EUROPEAN CENTRAL BANK

EUROSYSTEM

Euro money market study 2024

Money market study 2024 trends as observed through MMSR data*

*(first quarter of 2023 to fourth quarter of 2024)

April 2025

Contents

Introduction

The 2024 Euro money market study provides a comprehensive analysis of euro money markets using trade data from the 45 largest euro area banks. It examines five key segments of the euro money markets: (i) secured transactions – repurchase agreements (repos) and reverse repos, (ii) unsecured cash transactions, (iii) short-term securities issuance, (iv) foreign exchange swaps, and (v) overnight index swaps. The study describes developments in these segments between January 2023 and December 2024 based on daily money market trades reported to the European Central Bank via the Eurosystem's money market statistical reporting (MMSR) dataset.

This study is structured into two main parts. Part 1 analyses key developments, describing in detail the evolution of the euro money markets over the past two years and explaining the reasons behind these changes. Part 2 uses a series of charts to explore developments in each money market segment. The charts show various dimensions of the market such as volumes, prices, counterparties and maturities. Looking ahead, the 2026 Euro money market study will include trades executed by 69 rather than 45 banks, thus broadening the scope of the analysis. This will reflect the increase in the number of MMSR reporting agents.

1 Key developments in 2023 and 2024

The first part of the study examines key developments in euro money markets in 2023 and 2024. It describes the main features and changes observed (Section 1.1) and provides a comprehensive analysis of the factors driving them (Section 1.2). It also offers insights into (i) the factors behind the as-yet unexploited opportunity for arbitrage between unsecured and secured short-term rates (Box 1), and (ii) the impact of the 2023 global banking stress on the markets (Box 2).

1.1 Main features and changes

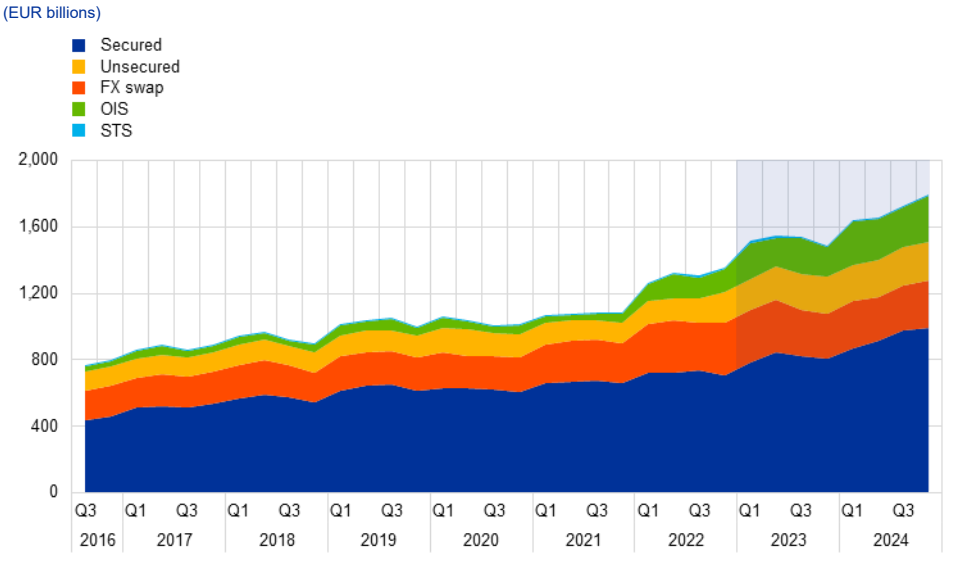
Euro money markets experienced a significant increase in activity, with continued concentration in short-term tenors and a large presence of non-bank counterparties.

Rates converged towards the DFR, and a persistent spread emerged between secured and unsecured overnight rates.

Increased market activity. Daily aggregate turnover rose by 38% from €1.3 trillion in 2022 to €1.8 trillion in 2024. Growth rates varied: secured transactions rose by 41% and unsecured trades by 28%, while short-term securities (STS) fell by 32% and foreign exchange (FX) swaps by 12%. Overnight index swaps (OIS) saw the highest growth at 101%, driven by expectations of interest rate changes. The fall in STS and FX swap trades was due to a shift towards slightly longer maturities, as outstanding amounts remained stable. Secured trades dominated the euro money market, making up more than half of total money market turnover (**Chart 1**).

Chart 1

Daily average volume per segment



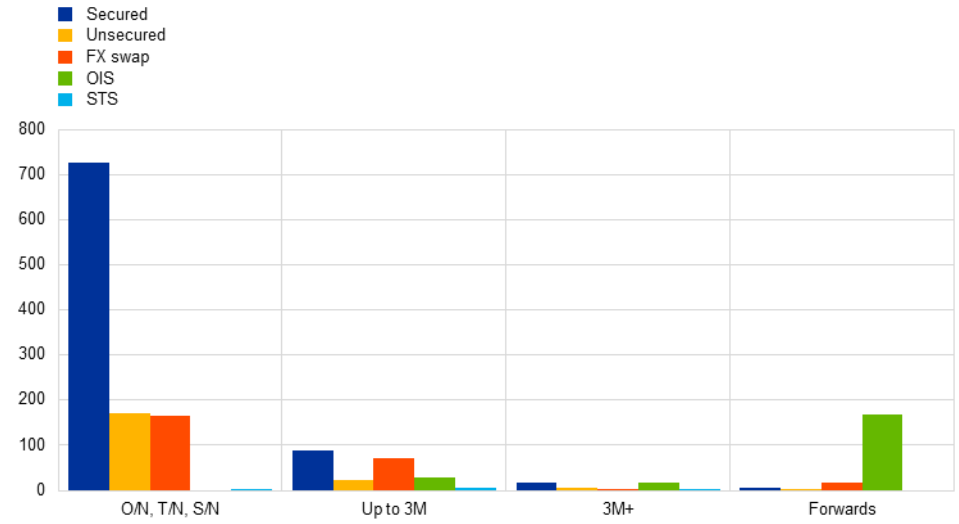
Sources: MMSR, CSDB and SHS.
Notes: Transactions between MMSR agents (reported twice) are included solely as lending to prevent duplication. OIS transactions, which refer to a notional amount that is not settled, are included alongside other funding instruments to show the total size of the money market, even though actual monetary transfers occur only in the non-OIS segments.

Market turnover remained concentrated in very short-term tenors. While the euro money market covers trading in maturities up to one year, tenors longer than three months are more usual in the STS and OIS segments. In total, 78% of OIS involved forward contracts (**Chart 2**).

Chart 2

Daily average volume per segment

(EUR billions)



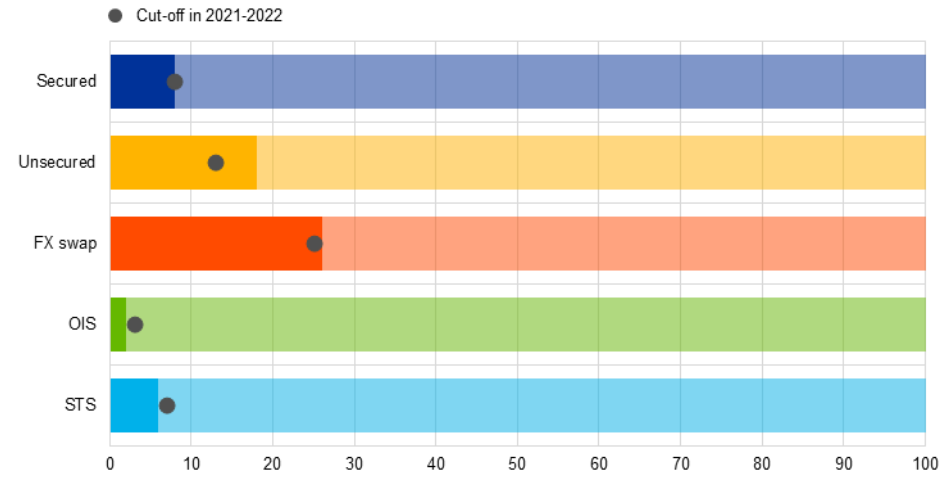
Sources: MMSR, CSDB and SHS.
Notes: Daily average transaction amounts. "O/N, T/N, S/N" refer to overnight, tomorrow/next and spot/next contracts. "Forwards" refers to contracts where the start date is set for a future date beyond the standard settlement period, typically two business days. OIS forwards are often set to begin at the start of a reserve maintenance period, allowing parties to cover against interest rate changes.

Dominance of non-bank entities. Interbank activity remained modest, ranging from 2% to 26% of the total turnover across segments. It rose from 13% to 17% in the unsecured segment, while difficult to assess in segments with central clearing, as MMSR data only cover trades involving the reporting bank. CCPs handle 70% of the secured turnover and most of the OIS. Non-bank entities are key counterparty sectors in all segments, with public institutions showing notable growth in the secured segment during 2024 (**Chart 3**).

Chart 3

Share of trades by counterparty sector

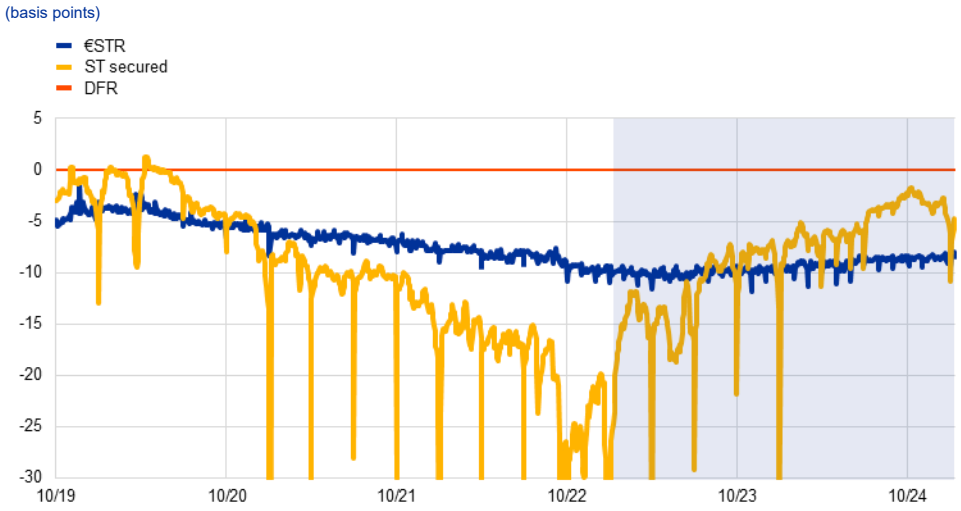
(percentages)



Sources: MMSR, CSDB and SHS.
Notes: Intense-coloured areas refer to trades between Euro Area banks, while light-coloured areas indicate trades with CCPs and other entities. Daily average transaction amounts.

Rate convergence towards the deposit facility rate (DFR). The spread between euro money market rates and the DFR narrowed, with a more pronounced effect on secured than unsecured rates. The rise in secured rates is mainly a result of increased net collateral supply and shifts in interest rate expectations, prompting market participants to take short positions in the period 2022-2023 and then move to long positions in 2024. The impact on short-term money markets of less ample reserves and adjustments to the ECB operational framework has been limited so far (Chart 4).

Chart 4
Short-term secured and unsecured rates as spread to DFR



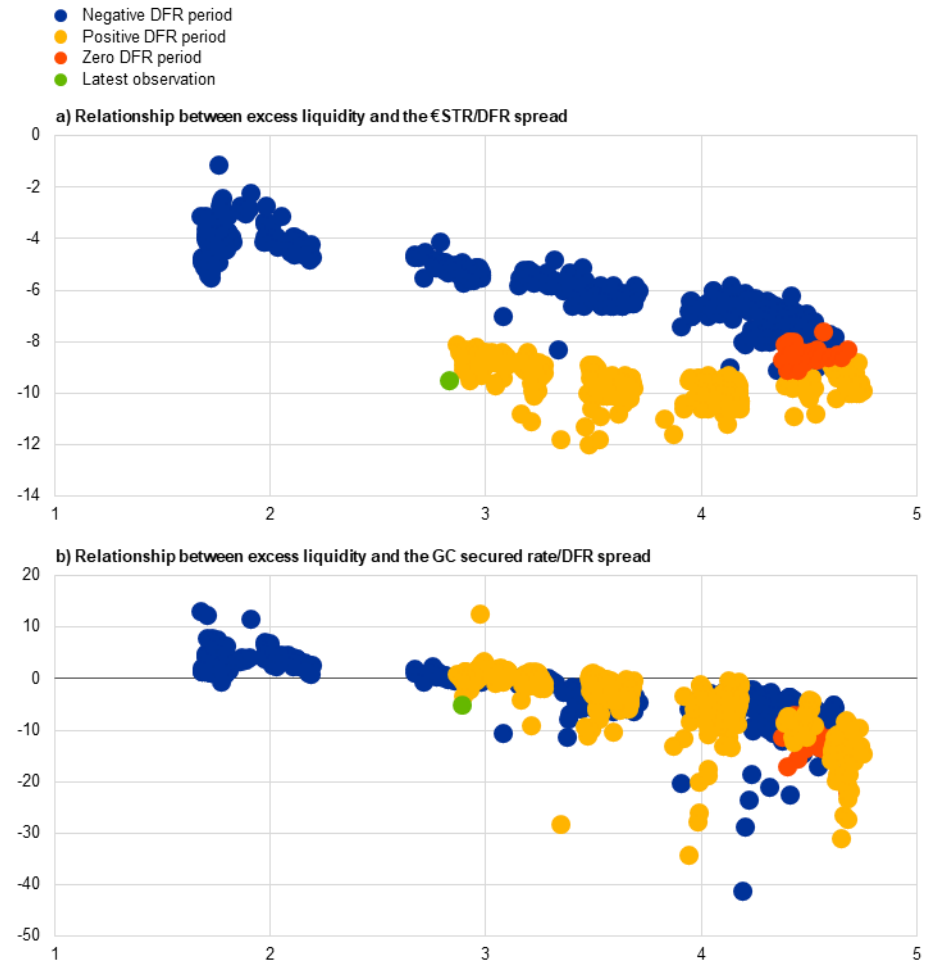
Sources: MMSR.
Notes: Spread relative to the DFR, with the DFR line set at 0. "ST secured" refers to short-term borrowing against government collateral from financial counterparties in the secured segment.

Emergence of a persistent positive spread between secured and unsecured overnight rates. The unsecured euro short-term rate (€STR) showed low sensitivity to reductions in excess liquidity, with its negative spread to the DFR remaining more persistent than historical data suggested (**Chart 5**, panel a). Meanwhile, repo rates based on general collateral (GC) transactions, driven by the search for cash and representing about 12% of repo turnover, narrowed their spread in line with the historical trends (**Chart 5**, panel b). The divergence in rates between the secured and unsecured segments has led to potential arbitrage opportunities, yet these remained largely unexploited at the end of 2024. The structural impediments to arbitrage are explained in Box 1.

Chart 5

Reaction of money market rates to declining excess liquidity

(x-axis: EUR trillions; y-axis: basis points)



Sources: MMSR, BrokerTec and Eurosystem calculations.
Notes: Covered period from October 2019 with DFR at -0.5% to December 2024 with DFR at 3.0%. Latest observation refers to 30/12/24. The negative DFR period was from 1 October 2019 to 27 July 2022. The zero-DFR period was from 27 July to 13 September 2022. The positive DFR period started on 14 September 2022, when the rate was increased from 0% to 0.75%.

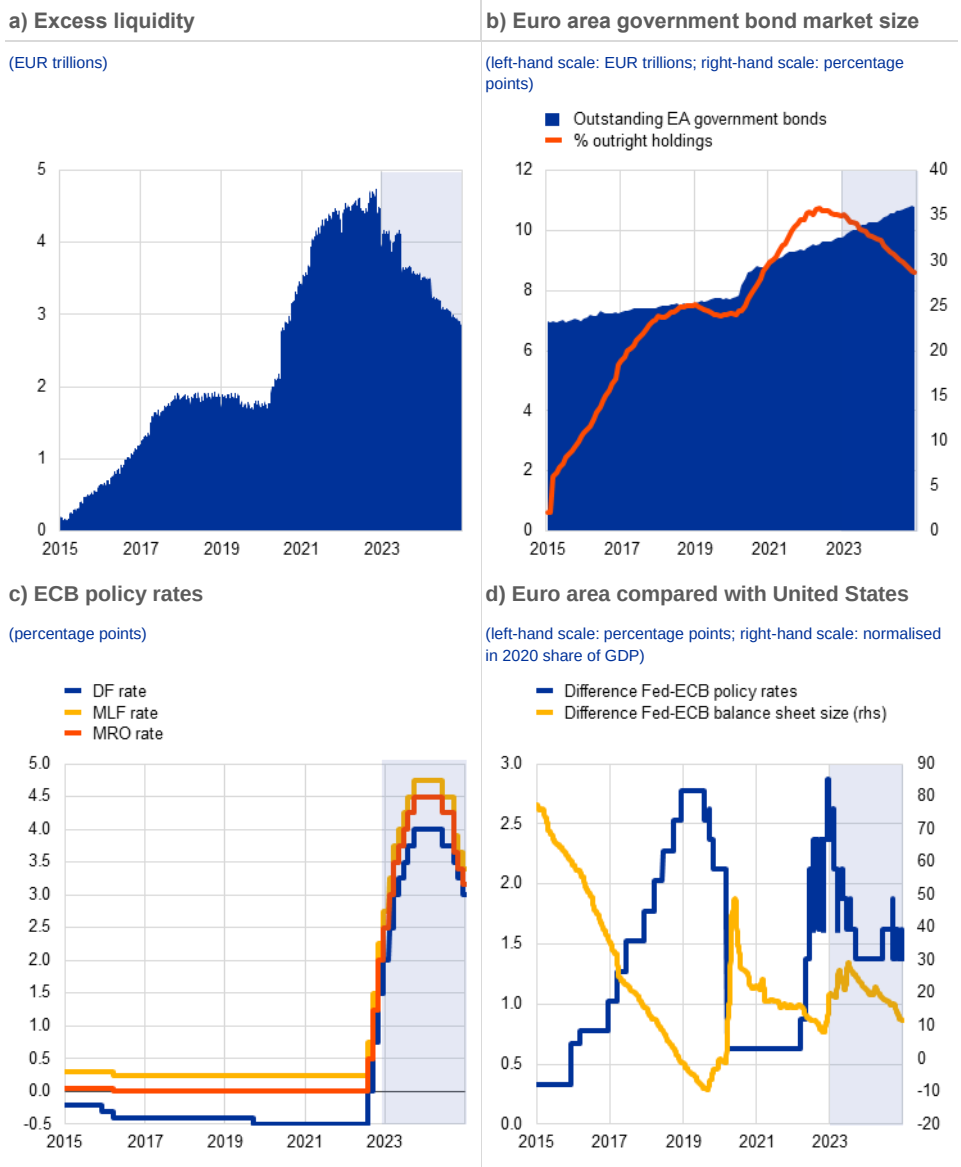
1.2 Main drivers of money market dynamics

Three factors influenced money market trends: (i) declining excess reserves, (ii) shifts in collateral supply and demand dynamics, and (iii) adjustments to ECB policy.

The key factors driving money market dynamics were declining reserves, collateral shifts and policy adjustments. In the period 2023-2024, three primary influences shaped money market trends: (i) a decrease in excess reserves; (ii) changes in the supply and demand dynamics of collateral; and (iii) modifications to policy rates, remuneration terms and the operational framework. In both the secured and unsecured segments, interest rates remained closer to the DFR than they did in the period 2021-2022. In the FX swap segment, the breach of covered interest parity (CIP) for EUR/USD converged towards zero. This section delves into the three major factors that drove these developments.

Chart 6

Macroeconomic developments



Sources: ECB data portal and ECB (MOPDB).
Notes: Panel b): The item "% outright holdings" refers to the Eurosystem's holdings as a share of total issued EA government bonds. Panel d): The blue line represents the difference between the ECB's DFR and the mid-point of the Federal Reserve System policy rate range. The yellow line represents the difference between the evolution of the Federal Reserve balance sheet and the Eurosystem balance sheet, represented as shares of US and euro area GDP respectively. The balance sheets have been normalised as at the beginning of 2020 to isolate the change component in balance sheet size as a share of GDP.

A. The decline in excess liquidity

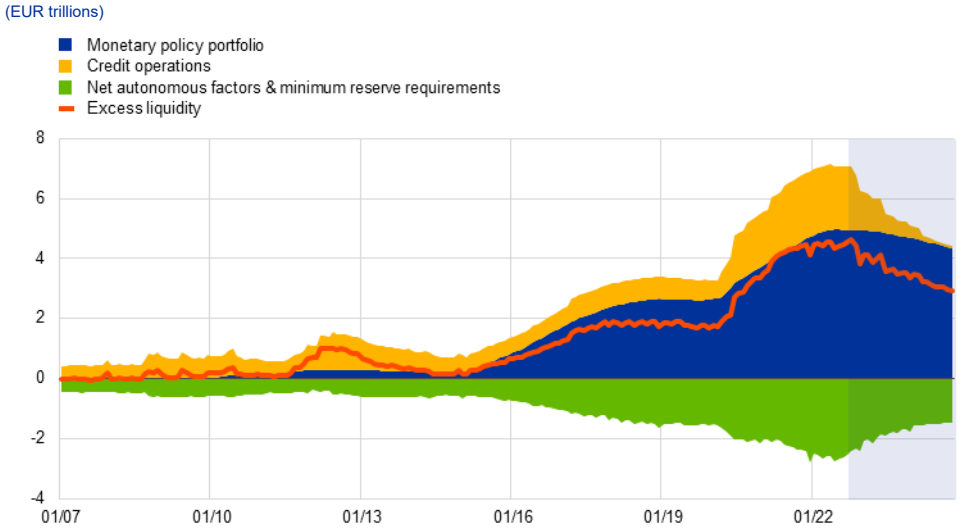
Significant Eurosystem balance sheet reduction led to better liquidity redistribution among banks.

The ECB gradually reduced excess liquidity. The ECB implemented a gradual decrease in excess liquidity through a significant reduction of over one-third in the Eurosystem balance sheet from its November 2022 peak. The reduction process was gradual, facilitated by the staggered maturities of TLTROs and the option for early repayments. In addition, the ECB adopted a phased approach to managing the exit from asset purchase programmes. Initially, the Eurosystem ceased net

purchases and then transitioned to partial reinvestments, before eventually halting reinvestments entirely for both the asset purchase programme (APP) and the pandemic emergency purchase programme (PEPP) (**Chart 7**).

Chart 7

Eurosystem balance sheet normalisation

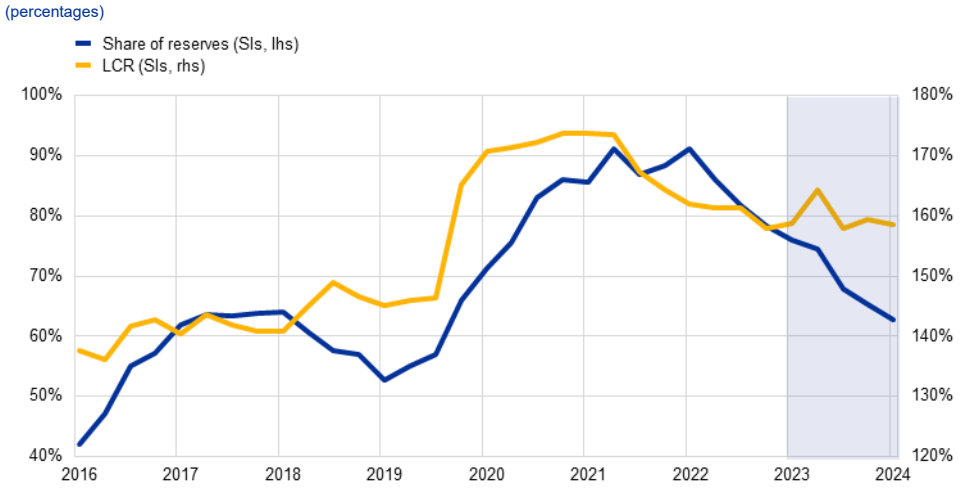


Sources: Eurosystem, ECB and ECB calculations.

Euro area banks adapted to an environment of declining excess liquidity by making strategic adjustments. The ECB's deliberate gradualism in quantitative tightening allowed banks to effectively prepare for it. The full repayment of TLTROs resulted in a decrease in liquidity coverage ratio (LCR) levels, with the aggregate LCR stabilising at 160%, well above the regulatory minimum of 100%. As banks approached their internal targets, they obtained high-quality liquid assets (HQLA) from market sources and reduced their expected liquidity outflows. (**Chart 8**).

Chart 8

LCR and share of reserves in HQLA

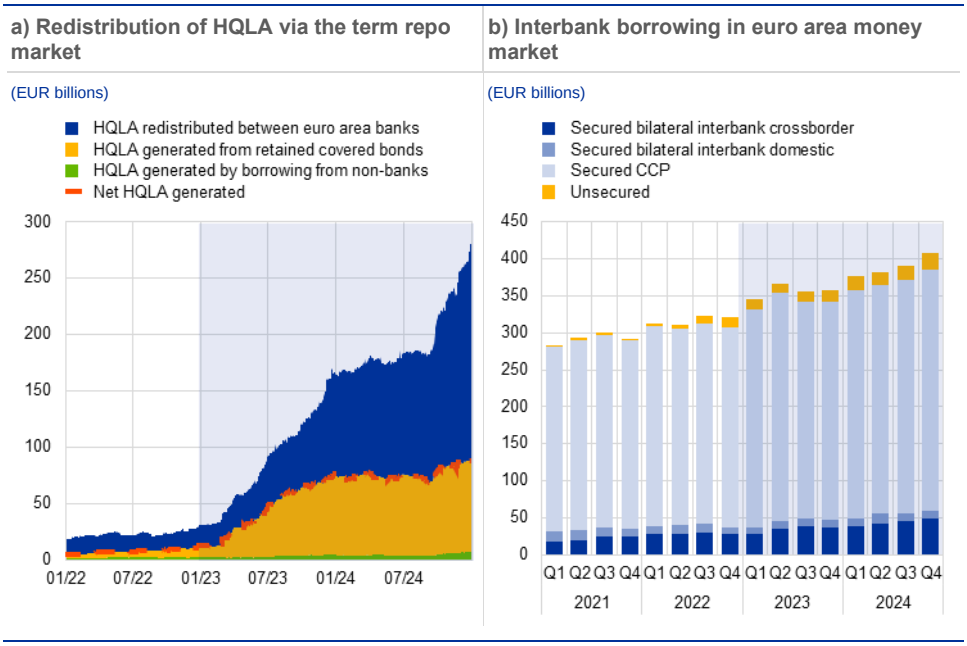


Sources: Eurosystem, ECB and ECB calculations.
Note: "SIs" stands for significant institutions (only data for the period up until the third quarter of 2024 are available).

Banks prioritised reserves with regulatory value over cash. As the Eurosystem's balance sheet shrank, banks shifted from focusing on traditional liquidity management to acquiring reserves with regulatory significance by increasing term repo activity in maturities over six months to support their net stable funding ratio. They also engaged in interbank money market transactions to generate HQLA for the LCR, such as borrowing against self-issued covered bonds. This marks a behavioural shift in money markets compared with the pre-Basel III era (**Chart 9**, panel a). The regulatory environment also led banks to favour secured over unsecured transactions for interbank liquidity redistribution, especially on a cross-border basis. Secured borrowing reduces leverage ratio costs, especially when cleared through CCPs for balance sheet netting purposes, whereas unsecured borrowing often incurs higher costs, leading to lower rates. The LCR further discourages unsecured borrowing by requiring HQLA for 30-day cash outflows, while secured borrowing can stabilise or enhance the LCR, depending on collateral quality (**Chart 9**, panel b).

Chart 9

Market funding activity



Sources: MMSR, SFTD and ECB.
Notes: Panel a): Outstanding volumes of HQLA generated for the borrower, based on a deduplicated SFT sample and collateral HQLA quality data. Open-term repo and evergreen transactions are excluded. Panel b): Secured borrowing transactions from euro area banks or from CCPs against any collateral. The bilateral volumes are further split between the domicile of the trade counterparties. Transactions with CCPs do not allow the location of the ultimate counterparty or its sector to be identified and therefore may also include trades with non-banks. Unsecured interbank trades include activity between euro area banks, which remains limited.

B. Shifts in collateral supply and demand dynamics

A shift from collateral scarcity to collateral abundance had a significant impact on the normalisation of repo rates.

Repo rates based on different collateral jurisdictions converged and were closer to the DFR.

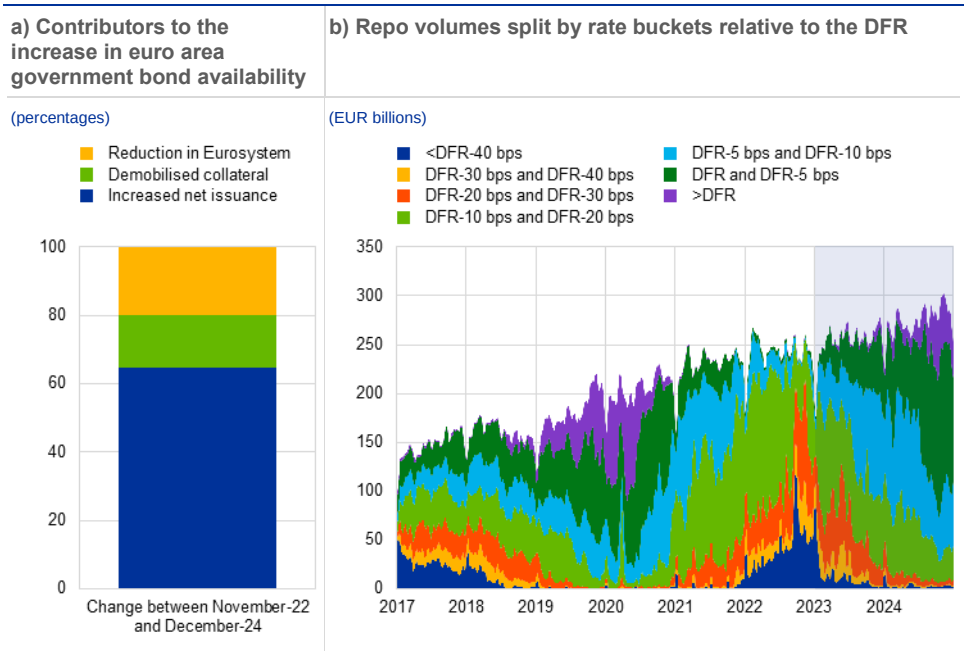
The transition from collateral scarcity to collateral abundance, alongside changes in monetary policy, contributed significantly to the normalisation of repo rates. In the period 2023-2024, repo rates across various collateral jurisdictions converged and became more closely aligned with the DFR. This shift was driven by

a combination of increased collateral supply and decreased collateral demand, as discussed below.[1]

The increase in collateral supply, driven by larger euro area sovereign bond issuance and the Eurosystem's reduced market footprint, eliminated the prevalence of special repo transactions at low rates. The shift from collateral scarcity to abundance was mainly due to increased net bond issuance by euro area sovereigns. As the ECB moved from quantitative easing to quantitative tightening, the supply of collateral grew further as the Eurosystem reduced its market footprint by gradually unwinding its monetary policy portfolios, and collateral mobilised with the Eurosystem in TLTROs was returned. Together, these factors contributed nearly €1 trillion in additional government bonds to the market (**Chart 10**, panel a). During the period 2015-2022, the ECB's extensive asset purchases had reduced collateral availability, leading to increased demand for specific securities repo transactions and a sharp decline in repo rates, with over 70% of repos trading at least 30 basis points below the DFR at their peak (see dark blue, red and yellow areas in **Chart 10**, panel b). However, in 2023, as the ECB moved to quantitative tightening, improved collateral availability prevented repo rates from deviating significantly from the DFR.

Chart 10

Repo rates and the Eurosystem market footprint



Sources: MMSR, CSDB and ECB calculations.
Notes: Panel a): Share of the three factors contributing to the increase in euro area government bond availability between November 2022 and October 2024. Panel b): Untrimmed volume per bucket of short-term secured rates relative to the DFR, smoothed by a ten-day moving average.

Reduced collateral demand, driven by shifts in monetary policy and a move from short to long positions in the bond market, also eased the downward pressure on repo rates. In 2022, high inflation led market participants to anticipate rising interest rates. This expectation prompted them to take short positions in the

[1] For more details, see the ECB Blog post entitled "Repo markets: Understanding the effects of a declining Eurosystem market footprint", 23 July 2024.

bond market, where they sold bonds, they did not own, expecting to buy them back at lower prices as rates increased. To facilitate these short positions, participants borrowed securities in the repo market, and the increased demand for borrowing initially pushed repo rates down. Conversely, as expectations shifted towards lower interest rates in 2024, participants switched to long positions. Anticipating bond price appreciation as rates fell, they began purchasing bonds. To finance these purchases, they used the repo market to obtain the necessary liquidity. This activity increased demand for financing in the repo market, easing the downward pressure on repo rates and aligning them more closely with the DFR and broader monetary policy.

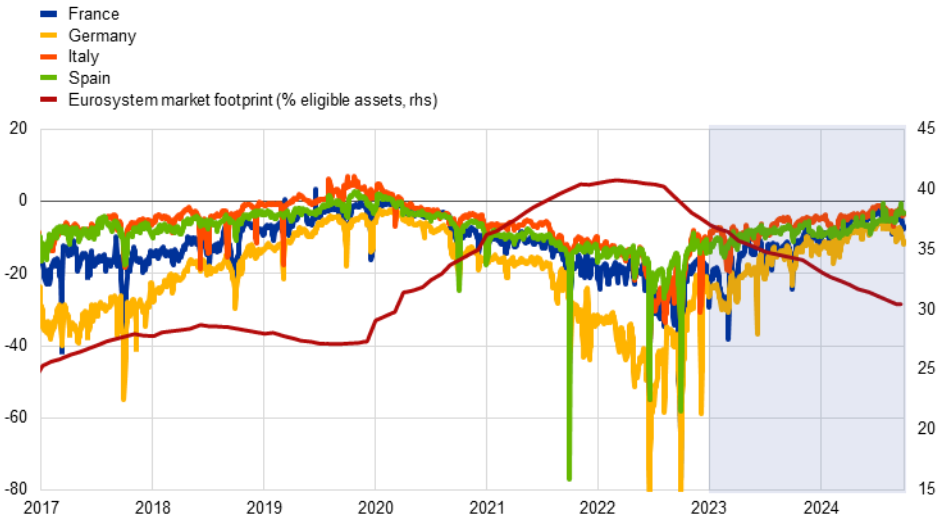
The abundance of collateral brought about a convergence in repo rates, but investor demand remained robust enough to absorb additional issuance. Since 2023, the increased supply of collateral, combined with reduced demand due to changing market strategies, has led to a transition in the repo market from a state of collateral scarcity to one of abundance. This shift allowed repo rates to converge towards the DFR in the review period, normalising from the asset scarcity of 2021, which became severe in 2022. The market's balance was evident in the reduced scarcity premium for transactions involving high-quality collateral, such as German government bonds, signalling more stable conditions (**Chart 11**, panel a). In addition, there was a noticeable decrease in the volume of special repo trades executed below the DFR and an increase in those executed above it (**Chart 11**, panel b). Repo rates exceeding the DFR were primarily observed in primary dealer transactions, which serve as hubs for liquidity and securities distribution. This situation is likely to have tested the intermediation capacity of dealers amid increased sovereign debt issuance. However, the strong appetite for government bonds at primary market issuances indicates that investor demand benefited from the return to positive rates.

Chart 11

Repo rates and the Eurosystem market footprint

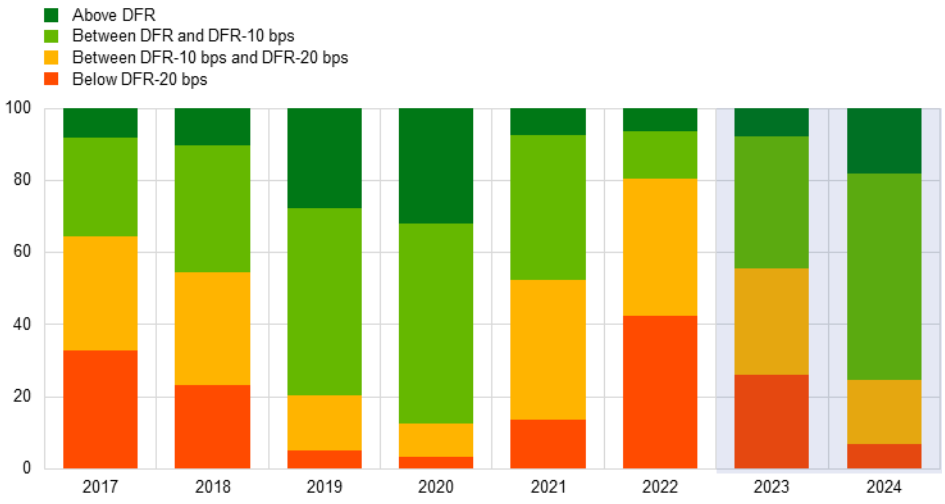
a) Spread of repo rates to deposit facility rate and Eurosystem market footprint

(left-hand scale: basis points; right-hand scale: % of eligible assets)



b) Percentage of specialness

(percentages)



Sources: MMSR and ECB calculations.
Note: Panel a): Only one-day repo rates are included. These include trades with overnight, tomorrow/next and spot/next tenors, calculated per settlement. Panel b): The red and yellow bars indicate special trades with high-demand securities and cash offered on cheaper terms.

C. ECB policy adjustments

The transmission of policy rate changes to money market rates was swift and complete.

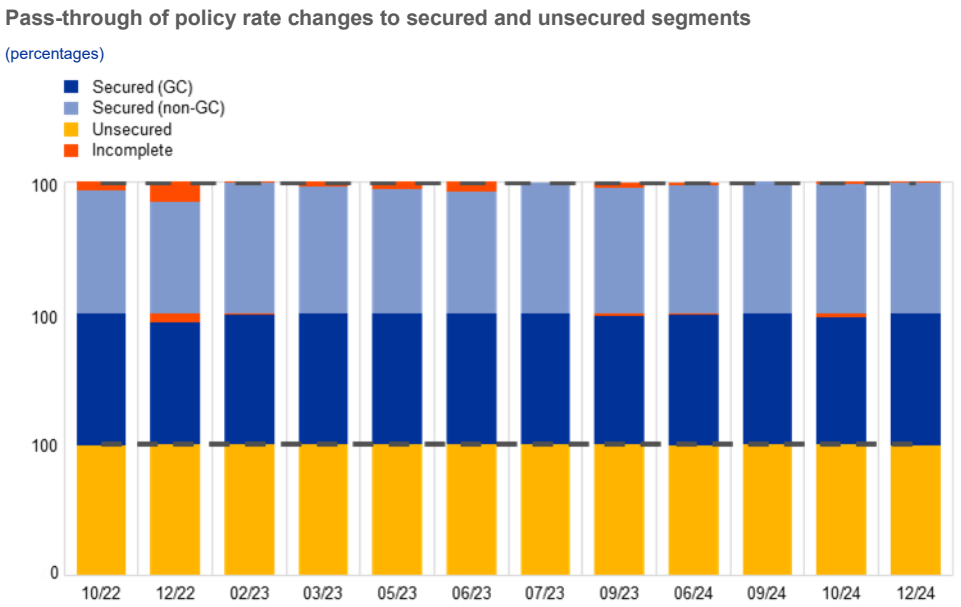
The changes to the ECB's operational framework provided an indication of how liquidity will be provided to the banking system in the future.

The transmission of ECB monetary policy rate changes to the money markets was effective. Between 2022 and 2024, the ECB adjusted its policy rates multiple times, leading to a cumulative increase of 450 basis points from July 2022 to September 2023, followed by a cumulative decrease of 100 basis points by the end of 2024. These changes were smoothly transmitted through the interest rate channel, making a clear impact on both the overnight unsecured (€STR) and

secured money market rates and thus demonstrating the effectiveness of the ECB's policy measures. Challenges in passing through to secured rates, which emerged in 2022 due to collateral scarcity in the repo market, were resolved as the ECB's balance sheet reduction in the period 2023-2024, along with increased bond issuance, alleviated collateral scarcity and improved repo market functioning. As the market adjusted, the steady rise in secured money market rates signalled a healthier, more resilient repo market, better positioned to support monetary policy transmission (**Chart 12**).

Chart 12

Policy rate expectations and pass-through of ECB policy rate changes



Sources: MMSR, BrokerTec, MTS, Bloomberg, ECB and ECB calculations.
Notes: The pass-through is measured as the difference between the average value of each rate in the week prior to the beginning of the new maintenance period and the average value over the first week of the maintenance period.

The ECB's 2023 policy adjustments on reserve and deposit remuneration reshaped banks' borrowing behaviour and money market dynamics. In February 2023, the Governing Council decided that government deposits placed with the Eurosystem could gradually return to the market, as repo market conditions had improved since September 2022.[2] Consequently, the remuneration ceiling for these deposits was lowered to the €STR minus 20 basis points as of 1 May 2023. Additionally, the decision in September 2023 to stop remunerating minimum reserves reduced incentives for unsecured borrowing at the end of the month, prompting banks to optimise their reserve bases. Some banks responded either by repricing unsecured borrowing trades downwards at month-end or by shifting them to secured markets or FX swaps, which are exempt from minimum reserve requirements. While these shifts towards the secured segment pointed to

[2] On 8 September 2022, the ECB temporarily removed the 0% interest rate ceiling for government deposits held with the Eurosystem, setting the ceiling at the DFR or the €STR, whichever was lower, until 30 April 2023. This measure aimed to prevent an abrupt outflow of deposits into the market, which would increase excess liquidity during a period of severe collateral scarcity in some euro area repo market segments, potentially pushing rates further down as policy rates rose.

optimisation behaviour, they did not significantly affect repo rates, as these flows were small and easily absorbed. However, the unsecured segment experienced more noticeable effects, with visible declines in the €STR around month-end reporting dates (See Section 2.2.4).

In March 2024, the ECB announced the outcome of its operational framework review.[3] A key element included maintaining an elastic provision of liquidity through a broad mix of instruments, with main refinancing operations (MROs) and three-month longer-term refinancing operations (LTROs) continuing to be conducted via fixed-rate tender procedures with full allotment. Effective as of 18 September 2024, the spread between the MRO and the DFR was reduced from 50 to 15 basis points. This narrower spread should incentivise bidding in the weekly operations, making it likely that short-term money market rates will remain close to the DFR and limiting the potential volatility in these rates. The spread between the MRO and the marginal lending facility (MLF) rate remained unchanged at 25 basis points. New structural longer-term refinancing operations and a securities portfolio will be introduced as the balance sheet begins to grow durably again. The reserve ratio and remuneration of minimum reserves remained unchanged.

Thanks to ample Eurosystem excess liquidity and favourable market conditions for bank funding, the reduction in the MRO rate spread to 15 basis points did not affect money market rates or volumes. Less than 1% of the peak outstanding in TLTROs was rolled over into MROs or LTROs, as banks continued to secure short-term funding under more favourable market conditions, with most comparable market funding sources remaining well below the MRO rate level. The ECB also committed to closely monitoring the evolution of liquidity, with a review of key parameters of the operational framework scheduled for 2026. In the meantime, the ECB remains ready to make earlier adjustments if needed (**Chart 13**).

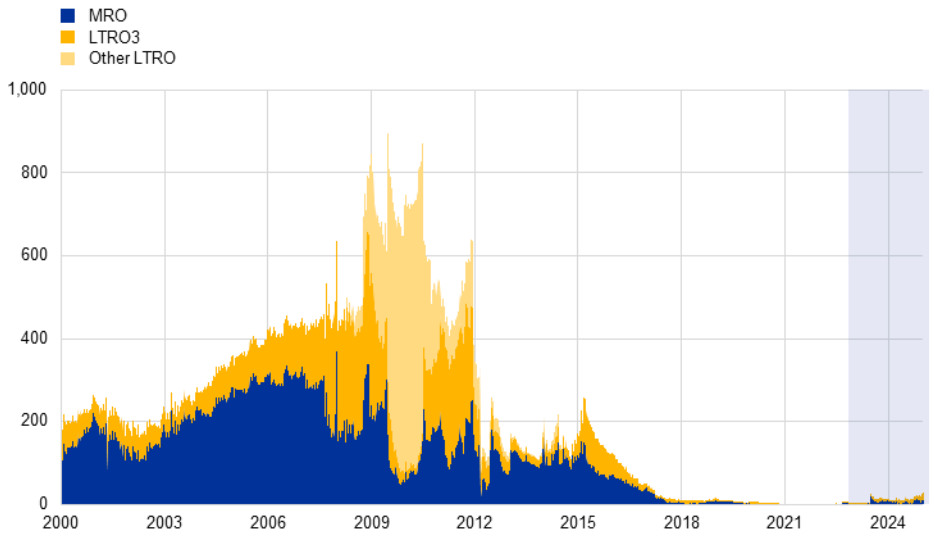
[3] See the ECB press release "Changes to the operational framework for implementing monetary policy", 13 March 2024.

Chart 13

Policy rate expectations and pass-through of ECB policy rate changes

Euro area banks' recourse to standard refinancing operations

(EUR billions)



Sources: ECB and ECB calculations.
Notes: MRO = one-week liquidity-providing operations in euro; LTRO3 = three-month liquidity-providing operations in euro; Other LTRO = one-month, six-month and 12-month liquidity-providing operations in euro.

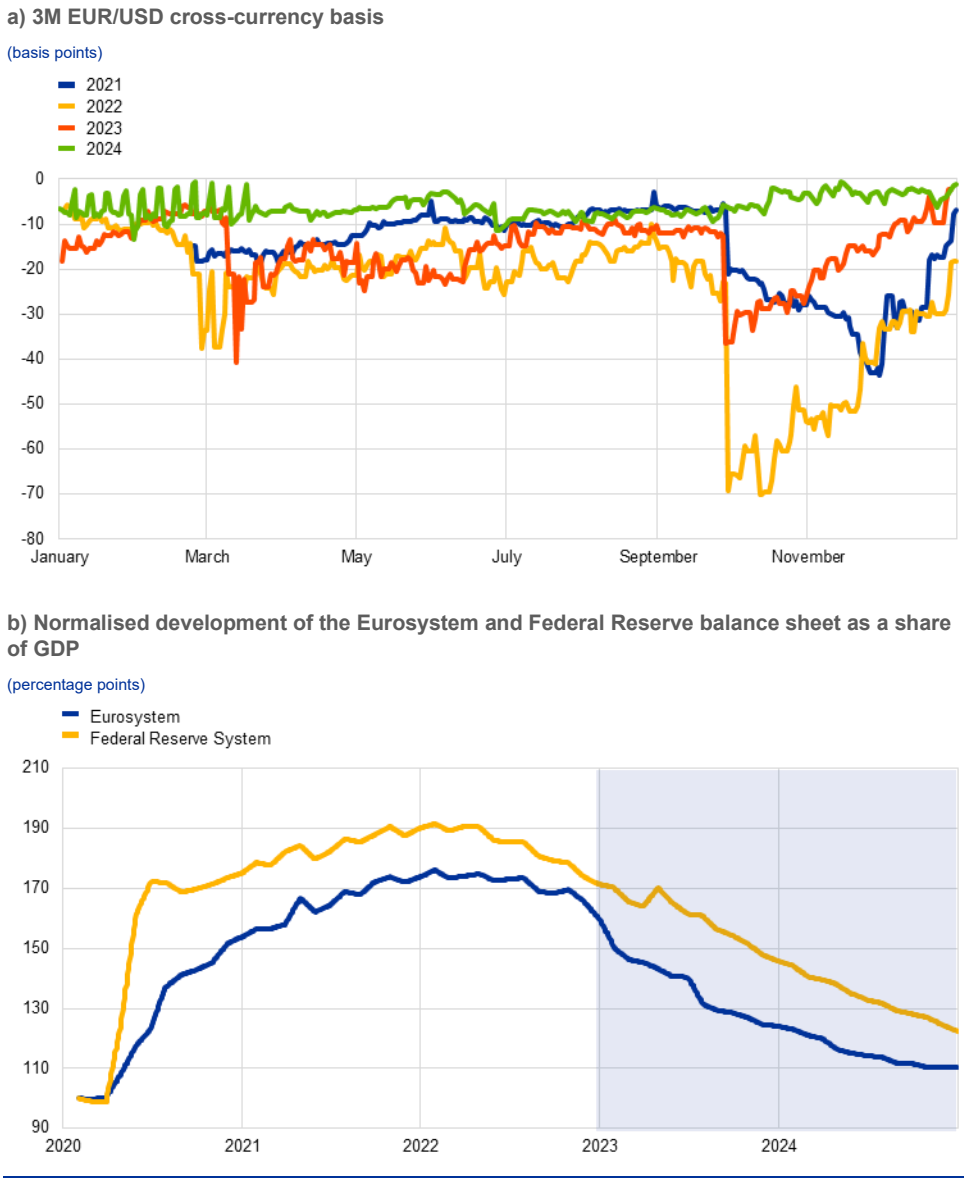
The dynamics of the FX swap market highlighted the significant impact of policy rate changes and liquidity conditions on currency interactions. During the review period, the breach of covered interest parity (CIP)[4] declined, approaching zero for shorter maturities (**Chart 14**, panel a). This trend was influenced by the convergence of policy rate spreads and by the ample liquidity conditions in both currencies. In the period 2023-2024, the policy rate divergence decreased from 237.5 to 137.5 basis points. In terms of liquidity, the ECB reduced its balance sheet to almost pre-COVID-19 levels, while the Federal Reserve System's quantitative tightening was slower. This divergence in the pace of quantitative tightening led to a relative abundance of US dollar reserves compared with euros, intensifying the tightening pressure on the FX swap basis (**Chart 14**, panel b).[5]

4 Theoretical condition where the relationship between interest rates and the spot and forward exchange rates of two countries are in equilibrium, leaving no opportunity for arbitrage using forward contracts.

5 The FX swap basis measures deviations from CIP in FX swap markets, reflecting the extra cost (or benefit) of borrowing US dollars by swapping them for euro. Under CIP, interest rate differentials should equal the forward premium/discount: (1+i_USD) = (1+i_eur)*F/S, where i_USD and i_eur are risk-free rates, and S and F are spot and forward EUR/USD rates respectively. The FX swap basis arises when the market-implied US dollar borrowing rate from FX swaps deviates from the direct US dollar funding rate. A negative basis suggests higher US dollar funding costs via FX swaps.

Chart 14

Development of Eurosystem and Federal Reserve balance sheets and overnight FX rate



Sources: Bloomberg and ECB calculations.
Notes: Panel a): The chart shows how the cross-currency basis widens in the fourth quarter owing to the year-end effect, which has been milder in recent years.

Box 1

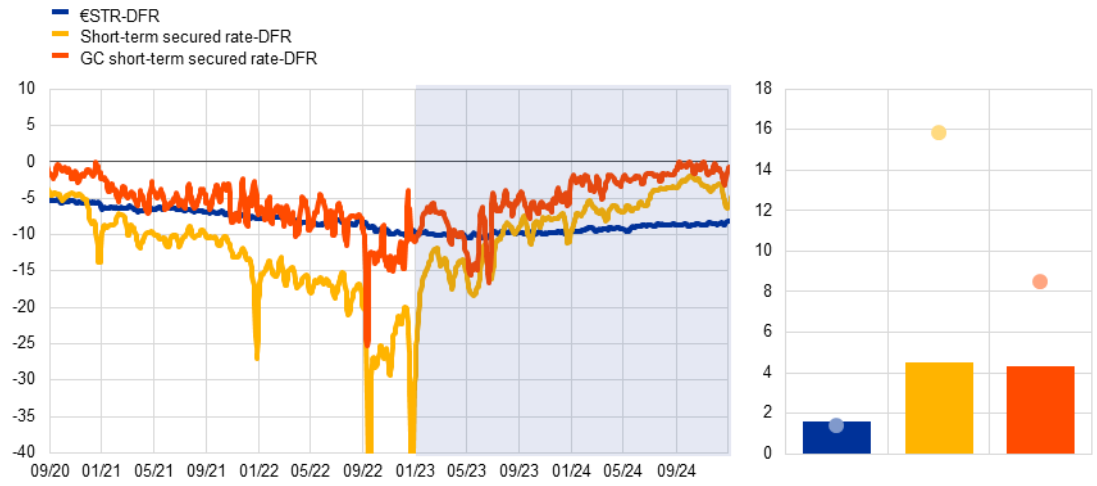
Factors behind the as-yet unexploited opportunity for arbitrage between unsecured and secured short-term rates

Distinct market structures in the secured and unsecured segments prevented arbitrage opportunities from being exploited. Since mid-2023, secured rates (repo) have consistently been higher than unsecured rates (€STR), reversing the trend observed during the period 2021-2022 when secured rates were lower (Chart 11). This shift was driven by a combination of monetary factors, such as (i) changes in interest rates; (ii) liquidity factors, including changes in the amount of

reserves; and (iii) regulatory influences. While monetary and liquidity factors mainly affected the repo market, regulatory factors affected the unsecured market, diminishing its sensitivity to changing liquidity conditions. Despite unsecured borrowing being cheaper than secured borrowing for much of 2023 and 2024, differences in market participants' models and operating methods prevented secured rates and unsecured rates from converging. The market's structure limits arbitrage opportunities, further reinforcing the divergence between these two rates.

Chart A

Spread of overnight money market rates to DFR (basis points)



Source: MMSR, Bloomberg and ECB calculations.
Notes: Smoothed five-day moving averages excluding the month-ends. The short-term secured rate includes overnight, tomorrow/next and spot/next borrowing transactions with financial counterparties using collateral issued by public institutions. On the RHS panel, bars represent the change since November 2023, while the dots indicate the change since January 2023.

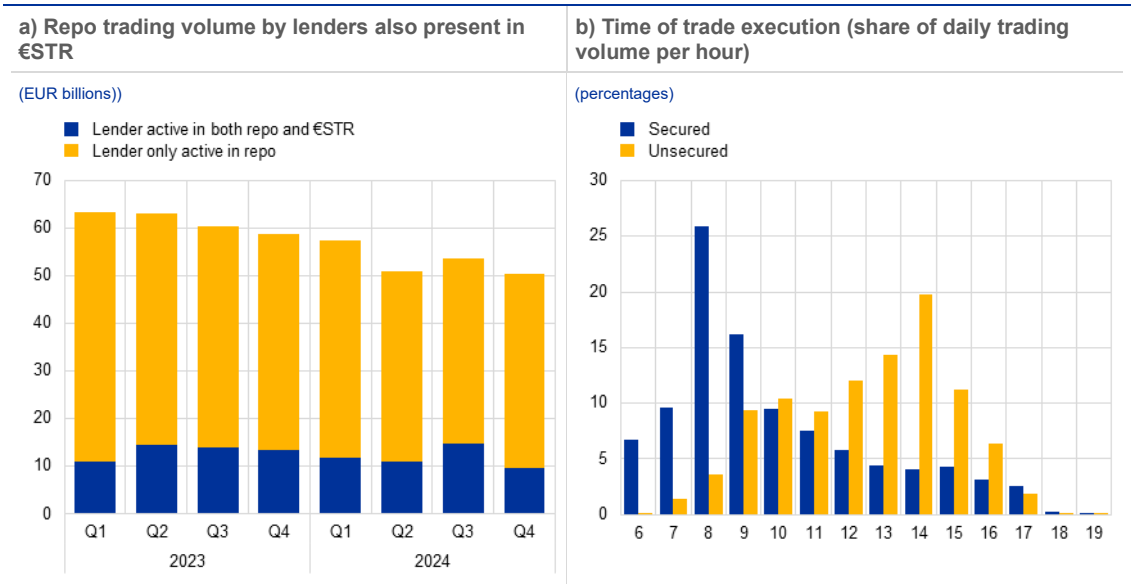
Non-bank financial institutions (NBFIs) faced CCP membership constraints that limited their access to the repo market. Most €STR volumes are generated by counterparties without access to the DFR, which is available only to banks. This structural limitation forces NBFIs to rely on market intermediation through either unsecured or secured segments. In the euro secured segment, the variety of legal frameworks and the coexistence of multiple CCPs pose significant barriers for NBFIs to enter the repo market. The set-up of a cleared repo desk involves substantial operational costs and legal requirements and thereby restricts participation to a select few institutions. Consequently, many NBFIs remain in the unsecured segment, where relationship-based transactions dominate (Chart 12, panel a).

Timing constraints also limited NBFIs' access to secured trading opportunities. Secured trades typically align with the early trading schedule of the bond market, while unsecured transactions occur throughout the day (See Chart 1, panel b). As a result, NBFIs, especially money market funds, often resort to unsecured overnight deposits late in the day, as secured market liquidity largely diminishes by late morning.

The fragmentation of participants across segments had implications for price formation. In the unsecured market, funding rates mainly reflect the intermediation cost charged by banks to NBFIs, essentially a spread below the DFR, as banks arbitrage by replacing NBFI deposits with direct placements with the Eurosystem. By contrast, the secured segment, where market power is more evenly distributed among participants, exhibits greater sensitivity to changes in liquidity conditions, allowing repo rates to adjust more flexibly to shifts in the liquidity environment.

Chart B

Common participants and timing differences between secured and unsecured



Sources: MMSR (panel a), SFTD (panel b) and ECB calculations.
Notes: Panel a): Cash lender activity in one-day repo trades against government collateral is checked quarterly to determine whether the lender is active in both repo and €STR markets at the same time. Panel b): The timestamp of the trade is an optional field in MMSR, reported in only 20-25% of transaction volumes with a one-day maturity.

Box 2

Impact of the 2023 global banking stress on the euro money market

In March 2023, the banking sector faced temporary stress with the collapse of Silicon Valley Bank (SVB) in the United States and the significant reputational damage experienced by Credit Suisse (CS) in Switzerland, which was subsequently acquired by UBS. SVB's downfall was triggered by a bank run following notable losses on its bond portfolio from rising interest rates, sparking fears of instability across the banking sector. The contagion spread to Signature Bank and other mid-sized US banks, such as First Republic Bank. These banking stress episodes in the United States and Switzerland tested the resilience of the banking reforms that followed the great financial crisis.[6]

US authorities swiftly acted to contain the crisis and restore confidence. Following the failures of SVB and Signature Bank, the Federal Deposit Insurance Corporation (FDIC) took both banks into receivership, managing their assets and operations. To prevent further panic, the FDIC guaranteed full protection for all depositors, including those with balances over the standard USD 250,000 insurance limit. Additionally, the Federal Reserve introduced the Bank Term Funding Program, which provided banks with emergency liquidity by allowing them to borrow against their bond holdings at face value, alleviating pressure from rising interest rates. In Europe, the Swiss National Bank (SNB) initially provided a CHF 50 billion liquidity backstop, which ultimately totalled CHF 168 billion, according to CS's last quarterly report. This intervention was crucial in preventing an

[6] See Bank for International Settlements (2023), "Report on the 2023 banking turmoil", October.

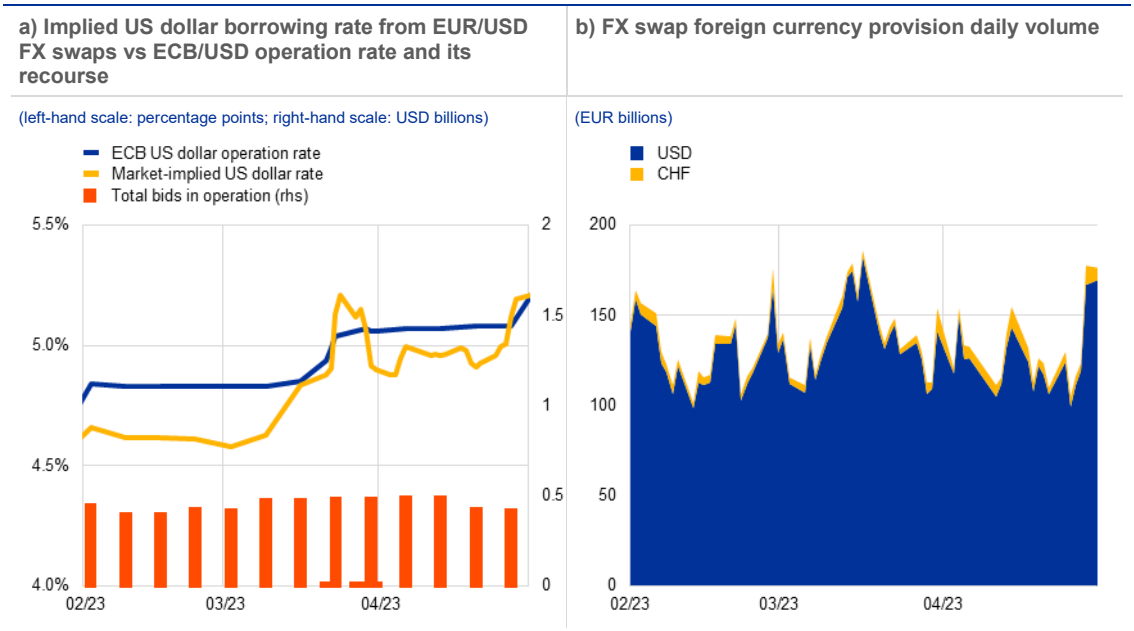
immediate collapse and facilitating the forced takeover by UBS, supported by additional government guarantees.

Spillover to the euro area

The euro area's financial markets also faced stressed conditions in March 2023, affecting banks' equities and fixed income markets. Equity prices of large euro area financial institutions fell sharply in mid-March 2023 amid fears of CS being put into resolution but eventually rebounded when UBS agreed to acquire it. Euro area sovereign bond yields declined before partially rebounding by the end of March, though they remained below pre-turmoil levels. Despite the price volatility, government bond issuance proceeded as planned according to the programme calendars. This suggests that the volatility did not significantly affect the robust issuance volumes, as investors are also willing to accept lower returns in exchange for perceived safety, which can facilitate planned issuance.

Chart A

Impact of the March 2023 market turmoil on FX swap markets and on demand in the ECB's US dollar providing operations



Sources: ECB and Bloomberg.
Notes: This chart shows the use of the Eurosystem's US dollar swap liquidity over time, the price of the operation and the equivalent market price. The market-implied US dollar rate is derived from the FX swap market, which is the market segment where most non-US banks obtain funding in US dollars. It is important to note that the calculation does not reflect the cost of collateral haircuts and margins applied. The cost of collateral may be influenced by the perceived risk of the asset being pledged, and market rates can change depending on asset quality. In addition, higher market-implied US dollar rates may lead to higher collateral haircuts, which increases the cost of posting collateral.

As regards money markets, the stress mainly affected the FX swap segment, especially for US dollar funding. European and Japanese banks faced reduced access to US dollar funds, causing the premium for receiving US dollars in exchange for other currencies to rise. This tension pushed the EUR/USD FX swap market-implied US dollar funding rate up to 9 basis points above the price of the central bank swap line network (US SOFR OIS + 25 basis points) for about three trading days (23-27 March 2023), compared with an average distance of 16 basis points below the swap line rate over the period under review (Chart 13, panel a). Central banks responded by increasing the frequency of US dollar swap line operations: starting on 20 March 2023, the swap network of the Federal Reserve, ECB, Bank of England, Bank of Japan, SNB and Bank of Canada decided to

move from weekly to daily swap line operations, ensuring a consistent supply of US dollar liquidity. This helped stabilise funding costs, reduce market volatility and discourage excessive reliance on dealers' intermediation activities in anticipation of liquidity shortages. Despite the low use of US dollar funding provided through the ECB's operations, the increased frequency of the US dollar providing operations via the swap line network eased market tensions and helped preserve the openness and functionality of the cross-border FX swap market. Trading volumes at the peak of market tensions (23-27 March 2023) remained above €130 billion (Chart 13, panel b).

Global shock waves also caused a temporary widening of spreads between secured and unsecured lending rates, reflecting increased risk aversion. Additionally, the three-month Euribor/€STR OIS spread, which measures the difference between interbank rates and expectations for interest rate movements for a future period, responded to heightened uncertainty and perceived credit risk. After staying in negative territory throughout 2023, mostly ranging between -10 and -16 basis points, it turned positive (+8 basis points) when issues with SVB and other US regional banks emerged. Meanwhile, the spread for longer periods was even more volatile: during the banking crises, the one-year Euribor/€STR OIS spread spiked to 70 basis points.

Regarding non-bank financial institutions, there were notable shifts in risk appetite, as liquidity was reallocated from higher-risk to lower-risk entities. Euro area money market funds experienced inflows of €18 billion in March 2023.

The ECB bank lending survey (BLS) for the first quarter of 2023 revealed deteriorating funding conditions. Banks reported reduced access to retail and wholesale funding, with declines in money market (-7%) and debt security (-13%) financing availability, reflecting the broader impact of the turmoil on financial conditions. However, as already indicated by the subsequent BLS for the second quarter of 2023, the overall impact on credit conditions was less severe than initially feared, revealing that the banking turmoil in March 2023 caused only a temporary shock without lasting effects on financing conditions.

2 Developments by market segment

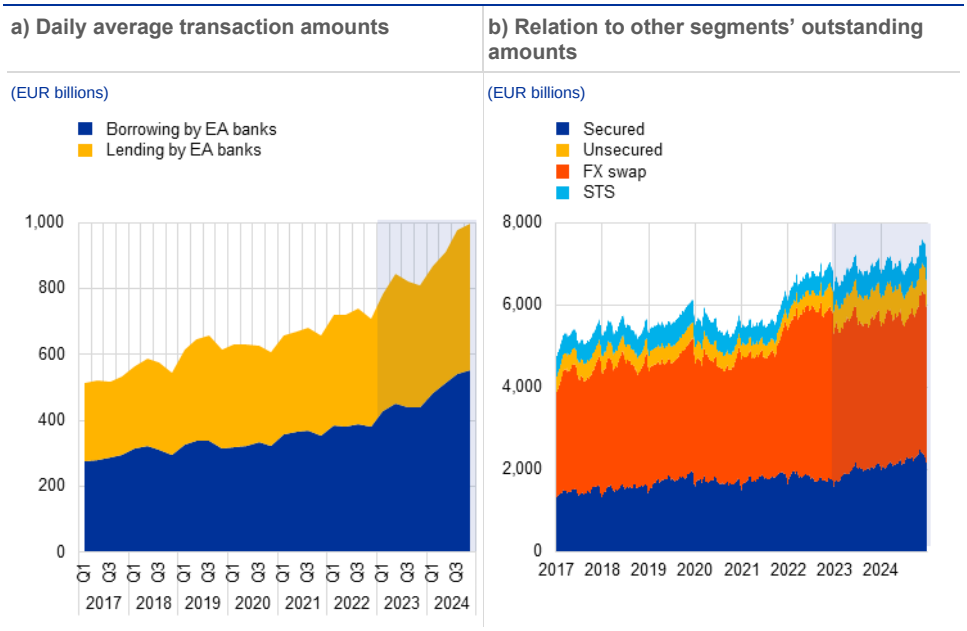
The second part of this study uses visual data to explore developments by money market segment. A series of charts illustrates the evolution of each euro money market segment across various dimensions including volume, prices, counterparties and maturities. These charts have been created in a harmonised way to make it easier to compare between segments.

2.1 The secured segment

2.1.1 Volumes

The secured segment, with daily turnover averaging €997 billion in the fourth quarter of 2024, grew by 41% over two years and makes up 30% of the total outstanding money market volume. Until 2022, repo trading was mainly collateral-driven, but since 2023 cash-driven repos have gained importance as government bonds used previously for "special" trades have become more available.

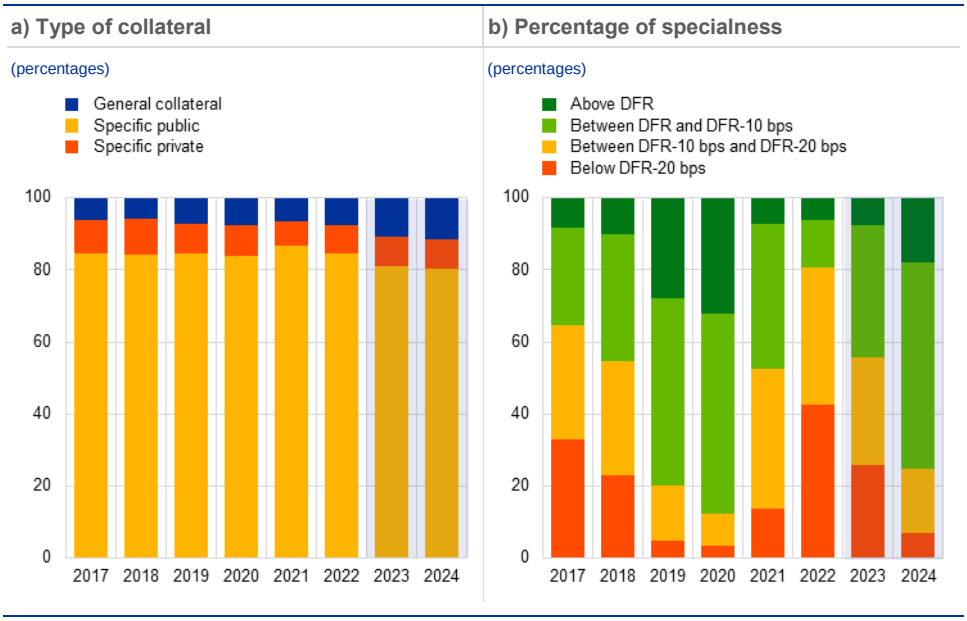
Chart 1.1.1
Segment size



Sources: MMSR, CSDB and SHS.
Notes: To avoid duplication, transactions between MMSR agents (reported twice) are counted only as lending. Open repos (no fixed maturity) and evergreens (reported repeatedly) are included only at origination (panel b).

Chart 1.1.2

Segment composition



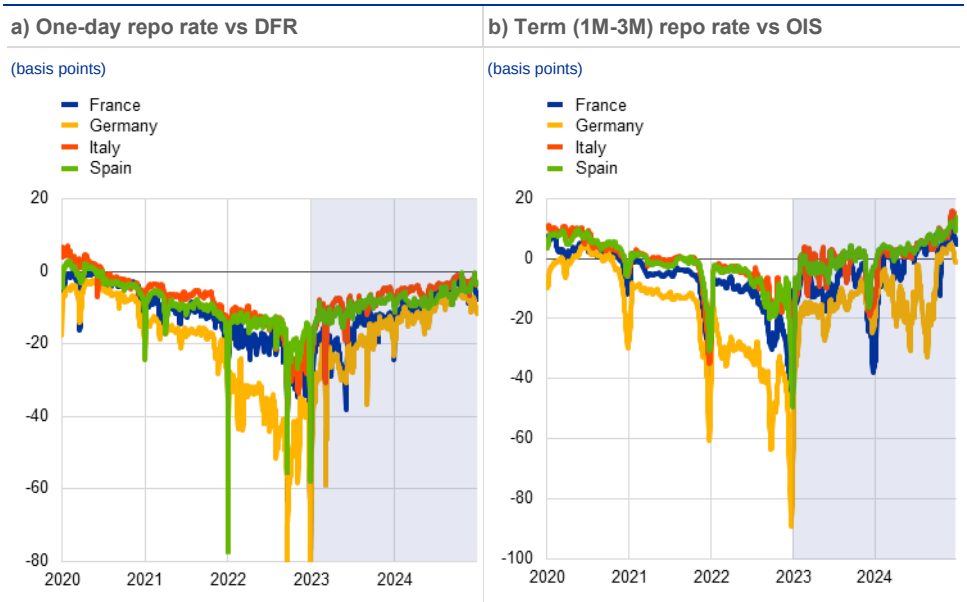
Source: MMSR.
Notes: Transactions between MMSR agents are counted only as lending. Panel a): General collateral refers to interchangeable government bonds; specific public and specific private refer to individual ISINs. General collateral and specific private trades are cash-driven, while specific public trades are driven by demand for securities. b) The red and yellow bars indicate special trades with high-demand securities and cash offered on cheaper terms.

2.1.2 Rates

Repo rates converged with the DFR as collateral scarcity eased. The increase in collateral supply, driven by larger euro area sovereign bond issuance and the Eurosystem's reduced market footprint, eliminated the prevalence of special repo transactions at low rates. Reduced collateral demand, driven by shifts in monetary policy and a move from short to long positions in the bond market, also eased the downward pressure on repo rates. The abundance of collateral led repo rates to converge, ensuring smooth ECB policy transmission to the repo segment.

Chart 1.2.1

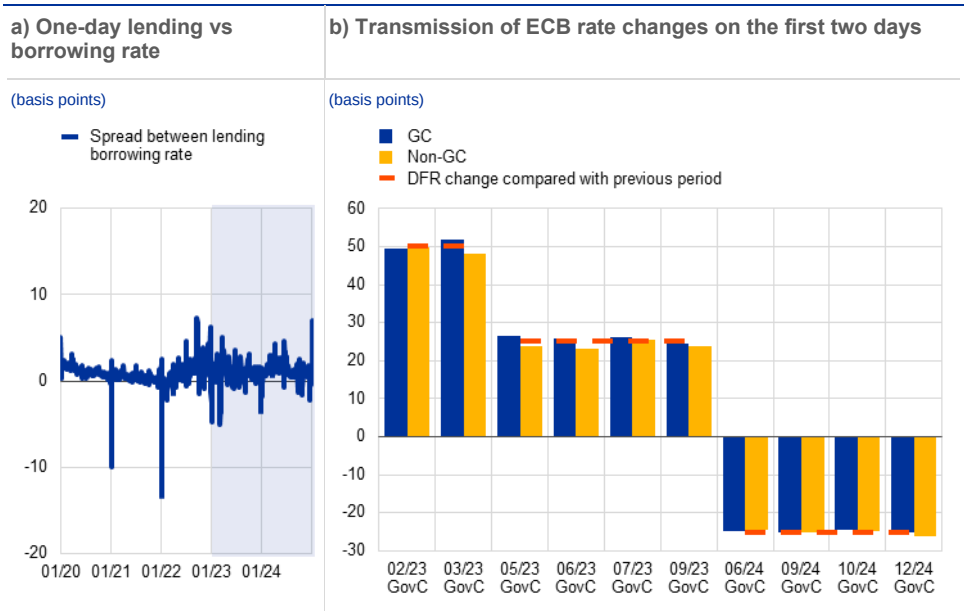
Repo rates by collateral issuer



Source: MMSR.
Notes: To prevent duplication, transactions between MMSR agents are counted only as lending. Spread between the volume-weighted average repo rates of Germany, France, Italy and Spain and the DFR (panel a) or OIS for similar maturities (panel b), excluding quarter-ends. Panel a) One-day repo rates cover overnight, tomorrow/next and spot/next tenors, calculated per settlement date. Panel b): Term repo rates include maturity bands from one to three months.

Chart 1.2.2

Observations on secured rate variations



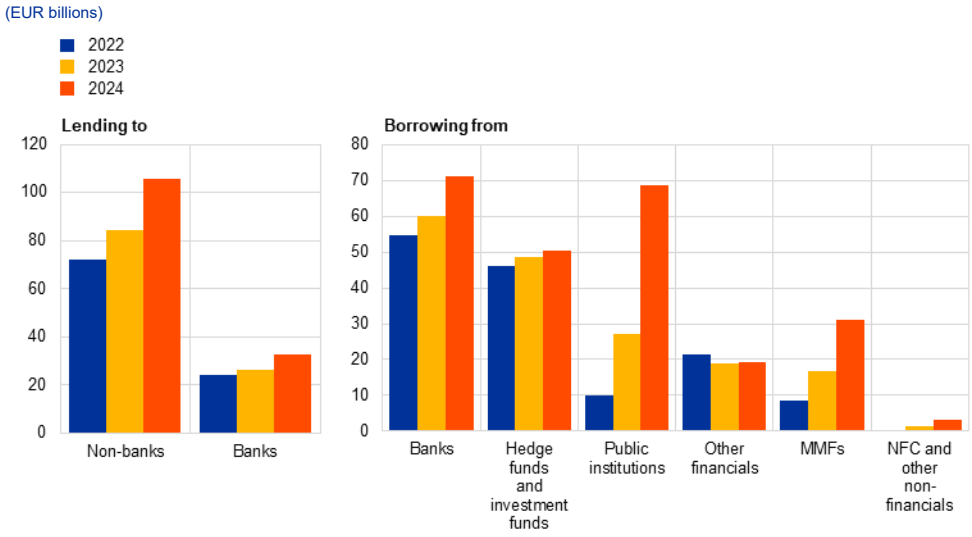
Sources: MMSR (panel a), Brokertec and MTS (panel b).
Notes: Panel a): Daily average lending minus borrowing rate for overnight, tomorrow/next and spot/next trades by MMSR agents. Panel b): Rate transmission for general collateral (GC) and non-GC repos settled within two days of policy rate change taking effect. GovC = Governing Council.

2.1.3 Counterparties

Two-thirds of secured transactions remained centrally cleared, while the rest took place bilaterally in direct trading or through brokers. In cash lending, bilateral deals mainly involved non-banks, while cash borrowing was evenly spread among banks, hedge funds, investment funds and public institutions, with notable growth from the latter. French entities continue to lead in lending and borrowing. The top ten and 150 entities make up 73% and 95% of the euro area repo market respectively.

Chart 1.3.1

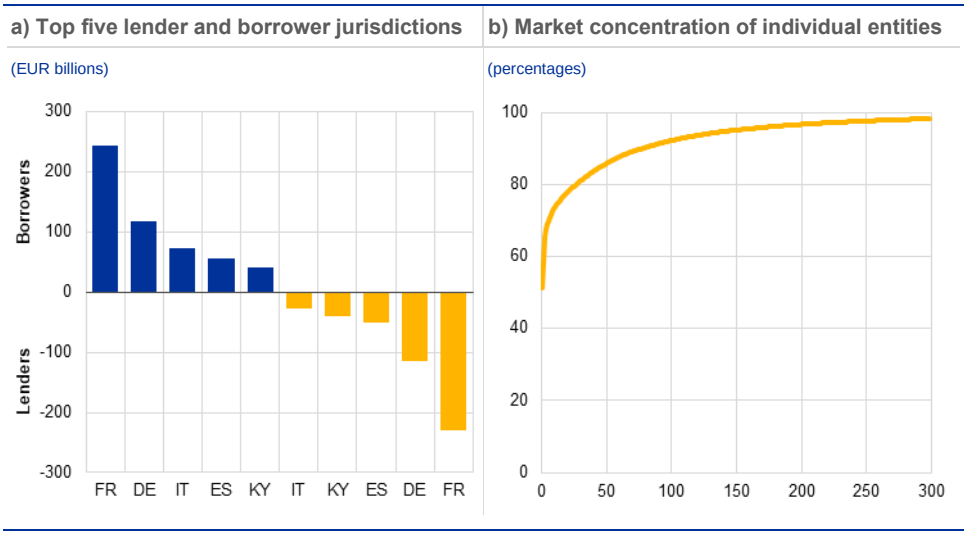
Main counterparties by direction for non-cleared trades



Source: MMSR.
Notes: Daily average transaction amounts. To avoid duplication, transactions between MMSR agents (reported twice) are counted only as lending.

Chart 1.3.2

Top actors in the segment



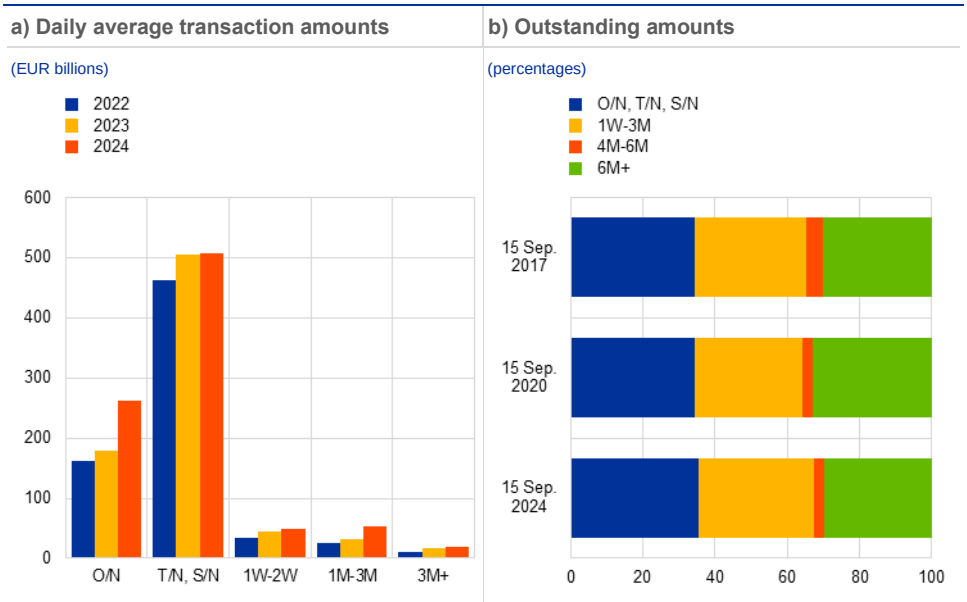
Source: MMSR.
Notes: Panel a): Daily average transaction amounts for trades conducted in 2023 and 2024. Both counterparty and reporting agent locations considered for bilateral trades, and reporting agent location considered for cleared trades. Transactions between MMSR agents (reported twice) are included solely as lending. Panel b): Cumulative share of individual counterparties of the MMSR agents (as distinct from governments and central banks) in the total segment volume over the period 2023-2024.

2.1.4 Maturities and calendar effects

In total, 87% of repo turnover occurs in the one-day maturity bucket. Since 2017, 35% of the outstanding amount has been in transactions with very short maturities, 30% in medium maturities and 35% in longer maturities. Regulatory reporting obligations lead to drops in volumes and rates at quarter-ends. In 2021 and 2022, rates fell by more than 200 basis points at year-end, owing to severe collateral scarcity and high excess liquidity. However, since then, easing collateral scarcity and declining excess liquidity have substantially reduced repo volatility on reporting dates, resulting in more benign conditions throughout 2023 and 2024.

Chart 1.4.1

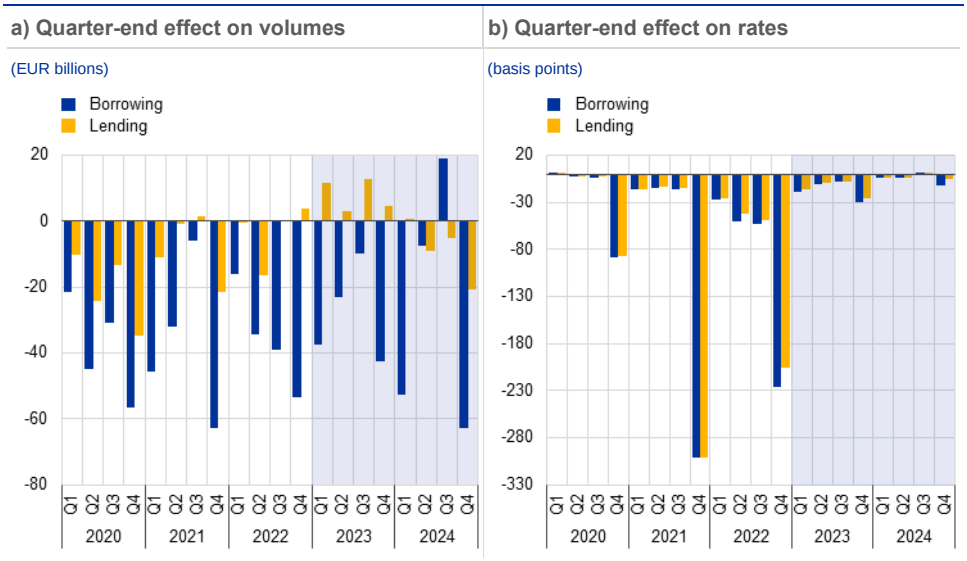
Maturity buckets



Source: MMSR.
Notes: To prevent duplication, transactions between MMSR agents are counted only as lending. Panel a): O/N = overnight; T/N = tomorrow/next; S/N = spot/next. b) Mid-September snapshot chosen to avoid quarter and year-end effects. Open repos and evergreens are included only at origination.

Chart 1.4.2

Calendar effect



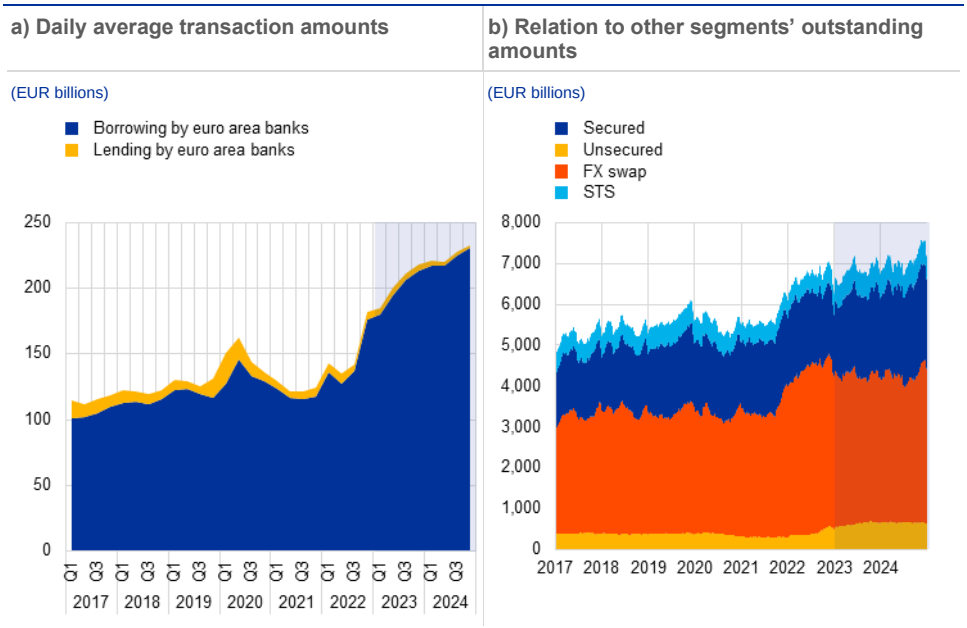
Source: MMSR.
Notes: Panel a) (daily average transaction amounts) and panel b) (volume-weighted rates) both show the difference between the last business day of one quarter and the first business day of the next, for overnight, tomorrow/next and spot/next tenors only. For panel b), an outlier lending rate of -85 basis points at year-end 2022 is capped at -30 bp to provide a better visual illustration of quarter-end effects in the current study.

2.2 The unsecured cash segment

2.2.1 Volumes

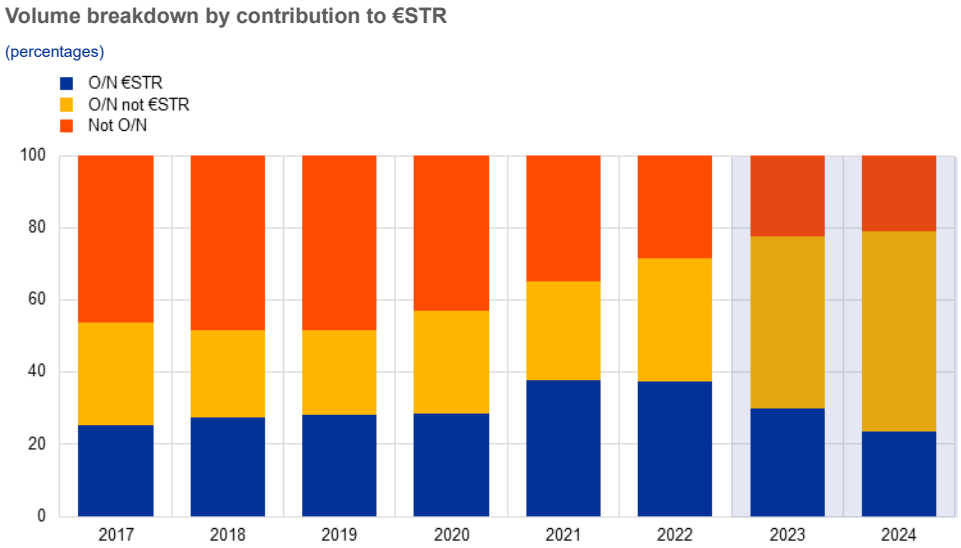
Averaging daily turnover of €233 billion in the fourth quarter of 2024, the segment grew 28% and makes up 9% of total stock. Bank borrowing from entities without deposit facility access was the main activity. Unsecured trades eligible for the €STR calculation fell from 40% to 30%. Overnight trades not eligible surpassed 50%.

Chart 2.1.1
Segment size



Sources: MMSR, CSDB and SHS.
Notes: To prevent duplication, transactions between MMSR agents are counted only as lending. For unsecured lending, the MMSR covers only transactions with other credit institutions, excluding other counterparties.

Chart 2.1.2
Segment composition



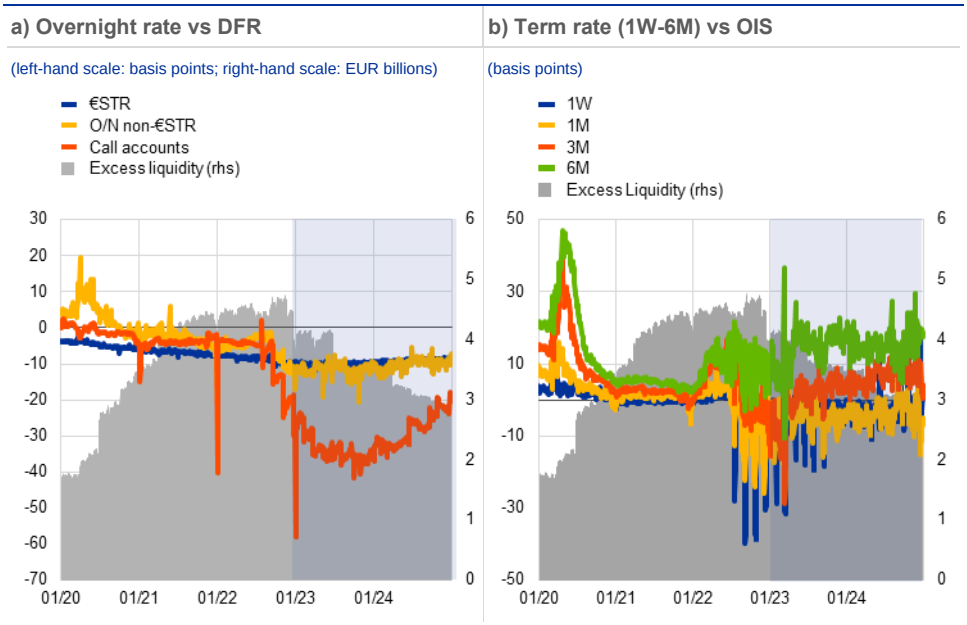
Source: MMSR.
Notes: Percentage shares of daily average transaction amounts. "O/N not €STR" includes overnight transactions outside the €STR methodology, such as deposit borrowing with government or non-financial corporations, call accounts, short-term securities issuance and all overnight lending. To prevent duplication, transactions between MMSR agents are counted only once. O/N = overnight.

2.2.2 Rates

Unsecured rates stayed persistently below the DFR, showing low sensitivity to declining excess liquidity. The spread between the €STR and the DFR held close to 9 basis points. The interest rate on call accounts decoupled from the €STR and stood significantly further below the DFR. In addition, the one-day lending rate was higher by 40 basis points and 25 basis points than the borrowing rates in September 2023 and December 2024 respectively. The pass-through of the ECB policy rate changes to the €STR was smooth throughout the hiking and cutting cycles.

Chart 2.2.1

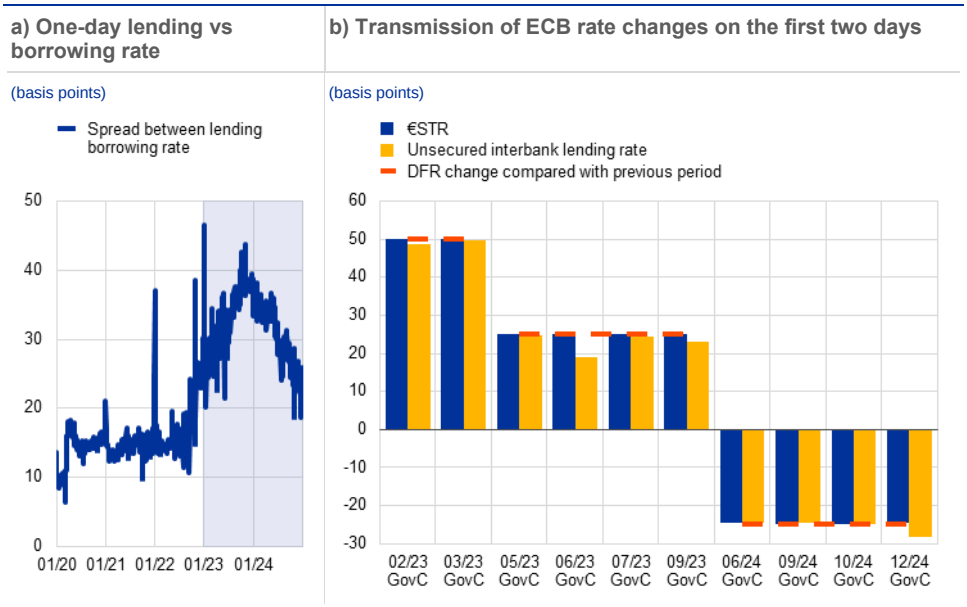
Unsecured rate in the context of declining excess liquidity



Sources: MMSR, ECB and Bloomberg.
Notes: Spread between the volume-weighted average rate and the DFR (panel a) or OIS for similar maturities (panel b). Panel a): Includes only overnight trades. "O/N non-€STR" includes fixed-rate overnight borrowing not fitting the €STR methodology, such as deposit borrowing from non-financials and O/N fixed-rate securities issuance. "Call accounts" refers to O/N fixed-rate borrowing, offering flexible, interest-bearing options with a minimum deposit and unlimited withdrawal. Panel b): Term rates include Euribor rates for one week, one to three months and six months. O/N = overnight.

Chart 2.2.2

Observations on unsecured rate variations



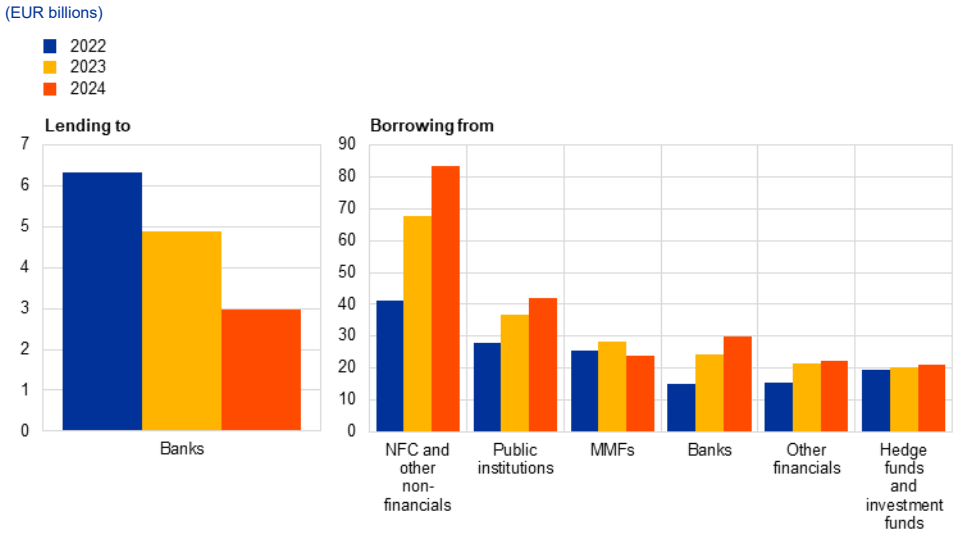
Source: MMSR.
Notes: Panel a): Daily average lending minus borrowing rate for overnight, tomorrow/next and spot/next trades by MMSR agents. Panel b): Transmission of 2023 and 2024 rate changes to unsecured trades settled within two days of policy changes taking effect. GovC = Governing Council.

2.2.3 Counterparties

Borrowing activity rose across all counterparty sectors, whereas the volume of lending to banks declined. On the borrowing front, deposits and call accounts from non-financial corporations remained the most prominent instruments, with interbank borrowing volumes ranking fourth. German entities dominated both trading directions, while French participation leaned towards borrowing. The unsecured segment exhibited the lowest concentration, with top ten entities accounting for 12% of the market and the top 150 for 48%.

Chart 2.3.1

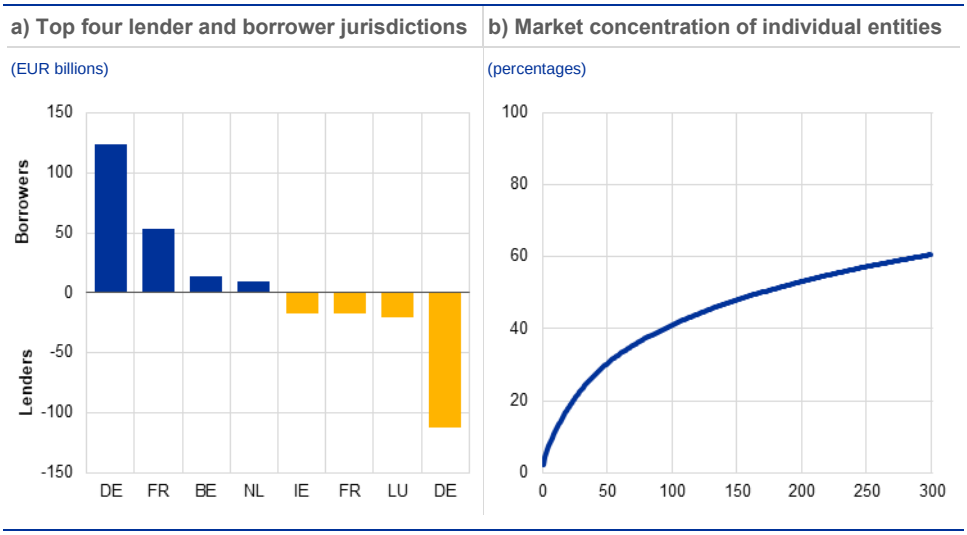
Main counterparties by direction



Source: MMSR.
Notes: Daily average transaction amounts: MMSR unsecured borrowing data (including data for call accounts) cover banks' transactions with any counterparty, while unsecured lending data are limited to interbank activity. To avoid duplication, transactions between MMSR agents (reported twice) are counted only as lending.

Chart 2.3.2

Top actors in the segment



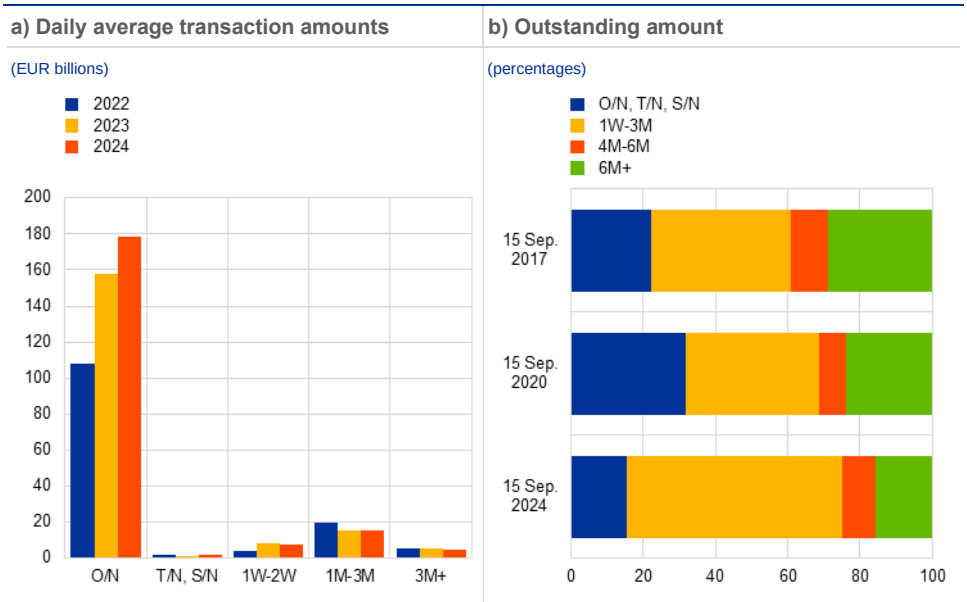
Source: MMSR.
Notes: Panel a): Daily average transaction amounts for trades in 2023 and 2024, based on the location of both the reporting agent and the counterparty. Transactions between MMSR agents are counted only once as lending to avoid duplication. Panel b): Cumulative share of individual counterparties (excluding governments and central banks) in the MMSR agents' volume for the period 2023-2024 relative to the total segment volume.

2.2.4 Maturities and calendar effects

86% of unsecured turnover is conducted in the overnight maturity bucket.

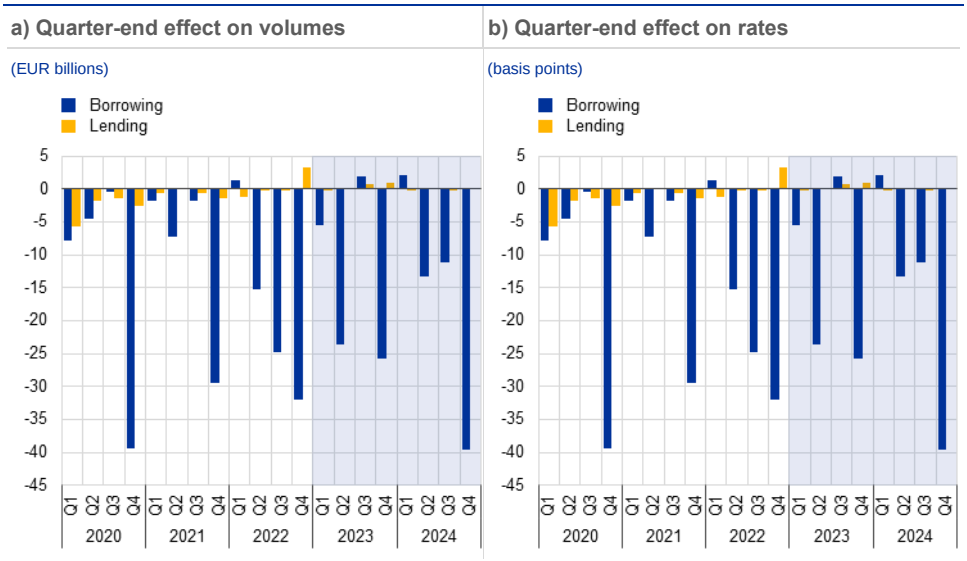
Since 2017, the share of outstanding transactions with maturities from one week to three months has increased significantly from 40% to 60%. The unsecured segment shows seasonal fluctuations at quarter-end and year-end due to regulatory factors. Although borrowing volumes and rates typically decrease on reporting dates, the rate decline at the end of 2023 and 2024 was more contained than in 2021 and 2022.

Chart 2.4.1
Maturity buckets



Source: MMSR.
Notes: Transactions between MMSR agents are recorded only once as lending to avoid duplication. Panel a): Daily average transaction amounts: O/N = overnight; T/N = tomorrow/next; S/N = spot/next. Panel b): Mid-September snapshot chosen to avoid quarter and year-end effects.

Chart 2.4.2
Calendar effect



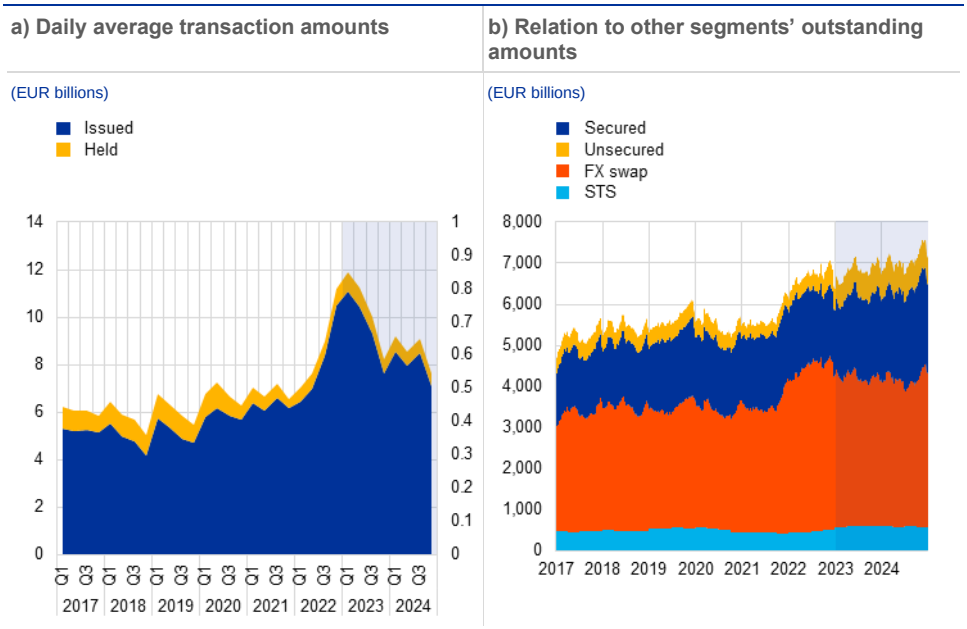
Source: MMSR.
Notes: Panel a) (daily average transaction amounts) and panel b) (volume-weighted average rates) shows the change between the last business day of one quarter and the first business day of the next, for overnight, tomorrow/next and spot/next tenors. Panel b): An outlier rate of -86 basis points from the fourth quarter of 2022 (year-end) was excluded to provide a better visual illustration of quarter-end effects in the review period.

2.3 The short-term securities segment

2.3.1 Volumes

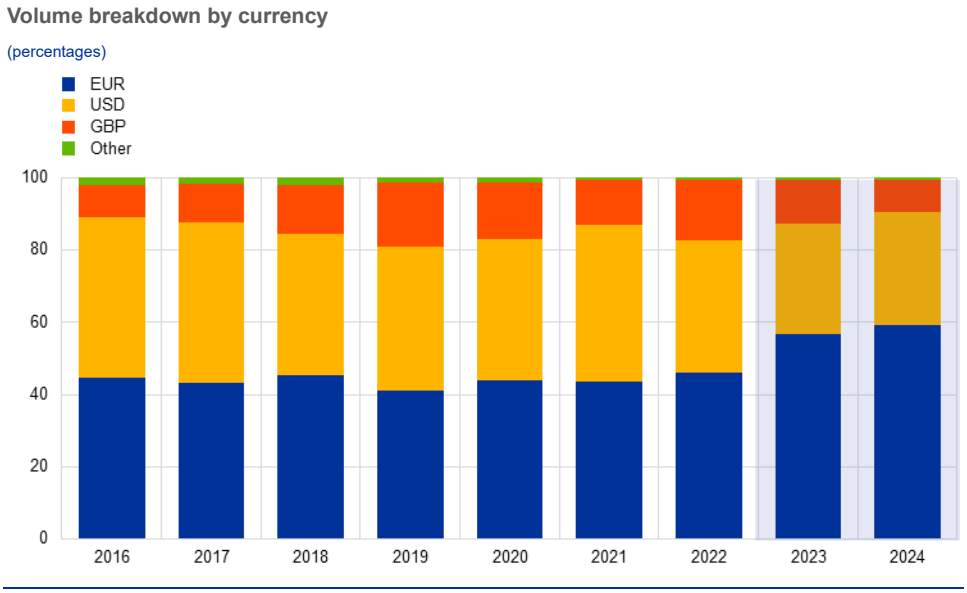
Short-term securities (STS) issuance in the primary market averaged €8 billion daily in the fourth quarter of 2024, accounting for 8% of the total outstanding money market volume. In the period 2023-2024, flows declined while activity shifted to longer maturities, resulting in stable outstanding amounts. STS include ECP, NEU CP and STEP. Issuance volumes in euro increased from 46% to 60%.

Chart 3.1.1
Segment size



Sources: MMSR, CSDB and SHS.
Notes: Panel a): Volume of STS issued by euro area banks (CSDB) and/or held by euro area banks (SHS), covering all currencies. To avoid duplication, STS issued and held by euro area banks (present in both databases) are counted only as issuance.

Chart 3.1.2
Segment composition



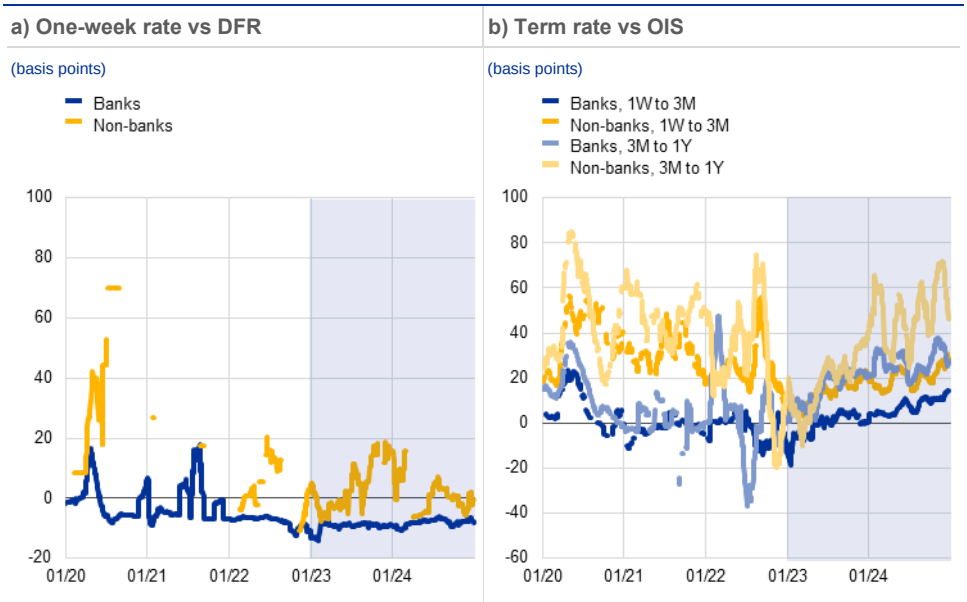
Source: CSDB.
Notes: "Other" covers 25 currencies including Swiss franc, Australian dollar and Hong Kong dollar.

2.3.2 Rates

STS rates for the shortest maturities issued by banks remained stable below the DFR, in line with unsecured money market rates. However, rates for other issuers were highly volatile. Bank-issued securities generally had lower rates for both short-term and long-term maturities. The issuer's rating also significantly affected pricing, especially for maturities beyond one week. ECB rate changes were effectively passed through to issuances with very short maturities.

Chart 3.2.1

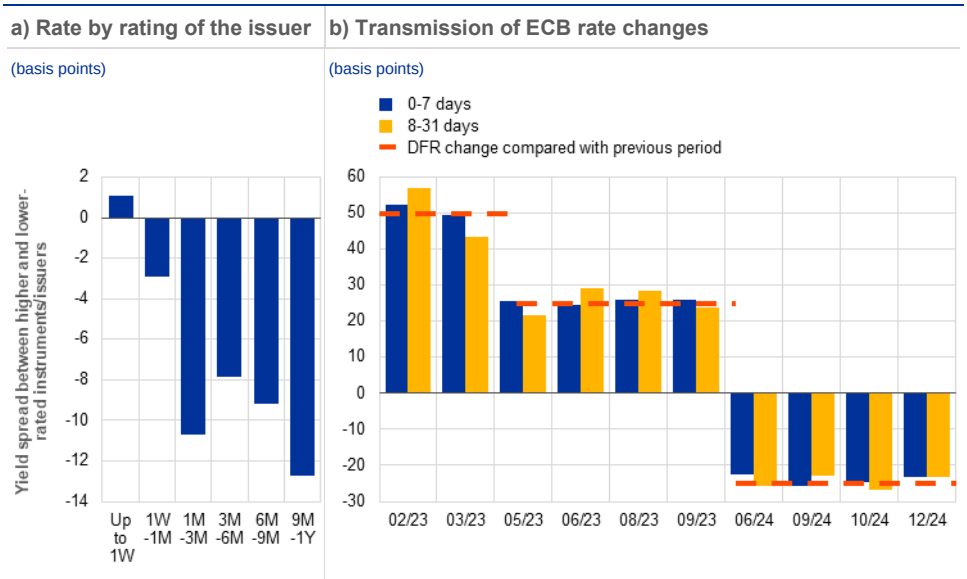
STS rates by issuer



Sources: STEP, CSDB and MMSR.
Notes: The 30-day moving average of the spread between the euro-denominated STS volume-weighted yield and the respective benchmark is broken down by issuer type, with confidential data points hidden. Panel a): The benchmark is the DFR. Panel b): The benchmark is the OIS for similar maturities.

Chart 3.2.2

Observations on STS rate variations



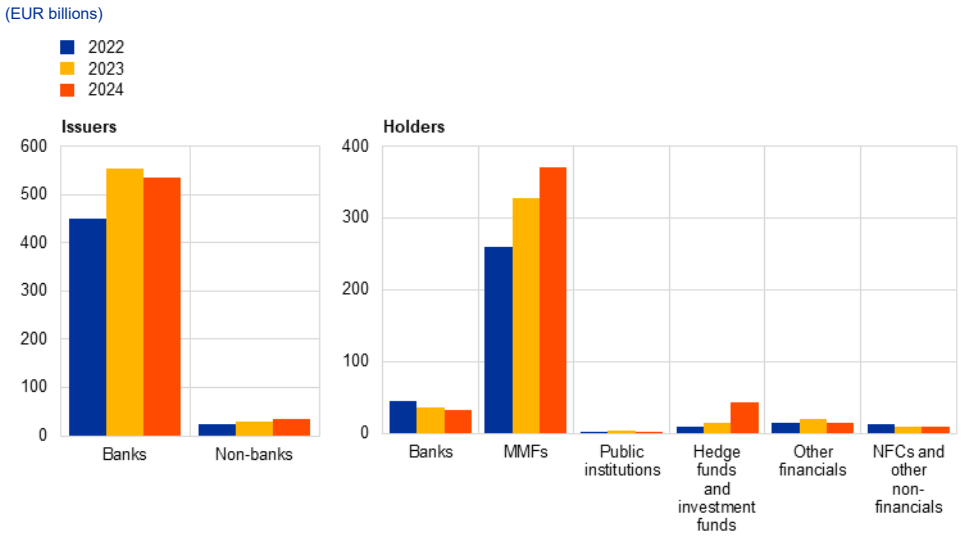
Sources: STEP and CSDB.
Notes: Panel a): Spread differences between the euro-denominated STS volume-weighted yield and the benchmark rate (DFR for up to one week, OIS for longer maturities) for higher-rated versus lower-rated instruments and issuers, covering all 2023 and 2024 trades. Panel b): Rate change transmission in 2023 and 2024 during the maintenance period. The pass-through was calculated by subtracting the volume-weighted average STEP euro-denominated zero-coupon yields of instruments issued and matured between two consecutive Governing Council decisions.

2.3.3 Counterparties

In the primary market, banks continued to be the main issuers of STS, with money market funds comprising most of the investor base. French entities led in both issuance and investment activities. Dutch and German banks also played significant roles in issuance, while Irish and Luxembourgish MMFs were prominent securities holders. The STS segment ranked in the middle compared to the other money market segments of other segments in terms of concentration, with the top ten entities accounting for slightly more than 40% of the market, and the top 150 accounting for 89%.

Chart 3.3.1

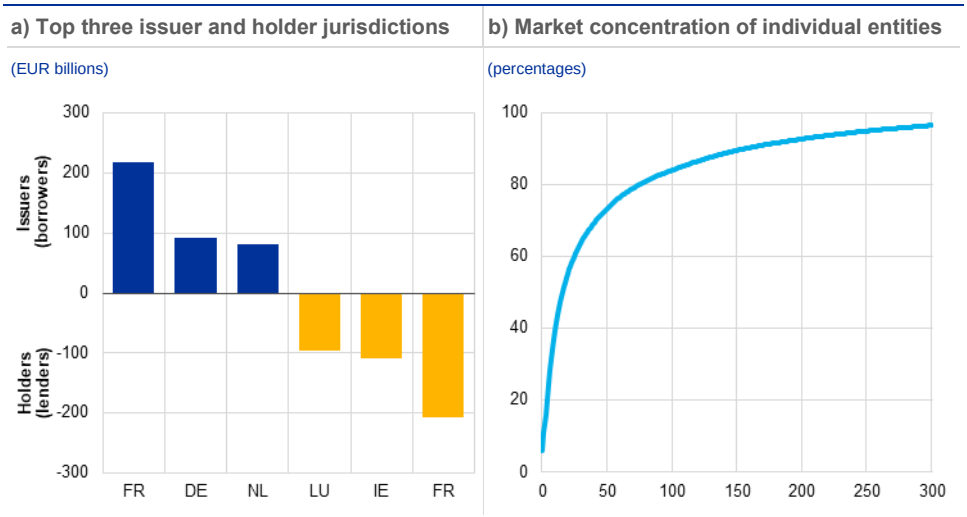
Main counterparties by direction



Sources: CSDB and SHS.
Notes: Sum of outstanding amounts and holding amounts as at the end of the fourth quarter. The left side indicates the sectors responsible for the issuance volume of securities in the euro area that are either held or issued by euro area banks, while the right side shows the sectors holding the securities either held or issued by euro area banks in the euro area.

Chart 3.3.2

Top actors in the segment



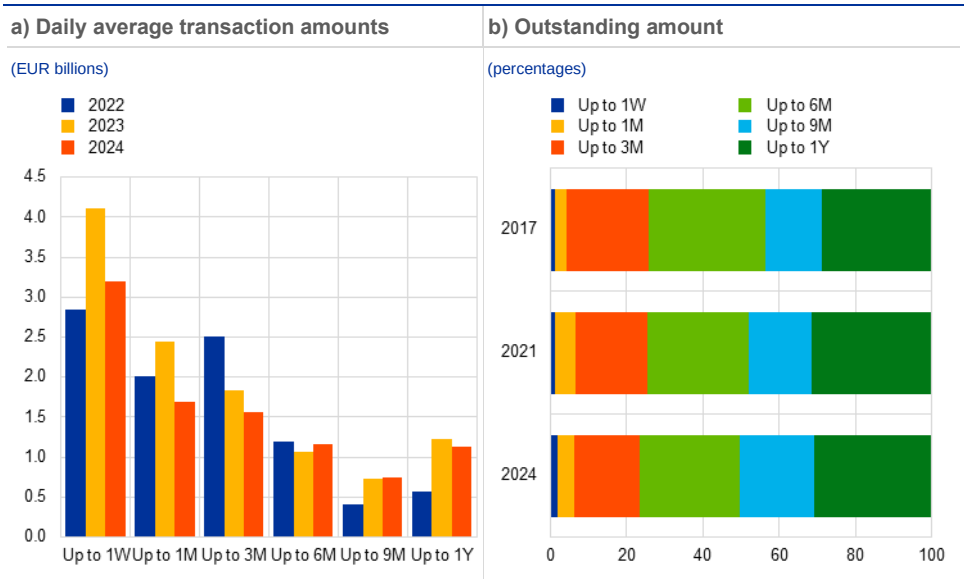
Sources: CSDB and SHS.
Notes: Panel a) Outstanding amounts as of the third quarter of 2023. Panel b): Cumulative share of individual entity STS issuances (as distinct from government and central bank STS issuances) over the period 2023-2024 relative to the total STS issuances in the segment.

2.3.4 Maturities and calendar effects

STS activity remained varied in terms of maturity, with a rise in short-term tenors over the last two years, although most outstanding amounts still had maturities over three months. The usual issuance pattern – peaking in the first and second quarters, then declining in the third quarter – was disrupted in the period 2020-2021 by TLTRO III offering a favourable three-year funding rate. After this special rate ended in June 2022, the traditional issuance pattern re-emerged. Issuances rose post-TLTRO III, fell in the second half of 2023, and increased sharply in 2024, marking a return to typical seasonal trends.

Chart 3.4.1

Maturity buckets

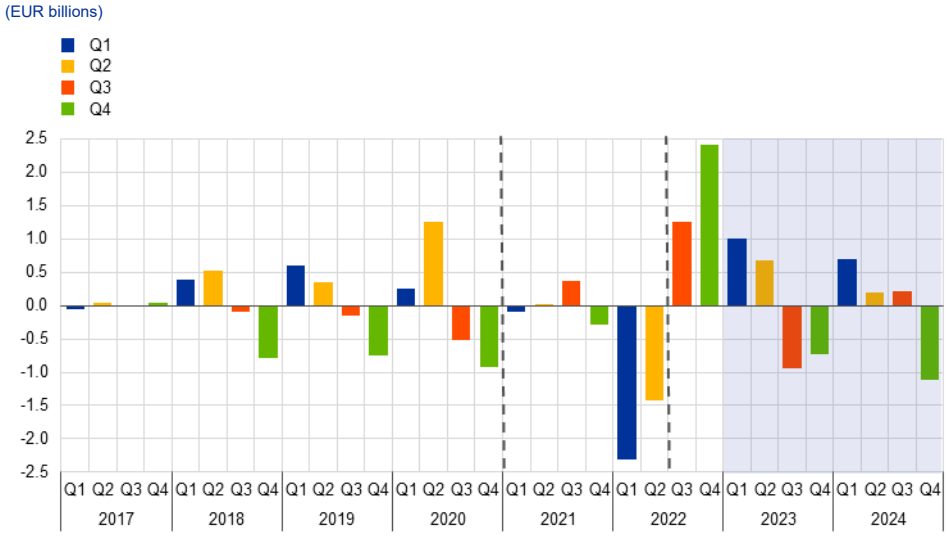


Sources: CSDB and SHS.
Notes: Panel a): Daily average issuance within the euro area across all currencies, excluding public entities, as well as euro area bank holdings from all sectors except public. Each maturity band excludes shorter maturities. Panel b): Data as of the end of the third quarter for comparability with other segments.

Chart 3.4.2

Seasonal pattern

Quarterly deviation from annual average issuance



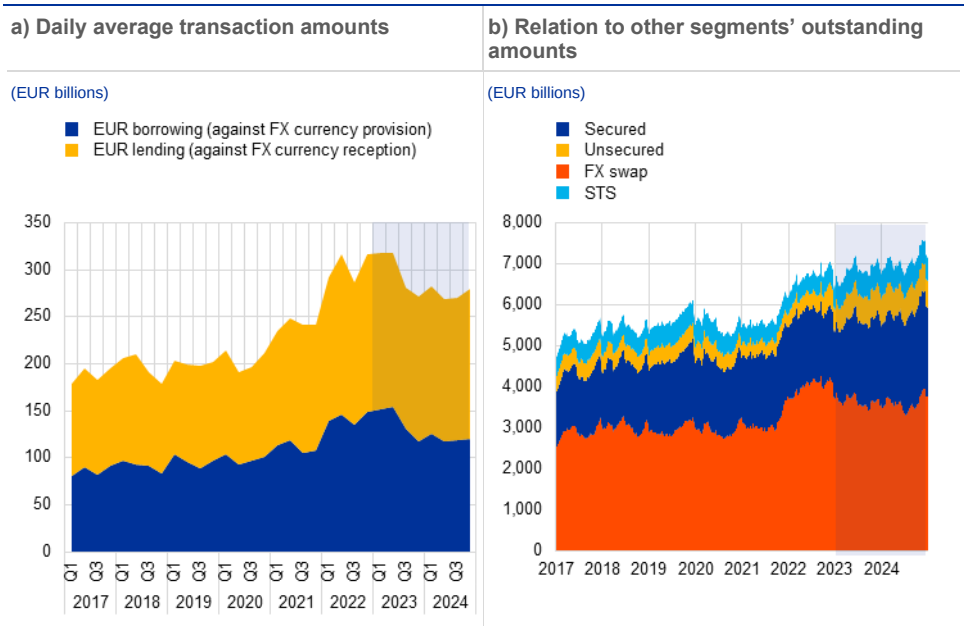
Source: CSDB.
Notes: Quarterly deviation of STS gross issuances from the yearly average.

2.4 The foreign exchange swap segment

2.4.1 Volumes

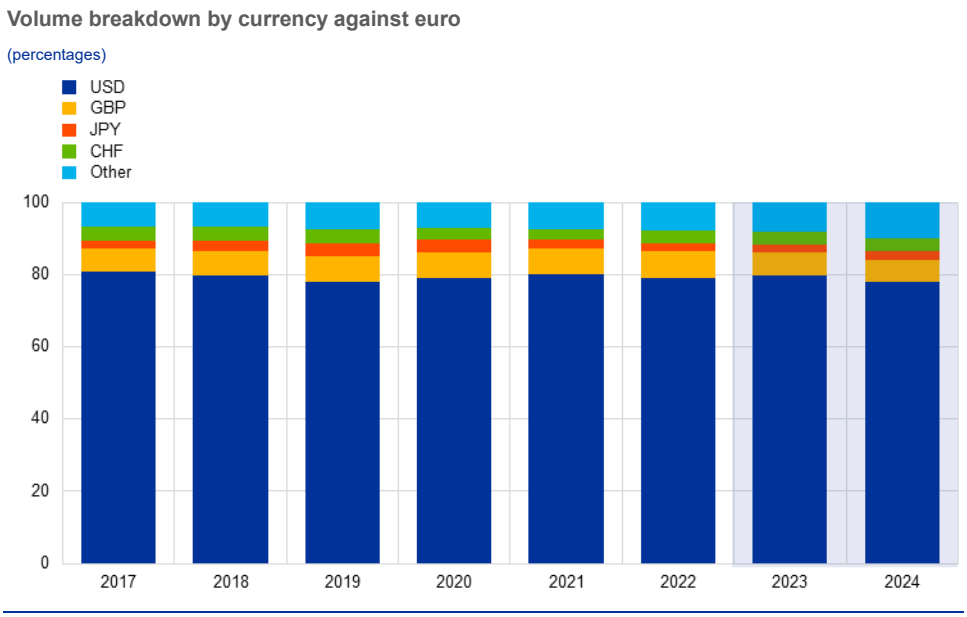
FX swaps, averaging daily turnover of €286 billion in the fourth quarter of 2024, remained the biggest segment, with 54% of the total outstanding volume. Turnover fell over the two-year review period with a shift to longer maturities. FX swap trades involving the US dollar made up about 80% of the daily volume.

Chart 4.1.1
Segment size



Source: MMSR, CSDB and SHS.
Notes: Volume of euros bought/sold against all currencies. Transactions between MMSR agents are counted only as FX currency receiving transactions to avoid duplication.

Chart 4.1.2
Segment composition



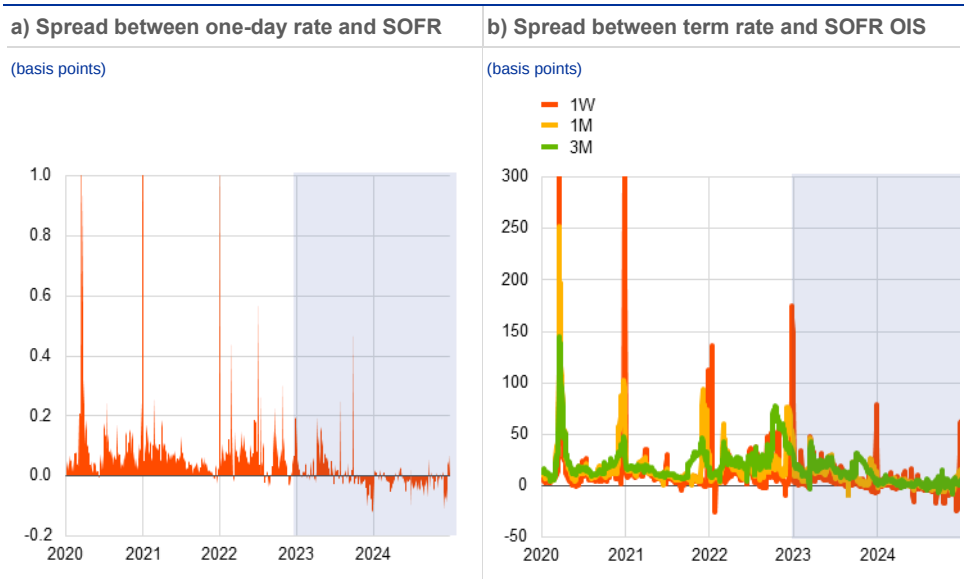
Source: MMSR.
Notes: Percentage of transaction amounts (euro versus foreign currencies). "Others" includes 61 currencies, with the Australian dollar, Hungarian forint and New Zealand dollar being the most significant. Transactions between MMSR agents are counted only as FX currency receiving transactions to avoid duplication.

2.4.2 Rates

Over the past two years, the premium for borrowing US dollars against euro in FX swaps has declined. When the cost of borrowing US dollars through FX swaps exceeds the funding costs in the US domestic money market, it indicates a US dollar supply shortage offshore. Recently, implied US dollar borrowing costs from FX swaps have approached the secured overnight financing rate (SOFR) and have rarely surpassed the backstop pricing of the Eurosystem's US dollar operations (Box 2 and Chart 4.2.2). The reduction in the US dollar premium has been supported by changing policy rate expectations and a narrowing interest rate differential between the United States and the euro area.

Chart 4.2.1

Offshore vs onshore US dollar implied borrowing rate



Sources: MMSR and Bloomberg.
Notes: Shows the spread between the implied US dollar borrowing rate from EUR/USD FX swaps with the secured overnight financing rate (SOFR) and SOFR OIS for similar maturities. Transactions between MMSR agents are counted only as FX currency receiving transactions to avoid duplication. Confidential data points are hidden.

Chart 4.2.2

Observations on FX swap rate variations

Sources: ECB and Bloomberg.
Note: Eurosystem's US dollar swap line use, operation price and FX swap market price.

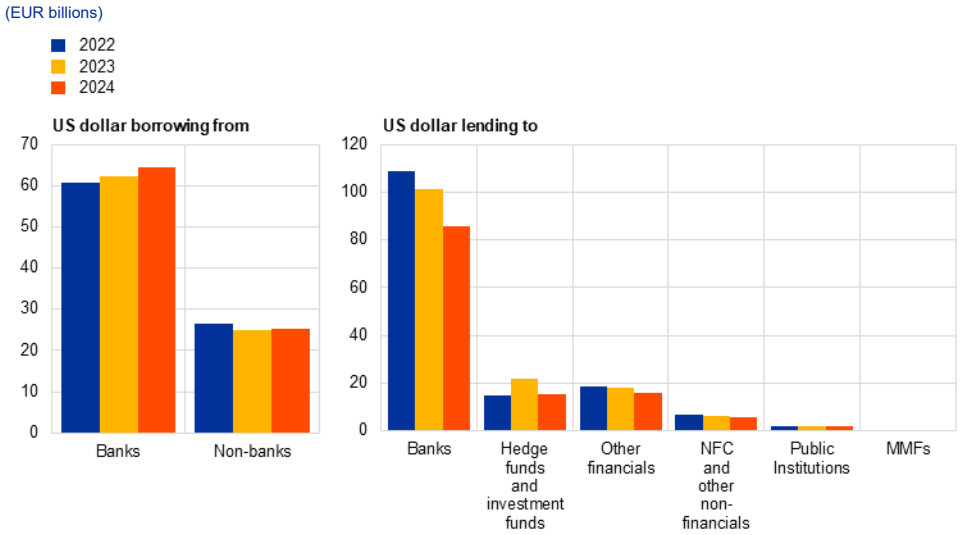
2.4.3 Counterparties

Interbank transactions dominate FX swap market activity. In transactions where MMSR reporting banks provide US dollars, 69% of the volume is traded with other banks. Hedge funds and investment funds have slightly increased their activity,

establishing themselves as the second largest counterparty group. Transactions with other financial corporations, including pension funds and insurance companies, remained steady in third place. French entities, followed by German entities, are the most active in the FX swap segment. The top ten and 150 entities accounted for 32% and 81% of the FX swap transaction volumes respectively.

Chart 4.3.1

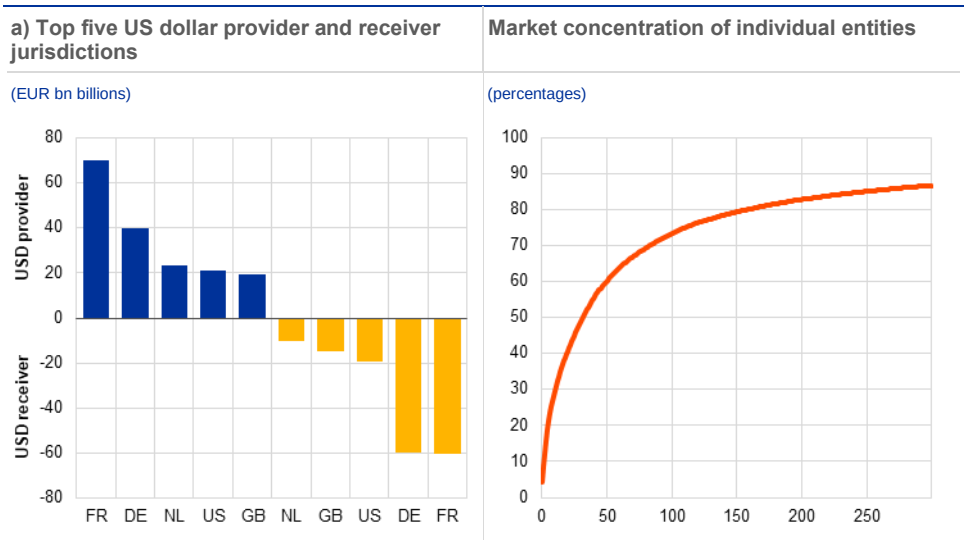
Main counterparties by direction



Source: MMSR.
Notes: Daily average transaction amounts indicate the counterparty sector for trades where MMSR reporting agents exchange euro for US dollars by. Double-reported transactions (between MMSR reporting banks) are counted only in US dollar provision.

Chart 4.3.2

Top actors in the segment



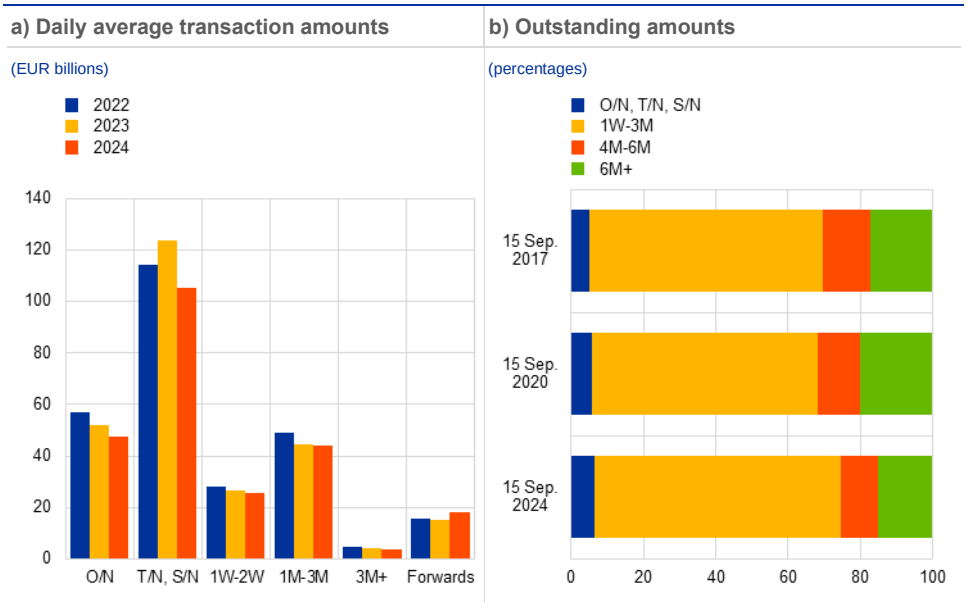
Source: MMSR.
Notes: Panel a): Daily average US dollar/euro transaction amounts for 2023 and 2024. Transactions between MMSR agents are counted only as FX currency receiving transactions to avoid duplication. Panel b): Cumulative share of individual counterparties (excluding non-government/central bank) in the MMSR agents' volume for the period 2023-2024 relative to the total segment volume. All currencies included.

2.4.4 Maturities and calendar effects

In total, 62% of FX swap turnover occurs in the one-day maturity bucket, although there has been a shift towards slightly longer maturities over the past two years. Since 2017, outstanding amounts have been distributed as 10% in very short maturities, 65% in medium maturities and 25% in longer maturities. While quarter-end effects are limited, year-end US dollar borrowing can become expensive, as seen in 2020. However, in 2023 and 2024, year-end conditions were milder than in the period 2021-2022, even with the large volume traded in the last five business days.

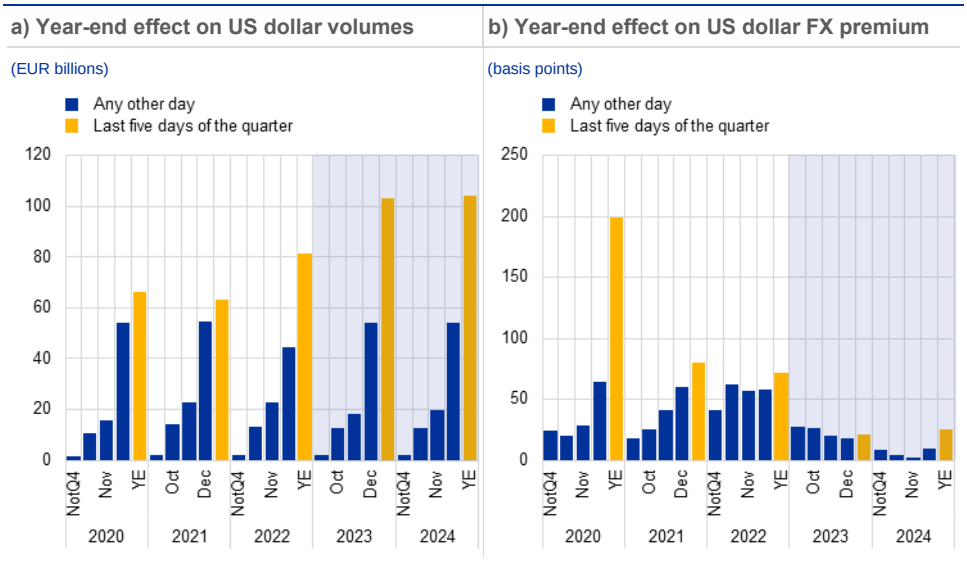
Chart 4.4.1

Maturity buckets



Source: MMSR.
Notes: Transactions between MMSR agents are counted only once as FX currency receiving transactions to avoid duplication. Panel a): Daily average transaction amounts in all currencies: O/N = overnight; T/N = tomorrow/next; S/N = spot/next; "Forwards" refers to transactions settling more than three business days ahead. Panel b): Mid-September snapshot chosen to avoid quarter and year-end effects.

Chart 4.4.2
Calendar effects



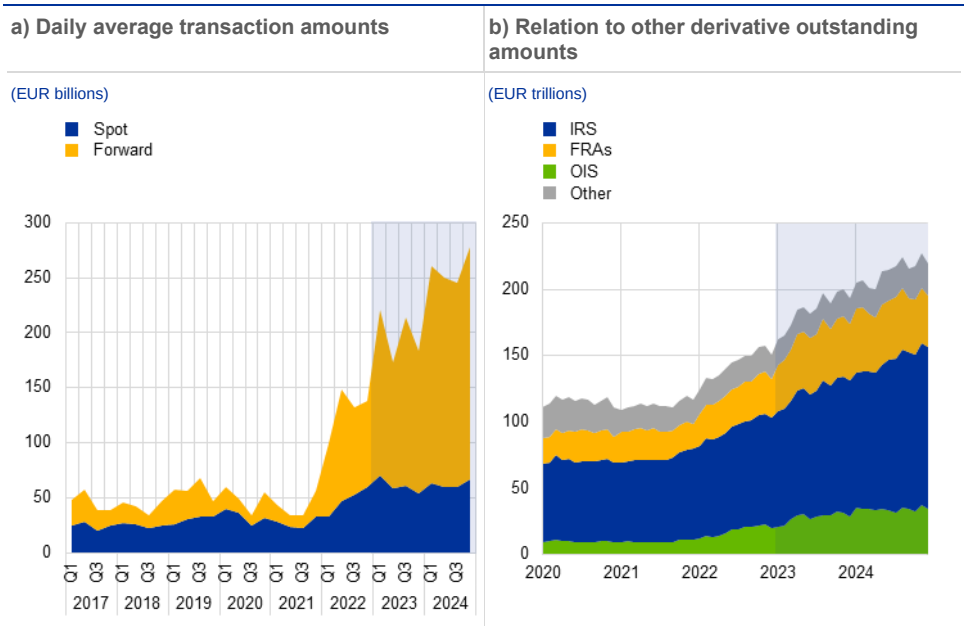
Source: MMSR.
Notes: Daily average transaction volume (panel a) and rate (panel b) deviations from the yearly average for the specified period. Blue bars represent the increasing volume traded in October, November and December (excluding the 5 last trading days of the month) compared to the average of the year, excluding Q4. The volume includes trades maturing in the first 15 days of the next year. The rise in trading from October indicates pre-funding strategies to bypass high year-end trading costs.

2.5 Overnight index swaps

2.5.1 Volumes

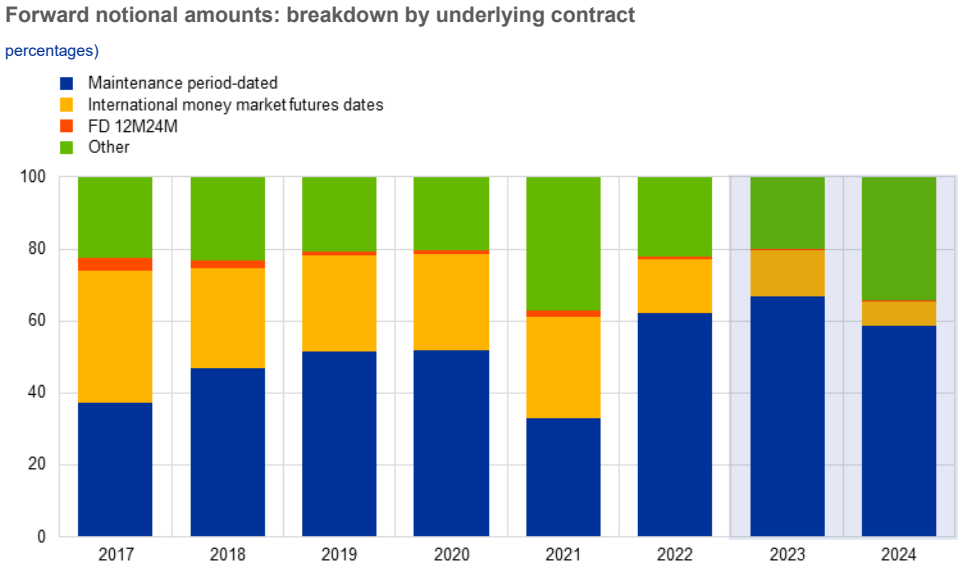
The OIS segment grew by 101% over two years, ranking third among money market derivatives with daily turnover of €228 billion. The demand for interest rate swaps, forward rate agreements and OIS derivatives surged owing to expectations of rate changes in 2022, 2023 and 2024. Banks use OIS for managing rate exposure and speculating on future policy rates, with 60% of forward activity linked to the Eurosystem reserve maintenance periods.

Chart 5.1.1
Segment size



Sources: MMSR (panel a), EMIR (panel b).
Notes: Panel a): Notional amounts, excluding double-reporting and novation. Panel b): Outstanding euro notional amounts at month's end, excluding double-reporting and extreme outliers. EMIR includes more reporting entities than MMSR.

Chart 5.1.2
Segment composition

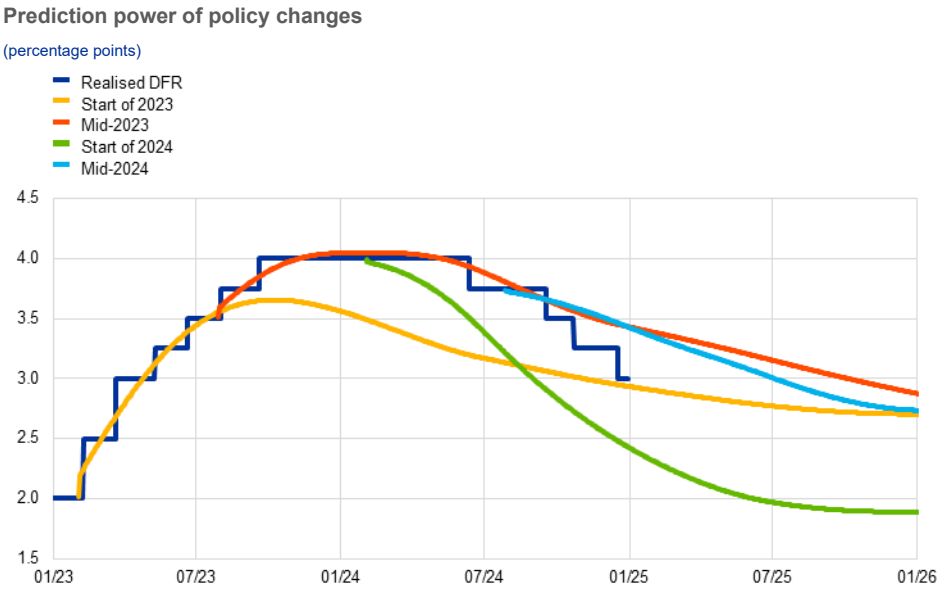


Source: MMSR.
Notes: Distribution of daily average trading amounts by contract, excluding double-reporting and novation. “FD 12M24M” refers to trades starting 12 months after the trade date and maturing 12 months later.

2.5.2 Rates

OIS market participants initially underestimated the ECB's rate hikes in mid-2022 but accurately predicted the peak in late 2023, as well as the 2024 cutting cycle. Policy signals from the Governing Council in October 2023, December 2023 and July 2024 triggered strong market reactions. Over shorter horizons, both the ECB Survey of Monetary Analysts (SMA) and OIS pricing reliably anticipated rate changes, although OIS rates occasionally diverged from SMA forecasts over longer horizons. The relationship between inflation swaps and OIS rates has returned to pre-COVID-19 levels.

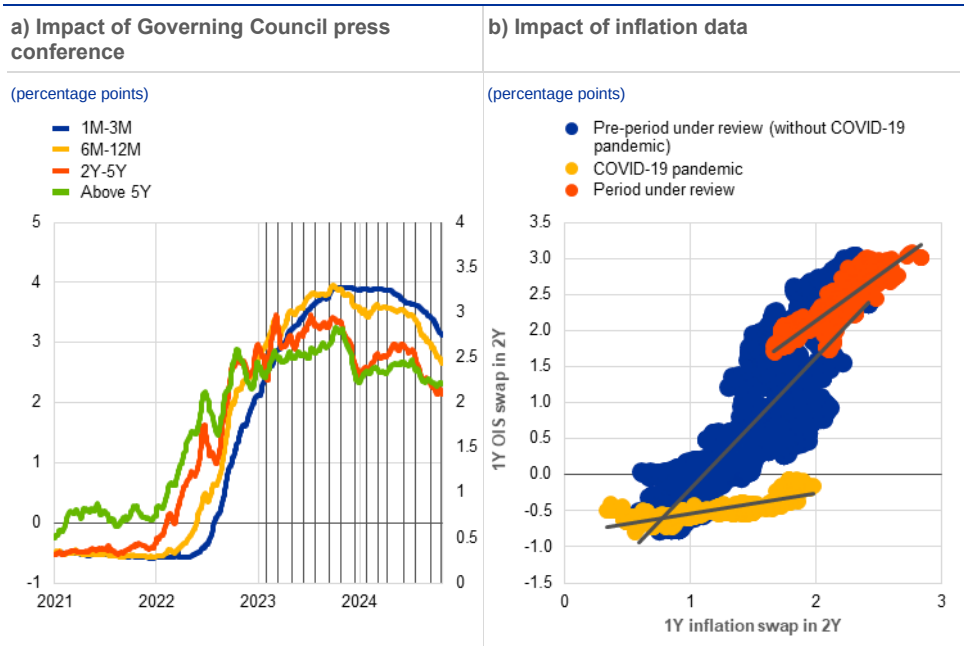
Chart 5.2.1
OIS rates



Sources: ECB and Bloomberg.
Notes: This chart shows the alignment of OIS forward curves (nominal rates on various dates) with actual policy rate changes, depicted by the realised DFR curve

Chart 5.2.2

Observations on OIS rate variations



Sources: MMSR (panel a) and Bloomberg (panel b).
Notes: Panel a): Volume-weighted average rate for selected maturity buckets plotted against trade dates, excluding double-reported and novated spot transactions. Vertical lines mark Governing Council dates. Panel b): The relationship between inflation swaps and OIS rates is shown. Inflation swaps transfer inflation risk for a fixed payment, enabling inflation to be estimated accurately and helping financial professionals to hedge or profit from price changes.

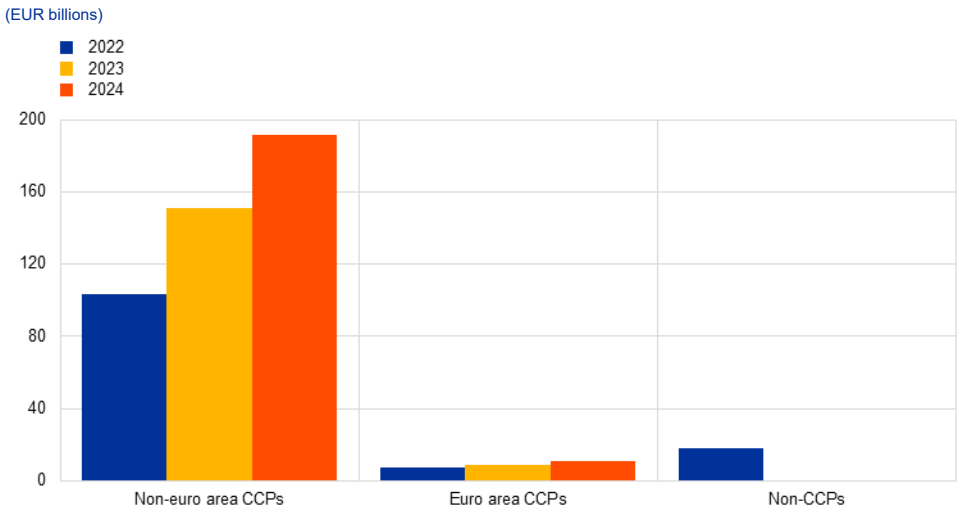
2.5.3 Counterparties

Most OIS transactions were centrally cleared, in compliance with the requirements under the European Market Infrastructure Regulation (EMIR)[7]. One non-euro area CCP cleared most trades, while euro area CCPs accounted for 6% of the total. The segment is highly concentrated, with the top ten and 150 making up 95% and 99.6% of the market respectively. Euro area banks were more active in forward than in spot positions, implying more focus on speculation than on hedging.

[7] Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories (OJ L 201, 27.7.2012, p. 1).

Chart 5.3.1

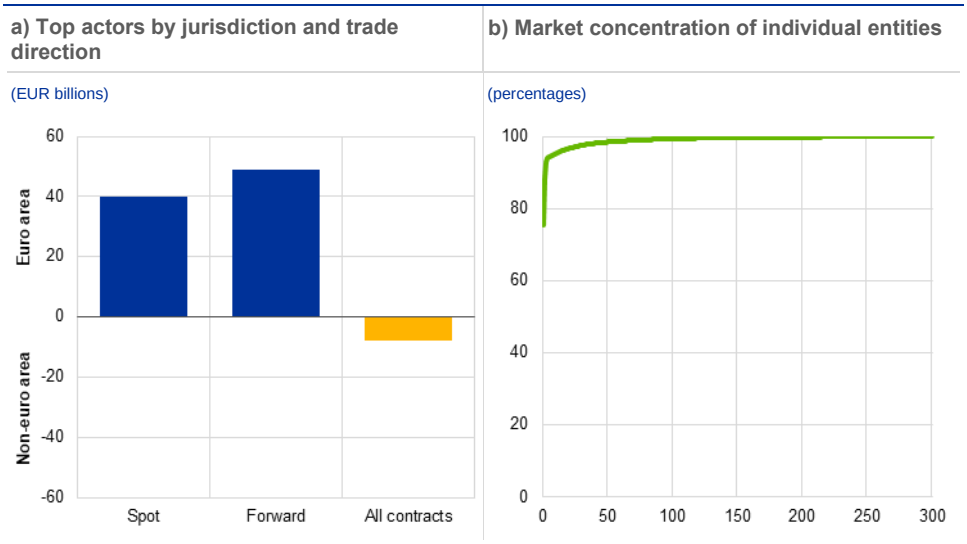
Main counterparties receiving fixed interest rate payments from euro area banks



Source: MMSR.
Notes: Average daily notional volume of OIS transactions categorised by centrally cleared versus non-cleared trades and by CCP location, excluding double-reported and novated transactions. Confidential data points are hidden.

Chart 5.3.2

Top actors in the segment



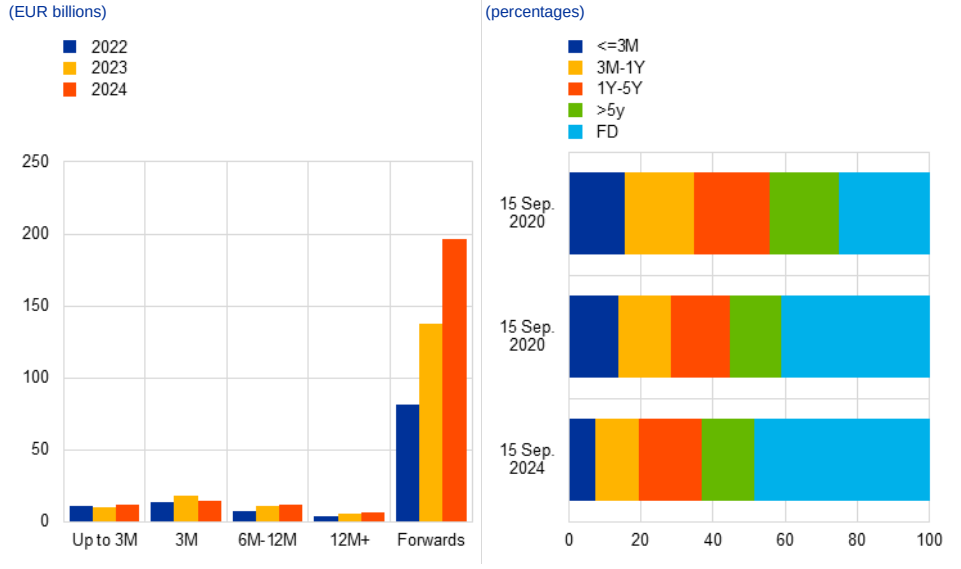
Source: MMSR.
Notes: Panel a): Daily average volume of OIS transactions for trades in 2021 and 2022, excluding double-reported and novated transactions. The chart indicates the counterparty's location for bilateral trades and the reporting agent's location for cleared trades. For the non-euro area, spot and forward trades have been merged. Panel b): Cumulative share of individual counterparties (excluding governments and central banks) in the volume of transactions by MMSR agents over the period 2023-2024 relative to the total OIS volume.

2.5.4 Maturities and calendar effects

As much as 78% of OIS turnover involved forward contracts. In 2024, 60% of forward contracts aligned with euro area reserve maintenance periods and ECB Governing Council meeting dates, enabling hedging against policy rate changes. The volume of OIS trading was sensitive to signals about future rate paths from ECB

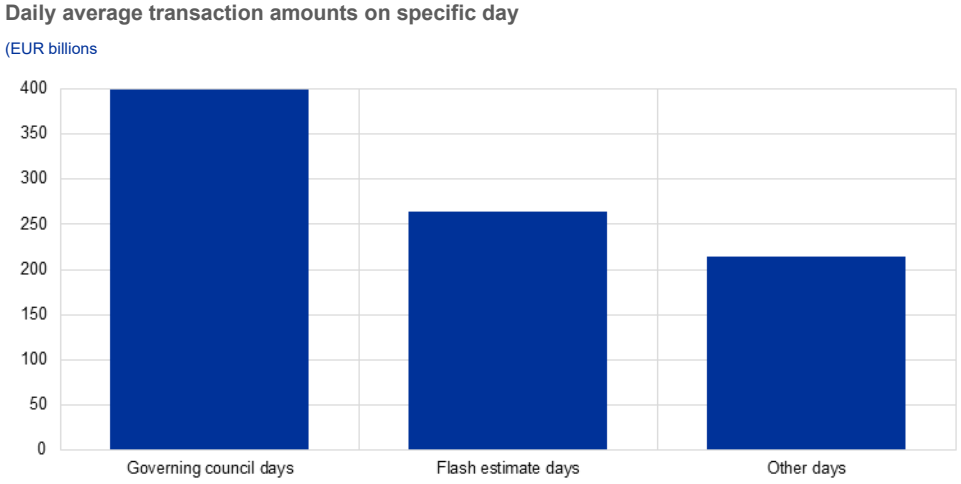
press conferences and inflation flash estimates, resulting in higher trading volumes on those dates compared with the average. Contracts with original maturities over one year accounted for 51% and 49% of the outstanding amounts in spot and forward contracts respectively.

Chart 5.4.1
Maturities



Sources: MMSR (panel a), EMIR (panel b).
Notes: Panel a): Maturity buckets indicate standard contract lengths based on the difference between start and maturity dates. Forwards are transactions settling more than three business days ahead, excluding double-reported and novated transactions. Panel b): Outstanding euro-denominated notional amounts, excluding double-reporting and extreme outliers. Mid-September snapshot chosen for comparability purposes with other segments.

Chart 5.4.2
Impact of Governing Council press conference and inflation data



Source: MMSR. Notes: Daily average transaction volumes, excluding double-reported and novated transactions.

Appendix

Money market statistical reporting

The money market statistical reporting (MMSR) dataset gathers daily information on activity in the euro money markets. MMSR data are collected on all individual transactions in euro below one year conducted by selected banks in the euro area, reported daily by 07:00 CET since 1 April 2016. The legal framework for MMSR is laid down in Regulation (EU) No 1333/2014[8].

The MMSR reporting agents cover the largest euro area banks. Initially, 53 banks were reporting agents, but over time, this number had fallen to 46 because of mergers and administrative changes. On 1 July 2024, 24 new banks were added and one removed. Data from these newly added banks are excluded from this 2024 edition of the Euro money market study as their reporting only covers the last quarter of the review period (2023-2024). Reporting agents are listed in Figure A.[9]

MMSR data cover four segments of the euro money market: secured, unsecured, foreign exchange swaps and overnight index swaps. Both legs of the transactions are reported, including lending and borrowing, selling and buying of foreign currency, and paying and receiving fixed interest rates. Data exclude intragroup transactions and cover wholesale trades with non-retail counterparties, such as financial corporations, non-financial corporations and governments.[10] Table 1 lists the main characteristics of the transactions reported for each segment.

Key transaction attributes reported include trade date, turnover, pricing, maturity structure and counterparty. For secured transactions, the collateral security's ISIN is also provided. The dataset has evolved, with two notable changes taking place in March 2019. First, the legal entity identifier (LEI) reporting requirement was extended to all counterparties. Second, financial auxiliaries and captive institutions were included among eligible counterparties, enhancing the accuracy and completeness of data. MMSR reflects new trades and the renegotiation of these trades, but does not include life-cycle events such as early cancellations. Data cover wholesale money market transactions by euro area reporting agents, including their branches in the European Union, the European Free Trade Area and the United Kingdom, with any global counterparty. Transactions between reporting agents are reported by both parties. Table 2 provides a summary of the main information available in the MMSR data.

---

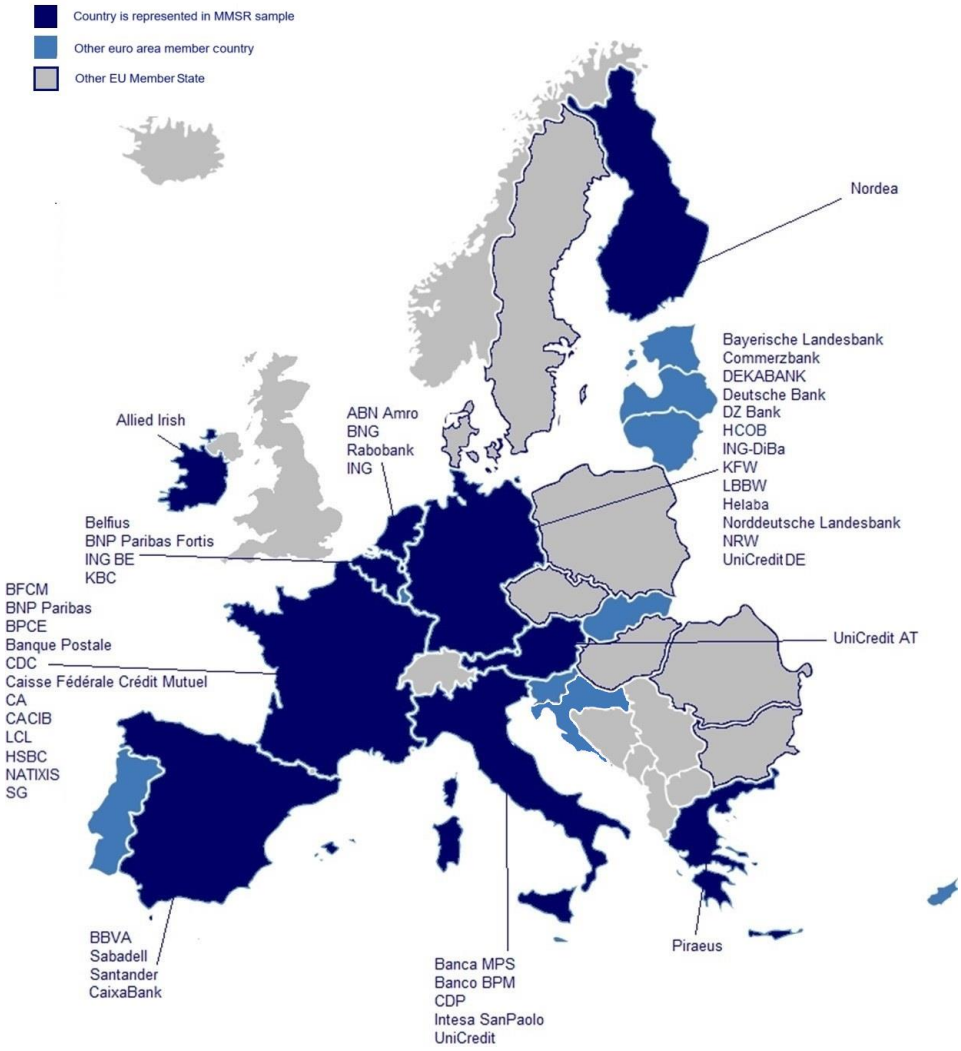
8 Regulation (EU) No 1333/2014 of 26 November 2014 concerning statistics on the money markets (ECB/2014/48) (OJ L 359, 16.12.2014, p. 97), as amended by Regulation (EU) 2015/1599 (ECB/2015/30) (OJ L 248, 24.9.2015, p. 45), Regulation (EU) 2019/113 (ECB/2018/33) (OJ L 23, 25.1.2019, p. 19), Regulation (EU) 2019/1677 (ECB/2019/29) (OJ L 257, 8.10.2019, p. 18), and Regulation (EU) 2020/2004 (ECB/2020/58) (OJ L 412, 8.12.2020, p. 31).

9 The updated list of reporting agents is also available on the ECB's website.

10 Transactions are reported when classified as "wholesale" under the Basel III LCR framework. Lending transactions in the unsecured segment are only reported when the counterparty is a credit institution.

Figure A

Reporting agents contributing to MMSR as at June 2024



Source: ECB.
Note: A more detailed list of reporting agents is available on the ECB's website.

Table A1

Scope of reporting for the four market segments included in MMSR

Segment	Scope of reporting
Secured	Secured transactions consist of short-term repurchase agreement transactions (borrowing and lending) denominated in euro. This includes bilateral transactions concluded directly between two counterparties, transactions mediated by a central counterparty and transactions where a third separate agent takes care of the collateral management (tri-party repos). Securities lending transactions which take place against cash must also be reported within the secured market segment.
Unsecured	Unsecured transactions consist of several kinds of short-term borrowing/lending contracts that share the characteristic of not being secured by any collateral. Unsecured transactions in the scope of MMSR take place using the instruments defined in the MMSR Regulation, in particular: • unsecured deposits – unsecured interest-bearing deposits that are either redeemable at notice or have a maturity of not more than one year, and that are either taken (borrowing) or placed (lending) by the reporting agent; • call accounts – either (i) cash accounts with daily changes in the applicable interest rate, giving rise to interest payments or calculations at regular intervals, and a notice period to withdraw money, or (ii) saving accounts with a notice period to withdraw money; • fixed-rate or variable-rate short-term debt securities – borrowing via the issuance of short-term securities, which are denominated in euro, from the reporting agent to counterparties, or lending via the purchase on the primary market of short-term securities, which are denominated in euro, issued by other credit institutions.

Segment	Scope of reporting
FX swaps	FX swap transactions consist of foreign exchange swap transactions with a maturity of up to and including one year (defined as transactions with a maturity date of not more than 397 days after the settlement date), in which euro are bought/sold on a near-term value date against a foreign currency, with an agreement to resell the purchased currency on a forward, pre-agreed maturity date.
OIS	OIS transactions consist of daily overnight index swap transactions denominated in euro of any maturity. It is the maturity of the underlying asset that qualifies the OIS as a money market instrument, regardless of the final maturity of the OIS.

Table A2

Main information available in the MMSR

Variables	Unsecured segment	Secured segment	FX swap segment	OIS segment
Proprietary transaction identification	Specifies the unique internal transaction identifier used by the reporting agent.			
Counterparty identification	Specifies the counterparty's LEI, if one has been assigned.			
Trade date	Specifies the date at which the parties enter into the transaction – trade time is reported if available.			
Settlement date, value date, or start date	Specifies the date on which the amount of money is exchanged.	Specifies the date on which the cash is initially exchanged with the collateral.	Specifies the date on which amounts of currency are exchanged based on an agreed FX rate.	Specifies the date on which the floating overnight rate used in the calculation of the OIS pay-out is computed.
Maturity date	Specifies the date on which the amount of money is due to be repaid by the borrower.	Specifies the date on which the cash is due to be returned against the collateral.	Specifies the date on which the FX swap transaction expires and the currency sold on the value date is repurchased.	Specifies the last date of the term over which the compounded overnight rate is calculated.
Transaction type	Specifies whether the transaction is borrowing or lending.	Specifies whether the transaction is borrowing or lending of cash.	Specifies whether the euro amount reported is bought or sold on the value date.	Specifies whether the fixed interest rate is paid or received.
Transaction amount	Specifies the nominal amount in euro lent or borrowed.	Specifies the nominal amount in euro lent or borrowed.	Specifies the nominal amount of the FX swap in euro.	Specifies the notional amount of the OIS.
Rate type	Specifies whether the transaction interest rate is fixed or floating.			
Deal rate	Specifies the interest rate at which the cash lent is to be remunerated. Only specified for fixed rate transactions.			
Reference rate index	Specifies the ISIN code of the underlying reference rate. Only specified for floating rate transactions.			
Basis point spread	Specifies the number of basis points added to or deducted from the underlying reference rate. Only specified for floating rate transactions.			
Foreign exchange spot rate			Specifies the foreign exchange rate between the euro and the foreign currency applicable to the transaction on the value date.	
Foreign exchange forward points			Specifies the difference between the foreign exchange forward rate and spot rate.	
Fixed interest rate				Specifies the fixed rate used in the calculation of the OIS payout.

Variables	Unsecured segment	Secured segment	FX swap segment	OIS segment
Instrument type	Specifies the instrument via which the borrowing/lending takes place.			
Collateral ISIN		Specifies an ISIN if possible. Otherwise, the collateral asset class, issuer sector and (if applicable) pool are reported.		
Special collateral indicator		Specifies whether a repo transaction is conducted against special collateral. Reporting this is optional.		
Collateral nominal amount		Reporting this is optional for transactions in which the asset pledged is not identified via individual ISINs.		
Collateral haircut		Specifies the haircut (a risk control measure – the market value of the collateral is reduced by a certain percentage). Reporting this is only mandatory for single collateral bilateral transactions.		
Foreign currency code			Specifies the ISO code of the currency bought/sold in exchange for euro.	

Source: ECB.
Notes: The above table is a selective and abbreviated overview of the variables reported. For a comprehensive overview, please refer to the MMSR reporting instructions, available on the ECB's website.

Box 3
Expansion of the MMSR reporting population

On 1 July 2024, 24 new banks were added to the money market statistical reporting (MMSR) population, increasing the total number of reporting agents to 69. This expansion makes MMSR data more representative. Notably, banks from Luxembourg and Portugal are included for the first time, alongside additional banks in those countries that previously had only one reporting agent, namely Ireland, Greece, Austria and Finland.

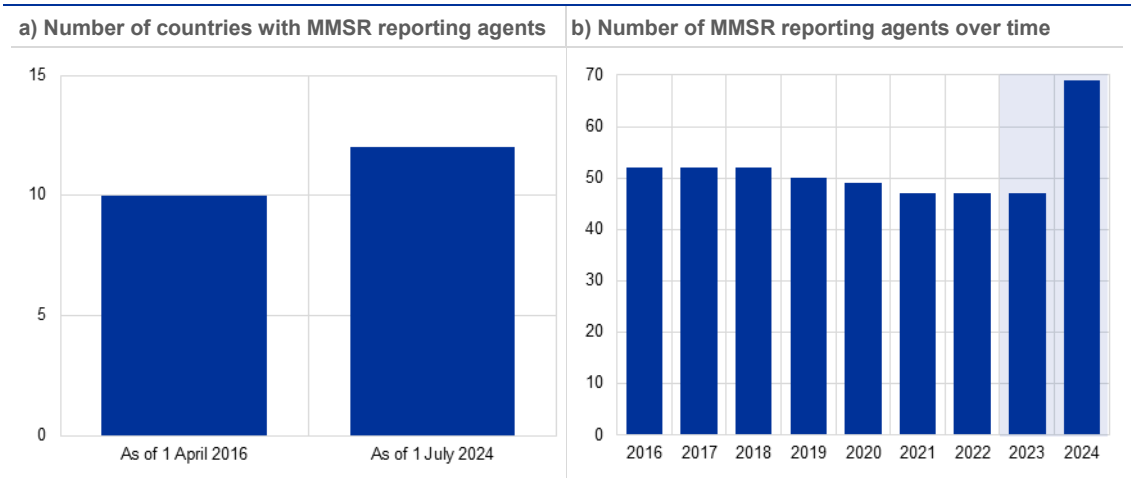
While this edition of the Euro money market study does not include the data from the new banks, some early results on the additional transactional volume from the additional reporting population can be observed over the first six months of reporting.

- FX swaps were the segment most affected, with an increase in average daily turnover of 16%, and new agents more active in Swiss francs, pounds sterling, and Japanese yen than the existing ones.
- In the secured segment, average daily turnover increased by 15.3%.
- In the unsecured segment, average daily turnover increased by 13%, with call accounts rising by 7.4% deposits up by 19.9%.

- Finally, in the OIS segment, the average daily notional amount increased by 8.7%, with spot OIS transactions up by 18.3% on this measure, driven mainly by increases in long maturities (five years and more), and forward OIS transactions rising by 5.4%.
- A more comprehensive analysis of the data from these new reporting agents will be included in the next edition of the Euro money market study.[11]

Chart A

Expansion of the MMSR reporting population



Source: ECB.
Notes: Panel b): Number of MMSR reporting agents on 1 July of the respective year. While 53 banks were selected at the inception of the MMSR in 2016, the number of reporting agents stood at 45 before 1 July 2024 owing to mergers and other corporate events. The ECB also decided to remove one bank from the reporting population, resulting a total of 69 reporting agents as of 1 July 2024.

[11] Further information is provided on the MMSR page (ECB's website) and in the ECB press release "Euro money market statistics and the €STR: Expansion of reporting population", 21 April 2023. The banks' data will be included in the €STR after 1 July 2025, i.e. 12 months after the first reporting date.

Postal address 60640 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Website www.ecb.europa.eu

For specific terminology please refer to the ECB glossary (available in English only).

PDF ISBN 978-92-899-7251-2, ISSN 1830-3781, doi:10.2866/2048493, QB-01-25-133-EN-N
HTML ISBN 978-92-899-7250-5, ISSN 1830-3781, doi:10.2866/0456895, QB-01-25-133-EN-Q