Central bank liquidity and balance sheet: navigating the shallows after the high tide of liquidity

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Slides (pdf)

It’s a real pleasure to be back in Copenhagen, for the third time this year.

Many thanks to Danske Bank for organizing such a timely and topical event. I must say, I’m delighted to see that Scandinavian banks are becoming ever more ambitious with these seminars, while maintaining excellent taste in their choice of keynote speakers. I’m truly honored to be here with you.

The theme of this seminar, *Navigating Tomorrow*, couldn’t be more fitting — especially here in Denmark, a country with a long tradition of maritime navigation, trade and occasionally loosing fleets in storms. Central bankers, too, are very fond of maritime analogies. Perhaps because in the past 15 years we have so often had to navigate uncharted waters.

As you saw from my title, today I’ll talk about liquidity and the Central Bank balance sheet. It’s a story of expansion, abundance, and a gradual return to a new normality. You Danes know this pattern well. It’s basically the lifecycle of Smørrebrød: first abundance, then immediate regret, and then well, Ozempic.

Back to liquidity. If you listen carefully, today’s talk will help you navigate the money markets not only tomorrow, but for the next few years.

The high tide of central bank liquidity is receding. But don’t worry, we are not sailing straight into the shallows at full speed.

Let me start with the Eurosystem’s balance sheet.

During the financial crisis and again during the pandemic, central bank balance sheets became, if not a topic at the family dinner table, at least something the financially literate public started paying attention to. These were years when central banks globally, including the ECB, launched measures at unprecedented scale.

These crisis measures have lapsed, but they are still visible in our oversized balance sheet. In many ways, the Eurosystem remains suspended between two liquidity worlds: the crisis world and the new normal.

Let me stress: I'm not here to speak about monetary policy *stance*. I'll leave that to my colleague, Governor Boris Vuji. I'm sure he'll offer a well-thought and up-to-date policy outlook later today.

Instead, I want to talk about the "plumbing": the art, science and practice of actually steering the market rates to the policy target.

I will highlight what's happening right now, and more interestingly, where I think we should go next.

And here comes the usual disclaimer: these are my views, not necessarily those of the Eurosystem — although, hopefully, they will be, so ignore me at your own risk. For additional reading, I recommend Isabel Schnabel's excellent speech on this topic — and of course double-checking what I say today on the Bank of Finland's website.

I will also touch lightly on payments and digital currencies, since — as you heard in the previous presentation — these topics are increasingly intertwined.

With that, let's lift anchor and move to the first topic.

Monetary Policy Implementation since launch of the euro

At the euro's launch in 1999, our framework was elegant in its simplicity. The banking sector operated at a liquidity deficit, and we provided exactly the liquidity needed through our weekly Main Refinancing Operations (MRO). No more, no less. Interbank markets redistributed liquidity efficiently, and the short-term market rates followed the MRO-rate closely.

And they did. Hardly anyone outside a central bank noticed. This is the perfect monetary policy implementation outcome: *success is when no one notices you exist*.

But by the end of the 2000s, the framework had to be adjusted again and again as we faced crisis after crisis. Unconventional measures became not only part of the toolkit, at times they were part of the euro's survival strategy.

The idea of providing specific amounts of liquidity was no longer feasible when interbank markets stopped functioning as before. Under these circumstances, we introduced fixed-rate full allotment (FRFA): banks could obtain essentially unlimited liquidity at a fixed rate, provided they had eligible collateral. This served us well.

And although unconventional measures may now feel like water under the bridge, it was only in March 2024 that we formalized the key lessons in our operational framework review[1].

We confirmed:

- the deposit facility rate, the lower bound of the interest rate corridor, as our main instrument to steer short-term money market rates;
- FRFA as the permanent procedure to be applied in our short-term credit operations also in the future;
- A mix of other liquidity-providing instruments, including structural bond portfolios and longer-term credit operations;

And yes, we let the crisis-era portfolios continue to run off.

Let’s look at what this means.

Balance Sheet remains above pre-crisis levels

The Eurosystem’s balance sheet expanded from around 1 trillion euros in 2007 to almost €9 trillion in 2022. It has since declined to around €6 trillion.

With inflation at 2%, inflation outlook around 2%, and the nominal policy rate at 2%, one may say our monetary policy is about as neutral as it can get — assuming the natural real rate is close to 0%.

The balance sheet, however, is not neutral. Even after unconventional credit operations matured and asset purchases continue to run off, our balance sheet remains far above pre-crisis levels and above the new normal.

What is the “normal” size of a central bank balance sheet? Unlike interest rates, we do not have a century-long chart to consult. Here, I find the concept of *natural balance sheet size* as useful.

For a global reserve currency issuer like the ECB, the natural size is liability driven. It originates from the demand for banknotes and reserve requirements. The more people hold cash — or why not digital euros in the future — the larger the liquidity deficit and the larger the natural balance sheet.

This deficit is filled with monetary policy assets. When the marginal unit of liquidity comes from short-term credit operations, their rate sets the focal point for monetary policy and the starting point of the yield curve.

Central banks may also choose to exceed the natural level to fulfill their mandates — especially during crisis. After hitting the effective lower bound, we had to move further along the yield curve and increase monetary policy accommodation with large scale asset purchases. The optimal balance sheet grew beyond the natural level. The asset side began to dominate, and the deposit rate became the focal point for monetary policy. We ended up with a floor system.

In normal times before the 15-year long string of crises, optimal and natural sizes aligned. Hence, the natural balance sheet gives a direction for balance sheet normalization.

Floor Required Excess Liquidity (FREL) maintains rates close to the Deposit Facility Rate (DFR)

However, in today's post-crisis world, a new concept matters: **FREL — floor-required excess liquidity**. This is the amount of liquidity i.e. central bank reserves needed to keep short-term money market rates close to the policy rate under a floor system.

Estimating FREL today is a bit like estimating how many pastries will be left at the end of a Danish breakfast buffet: thanks to the regulatory changes, changes in payments and banks having learned a lesson from crises, history is no longer a reliable guide. Over Eurosystem's almost 30-year history, estimates have over time ranged from €8 billion to €2 200 billion. So, we need caution.

Structural demand for liquidity i.e. central bank reserves has increased

Here surveys become handy. According to banks, they maintain liquidity buffers for settlement purposes, precautionary, regulatory and signaling reasons — all difficult to quantify individually, let alone combined and across all banks.

Given uncertainty, we monitor multiple indicators: money market activity, participation in our operations, portfolio run-off and investor absorption capacity to meet raising debt supply.

Most estimates suggest the FREL won't be reached for 1-3 years. While time stamps catch the headlines, note that FREL is an uncertain and a moving target. For example, declining demand for banknotes reduces the structural liquidity need, and hence increases the level of excess liquidity we have in the system. Similarly, if the euro area National Central Banks were to increase their financial asset holdings closer to level they had before the global financial crisis, the portfolio reductions needed in our legacy monetary policy portfolios will grow substantially. So, we shouldn't obsess over one number or a date.

The key point: short-term euro rates will follow the ECB's deposit rate closely for some time.

Compare this briefly with the Fed: it decided, as of December, to re-invest all proceeds from maturing bonds. In plain terms, they've halted their balance sheet decline as liquidity conditions have tightened. The Eurosystem is *not* close to that point, and our framework behaves differently even once FREL is reached.

Let me clarify.

Even if we are still in a supply-driven environment, our framework contains a strong *demand-driven* element. The narrow 15-basis-points spread between the MRO and the deposit facility rate incentivizes participation in weekly operations. Once FREL is reached, and rates drift up, banks turn to MROs, which adds liquidity and stabilizes rates.

If the FREL-level was clearly bypassed and banking sector returned to a liquidity deficit, i.e. closer to the natural balance sheet, the MRO-rate again would become the de facto policy rate. A situation we know well.

But it's trickier when liquidity sits between FREL and deficit: enough excess liquidity to prevent a full switch to the demand-driven world, but not enough to anchor overnight rate to the floor. Volatility may emerge.

In the operational framework review last year, the ECB explained that it is ready to accept some volatility in this transition. But if it became excessive, there would be several ways to address it. First, overnight volatility could be reduced by cutting the spread between the policy rates further. Secondly, if needed, structural operations can be used to push aggregate liquidity to one of the steady equilibriums – for example with minimum reserve requirement or by adding liquidity with structural operations.

The latter is the approach chosen by the Fed. They have a similar instrument to our MROs, the standing repo facility (SRF). Recent upward pressure on US repo rates has increased SRF usage — but the Fed sees persistent usage as a signal to **buy assets** to maintain ample reserves.

In short: we allow the framework to shift toward demand-driven operations like the MRO. The Fed, by contrast, expands supply.

Looking ahead: as our portfolios keep shrinking, weekly operations cannot expand indefinitely. At some point, we need *structural liquidity providing operations*.

The March 2024 operational framework review did not specify the division between instruments. That is why the review expected to start next year may be important in facilitating our readiness. And it’s not just us central bankers. Banks must also be ready to use the tools as intended.

This takes us to the next part, liquidity provision with different operations.

Future Balance Sheet will have new elements

Every time a central bank buys an asset, extends a loan, takes a deposit, or allows a debt security to mature from its balance sheet, it affects central bank liquidity, i.e. reserves in the banking system. As always, size matters, but so does how you do it.

Theory and evidence show that short-term operations are best for balancing liquidity in banking system once the system again operates in deficit. And when the demand for liquidity is uncertain, fixed-rate full allotment (FRFA) has proven to be the optimal procedure to control market rates.

Even if this is our operating mode already, we can improve our framework. Currently, collateral eligibility is the same across all operations. I believe there is a strong case for introducing a tiered collateral system in the future, when the policy is once again set by liquidity provision instead of taking deposits.

One can make the case that in the liquidity providing key policy operations only high-quality liquid assets (HQLA) should be accepted. This would limit the central bank footprint in the markets by ensuring that, for banks, these operations are purely liquidity management rather than a way to make liquidity transformation or regulatory arbitrage.

If and when the demand in these policy setting operations becomes substantial, we will introduce structural long-term operations (SLTROs). Eventually these operations could inject bulk of the standard central bank liquidity provision.

In contrast to the short-term credit operations, where central bank acts as a rate setter, competitive auctions would make more sense for the structural credit operations. Setting only the volume, and not the rate, would reduce distortions, price liquidity transformation in a more market-oriented way, and reveal more information on reserve demand. With competitive pricing, the maturity of the structural long-term credit operations could extend even beyond a year. And accepting a broad set of non-HQLA collateral in these operations, like credit claims, would also make sense.

Indexing SLTRO rates to the fixed-rate of policy operations makes sense: the spread determined in a market-based manner at auctions would be added to the average policy rate over the SLTRO maturity. This avoids any unintended signaling about the future stance. In addition, this would also lift interest rate risk away from us.

A demand-driven framework relies on banks participating without stigma. Stigma arises when participation signals weakness — especially when central bank lending is more expensive than market funding.

There are several ways to prevent stigmatization of the central bank operations. First, we never publish the names of the institutions that come to our window. Second, if the collateral set eligible to central bank operations was closer to general collateral repo market, the smaller should the issue with pricing be. This element would be enhanced if the collateral sets were differentiated between the rate setting operations on one hand, and the structural operations and marginal lending facility on the other hand. The higher price in the latter operations would reflect maturity and liquidity transformation rather than the weakness of participating institutions.

We naturally welcome all participation in our credit operations as they are integral part of our framework, and we consider banks' participation as business as usual. We also strongly encourage banks to regularly test the credit operations regardless of their actual liquidity needs.

Another source of liquidity supply is structural asset purchases. Once structural liquidity needs grow sufficiently, it becomes logical to establish a structural securities portfolio alongside SLTROs.

Regarding the modalities of such a structural portfolio, the weighted duration of holdings should most likely be considerably shorter than the duration of the market. This way we reduce market footprint, our interest rate risk and - preserve more fire power for times of crisis.

Now, let me finish with a closely related topic: expected changes in payments landscape.

Central Bank and Digital Payments of the future

Shorter settlement cycles and increased need for continuous real time settlement have lately been major trends with payments. This has an impact on banks' liquidity management and the demand for liquidity. Thus, the Eurosystem is looking into whether our main payment system, T2, could operate longer hours, maybe eventually even on 24/7/365 basis.[2]

Second, TIPS already offers broader operating hours. It allows instant payments at any time, but this means banks need to keep a separate prefunded pot of liquidity when T2 is closed. In an ideal world, banks would earn the deposit rate on all central bank balances, without daily reshuffling between TIPS and T2 and the deposit facility.

Third, the digital euro. Think of it as a digital banknote — a public good for everyday payments with central bank money. Something you might use to buy smørrebrød, gløgg, or anything else highly likely to stain your gloves in December.

At present, no such public digital instrument exists for citizens: only banks and a few other institutions can have accounts in a Eurosystem NCB. Actually, we don't have any pan-euro area payment method that would function for all use cases that retail customers have. And those closest to being ones are not governed by European authorities - a situation that we cannot stand forever.

For banks' liquidity management the digital euro would create similar challenges as I mentioned with TIPS. The impact of this depends on the digital euro's popularity and payment volatility.

At the same time, and I want to be clear on this, banks will remain as the core element of the euro area financial system. Digital euro is not questioning or challenging that. In fact, all necessary design choices for the digital euro will be made with financial stability firmly in mind.

Fourth, as distributed ledger technology (DLT) may transform securities markets by increasing efficiency, reducing settlement risk and enabling 24/7 trading - the Eurosystem is also exploring wholesale DLT-settlement to ensure central bank money always remains the safest and most scalable mean of settlement in any possible future architecture.[3]

Concluding remarks

Let me conclude with a summary of my key points.

The ECB's balance sheet needs to decline further before we expect the automatic stabilizers activating themselves.

But with the safeguards we have in place, narrow spread between MRO and DFR rates, and FRFA in place, we don't need to hurry with new structural operations. In the meantime, we still need to give some thought about how structural credit operations best serve policy transmission and financial stability, and how bond purchases best meet their policy goals.

In other words, and other things being equal, the existing legacy monetary policy portfolios need to reduce considerably more before one should expect new kinds of policy holdings.

Meanwhile, the payments landscape is evolving rapidly — instant payments, digital euro, and DLT all have implications for liquidity and monetary policy implementation.

Thank you for your attention, and I wish you an enjoyable and inspiring afternoon!

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[1] The decisions on the monetary policy implementation framework taken in March 2024

[2] The ECB plans to publish a summary and analysis of the responses received to the consultation in the first quarter of 2026.

[3] For a more thorough explanation of D€, Pontes and Appia see speech by Thomas Vlassopoulus on 7 November.

From promise to practice: How AI is transforming the economy, the financial sector and financial supervision

Good morning, ladies and gentlemen.

I am delighted to welcome you to this seminar, whether you are here in Helsinki or online. This is the second time we are organising this event under the title '*Impact of AI on the Economy, Finance and Supervision*'.

The seminar is jointly organised by the Bank of Finland and the Finnish Financial Supervisory Authority as part of our shared **Data Economy initiative**, and in support of one of the Bank's strategic priorities, '*Data and AI in the economy and workplace'*.

This year, we will focus especially on how artificial intelligence is being applied in the financial sector and in supervisory work. We will do our best to avoid the hype, and instead demonstrate, through practical examples, the real added value that AI brings, and can potentially bring, to us all. We will hear several examples not only from Finland but also from colleagues across Europe.

Bank of Finland's experience

In these opening remarks, I would like to share a few examples of how we have applied AI at the Bank of Finland over the past few years.

One such example is our machine-learning '*robot economist'*, which has been working hard at the Bank of Finland for several years now.

This robot forecasts Finnish GDP growth using the very latest data in a nowcasting model. It also independently publishes its forecasts on social media. Back in 2020, for instance, the robot tweeted its forecasts nearly one hundred times.

As I represent the employer side, I'm happy to have an economist who never asks for a coffee break or a pay rise. But, on the other hand, when assessing the usefulness of having a robot economist working for us, I must also consider the time spent coding and updating it, and whether we really are better off with such frequent forecasts.

Impact of AI on the economy

Let me turn to the first part of our title – *the impact of AI on the economy*.

At the Bank of Finland, we recently published a review of the potential impact of artificial intelligence on growth and employment.

AI tools are driving a new kind of structural change in the Finnish labour market. Thanks to new technologies notably large language models and generative AI it is now possible to automate many kinds of work and tasks that previously were beyond automation, including services and expert roles.

At the same time, technological advances are creating demand for new kinds of skills. Companies and organisations must invest in new tools and systems, and in genuinely transforming their ways of working and building the competences of their employees.

This inevitably involves costs, but it is the only way to achieve the broad productivity gains and higher economic growth that AI makes possible in the longer term.

Looking at the bigger picture, it is essential that Europe keeps pace with AI development and does not become overly dependent on other jurisdictions. We need investment, education and innovation in Europe, and the European Commission has several initiatives supporting this. Moreover, Europe is a wealthy continent, with a vast number of highly educated, talented people. We therefore have all the ingredients needed to harnessing the benefits of AI. We just need to ensure we use these resources wisely and locally, within Europe. A stable and competitive Europe is our goal. Later today, we will hear more about this from the European Commission.

Impact of AI on the financial sector

I shall now turn to the second part of our title, *the impact of AI on the financial sector*.

Central banks have been early adopters of machine learning. As highlighted by a BIS Bulletin last year, typical use cases include predictive modelling for monetary policy or financial stability, including GDP nowcasting and crisis prediction.

The Bank of Finland has also published some of this work, for example on the use of Bayesian VAR models for GDP nowcasting and neural networks for predicting systemic financial crises.

Today, we will hear a presentation from the **Financial Stability Board**, on AI and financial stability, and from the **Bank of England** on its approach to AI. We will also have two presentations from academia and two from the banking sector, as well as a contribution from the **European Commission**.

In addition, the **Finnish Financial Supervisory Authority** – the **FIN-FSA** – will summarise the key findings of a recent survey on the use of AI in the financial sector.

More broadly, AI can enhance operations, improve services and open new opportunities for data use and risk management. But we also need to understand how the AI models work and recognize when they hallucinate.

Unlike us humans, when AI hallucinates, it does so with great confidence, which can be both impressive and dangerous. Then again, you might feel that some humans hallucinate confidently and dangerously too – and judging by the news we see, you might be right.

Cybersecurity risks and dependence on third-party service providers are also key concerns. It’s not enough to know which banks are systemically important. We must also identify the critical service providers behind our banking sector services, including the providers of AI models.

And we must understand how the demand for financial services is changing. How soon will we reach a world where customers no longer make their own spending or investment decisions, but instead rely on their personal AI agents to manage their finances autonomously?

Quantum technology and AI

The pace of development is rapid, and it does not stop with AI.

At the Bank of Finland, we recently conducted a survey in the financial sector on the prospects, benefits and risks of quantum technology.

What will be the impact of AI in combination with quantum computing and other emerging technologies? Their combined impact could bring a substantial transformation once the technologies mature.

The financial sector is closely monitoring developments regarding quantum technology, but few institutions have run practical tests or trials, given the early stage of the technology. Our survey found that opportunities are seen especially in risk management, information security and investment activities.

However, data protection concerns remain prominent. Four out of five respondents considered ‘harvest now, decrypt later’ attacks to be a relevant risk.

As quantum computing develops, it has the potential to revolutionise current IT solutions. Therefore, all financial sector institutions should follow developments closely and assess what quantum computing could mean for their own business, and how to prepare for it.

Cybersecure solutions and trust in financial services are foundational to modern society. A resilient economy and financial system are essential under all circumstances.

Impact of AI on financial supervision

Finally, a few words about *AI in financial supervision*.

Artificial intelligence is increasingly being used in the work of public authorities, and we will hear several practical examples from across Europe.

Striking the right balance between trust and innovation is key. We are all in the business of trust, so trials and pilots must not undermine confidence in our work and services. But we are also learning by doing, and sometimes we learn best from mistakes. As someone wisely observed, “*artificial intelligence is still far behind natural stupidity*” – though it is catching up one pilot project at a time.

Not all ideas can be success stories, but we should not be discouraged if we try something and fail. If we never try at all, our AI journey will have failed before it even begins.

As part of the Bank of Finland and FIN-FSA’s shared **Data Economy initiative**, our **Analytics Center of Excellence**, or **ACE** for short, plays a key role in developing our data science culture. Together with partners, ACE has built a cloud-native data science platform that enables advanced analysis of microdata.

The effort invested in our cloud transformation is already paying off: our first major initiative – the new granular personal credit register and cloud-based analytics platform – has already attracted a **Central Banking Award**.

Another example is our newly launched **Innovation Accelerator**. It began earlier this year with a contest for new ideas across our organisations. Three AI use cases were selected as the best proposals, and these have since been developed further in internal hackathons and workshops.

We are also active outside our own walls, for example as members of **AI Finland**, a nationwide AI network, and as partners in next week’s **Junction hackathon**, where young experts will tackle challenges using the latest AI tools. The challenge we will bring to the hackathon is a look at the simplification of financial sector regulation and policies. And yes, I know simplifying financial regulation sounds almost as ambitious as solving the AI alignment problem!

This seminar is a valuable opportunity not only to hear about the latest developments, but also to exchange ideas and learn about real-world experiences.

Tomorrow, we will dedicate the entire day to these practical examples with seven case studies from supervisors and central banks, each showing how AI is being applied in practice.

Thank you all for your time and engagement, and a very warm thank you in advance to all the speakers for your contributions.

I wish you all, both here in Helsinki and online, a very fruitful and inspiring seminar.

The Payment and Settlement System Simulator Seminar has grown into a unique forum for both users and researchers

Dear colleagues, dear friends,

It is my great pleasure to welcome you all to the 23rd Simulator Seminar here in Helsinki.

I am Tuomas Välimäki. Since 2018, I have served as a Member of the Board of the Bank of Finland, with responsibility, among other things, for Payment systems. Before joining the Board, I spent almost a quarter of a century in various roles at the Bank. This has given me a broad perspective on monetary policy, financial stability, as well as market operations and infrastructures.

With this background, I fully appreciate the value of computational models in economic and financial analysis. Whether we are assessing the impact of new tariffs on the Finnish or euro area economy, or exploring broader systemic developments, we need to rely on robust analytical tools. Yet models alone are not enough. We must take a holistic perspective, we need to understand the broader context, analyze interdependencies, and identify systemic effects. Simulation tools and infrastructure data are crucial in this quest.

Simulation, at its core, is about representing real-world processes in a safe and cost-effective way. From flight simulators to military training and even climate modelling, simulation enables us to explore complex and risky scenarios without real-world consequences. Payment and settlement system simulators are part of this family. Thanks to advances in computing power and accessibility, they allow us to study system dynamics under stress, assess liquidity needs, and test the implications of new settlement mechanisms safely, effectively, and at a relatively low cost.

The first simulator seminar was held in 2003, just one year after the physical euro was introduced as the common legal tender in 12 countries. At that time, key research questions related to the impact of the transition to the forthcoming TARGET2 payment system that was to replace our national BOF-RTGS. To ensure a smooth transition, we opted to simulate the process. This led to the launch of the first generic BoF Simulator in 2004, and four years later, to a successful integration into TARGET2. Over time, TARGET2 has evolved into T2 Services, and likewise the BoF Simulator has advanced into the Simulation Tool. Most recently, this Tool was used in a Europe-wide stress test of the payment systems. To me this was an excellent example of the Tool’s success.

Also, the annual simulator seminar has grown into a unique forum for both users and researchers. It not only showcases the latest developments but also fosters the exchange of ideas and experiences across the community. I hope this seminar offers valuable support for the practical application of the BoF Simulator. I encourage you to take full advantage of this opportunity: ask questions, challenge assumptions, and share your insights throughout the sessions.

We are also looking ahead. After almost a quarter of a century with similar events, the time might be ripe for something new. Should we refocus these seminars? For example, shouldn’t we try to integrate them more closely with other topical issues in central banking, like CBDCs or the level of excess liquidity in the banking sector? Digital euro or US dollar stable coins are hot topics wherever central bankers meet these days. Everyone agrees that they might reshape payment flows, but opinions differ on how and to what extent this happens. Maybe simulation tools can shed some light on this.

Similarly, after the end of large-scale asset purchases central bank balance sheets have been shrinking across the world. We know that interbank flows shifted significantly when banking sectors moved from balanced liquidity conditions to abundant reserves. I believe most of us would agree there will be major changes in the interbank flows as we return towards neutral liquidity levels, but we would probably disagree where the new normal lies. Again, simulation tools could prove particularly valuable in this type of analysis.

During tonight's dinner at the Bank of Finland's Villa, we will invite you to an open discussion on the role and positioning of this seminar among other events in the field. Your views will be essential in shaping the concept, its future direction, and ensuring it continues to serve the needs of its community.

Finally, let me extend my sincere thanks to all the speakers, discussants, and colleagues who have made this seminar possible. I wish you a rewarding and insightful seminar, and a very pleasant stay here in Helsinki.

Thank you!

Where can stability be found if the anchor comes loose? Dollar turbulence and the euro’s international role

Bank of Finland's stakeholder event on 14 August 2025

Presentation (pdf)

Translation of the draft script.

Where can stability be found if the anchor comes loose? Dollar turbulence and the euro’s international role

First, may I also wish you a very warm welcome to this Bank of Finland stakeholder event. Governor Rehn’s depiction of monetary policy in these times of uncertainty leads us nicely to the theme of my talk, which is the possible, though unlikely, prospect of a change occurring in the status of the global economy’s anchor.

One consequence of the recent actions of the United States administration is that the dollar’s standing as a safe haven and reserve currency has been the focus of more critical scrutiny. From the Eurosystem’s perspective it is essential to look at how the euro’s role in global financial markets can be developed in the present environment.

I shall briefly examine the factors behind the dollar’s turbulence seen in the first part of the year and the opportunities to strengthen the role of the euro and European investment assets. I must emphasise at this point that I am not in any way calling for the euro’s role to be strengthened at the expense of the fundamentals of the global economy.

The task of central banks is, above all, to stabilise the value of money and purchasing power. Trust in the monetary economy is both a premise for stability and a consequence of it. Wishing for or fostering change could be a risky undertaking, given this context. With the forces of change pushing on independently of us, our task is to analyse developments closely and to seek to strengthen the euro’s position and its stability.

The US dollar is still by far the most important reserve currency, even though its share of global currency reserves has fallen from over 70% to less than 60% since the creation of the euro. At the end of 2024, the euro’s share was about 20%. This is slightly higher than in the early years of the euro, but is lower than it was about 15 years ago, when its share was nearly one quarter.[1] The euro is still clearly the world’s second most important reserve currency, even after the European sovereign debt crisis and the extended period of negative interest rates.

The euro is also second only to the dollar in other metrics too, such as in international debt, loans, deposits and foreign exchange turnover.

However, the euro's role in the global economy should not be taken for granted. Nor should its current position be seen as optimal. The circumstances for strengthening the euro's role are now remarkably good – unfortunately, perhaps. For this to happen, however, there needs to be deeper economic integration in Europe. I shall return to this point.

There have been extraordinary signs this year that the dollar's dominance is being shaken. Underlying this has been the US economic policies.

This was perhaps most clearly highlighted in April, when the tariff announcements and questioning of the central bank's independence gave rise to a widespread reaction in the markets. The unpredictability of US policy is continuing, and there is still no end to the twists and turns – despite the many trade agreements that have been provisionally reached.

Besides trade policy, there has also been turbulence in the geopolitical environment. The United States has altered its stance towards its allies to such an extent that some countries, at least, might in the future be less willing than today to invest in the US.

At the same time, the US has introduced various economic policy reforms which, according to economists, will add further to the already large budget deficit. Although high debt levels are a problem in many economies, investors have started to question how sustainable the debt trajectory is in the United States, especially in a situation where the credit rating has weakened and there are repeated budget disputes in Congress.

There are also smaller and more technical considerations that do little to enhance the confidence of those investing in US debt securities – such as the country's loss of its AAA credit rating and the regular demands by Congress to raise the debt ceiling.

At the same time, there are indications that institutions regarded as stable are being undermined. Besides challenging the independence of the central bank, there have also been quarrels with the judicial system, and key economic statistics are starting to be politicised.

These actions have had an exceptional impact on the dollar. The exchange rate no longer follows yield spreads in the way we have been used to. The dollar has depreciated, even though US interest rates have risen in relation to the euro area.

The reaction of financial markets has not been limited to the weakening of the dollar. Following the turbulence of the tariff announcements, many of the established correlations in the financial markets were ‘broken’ for a short while. During the worst of the turbulence the dollar, US stocks and (long-term) Treasury bonds lost value. US government bonds also fell in value against swap rates, and the cost of hedging against dollar depreciation rose on the options market. This is exceptional, as the dollar and US government bonds have long been regarded among international investors as safe havens from crises and they have invested in these partly for this reason.

It was good news that amid the tariff upheavals there was some safe haven demand for euro area assets, and the markets functioned almost without difficulty.

Uncertainty over US assets has subsequently faded somewhat, but has not disappeared. The dollar is still considerably weaker than at the start of the year, and the unpredictability of US policy is, generally speaking, keeping investors on their toes.

For foreign investors, the dollar’s negative correlation with share prices has traditionally provided a safeguard, and so the foreign exchange risk has often not been fully hedged. But now, investors have, with reason, been questioning whether this can be relied upon as before. There is evidence that, since April, international investors have been hedging their dollar positions more than previously. This has accelerated the weakening of the dollar, although it is not the only reason for this. The prices of currency options have also now been restored a little.

The demand for euro area debt securities has been strong. Foreign central banks have been active in buying euro government bonds, and the demand for corporate bonds has also been strong. Market participants are reporting that investors have been looking for alternatives to the dollar. This view is also supported by statistical data on the investment streams of funds and US debt securities. Nevertheless, on the basis of activity in the equity markets, it seems that tax reductions and the passion for technology have restored the optimism of investors towards the dynamic corporate landscape of the United States.

My own interpretation of these market indicators is that there are early signs that investor interest is shifting from the dollar to the euro and other currencies. So far, however, the evidence to support this is rather thin and does not yet reveal any fundamental shift. It remains to be seen whether the swings earlier in the year were just a shift in the tactical positioning of investors or whether investors are altering their investment strategies more permanently. From the viewpoint of orderly market functioning, the hope in any case is that capital movements will occur in a controlled manner in the longer run.

Based on market fluctuations, the way in which investors view the United States as an investment destination seems to have changed, at least to an extent. But what do investors themselves say?

Two surveys have recently been carried out that allow us to try to determine what major investors are thinking. The ECB’s Institutional Investor Dialogue includes some of the largest asset management companies, while the OMFIF’s Global Public Investor survey includes central banks and other important investors in public assets.

You can infer from the surveys, first of all, that investors do intend to structurally alter the allocation of investments away from the dollar, in part towards Europe. Many have already reduced their tactical US allocations.

Secondly, trade policy and geopolitics, as well as the situation more generally in the United States, are a cause of widespread concern, and this does have an impact on investment decisions.

And thirdly, investors do not believe that the dollar’s reserve currency status will crumble, and the expectation is that changes will occur slowly. The position of the dollar is nevertheless of such importance that even a small-scale shift of international investors from the dollar to the euro would bring a considerable amount of additional investment to Europe.

The surveys therefore verify the signals given by market indicators. Although no significant shift has occurred so far, the actions of the United States have caused investors to ponder alternatives to the dollar. I must add here that I shall be very interested to hear about how you view the situation.

Europe and the euro now have an opportunity to benefit from investor interest. The role of euro area sovereign bonds as a global safe haven appears to have strengthened in recent months. But what can we do better in order to attract more investors to Europe?

We have really quite a considerable opportunity now if we make the right choices and work together towards a common goal.

Let’s consider for a moment what features are actually required of a global reserve currency.

To begin with, the economy in question must normally be large and growing, with debt at a sustainable level. Stable and strong institutions are also clear advantages for the euro. We must maintain and strengthen these basic pillars in Europe in the future, too. Europe's position will also be underpinned in the coming years by bolstering its capacity to defend itself. These already feature broadly on the agenda of Europe's politicians.

Deeper, more liquid and more unified capital markets would also support the international use of the euro. The wide-ranging promotion of a savings and investments union is at the heart of this, and we at the Bank of Finland, and in the Eurosystem, are seeking to play our part in these developments.

In the current geopolitical environment, the role of a digital euro as a new European means of payment has become more significant. A more effective payment system, for instance regarding wholesale and cross-border payments, would in other respects, too, improve the effectiveness of European financial markets and boost the euro's attractiveness.[2] We will also see to the euro's availability in all circumstances, even outside the euro area, through the ECB's liquidity facilities. This, too, will foster the euro's international role.

I would nevertheless like to concentrate today on the sufficiency of safe investment assets. We are still lacking a common and safe European investment asset. As we know, the discussion about financing Europe's defence is especially topical. Could we also at the same time strengthen the euro's ability to function as a global reserve currency? Or to put it another way, could we kill two birds with one stone?

First let's consider what we mean by a safe investment asset. [3]

A safe investment asset is an asset for which there is the greatest confidence that its value will be preserved in all circumstances. Such assets are highly creditworthy in that the probability of the issuer defaulting is extremely low. They are also very liquid, making them easy to sell in almost all circumstances. Safe investment assets therefore tend to retain their value or even gain in value in times of crisis in the markets.

Safe investment assets bolster risk assessment in financial markets, as other securities and their risk level are priced in relation to these safe assets. This improves market transparency and reduces financing costs.

Safe investment assets are also used as collateral and as underlying security in many market segments that are important for the functioning of the financial markets, especially in the repo market, in derivatives and in central bank refinancing operations. Without a sufficient amount of high-quality collateral, key financing channels can freeze up. This is what we saw in the global financial crisis that began in 2008.

US government bonds have long met the conditions for being safe investment assets. They have formed an anchor for global markets – a foundation for pricing international finance, and a safe haven for investors to move to when the pricing uncertainties related to other investment assets exceed a certain tolerance level.

The existence of safe investment assets is therefore essential to the functioning of the markets. The United States benefits in various ways from being an issuer of safe investment assets.

As US government bonds are considered a safe investment, there is extensive demand for them globally. This reduces the country's financing costs. The US enjoys this so-called 'convenience yield', a premium which investors are willing to pay for the benefit of holding US bonds. Envious onlookers might instead call this, in the words of Giscard d'Estaing, an 'exorbitant privilege'.

Extensive international demand also means that there is unending additional capital for financing investments in the United States. What's more, the US can also rely on an inflow of capital in crisis situations. Looking at the euro area, it would be advantageous if its monetary policy were to be transmitted more evenly across the euro countries in crisis situations too – instead of yield spreads widening between countries, as tends to happen nowadays.

Can the euro's international role be fostered by increasing the amount of safe investment assets in the euro area?

As I noted earlier, the euro and the European sovereign bond markets would appear to meet the basic requirements for becoming international safe investment assets.

However, although our sovereign bond market is large – in excess of EUR 10 trillion – it is only about one third the size of its US counterpart. The position of the debt securities market in the euro countries is further weakened by it being fragmented on the basis of the various issuers.

As a consequence, we actually have a lot fewer safe, highly creditworthy investment assets. The closest to a safe investment asset that we have in the euro area is the German 10-year Bund, but the volume of these is small from the perspective of the global financial markets.

Regarding the completion of Europe's capital markets union, it is important that we have a sufficient supply of euro-denominated safe investment assets for the purpose of financing the growing investment needs and for bolstering the euro's international position.

Within the current framework, more safe investment assets for Europe could be found in the medium term by improving the credit ratings of the EU's Member States. An improvement in member countries' debt sustainability would also be desirable from this perspective.

If Europe was able to offer a genuinely safe and liquid investment asset equivalent to US government bonds, it would provide investors with a credit-risk free, liquid, homogeneous alternative as a foundation for their investment portfolios. This would also advance the wider use of the euro. In the surveys I mentioned earlier, investors specifically identified the absence of a safe investment asset as being the biggest obstacle to expanding the euro's reserve currency role, although they also pointed to the temporary nature of common debt (EU bonds), and the inadequate liquidity of the government bond markets.

The creation of investment assets is not, of course, a sufficient justification in itself for accumulating public debt, but there is currently a justified need in Europe for debt financing both nationally and on a common basis, because capital is needed for the necessary strengthening of Europe's common defences.

Europe already has a significant amount of common European debt [left-hand graph]. But even these debt securities do not behave like safe investment assets.

What, then, do we need to do to ensure any future common European debt is to be more like a safe investment asset?

A clue can be gained by looking at a comparison of the debt securities of particular institutions. The interest rate on ESM debt is the lowest among EU institutions [right-hand graph]. The ESM is well capitalised. This emphasises the need for common revenue streams in order that common debt can really be a safe investment asset.

A safe asset requires not only a clear and credible guarantee structure but also certain more technical properties, such as the inclusion of active futures trading in the most important bond indices, permanent and homogeneous issuances and active collateral usage in the repo market.

Nevertheless, current institutional structures do not allow the creation in the euro area of an instrument with an adequate guarantee structure. An investment asset that is genuinely like the US government bonds would require either a common tax base, a federal budget or other institutional division of responsibilities within which you could issue homogeneous and credit-risk free debt securities.

The creation of genuinely safe investment assets would therefore require significant changes to European institutions. I do nevertheless believe that a well-designed common European safe asset – whether in the form of eurobonds, common debt securities or some other structure – could constitute a safe investment asset and its benefits could be distributed more widely among Member States. The euro countries' 'convenience yield' should not concern only German bonds. Public debate on the different alternatives is already under way. Covering borrowing with common revenue streams is critically important, however.

But I would also emphasise at the same time that alongside the creation of a common safe investment asset, it is also important to strengthen national safe investment assets.

To finish with, I shall run through a few concluding remarks. The role of the euro in international financial markets is robust, but it should not be taken for granted. The latest actions by the United States have raised questions among investors about the role of the dollar, and Europe now has a unique opportunity to strengthen its own position. This is not an end in itself, but, rather, a stronger international role for the euro would support growth in the euro area economy and the strategic autonomy of the euro area in a changing world.

This requires us to work in a determined manner to foster economic growth, ensure debt sustainability, maintain stable institutions and deepen the capital markets.

There should be a focus on increasing the amount of safe investment assets, particularly now when there are discussions in connection with the financing of defence spending. A safe investment asset is not merely a technical financial detail – it is an essential element of a capital market that finances investments. With common input at EU level, it should be possible to improve the efficiency of budgeting and borrowing.

As always, major reforms are challenging and take time, but nothing can be completed if it's never been started. To paraphrase President Kennedy: *We choose to do things not because they are easy, but because they are hard.*

If we are to succeed, the EU must develop a strategy which would allow the creation of additional, genuinely common, safe investment assets and would improve the debt sustainability of Member States. This would foster economic growth and the stability of the financial markets, and would also deepen the capital markets union and strengthen the euro's role as an international currency.

Thank you for your kind attention. With that said, I now look forward to hearing you views on the development of the market and on ways to strengthen the role of the euro.

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[1] The euro's international role is examined in more detail in the ECB's annually produced report ‘The international role of the euro’, which was published in June this year.

[2] I have spoken about the importance of a digital euro and payment modernisation in various other contexts, such as in a speech entitled ‘A digital euro could be a cornerstone for payments’ (in Finnish), on 15 May 2025, and another entitled ‘Finnish payment and settlement systems should be developed for a future common European market’ (in Finnish), on 10 March 2025.

[3]I have discussed this earlier in a blog post: https://www.eurojatalous.fi/fi/blogit/2025/turvallinen-sijoituskohde-on-paaomamarkkinoiden-ankkuri/, (in Finnish) on 30 April 2025.

Preventing Monkeys from running Monetary Policy operational frameworks

Dear friends, dear colleagues,

I start with two pledges. First, this will be my final intervention today, and second, I'll be brief.

Some of you know that we were supposed to hear an excellent dinner speech by Francesco Papadia, my dear friend and co-author. Unfortunately, he couldn't join us today here in Helsinki after all, but I will hint on what his messages to us would have been.

Francesco wanted to provide us with the big picture, by tackling the rise and fall of central bank balance sheet management indicating that the origin and the responsibility of sovereign spreads must be found in Rome, Paris, Helsinki and other Member State capitals rather than in Frankfurt.

In his draft speech, Francesco concluded that managing the central bank's balance sheet has proven to be a useful tool in times of market stress and at the lower bound, though its effectiveness in the latter case was limited, as seen in the prolonged failure to meet the inflation target. To his view, which I do share, this highlights the need for stronger preemptive measures to avoid reaching the lower bound, without raising the inflation target, while recognizing that policy trade-offs become more pronounced at very low rates.

For now, interest rate adjustments suffice, but balance sheet tools should remain available also for future use. When that time comes, we'll benefit from the lessons and data gathered, likely leading to a more cautious and informed application.

Having said this, I don't dare try to replace Francesco, but as we are here tonight at Suomen Pankki's Villa, well-fed, surrounded by some of the sharpest minds in monetary policy implementation and waiting for the dessert, let me share you a story that has absolutely nothing to do with interest rates, liquidity tiers, or central bank balance sheets.

It's a tale about monkeys. Five of them, to be precise.

In a behavioral experiment, five monkeys were placed in a cage. A banana was hung enticingly from the ceiling, just out of reach, but with a ladder leading up to it. Naturally, one monkey climbed the ladder. But the moment he did so, all the monkeys get sprayed with cold water. Now, this was repeated with another brave monkey, with the same outcome. It didn't take long before they collectively realized that climbing the ladder equals group suffering. So they stop trying.

Then the researchers, those mischievous minds, replaced one monkey with a newcomer. This fresh monkey, unaware of the watery consequences, made it for the banana... and was immediately attacked by the others before he even reached the first step of the ladder. No water was sprayed, the researchers had turned off the system, but naturally the enforcement continued. One by one, each of the original monkeys was replaced, and always the newcomer tried to go for the banana, and faced the consequences by being attacked by all other monkeys and learned the unpleasant lesson. This went on until none of the original water-sprayed monkeys remained.

And yet, none of them went for the banana. Why?

Because, in their silent consensus, they knew that if one of us tries to reach the banana, we will all attack him. But why: Well, that's just how it's always been done.

Now, why am I telling you this at a dinner of a conference on monetary policy implementation?

Because operational frameworks, like monkey ladders, carry the weight of precedent. Once built, they are carefully tended, tweaked, interpreted, and defended. Over time, features introduced in response to specific conditions can petrify into unquestioned norms. Liquidity instruments designed for crisis-fighting may persist long after the crisis has passed. Interest rate corridor widths, collateral eligibility rules, counterparty lists, these can all become ladders no one dares climb, even when the water has long stopped spraying.

Of course, there is wisdom in continuity. We build on experience. We don’t reinvent the operational wheel with every policy cycle. But there’s a fine line between honoring best practices and blindly preserving them.

That is why gatherings like this, conferences that bring together practitioners, policymakers, and academics, are not just useful; they are essential.

They give us a chance to ask: Why do we do things the way we do? What assumptions underlie our tools? What elements of our framework are there because they work, and which are there simply because they've always been there?

Together, we explore the structure of our monetary policy operating frameworks. Not just to preserve them, but to improve them. We challenge each other, share our experiences, and spot the ladders we’ve stopped climbing, not because they’re dangerous, but because we’ve forgotten why we ever feared them.

So, as we enjoy this evening, let’s toast not only to the smooth functioning of our frameworks, but also to the courage to examine them critically, and to the discussions that keep us from turning into monkeys in tailored suits.

Thank you all for today. Now it’s time for our final agenda item, the dessert.

A new dawn, a new day, a new life for monetary policy implementation

Slides (pdf)

Ladies and Gentlemen, dear colleagues, dear friends,

It's a pleasure to open this conference co-organized by Suomen Pankki, Bank of Finland and SUERF, and to extend a warm welcome also on my behalf.

"It's a new dawn, it's a new day …" and, at least for those of us who spend our days occupied by the mechanics of operational frameworks, it just might be a new life for monetary policy implementation.

I promise not to sing like Nina Simone, or any of the other great voices who have recorded the classic song Feeling Good. But I believe that the spirit of that song captures something essential about where we find ourselves today. After years of unconventional measures, swollen balance sheets, and abundant reserves, combined with shifts in financial market structures, technology and regulation, we are clearly entering a new phase.

We are rethinking how monetary policy should be implemented in a new, more "normal" environment - whatever that may mean in a world where economic policies are redrawn every morning in the Truth Social.

But, let me borrow the spirit of Nina Simone's question: Are we feeling good? Are we confident that our frameworks are fit for purpose? Are we ready to adapt and learn by doing, as Vicky Saporta, our next speaker, will aptly describe in her remarks? Are we ready for the next chapter?

This conference offers an important opportunity to reflect on those questions. I'm delighted to see such a high-caliber and wide-ranging group of participants gathered here today. It underscores not only the importance of this topic but also the growing appetite for open, and perhaps even a bit nerdy, technical discussions on monetary policy implementation.

This topic rarely makes headlines. Even among central bankers, implementation details are sometimes treated as a footnote. But we at the Bank of Finland believe this conference helps to fill still existing gaps. After all, how we implement monetary policy does shape the financial system and its infrastructure in a fundamental way.

Before we get started, I sincerely want to thank all the speakers and participants. Your time, expertise, and insights will be invaluable as we collectively explore the forms of this "new life" for monetary policy implementation.

Over the next few minutes, I will outline three interrelated key themes we must confront as we design the next stage of our implementation frameworks: the size and role of central bank balance sheet, the design of central bank liquidity tools, and the role of the reserves market.

But first my normal disclaimer: the views I present today are my own and do not necessarily reflect those of the Eurosystem. That said, if they don't, I will do whatever it takes to persuade the Eurosystem to adopt them, and believe me, it will be enough.

Where we stand: the ECB's March 2024 OFR Decisions (Slide 2)

Let's begin with a brief overview of where we currently stand.

We know central banks can use different approaches to control short-term interest rates. The Federal Reserve operates with ample reserves, the Bank of England uses a demand-driven floor system, and the Swedish Riksbank has opted for a narrow corridor. All these approaches work well. They all achieve their core objective: control over short-term interest rates.

Since multiple frameworks can achieve their ultimate goal, the choice must be guided by other considerations: how each framework interacts with the financial system, the incentives it creates and side effects it implies. In other words, the design of an implementation framework is not just about whether it works, but how it works in practice and solves the associated trade-offs.

In March 2024, the ECB Governing Council decided to move toward a demand-driven system. The new framework resembles the Bank of England's model in several respects, but of course, it reflects the unique characteristics of the euro area: its bank-based financial system, heterogeneity, and the institutional design in the single currency area.

Let me briefly recap the key elements of the Eurosystem's updated framework:
The deposit facility rate (DFR) was confirmed as the main instrument to steer rates. Some volatility in money market rates is accepted to foster market activity, via a 15-basis-point interest rate spread between deposit and lending rates.

The Eurosystem will provide reserves through a mix of instruments, including new structural operations. These will be designed to meet the banks' structural need for liquidity that is expected to remain well above pre-GFC levels. While the direction is clear, many operational details are still under development. Gioia Cellai's presentations later today will contribute to that work.

Finally, the balance sheet will not remain permanently oversized. However, the adjustment process will be gradual, allowing us to assess how our tools perform, how markets develop and adapt as needed. The next formal review, scheduled for 2026, gives us flexibility along the way.

This conference is an important part in that reflection process.

Now, let's take a step back and examine some broader implementation questions that apply not only to the Eurosystem but to central banks more generally.

Natural vs. Optimal Balance Sheet size, and how to Get There (Slide 3)

A central question, one I'm sure others will also raise today, is: What is the appropriate size of the central bank balance sheet? And how should we approach the transition?

A helpful distinction here is between the natural and the optimal size.

The natural size is the minimum needed to meet the structural liquidity needs of the banking system. For the central banks issuing a reserve currency, like the Eurosystem, typically the liability side dominates. That is, the demand for banknotes and reserves exceeds central bank's basic demand for assets like foreign exchange reserves. This kind of a structural liquidity deficit is met through policy operations on the asset side, typically by providing banks with refinancing operations and/or holding a securities portfolio.

The optimal balance sheet size goes beyond the natural one. It incorporates policy objectives and some trade-offs. A larger balance sheet can reduce short-term rate volatility and support financial stability, at least in the short run, but it also expands the central bank's footprint in financial markets, reduces incentives for market activity, and may introduce moral hazard.

There is no universal one-size-fits-all answer to the optimal balance sheet size. It evolves with the financial system and institutional context. One unresolved question is whether abundant reserves (or large balance sheet) genuinely enhance financial stability. Recall the 2023 US banking turmoil: Silicon Valley Bank and some others collapsed despite abundant reserves in the U.S. banking system. Conversely, in the euro area, abundant reserves may have helped to shield banks from contagion.

Ultimately, the size and composition of the balance sheet reflect both past and present policy needs. For example, in 2020, the pandemic pushed the optimal size far above the natural level. This illustrates the key point: the natural and optimal sizes do not always, or even often, coincide. But when steering short-term rates is sufficient, the optimal and natural balance sheet sizes can over time converge.

We'll hear more on this from Vicky Saporta, Thomas Vlassopoulous, Heidi Elmér, and Stéphane Lavoie. While I haven't seen their slides yet, I expect a shared theme will be that many central banks now define the natural balance sheet as one that satisfies reserve demand, and no more. Whereas the Fed supplies reserves more than demanded through asset purchases, the BoE allows banks to determine their reserve needs and supplies them flexibly through lending operations.

In the future, we will be moving (in the euro area) to a hybrid model, having a structural outright portfolio together with lending operations. The marginal reserve unit will be supplied through the latter, in a demand-driven manner.

As we transition from today's oversized balance sheet, three elements are particularly important:

First, money market activity, measured both in prices and quantities, will help assess reserves scarcity and the efficiency of their redistribution. We will learn on the current state of play in money markets later today from Sriya Anbil, Christoph Rieger and Jean-Louis Schirmann.

Second, participation in standard credit operations provides insights into banks' demand for reserves.

Third, market capacity to absorb maturing securities from our legacy portfolios, quantitative tightening (QT), especially amid rising euro area sovereign issuance to cover e.g. increasing defense spending, must be monitored closely.

So far, we've seen no signs of reserve scarcity. But our new operational framework must be ready before scarcity re-emerges. And it's not just about us, banks must also be ready to use the tools as intended.

To conclude this section, given the uncertainties, we need not only a steady-state balance sheet, but also a credible transition path, one that remains flexible and data-driven.

Designing Central Bank Liquidity Tools (Slide 4)

Now to my second topic: the design of liquidity tools.

I've long argued for a clear distinction between two types of operations: first, short-term operations to control the short market rates, and second, structural longer-term operations aimed at enhancing financial stability.

For the euro area this could mean:

First, tiered collateral framework: Limit short-term policy operations to high-quality liquid assets (HQLA), while accepting the broader range of collateral in longer-term operations. This would support the control over interest rates and put limits to regulatory arbitrage, much like the Bank of England's approach.

Second, different tender procedures: fixed-rate full allotment (FRFA) is ideal for short-term operations. Indeed, one of the main findings in my PhD thesis, already over 20 years ago was precisely that fixed-rate operations offer the best control over short-term rates, especially when banks' demand for reserves is uncertain. FRFA adjusts reserve supply quickly, also supporting financial stability and even liquidity in bank resolution if needed. And we can go beyond the current weekly operations: why not consider an open-ended 24/7/365 facility at the policy rate against high quality liquid assets? Niko Herrala will share thoughts on that later today.

In contrast to the operations in which the central bank acts as a rate setter, competitive auctions make more sense for longer-term operations. Acting as a rate taker in these financial stability-oriented operations reduces distortions, puts a price on enhanced liquidity transformation, and reveals information on reserve demand.

Third, no stigma: credit operations must be seen as a normal part of the toolkit. Several central banks here today are encouraging banks to use facilities in the future. From my perspective, the two main features to prevent stigma are: 1) if the price of borrowing reserves directly from the central bank does not exceed the market rate, the use of central bank facilities should not result in a separating equilibrium, and in any case 2) the institutions using the central bank operations or facilities should not be disclosed.

Finally, the width of the interest rate corridor matters. Whereas rate volatility grows with the width of the corridor, a wider corridor provides more room for market activity. Hence, the optimal width depends on central bank preferences regarding rate volatility and market footprint. In the Eurosystem, the Governing Council opted last year for a 15-basis-point spread between the deposit facility rate and main refinancing rate.

That said, different frameworks may work equally well in different contexts. I am looking forward to Fernando Restoy's speech, which will touch on how evolving bank liquidity management may influence monetary policy implementation.

What Is the Role of Reserves? (Slide 5)

Let me close with a few reflections on reserves and in particular minimum reserve requirements (MRR), and their function in the operational framework.

In a corridor framework with a lean balance sheet, MRR limits rate volatility and is market-neutral, if remunerated appropriately.

But in ample reserve or demand-driven floor regimes, like the Fed or the BoE, MRR plays no real role in rate control. This is evidenced also by the fact that neither the Fed nor the BoE have MRR. Today, the other historical function of reserve requirements, liquidity assurance, is largely covered by the liquidity coverage ratio (LCR) and other supervisory tools.

If one applies MRR, one should be clear about its aim, and this should also drive its design. Do we aim at better rate control, monetary policy effectiveness, financial stability, or central bank income? Currently, minimum reserves are not remunerated by the Eurosystem. MRR are not currently needed to reduce short-term rate volatility. It functions more like a tax, countering the effect tiering had when negative interests were applied.

Heidi Elmér will cover this topic in more depth from the Riksbank's deposit requirement perspective.

More broadly on the role of reserves in transmission. The choices on the design of monetary policy implementation affect the amount of reserves in the banking system. But is this an issue from monetary policy transmission perspective?

While we should be mindful of the links between implementation and transmission, policy rate, our most effective and best understood tool, will remain the primary tool for setting the monetary policy stance also in the future. Furthermore, any potential impact from our implementation choices to the policy stance e.g. via credit intermediation can be taken into account while setting the policy rate.

We managed fine pre-GFC with far less reserves. Still, if banks want to hold more safe assets in the form of reserves than 20 years ago, let’s allow that, in a market neutral way. Perhaps they should even be allowed to pre-commit to a certain level of reserve holdings and access them via long-term structural credit operations at competitive prices.

In this respect, I see merit in the idea of voluntary reserve requirements.
Even if demand for reserves proves higher than expected, that does not mean central banks need to hold massive securities portfolios and accept related risks. In bank-based economies, especially currency unions without fiscal unions, structural credit operations may be a more efficient and targeted way to supply liquidity.

Concluding remarks (Slide 6)

Let me conclude by returning to the question I posed at the beginning: Are we feeling good?

After reflecting on the progress we’ve made, I’d say: I feel better than James Brown.

But seriously, this is a moment of opportunity. The Eurosystem has a solid operational foundation. Now is the time to learn, refine, and adapt. We’re not starting from scratch. We’re building on years of experience, evidence, and excellent collaboration within the central banking community.

Our framework is not static. The insights we get from conferences like this improve its evolution. We still face many open questions: how the adopted frameworks perform in practice, how markets react, and how implementation choices support broader policy goals.

This conference is not about final answers. It’s about engagement. We wish to see you all contributing as we move towards the ECB’s 2026 operational framework review. Your input will help shape not only the future of the Eurosystem’s framework, but also the broader understanding of how central banks can implement policy effectively in different environments.

Because let’s not forget: the operational framework we design today will shape the financial system and its infrastructure and define how monetary policy works in the next crisis.

I look forward to the discussions ahead, and to continuing the debate over dinner later this evening.

I truly hope this conference sparks fresh insights, new friendships, and lasting collaborations.

Thank you for your attention.