

International Capital Market Association European Repo Market Survey

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Executive Summary

In December 2022, the European Repo and Collateral Council (ERCC) of the International Capital Market Association (ICMA) conducted the 44th in its series of semi-annual surveys of the repo market in Europe, which provide an unrivalled picture of the development of that market.

The survey asked a sample of financial institutions in Europe for the value and breakdown of their repo contracts that were still outstanding at close of business on December 8, 2022. Replies were received from 61 institutions, mainly banks. Data were also reported separately by the principal automatic repo trading systems (ATS) and tri-party repo agents in Europe, giving the size and composition of almost all automatic electronic repo trading and tri-party repo collateral management in Europe.

Total repo business

The total value of the repo contracts outstanding on the books of the 61 institutions who participated in the latest survey was a new high of **EUR 10,374 billion**. This compares with EUR 9,680 billion in the June survey. The rise in the headline number was 7.2% since June and 12.8% year-on-year, which represents a modest deceleration in the rate of growth of the survey sample. The rate of growth is even lower if adjusted for the new participants who joined the survey. However, the record total does not take account of the huge volume of short-term repos that were traded during the market turmoil in September as these would have run off before the survey date.

Trading analysis

There was a continued acceleration in the growth of turnover on automatic trading systems (ATS), which operate in the interdealer segment, whereas the growth of end-period balances decelerated sharply, which could be interpreted as a shortening of the average term-to-maturity but may have been due to the rapid run-off of the very short-term transactions characteristic of ATS repo.

Tri-party repo contracted. This was unexpected given signs of recovery in the previous survey but may have been connected to uncertainty about the upward trajectory of central bank interest rates and perhaps the diversion of government securities into the market for specific collateral. Price volatility in response to market uncertainty was reflected in a general increase in the haircuts on tri-party repo collateral.

Geographical analysis

Anonymous (CCP-cleared) repo trading among the survey sample continued to recover some of the ground it had lost. ATS saw stronger cross-border activity.

Clearing analysis

The largest European CCP continued to grow but growth may have been decelerating. Moreover, outstanding balances declined. This would suggest a shorter average remaining term-to-maturity but this was not necessarily the case at all CCPs. There was also less post-trade clearing.

Some but not all GC financing facilities grew in line with the survey and consequently took a record share of the otherwise contracting tri-party repo market. These systems may have benefited from their standardized nature and largely interbank user-base.

Cash currency analysis

The share of the euro recovered, largely at the expense of sterling and the dollar.

Collateral analysis

There was an increase in the value of most nationalities of security posted as collateral over the second-half of 2022 but particularly of German, French, Italian and Spanish government securities. In terms of market share, however, there was a significant shift into German securities and out of UK gilts and US Treasuries. It is possible that the reduced share of UK gilts may have reflected the sell-off in gilts by pension funds during the market turmoil triggered by the mini-budget in September (which reflected regulatory and other constraints on the capacity of the repo market to intermediate heavier-than-normal flows).

Repo rate analysis

There were further increases in the shares of floating-rate repo in the survey and in trading on ATS, as would be expected in an environment of rising interest rates.

Maturity analysis

The survey showed the usual end-year seasonality with a relapse in the share of short-dated repos and a corresponding increase in the weighted average term-to-maturity.

A record high was reached by forward repos but some of these transactions may have been the result of longer-term trades being broken up in order to increase netting opportunities.

Product analysis

The share of securities lending conducted on repo desks continued its recent seasonal pattern by recovering from the level touched in June. It may be that the increase in securities lending was against non-cash collateral, which is a balance sheet-neutral way of borrowing and lending securities and would have been an attractive trading option towards the end of the year.

Concentration analysis

The concentration of business in the survey decreased but this largely reflected the (re)entry of new participants into the survey.

Chapter 1: The Survey

On December 8, 2022, the European Repo and Collateral Council (ERCC) of the International Capital Market Association (ICMA) conducted the 44th in its series of semi-annual surveys of the repo market in Europe. The first of these surveys took place in June 2001 and the subsequent series of survey reports provides an unrivalled picture of the development of the European repo market over more than two decades.

The survey was carried out and the results analysed on behalf of ICMA by the author, Richard Comotto, under the guidance of the ERCC Council.

1.1 What the survey asked

The survey asked financial institutions operating in Europe for the starting value of the cash side of repos and reverse repos that were still outstanding at close of business on Thursday, December 8, 2022 (in other words, the stock of transactions that had not matured or been terminated and were therefore still outstanding on the survey date rather than the flow of transactions between two survey dates). The survey covered all types of true repo, which means repurchase transactions, reverse repurchase transactions, buy/sell-backs and sell/buy-backs but not synthetic or pledge structures.

The survey also asked participating institutions to break down their data into repo and reverse repo, as well as by: location of the counterparty; method of execution; cash currency; type of contract; type of repo rate; remaining term to maturity; method of clearing; origin of collateral; and some other categories. In addition, institutions were asked to report the outstanding value and composition of any securities lending and borrowing conducted from their repo desks.

Since 2017, the survey has asked for the number of new transactions and the value of turnover since the previous survey and, since 2019, the numbers and types of legal agreements under which they can transact repos.

An extract of the accompanying Guidance Notes for survey participants is reproduced in Appendix A.

As well as reports provided by participating institutions, data has also been provided separately since 2003 by the principal automatic repo trading systems (ATS) and by the main tri-party repo agents in Europe. The latter have also reported tri-party securities lending since 2016. Members of the Wholesale Market Brokers' Association provided data separately from 2002 until 2017.

1.2 The response to the survey

The latest survey was completed by 61 offices of 54 financial groups. This is five more participants than in June 2022. Two of the extra participants rejoined the survey, another was a new participant and two were the new EU offices of firms based in the UK.

Of the 61 participants in the latest survey, 45 were headquartered across 15 European countries, including Norway (1), Switzerland (2) and the UK (6). 35 participants were headquartered across 12 of the 27 member states of the EU (there continue to be no participants in the survey from Finland and Sweden, and only one from a former Accession State). 36 participants were headquartered across 11 of the 19 countries of the eurozone. Other survey participants were headquartered in Australia (2), Japan (5) and North America (9). 20 participants were branches or subsidiaries of foreign parents or supranational entities. Most of these (15) were located in the UK.

Many institutions provided data for their entire European repo business. Others provided separate returns for one or more (but not necessarily all) of their European offices. Participants were asked to report for both their UK and EU offices. A list of the institutions that have participated in the ICMA's repo surveys is contained in Appendix B.

1.3 The next survey

The next survey is scheduled to take place at close of business on Wednesday, June 7, 2023.

Any financial institution wishing to participate in the next survey will be able to download copies of the questionnaire and accompanying Guidance Notes from ICMA's website. The latest forms will be published shortly before the next survey at www.icmagroup.org/surveys/repo/participate.

The data received in the survey are used for no other purpose than to inform the survey report. Individual returns are seen only by the author and participants can request that returns are anonymized before the data are made available to the author. Only aggregated data are published and ICMA is not permitted to disclose data reported by individual participants.

Questions about the survey should be sent by e-mail to reposurvey@icmagroup.org.

Institutions who participate will receive a confidential list of their rankings across the various categories of the survey.

Chapter 2: Analysis of Survey Results

The aggregate results of the latest two surveys (June and December 2022) and of the surveys in each December in the four previous years (2018-2021) are set out in Appendix C. The full results of all previous surveys can be found at www.icmagroup.org.

Total repo business (Q1)

The total value, at close of business on December 8, 2022, of repos and reverse repos outstanding on the books of the 61 institutions who participated in the latest survey was a new all-time record of **EUR 10,374.2 billion**, compared with the previous record of EUR 9,680.3 billion in June. However, the latest number represents a deceleration in the rate of growth of the survey sample to 7.2% since the last survey and to 12.8% year-on-year, compared with 10.9% and 16.8%, respectively, in the six months to June.

The survey sample as a whole continues to be a net lender of cash to (and therefore a net borrower of securities from) the rest of the repo market. The survey sample has been a net lender continuously since 2012. Gross cash borrowing (which peaked at 54.6% in December 2006) has trended down since June 2010, while gross cash lending has trended up. These trends accelerated after June 2020, culminating in December 2022 in record net lending equivalent to 6.0% of the total outstanding value of the survey (EUR 617.2 billion). The trends likely reflect the impact of central bank liquidity, which has provided an alternative to the repo market as a source of funding.

Figure 2.1 – Total business

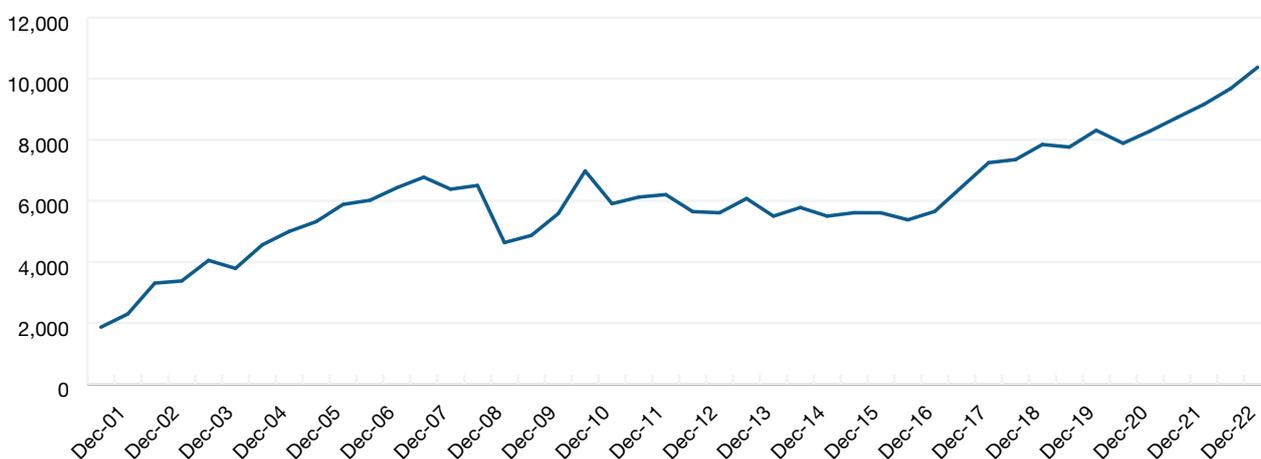
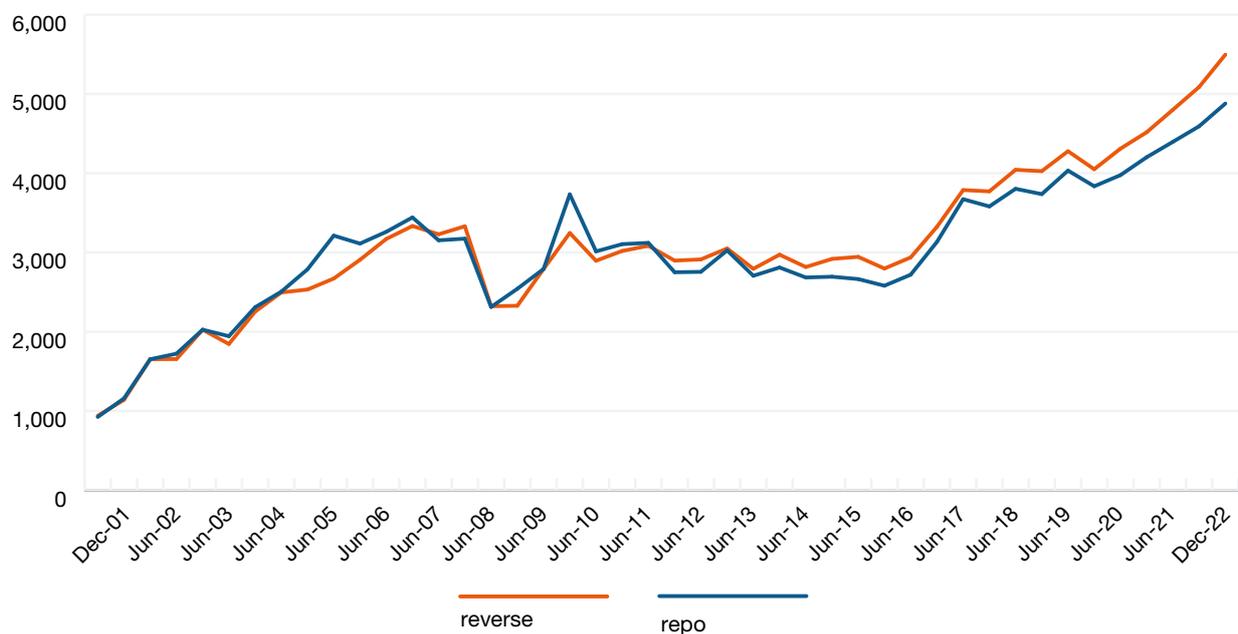


Table 2.1 – Total repo business

survey	total	repo	reverse repo
2022 December	10,374	47.0%	53.0%
2022 June	9,680	47.4%	52.6%
2021 December	9,198	47.8%	52.2%
2021 June	8,726	48.2%	51.8%
2020 December	8,285	48.0%	52.0%
2020 June	7,885	48.6%	51.4%
2019 December	8,310	48.5%	51.5%
2019 June	7,761	48.1%	51.9%
2018 December	7,846	48.5%	51.5%
2018 June	7,351	48.7%	51.3%
2017 December	7,250	47.8%	52.2%
2017 June	6,455	48.5%	51.5%
2016 December	5,656	48.1%	51.9%
2016 June	5,379	48.0%	52.0%
2015 December	5,608	47.5%	52.5%
2015 June	5,612	48.0%	52.0%
2014 December	5,500	48.8%	51.2%
2014 June	5,782	48.6%	51.4%
2013 December	5,499	49.2%	50.8%
2013 June	6,076	49.8%	50.2%
2012 December	5,611	49.1%	51.9%
2012 June	5,647	48.7%	51.3%
2011 December	6,204	50.3%	49.7%
2011 June	6,124	50.7%	49.3%
2010 December	5,908	51.0%	49.0%
2010 June	6,979	53.5%	46.5%
2009 December	5,582	50.0%	50.0%
2009 June	4,868	52.2%	47.8%
2008 December	4,633	49.9%	50.1%
2008 June	6,504	48.8%	51.2%
2007 December	6,382	49.4%	50.6%
2007 June	6,775	50.8%	49.2%
2006 December	6,430	50.7%	49.3%
2006 June	6,019	51.7%	48.3%
2005 December	5,883	54.6%	45.4%
2005 June	5,319	52.4%	47.6%
2004 December	5,000	50.1%	49.9%
2004 June	4,561	50.6%	49.4%
2003 December	3,788	51.3%	48.7%
2003 June	4,050	50.0%	50.0%
2002 December	3,377	51.0%	49.0%
2002 June	3,305	50.0%	50.0%
2001 December	2,298	50.4%	49.6%
2001 June	1,863	49.6%	50.4%

Figure 2.2 – Total repo versus reverse repo business



It has been explained that the ICMA survey measures the value of outstanding transactions at close of business on a survey date. While measurement of the flow of new repos between two dates can be useful for some business analyses, measuring the stock of transactions at one date gauges risk exposure and open interest. However, it is important to note that outstanding value understates the share of shorter-term repos compared with turnover data, given that shorter-term repos run off faster between surveys than longer-term repos. For this reason, notwithstanding the strong growth to a record total, the survey understates the activity in the European repo market in the second-half of 2022, as the short-term repos which comprised the bulk of the trading during the turbulent events of September, will have run off by the end of the year and therefore will not have been included in the survey measure of the market.

Another important feature of the survey methodology is that the survey includes repos from their transaction dates, that is, the dates on which they were executed by the two parties and contracts formed, rather than from their value or purchase dates, which are the dates on which cash and collateral are first due to be exchanged. This transaction-date basis means that the outstanding value measured by the survey includes forward repos, which will not have been recognized on the balance sheets of the sellers.

The values measured by the survey have not been adjusted for the reporting of the same transaction by two participants who are the contracting parties. However, a study by the author (see the report of the December 2012 survey) suggested that the problem of double-counting was not very significant. Interestingly, a trade repository in Europe has estimated that two-sided reporting has been less than 30% under EU SFTR and less than 15% under UK SFTR, which is consistent with the author’s estimate of double-counting in 2012.

The survey does not measure the very significant value of repos transacted with central banks as part of their monetary policy operations.

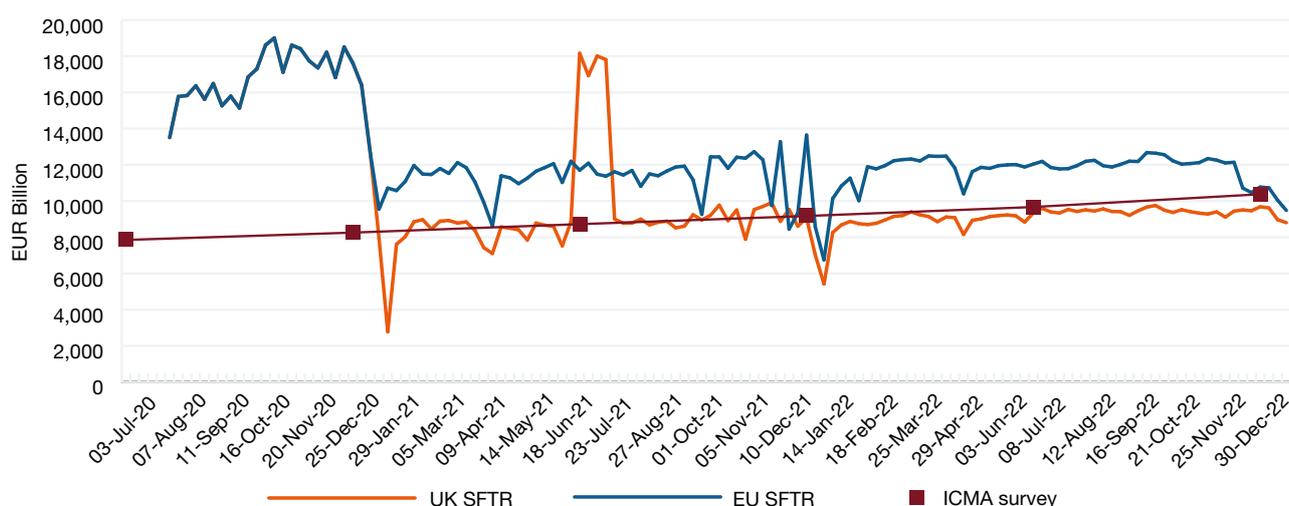
In order to accurately gauge the growth of the European repo market (or at least that segment represented by the institutions who have participated in the survey), it is not usually valid to simply compare headline survey numbers. Some changes may represent the entry or exit of institutions into and out of the survey, mergers between banks or the reorganization of repo books across banking groups. To offset the impact of changes in the survey sample, comparisons are made of the aggregate outstanding contracts reported by a sub-sample of institutions who have participated continuously in several surveys. In the case of the latest survey, the growth since June 2022 in a sample of 58 survey participants who had participated in the last three surveys was 4.2% compared to 7.2% for the full

survey sample and 10.2% year-on-year compared to 12.8%. New participants therefore had a material impact on the growth in the survey and may also have changed its composition.

Between June and December 2022, 26 of the 61 institutions who responded to the latest survey expanded their repo books (compared with 23 out of 56 between December 2021 and June 2022). The repo books of 32 institutions contracted over the same period (compared with 26 between the previous two surveys). The median percentage change in all repo books was -1.8% compared to zero in the half-year to June. The average unweighted change in the second-half of 2022 for the participants who increased the size of their repo books slowed to +23.3% and to -18.1% for those who cut their books, from +32.2% and a corrected -20.1% in June, respectively. The weighted average change across all books was virtually unchanged at +8.3. This suggests that growth in the survey became more concentrated.

Data published under the Securities Financing Transactions Regulations (SFTR) in the EU and the UK show that the value of all outstanding repos reported to regulators on December 9, 2022, (the reporting date closest to the latest survey date) was EUR 10,775 billion in the EU and EUR 9,687 billion in the UK, totaling EUR 20,461 billion, compared with EUR 20,036 billion on June 10, 2022 (the reporting date closest to the June survey date), a fall of -2.1%. The ICMA survey therefore outpaced SFTR data on outstanding balances. It is now equivalent to over 52% of the EU and UK total, compared with some 45% in June.¹

Figure 2.3 – ICMA survey versus SFTR public data: outstanding amounts



Sources: UK and EU SFTR public data

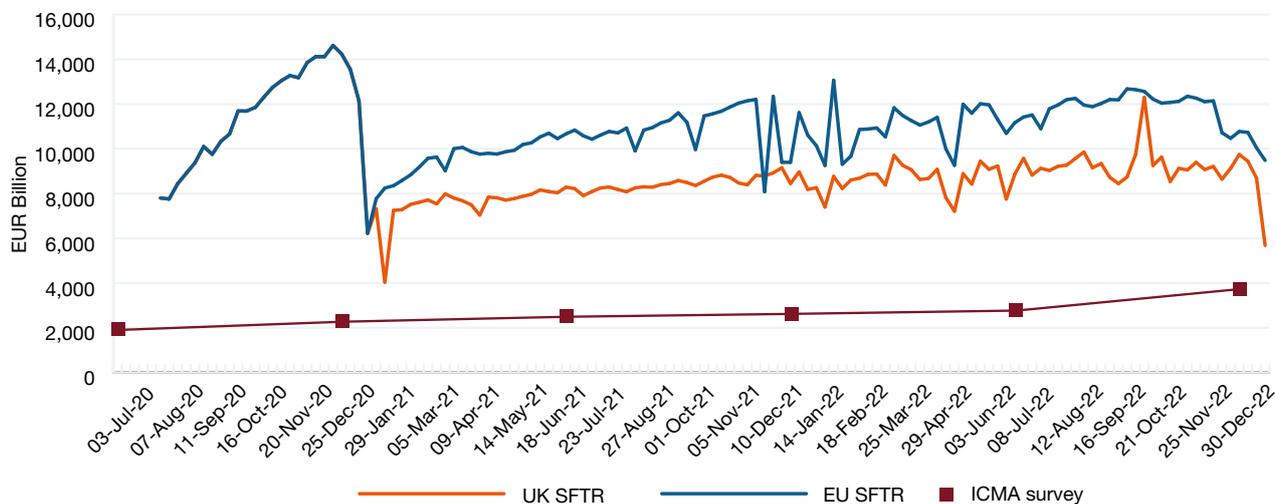
Institutions accounting for 41% of the total value of the survey reported their repo turnover over the six months since the previous survey. Grossing up on the basis of the survey shares of those participants who did not report their turnover suggests that the daily average turnover for the whole survey sample over the second-half of 2022 was EUR 3,737 billion per day, compared to EUR 2,784 billion between the two previous surveys, a rise of +34.2%. Average deal size remained EUR 48 million.

Turnover in repo reported under SFTR between the week ending June 10, 2022, and the week ending December 9, 2022, approximately the same period as that covered by the survey, averaged EUR 2,380 billion per day in the EU and EUR 1,859 billion per day in the UK, totaling EUR 4,239 billion. This represents a rise of 8.2% over the previous six-month average. Estimated turnover in the ICMA survey therefore outpaced that reported under SFTR. The turnover estimated in the ICMA survey (EUR 3,737 billion a day) increased to just under 88% of the SFTR number.

¹ SFTR data are believed to be inflated by various factors, which were discussed in a review of the first year of the regulation.

Another feature in SFTR data was the earlier winding down in the repo market in 2022 ahead of the year-end. There is evidence that this started in the EU repo market in November but later in the UK repo market.

Figure 2.4 – ICMA survey versus SFTR public data: weekly turnover



Sources: UK and EU SFTR public data

Trading analysis (Q1.1)

Table 2.2 – Trading analysis

	December 2022		June 2022		December 2021	
	share	users	share	users	share	share
direct	63.5%	61	64.5%	56	63.1%	56
of which tri-party	6.5%	49	9.0%	42	8.6%	45
voice-brokers	9.0%	32	8.1%	36	10.1%	34
ATS	27.5%	48	27.4%	45	26.8%	46

The most notable development in the location of trading reported in the survey was a sharp drop in the share of **tri-party repo** from the recent high of 9.0% in June to 6.5%. This occurred despite an increase in the number of participants reporting tri-party business and the revival of GC repo as a result of central banks starting to withdraw liquidity from the market and would seem to reflect uncertainty about rate of further interest rate increases.² The lower share of tri-party repo was matched by a contraction in the outstanding value of tri-party business reported separately by the five principal tri-party agents operating in Europe of -12.6% to EUR 488.2 billion compared to growth of +2.1% over the previous semester.³ The rate of contraction was similar across the tri-party repo businesses of both ICSDs and custodian banks.

Tri-party repo continued to provide the survey sample with net cash (equivalent to 6.2% of the survey total) but, within that net number, there was a seasonal retracement of the share of gross lending by the survey sample to 29.0% of the outstanding value of total tri-party repo from 36.6% in June.

The major counterpart to the contraction in the share of tri-party repo was a partial recovery in the share of **voice-brokers**.

² The share of tri-party repo in the survey is structurally understated because some participants who are known to use tri-party repo do not fill out the trading analysis in their survey return.

³ The reporting agents were Bank of New York Mellon, Clearstream, Euroclear, JP Morgan and SIS, who account for the bulk of tri-party repo business in repo.

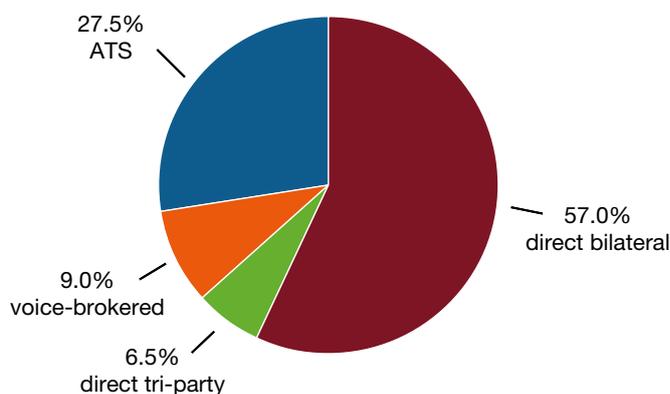
There was the usual seasonal retreat in **direct trading** in December. Such seasonality may reflect the impact of the shrinkage of intermediary balance sheets at end-year on dealer-to-customer business, which is part of direct trading.

The trading of repo on **automatic trading systems (ATS)** maintained its share of the expanding survey.

Table 2.3 – Numbers of participants reporting particular types of business

	Dec-22	Jun-22	Dec-21	Jun-21	Dec-20	Jun-20
ATS	48	45	46	46	48	46
anonymous ATS	43	40	44	41	42	42
voice-brokers	32	36	34	31	38	43
tri-party repos	49	42	45	43	42	37
total	61	56	56	59	60	61

Figure 2.5 – Trading analysis



Data provided separately by the principal ATS in Europe appeared to show a further acceleration in their growth. The outstanding value of repos executed on these platforms increased by 15.7% to EUR 1,651.4 billion on December 8, 2022, compared with growth of 18.8% to EUR 1,426.8 billion in June. However, growth in the outstanding value of ATS trading was boosted by the addition of SIX SIS to the set of ATS providing separate returns to the survey, which means there was really a significant deceleration in the growth of ATS balances.

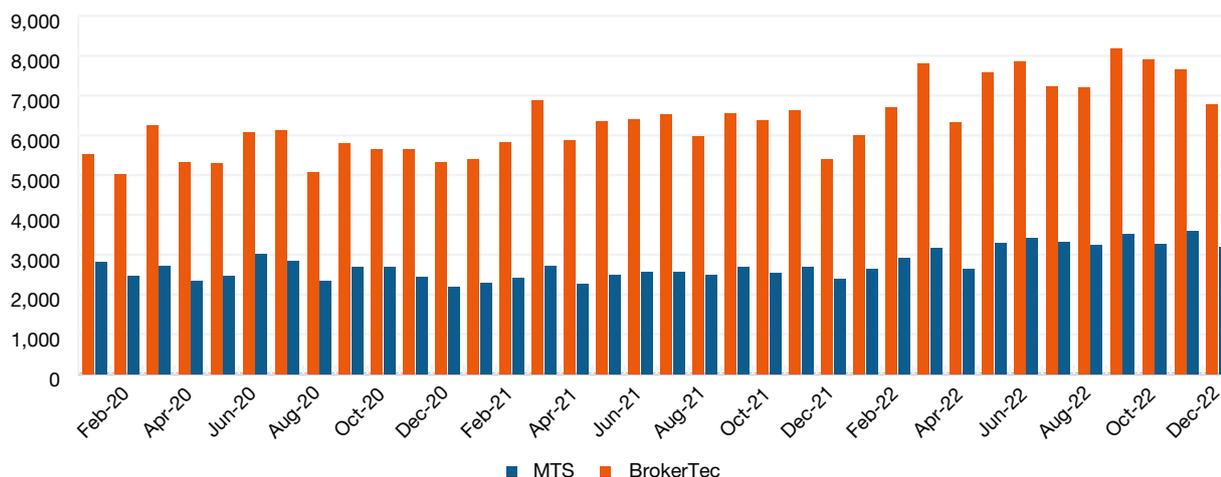
The number of new transactions (turnover) increased by 15.4% to some 27,600 per day and the value of new transactions grew at 15.3% to almost EUR 647 billion per day compared with over 23,900 transactions and 0.1% growth to EUR 560.9 billion in June. Such strong growth in turnover and weak growth in balances suggests a shortening of the average term-to-maturity. This was confirmed to some extent in the maturity data provided separately by the ATS which saw the share of longer-dated repo fall from 2.7% to 2.3%. However, it needs to be remembered that the average term-to-maturity on ATS tends to be very short-term (97.7% are short dates) and the scope for shortening or lengthening term is inherently limited with the central limit order books (CLOB) used by ATS. The slowdown in balances could just be due to the rapid run-off of the very short-term transactions which are characteristic of ATS repo. However, data from the Eurex ATS suggest a lengthening of average term but this seems to have occurred only in December and may have been executed off-venue, in the OTC (over-the-counter) market, and registered with the ATS post-trade.

Performance continued to vary significantly between the different ATS, with the strongest growth being seen in those ATS which are most active in repos against core eurozone collateral.

The share of cross-border business entirely outside the eurozone that was traded on an ATS increased to 2.6% from 1.4% in June 2022. This was at the expense of domestic trading, which fell back to 26.4% from 27.2%.

Monthly turnover data published for BrokerTec and MTS show increased but volatile levels of repo trading on these ATS in the first-half of 2022, followed by a step-up in September in the context of the market turbulence triggered by the UK mini-budget and more bearish interest rate expectations.

Figure 2.6 – Monthly turnover in European repo on BrokerTec and MTS

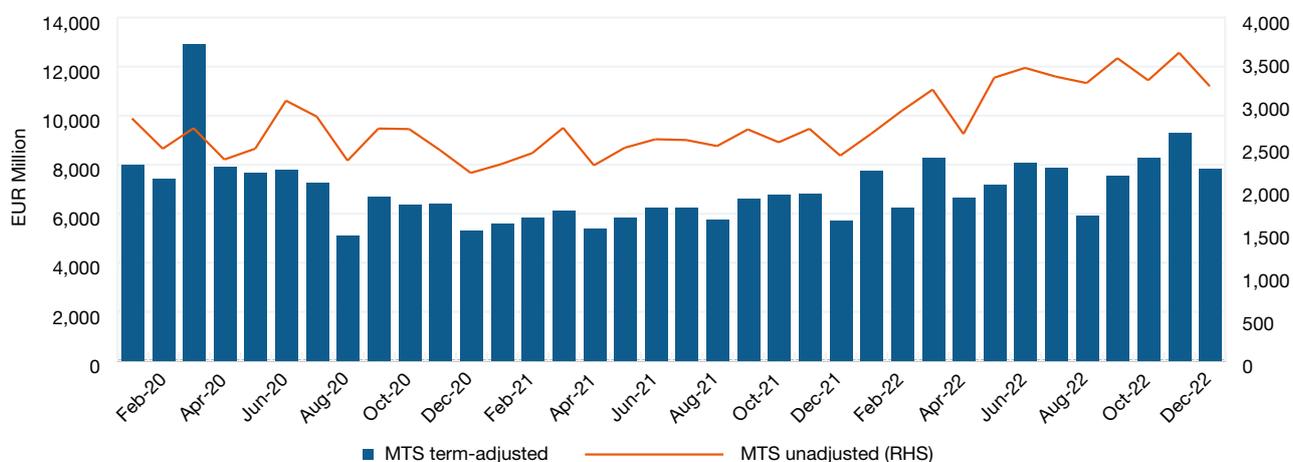


Sources: CME and Euronext

On Eurex Repo, turnover expanded to EUR 174.5 billion per day in November from EUR 120.9 billion per day in June (+44.3%) before deflating to EUR 111.9 billion per day in December as the year-end approached. On the other hand, there was little change in turnover on GC Pooling, which was EUR 69.3 billion per day in November and EUR 67.5 billion per day in December compared with EUR 71.0 billion per day in June. Activity may have been dented by systems migration issues in the last quarter. Note that turnover data from Eurex is term-adjusted, that is, the size of each transaction is scaled up by the number of days in the term.

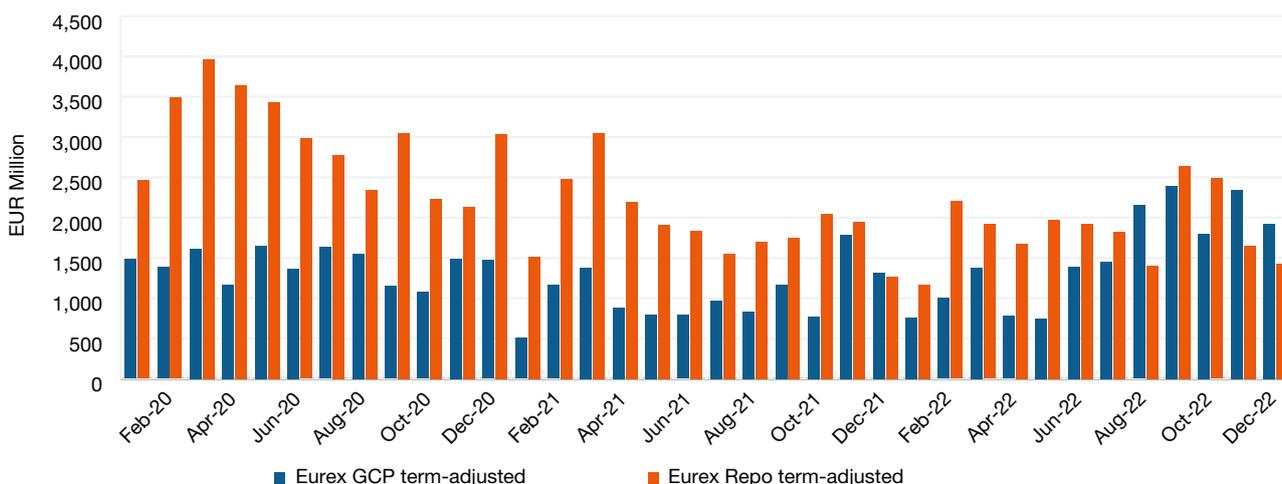
Both term-adjusted and unadjusted monthly turnover data is published by MTS, allowing a comparison which shows how the average term to maturity of new transactions are changing. There is a pattern of terms being extended in March, June, September and either November or December, which is to be expected, given that these include bond futures delivery dates and end-quarter reporting dates over which parties seek longer-term funding to avoid market illiquidity as a result of banks “window-dressing” (that is, contracting their balance sheets in order to reduce reported balances). On the other hand, terms tend to shorten between June and September, which is the summer holiday season, and there is evidence of a similar contraction around Easter. There was an exceptional lengthening of average term in March 2020 during the Covid-related “dash for cash” and, to a lesser extent, in November 2022.

Figure 2.7a – Average daily term-adjusted turnover on Euronext MTS



Source: Euronext

Figure 2.7b – Average daily term-adjusted turnover on Eurex

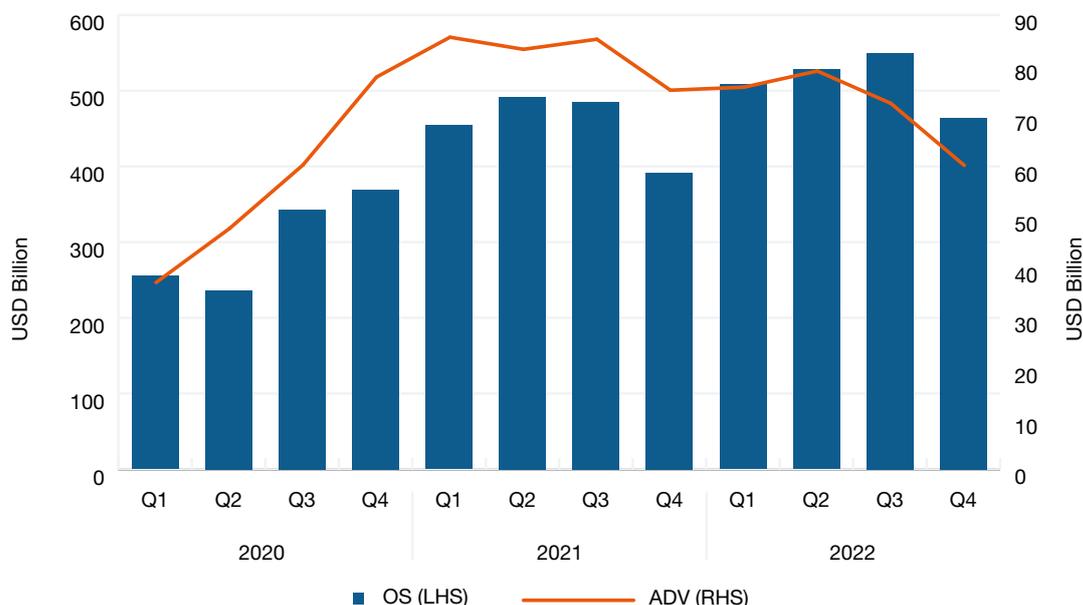


Source: Eurex

Activity on **automated repo trading systems** seems to have changed structure in 2022, at least on the basis of data from Tradeweb, which may be the largest automated repo trading system in Europe and is the only automated system to publish data.⁴ Tradeweb saw average daily turnover shrink by 8.1% compared with the second-quarter and by 14.9% compared with the same quarter in 2021, whereas the value of outstanding repo on its European platform grew by 4.1% over the second-quarter and 13.3% over the previous third-quarter. These changes imply a further significant lengthening of average term-to-maturity. However, business on other types of automated trading system may have evolved differently to that of Tradeweb.

⁴ Automated trading systems are often called request-for-quote (RFQ) systems and are largely used for dealer-to-client business, whereas ATS almost exclusively execute interdealer business.

Figure 2.8 – Monthly turnover and outstanding value in European repo on Tradeweb



Source: Tradeweb

While tri-party repo contracted overall, there was continued strong growth in the second-half of 2022 in **GC financing**, which is a part of the tri-party market but differs from most tri-party repo in that it is a highly-standardised product.⁵ The GC financing facility at Eurex, GC Pooling, which is the principal such facility in Europe, is also largely interbank. It may be that repos against standardized (and high-quality) collateral baskets proved particularly useful for banks seeking to manage their liquidity in an environment of interest rate uncertainty.

The outstanding value of GC financing jumped by 75% to EUR 146.5 billion from EUR 84.0 billion in June and its share of tri-party repo market, as reported separately by the principal agents, rose to a record 24.2% from 12.3% in June, while GC financing's share of electronic business, as reported directly by ATS, grew to 5.5% from 3.1%. However, as a percentage of the survey sample, the share of GC financing remained at 0.8%, which suggests that some of its bigger share of the tri-party repo market was the result of the contraction of that market. It is also likely that the unchanged survey share of GC Pooling reflects differences between the membership of GC Pooling and the composition of the survey sample. LCH SA's GC financing product, €GCPlus, fell from a peak of almost EUR 35 billion in outstanding nominal value in June to just under EUR 5 billion in December.

Geographical analysis (Q1.1)

Table 2.4 – Geographical analysis

	December 2022		June 2022		December 2021	
	share	users	share	users	share	users
domestic	22.0%		22.8%		25.9%	
cross-border to (other) eurozone	19.5%		18.7%		19.7%	
cross-border to (other) non-eurozone	40.4%		41.1%		38.4%	
anonymous	18.1%	43	17.4%	40	16.0%	44

⁵ GC financing repos are transactions cleared on CCPs and managed by tri-party agents. The largest GC financing facility in Europe is Eurex's GC Pooling service but facilities are also provided by LCH SA's €GCPlus and LCH Ltd's TermLGC.

Figure 2.9 - Geographical analysis

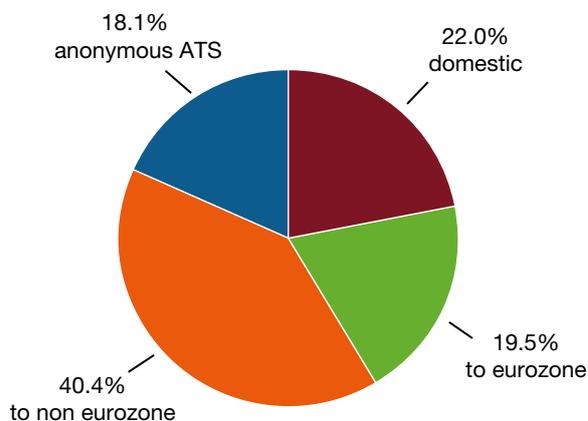
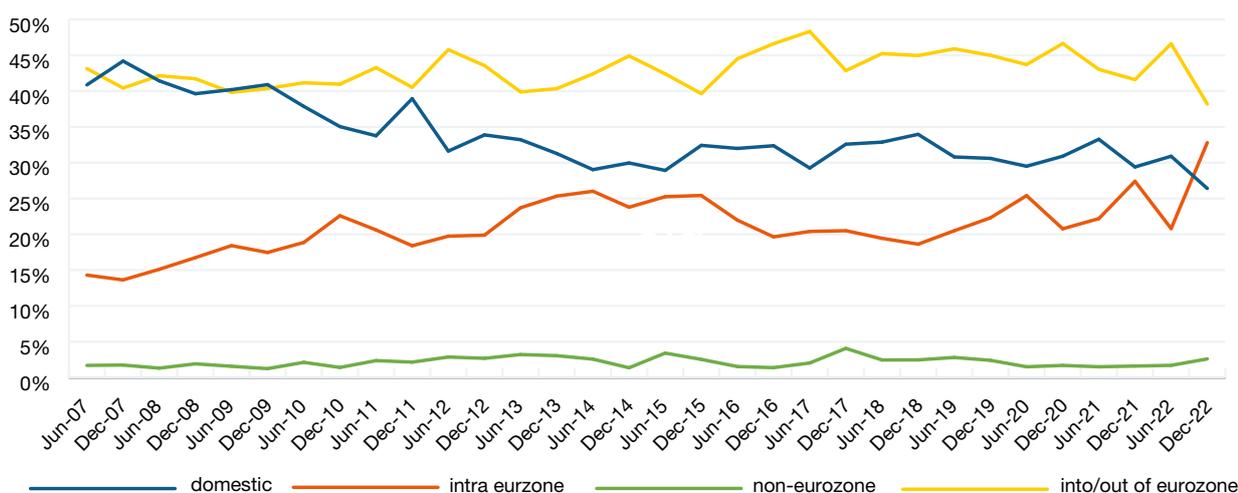


Table 2.5 – Geographical comparisons in December 2022 (June 2022)

	main survey	ATS	tri-party
domestic	22.0% (22.8%)	26.4% (27.2%)	34.4% (34.4%)
cross-border	59.9% (59.8%)	73.6% (71.3%)	65.6% (65.6%)
anonymous	18.1% (17.4%)		

The share of **domestic repo** business in the survey extended its recent downward trend. Domestic activity also fell back slightly in ATS repo but was unchanged in tri-party repo. The counterparts to the decline in the share of domestic repo in the survey were increases in the share of repos traded **cross-border business into and out of the eurozone** and **anonymous** (CCP-cleared) transactions.

Figure 2.10 – Outstanding value of ATS business by location of counterparties

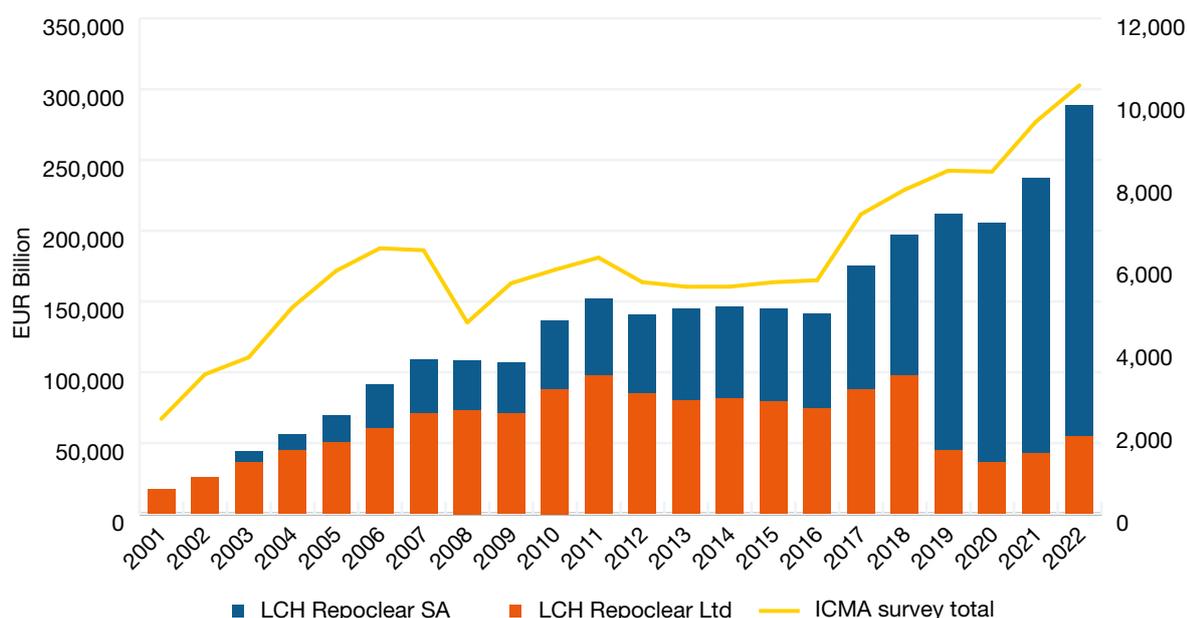


Clearing and settlement analysis (Q1.2 and Q1.8)

Anonymous (CCP-cleared) repo trading added to the gains it made in the first-half of 2022, consolidating the reversal of the downward trend followed since June 2016. Indeed, growth in the value of anonymous trades by the survey sample (excluding GC financing) accelerated to 11.5% to reach EUR 1,713.9 billion. CCP-cleared repo (as reported separately by the principal ATS in Europe) accounted for 94.8% of ATS business, down from 99.1% in June. This was largely as a result of increased uncleared domestic Italian repo on MTS.

Annual turnover in terms of the nominal value of cleared collateral reported by LCH RepoClear, the largest repo CCP in Europe, showed rapid but slightly decelerating growth.

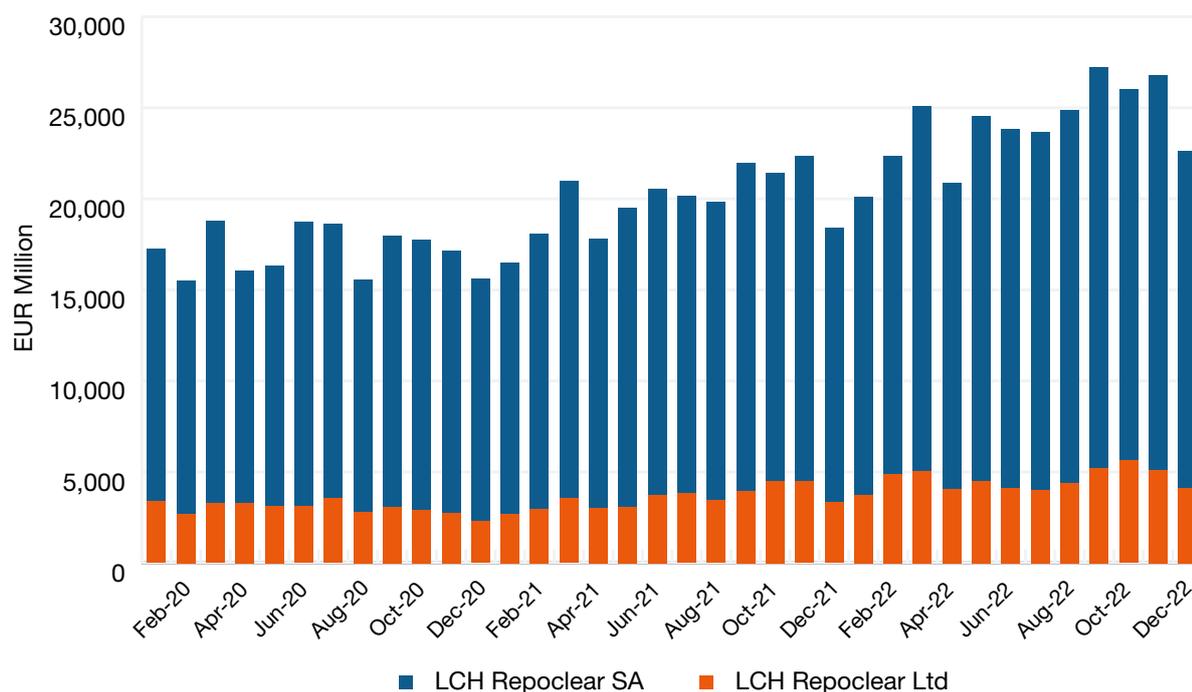
Figure 2.11 – Annual cleared nominal turnover on LCH RepoClear (EUR billion, double-counted)



The deceleration in the growth of CCP-clearing is evident in the monthly turnover in nominal value of cleared repos reported by LCH which shows growth of 10.1% over the second-half of 2022 compared with 10.6% in the first-half. But this slightly slower rate of expansion compares with growth in the survey sample of 7.2%, which seems to have carried the share of anonymous (CCP-cleared) trading by the survey sample to 18.1% of the survey from 17.4% in June (see Table 2.5 above).

Turnover on RepoClear reached a new peak in September, during the market turmoil triggered by the UK mini-budget. Turnover remained elevated until the seasonal fall in December.

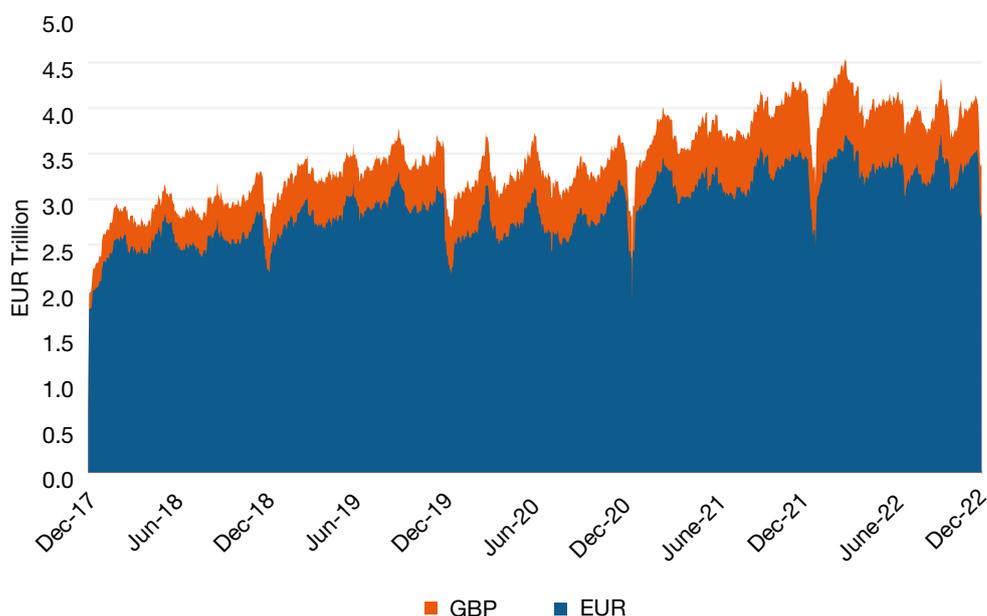
Figure 2.12 – Monthly cleared nominal turnover on LCH RepoClear in 2020-22 (EUR billion, double-counted)



Source: LCH

A less bullish picture of CCP-clearing is painted by Figure 2.13, which shows the outstanding nominal value of repos cleared by LCH. After surging to a record high in early March 2022, outstanding value fluctuated at lower levels over the rest of 2022, albeit with futures-related peaks in June, September and early December. If a comparison is made between survey dates in order to avoid the impact of the usual end-year drop in activity, the average daily outstanding nominal value of cleared repos at LCH SA grew by 0.9% and that of LCH Ltd fell by 14.2%. The latter reflects the aftermath of the UK mini-budget in September.

Figure 2.13 – Daily outstanding nominal value of cleared repos on LCH RepoClear 2018- 2022 (EUR trillion, double-counted: calculated using same methodology as ICMA survey)



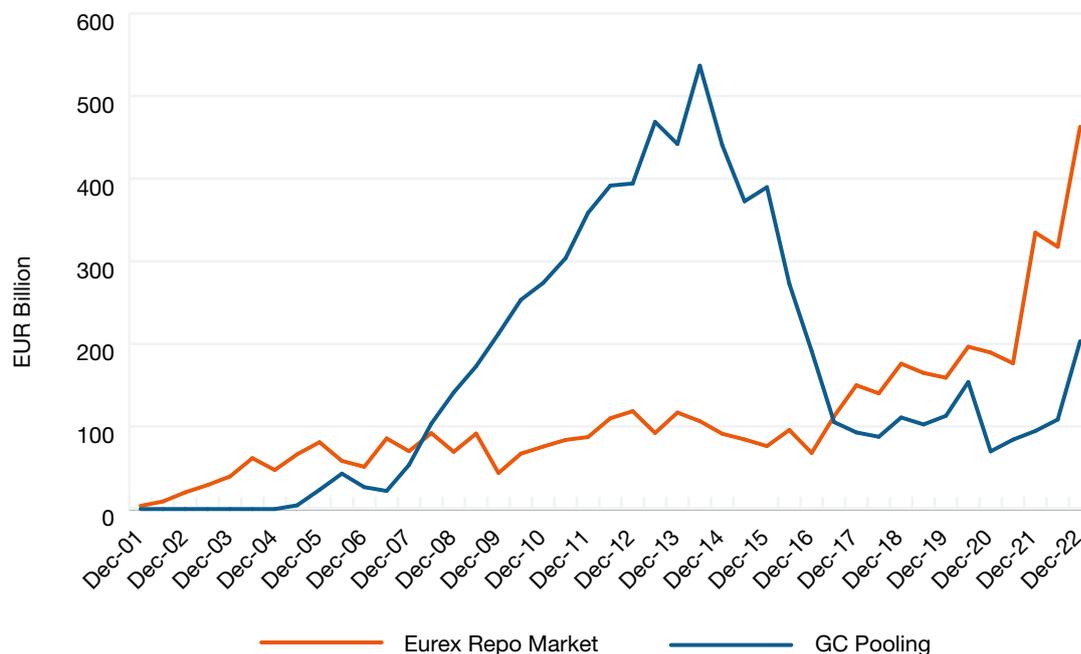
Source: LCH

On Eurex Repo and GC Pooling, growth in the outstanding value of business accelerated in the second-half of 2022. On the basis of data compiled using the methodology of the ICMA survey, the outstanding value of business on Eurex Repo fell back in the first-half to EUR 317.6 billion in June and then grew by 45.7% to EUR 462.8 billion in December. On the same basis, GC Pooling surged by 87.4% to a six-year peak of EUR 203.2 billion in from EUR 108.4 billion in June.

In Eurex Repo, the growth in outstanding value was continuous from August through the end of the year, whereas the growth in term-adjusted turnover was reversed by the sharp seasonal fall in December. In contrast, the outstanding value of GC Pooling was concentrated in December, while turnover fluctuated around the average across the whole semester. However, both these different patterns of behaviour are consistent with reports of the average of term of new business on both platforms jumping in December in anticipation of higher interest rates and end-year market illiquidity.

Comparing the outstanding values of Eurex Repo and GC Pooling illustrates the different impact on the trading of GC and specific/special euro repo of quantitative easing by the ECB from 2015 and the recent transition to quantitative tightening and higher interest rates. Thus, Eurex Repo, which trades both GC and specific/special collateral, started to gain ground after 2016 as quantitative easing resulted in collateral scarcity. GC Pooling, on the other hand, was crushed by quantitative easing, temporarily revived by the “dash for cash” during the Covid-related market turmoil and is now being sustained by the draining of central bank liquidity and position-taking in anticipation of interest rate hikes.

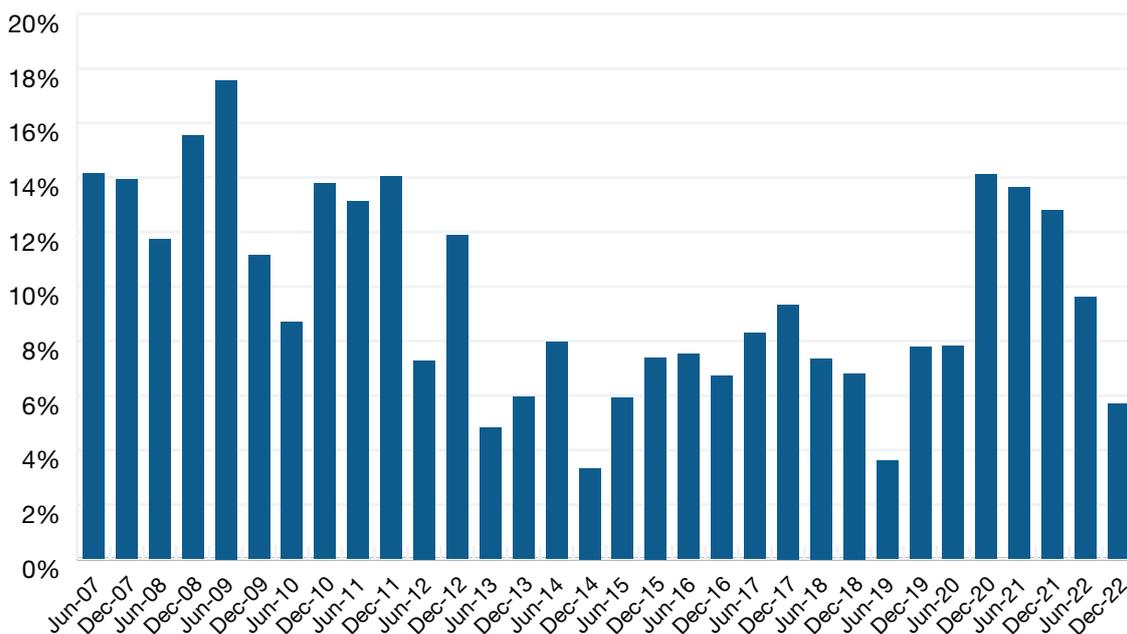
Figure 2.14 – Outstanding value of Eurex Repo and GC Pooling on survey dates (EUR billion, double-counted, calculated using same methodology as ICMA survey)



Source: Eurex Repo

While the bulk of CCP-clearing is of repos transacted on ATS, a declining but still significant proportion continues to be transacted directly between parties and then registered with a CCP. Post-trade clearing, which peaked at 14.1% in December 2020, touched 5.7% in the latest survey (the record high was 17.6% in June 2009 and the record low was 3.6% in June 2019).

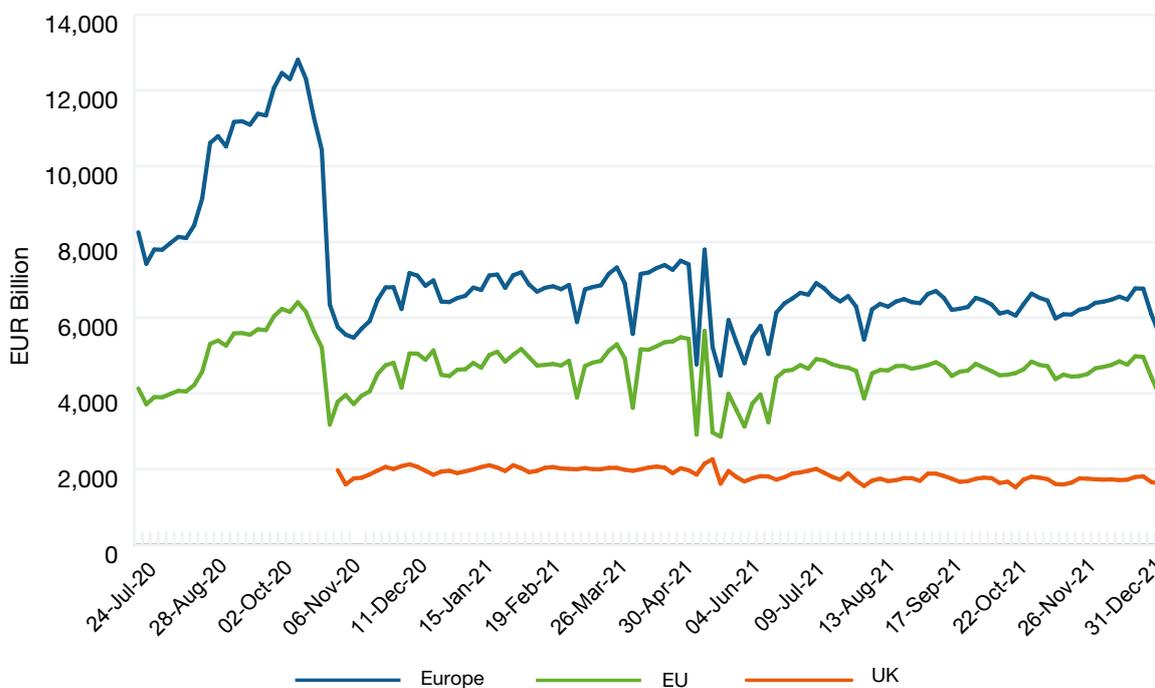
Figure 2.15 – Post-trade CCP-clearing



Source: LCH

The value of outstanding CCP-cleared repo reported under SFTR was less volatile in 2022 and, in contrast to data published by the CCPs, it was lower. The share of CCP-clearing in SFTR data for the EU (down to 38.7% from 44.5% in 2021) continued to converge on the reported share in the survey (23.8%). The share in the UK has fallen below the survey share (18.9% from 24.4%). The lower proportion of CCP-cleared repos in the UK accords with anecdotal evidence and is consistent with the greater importance of OTC trading in the UK market.

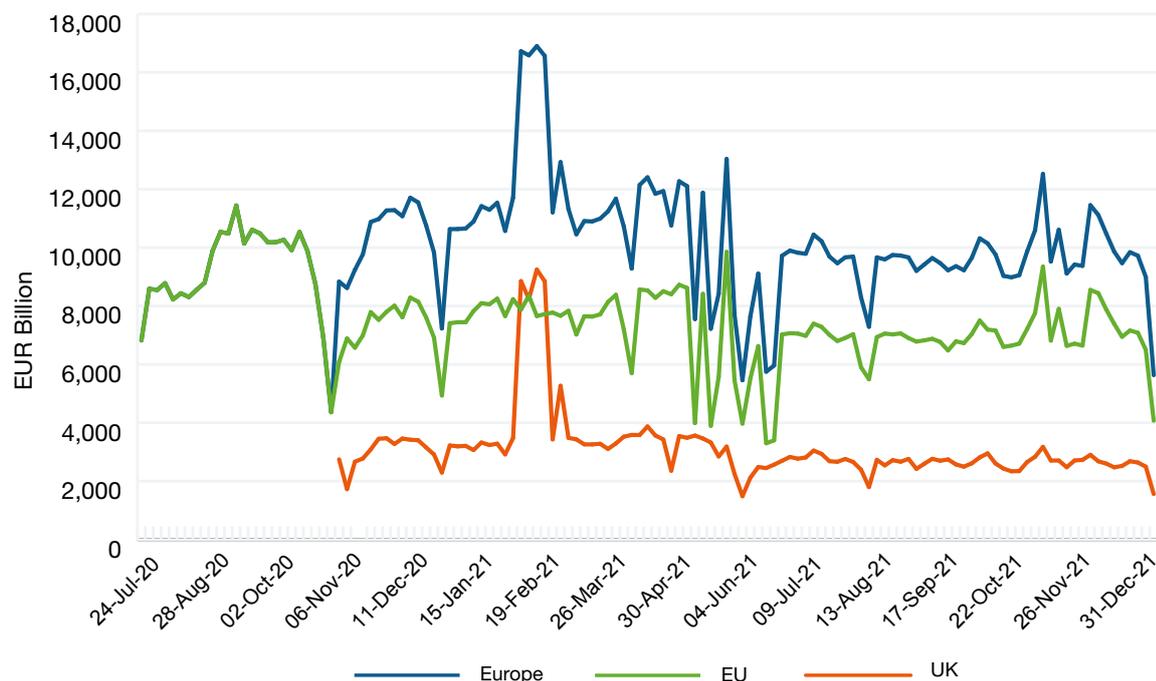
Figure 2.16 – Outstanding CCP-cleared repos reported under SFTR (EUR trillion)



Source: DTCC, Regis-TR, Unavista

The share of CCP-cleared repo in turnover reported under SFTR was also lower in the second-half of 2022, in contrast to data published by the CCPs, although much higher than the share of the CCP-cleared repo in the value of outstanding transactions in both the EU (60.4% compared with 66.1% in 2021) and in the UK (29.3% compared with 39.5% in 2021). However, the share of CCP-clearing in SFTR data is still being exaggerated by the duplication of the reporting of CCP-cleared repo.

Figure 2.17 - New CCP-cleared repos reported under SFTR (EUR trillion)



Source: DTCC, Regis-TR, Unavista

Cash currency analysis (Q1.3 and Q1.4)

Table 2.6 – Cash currency analysis

	December 2022	June 2022	December 2021
EUR	56.4%	54.7%	56.8%
GBP	14.8%	15.6%	15.7%
USD	19.4%	20.3%	19.1%
DKK, SEK	1.2%	1.3%	1.5%
JPY	5.6%	5.7%	4.7%
CHF	0.2%	0.0%	0.1%
other APAC	1.3%	1.1%	0.9%
other currencies	1.1%	1.4%	1.2%
cross-currency	2.1%	1.8%	1.9%

The share of the euro in the survey bounced back in December 2022, especially in tri-party repo (to 49.3% from 43.5% among all tri-party agents and to 61.8% from 52.9% at the ICSDs). The euro fell back in ATS trading but only because the return of SIX to the survey boosted the share of Swiss francs (to 3.2% from zero).

Figure 2.18 – Currency analysis

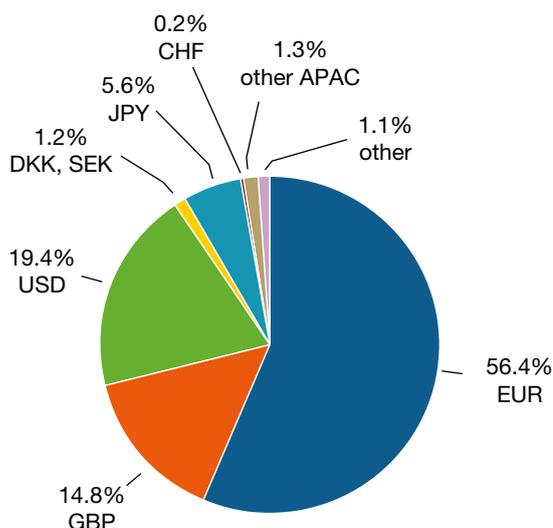


Table 2.7 – Currency comparison in December 2022 (June 2022)

	main survey	ATS	tri-party
EUR	56.4% (54.7%)	88.0% (90.0%)	61.8% (52.9%)
GBP	14.8% (15.6%)	7.8% (9.2%)	5.1% (9.8%)
USD	19.4% (20.3%)	1.0% (0.7%)	29.0% (34.4%)
DKK, SEK	1.2% (1.3%)	0.0% (0.0%)	0.7% (0.4%)
JPY	5.6% (5.7%)	0.0% (0.0%)	2.3% (1.3%)
CHF	0.2% (0.0%)	3.2% (0.0%)	0.0% (0.5%)
other APAC	1.3% (1.1%)	0.0% (0.0%)	0.2% (0.2%)
etc	1.1% (1.4%)	0.0% (0.0%)	1.1% (0.2%)
cross-currency	2.1% (1.8%)		7.8% (12.7%)

Collateral analysis (Q1.9)

The combined share of European (EU plus UK) collateral in the form of government securities fell back slightly to 91.0% of the survey from 91.5%.

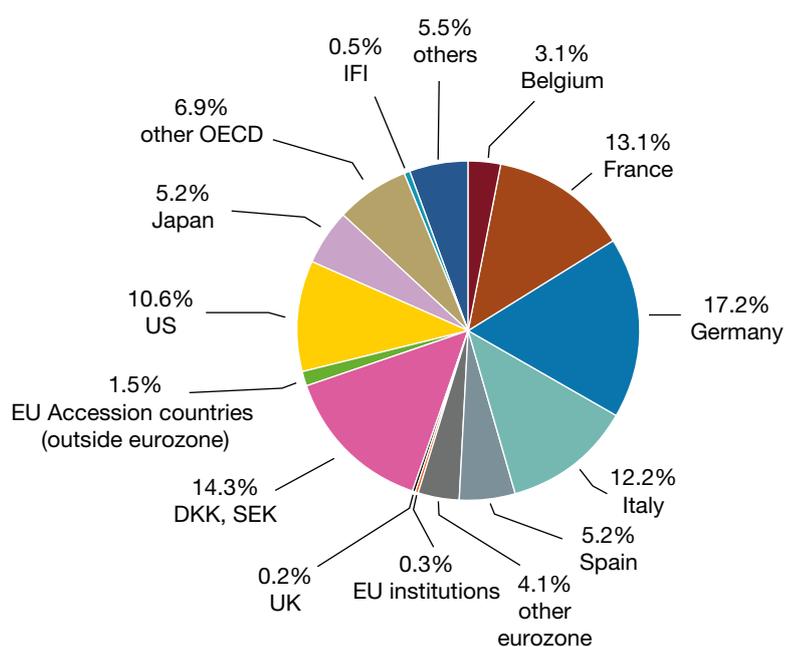
There was an increase in the value of most nationalities of security posted as collateral over the second-half of 2022 but particularly of German, French, Italian and Spanish government securities. In terms of market share, there was a significant shift into German securities and out of UK and US Treasuries. Particularly strong demand for German (and to a lesser extent French) government securities that were trading special, in order to cover short positions against futures contracts and as safe-haven assets, seem to have been triggered by the ECB rate increase in September. Liquidity in German government securities was boosted in November by the re-opening by the German debt management agency of 18 issues with a total nominal value of EUR 54 billion, in part, to relieve collateral shortages. It is possible that the reduced share of UK Treasuries may have reflected the sell-off during the market turmoil triggered by the mini-budget in September. Ironically, the sell-off was in part the result of regulatory and other constraints on the capacity of the repo market to intermediate such surges in business, a problem which regularly manifests itself at quarter and year-end.

The survey share of securities issued by EU institutions being used as repo collateral continued to be negligible.

Table 2.8 – Collateral analysis

	December 2022	June 2022	December 2021
Germany	17.2%	15.6%	15.8%
Italy	12.2%	12.0%	11.9%
France	13.1%	13.3%	13.7%
Belgium	3.1%	3.0%	3.3%
Spain	5.2%	5.1%	5.9%
other eurozone	4.1%	4.4%	4.6%
DKK, SEK	1.5%	1.5%	1.7%
former EU Accession	0.3%	0.3%	0.4%
EU institutions	0.2%	0.1%	0.3%
UK	14.3%	15.3%	15.4%
international institutions	0.5%	0.5%	0.4%
US Treasuries	8.4%	9.4%	10.9%
other US	2.2%	2.2%	2.2%
Japan government	3.9%	4.0%	3.9%
other Japan	1.3%	1.3%	1.1%
other OECD ex APAC	6.2%	6.6%	3.4%
other APAC OECD	0.8%	0.2%	0.3%
eurobonds	1.6%	1.5%	1.5%
other fixed income	3.6%	3.1%	3.0%
equity	0.3%	0.5%	0.4%

Figure 2.19 – Collateral analysis (main survey)



In ATS, there was a strong growth in the share of French government securities (to 14.7% from 12.1%) and, to a lesser extent, German government securities (which reached 15.8% from 15.6%). These gains were largely at the expense of the shares of UK Treasuries and Italian government securities (which fell to 9.4% and 43.5%, respectively, from a revised 10.5% and from 44.5%)

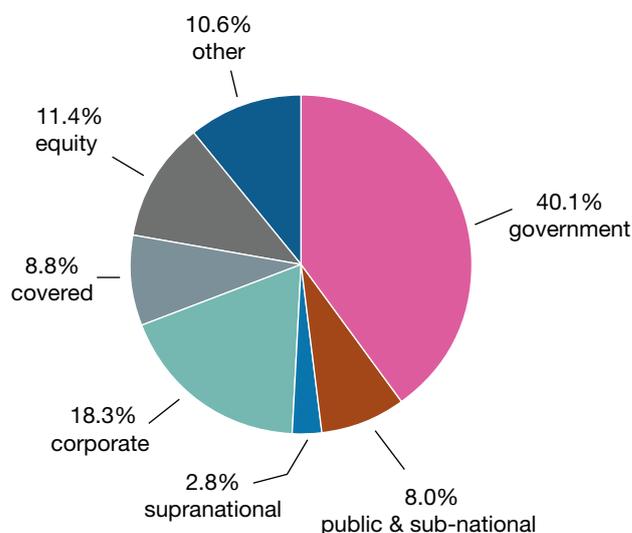
The survey sample continued to be a large net lender of government securities from Belgium (0.3% from 0.5% in June), Germany (3.3% from 2.2%) and Spain (1.1% from 0.6%) as well as US Treasuries (1.3% from 3.3%) and “other OECD” securities (1.2% from 1.0%). The sample remained a significant net borrower of government securities issued in France (1.6% from 1.2%), Italy (2.2% from 2.5%) and the UK (1.9% from 2.6%) and of JGBs (1.7% from 0.9%) and non-government US securities (0.6% from 0.4%).

The share of government securities used as collateral in tri-party repo managed by the ICSDs retreated further and significantly, to 40.1% from 44.4% in June. This was mainly due to the reduced allocation of UK Treasuries (to 7.8% from 12.9%) as well as falls in the use of French and German government securities (to 4.9% and 3.4%, respectively, from 7.2% and 4.4%) and further increases in the allocation of European eurobonds (to 16.8% from 16.0%). European Eurobonds became the largest component of the tri-party collateral pool, although UK gilts remained the largest from a single issuer. On the other hand, there was a recovery in the allocation of JGBs and US Treasuries (to 6.1% and 3.6%, respectively, from 4.7% and 3.0%). The share of securities issued by EU institutions being used as repo collateral in tri-party repo (as reported separately by the agents) was little changed at 4.7% compared with 5.1% in June.

Table 2.9 – Tri-party repo collateral analysed by type of asset

	December 2022	June 2022	December 2021
government securities	40.1%	44.4%	48.7%
public agencies / sub-national governments	8.0%	8.0%	8.2%
supranational agencies	2.8%	3.7%	4.2%
corporate bonds	18.3%	15.7%	10.6%
covered bonds	8.8%	8.3%	6.4%
residential mortgage-backed	1.3%	0.9%	1.0%
commercial mortgage-backed	0.4%	0.3%	0.3%
other asset-backed	1.6%	1.3%	1.4%
CDO, CLN, CLO, etc	1.5%	1.5%	1.1%
convertible bonds	3.2%	2.7%	2.9%
equity	11.4%	10.4%	13.1%
other	2.6%	2.7%	2.0%

Figure 2.20 – Collateral analysis (tri-party agents) by type of asset



The value and share of AAA-rated securities continued to recover but the value and share of AA-rated securities fell back. A-rated and unrated securities did not increase in value but did gain share. In the case of unrated securities, this was because the value of allocations was sustained while the overall value of tri-party repo declined. Unrated securities are typically equities. Equity values fluctuated during the second-half of 2022 but increased slightly between survey dates, so the increased value of this collateral would seem to reflect the allocation of a greater number of shares.

Table 2.10 – Tri-party repo collateral analysed by credit rating

	December 2022	June 2022	December 2021
AAA	20.8%	20.0%	18.4%
AA	24.6%	29.2%	27.5%
A	12.3%	10.8%	12.8%
BBB	13.2%	13.3%	13.4%
below BBB-	9.4%	9.2%	10.1%
A1/P1	3.2%	3.8%	4.0%
A2/P2	0.3%	0.1%	0.1%
Non-Prime	0.4%	0.0%	0.1%
unrated	15.8%	13.7%	13.8%

Figure 2.21 – Collateral analysis (tri-party agents) by credit rating – changes

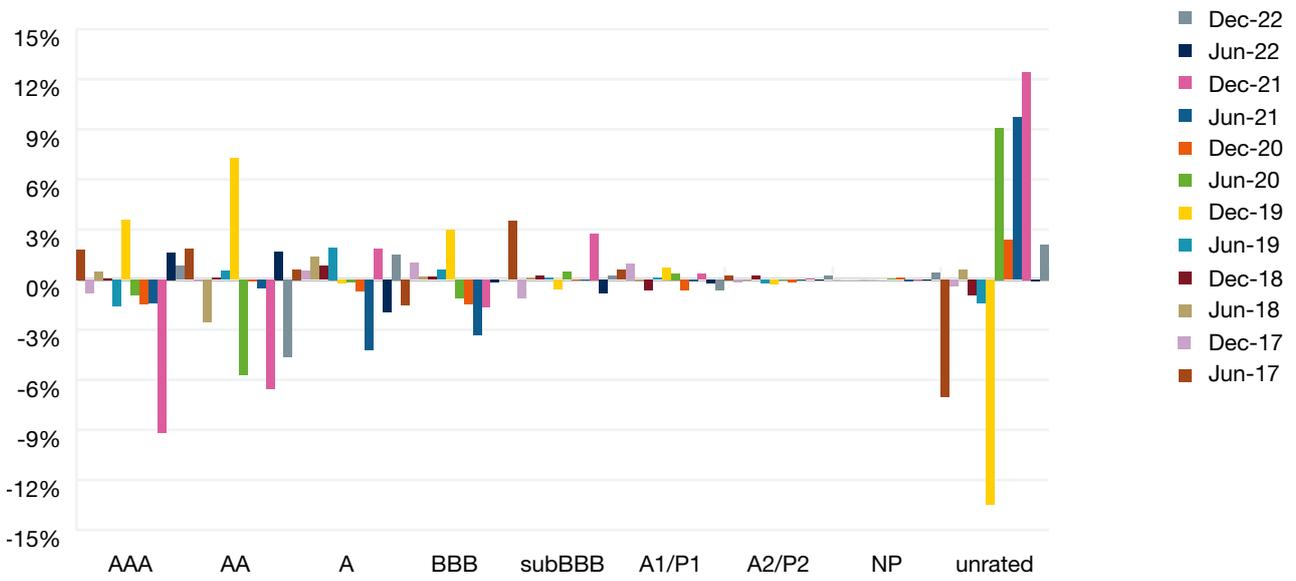


Figure 2.22 – Historic collateral analysis (tri-party agents) by credit rating

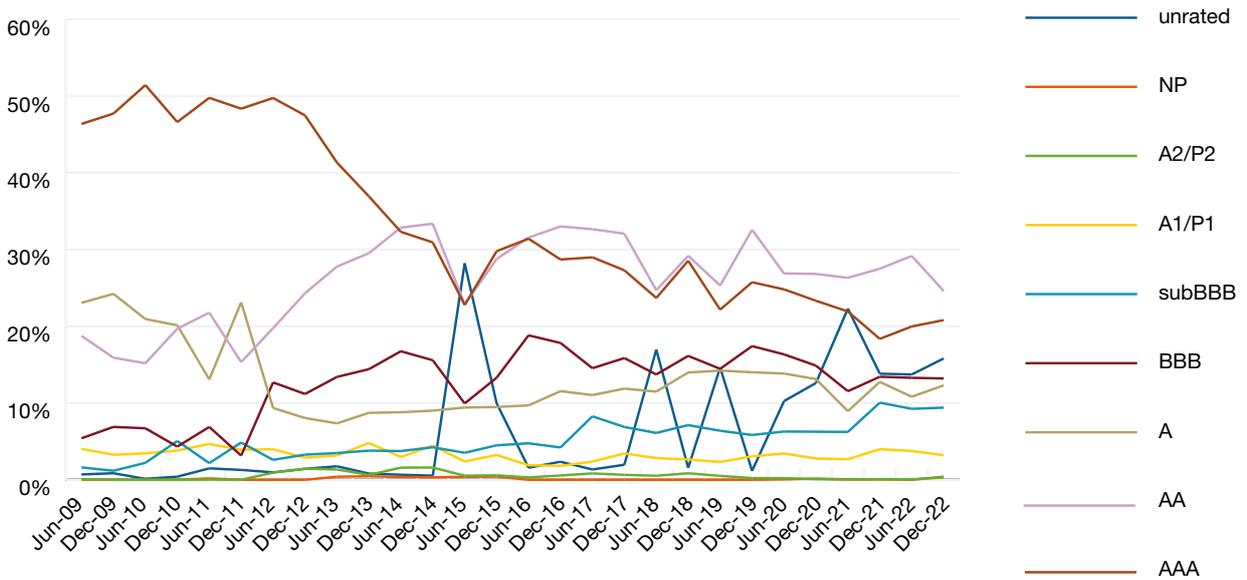
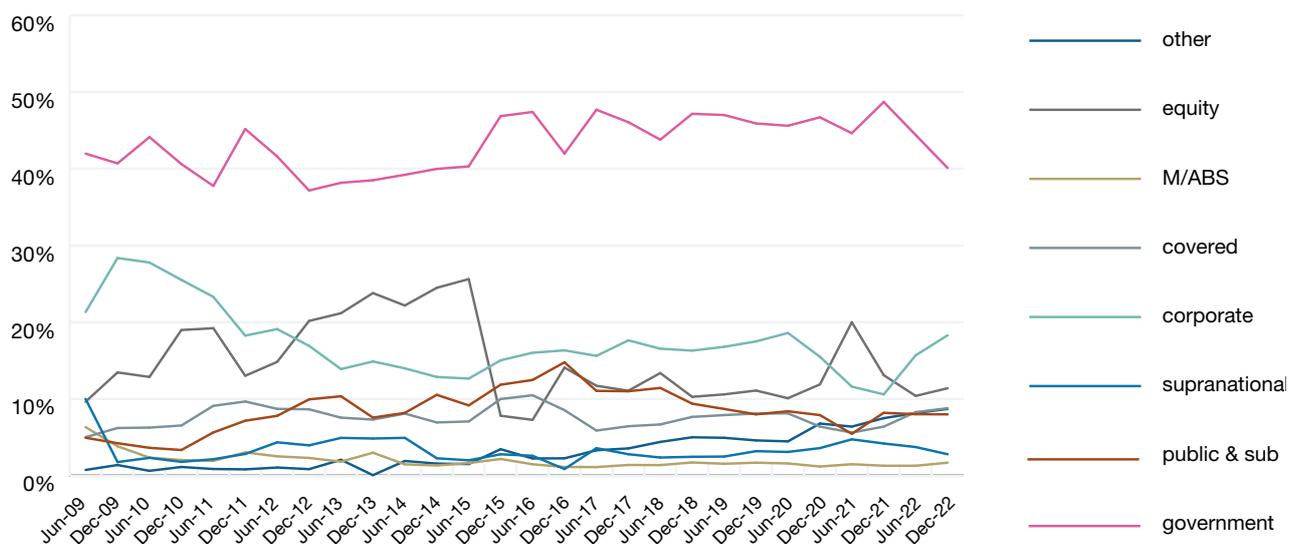


Figure 2.23 – Historic collateral analysis (tri-party agents) by type of asset



The weighted average haircuts on most types of tri-party collateral widened significantly, likely in response to the increased volatility of collateral prices arising from market uncertainty and disruption. The exceptions were MBS and ABS. The narrowing of haircuts on these assets could reflect a switch to higher-quality issues but may not be meaningful given the small amounts of such collateral (3.3%).

Table 2.11 – Tri-party repo collateral weighted-average haircuts analysed by type of asset

	December 2022	June 2022	December 2021
government securities	3.3%	1.8%	2.5%
public agencies / sub-national governments	3.5%	3.0%	2.7%
supranational agencies	2.9%	2.4%	1.8%
corporate bonds (financial)	6.3%	3.7%	3.3%
corporate bonds (non-financial)	7.0%	4.9%	3.1%
covered bonds	2.8%	1.3%	1.0%
residential mortgage-backed	2.5%	2.6%	1.7%
commercial mortgage-backed	2.2%	3.4%	1.3%
other asset-backed	5.7%	6.4%	4.1%
CDO, CLN, CLO, etc	5.2%	4.0%	2.5%
convertible bonds	8.8%	7.5%	2.8%
equity	7.2%	6.7%	1.7%
other	4.5%	3.1%	1.5%

Contract analysis (Q1.5)

Figure 2.24 – Contract analysis

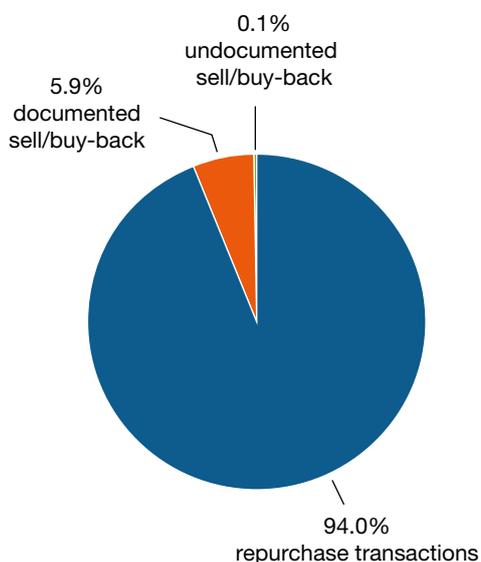


Table 2.12 – Contract comparison in December 2022 (June 2022)

	main survey	ATS	tri-party
repurchase transactions	94.0% (93.2%)	93.1% (92.6%)	100.0% (100.0%)
documented sell/buy-backs	5.9% (6.4%)	6.9% (7.6%)	
undocumented sell/buy-backs	0.1% (0.4%)		

The share of repo master agreements in place among survey participants that were ICMA Global Master Repurchase Agreements (GMRA) fell back to 82.9% from a record 92.0% in June.

Repo rate analysis (Q1.6)

There were further increases in the shares of floating-rate repos in the survey and in trading on ATS, as would be expected in an environment of rising rates. The share in the survey increased to 12.9% from a low of 9.0% in December 2019 (having fallen from a high of 20.1% in June 2018). The share of floating-rate transactions in tri-party repo plunged but this change should be treated with caution. It may be due to a reclassification by an agent. It also needs to be remembered that many fixed-rate tri-party repos are open-ended, which means they can be and often are changed (re-rated) by agreement between the parties. In practice, therefore, the difference with floating-rate repo is much less than it appears.

Figure 2.25 – Repo rate analysis

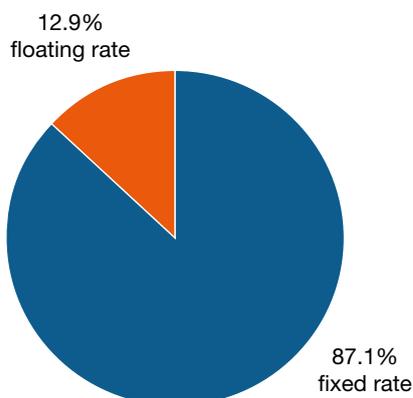


Table 2.13 – Repo rate comparison in December 2022 (June 2022)

	main survey	ATS	tri-party
fixed rate	87.1% (88.0%)	97.1% (97.7%)	96.4% (76.5%)
floating rate	12.9% (12.0%)	2.9% (2.3%)	3.6% (23.5%)

Maturity analysis (Q1.7)

The survey exhibited the usual mid-year seasonality with a relapse in the share of short-dated repos (one month or less remaining to maturity). Short-dates typically shrink at end-year as cash borrowers seek term funding into the new year. They recover by mid-year. In December 2022, the shift out of short-dated repo was equivalent to 6.6 percentage points of the survey total.

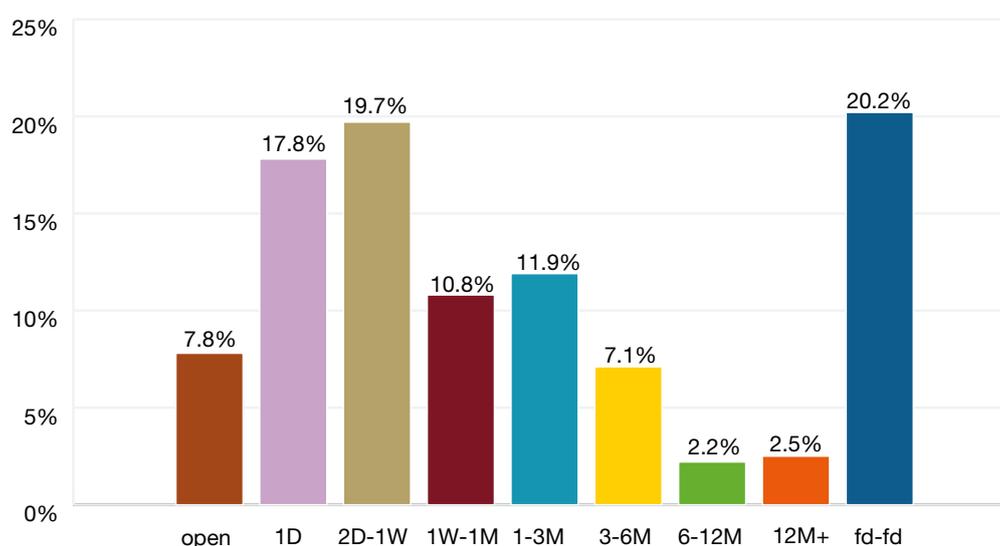
There was a further and substantial increase in forward repo to a record share of 20.2%.⁶ True forwards are used to lock in the future supply of or demand for cash or collateral or to hedge against or take interest rate risk by locking in the cost of borrowing or lending cash at a future date. However, at least some of the forward repos reported in the survey are not true forwards but the result of parties breaking up term trades into consecutive contracts in order to reduce the balance sheet impact of term trades. And in some cases, long-term transactions will be broken up into two successive shorter-term transactions, the first maturing on a date just after the new year in order to minimize the balance sheet impact at year-end and the second, into which the first one automatically rolls, pushing the final maturity beyond the netting dates in order to avoid an overconcentration of maturities. There may also be technical inflation of the value of forward repo in that the lending of specific securities is often agreed for “corporate value dates”, which means the transaction date plus three business days (T+3). Such transactions fall into the survey definition of forward repo.

⁶ Forward repo are transactions in which the initial exchange of cash and collateral takes place more than two days in the future and usually weeks or months later.

Table 2.14 – Maturity analysis

	December 2022	June 2022	December 2021
open	7.8%	8.2%	6.3%
1 day	17.8%	17.3%	16.8%
2 days to 1 week	19.7%	22.8%	18.8%
1 week to 1 month	10.8%	14.8%	13.8%
>1 month to 3 months	11.9%	9.5%	16.9%
>3 months to 6 months	7.1%	7.4%	8.0%
>6 months to 12 months	2.2%	2.4%	3.2%
>12 months	2.5%	2.2%	2.5%
forward-start	20.2%	15.3%	13.6%

Figure 2.26 – Maturity analysis (main survey)



Reflecting the seasonal shift back towards longer dates, the weighted average term-to-maturity of outstanding repos lengthened to 31-70 days from 28-64 days in June, so not as extended as in December 2021 (34-77 days).⁷

One to six-month repos continued to be highly seasonal, increasing share in December and falling back in June, reflecting the shift into longer-dated repos over the end-year.

⁷ The lower end of the range assumes that all transactions have the minimum term in each maturity band; the upper end assumes the maximum and a term of 31 days for open repo.

Figure 2.27 – Maturity analysis: short dates, longer terms & forwards (main survey)

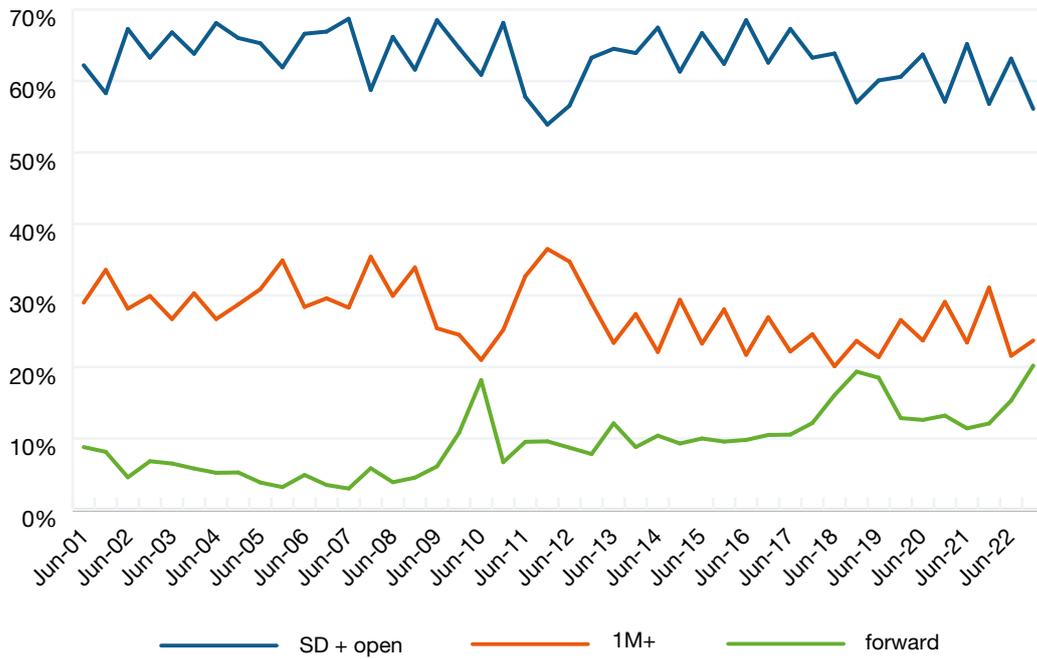
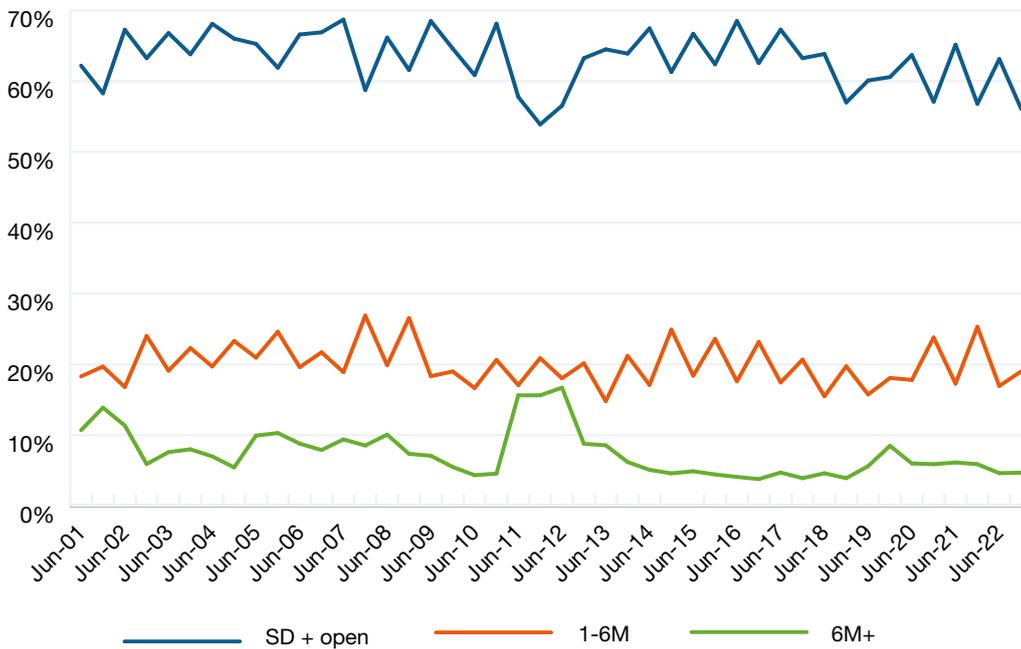
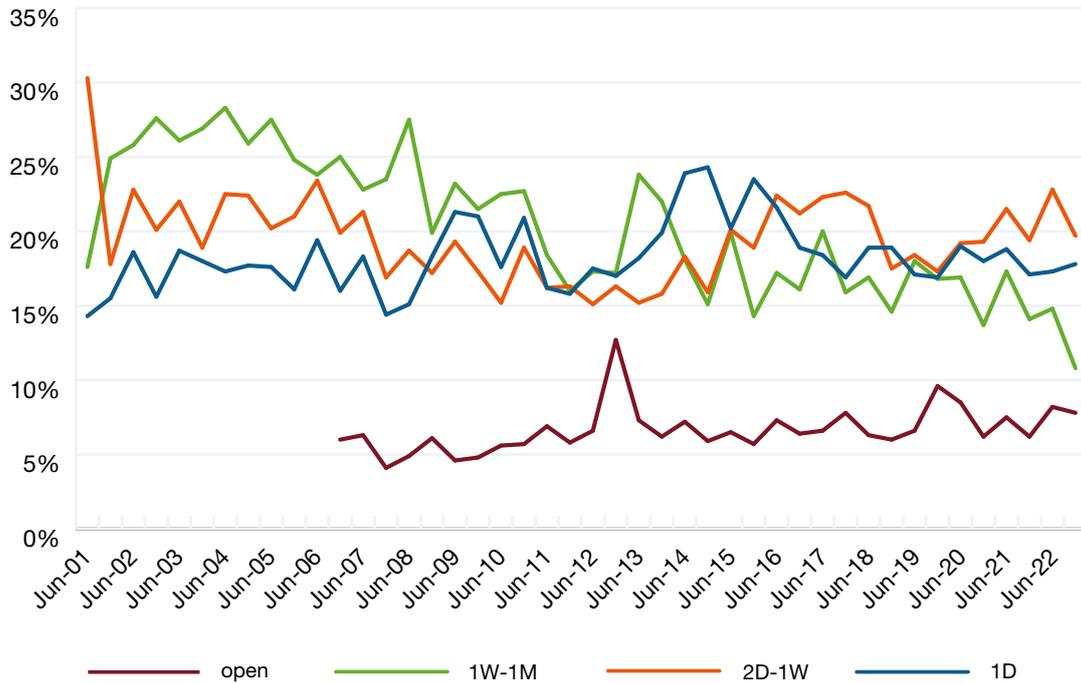


Figure 2.28 – Maturity analysis: non-forward terms (main survey)



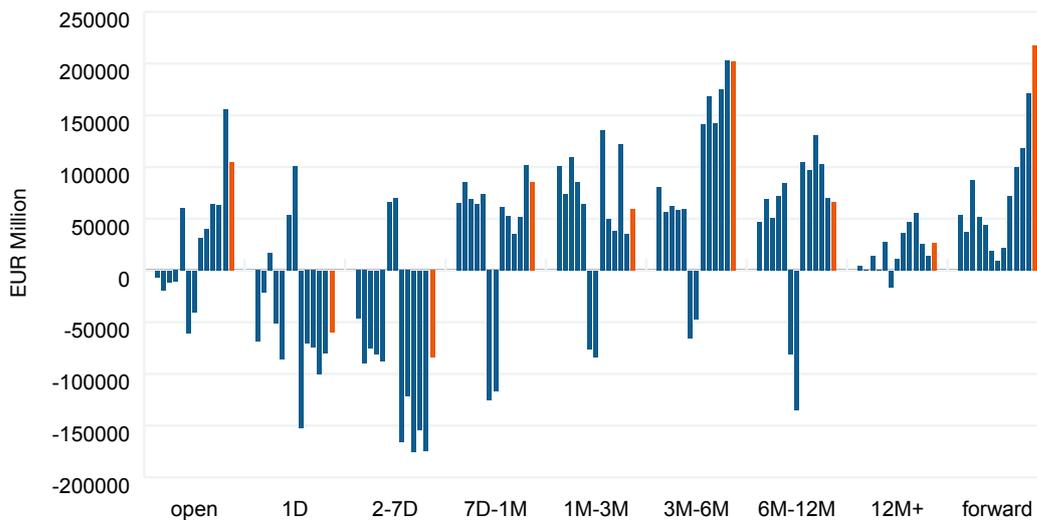
The share of repos with between one week and one month remaining to maturity continued its secular decline to an all-time low of 10.8%.

Figure 2.29 – Maturity analysis: breakdown of short dates plus open (main survey)



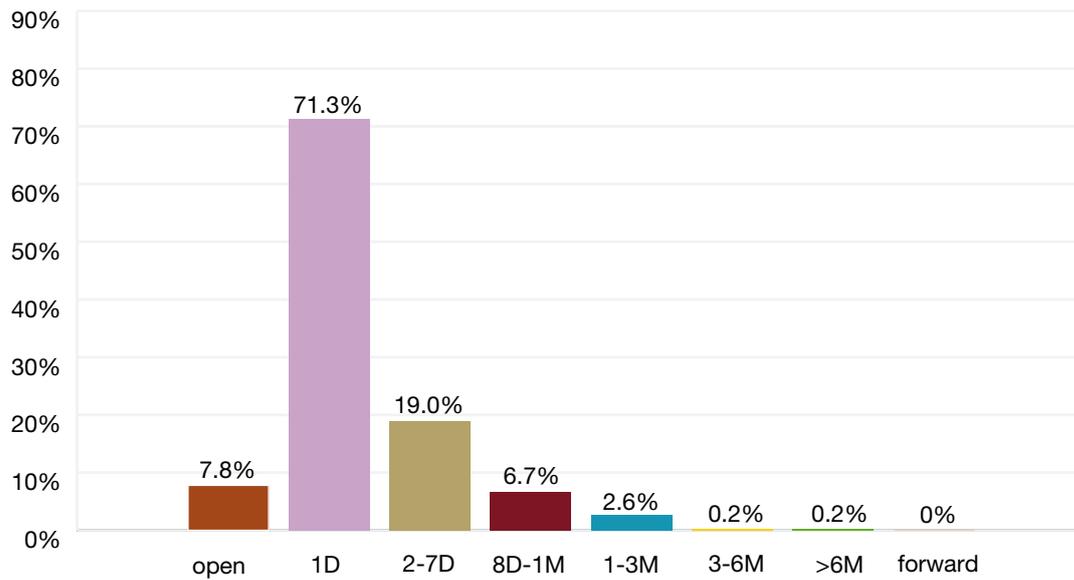
The survey sample continued to run a negative funding gap (borrowing short-term and lending longer-term). Net borrowing remained strongly seasonal between two and seven days, whereas net lending was highly cyclical between one and three months. Structurally, repos with a remaining term between three and six months, open repos and forward repos have increasingly become the main channels for the net lending of cash and borrowing of securities.

Figure 2.30 – Maturity analysis: maturity transformation profile – net reverse repo (main survey)



ATS repo continued to be contrarian over the second-half of the year by shifting back into short-dates, although not to any great extent (to 97.7% from 97.3%).

Figure 2.31 – Maturity analysis (ATS)



Tri-party agents reported a shift into repos with remaining terms to maturity of 1-week to 3-months and into open positions.

Figure 2.32 – Maturity analysis (tri-party agents)

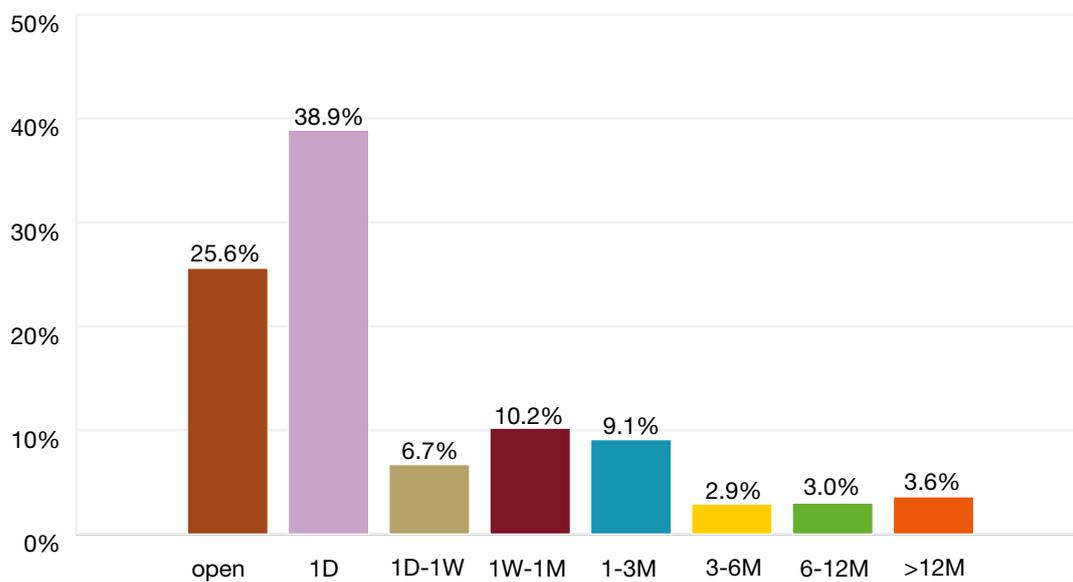


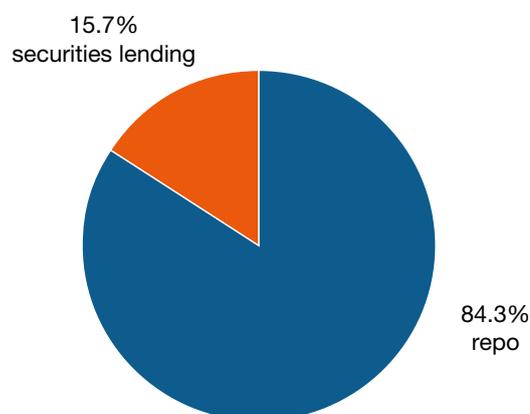
Table 2.15 – Maturity comparison in December 2022 (June 2020)

	main survey	ATS	tri-party
open	8.2% (6.3%)	n/a	49.8% (45.6%)
1 day	17.3% (16.8%)	85.1% (86.3%)	14.7% (16.7%)
2 days to 1 week	22.8% (18.8%)	9.5% (9.4%)	6.7% (6.8%)
1 week to 1 month	14.8% (13.8%)	3.0% (1.7%)	10.2% (9.0%)
>1 month to 3 months	9.5% (16.9%)	2.0% (2.0%)	9.1% (8.5%)
>3 months to 6 months	7.4% (8.0%)	0.2% (0.5%)	2.9% (6.2%)
>6 months to 12 months	2.4% (3.2%)	0.1% (0.2%)	3.0% (3.4%)
>12 months	2.2% (2.5%)	0.0% (0.0%)	3.6% (3.5%)
forward-start	15.3% (13.6%)	0.0% (0.0%)	

Product analysis (Q2)

The share of securities lending conducted on repo desks recovered to 15.7% from 15.1% in December, continuing its recent seasonal pattern of fluctuations, albeit more weakly than before. One explanation of this cyclical behaviour is that securities lending against non-cash collateral offers a way for repo desks to reduce the balance sheet impact of trading in specific/specials at end-year, when dealers are seeking to reduce their balance sheets for reporting purposes.

Figure 2.33 – Product analysis



Concentration analysis

The survey became less concentrated in December 2022, with the top 10 institutions giving up share to the rest of the survey sample, as reflected in a decline in the Herfindahl Index to a three-year low. To a significant degree, the reduction in concentration reflected the entry of new participants into the survey.

Table 2.16 – Concentration analysis

	December 2022	June 2022	December 2021
top 10	67.0%	69.1%	65.9%
top 20	86.3%	87.8%	87.0%
top 30	94.4%	95.3%	95.2%
other	5.6%	4.7%	4.8%

The reduction in the concentration of the survey can also be seen in the downwards movement in the Gini coefficient curve in Figure 2.32.

Figure 2.34 – Concentration analysis

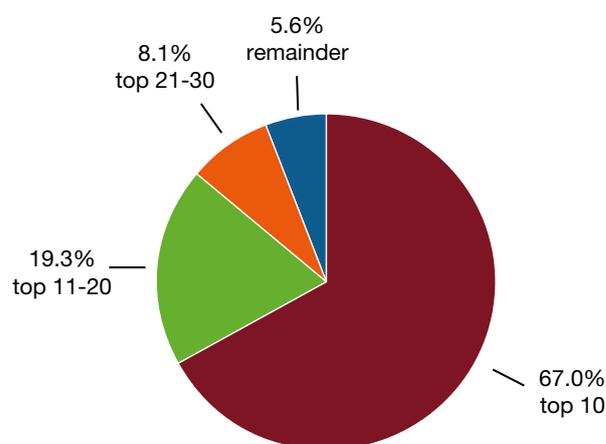


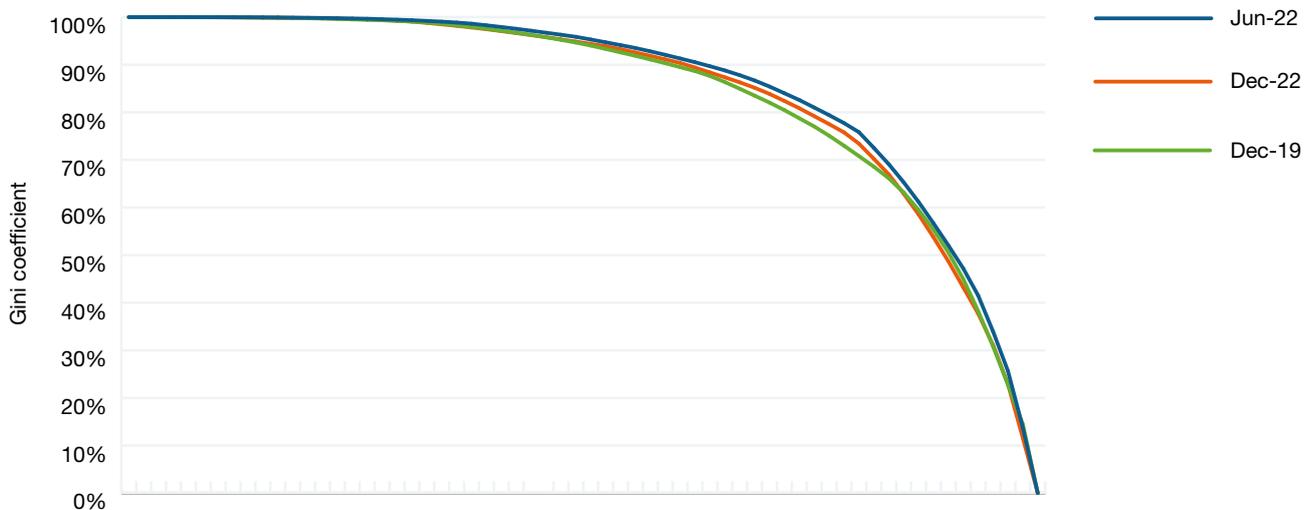
Table 2.17 – Herfindahl Index⁸

	index	numbers in survey
December 2003	0.045	76
June 2004	0.040	81
December 2004	0.047	76
June 2005	0.043	81
December 2005	0.043	80
June 2006	0.042	79
December 2006	0.050	74
June 2007	0.041	76
December 2007	0.040	68
June 2008	0.044	61
December 2008	0.049	61
June 2009	0.051	61
December 2009	0.065	59
June 2010	0.105	57
December 2010	0.064	57

⁸ The Herfindahl Index is the sum of the squares of market shares divided by the square of the sum of market shares. The higher the index, the lower the degree of competition. If the index is higher, the more a single institution has a dominant market share and/or the more insignificant the market shares of all the other survey participants. A market in which several institutions have very large market shares can therefore have a relatively low index.

	index	numbers in survey
June 2011	0.074	58
December 2011	0.065	62
June 2012	0.062	60
December 2012	0.054	69
June 2013	0.046	63
December 2013	0.046	66
June 2014	0.046	64
December 2014	0.043	64
June 2015	0.044	64
December 2015	0.041	70
June 2016	0.050	66
December 2016	0.056	65
June 2017	0.052	64
December 2017	0.049	64
June 2018	0.053	62
December 2018	0.060	59
June 2019	0.054	59
December 2019	0.059	60
June 2020	0.069	61
December 2020	0.062	60
June 2021	0.064	59
December 2021	0.058	56
June 2022	0.060	56
December 2022	0.056	61

Figure 2.35 – Cumulative distribution of market share



Chapter 3: Conclusion

The December 2022 survey shows that the European repo market continued to flourish in the second-half of last year. Fears of severe illiquidity hitting the market at the end of the year, as dealers close their books in order to reduce balance sheets ahead of end-year regulatory reporting and assessment of taxes, did not in fact materialize, despite signs of imbalances emerging as early as August. In the end, problems were avoided by the market (both dealers and customers) making various preparations, central banks and debt management offices taking ameliorative action (including the action by the ECB to defer TLTRO repayments and extra issuance by the German debt agency) and the weakness of the dollar.

Nevertheless, there were signs of a modest deceleration in the growth of the European repo market over the second-half of 2022, although this could be temporary given that quantitative tightening by central banks, and hedging and position-taking in anticipation of further rate hikes, is reviving the GC repo market, while the parallel market for specific and special collateral continues to benefit from persistent scarcity and the background demand for collateral and collateral transformation across the financial markets.

The key developments impacting the survey in the six months since the previous survey were the market turmoil in September and the end-year winding-down of dealers' balance sheets.

The market turmoil, arising from uncertainty over the rate and extent of central bank interest rate increases and the shock of the UK mini-budget, which spilled over from the UK into other markets, occurred against a backdrop of rising activity in the repo market, which was an incongruous combination of cash-driven trading in response to rising and positive interest rates and securities-driven trading in the face of continued collateral scarcity. The market turmoil fueled an exceptional surge in trading as dealers sought to cover short positions against further interest rate increases and against bond futures, and investors sought safe-haven assets. These events helped to boost demand for German and, to a lesser extent, other core eurozone government securities. However, the sell-off of UK gilts by LDI pension funds (which was partly the result of regulatory and other constraints on the intermediary capacity of the repo market and its ability to refinance LDI pension fund holdings) may have sapped subsequent activity in the gilt repo.

The events in September took place at a time of increasing concern about the capacity of dealers to intermediate repo flows at the end of the year. Year-end is a time when dealers typically "window dress" their balance sheets by shrinking them in order to minimize the regulatory and other costs and consequences linked to end-year balance sheet size. In 2022, such concerns manifested themselves as early as the summer and forward prices implied severe market tightness by the year-end.

However, as noted already, the end-year passed smoothly because of anticipatory measures by the authorities and the market. Market preparations included the usual seasonal increase in longer-term repos over the year-end (increasing the survey's average term-to-maturity) but also a record number of forward repos. Some forward repos stretched well beyond the year-end but others were the result of breaking up such long-term repos into an initial repo maturing just after the year-end in order to facilitate netting and a subsequent repo to extend the asset-liability management impact of the two transactions.

Balance sheet concerns may also have been behind the seasonal increase in securities lending from repo desks. Securities loans against non-cash collateral can be used to borrow or lend securities without the balance sheet impact of repos.

One unexpected fall-out from increased market uncertainty and the consequent volatility in the price of securities was a contraction in tri-party repo. This cash-driven sector of the repo market had declined for several years in the face of excess liquidity from central bank but had started to revive as monetary policy

was normalized and positive interest rates pulled cash back into the repo market. However, concern over rate changes and volatile collateral prices stymied this recovery in the second-half of 2022. Collateral price volatility was also reflected in a significant rise in haircuts on almost all types of tri-party repo collateral.

There was one exception to the decline in tri-party repo. This was in some GC financing facilities, which are combinations of CCPs and tri-party collateral management. In contrast to other tri-party repos, GC financing transactions are standardized and interbank. The convenience of standardized products may have become more attractive to banks managing liquidity in an environment of uncertain interest rates.

As expected in an environment of rising interest rates, floating-rate repo continued to grow.

About the Author

This report was compiled by Richard Comotto, who is Senior Consultant to the ICMA's European Repo and Collateral Council. He is also author of the ICMA's 'Guide to Best Practice in the European Repo Market' and its Repo FAQs, Course Director of the ICMA Professional Repo Market and Collateral Management Course and of the ICMA-ISLA GMRA-GMSLA Workshop and author of the ICMA SFTR Task Force's Reporting Recommendations and the ICMA CSDR Cash Penalty Best Practice Recommendations and FAQs. Richard also provides technical assistance on behalf of ICMA, IMF, World Bank, Asian Development Bank and other organizations to developing repo markets around the world.

Appendix A: Survey Guidance Notes

The following extract is based on the Guidance Notes issued to participants in conjunction with the survey that took place on December 7, 2022.

The data required by this survey are: the total value of the repos and reverse repos booked by your repo desk that are still outstanding at close of business on Wednesday, December 7, 2022, and various breakdowns of these amounts, as well as the total value of all repos and reverse repos turned over the six months since the previous survey (which was on June 8, 2022).

Branches of your bank in other countries in Europe may be asked to complete separate returns. If your repo transactions are booked at another branch, please forward the survey form to that branch. If branches of your bank in other countries run their own repo books, please copy the survey form to these branches, so that they can also participate in the survey. Please feel free to copy the survey form to other banks, if you discover that they have not received it directly.

Guidance Notes

General guidance

- a) Please fill in as much of the form as possible. For each question that you answer, you will receive back your ranking in that category.
- b) If your institution does not transact a certain type of repo business, please enter 'N/A' in the relevant fields. On the other hand, if your institution does that type of business but is not providing the data requested by the survey, please do not enter anything into the relevant field. If your institution does that type of business but has no transactions outstanding, please enter zero into the relevant field.
- c) You only need to give figures to the nearest million. However, if you give figures with decimal points, please use full stops as the symbols for the decimal points, not commas. For nil returns, please use zeros, not dashes or text.
- d) Please do not re-format the survey form, ie change its lay-out, and do not leave formulae in the cells of the underlying spreadsheet.
- e) Include all varieties of repos, ie repurchase transactions (classic repos and pensions livrées) and sell/buy-backs (e.g. simultaneous and PCT). There is a separate question (see question 2) on securities lending and borrowing transactions (including securities lending and borrowing against cash collateral).
- f) Exclude repo transactions undertaken with central banks as part of their official money market operations. Other repo transactions with central banks, e.g. as part of their reserve management operations, should be included.
- g) Give the value of the cash which is due to be repaid on all repo and reverse repo contracts (not the market value or nominal value of the collateral) that are still outstanding at close of business on Wednesday, December 7, 2022. This means the value of transactions at their repurchase prices.
- h) "Outstanding" means repos and reverse repos with a repurchase date, or which will roll over, on or after Thursday, December 8, 2022. You should include all open repos and reverse repos that have been rolled over from Wednesday, December 7, 2022, to a later date and all forward-forward repos and reverse repos that are still outstanding as forward contracts at close on Wednesday, December 7, 2022.
- i) Give separate totals for (a) repos plus sell/buy-backs and (b) reverse repos plus buy/sell-backs.
- j) The survey seeks to measure the value of repos and reverse repos on a transaction date basis, rather than a purchase date basis. This means that you should include all repo and reverse repo contracts that

have been agreed before close of business on Wednesday, December 7, 2022, even if their purchase dates are later. An unavoidable consequence of using the transaction date is that tom/next and spot/next transactions that are rolled over will be counted more than once, eg a tom/next repo transacted on the day before the survey date and rolled over on the survey date will feature twice.

- k) Give gross figures, i.e. do not net opposite transactions with the same counterparty. If this is not possible, please indicate that your figures are net.
- l) Do not report synthetic repos.
- m) You should include intra-group transactions between different legal entities or between foreign branches and the parent company.

Guidance on specific questions in the survey form

- 1.1 Transactions (1.1.1) direct with counterparties or (1.1.2) through voice-brokers should exclude all repos transacted over an ATS (see below). These should be recorded under (1.1.3).
 - (1.1.2) Transactions through voice-brokers should be broken down in terms of the location of the counterparties, rather than the location of the voice-brokers.
 - (1.1.3) “ATSs” are automatic or semi-automatic trading systems (e.g. BrokerTec, Eurex Repo, MTS, eRepo and SIX Repo) but not voice-assisted electronic systems used by voice-brokers (where voice-brokers record and communicate transactions agreed by telephone or electronic messaging) or automated systems such as GLMX or TradeWeb (which offer a request-for-quote (RFQ) trading model). Nor does use of an ATS include trading assisted by electronic means of structured messages and confirmations such as Bloomberg’s RRRRA and similar screens. Transactions on automated trading systems (RFQ systems) should be included in (1.2.2) --- see below. Transactions through voice-assisted systems should be included in (1.1.2). Anonymous transactions through an ATS with a central counterparty (e.g. Euronext Clearing (CC&G), LCH, BME Clearing (MEFFClear) and Eurex Clearing) should be recorded in either (1.1.3.4) or (1.1.3.5). (1.1.3.4) is for GC financing systems. These are ATS that are connected to a CCP and a tri-party repo service. Examples include Eurex Repo Euro GC Pooling (EGCP), LCH SA’s €GCPlus and LCH Ltd’s £GC. They do not include GC basket trading on ATS in which the seller manually selects the securities to be delivered from a list prescribed by the ATS. This activity may be cleared across a CCP but does not involve a tri-party service and should be recorded in (1.1.3.5).
- (1.2.1) This item includes all the transactions recorded in (1.1.3) plus any transactions executed directly with counterparties and via voice-brokers which are then registered with and cleared through a central counterparty.
- (1.2.2) Questions (1.1.3.1) to (1.1.3.5) measure repos and reverse repos transacted on automatic or semi-automatic trading systems such as BrokerTec, Eurex Repo, MTS and eRepo, but not voice-assisted electronic systems used by voice-brokers (where voice-brokers record and communicate transactions agreed by telephone or electronic messaging) or automated systems such as BrokerTec Quote, GLMX, MTS BondVision or TradeWeb (which offer a request-for-quote (RFQ) trading model). This question asked for the total value of business transacted on any electronic trading system, whether automatic, semi-automatic or automated, and therefore including automated systems such as GLMX or TradeWeb, which offer a request-for-quote (RFQ) trading model. Electronic trading is defined in terms of where the contract is executed and so does not include voice-assisted electronic systems used by voice-brokers or trading assisted by electronic means of structured messages and confirmations such as Bloomberg’s RRRRA and similar screens.

- 1.5 “Repurchase transactions” (also known as “classic repos”) include transactions documented under the Global Master Repurchase Agreement (GMRA) 1995, the Global Master Repurchase Agreement (GMRA) 2000 or the Global Master Repurchase Agreement (GMRA) 2011 without reference to the Buy/Sell-Back Annexes, and transactions documented under other master agreements. “Sell/buy-backs” are therefore taken to include all transactions that are not documented. Repurchase transactions are characterised by the immediate payment by the buyer to the seller of a compensatory or manufactured payment upon receipt by the buyer of a coupon or other income on the collateral held by the buyer. If a coupon or other income is paid on collateral during the term of a sell/buy-back, the buyer does not make an immediate compensatory or manufactured payment to the seller, but reinvests the income until the repurchase date of the sell/buy-back and deducts the resulting amount (including reinvestment income) from the repurchase price that would otherwise be due to be received from the seller. Sell/buy-backs may be quoted in terms of a forward price rather than a repo rate. Where sell/buy-backs are documented (e.g. under the Buy/Sell-Back Annexes to the GMRA 1995, 2000 or 2011), periodic adjustments to the relative amounts of collateral or cash - which, for a repurchase transaction, would be performed by margin maintenance transfers or payments - are made by adjustment or re-pricing. All open repos are likely to be repurchase transactions.
- 1.6 “Open” repos, which are reported in (1.7.3), are defined for the purposes of this survey as contracts that have no fixed repurchase date when negotiated but are terminable on demand by either counterparty. Open repos should also be included in fixed-rate repo (1.6.1) unless their repo rates are linked to interest rate indexes which will be refixed during the life of the repos, in which cases, they would be reported as floating-rate repos (1.6.2).
- 1.7 This section asks for the remaining term to maturity (not the original term to maturity) of repos to be broken down as follows:
- (1.7.1.1) 1 day – this means:
- all contracts transacted prior to Wednesday, December 7, 2022, with a repurchase date on Thursday, December 8, 2022;
 - overnight, tom/next, spot/next and corporate/next contracts transacted on Wednesday, December 7, 2022.
- (1.7.1.2) 2–7 days – this means:
- all contracts transacted prior to Wednesday, December 7, 2022, with a repurchase date on Friday, December 9, 2022, or any day thereafter up to and including Wednesday, December 14, 2022;
 - contracts transacted on Wednesday, December 7, 2022, with an original repurchase date on Friday, December 9, 2022, or any day thereafter up to and including Wednesday, December 14, 2022 (irrespective of the purchase date, which will vary).
- (1.7.1.3) More than 7 days but no more than 1 month – this means:
- all contracts transacted prior to Wednesday, December 7, 2022, with a repurchase date on Thursday, December 15, 2022, or any day thereafter up to and including Monday, January 9, 2023;
 - contracts transacted on Wednesday, December 7, 2022, with an original repurchase date on Thursday, December 15, 2022, or any day thereafter up to and including Monday, January 9, 2023 (irrespective of the purchase date, which will vary).
- (1.7.1.4) More than 1 month but no more than 3 months – this means:
- all contracts transacted prior to Wednesday, December 7, 2022, with a repurchase date on Tuesday, January 10, 2023, or any day thereafter up to and including Tuesday, March 7, 2023;
 - contracts transacted on Wednesday, December 7, 2022, with an original repurchase date on Tuesday, January 10, 2023, or any day thereafter up to and including Tuesday, March 7, 2023 (irrespective of the purchase date, which will vary).

(1.7.1.5) More than 3 months but no more than 6 months – this means:

- all contracts transacted prior to Wednesday, December 7, 2022, with a repurchase date on Wednesday, March 8, 2023, or any day thereafter up to and including Wednesday, June 7, 2023;
- contracts transacted on Wednesday, December 7, 2022, with an original repurchase date on Wednesday, March 8, 2023, or any day thereafter up to and including Wednesday, June 7, 2023 (irrespective of the purchase date, which will vary).

(1.7.1.6) More than 6 months but no more than 12 months – this means;

- all contracts transacted prior to Wednesday, December 7, 2022, with a repurchase date on Thursday, June 8, 2023, or any day thereafter up to and including Thursday, December 7, 2023;
- contracts transacted on Wednesday, December 7, 2022, with an original repurchase date on Thursday, June 8, 2023, or any day thereafter up to and including Thursday, December 7, 2023 (irrespective of the purchase date, which will vary).

(1.7.1.7) More than 12 months – this means;

- all contracts transacted prior to Wednesday, December 7, 2022, with a repurchase date on Friday, December 8, 2023, or any day thereafter;
- contracts transacted on Wednesday, December 7, 2022, with an original repurchase date on or after Friday, December 8, 2023 (irrespective of the purchase date, which will vary).

(1.7.2) For repos against collateral that includes a transferable security regulated under the EU MiFID and that have been traded or which it is possible to trade on a MiFIR-regulated trading venue (regulated market, multilateral trading facility or organised trading facility), which are subject to the settlement requirements of the EU CSDR, forward-forward repos are defined for the purposes of this survey as contracts with a purchase date of Monday, December 12, 2022, or later. There is therefore an overlap with corporate/next transactions. If the latter cannot be identified separately, it is accepted that they will be recorded as forward-forward repos. It does not matter than many repos may actually be traded for T+1 (ie a purchase date of Thursday, December 8, 2022). For repos transacted in the OTC market or against collateral not regulated under CSDR, the definition of forward-forward may be different.

(1.7.3) Open repos in this field should equal open repos in item (1.6.3).

1.8 Please confirm whether the transactions recorded in the questions in (1.6 and 1.7) include your tri-party repo business. Some institutions do not consolidate their tri-party repo transactions with their direct or voice-brokered business because of delays in receiving reports from tri-party agents or the complexity of their tri-party business.

(1.8.1) and (1.8.2) should not include any repos transacted across GC financing systems and recorded in (1.8.3).

1.9 “Eurobonds” (also known as “international bonds”) are defined as securities held outside national central securities depositories (CSD), usually in an ICSD such as Clearstream or Euroclear, or a custodian bank; typically with the ISIN prefix XS; often issued in a currency foreign to the place of issuance; and sold cross-border to investors outside the domestic market of the place of issuance. Eurobonds should be recorded in (1.9.30-33), except for those issues by “official international financial institutions”, which should be recorded in (1.9.20). Eurobond does not mean a bond denominated in euros.

- (1.9.20) “Official international financial institutions, including multilateral development banks” such as:
- African Development Bank (AfDB)
 - Asian Development Bank (AsDB)
 - Bank for International Settlements (BIS)
 - Caribbean Development Bank (CDB)
 - Central American Bank for Economic Integration (CABEI)
 - Corporacion Andina de Fomento (CAF)
 - Council of Europe Development Bank
 - East African Development Bank (EADB)
 - European Bank for Reconstruction and Development (EBRD)
 - Inter-American Development Bank Group (IADB)
 - International Fund for Agricultural Development (IFAD)
 - Islamic Development Bank (IDB)
 - Nordic Development Fund (NDF)
 - Nordic Investment Bank (NIB)
 - OPEC Fund for International Development (OPEC Fund)
 - West African Development Bank (BOAD)
 - World Bank Group (IBRD and IFC)
- Securities issued by the EU (but not individual EU members) should now be included in the new question 1.9.37. EU issuers include:
- European Commission
 - European Financial Stability Mechanism (EFSM)
 - European Financial Stability Facility (EFSF)
 - European Investment Bank (EIB)
 - European Stabilisation Mechanism (ESM)
- (1.9.21) “US Treasury” includes bills, notes and bonds, including floating-rate notes, issued by the US central government but not securities guaranteed by that government, such as Agency securities.
- (1.9.23) “Japanese government” includes bills, notes and bonds issued by the Japanese central government but not securities guaranteed by that government.
- (1.9.25) “Other OECD countries” are Australia, Canada, Chile, Iceland, Israel, Korea, Mexico, New Zealand, Norway, Switzerland and Turkey.
- (1.9.26) “Other non-OECD European, Middle Eastern & African countries” should exclude any EU countries.
- (1.9.34) “Equity” includes ordinary shares, preference shares and equity-linked debt such as convertible bonds.

2.1 This question asks for the total gross value of transactions with a transaction date on or after June 9, 2022 (the day after the previous survey date), to and including December 7, 2022 (the latest survey date). In other words, it asks for the turnover or flow of business over the six month interval and includes all business transacted since the last survey date, even if it has matured before the survey date. This section is therefore different from the rest of the survey, which asks for the value of business outstanding on the survey date, in other words, the stock of transactions.

- 2.2 This question asks for the number of individual transactions with a transaction date on or after June 9, 2022 (the day after the previous survey date), to and including December 7, 2022 (the latest survey date), even if it has matured before the survey date. In other words, this is the number of tickets written.
- 3 “Total value of securities loaned and borrowed by your repo desk” includes the lending and borrowing of securities with either cash or securities collateral. Exclude any securities lending and borrowing done by desks other than your repo desk. If your repo desk does not do any securities lending and borrowing, this line will be a nil return.
- 4.1 “Active” means about once a week or more often.

For further help and information

If, having read the Guidance Notes, you have any further queries, please e-mail the independent survey administrator at reposurvey@icmagroup.org.

Appendix B: Survey Participants

List of respondents	Jun-13	Dec-13	Jun-14	Dec-14	Jun-15	Dec-15	Jun-16	Dec-16	Jun-17	Dec-17	Jun-18	Dec-18	Jun-19	Dec-19	Jun-20	Dec-20	Jun-21	Dec-21	Jun-22	Dec-22
ABN Amro Bank	x	x	x	x	x	x														
Allied Irish Banks	x	x	x	x	x	x	x	x	x	x	x									
AXA Bank Europe	x	x	x	x	x	x	x	x	x											
Banc Sabadell	x	x	x	x	x	x	x	x	x		x									
Banca d'Intermediazione Mobiliare (IMI)		x	x	x	x	x	x	x	x	x	x									
Banca Monte dei Paschi di Siena	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	x
Banco BPI		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Banco Santander	x	x	x	x	x	x	x	x	x	x	x	x	x							x
UniCredit Bank Austria (Bank Austria)		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Bank fuer Arbeit und Wirtschaft und Oesterreichische Postsparkasse (Bawag)		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Bank of Ireland	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
Bank Przemyslowo-Handlowy SA																				
Landesbank Berlin																				
Banque de Luxembourg	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Banque et Caisse d'Epargne de l'Etat	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Barclays Capital	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Bayerische Landesbank	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x			
BBVA		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BHF-Bank	x	x																		
BHF-Bank International																				
BNP Paribas	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Bundesrepublik Deutschland Finanzagentur	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Caixabank (including Bankia)	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x
Caixa d'Estalvis de Catalunya	x	x	x		x	x														
Bankia SA (formerly Caja de Ahorros y Monte de Piedad de Madrid (Caja Madrid))	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
CA-CIB (formerly Calyon)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Citigroup Global Markets Ltd	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Commerzbank	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Canadian Imperial Bank of Commerce and Credit (CIBC)	x	x	x	x	x	x		x	x	x		x	x	x	x	x	x			
Commonwealth Bank of Australia																				x
Confederación Española de Cajas de Ahorros (CECA)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Credit Suisse Securities (Europe) Ltd	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Danske Bank	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

List of respondents	Jun-13	Dec-13	Jun-14	Dec-14	Jun-15	Dec-15	Jun-16	Dec-16	Jun-17	Dec-17	Jun-18	Dec-18	Jun-19	Dec-19	Jun-20	Dec-20	Jun-21	Dec-21	Jun-22	Dec-22
Daiwa Securities SMBC Europe	x	x	x	x	x	x														
Dekabank Deutsche Girozentrale	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Deutsche Bank	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Deutsche Postbank	x	x	x	x	x	x	x	x	x	x										
Belfius Bank (formerly Dexia)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Banque Internationale Luxembourg (formerly Dexia BIL)								x	x		x			x						
Dexia Kommunal Bank Deutschland																				
DNB Bank ASA						x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DZ Bank	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
EFG Eurobank Ergasias	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Erste Bank der Oesterreichischen Sparkassen	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Euroclear Bank	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x
European Investment Bank																x	x	x	x	x
Hypothekbank Frankfurt International (formerly Eurohypo Europäische Hypothekbank)	x	x	x																	
Fortis Bank	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Goldman Sachs	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x
HSBC																				
HSBC Athens	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
HSBC France																				
HSH Nordbank						x														
Unicredit Bank Germany (Bayerische Hypo-und-Vereinsbank)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ICBC Standard Bank						x	x	x												
ING Bank	x	x	x	x	x	x	x	x												
Intesa SanPaolo	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Jefferies International Ltd	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	xx
JP Morgan	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
KBC	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
KfW	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Kingdom of Belgium Federal Public Service Debt Agency	x	x	x	x	x	x	x	x	x	x	x				x					
Landesbank Baden-Württemberg, Stuttgart	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Landesbank Hessen-Thüringen -Girozentrale (Helaba)	x	x	x	x	x	x	x			x										
Lloyds Bank Commercial Banking													x	x	x	x	x	x	x	x
Lloyds Bank Plc									x	x	x	x	x	x	x	x	x	x	x	x
Macquarie Bank	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x			x
Bank of America Merrill Lynch	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Mitsubishi Securities International	x		x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	xx
Mizuho International	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

List of respondents	Jun-13	Dec-13	Jun-14	Dec-14	Jun-15	Dec-15	Jun-16	Dec-16	Jun-17	Dec-17	Jun-18	Dec-18	Jun-19	Dec-19	Jun-20	Dec-20	Jun-21	Dec-21	Jun-22	Dec-22
Morgan Stanley	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x
National Australia Bank						x														
National Bank of Greece							x	x												
Newedge	x																			
Nomura International	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Norddeutsche Landesbank Girozentrale	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Nordea Markets	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
Norinchukin Bank	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Nova Ljubljanska Banka d.d.	x	x		x		x	x	x	x	x		x	x	x	x	x	x	x	x	x
Nykredit Bank A/S														x	x	x	x	x	x	x
Piraeus Bank						x	x	x		x										
Rabobank	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Royal Bank of Canada			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
NatWest Markets (formerly Royal Bank of Scotland)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
RBI										x										
Société Générale	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Standard Chartered														x	x	x	x	x	x	x
Toronto Dominion Bank	x	x		x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
UBS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
UniCredit Bank AG Milano Branch	x	x	x		x	x	x	x	x		x			x	x	x	x	x	x	x
Unicredit Bank Spa										x		x	x	x	x	x	x	x	x	x
Westdeutsche Landesbank Girozentrale																				
	63	66	64	64	64	70	66	65	64	64	62	59	56	60	61	60	59	56	56	61

Appendix C: Summary Of Survey Results

	Dec-18	Dec-19	Dec-20	Dec-21	Jun-21	Dec-22
Q1 What are the total gross values of cash due to be repaid by you and repaid to you on repo transactions maturing after survey date? (figures in EUR billions)	7,846	8,310	8,285	9,492	9,680	10,374
Of the amounts given in response to question (1) above:						
1.1 How much was transacted:						
direct with counterparties						
• in the same country as you	16.5%	16.3%	16.5%	16.5%	16.3%	15.1%
• cross-border in (other) eurozone countries	10.3%	10.2%	13.1%	13.1%	12.5%	12.8%
• cross-border in non-eurozone countries	32.9%	34.7%	33.8%	33.5%	35.7%	35.6%
through voice-brokers						
• in the same country as you	4.7%	5.1%	4.9%	4.3%	2.9%	3.3%
• cross-border in (other) eurozone countries	3.3%	3.0%	3.2%	3.9%	3.5%	3.8%
• cross-border in non-eurozone countries	2.8%	1.8%	1.3%	1.8%	1.7%	1.9%
on ATs with counterparties						
• in the same country as you	5.4%	4.9%	4.8%	5.1%	3.6%	3.6%
• cross-border in (other) eurozone countries	1.9%	1.2%	2.2%	2.6%	2.7%	2.9%
• cross border-border in non-eurozone countries	2.0%	1.7%	2.2%	3.0%	3.7%	2.9%
• anonymously across a GC financing system	1.1%	0.9%	0.5%	0.7%	0.8%	0.8%
• anonymously across a central clearing counterparty but not GC financing	19.3%	20.2%	17.5%	15.3%	16.6%	17.3%
• total through a central clearing counterparty	27.2%	29.9%	32.1%	28.8%	27.0%	23.8%
• transacted across any electronic system			70.7%	23.9%	24.4%	23.2%
1.2 How much of the cash is denominated in:						
• EUR	60.5%	53.6%	54.4%	56.8%	54.7%	56.4%
• GBP	12.4%	13.6%	16.5%	15.7%	15.6%	14.8%
• USD	19.4%	18.9%	19.2%	19.1%	20.3%	19.4%

	Dec-18	Dec-19	Dec-20	Dec-21	Jun-21	Dec-22
• SEK, DKK	1.6%	1.9%	1.4%	1.5%	1.3%	1.2%
• JPY	4.5%	5.4%	5.7%	4.7%	5.7%	5.6%
• CHF	0.0%	0.0%	0.1%	0.1%	0.0%	0.2%
• other Asian and Pacific currencies	0.6%	0.9%	1.5%	0.9%	1.1%	1.3%
• other currencies	1.0%	5.6%	1.2%	1.2%	1.4%	1.1%
1.3 How much is cross-currency?	2.5%	1.7%	2.7%	1.9%	1.8%	2.1%
1.4 How much is:						
• classic repo	93.1%	91.7%	93.0%	93.2%	93.8%	94.0%
• documented sell/buy-backs	6.7%	8.1%	6.8%	6.4%	5.7%	5.9%
• undocumented sell/buy-backs	0.2%	0.2%	0.3%	0.4%	0.4%	0.1%
1.5 How much is:						
• fixed rate	80.7%	85.0%	87.7%	89.0%	88.0%	87.1%
• floating rate	13.1%	9.0%	10.5%	11.0%	12.0%	12.9%
• open	6.1%	6.0%	1.8%			
1.6 How much fixed and floating rate repo is (1.6.1) for value before (survey date) and has a remaining term to maturity of:						
• 1 day	18.9%	16.9%	18.0%	16.6%	17.3%	17.8%
• 2 - 7days	17.5%	17.3%	19.3%	18.6%	22.8%	19.7%
• more than 7 days but no more than 1 month	14.6%	16.8%	13.7%	13.7%	14.8%	10.8%
• more than 1 month but no more than 3 months	16.1%	13.3%	15.6%	16.7%	9.5%	11.9%
• more than 3 months but no more than 6 months	3.6%	4.7%	8.2%	7.9%	7.4%	7.1%
• more than 6 months	2.5%	5.1%	3.5%	3.2%	2.4%	2.2%
• more than 12 months	1.4%	3.4%	2.4%	2.7%	2.2%	2.5%
• forward-forward repos	19.3%	12.9%	13.2%	14.5%	1.3%	20.2%
• open	6.0%	9.6%	6.2%	6.1%	8.2%	7.8%
1.7 How much is tri-party repo:	6.9%	8.7%	8.8%	8.6%	9.0%	6.5%
• for fixed terms to maturity	79.6%	78.1%	83.7%	82.1%	75.9%	75.7%
• on an open basis	8.0%	6.3%	10.8%	6.8%	13.3%	12.6%
GCF	12.4%	15.6%	5.5%	11.1%	10.8%	11.7%
1.8 How much is against collateral issued in:						
Austria						
• by the central government	0.9%	0.8%	0.9%	0.9%	1.0%	0.8%
• by other issuers	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

	Dec-18	Dec-19	Dec-20	Dec-21	Jun-21	Dec-22
Belgium						
• by the central government	3.0%	2.8%	3.1%	2.9%	2.6%	2.6%
• by other issuers	0.7%	0.3%	0.3%	0.4%	0.5%	0.5%
Denmark						
• by the central government	0.2%	0.4%	0.3%	0.2%	0.3%	0.2%
• by other issuers	0.4%	0.5%	0.6%	0.6%	0.6%	0.7%
Finland						
• by the central government	0.5%	0.3%	0.4%	0.4%	0.4%	0.5%
• by other issuers	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%
France						
• by the central government	12.6%	12.0%	12.2%	13.2%	12.8%	12.5%
• by other issuers	1.0%	1.0%	0.5%	0.6%	0.6%	0.6%
Germany						
• by the central government	15.2%	12.3%	14.8%	14.3%	14.5%	15.8%
pfandbrief	0.9%	0.3%	0.1%	0.1%	0.5%	0.6%
• by other issuers	1.0%	0.9%	0.6%	1.4%	0.6%	0.8%
Greece						
• by the central government	0.2%	0.3%	0.1%	0.2%	0.1%	0.1%
• by other issuers	0.2%	0.1%	0.0%	0.1%	0.0%	0.0%
Ireland						
• by the central government	0.2%	0.3%	0.3%	0.4%	0.3%	0.3%
• by other issuers	0.2%	0.3%	0.2%	0.3%	0.3%	0.3%
Italy						
• by the central government	12.2%	13.7%	11.4%	11.5%	11.6%	12.0%
• by other issuers	0.8%	0.4%	0.3%	0.4%	0.4%	0.2%
Luxembourg						
• by the central government	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
• by other issuers	0.3%	0.2%	0.4%	0.3%	0.3%	0.3%
Netherlands						
• by the central government	1.8%	1.0%	1.2%	1.3%	1.2%	1.0%
• by other issuers	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
Portugal						
• by the central government	0.6%	0.5%	0.5%	0.5%	0.5%	0.4%
• by other issuers	0.1%	0.2%	0.0%	0.1%	0.0%	0.1%
Spain						
• by the central government	4.0%	5.0%	4.8%	5.2%	4.8%	4.8%

	Dec-18	Dec-19	Dec-20	Dec-21	Jun-21	Dec-22
• by other issuers	1.0%	0.8%	0.4%	0.7%	0.3%	0.4%
Sweden						
• by the central government	0.6%	0.4%	0.5%	0.5%	0.4%	0.3%
• by other issuers	0.7%	0.4%	0.3%	0.3%	0.3%	0.2%
UK						
• by the central government	11.0%	13.4%	14.8%	14.1%	13.9%	12.9%
• by other issuers	1.7%	1.2%	1.4%	1.3%	1.3%	1.4%
US Treasury	8.8%	8.8%	8.1%	10.9%	9.4%	8.4%
US other issuers	2.4%	2.4%	2.2%	2.2%	2.2%	2.2%
US but settled across EOC/CS						
other countries						
Bulgaria						
• by the central government						
• by other issuers						
Cyprus						
• by the central government						
• by other issuers						
Czech Republic						
• by the central government	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
• by other issuers	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%
Estonia						
• by the central government						
• by other issuers						
Hungary						
• by the central government	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
• by other issuers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Latvia						
• by the central government						
• by other issuers						
Lithuania						
• by the central government						
• by other issuers						
Malta						
• by the central government						
• by other issuers						
Poland						

	Dec-18	Dec-19	Dec-20	Dec-21	Jun-21	Dec-22
• by the central government	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
• by other issuers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Romania						
• by the central government						
• by other issuers						
Slovak Republic						
• by the central government						
• by other issuers						
Slovenia						
• by the central government						
• by other issuers						
Other EU members by central government	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
Other EU members by other issuers	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%
• by official international financial institutions	0.7%	0.5%	0.2%	0.4%	0.5%	0.5%
Japan						
• Japanese government	3.4%	5.1%	5.2%	3.9%	4.0%	3.9%
• Other Japanese issuers	1.4%	1.4%	1.1%	1.1%	1.3%	1.3%
Other Asian & Pacific OECD countries in the form of fixed income securities, except eurobonds	0.4%	1.4%	0.8%	0.3%	0.2%	0.8%
Other OECD countries in the form of fixed income securities, except eurobonds	4.3%	4.2%	5.4%	3.4%	6.6%	6.2%
Other OECD						
non-OECD EMEA	0.5%	0.6%	0.7%	0.7%	0.7%	0.7%
non-OECD Asian & Pacific	0.4%	0.6%	0.6%	0.5%	0.5%	0.5%
non-OECD Latin America	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%
eurobonds issued by European entities	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%
eurobonds issued by US entities	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%
eurobonds issued by Asian & Pacific entities	0.3%	0.5%	0.5%	0.3%	0.4%	0.4%
eurobonds issued by other entities	0.3%	0.4%	0.5%	0.3%	0.4%	0.4%
equity	0.2%	0.3%	0.3%	0.4%	0.5%	0.3%
collateral of unknown origin or type	1.0%	0.2%	0.2%	0.1%	0.0%	0.5%
collateral in tri-party which cannot be attributed to a country or issuer	1.3%	1.6%	1.2%	1.4%	1.5%	1.6%
EU issues			0.5%	0.3%	0.1%	0.2%
total gross values of repo & reverse repo with APAC	13.3%	13.6%	5.3%	3.9%	4.7%	6.8%

	Dec-18	Dec-19	Dec-20	Dec-21	Jun-21	Dec-22
Q2 What is the total value of securities loaned and borrowed by your repo desk: to/from counterparties						
in the same country as you						
• in fixed income	22.3%	20.4%	19.6%	22.1%	25.8%	24.8%
• in equity	0.1%	0.2%	0.1%	0.0%	0.1%	0.0%
• cross-border in (other) eurozone countries						
• in fixed income	32.1%	24.8%	35.2%	26.3%	30.7%	25.1%
• in equity	1.3%	0.2%	1.2%	0.3%	0.3%	0.2%
• cross-border in non-eurozone countries						
• in fixed income	43.1%	53.4%	42.6%	50.8%	42.5%	49.4%
• in equity	1.1%	1.0%	1.3%	0.4%	0.6%	0.4%
for which the term to maturity is						
fixed	72.8%	70.8%	77.7%	71.6%	68.0%	70.6%
open	27.2%	29.2%	22.3%	28.4%	32.0%	29.4%
Number of GMRA's		71%	73.4%	84.9%	92.0%	82.9%

Appendix D: The ICMA European Repo And Collateral Council

The ICMA European Repo and Collateral Council (ERCC) (formerly the ICMA European Repo Council) is the forum where the repo dealer community meets and forges consensus solutions to the practical problems of a rapidly evolving marketplace. In this role, it has been consolidating and codifying best market practice. The contact and dialogue that takes place at the ERCC underpins the strong sense of community and common interest that characterises the professional repo market in Europe.

The ERCC was established in December 1999 by the International Capital Market Association (ICMA, which was then called the International Securities Market Association or ISMA) as a body operating under ICMA auspices.

Membership of the ERCC is open to any ICMA member who transacts repo and associated collateral business in Europe, is willing to abide by the rules and has sufficient professional expertise, financial standing and technical resources to meet its obligations as a member.

The ERCC meets twice a year (usually in February/March and September) at different financial centres across Europe. The Steering Committee now comprises 19 members elected annually and meets six or seven times a year.

More information about the ERCC is available on www.icmagroup.org.

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