The impact of monetary policy normalisation on secured money markets

Rationale

This article offers an empirical analysis of the main factors which explain the variations in the repo-deposit facility rate (DFR) spread in the euro area, focusing on the impact of monetary policy normalisation. The findings suggest that a notable rise in interest rate expectations was the main factor behind the widening of the spread in 2022. In 2023 the slowdown in the pace of interest rate hike expectations and the Eurosystem's balance sheet reduction returned the spread to the levels prior to the start of the policy rate hiking cycle.

Takeaways

- The widening of the repo-DFR spread in 2022 arose mainly from interest rate hike expectations.

- Other conjunctural factors such as monetary policy uncertainty and the demand for short-term assets also contributed to the widening of the spread.

- The temporary tensions seen in this market in 2022 eased in 2023 with lower expectations of interest rate hikes.

Keywords

Repo rates, interest rate expectations, monetary policy normalisation, granular information, panel data.

JEL classification

E40, E52, C81, C23.

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THE IMPACT OF MONETARY POLICY NORMALISATION ON SECURED MONEY MARKETS[1]

Introduction

Money markets are key for financial markets. They are the main channel through which central bank decisions are transmitted to the financial system and the real economy. These markets are used by deposit institutions and other financial agents to, for instance, obtain funding or make short-term investments.[2] Changes in policy interest rates,[3] which are decided by the central banks, affect the money markets as a whole and are transmitted to financial conditions through the longer-term financing markets and, consequently, to firms, households and other economic sectors. To this end, the smooth functioning of these markets is key for the transmission of monetary policy and its effectiveness.

Money markets are divided into different segments, notably the secured (repo) and unsecured segments. This article focuses on the former, owing to its increasing importance in terms of volume[4] (see Chart 1) and to its relationship with the sovereign debt market, as these assets are used as collateral in secured transactions.

In contrast to the unsecured market (whose average rate is that published as the euro short-term rate (€STR)), repo transactions take the form of collateralised lending. Accordingly, the repo interest rate is lower than €STR. Also, the variety of assets used as security introduces an element of heterogeneity in this market. Much of this heterogeneity is determined by the issuer of the collateral, although differences are also observed between assets of the same issuer, depending on whether the asset is used as a benchmark.

A repo agreement gives the lender of cash ownership of or the right to use the assets employed as collateral during the life of the repo.[5] Thus, there are two possible reasons for a repo transaction to be done: (i) need for funding, and (ii) a desire to borrow a specific asset. In the first case, the rate set will mainly depend on liquidity supply and demand[6] and collateral included in the list of eligible bonds will be delivered as security (transactions with general collateral).[7] In the second, the desire to obtain or lend a specific asset (specific collateral), which may become special collateral, comes into play.[8]

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1 The views expressed in this article are solely those of the authors and do not necessarily represent the views of the Banco de España.

2 The International Capital Market Association stresses the importance of short-term investments for mitigating credit and liquidity risks. https://www.icmagroup.org/market-practice-and-regulatory-policy/repo-and-collateral-markets/icma-ercc-publications/frequently-asked-questions-on-repo/3-what-is-the-role-of-repo-in-the-financial-markets/

3 https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.es.html

4 Since the outbreak of the Great Financial Crisis of 2008 and the sovereign debt crisis of 2012 the secured segment has accounted for most of the volume traded on money markets.

5 The definition of "repurchase agreement" in MMSR Regulation EU No 1333/2014, Art. 1(22) includes not only repo transactions through a sale with a repurchase agreement, but also repo transactions with a pledged asset accompanied by the assignment of the right to use the asset.

6 Much like transactions in the unsecured market, where liquidity supply and demand are the main determinants.

7 In this case, the type of bond received is indifferent for participants.

8 These are high-demand bonds usually related to recent issues; for example, benchmark or on-the-run bonds. This excess demand for bonds on the cash market also passes through to the repo markets.

Chart 1
Secured and unsecured segment volumes (a)

€bn
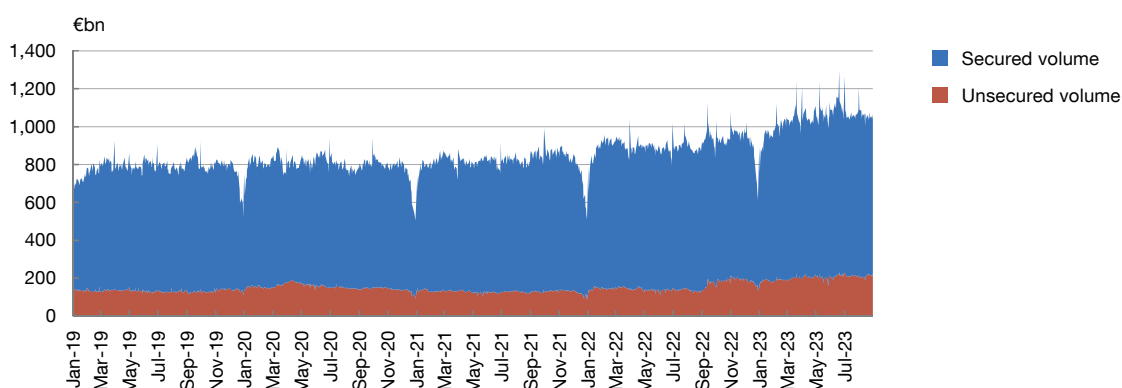
SOURCES: MMSR and Banco de España.
NOTE: All transactions are grouped by settlement date based on the infromation reported by banks to the MMSR dataset.

a The money market statistical reporting (MMSR) dataset is governed by Regulation (EU) No 1333/2014 of the European Central Bank of 26 November 2014 (ECB/2014/48). Its main purpose is to provide the ECB with comprehensive, detailed and harmonised statistical information on the money markets in the euro area. https://www.ecb.europa.eu/stats/financial_markets_and_interest_rates/money_market/html/index.es.html.

Figure 1 shows how changes in the supply of and demand for liquidity and collateral impact repo rates. In an excess liquidity environment the search for collateral becomes the primary aim of repo transactions, which has contributed to the repo-DFR spread[9] being negative (see Chart 2). In this scenario, the repo rates will depend on collateral supply and demand. Therefore, when collateral is in short supply, participants needing the asset will have to pay a higher price, meaning a lower return (repo rate).
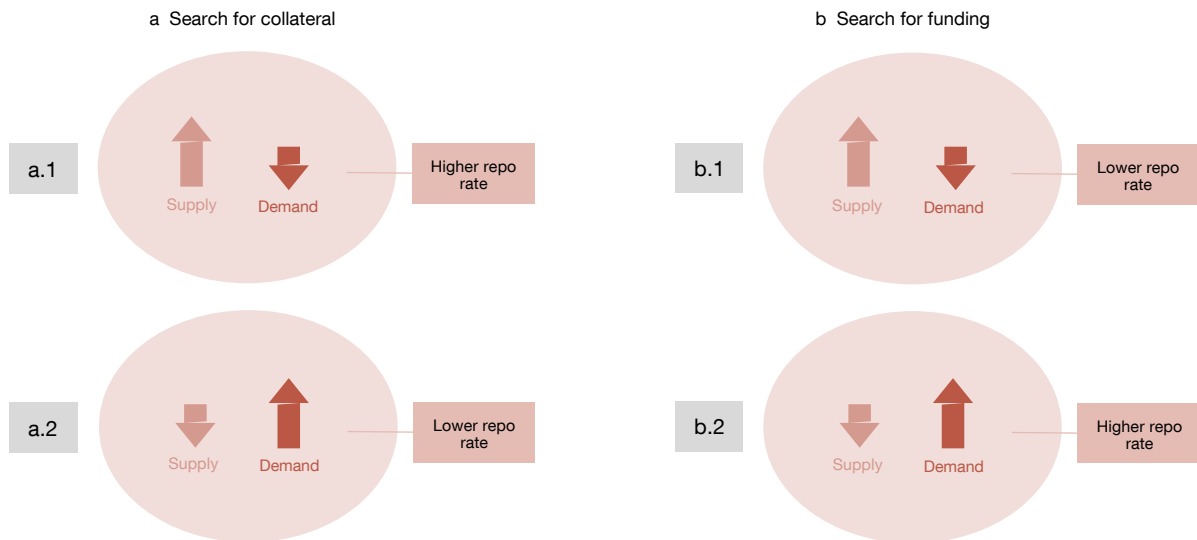
Changes in the repo-DFR spread during the pandemic and monetary policy normalisation

The heterogeneity observed between repo rates in different jurisdictions warrants an analysis of the repo-DFR spread for each of the main issuers of sovereign debt in the euro area (France, Germany, Italy and Spain). The outbreak of the pandemic led central banks to act swiftly to mitigate the adverse effects of COVID-19 on the financial markets and the real economy. Specifically, the European Central Bank (ECB) expanded its asset purchase programmes, introduced a new one (the pandemic emergency purchase programme (PEPP)) and announced improvements in the conditions of its targeted longer-term refinancing operations (TLTRO). As a result, the volume of assets available as collateral in the repo market decreased, both directly,

9 The repo-DFR spread is defined as the volume-weighted average rate for fixed-rate transactions using government debt as collateral, based on transactions reported in the Money Market Statistical Reporting (MMSR) dataset. They include overnight transactions that are settled on the trade date (overnight or O/N), one day after the trade date (tomorrow-next or T/N) or two days after the trade date (spot-next or S/N). The DFR is the interest rate (remuneration) applicable to overnight deposits by monetary policy counterparties in the Eurosystem.

Impact of changes in liquidity and collateral supply/demand on repo rates

a Search for collateral

| a.1 | Supply ↑ Demand ↓ | Higher repo rate |

| a.2 | Supply ↓ Demand ↑ | Lower repo rate |

b Search for funding

| b.1 | Supply ↑ Demand ↓ | Lower repo rate |

| b.2 | Supply ↓ Demand ↑ | Higher repo rate |

SOURCE: Banco de España.
NOTE: Scenarios a2 and b1 show the current situation, in which money market participants have excess liquidity (i.e. there is less demand for financing) and there is a shortage of collateral (as the demand for collateral outstrips the supply). In this situation, the repo-DFR spread tends to increase, since the providers of liquidity (and borrowers of collateral) must accept a lower return (or higher price) in exchange for receiving the collateral. By contrast, panels a1 and b2 show a scenario in which there is a need for liquidity and sufficient collateral available, which contributes to an increase in the repo rates.

Repo-DFR (a) spread and excess liquidity

Legend:
- Excesss liquidity (right-hand scale)
- Repo-DFR spread
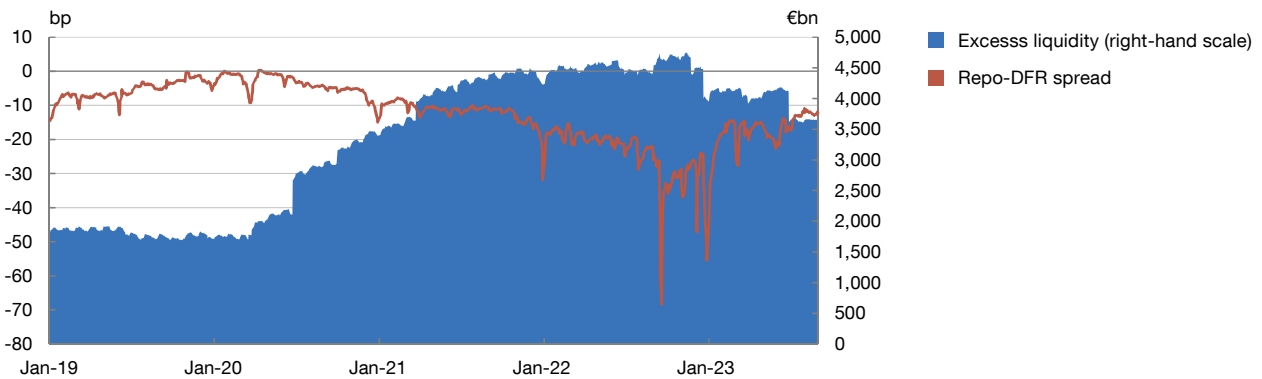
SOURCES: ECB and Banco de España.

a Repo-DFR calculation: see footnote 9.

due to the purchases, and indirectly, due to the monetary refinancing operations, which, as secured transactions, tie up the assets used as collateral. This contributed to a shortage of collateral that pushed repo rates down, with an increase in the negative repo-DFR spread of nearly 12 basis points (bp) for German collateral between January and September 2022 (see Chart 3).

Chart 3
Repo-DFR spread by collateral issuer (a) (b)

bp

Legend: DE, FR, ES, IT
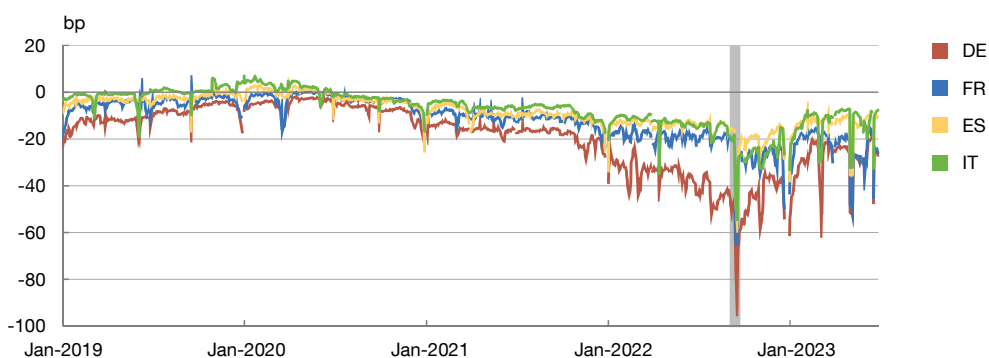
SOURCES: MMSR and Banco de España.

a   Repo rate calculated for overnight transactions using sovereign bonds of the four countries analysed as collaterall. The volume-weighted average rate is shown.
b   The quarter- and year-end dates have been excluded.

However, the largest widening of this negative spread was observed between January and September 2022 precisely in a setting of stable excess liquidity in the system and, consequently, ending of collateral scarcity driven by this excess liquidity. The return to positive policy rates in September 2022, after several years in negative territory, led to high volatility in the repo markets and ended with the peak observed in the spread at end-September: between September 14[10] and 19 the negative repo-DFR spread widened by up to 37 bp in the case of the German and French repo markets, and by 28 bp in the case of Spanish and Italian bonds.

There are therefore two periods during which the negative repo-DFR spread widened, driven by different forces. After the introduction of expansionary monetary policy measures, the change in the spread was due both to an increase in the supply of liquidity in the system and to greater collateral scarcity. In 2022 excess liquidity remained practically constant[11] and the main reason behind the increased spread was the greater shortage of collateral owing to conjunctural market developments (detailed below), which, however, cannot be attributed to the asset purchase programmes.

Factors shaping the repo-DFR spread

The analysis conducted in this paper is based on granular data for transactions carried out between 1 January 2019 and 30 June 2023. We analyse the effect of each factor, taking into account the characteristics of each transaction (specifically, the collateral used and the

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10   The first day of the new maintenance period after which the deposit facility rate rose from 0% to 0.75%.

11   From December 2022 onwards a decrease in excess liquidity was observed (pushing repo rates up) owing to a reduction in the TLTRO balances.

counterparties involved).[12] The breakdown by type of collateral helps differentiate between general and specific collateral, which are traded at different rates. The most significant change in 2022 was the start of the monetary policy normalisation process, which affected the markets even before the ECB's first policy interest rate hike.

To understand the changes in the repo-DFR spread, multiple factors are analysed[13]. These include both aspects already observed before the normalisation (mainly the impact of the asset purchase programmes and excess liquidity) and conjunctural factors (the change in policy rate expectations, higher monetary policy uncertainty and the preference for investments in short-term assets).

The impact of the change in policy rate expectations on the negative repo-DFR spread is analysed through the changes in the expected interest rate path.[14] The slope of the policy interest rate path points to the policy interest rate changes expected by the markets. It is especially useful in a hiking cycle. A positive value usually suggests an upward cycle, whereas a negative value is observed in a rate-cutting environment. Moreover, EURIBOR-based derivatives (swaptions) are used to analyse the impact of greater monetary policy uncertainty (SMOVE)[15]. In a context of greater volatility, many investors have increasingly opted for investments in short-term assets (repo transactions backed by sovereign collateral). The model quantifies this effect through the spread between the German 10-year bond and the 10-year overnight index swap (OIS) for Germany and France.[16] Another factor that may influence the changes in the repo-DFR spread is the need for funding in the market. The literature has generally used the EURIBOR-OIS spread to measure possible credit/liquidity tensions in the money markets,[17] as it shows the difference

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12 The inclusion of controls for the bond and counterparty variables in the regression is a major improvement to the model, providing more robust indicators for the rest of the factors. This is especially important for the type of collateral used, since the data show that the rates negotiated differ widely depending on asset type, which is in line with the existence of special or general bonds. Also, certain counterparties negotiate different rates, even when the same collateral is used.

13 The impact of each variable on the repo-DFR spread is analysed through a regression with binary variables to identify quarter- and year-ends, as well as time dummies. The specification is as follows: $Repo - DFR_{it} = \beta_1 Slope_t + \beta_2 SMOVE_t + \beta_3 10Ysov - OIS_t + \beta_4 EuriborOIS3M_t + \beta_5$ Quarter- and year-end $+ \beta_6 APP_t$ ratio $+ \alpha_1 Time_t + \alpha_2 Collateral_{it} + \alpha_3 Counterparties_{it}$, where i refers to each individual transaction and t refers to time. $Slope_t$ is the slope of the expected path of policy rates. $SMOVE_t$ is the monetary policy uncertainty. $10Ysov - OIS_t$ is the spread between the 10-year sovereign bond in Germany and France and OIS with the same maturity. $EuriborOIS3Mt$ is the spread between the 3-month Euribor and the 3-month OIS. $APP ratio_t$ is the ratio of central bank holdings of sovereign debt (PSPP+PEPP) and the amount of outstanding debt held by the private sector (free-float). $Collateral_{it}$ identifies the specific effect of each bond on the repo rate and $Counterparties_{it}$ captures differences across repo rates depending on the counterparties involved in each i transaction.

14 The yield curve parameters (level, slope and curvature) are estimated based on the OIS over different maturities. The aim is to obtain the expected monetary policy interest rate path. The level indicates the expected policy rate for the medium term, while the slope measures the difference between the current rate and the medium-term value. Therefore, the slope provides information about the expected growth (or decline) in interest rates.
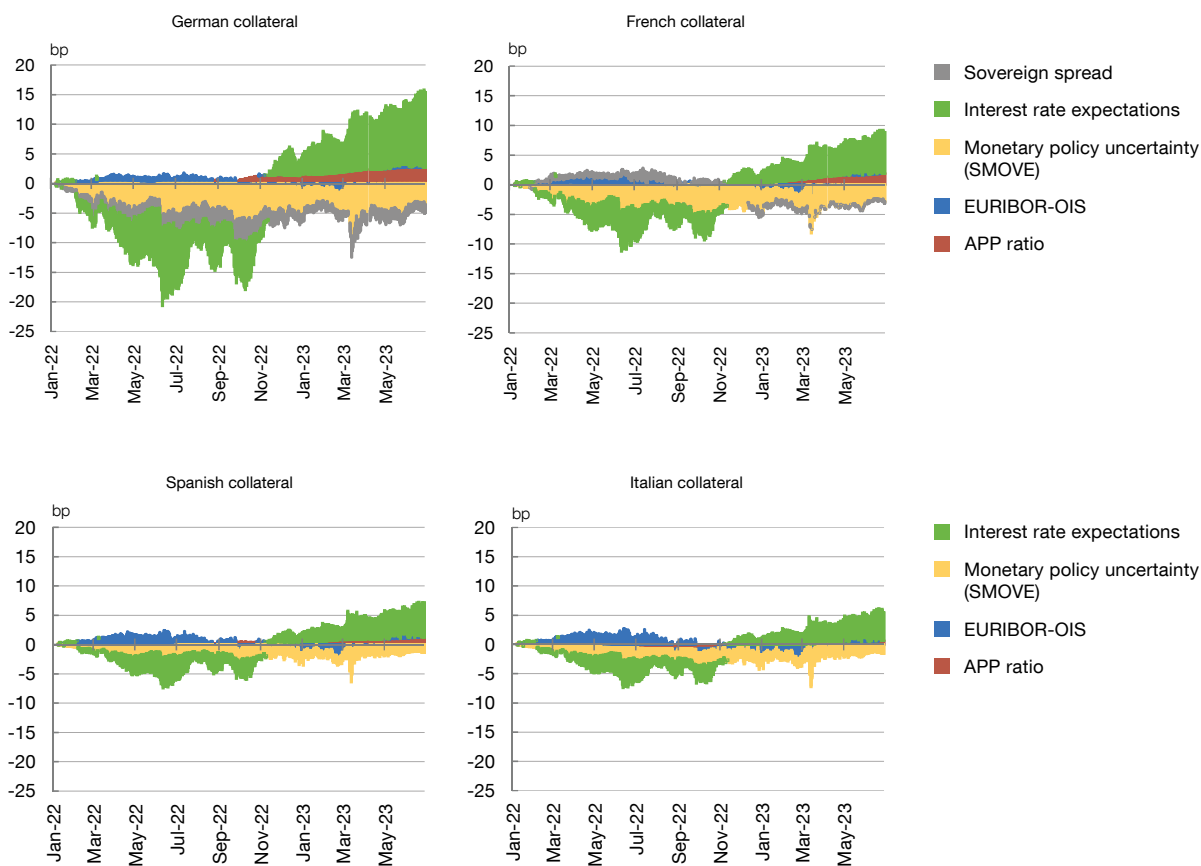
15 This is a measure of three-month implied volatility, where the 3-month EURIBOR is the underlying rate.

16 The German bond-OIS spread is usually negative, since these assets are less risky than the OIS (which is considered a risk-free asset) and demand tends to increase in times of higher volatility, which causes the premium to be negative. The French bond has had negative yields over much of the period. Accordingly, it is included to determine whether the foregoing behaviour has also extended to French bonds.

17 The EURIBOR-OIS spread shows both liquidity and bank credit risk. First, if banks' financing needs are greater, the additional price paid for receiving such funding will be greater than the OIS rate, even if credit risk is not high. Second, if there is sufficient liquidity, banks may be reluctant to provide funding owing to a lack of trust in the counterparty (credit risk). Some authors have attributed the fact that the EURIBOR-OIS spread had been negative since September 2022 to excess liquidity in the system. Others, however, argue that the use of EURIBOR as a reference index may be affected by its calculation methodology, especially regarding some time periods. By contrast, in March 2020, after the outbreak of the pandemic, credit risk increased, pushing the repo rate upwards (see Chart 5).

Chart 4

Contribution of each factor to the widening of the negative repo-DFR spread during the monetary policy normalisation period

German collateral

French collateral

Spanish collateral

Italian collateral

Legend:
- Sovereign spread
- Interest rate expectations
- Monetary policy uncertainty (SMOVE)
- EURIBOR-OIS
- APP ratio

SOURCE: Banco de España.
NOTE: The estimated contribution of each of the variables to the changes in the repo-DFR spread is shown as the coefficient of the estimated regression (see footnote 13), multiplied by the cumulative change in each variable since January 2022.

between the average cost at which transactions are made in the interbank market and the risk-free rate. Lastly, the impact of the sovereign debt holdings by national central banks on the total debt available in the market,[18] which other authors have defined as the Eurosystem's footprint, is included.

In the first quarter of 2022, the expected path of interest rates began sloping upwards, peaking in September with the return to positive rates. The estimations[19] indicate that the expectation of further rate hikes had a significant impact and was the key factor driving the widening of the negative repo-DFR spread, as collateral became increasingly scarce (see Chart 4). The short positions taken by investors, in view of the expectation of rate hikes, points to a rise in the demand for collateral on the

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18 Holdings under the Public Sector Purchase Programme (PSPP) and the PEPP and pledged collateral in monetary policy operations are subtracted from outstanding sovereign debt, while assets that are put back into the market as a result of securities lending (a measure announced by the ECB to reduce collateral scarcity) are added.

19 Coefficient β_1, per the specification shown in footnote 13, is negative and significant, showing that when expectations of rate hikes increase, the repo rate falls and the negative repo-DFR spread widens.
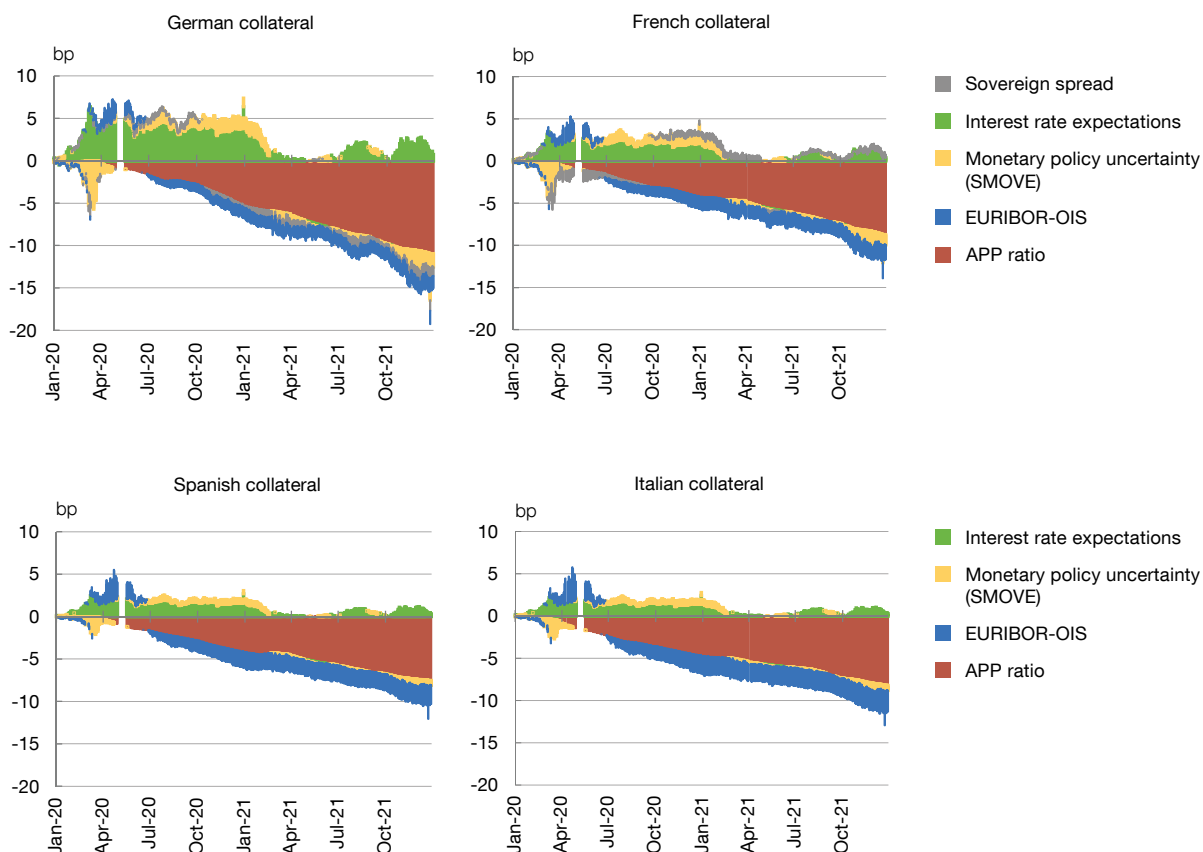
SOURCE: Banco de España.
NOTE: The estimated contribution to the changes in the repo-DFR spread is shown as the estimated regression coefficient multiplied by the cumulative change in each variable since January 2020.

repo market, as such investors could borrow sovereign bonds and sell them on the cash market, so as to repurchase them once the rate hikes had materialised and the price had fallen.

Moreover, alongside increased expectations of rate hikes, the rise in monetary policy uncertainty during 2022 was the second most important factor behind the widening negative repo-DFR spread, particularly in the case of German and French bonds. For German bonds, the higher demand for such assets (which are considered safe) also caused their yields to fall, contributing to a decline in repo rates with respect to the DFR.[20] This effect was smaller in the case of French bonds (see Chart 4).

Lastly, it is worth noting that the factors relating to excess liquidity and the Eurosystem's footprint made virtually no contribution to the widening of the repo-DFR spread in 2022. The same cannot be said of 2020 and 2021, when the expansion of asset purchase programmes and greater excess liquidity were the main determinants of the widening negative repo-DFR spread (see Chart 5).

20   As noted above, greater demand for bonds on the cash market passes through to the repo markets.

Beginning in 2022 Q4, the reduction in holdings contributed to the narrowing of the repo-DFR spread in late 2022 and in 2023 (see Chart 4).

Conclusions

This article shows that in 2022 tensions in the repo market stemmed mainly from conjunctural factors such as interest rate hike expectations, the return to positive rates and the greater demand for short-term assets, in a context of lower borrowing needs on the market. The factors relating to the Eurosystem's purchase programmes (the Eurosystem's footprint) remained largely stable over 2022. Developments in 2023 suggest that the widening of the repo-DFR spread observed in 2022 may have been reversed as a result of lower expectations of further policy rate hikes, alongside the effects of shrinking central bank balance sheets. In any event, it is important to continue monitoring the spread and its underlying factors, particularly in a setting in which uncertainty over interest rate and inflation developments remains high, given the role this market plays in passing policy rate hikes through to the different financial markets.

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How to cite this document