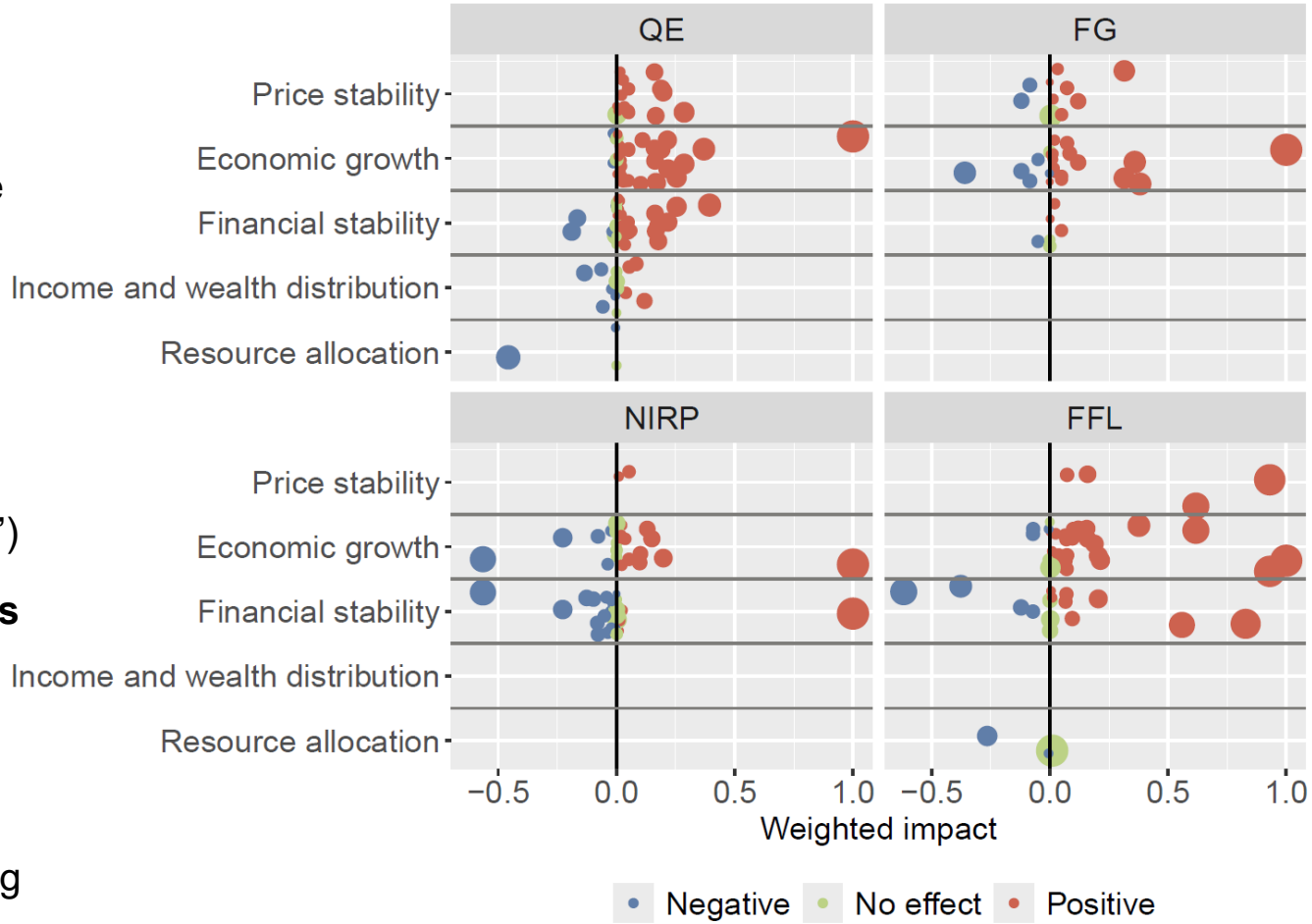
- Outlook of sustaining UMP when (aforementioned) adverse effects occur could have a negative impact on market expectations
- Imperfect communication has a significant impact on the propagation of forward guidance
- Communication failures as a source of macroeconomic volatility

Quantitative Easing (QE)

- Increased asset prices despite weak economic growth → emergence of asset bubbles → threats to financial stability
- Contributing to growth in money supply (M3) and inflationary pressures
- Price distortions in asset markets (bond, housing, etc.)
- Political/social tensions if asset purchases disproportionally benefit parts of society
- Fall in aggregated productivity due to capital misallocation → emergence of zombie firms
- Potential trade-off between short-term stabilization, high(er) prices, and long-term financial risk

Literature review: relevance of findings in the literature

- **Review of 131 papers** published between 2008 and 2024; focus on **AE** (esp. US and the euro area)
- Papers study the **impact of the different monetary tools on five key areas.** The results of the papers were **classified** and **weighted**
- **Main findings:**
- Most but not all papers **find the expected theoretical effects;** there are also many papers that do not find significant effects (surprising given the "publication bias")
- There is **very little research on the unintended effects of UMP**, especially on income and wealth distribution and resource allocation
- There is essentially **no research** on the contribution of QE and FFL to the inflation that emerged in 2021 starting in the Global North (exception BIS 2023)



Source: Spisso, Stelzer and Zörner, OeNB 2024

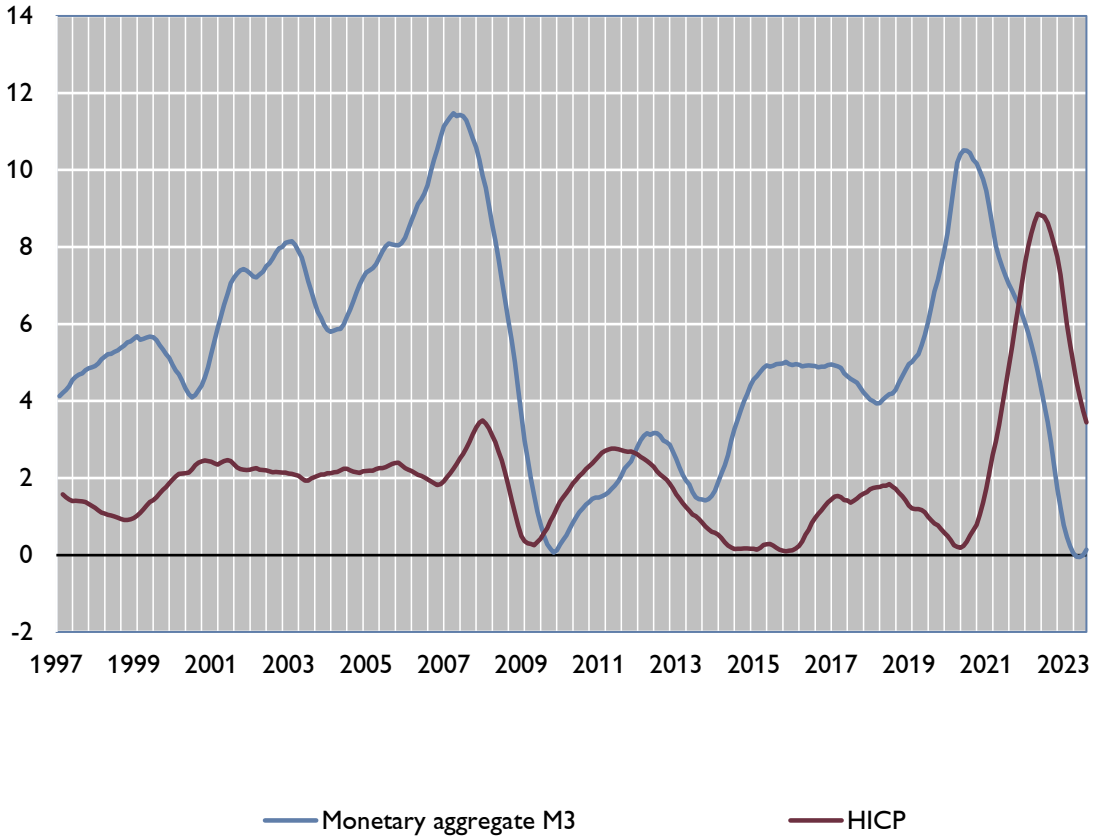
Unwelcome implications of UMP for central banks – flaring inflation, sustained losses, and what options?

a. UMP, the quantity of money and inflation

- According to the **quantity theory of money**, inflation rises when money supply growth outpaces economic growth (Friedman 1963, as best known paper)
- The strength of this link between money growth and inflation has **faded** as major central banks have shifted from money to interest rate targeting and as economies have become more complex (Stock and Watson, 2006)
- QE and FFL caused a substantial **expansion of central banks' balance sheet**s, which increased money aggregates such as M3 (broad money)
- Yet, during this period of low inflation, **inflation remained subdued** despite the elevated money growth, and thus the relationship between the two was virtually non-existent

Monetary quantity and inflation in the euro area

12-month moving average of the monthly series

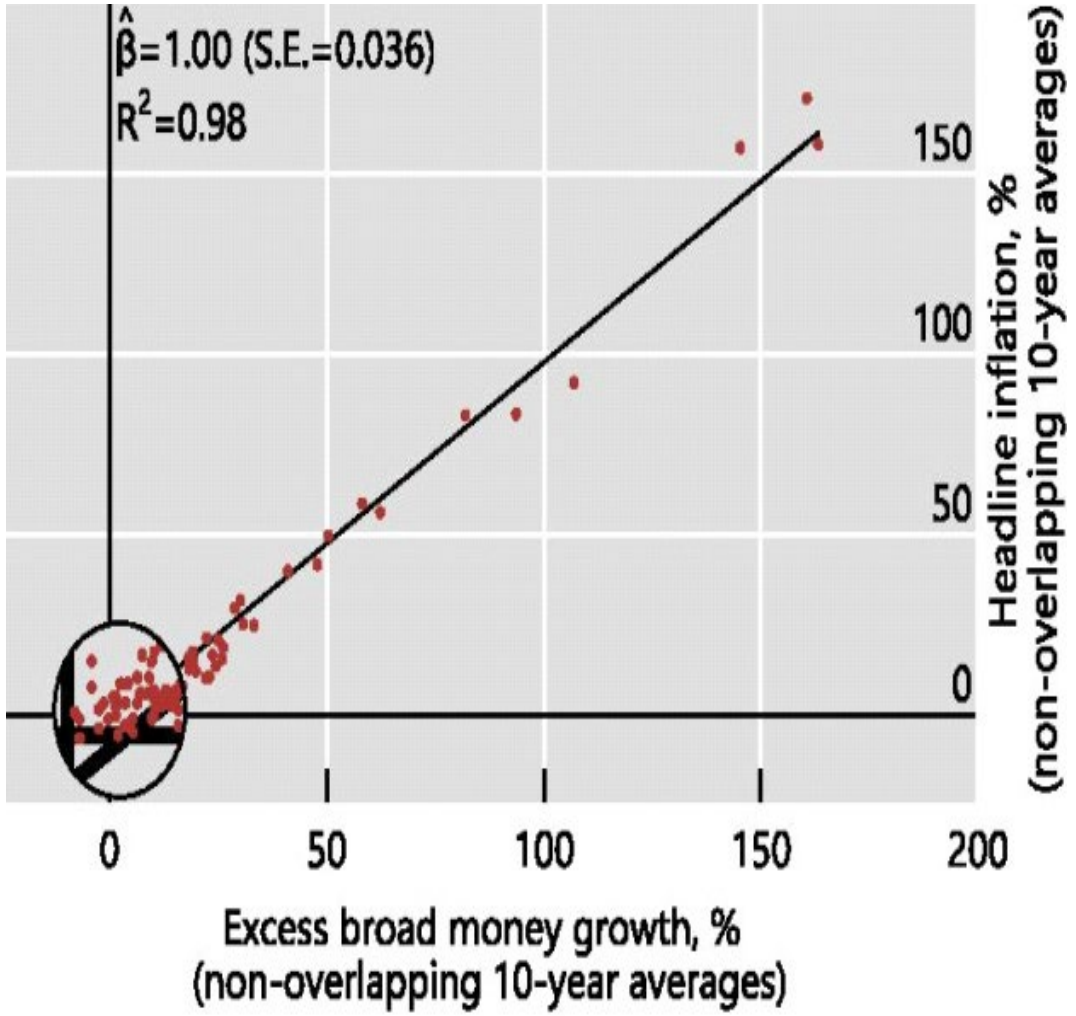


Source: ECB.

… the role of inflation regimes and shocks

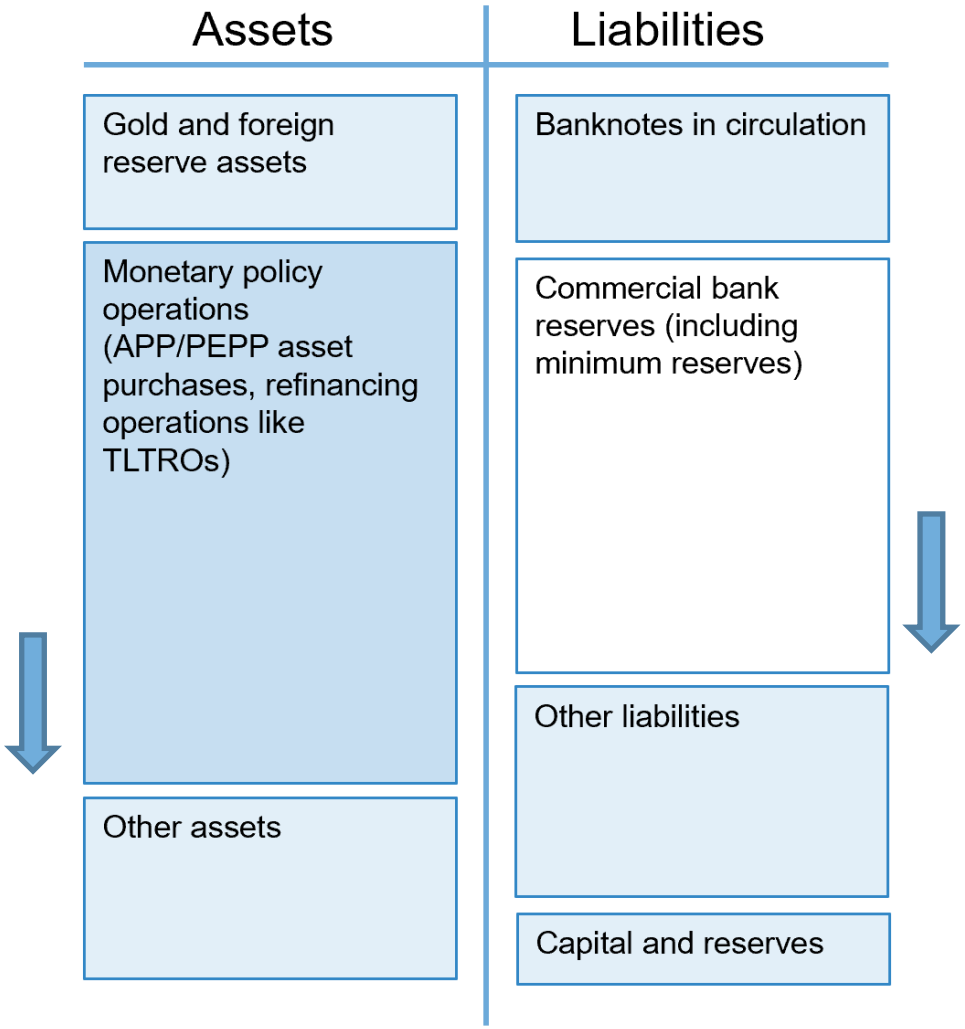
- **Recent research** by Borio et al. (2023, 2024) explores the relationship between excess money growth (money growth above GDP) and headline inflation (using non-overlapping 10-year averages).
- When separating the annual data for AEs and EMEs in the period 1951-2021 into **high and low inflation regimes**, the relationship disappears for the low inflation countries and is exactly 1 for the high inflation ones.

- My take is that inflation is always a monetary phenomenon – no excess growth in monetary quantity, no inflation. For inflation to take place, it requires **shocks**, such as the energy price shock in 2021 and 2022 (China and Russia).



Source: Borio et al. 2024

b. UMP and Central Banks balance sheet expansion under QE & FFL

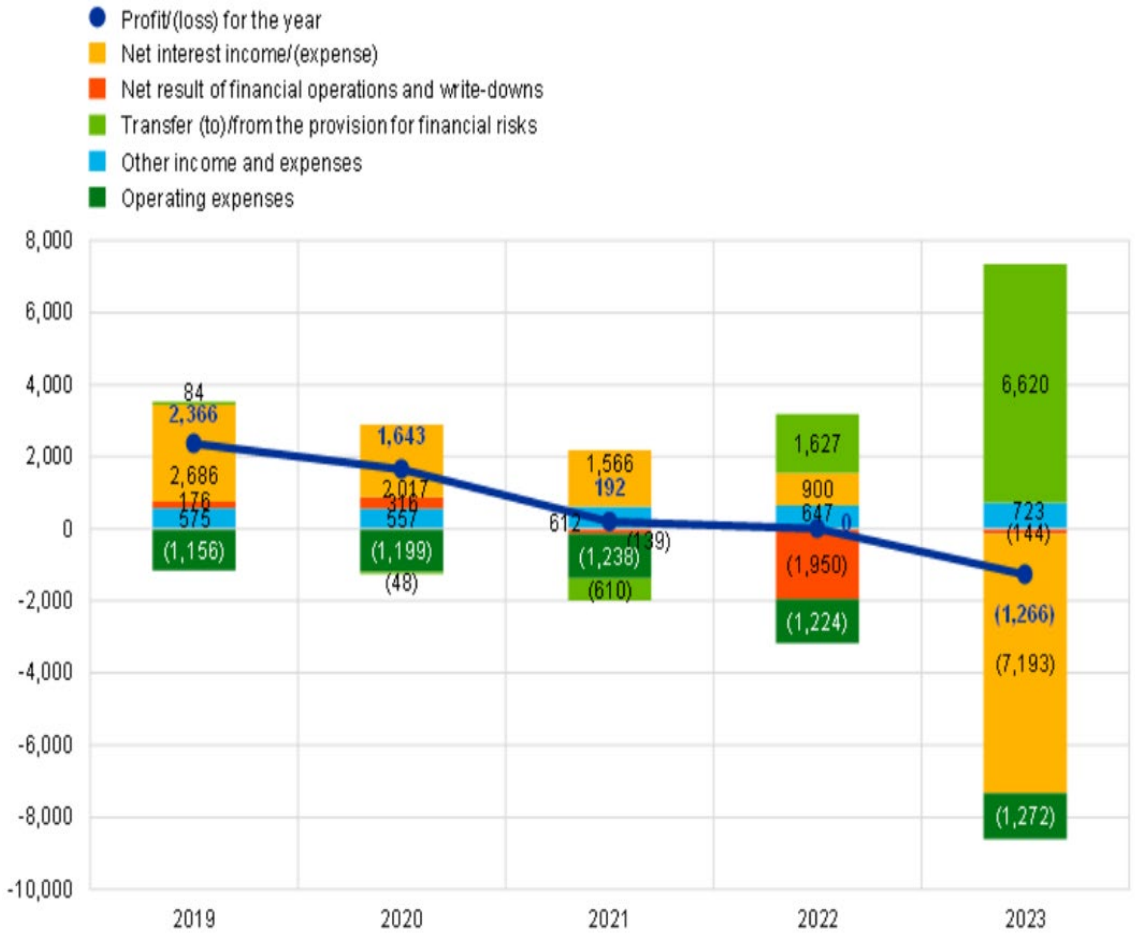


- **Differences between asset purchases (APs) and longer-term refinancing operations (LTROs):**
  - QE: CB decides on its **balance sheet size**
    FFL: demand driven → banking sector decides on the size of CB's balance sheet (if CB wants to expand its balance sheet by more → it has to offer more favourable conditions)
  - QE: generate an **income stream** that is fixed
    FFL: CB can choose between fixed-rate or indexed tenders; indexed tenders are less accommodative, but reduce interest rate risk
  - **Maturities** of APs will be at the discretion of the CB
  - FFL entail a lower **credit risk** (collateralized)
- After a successful UMP intervention, key interest rates rise again → **mismatch** in the sensitivity of assets and liabilities to changes in short-term interest rates (exception: indexed LTROs) → **negative effects on profitability** of central banks (Donnery et al., 2017)

CB balance sheet expansion and profit & loss accounts

- During the purchase phase of QE the acquired assets have low or even **negative returns**, and the CB deposits by commercial banks also have **no or low remuneration**
- When the lending and deposit rates are increasing, the returns on assets of CB remain negative or low, while the deposits by the commercial banks receive the higher deposit rate (4% at the ECB and 5+% for FED in 2023)
- This **asset liability mismatch** will last for many years. For some NCBs within the euro area it may take years to become positive and till the 2040s to re-establish reserves (without further shocks)

Figure 7: Components of the ECB's profit and loss account (in EUR millions)



Source: ECB Annual Accounts 2023

c. Monetary policy options to keep losses in check

Unremunerated minimum reserve (UMR) requirements

- A well known instruments of the past: A share of the deposits with the central bank are blocked
- MR served initially as cash security for bank problems, was not successful in this task and lost importance with the Basel regulations on banking supervision
- When unremunerated, MR will affect bank lending while keeping the policy interest rate unchanged but have a touch of taxation of banks
- When the issue of the current asset-liability mismatch emerged, a number of economists (in particular Paul de Grauwe in 2022, 2023) suggested the use of UMR to address balance sheet issues
- A rate of 5 to 10 percent of unremunerated MR would reduce substantially the high implicit subsidy commercial banks currently receive while strengthening the balance sheet of CBs
- For information: the CB of Croatia levied a MR at the rate of over 10 percent bevor joining the euro area in 2023

Options for conventional monetary policy at the ELB

Make-up strategies aim to compensate for past inflation shortfalls by tolerating temporary overshooting and vice versa.

- Variants include **average inflation targeting** (AI-T) and **price level targeting** (PL-T). AI-T gives lower weights to deviations at the beginning of the period, while PL-T compensates for them fully and equally no matter how long in the past.
- The effectiveness of these strategies depends on central bank credibility and on economic agents having perfect information and behaving rationally (strong assumptions). Since these strategies have been rarely implemented (e.g., Fed's adopted an AI-T after its strategy review in August 2020), empirical evidence is limited.
- FED’s recent experience shows **mixed results** in terms of public understanding and impact. This makes make-up strategies not a viable option at the ELB.

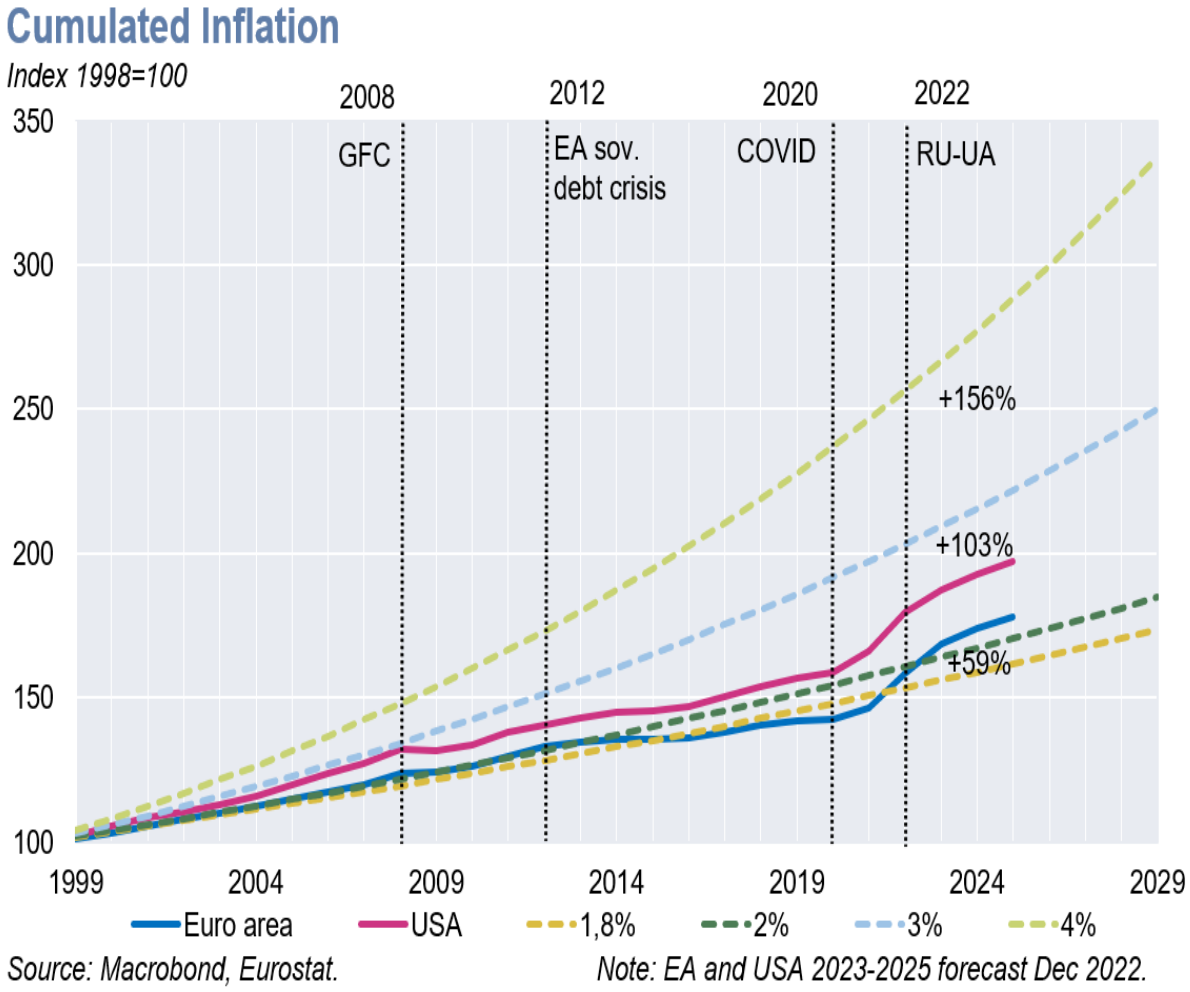
Asymmetric reaction functions imply that the central bank reacts more aggressively to undershooting than to overshooting the inflation target, thereby countering the deflationary bias at the ELB.

- Because of the non-zero probability of hitting the ELB, theory predicts that rational agents anticipate that the central bank will not be able to forcefully combat deflationary spirals. For this reason alone, agents revise their inflation expectations downward, creating a **deflationary bias** that can become partially self-fulfilling by creating a binding ELB constraint.
- The success of asymmetric reaction functions therefore also depends on central bank credibility and rational expectations. The **ECB adopted an asymmetric reaction function approach in 2021**, but public awareness and understanding of this strategy appear to be limited.
- Moreover, letting inflation overshoot can jeopardize central bank credibility and therefore reduces the effectiveness of monetary policy.

Raising inflation targets

- An increase in the inflation target could help to avoid the ELB constraint in an economic environment of structurally low real interest rates. A higher inflation target would compensate for lower nominal interest rates caused by a low real neutral rate of interest, r*.
- Studies suggest that a reduction in the neutral rate would justify a higher inflation target (see, e.g. Andrade et al. 2019; Billi et al. 2024); however, this approach risks long-term losses in the value of money and potential nonlinearities.
- An increase from 2% to 3% or 4% would have significantly increased cumulative inflation over the past decades.

Figure 5: Cummulated inflation forecast



Summing-up

1. The shift from conventional to unconventional monetary policy was dictated by the binding effective lower bound in interest rate setting becoming relevant by the falling equilibrium interest rate r*
2. The applied new instruments of unconventional monetary policy included negative interest rates, quantitative easing, funding for lending, and forward guidance in all advanced economies with limited variation
3. The available empirical evidence suggests that the policy instruments were broadly effective to address the immediate goals of monetary policy, but the intended mechanisms were accompanied by conjectured unintended side-effects of diverse nature
4. There is limited research on the unintended effects of UMP, especially on income and wealth distribution and on resource allocation
5. There is essentially no empirical research on the contribution of QE and FFL, i.e. monetary expansion, to the inflation that emerged in 2021, starting in the Global North (except Borio et al. 2023)
6. The consequences of unconventional monetary policy include balance sheet issues for most central banks, with projected negative equity till the 2030s (or even 2040s), potentially undermining central banks´ independence
7. The proposed conventional monetary policy alternatives are limited in number and promise, and include make-up strategies, asymmetric reaction functions, and a higher inflation goal
8. An alternative policy approach would be efforts to re-increase r*, and promising approaches include its main conjectured drivers – total factor productivity, increase in retirement age, and capital flows for green transition

References under finalization

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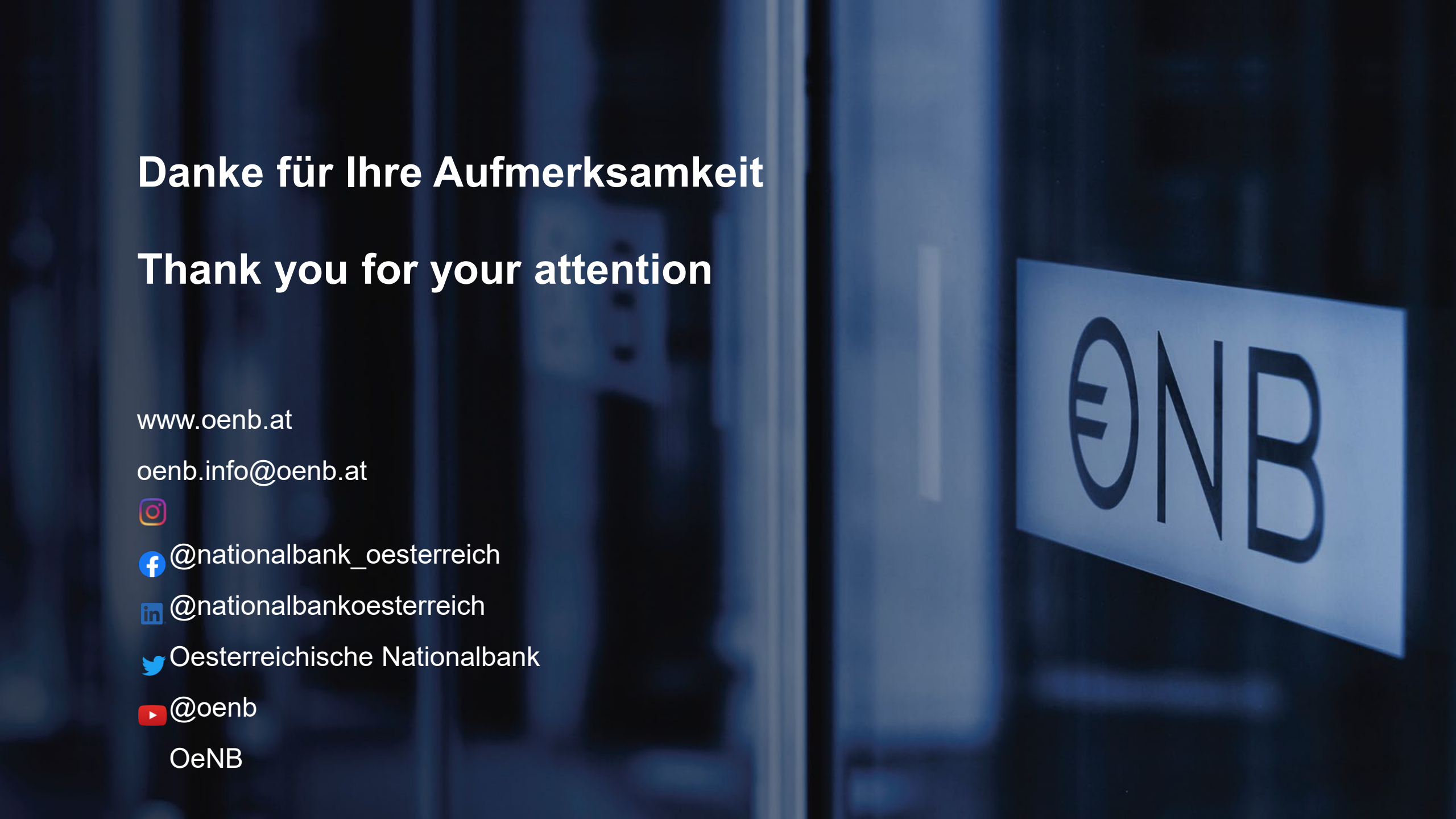

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