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Claudio Bassi, Michael Grill,
Felix Hermes, Harun Mirza,
Charles O'Donnell, Michael Wedow

Enhancing repo market transparency: the EU Securities Financing Transactions Regulation

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Abstract

The introduction of the Securities Financing Transactions Regulation into EU law provides a unique opportunity to obtain an in-depth understanding of repo markets. Based on the transaction-level data reported under the regulation, this paper presents an overview and key facts about the euro area repo market. We start by providing a description of the dataset, including its regulatory background, as well as highlighting some of its advantages for financial stability analysis. We then go on to present three sets of findings that are highly relevant to financial stability and focus on the dimensions of the different market segments, counterparties, and collateral, including haircut practices. Finally, we outline how the data reported under the regulation can support the policy work of central banks and supervisory authorities. We demonstrate that these data can be used to make several important contributions to enhancing our understanding of the repo market from a financial stability perspective, ultimately assisting international efforts to increase repo market resilience.

JEL Codes: G10, G18, G23

Keywords: securities financing transactions, regulation, financial stability

Non-technical summary

Repo markets provide a range of economic functions that are central to the financial system. However, they may also exhibit significant risks that can contribute to financial instability. The global financial crisis highlighted important vulnerabilities that can spill over to other markets, having a broader impact on funding and market liquidity. A clear view emerged that enhanced data collection on securities financing transactions such as repos was needed to give authorities more timely and comprehensive insights into these markets.

In 2013 the Financial Stability Board (FSB) issued a set of recommendations aimed at addressing the risks arising from securities financing transactions (SFTs), in particular repos. Some of these measures required national and regional authorities to enhance data collection in these markets to improve their ability to monitor key risks to financial stability and develop policy responses. This led to the introduction of the Securities Financing Transactions Regulation (SFTR)¹ in the EU in 2016. The resulting data collection gave rise to the Securities Financing Transaction Data Store (SFTDS)², which effectively covers all SFTs conducted in the euro area, plus those conducted outside it by supervised euro area entities.

The SFTDS by increasing transparency for authorities, greatly enhances their understanding of repo markets from a financial stability perspective, thereby supporting efforts to monitor risks and improve the resilience of these markets. We start by showing how certain features of the SFTDS address key data gaps. By providing a comprehensive picture of daily repo activity for a broad range of markets and counterparties, it will help authorities obtain more timely and comprehensive insights into trends and support them in developing policy responses to key financial stability issues.

Our first application of the dataset examines the activity in key market segments. We find there is an important cross-border and cross-currency dimension, with a large volume of trades conducted outside the euro area by the foreign branches of euro area supervised entities, as well as trades conducted in the euro area by counterparties with a non-euro area parent. Focusing on euro-denominated market segments we find that, based on outstanding amounts, the share of trades that are centrally cleared is significantly lower than the figures typically reported for daily transactions. We then show how the euro area repo market is primarily driven by trades that involve specific collateral.

Our second application examines the counterparty dimension for the euro-denominated market. For centrally cleared trades, we find foreign banks (defined as those with a non-euro area parent) are the largest sector in terms of gross positions.

¹ Regulation (EU) 2015/2365 of the European Parliament and of the Council of 25 November 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No 648/2012 (OJ L 337, 23.12.2015, p. 1).

² The SFTDS was developed and is managed by the ECB together with seven other ESCB central banks.

These are followed by euro area commercial banks and then euro area investment banks. For non-centrally cleared trades, we find that euro area commercial banks are the largest sector in terms of gross position, followed by euro area investment banks and then foreign banks. In the non-bank sector, which operates almost exclusively in non-centrally cleared markets, we find that investment funds are the largest sector in terms of gross amounts, while insurance companies and pension funds have the largest net position, as net cash borrowers.

Our third application examines differences in the asset composition and haircuts on collateral for non-centrally cleared trades. We focus on these because this is where financial stability risks are expected to be most pronounced, for example due to differences in counterparty and collateral composition or risk-management practices. We find that while a large majority of trades are backed by sovereign collateral, those backed by non-sovereign collateral play a sizeable role too. We then examine the role of haircut practices, which are in principle a key risk mitigation tool for non-centrally cleared trades backed by non-government collateral. We find that the share of positive haircuts for non-government collateral is typically quite low, irrespective of whether the cash borrower is a bank or a non-bank. This finding further underscores the need to make progress on implementing regulatory rules for minimum haircut practices for the non-bank sector in the non-centrally cleared space.

The dataset can make important contributions to financial stability and, on a broader basis, other areas that are important for central banks. The SFTDS greatly enhances transparency with regard to monitoring and supervising financial stability risk, and helps authorities monitor risks in the repo market. It will also play an important role in current international regulatory policy initiatives aimed at enhancing the resilience of the global financial system to address vulnerabilities in the non-bank sector and develop policy recommendations. Finally, the dataset will be crucial for central banks to carry out a broader evaluation of how the repo market functions for monetary policy purposes.

1 Introduction

Repo markets play a key role in the financial system by providing a range of economic functions. These include the provision of funding, investment of cash, collateral transformation, as well as facilitating hedging and liquidity in underlying markets. The ability to raise cash against liquid assets during times of stress can be particularly crucial to prevent forced selling in core bond markets, underscoring the importance of repo market functioning at such times.

However, they can also pose significant risks to the financial system. The global financial crisis highlighted major vulnerabilities in repo markets related to issues around transparency, excessive leverage, over-reliance on short-term funding, collateral quality, and haircut procyclicality (see Bank for International Settlements, 2017). Even though the repo market is a secured market, segments of it can still be subject to market freezes, which can have severe consequences (see Corradin et al., 2017). Vulnerabilities emanating from the repo market can also spill over to other markets, impacting funding and market liquidity more broadly (see Gorton et al., 2020).

Significant regulatory efforts have been made to enhance the resilience of the global financial system in both the traditional banking industry and the so-called “shadow-banking” sector.³ A clear view emerged that enhanced data collection on securities financing transactions was needed for authorities to obtain more timely and comprehensive insights into these markets. In 2013 the FSB issued a set of recommendations aimed at addressing risks in relation to SFTs (Financial Stability Board, 2013). Some of these measures required national and regional authorities to enhance their data collection in these markets in order to improve their ability to monitor key financial stability risks and develop robust policy responses.

In 2016 the SFTR was introduced in the EU, requiring all entities based in the EU to report their SFTs. The resulting data collection led to the development of the SFTDS, a subset of the SFTR, which covers all SFT transactions conducted in the euro area, transactions conducted in euro or involving euro-denominated collateral in the EU, as well as transactions of supervised euro area entities conducted outside the EU. While the SFTDS includes all types of SFTs, we focus on the repo market, which is the largest segment.

In this paper we aim to show that the SFTDS can greatly enhance our understanding of repo markets from a financial stability perspective, supporting efforts to increase resilience. We start by showing how the data reported under the SFTR greatly increases transparency and will help authorities obtain more timely and comprehensive insights into market trends. By providing a comprehensive picture of daily activity for a broad range of market segments and counterparties, it will support market monitoring and the development of policy

³ The FSB at the time defined shadow banking as “credit intermediation involving entities and activities outside the regular banking system” (Financial Stability Board, 2011). More recently however when referring to entities, the term non-bank financial intermediation or the non-bank sector is applied.

responses on key financial stability issues. We then highlight the potential of the SFTDS by applying our analyses to three broad key dimensions: (i) market segments (e.g. jurisdiction, currency, central clearing); (ii) counterparties; (iii) collateral (e.g. asset composition and haircuts). Finally, we highlight areas in which the dataset can support policy work by central banks and supervisory authorities.

Our first set of results examines the role of market segments; we look at jurisdiction, currency, the presence of central clearing and the distinction between general and specific collateral.⁴ We show that there is an important cross-border and cross-currency dimension to the dataset, which involves a large volume of trades by the foreign branches and subsidiaries of euro area supervised entities, as well as trades conducted in the euro area by counterparties that have a non-euro area parent.⁵ This indicates that there is significant scope for international transmission of shocks originating both inside and outside the euro area. Further analysis on how this contributes to the interconnectedness of the global financial system will be useful.

We then focus on euro-denominated trades and distinguish between whether a trade is centrally cleared and whether it is backed by general or specific collateral. We restrict our examination to euro-denominated trades as this is the market captured most comprehensively by the dataset. It is therefore the most representative market, and the sizeable degree of heterogeneity helps us to focus our analysis. From a financial stability perspective, the use of central clearing is relevant in at least two important ways. First, it can facilitate the intermediation capacity of dealer banks by allowing exposures to be netted, which reduces the capital allocated to market-making activities. Second, it can reduce the credit risk exposure for market participants by having a central clearing counterparty (CCP). This provides for more efficient offsetting of losses and mutualisation in the event of a default (see Duffie et al., 2015). A feature of our analysis is that we focus on outstanding amounts and find that the share of central clearing is significantly lower than typically reported for daily transactions (see for example, European Central Bank, 2023). Finally, we look at the role of general or specific collateral and find that the euro area repo market is primarily driven by trades that involve specific collateral. A significant share of this is potentially due to the demand for specific types of collateral known as specialness. This may indicate that the demand for collateral rather than funding is the main driver of the euro-denominated repo market (see Schaffner et al., 2019). This may have implications for how the repo market is set up to perform economic functions related to the provision of funding.

Our second set of results examines the counterparty dimension for euro-denominated trades. This is crucial not just for evaluating risks but also for understanding which economic functions repo markets perform. A stylised way of classifying how counterparties use repo markets from a supply and demand

⁴ “Specific” refers to transactions in which the cash lender requests a specific ISIN to be provided as collateral (see ESMA, 2021). Specific collateral should not be understood as synonymous with special collateral. Specialness simply means that the repo rate is below the general collateral rate. However, not all transactions that agree on a specific piece of collateral display that feature (see International Capital Market Association, 2023b).

⁵ While trades that take place within the EU are mostly euro-denominated, those involving a cross-border dimension in terms of an EU counterparty and a foreign counterparty tend to use a mix of currencies.

perspective is: (i) funding demand (repos), (ii) cash investment (reverse repos), (iii) collateral demand (reverse repos), (iv) collateral investment (repos), and (v) market-making (repos and reverse repos). For centrally cleared trades we find that in terms of gross positions foreign banks are the largest sector, followed by euro area commercial banks and then euro area investment banks (for sector classifications see Lenoci and Letizia, 2021).⁶ Foreign banks (defined as banks where the parent's headquarter is located outside the euro area) are the largest cash lenders (collateral borrowers) in net terms, while euro area commercial banks are the largest net cash borrowers (collateral lenders). For non-centrally cleared trades, we find that euro area investment banks are the largest sector in terms of gross position, followed by euro area commercial banks and then foreign banks. In terms of net positions, euro area investment banks tend to be cash lenders, while commercial banks tend to be cash borrowers. We also see that foreign banks' activity is much less than for centrally cleared trades.

We find that non-banks make up a sizable share of repos in non-centrally cleared transactions. Investment funds (IFs) have the largest gross positions, while the largest sector in net terms is insurance corporations and pension funds (ICPFs) as a net borrower. This may suggest that IFs generally use the repo market for collateral transformation, (i.e. they borrow cash against lower quality collateral and reinvest to acquire higher quality collateral). ICPFs on the other hand may potentially use repos to access cash buffers (e.g. to meet cash margin calls) or simply to generate a return by lending collateral that commands a specialness premium.

Our third set of results examines the role of collateral in the non-centrally cleared segment with regard to asset composition and haircuts. We deliberately focus on the non-centrally cleared segment, as this is where financial stability risks are expected to be most pronounced, for example due to differences in counterparty and collateral composition and risk management practices. To further tease out the financial stability risks, we differentiate between banks and non-banks. In terms of asset composition, we find that while the large majority of trades are backed by sovereign collateral, trades backed by non-sovereign collateral can play a sizeable role. We also find that entities in the non-bank sector tend to pledge less liquid assets as collateral in their borrowing operations relative to the collateral they receive against cash, while the reverse is the case for banks. However, aggregate figures may mask important heterogeneity at entity or sector level, given the different uses of the repo market.

We then look at the role of haircuts, focusing on the distribution from the cash borrower perspective. Haircut practices serve as a main risk mitigation tool for non-centrally cleared trades backed by non-sovereign collateral. We find that the share of positive haircuts for non-government collateral is typically quite low, irrespective of whether the cash borrower is a bank or a non-bank. This further underscores the need to make progress on implementing regulatory rules aimed at setting minimum

⁶ The only deviation in our analysis from this classification is that we create a specific category for foreign banks, which includes both investment and commercial banks.

haircut standards for the non-bank sector in non-centrally cleared markets (see for example, Financial Stability Board, 2020).

In a final step, we highlight how SFTR data reporting can support the policy work of central banks and supervisory authorities. Based on our analysis, we believe that the dataset can make important contributions not only to financial stability but also more broadly to other areas of importance for central banks. First, from a financial stability risk monitoring and supervisory perspective, the SFTDS greatly increases transparency and supports authorities in monitoring important risks related to interconnectedness, concentration, liquidity provision, collateral demand, liquidity/maturity mismatches, leverage, and various collateral metrics. Second, the dataset will play an important role in current international policy initiatives to enhance global financial stability resilience. This is a key component in addressing vulnerabilities in the non-bank sector and developing policy recommendations. Finally, the dataset can help central banks conduct a more broad-based evaluation of how the repo market functions for monetary policy purposes, which may be of particular relevance in the current period of monetary policy normalisation, when intermediation capacity may become more constrained.

The paper proceeds as follows. Section 2 provides key details on the institutional background of the SFTDS and a description of the data, including some of its key comparative advantages over other data sources. Section 3 presents high-level findings for three key dimensions that are deemed crucial from a financial stability perspective. Section 4 presents possible implications for policy discussions. Section 5 concludes.

2 Description of the SFTDS

2.1 Institutional background

In response to the global financial crisis the FSB undertook several initiatives to support global financial markets, including addressing financial stability risks associated with SFTs. In August 2013 it published a comprehensive report setting out policy recommendations (Financial Stability Board, 2013). Importantly, the FSB recommended, among other things, that its member institutions collect granular transaction-level data to increase the transparency of SFT markets. It also initiated a global SFT data reporting initiative which will aggregate SFT market data to be reported by member jurisdictions on a global scale.⁷

As a follow-up to the FSB recommendations the EU issued the SFTR, which entered into force in 2016. At EU level, work was also under way regarding the assessment, identification and monitoring of entities and risks posed by “shadow banking” (for an overview see European Commission, 2013). A key contribution included proposals for potential improvements to the monitoring and supervision of SFT markets (see Bouveret et al., 2013). The regulation required all EU SFT market participants (excluding central banks and certain non-financial corporations) to report their SFT trades daily since mid-June 2020 (after a phase-in period). The information comprises comprehensive details on amounts, prices/rates and collateral and is reported to dedicated trade repositories which make the data available to relevant authorities via the TRACE portal, a data hub operated by the European Securities and Markets Authority (ESMA).

ESMA is responsible for managing the SFTR reporting regime. This includes defining the technical reporting standards, issuing guidelines, controlling reporting processes, supervising trade repositories (TRs) and improving data quality. The large volume of the data (multiple tables are collected with dozens of reportable fields of daily information for all market participants), its complexity, quality concerns and confidentiality issues have so far constrained the use of SFTR data for policy analysis.

2.2 Data description

The SFTDS captures all SFT trades for the euro area, as well as transactions by supervised euro area entities conducted outside the EU. In addition, it covers non-euro area trades in the EU that are euro-denominated or involve euro-denominated collateral. It is jointly managed by the ECB and seven national central banks (NCBs). The SFTDS helps the ECB, NCBs and the ESRB meet their responsibilities, and also facilitates collaboration among participating institutions. It

⁷ Further to this, the FSB published specific recommendations targeting SFT markets related to margining practices and collateral re-use with a view to dampening procyclicality and excessive leverage.

collects data by accessing an ESMA data hub, where the data reported from TRs is stored. The ECB processes the data, enriches them and makes them available for users.⁸

The SFTDS covers three main types of SFTs: repos, securities lending and margin lending. This paper focuses on repos, as these represent the largest share of securitised transactions and where, arguably, the data quality is most reliable. The data available to the ECB cover approximately 200,000 unique outstanding and 13,000 unique new transactions per day after data processing,⁹ with detailed information on counterparties, loans, and collateral.

The dataset greatly increases the transparency of repo markets, which are important for the euro area from a financial stability perspective. More concretely, the data can provide snapshots and trends over time of: (i) cyclical and structural changes in funding conditions (e.g. rates, haircuts); (ii) the role of counterparties; (iii) the degree of maturity, liquidity and currency mismatches; (iv) leverage; (v) collateral metrics (e.g. composition, transformation and re-use); (vi) interconnectedness (cross-border and cross-sector); (vii) concentration risks (e.g. collateral type, counterparty); (viii) issues around reporting dates (e.g. window dressing behaviour (Bassi et al., 2023).

The SFTDS complements other widely used data sources on the euro area repo market, such as the ECB's money market statistical reporting (MMSR) dataset¹⁰ and the International Capital Market Association (ICMA) semi-annual European Repo Survey.¹¹ It allows a more complete and system-wide perspective on the repo market across multiple dimensions. For example, compared to the MMSR, the SFTDS provides several key advantages for euro area authorities in monitoring and addressing financial stability risks. First, it provides a system-wide perspective of the entire euro area repo market by including a broad set of counterparties. This allows for a novel view of the entire euro area repo market structure and linkages, with risks in the non-bank sector of particular interest. Second, it includes trades denominated not only in euro but also in other currencies. Previous euro area stress episodes have included an important channel of US dollar funding constraints (Altinkeski et al., 2022). Third, it includes trades of any maturity,

⁸ The SFTR prescribes that the ESRB must have access to all EU transactions (therefore all transactions reported under the SFTR), while the ECB and NCBs only have access to euro area transactions (defined as transactions which are either conducted by at least one euro area entity and/or in euro and/or involving collateral issued by euro area entities) that fall under their respective mandates.

⁹ Data processing includes cleaning procedures such as removing transactions with inconsistent date reporting, transactions that have matured but have not been removed, and outliers. It also includes deduplicating the dataset, which refers to reducing each transaction to only one observation to avoid double counting.

¹⁰ The MMSR is a dataset that is primarily for monetary policy implementation purposes and collects transaction-level data on euro-denominated secured, unsecured, foreign exchange swap and overnight index swap euro money market segments conducted by a sample of euro area banks. It is restricted to euro-denominated transactions and transactions with a maturity below 397 days.

¹¹ The ICMA European Repo Survey reports the aggregate value of total repos outstanding from a number of financial institutions operating in Europe at close of business on a semi-annual basis. The survey covers all types of repo and reverse repo agreements and includes buy/sell-backs and sell/buy-backs but not synthetic or pledge structures. The survey includes data on the location of counterparty, method of execution, cash currency, type of contract, type of repo rate, remaining term to maturity, method of clearing and settlement, and origin of collateral (see International Capital Market Association, 2023a).

which allows for a more detailed view on the term structure of repos. It therefore also provides a complete picture of the corresponding risk exposures of trades. Fourth, for centrally cleared trades, the MMSR only reports the CCP as the counterparty for end users, whereas the SFTDS allows for matching of the end users of these trades. Fifth, it also includes intragroup trades, which can be an important component of overall repo activity, as well as the international dimension of repo activity.

A key characteristic of the SFTR reporting regime is that it requires EU entities to which it applies to also report their repo activity outside the EU. For example, some major European banks play an active role in the US repo market, so this activity is captured. Similarly, the disruption in the UK gilt episode last year largely involved liability-driven investment (LDI) funds domiciled and supervised in Ireland conducting their repo activity with UK counterparties, which is also captured in the data. This provides a unique opportunity to monitor cross-border risks and determine whether regulatory or supervisory action is required in the EU to limit the potential for spillovers to other jurisdictions.

3 Financial stability analysis of the euro area repo market

In this section we illustrate the potential of the SFTDS for conducting analyses on the repo market that are relevant from a financial stability perspective. We focus our analyses along three broad dimensions: (i) market segments (e.g. jurisdiction, currency, central clearing); (ii) counterparties; (iii) collateral metrics (e.g. asset quality and haircuts).

3.1 Market segments

We focus on five key dimensions: (i) jurisdiction, (ii) currency, (iii) internal or external group activity, (iv) central clearing, (v) the distinction between general and specific collateral. Initially we examine the first three of these and then go on to consider the last two, restricting to the euro-denominated repo market.

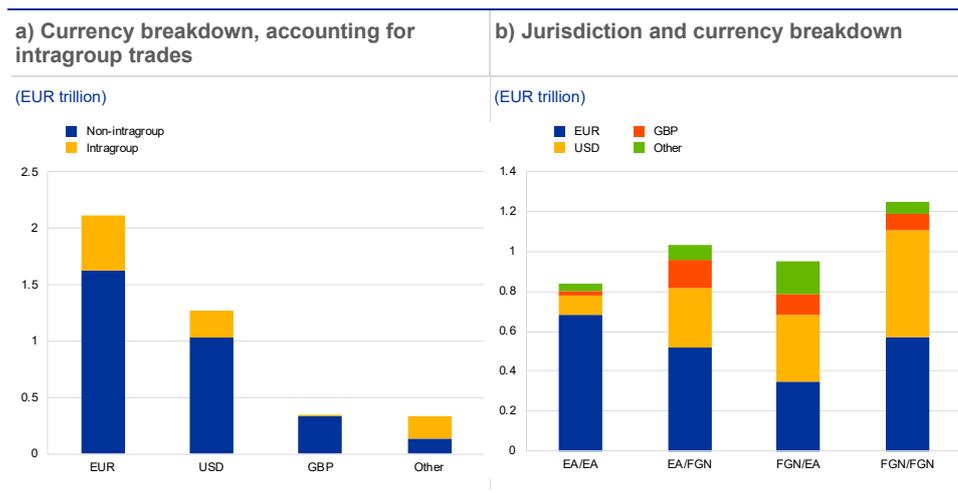
A key feature of the SFTDS is the inclusion of trades by euro area entities via their foreign branches based outside the euro area. This is especially key for measuring interconnectedness and the risk from international shocks. Cetorelli and Goldberg (2011) showed that global banks played a significant role in transmitting the 2007-09 crisis to emerging economies. A key component of this transmission is the internal capital markets of these global banks. Ivashina et al. (2015) found that European banks' reliance on wholesale US dollar funding was a key amplifier in the reduction in their dollar lending in the euro area during the sovereign debt crisis. Information on the jurisdiction of banks' international activities is important and should be considered when measuring systemic vulnerabilities (see McGuire and von Peter, 2016).

Chart 1 reports outstanding volumes with a breakdown of repo activity by currency, jurisdiction, and intragroup activity. Chart 1 a) shows that euro-denominated transactions make up the largest part of the euro area repo market, followed by those denominated in dollars. A sizeable part of these transactions is due to intragroup activity. Chart 1 b) shows the cross-border dimension of repo activity with a breakdown by currency denomination. To capture the cross-border dimension, we distinguish between trades where the counterparty activity is defined as "euro area" or "foreign". "Euro area" captures the activity of counterparties where both the branch and parent group are based/headquartered in the euro area. "Foreign" captures the activity of entities where either the branch or parent group is based/headquartered outside the euro area. Column 1 shows the outstanding volumes of trades involving only "euro area" counterparties. These transactions are mostly euro-denominated. Columns 2 and 3 shows the activity when a "euro area" counterparty engages in a transaction with a "foreign" counterparty. When a "euro area" counterparty borrows cash from a "foreign" counterparty (column 2), over half of those transactions are euro-denominated. When a "euro area" counterparty lends

cash to a “foreign” counterparty (column 3), less than half of those transactions are euro-denominated. Lastly, column 4 shows the activity involving only “foreign” counterparties.¹² Here, we see that roughly half of the transactions are denominated in a currency other than the euro. The above analysis shows that the euro area repo market involves a significant degree of cross-border activity and may thus be subject to a significant transmission channel for shocks originating outside the euro area.

Chart 1

Market segments by currency, jurisdiction and intragroup



Source: SFTDS

Chart 1 a) reports the outstanding volumes of each major currency, broken down into whether the underlying transaction is an intragroup trade or not. The blue bars indicate non-intragroup trades; the yellow bars indicate intragroup trades. Chart 1 b) reports the volumes broken down by currency with the cross-border dimension included. The blue bars represent euro-denominated transactions, the yellow bars indicate dollar-denominated transactions, the orange bars represent sterling-denominated transactions, and the green bars represent all other currencies. A transaction has the label 'EA' if both the branch and parent group of a counterparty are based / headquartered in the euro area. The label 'FGN' is applied if either the branch or the parent group of a counterparty is based / headquartered outside the euro area. The left label indicates the cash borrowing side (i.e. repo) of a transaction whereas the right label indicates the cash lending side (i.e. reverse repo). The values are aggregated daily end-of-month figures averaged across the sample period.

End-of-month reporting dates from January 2021 to June 2023

Abstracting from the dimensions of currency and jurisdiction and eliminating intragroup trades, two important dimensions remain for defining market segments. One is the role of central clearing. The second is whether trades are secured by general or specific collateral. From these two dimensions, four core segments can be derived: (i) non-centrally cleared with general collateral (cash demand-driven), (ii) centrally cleared with general collateral (cash demand-driven), (iii) non-centrally cleared with specific collateral (collateral demand-driven), (iv) centrally cleared with specific collateral (collateral demand-driven).

With central clearing there are two important aspects from a financial stability perspective. The first is the ability of financial intermediaries to net their repo and reverse repo transactions, which can help alleviate balance sheet constraints. The second is the reduction of counterparty risk because of the use of a CCP (see Menkveld and Vuillemeij, 2021). Clearing a transaction via a CCP allows the entities involved to mutualise their risk (Biais et al., 2012). The share of central clearing in terms of volumes is therefore an important component in understanding dealers'

¹² An example of this could be that a euro area entity uses a foreign branch to transact with a foreign entity, or two entities are domiciled in the euro area, but both have foreign parents.

capacity to supply liquidity during periods of stress, as well as mitigating their risks from counterparty default.

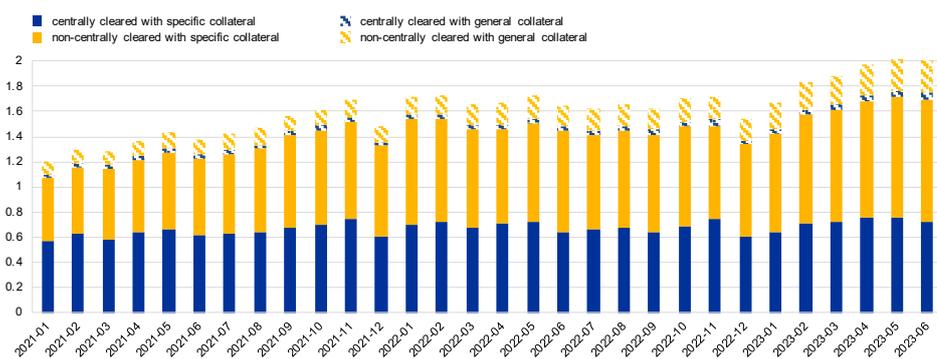
The distinction between general and specific collateral may be useful in indicating whether a trade is driven primarily by collateral demand or funding demand.¹³ This consideration is relevant when assessing whether the repo market can serve as a source of funding in times of stress for market participants who may need to monetise assets to meet margin calls that require cash collateral. Specific collateral should not be understood as synonymous with special collateral. Specialness simply means the repo rate is below the general collateral rate. However, not all transactions that agree on a specific piece of collateral have this feature. Special collateral is therefore a subset of specific collateral (see International Capital Market Association, 2023b).

Chart 2 shows the results for both these dimensions, with our analysis focusing on outstanding amounts. We examine euro-denominated trades, as this is the market most comprehensively captured by the dataset and therefore where it is most representative. This is also for practical purposes, as it is the largest segment and can help focus our analysis, given the sizeable degree of heterogeneity. Most figures reported for central clearing in the euro area repo market focus on daily transactions, which typically report the share of central clearing at around 70% (see for example, European Central Bank, 2022). When looking at the stock of repos, however, we find that the share of central clearing for outstanding trades is only around 45% – significantly lower than what is reported in the daily transaction data.¹⁴ This difference in terms of counterparty risk is important, as outstanding exposure is the relevant factor for determining dealer capacity.

Chart 2

Central clearing and specific collateral segments in the euro-denominated market

(EUR trillion)



Source: SFTDS

This chart reports the time series of outstanding volumes of euro-denominated trades for four core markets and excludes intragroup transactions. The blue bars represent centrally cleared trades and the yellow bars represent non-centrally cleared trades. The solid bars represent trades using specific collateral and the dashed bars represent trades in the general collateral market. End-of-month reporting dates from January 2021 to June 2023.

¹³ Transactions secured by general collateral have a basket of securities underlying, whereas transactions secured by specific collateral, the collateral borrower asks for a specific piece of collateral.
¹⁴ The daily data in the SFTDS are similar, suggesting differences are not due to composition but rather a stock effect, with longer maturity trades tending to be non-centrally cleared.

In terms of underlying collateral we find that the euro area repo market is primarily driven by trades which involve specific collateral. This could suggest the euro area repo market is mostly collateral-driven, consistent with the period of asset scarcity in government bond markets (see Brand et al., 2019; Schaffner et al., 2019; Schnabel, 2023). While this feature is well documented in the literature, it is important to note that a trade that is identified as specific does not necessarily imply specialness, as explained above. We would therefore caution that any interpretation implying general collateral serves general funding demand and specific collateral serves specific demand is far from clear cut. Rather, it is likely that a sizeable portion of trades involving specific collateral serve more than one economic function, implying that the provision of funding may not be contingent on the demand for collateral alone.

3.2 Counterparties

Our second application of the data examines the role of counterparties and their potential different uses of the repo market. A stylised way of classifying the role of counterparties from a supply and demand perspective is: (i) funding demand (repos); (ii) cash investment (reverse repos); (iii) collateral demand (reverse repos); (iv) collateral investment (repos). However, for some economic functions counterparties may engage in more than one of these; market-making or collateral transformation, for example. When analysing counterparties in repo markets, it is important to distinguish between these different drivers of demand and supply.

On the demand side repos can enable investors to finance leveraged trading strategies, which can in principle contribute to price discovery and market liquidity. However, several recent episodes have shown how vulnerabilities from such strategies can spill over into other markets. Avalos et al. (2019) find that increased demand for funding from leveraged non-bank financial institutions via US Treasury repos appears to have compounded the strains of the temporary factors in repo markets in September 2019. In March 2020 US hedge funds using repos to fund the basis trade caused significant stress in US Treasury markets (see Aramonte et al., 2022). In September 2022, LDI funds, domiciled in the euro area and trading with UK counterparties, used repos to leverage their exposure to gilts, which created solvency and liquidity issues when the value of these bonds fell as yields increased (Mosk et al., 2023).

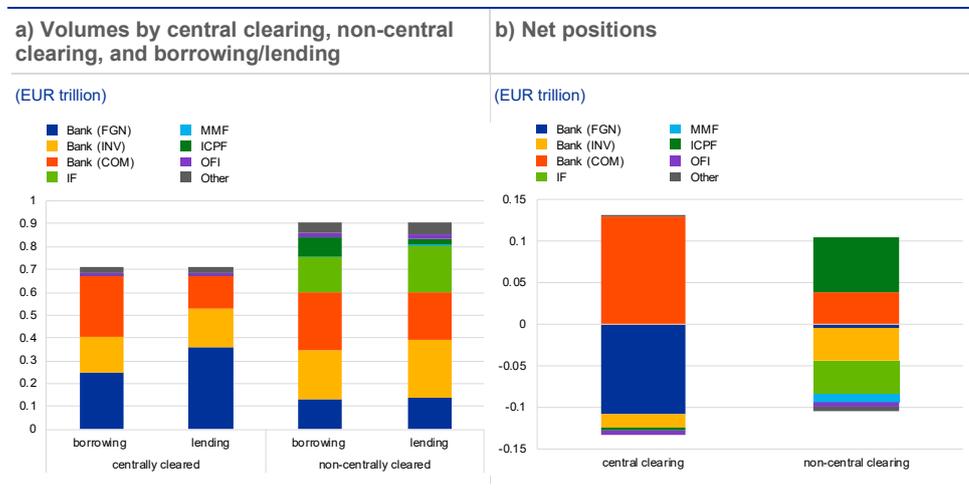
On the supply side the repo market is an important factor in market participants being willing to temporarily monetise liquid assets to meet margin calls that require cash, helping to reduce one-sided selling pressures in a “dash for cash”. Key to this are the capacity and incentives dealers have to provide liquidity, which are affected by balance sheet constraints, risk tolerance and how they discriminate between market participants. It is important to look at dealers' net positions, as these may indicate the degree to which they are performing a market-making role and whether there are unrealised netting benefits which could be captured with central clearing, improving their intermediation capacity. Understanding these aspects is essential to address risks related to the supply of

funding. Breckenfelder and Hoerova (2023) found a dramatic decrease in bank cash lending to mutual funds in the repo market in March 2020, which affected the liquidity positions of these funds during the crisis. In the UK repo market, Hüser et al. (2021) found a significant increase in volumes traded in the cleared segment of the market and interpreted this as a preference for dealers and banks to transact in the cleared rather than the non-cleared segment. They also found that the amount of funding to non-banks decreased, suggesting a reluctance among dealers to take on risk.

Chart 3 a) shows the volumes for each sector broken down by repos and reverse repos for both centrally cleared and non-centrally cleared trades; Chart 3 b) shows the net positions for each sector (i.e. the difference between cash borrowing and lending). For centrally cleared trades we see that foreign banks are the largest sector in terms of gross position, followed by euro area commercial banks and then euro area investment banks (for sector classifications, see Lenoci and Letizia, 2021). Foreign banks are the largest net cash lender (collateral borrower) and euro area commercial banks the largest net cash borrower (collateral lender). As far as the potential for netting gains from centrally cleared trades is concerned, this should in principle be examined at entity level. However, we find that euro area investment banks as a sector appear to take full advantage of netting gains, as their net positions are very low compared to their total gross positions. This does not rule out the possibility that a significant share of banks in the other sectors may also be taking advantage.

Chart 3

Counterparty sector breakdown of repo and reverse repos



Source: SFTDS

These charts report gross and net positions of outstanding euro-denominated centrally cleared and non-centrally cleared transactions by counterparty sector. Chart 3 a) shows outstanding volumes while distinguishing by (non-) central clearing and by cash borrowing (i.e. repo) and cash lending activity (i.e. reverse repo). Since every transaction reports both a cash borrower and cash lender, these are equal in size. 'Net' positions are calculated by subtracting the cash lending position from the cash borrowing position. Thus, positive values indicate net cash borrowers, negative values net cash lenders. Eight types of counterparties are considered: foreign banks (Bank (FGN)), investment banks (Bank (INV)), commercial banks (Bank (COM)), investment funds (IF), money market funds (MMF), insurance corporations and pension funds (ICPF), other financial institutions (OFI) and others. We classify foreign banks based on the country of the parent and include both investment and commercial banks. Intragroup transactions are excluded. The values are aggregated daily end-of-month figures averaged across the sample period. End-of-month reporting dates from January 2021 to June 2023.

Non-centrally cleared trades involve a broader range of counterparty sectors, especially non-banks. In terms of gross positions we find euro area investment banks are the largest sector, followed by euro area commercial banks and then

foreign banks. For net positions, euro area investment banks are marginally cash lenders, while commercial banks are marginally cash borrowers. We also see that foreign banks are much less active in non-centrally cleared than centrally cleared trades.

In the non-bank sector, where some of the risks related to the demand for repos may be greater, we find a considerable role for IFs and ICPFs. IFs are the non-bank sector with the largest gross positions but are marginally cash lenders in net terms. They show a high demand for collateral, for example to engage in collateral transformation, where the collateral they pledge in repos is of a lower quality than what they acquire in reverse repos. IFs may also have a demand for funding, for example to acquire even more collateral. However, their main objective is likely to be collateral demand, resulting in a net lending position. ICPFs are the largest non-bank sector in terms of net positions, being net cash borrowers; this indicates that they potentially use the market to access cash buffers (e.g. to meet cash margin calls) or simply generate a return by lending out collateral commanding a specialness premium.

3.3 Collateral

Our third application of the dataset focuses on collateral and examines differences in asset composition and haircut practices in non-centrally cleared transactions. A key concern in repo markets is counterparty risk – the risk that the provider of collateral defaults and fails to repurchase it. This leaves the cash lender with collateral that may have lost value or be illiquid.¹⁵ A related risk is wrong-way risk, where the value of the collateral is negatively correlated with the credit risk of the cash borrower, meaning the collateral is expected to lose value at the same time the counterparty is more likely to default. This can occur when the collateral is exposed to similar economic or market factors as the cash borrower. Barbiero et al. (2022) have shown that borrowers from the same country as the collateral they pledge pay a premium. A third risk is excessive collateral re-use, which may lead to the build-up of leverage by creating a chain of interconnected exposures that can amplify market shocks and contagion (Brumm et al., 2023).

Chart 4 shows the differences in collateral composition by cash borrowing and lending activity, distinguishing between banks and the non-bank sector. We deliberately focus on the non-centrally cleared segment, as again this is where financial stability risks are expected to be more pronounced, and also because centrally cleared transactions are almost exclusively backed by sovereign securities. To tease out further the financial stability risks, we examine the differences in asset composition between banks and non-banks. For banks and non-banks, we find that while the large majority of trades are backed by sovereign collateral (around 70%), there remains a sizeable role for non-sovereign collateral. We also find that the non-bank sector tends to pledge lower quality collateral in its borrowing relative to the

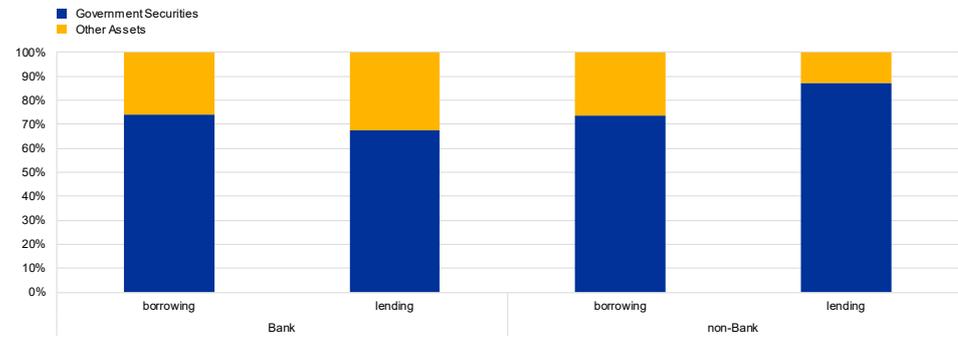
¹⁵ This is especially relevant when thinking about collateral transformation, as the receiver might be stuck with low-quality collateral.

collateral it receives against cash, while the reverse is the case for banks. However, aggregate figures may mask important heterogeneity at entity or sub-sector levels.

Chart 4

Collateral composition in the euro-denominated non-centrally cleared market

(percentages)



Source: SFTDS

This chart reports the composition of outstanding pledged collateral, distinguishing broadly by government securities and other assets. Blue indicates the share of government securities while yellow indicates the share of other assets. The label 'Banks' includes investment banks, commercial banks, and foreign banks, whereas the label 'non-Bank' includes investment funds, insurance corporations and pension funds, money market funds, other financial corporations, and other institutions. The chart only includes euro-denominated transactions and excludes intragroup transactions. Values are aggregated end-of-month figures and averaged across the sample period to calculate shares.

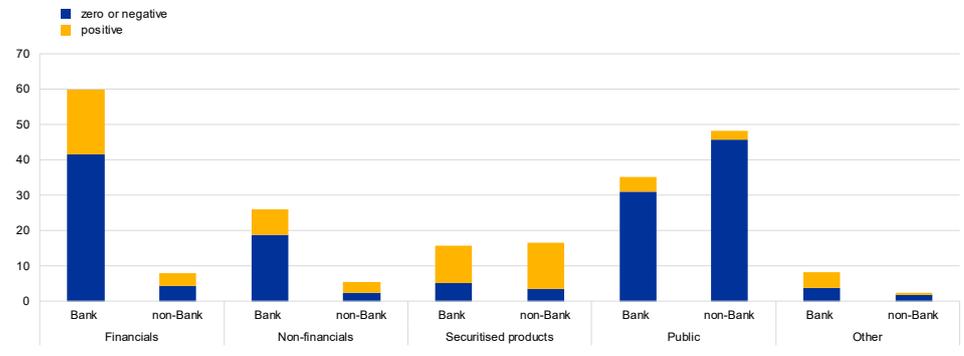
End-of-month reporting dates from January 2021 to June 2023.

Chart 5 shows the share of positive haircuts for non-sovereign collateral by different asset type. Haircuts are an important risk mitigation tool for trades that are not backed by sovereign collateral and may also be useful for banks in mitigating potential counterparty risks emanating from the non-bank sector. We find that the share of positive haircuts for non-sovereign collateral is typically quite low, for both banks and non-banks. Positive haircuts are highest for securitised products, which make up a significant share of non-bank cash borrowing. For banks, these are mostly driven by financial debt securities and securitised products. This further underscores the need to make progress on implementing regulatory rules aimed at ensuring minimum haircut practices for the non-bank sector in the non-centrally cleared space (see Financial Stability Board, 2020).

Chart 5

Haircuts for non-sovereign collateral categories in the euro-denominated non-centrally cleared market

(EUR billion)



Source: SFTDS

This chart reports outstanding volumes broken down by asset type from cash borrower perspective, distinguishing between banks and non-banks. The label 'Banks' includes investment banks, commercial banks, and foreign banks, whereas the label 'non-Bank' includes investment funds, insurance corporations and pension funds, money market funds, other financial corporations, and other institutions. Blue bars indicate zero or negative haircuts whereas yellow bars indicate positive haircuts. This only includes euro-denominated transactions and excludes intragroup trades. Furthermore, only non-centrally cleared transactions are covered. The label 'Financials' includes debt securities with a financial sector as the issuer sector. 'Non-financials' include debt securities with a non-financial sector as the issuer sector. 'Securitised products' include securities labelled as securitised products. 'Public' includes debt securities with a supranational or non-sovereign government sector as the issuer sector. 'Other' includes securities with an unspecified issuer sector, as well as equities. The values are aggregated daily end-of-month figures averaged across the sample period. End-of-month reporting dates from January 2021 to June 2023.

4 Policy implications

The above analysis indicates the SFTDS can make important contributions both to regulatory efforts to enhance the resilience of the financial system and also more broadly to other areas of importance to central banks.

First, from a financial stability risk monitoring perspective, the dataset greatly increases transparency and helps authorities obtain more timely and comprehensive visibility into trends in repo markets. It provides an exhaustive picture of repo market activity within the EU, as well as activity associated with EU-supervised institutions outside it. In particular, the data can provide snapshots and trends over time of: (i) cyclical and structural changes in funding conditions (e.g. rates, haircuts); (ii) the role of counterparties; (iii) the degree of maturity, liquidity and currency mismatches (iv) leverage; (v) collateral metrics (e.g. composition, transformation and re-use); (vi) interconnectedness (cross-border and cross-sector); (vii) concentration risks (e.g. collateral type, counterparty); (viii) issues around reporting dates (e.g. window dressing behaviour). For example, the dataset captures a large component of the repo activity of euro area domiciled LDI funds in the UK repo market at the time of the turbulence in UK gilts in September 2022.

Second, the dataset will play an important role in current international policy initiatives to enhance global financial stability resilience, of which a key priority is to address vulnerabilities in the non-bank sector. As part of its broader response to address risks related to SFTs, the FSB has issued a comprehensive list of policy recommendations (Financial Stability Board, 2013). This includes minimum standards and haircut floors on non-centrally cleared SFTs for trades involving the non-bank sector. However, progress in implementing these reforms has been slow, and the dataset will be valuable for assessing not only the progress made but also whether enhanced requirements will be necessary. A related issue highlighted by the FSB (see Financial Stability Board, 2017) is the role of collateral re-use.¹⁶ While we have not explored this dimension here, partially due to ongoing data issues, inclusion of this variable in the dataset will be important for monitoring these risks and determining whether policy action is required.

Recent stress episodes have shown important non-bank amplification channels due to excessive leverage obtained in the repo market. For example, in March 2020 leveraged hedge funds using repos to fund basis trades caused significant stress in US Treasury markets (see Aramonte et al., 2022). More recently, in September 2022, sterling-denominated LDI funds used repos to fund leveraged holdings of gilts, which led to large collateral calls and deleveraging when the value of these bonds fell, further amplifying the stress in gilt markets. The FSB has already undertaken initiatives to address these risks. The Basel Committee on Banking Supervision (BCBS) is also currently exploring whether banks' risk management of

¹⁶ While this can facilitate greater lending capacity and lower funding costs, it also increases the interconnectedness among market participants and potentially contributes to the formation of contagion channels and risks and can contribute to procyclicality.

exposures to leveraged non-bank entities could be enhanced (Basel Committee on Banking Supervision, 2022). A key part of this will be examining their counterparty risk-management practices with non-banks in repo markets.

Related to this are policy efforts to ensure that repo markets function during times of stress, which is an important component of mitigating the impact of large margin calls on derivatives that require payment of cash collateral. A key part of this is ensuring market participants have access to liquidity to meet margin calls. However, while the repo market can be a useful component of contingent funding sources, excessive reliance could put a strain on how smoothly it functions. A recent FSB report on liquidity in core government bond markets also examined ways to increase the availability and use of central clearing for government bonds, cash and repo transactions in particular (Financial Stability Board, 2022).

Finally, the dataset can play an important role for central banks in evaluating how the repo market functions more broadly for monetary policy purposes and to ensure financial stability. From a euro area perspective, the consensus has been that repo markets have generally functioned well. However, in the current period of monetary tightening, intermediation capacity could be more constrained, and it is important to examine developments closely (see Schaffner et al., 2019). Other important issues are the role of window dressing around reporting dates (see Bassi et al., 2023), the impact of specialness in the repo market and a better understanding of the growing role of the non-bank sector for monetary policy purposes.

5 Conclusion

In this paper we have shown how the data reported under the SFTR greatly increase market transparency and will help authorities obtain more timely and comprehensive insights into trends in repo markets. In particular, the data will help authorities monitor important risks related to interconnectedness, concentration, liquidity provision, collateral demand, liquidity/maturity mismatches, leverage, and various collateral metrics. It might also play an important role in current international policy initiatives to enhance global financial stability and can assist central banks in evaluating how repo markets function more broadly. The results we have presented highlight how the dataset can shed light on key financial stability issues for the euro area repo market. However, we have only touched on these issues; there is scope for a much more comprehensive analysis to gain deeper insights into these issues.

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Claudio Bassi

European Central Bank, Frankfurt am Main, Germany; email: Claudio.Bassi@ecb.europa.eu

Michael Grill

European Central Bank, Frankfurt am Main, Germany; email: Michael.Grill@ecb.europa.eu

Felix Hermes

European Central Bank, Frankfurt am Main, Germany; email: Felix.Hermes@ecb.europa.eu

Harun Mirza

European Central Bank, Frankfurt am Main, Germany; email: Harun.Mirza@ecb.europa.eu

Charles O'Donnell

European Central Bank, Frankfurt am Main, Germany; email: Charles.ODonnell@ecb.europa.eu

Michael Wedow

European Central Bank, Frankfurt am Main, Germany; email: Michael.Wedow@ecb.europa.eu

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

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