ISMA

International Securities Market Association

# European repo market survey
# Number 1 - conducted June 2001

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## Contents

This report was commissioned by the International Securities Market Association (ISMA) in particular support of members of ISMA's European Repo Council (ERC) and in the interests of the international securities market as a whole.

Its purpose is to help participants in, and observers of, Europe's cross-border repo market to gauge the size of the market.

All statements and opinions contained within this report are made in a personal capacity by the author and do not represent the opinion of ISMA, which has neither taken an official position on the issues discussed herein nor sought to verify the statistics provided.

# ABOUT THE AUTHOR

This report was compiled by Mr. Richard Comotto, a Visiting Fellow at the ISMA Centre at the University of Reading in the UK, where he is responsible for MSc and BSc modules on risk management, e-commerce in wholesale markets and money markets (including repo and foreign exchange). In addition, he lectures on ISMA's international General and Operations Certificate Programmes.

The author also provides independent consultancy services including research, support and training on the international money, securities and derivatives markets. His clients include professional market associations, government agencies, regulatory authorities, banks, brokers and information services.

Mr. Comotto has written several books and articles on a range of financial topics, including foreign exchange and money markets, swaps and electronic trading systems. He takes particular interest in the impact of 'electronic brokers' on the foreign exchange market and the more recent entry of electronic trading systems into the bond and repo markets. He is a regular speaker at conferences on repo and electronic trading in the fixed-income market.

He served for ten years at the Bank of England, within its Foreign Exchange Division and on secondment to the International Monetary Fund in Washington DC.

# Executive summary

In June 2001, members of ISMA's European Repo Council (ERC) took part in ISMA's first semi-annual survey of the repo market in Europe. The survey asked a sample of banks in Europe for the value of their repo contracts (excluding repos with central banks) that remained outstanding at close of business on June 13, 2001. The survey also sought to analyse banks' outstanding business and to obtain information about securities lending and borrowing conducted on their repo desks.

### Total repo business

48 banks participated in this first survey. The total value of repo contracts outstanding on their books was EUR1,863 billion (1,863,000,000,000), of which 49.6% were repos and 50.4% were reverse repos. The total is a gross figure. This means that it has not been adjusted to take account of the fact that contracts between pairs of banks participating in the survey have been reported by both banks and therefore counted twice.

### Counterparty analysis

Some 47% of outstanding repo contracts reported in the survey were negotiated directly with the other counterparty, 46% through voice-brokers and 8% through inter-dealer automatic trading systems (ATSs).

### Geographical analysis

Around 53% of outstanding repo contracts reported were with domestic counterparties and 42% were cross-border. The remaining 5% were negotiated anonymously through an ATS and settled with a central clearing counterparty (CCP) (which means that it is not possible to categorise them as domestic or cross-border).

### Settlement analysis

Approximately 6% of outstanding contracts reported in the survey were negotiated under tri-party repo arrangements. The remainder were bilateral or with a CCP.

### Cash currency analysis

Some 73% of reported outstanding repo contracts were denominated in euros (EUR), 11% in pounds sterling (GBP) and 10% in US dollars (USD).

Only 2% of reported outstanding contracts were reported to be cross-currency repos (transactions in which the cash and collateral are denominated in different currencies).

### Collateral analysis

About 76% of collateral holdings reported in the survey (measured by market value) were issued in countries in the eurozone: 34% were issued in Germany and 18% in Italy. Another 12% of collateral was issued in the UK. More than 91% of collateral was issued by central governments.

### Repo rate analysis

Some 90% of reported outstanding repo contracts paid a fixed rate of return, 5% were floating-rate and 4% were on an open basis (transactions with no fixed maturity but terminable on demand by either counterparty subject to an agreed period of notice).

### Maturity analysis

Whilst around 62% of reported outstanding repo contracts had less than one month remaining to maturity, a significant amount of business ran out to one year. Some 9% were forward-forward repos (with value dates more than two business days in the future).

### Product analysis

A number of the banks surveyed transacted securities lending and borrowing on their repo desks. Of the total outstanding contracts reported by repo desks - i.e repos plus securities lending and borrowing - some 17% was securities lending and borrowing.

### Concentration analysis

The top ten banks in the survey accounted for some 64% of the total reported business. The top twenty banks accounted for 88%. The top thirty accounted for 97%.

The next ISMA survey is scheduled to take place on Wednesday, December 12, 2001.

# CHAPTER 1
# THE SURVEY

On June 13, 2001, members of ISMA's European Repo Council (ERC) took part in ISMA's first semi-annual survey of the repo market in Europe. Future surveys are planned to take place on the second Wednesday in June and December each year. The next survey will therefore be conducted on December 12, 2001.

The ISMA survey has been supported by the ACI, the Financial Markets Association, and welcomed by the European Central Bank (ECB) and European Commission. The survey was managed and the results analysed on behalf of ISMA by the ISMA Centre at the UK's University of Reading, in co-ordination with the ERC Steering Committee ("ERC Committee").

## 1.1 Why the survey was commissioned

The survey was commissioned by ISMA in response to the growing demand for information on the size and composition of the European repo market. This information is important not only to market participants but also to supervisory and monetary authorities, and other interested parties such as market infrastructure and service providers. The demand reflects the importance of repos to both banks and the authorities, and general interest in the impact on the market of recent developments such as the euro, electronic trading, of central clearing counterparty facilities and tri-party repo. The ERC Committee also felt that a survey would relieve member banks of the burden of having to respond to the growing number of calls to participate in ad hoc surveys or provide estimates of market size.

Before deciding to embark on the survey, the ERC Committee examined the data already published about national repo markets in Europe. Excellent data (almost 240 primary statistical series) are published by the Bank of England on repos in sterling and foreign currencies transacted by banks in London. High-quality data are also available from the authorities in France, Norway, Spain, Sweden and Switzerland, although often limited in terms of coverage and depth of analysis. Other countries tend to provide only headline numbers or monetary data (e.g. repo assets and liabilities of monetary financial institutions). Moreover, some countries measure turnover, whereas others measure outstanding contracts. The available data is therefore currently very patchy and uneven in coverage. As a result of these inconsistencies, only the most tentative estimates of the overall size of the European market can, at the moment, be made.

The ad hoc surveys of the European repo market conducted to date have not been particularly successful in terms of coverage or depth of analysis.

Other data on the repo market are available from non-official sources such as central securities depositories (CSDs), central clearing counterparties (CCPs), tri-party repo agents, automatic trading systems (ATSs) and ISMA's trade reporting system TRAX. However, most of these sources are unable to offer a sufficiently broad perspective on the entire market and their data are highly aggregated.

### 1.2 What the survey asked

The ISMA survey asked banks in a number of European centres for the value of the cash leg of repo and reverse repo contracts still outstanding at close of business on Wednesday, June 13, 2001.

The survey sought to analyse banks' business in terms of counterparty, currency, type of contract, type of repo rate, remaining term to maturity, method of settlement and source of collateral. It also asked about securities lending and borrowing conducted on repo desks.

The precise data sought by the survey are set out in the tables at the beginning of Chapter 3. An extract of the guidance notes that accompanied the survey are reproduced in Appendix A. The survey questionnaire and guidance notes are likely to be revised for the next survey, and will be published in due course on ISMA's web site at www.isma.org.

### 1.3 The response to the survey

The survey met with an excellent response. 48 banks out of the initial sample of 71 made returns - a response rate of 68%. The number of participating banks and the very detailed nature of the data provided means that ISMA's first survey provides the most authoritative picture of the European repo market to date.

The banks surveyed are headquartered in twelve European countries (eleven within the EU and ten in the eurozone), as well as in the US and Japan. Many of these banks provided data for their entire European repo business. Others provided separate returns for each branch that has its own repo book (including branches technically brings the total number of participants to 53). A list of participating banks is contained in Appendix B.

In future surveys, the ERC Committee hopes to expand significantly the number of participant banks. A number of banks that were unable to participate in the first survey have indicated that they will participate in December, and other banks are being approached. Any bank wishing to participate should send contact details by e-mail to reposurvey@isma.co.uk or download copies of the next survey form and guidance notes from ISMA's web site when they are made available.

# CHAPTER 2
# METHODOLOGICAL ISSUES

The design of the survey form[1] had to balance the desire for a complete picture of the European repo market and the need to avoid overburdening banks with questions. It was also necessary to take into consideration, particularly for the first survey, the operational challenge for banks of extracting a new set of data from their records.

## 2.1 Stock versus flow

The most basic decision that had to be addressed in the design of the survey was whether to measure repo business in terms of:

- the outstanding value of contracts at the close of business on a certain date (in other words, a stock); or
- the cumulative value of transactions agreed over a certain period, whether the resulting contracts were still in force by the end of the survey period or had matured prior to this date (in other words, a flow).

Ideally, a survey should measure both stocks and flows. However, the ERC Committee felt that this would be asking too much of banks in the first survey.

There are arguments for and against both measures of market size. Stock data is useful in providing a gauge of credit and market risk exposure. Stocks may also be easier for banks to analyse into cash currency denomination and source of collateral, as these numbers can be taken from the balances outstanding in accounts.

Flows, on the other hand, give a better measure of activity and provide a basis from which to estimate revenues, as well as measuring exposure to operational risk. It is also probably easier for banks to compile a total figure from flows and to analyse flows into maturities. The majority of published data to date have been flows. Unfortunately, however, variations in maturity distributions across banks and markets mean that flows are not strictly comparable. For example, EUR10 billion per day of overnight repos is not as significant as EUR10 billion per day of one-week repos. An accurate adjustment for this problem would require a very detailed analysis of maturities.

After considering the various arguments, the ERC Committee decided to measure the stock of repos.

## 2.2 Double counting

The problem of double counting arises when two banks report transactions between themselves. This means that the survey will count each contract twice. Because the survey is aimed only at banks, double counting is purely a problem for repos between banks. It can be ignored for repos between banks and non-banks, or - in the case of purely domestic surveys - repos between banks and non-resident entities.

In order to adjust for double-counting, it would have been necessary to ask banks to

[1] See the tables at the beginning of Chapter 3 for details of the areas covered.

analyse their business further, specifically, into:

- interbank repos; and
- repos with non-banks.

The interbank figure would then be reduced by anything up to 50%, depending on how much interbank repo business was thought to have been captured by the survey. For example, if the survey was thought to capture 50% of interbank business, then the reported interbank figure would only have to be reduced by 25%.

Because a number of banks indicated that they would have difficulty in analysing their business into interbank and customer, the ERC Committee decided not to include this question. In coming to this view, it was also noted that most existing figures for the size of repo markets were gross and that ISMA's survey figure would therefore be comparable.

### 2.3 Measuring the size of domestic markets and the intra-eurozone market

The data collected by ISMA's survey cannot be decomposed into domestic markets. This is because many of the banks participating in the survey run a single book for repo in Europe, even though some deal in repos from several centres. It may be tempting to use the collateral analysis as a proxy, but this ignores the widespread use of third-country collateral, particularly German, Italian and Belgian government bonds, and the international nature of much of the business conducted in London.

Furthermore, the survey does not provide a figure for the size of the market between counterparties based within the eurozone. This would have required a more detailed counterparty analysis, a burden which the ERC Committee was reluctant to impose on banks.

### 2.4 Country coverage

Although the survey captured the European repo business of banks headquartered in 14 countries, some of those countries were represented by only one or two banks. For some countries, this is not a serious problem because the high concentration of banking means that just two banks can provide a representative sample. Difficulties arise for countries where the banking system is very fragmented, and the domestic market is less integrated into the wider European market and more idiosyncratic. One example of the problems that this can cause may be the higher-than-expected percentage of classic repo revealed by the survey, which may reflect the relative under-representation of banks headquartered in countries such as Italy and Spain, where sell/buy-backs are more common than classic repos. However, the deepening of the survey by the inclusion of more banks headquartered in currently under-represented countries will gradually resolve this issue.

### 2.5 Market coverage

The fact that 48 banks participated in the first ISMA survey represents an excellent start, especially as this number included some of the largest participants in the European repo market. The figure of EUR1,863 billion in outstanding contracts is also very impressive. Nevertheless, these 48 banks represent only a sample of the market population, which means that the European repo market is obviously larger than EUR1,863 billion.

The intriguing question is, of course, how much larger? The ISMA Centre tackled the issue by conducting two exercises:

- To produce a bottom-up estimate of overall market size, the Centre used the profile of the returns from the banks taking part in the survey to estimate the size of the repo business of the larger non-participating banks. Aggregate adjustments were made for the smaller banks in each country and for missing countries.

- It filled-in the gaps in published figures for domestic markets using anecdotal evidence and by converting, where possible, from available turnover figures.

Both exercises were based on conservative assumptions. The results were consistent with one another and confirmed the obvious, i.e. that the European repo market is somewhat larger than EUR1,863 billion. However, the ERC Committee felt that the publication of these estimates, however carefully derived, alongside the precise numbers provided by participating banks could detract from the real achievement represented by the survey and would risk undermining its credibility.

### 2.6 Internal consistency

The returns from banks were examined individually and suspected anomalies were cross-checked against the returns from other banks. Where the profile of one bank differed significantly from the others, the return was queried with the bank. However, relatively few returns needed to be queried. ISMA is therefore able to be confident in the overall quality of the data provided by participants.

# CHAPTER 3
# ANALYSIS OF SURVEY RESULTS

The aggregate results of the survey are set out in the following series of tables.

Q1 What is the total value of cash you have borrowed and lent through repo transactions that is due to be repaid after June 13, 2001?

| Repo | Reverse repo | Total |
|---|---|---|
| 49.6% | 50.4% | 100.0% |

Of the amounts given in response to Q1 above,

| 1.1 How much was transacted: | Repo | Reverse repo | Total |
|---|---|---|---|
| direct with counterparties | | | |
| • in the same country as you | 23.6% | 22.7% | 23.2% |
| • cross-border in (other) eurozone countries | 12.8% | 10.8% | 11.8% |
| • cross-border in non-eurozone countries | 10.6% | 12.4% | 11.5% |
| through voice-brokers | | | |
| • in the same country as you | 28.0% | 28.7% | 28.3% |
| • cross-border in (other) eurozone countries | 11.0% | 11.7% | 11.4% |
| • cross-border in non-eurozone countries | 5.6% | 6.0% | 5.8% |
| on ATSs with counterparties | | | |
| • in the same country as you | 1.9% | 1.4% | 1.7% |
| • cross-border in (other) eurozone countries | 1.5% | 1.6% | 1.5% |
| • cross-border in non-eurozone countries | 0.2% | 0.4% | 0.3% |
| • anonymously through a central clearing counterparty | 4.8% | 4.3% | 4.6% |
| | | | |
| 1.2 How much of the cash is denominated in: | | | |
| • EUR | 74.2% | 72.3% | 73.3% |
| • GBP | 11.3% | 11.0% | 11.2% |
| • USD | 8.8% | 10.2% | 9.5% |
| • SEK, DKK | 1.8% | 1.5% | 1.6% |
| • JPY | 2.5% | 3.7% | 3.1% |
| • Other currencies | 1.4% | 1.3% | 1.3% |
| | | | |
| 1.3 How much is cross-currency? | 2.2% | 1.6% | 1.9% |
| | | | |
| 1.4 How much is: | | | |
| • classic repo | 85.4% | 82.4% | 83.9% |
| • documented sell/buy-backs | 7.1% | 9.3% | 8.2% |
| • undocumented sell/buy-backs | 7.4% | 8.3% | 7.9% |
| | | | |
| 1.5 How much is: | | | |
| • fixed rate | 91.4% | 89.5% | 90.4% |
| • floating rate | 4.6% | 6.1% | 5.3% |
| • open | 4.0% | 4.5% | 4.3% |
| | | | |
| 1.6 How much fixed & floating rate repo is: | | | |
| for value before June 16, 2001 and with a remaining term to maturity of: | | | |
| • 1 day | 16.2% | 12.5% | 14.3% |
| • 2 - 7 days | 29.9% | 30.6% | 30.3% |
| • more than 7 days but no more than 1 month | 17.4% | 17.8% | 17.6% |
| • more than 1 month but no more than 3 months | 11.0% | 11.7% | 11.4% |
| • more than 3 months but no more than 6 months | 6.4% | 7.5% | 6.9% |
| • more than 6 months | 9.5% | 11.8% | 10.7% |
| for value after June 15, 2001 (i.e. forward-forward repos) | 9.6% | 8.1% | 8.8% |

| | Repo | Reverse repo | Total |
|---|---|---|---|
| 1.7 How much is tri-party repo: | | | |
| • for fixed terms to maturity | 5.2% | 2.2% | 3.7% |
| • on an open basis | 3.6% | 0.0% | 1.8% |
| | | | |
| 1.8 How much is against collateral issued in: | | | |
| Austria | | | |
| • by the central government | 1.2% | 0.8% | 1.0% |
| • by other issuers | 0.0% | 0.1% | 0.0% |
| Belgium | | | |
| • by the central government | 8.0% | 6.9% | 7.5% |
| • by other issuers | 0.0% | 0.1% | 0.0% |
| Denmark | | | |
| • by the central government | 0.4% | 0.4% | 0.4% |
| • by other issuers | 0.2% | 0.3% | 0.3% |
| Finland | | | |
| • by the central government | 0.1% | 0.1% | 0.1% |
| • by other issuers | 0.0% | 0.0% | 0.0% |
| France | | | |
| • by the central government | 6.3% | 5.2% | 5.8% |
| • by other issuers | 0.4% | 0.3% | 0.4% |
| Germany | | | |
| • by the central government | 27.3% | 30.7% | 29.0% |
| • by landesbanks and hypotheken banks in the form of pfandbrief | 3.3% | 2.7% | 3.0% |
| • by other issuers | 2.4% | 1.9% | 2.1% |
| Greece | | | |
| • by the central government | 1.4% | 1.7% | 1.5% |
| • by other issuers | 0.0% | 0.0% | 0.0% |
| Ireland | | | |
| • by the central government | 0.1% | 0.0% | 0.0% |
| • by other issuers | 0.0% | 0.0% | 0.0% |
| Italy | | | |
| • by the central government | 17.7% | 17.9% | 17.8% |
| • by other issuers | 0.3% | 0.6% | 0.4% |
| Luxembourg | | | |
| • by the central government | 0.0% | 0.0% | 0.0% |
| • by other issuers | 0.0% | 0.1% | 0.1% |
| Netherlands | | | |
| • by the central government | 1.4% | 1.4% | 1.4% |
| • by other issuers | 0.2% | 0.3% | 0.3% |
| Portugal | | | |
| • by the central government | 0.3% | 0.3% | 0.3% |
| • by other issuers | 0.0% | 0.0% | 0.0% |
| Spain | | | |
| • by the central government | 6.1% | 4.6% | 5.4% |
| • by other issuers | 0.1% | 0.2% | 0.1% |
| Sweden | | | |
| • by the central government | 1.2% | 1.0% | 1.1% |
| • by other issuers | 0.2% | 0.2% | 0.2% |
| UK | | | |
| • by the central government | 11.3% | 11.0% | 11.2% |
| • by other issuers | 0.7% | 0.6% | 0.6% |
| | | | |
| US but settled across Euroclear or Clearstream | 3.8% | 2.2% | 3.0% |
| | | | |
| other countries | 5.3% | 8.4% | 6.9% |

Q2 What is the total value of bonds loaned and borrowed by your repo desk?

| | Lending | Borrowing | Total |
|---|---|---|---|
| To/from counterparties | | | |
| • in the same country as you | 46.1% | 66.8% | 56.2% |
| • cross-border in (other) eurozone countries | 30.9% | 17.7% | 24.4% |
| • cross-border in non-eurozone countries | 23.0% | 15.6% | 19.4% |
| For which the term to maturity is | | | |
| • fixed | 79.5% | 64.5% | 72.3% |
| • floating | 20.5% | 35.5% | 27.7% |

Not all the participating banks completed all the analyses. In some cases, this was simply because of the nature of their business. Those banks, for example, that do not use ATSs, a CCP or tri-party repos could not respond to questions on these subjects. In a few cases, banks were unable to extract the necessary data in the time available. The most significant shortfall was in the collateral analysis, which six banks or branches were unable to complete.

*Total repo business (Q1)*

The total value of repos and reverse repos outstanding on the books of the 48 participating banks at close of business on June 13, 2001 was EUR1,863 billion, of which 49.6% were repos and 50.4% were reverse repos. The total is a gross figure, which means that it has not been adjusted for double-counting (see Chapter 2, section 2.2). The average size of participating banks' repo books was about EUR39 billion.

*Counterparty analysis (Q1.1)*

Some 47% of reported outstanding repo contracts had been negotiated directly with the other counterparty (41% were settled bilaterally and 6% under tri-party repo arrangements), 46% through voice-brokers and 8% through inter-dealer ATSs.

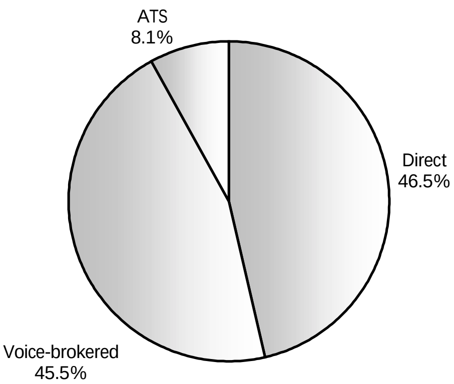


Figure 1 Counterparty analysis

Of the banks surveyed, 41 used voice-brokers and 19 traded on ATSs. These numbers show significant interest in electronic trading, but modest usage over the first two years in which European systems have been available.

The average number of active repo relationships for the banks in the survey was 88, but the variation in the numbers across banks was considerable.

*Geographical analysis (Q1.1)*

Some 53% of reported outstanding repo contracts were with domestic counterparties and 42% were cross-border. Splitting the latter figure down, just under 25% were with counterparties in eurozone countries (both eurozone to eurozone and eurozone to non-eurozone transactions) and almost 18% were with counterparties outside the eurozone (both eurozone to non-eurozone and non-eurozone to non-eurozone transactions). Almost 5% of reported outstanding contracts were negotiated anonymously on an ATS and settled with a CCP, and could not therefore be categorised as either domestic or cross-border.

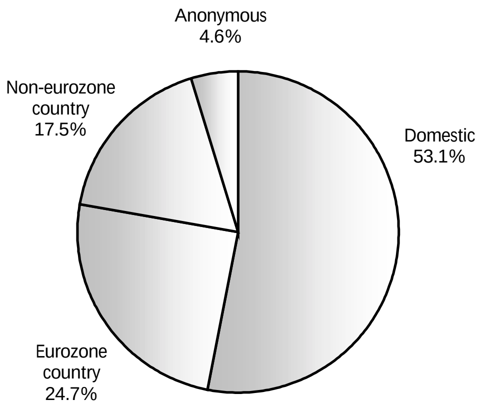


Figure 2 Geographical analysis

The difference between the 5% quoted above for ATS business and the 8% quoted in the earlier counterparty analysis is probably due to the fact that the 5% represents fully anonymous business, whereas the 8% includes business on ATSs that offer name display (no anonymity) or name give-up (pre-trade anonymity only). Anonymity requires an ATS to be connected to a CCP (which means that the CCP appears on the screen as the counterparty). While ATSs accounted for a relatively modest share of reported repo business, the ERC Committee believes that the growth in electronic trading in the European repo market has been accelerating.

The counterparty and geographical analyses are shown in combination in Figure 3 below.

(44%). Voice-brokers play a larger role in domestic business (53%) than cross-border business (voice-brokers are involved in 46% of business with eurozone countries and 33% of business with non-eurozone countries). ATSs are more important in business with eurozone counterparties (6%) than they are in business with domestic counterparties (3%) and non-eurozone counterparties (2%).

*Settlement analysis (Q1.7)*

Some 6% of reported outstanding repo contracts had been negotiated under tri-party repo arrangements, the rest were bilateral or with a CCP. Of the tri-party repo business, some 67% was for a fixed term and 33% was on an open basis.

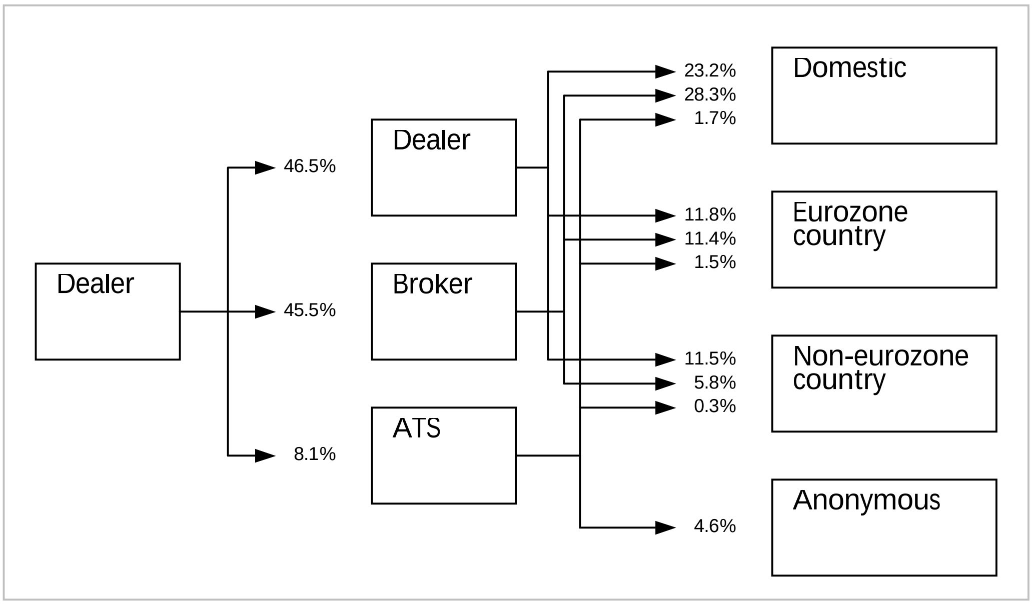


Figure 3 Counterparty and geographical analysis combined

Direct relationships are more important in business with non-eurozone counterparties (representing 65% of the total business with these counterparties) than in business with eurozone countries (48%) or domestic business

Of the participating banks, 21 transacted tri-party repos. The total reported size of tri-party repo business was EUR98 billion. This compares with an estimate of the size of the European tri-party repo market in June 2001 of over EUR180 billion, suggesting that the survey had captured about half of that business. The general impression within the ERC Committee is that tri-party repo has been growing rapidly.

*Cash currency analysis (Q1.2)*

Some 73% of the outstanding repo contracts reported in the survey were denominated in euros (EUR), 11% in pounds sterling (GBP), 10% in US dollars (USD), 3% in Japanese yen (JPY) and 2% in either Swedish krona or Danish krone (SEK, DKK).

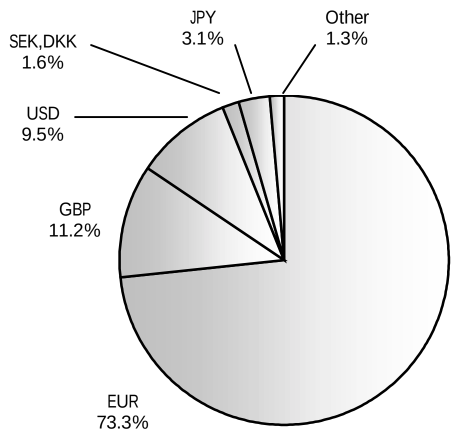


Figure 4 Cash currency analysis

Only 2% of contracts were reported to be cross-currency repos (transactions in which the cash and collateral are denominated in different currencies). However, only 14 banks answered this question (some of those not answering might not have been able to extract the data, others might not engage in cross-currency repo).

*Collateral analysis (Q1.8 and Q1.3)*

Some 76% of repo collateral held by participating banks was issued in countries of the eurozone: 34% was issued in Germany, 18% in Italy, 8% in Belgium, 6% in France, 6% in Spain, 2% in the Netherlands and 2% in Greece. Another 12% of collateral was issued in the UK, 3% in the US and cleared in Europe, and 2% was issued in Sweden or Denmark.

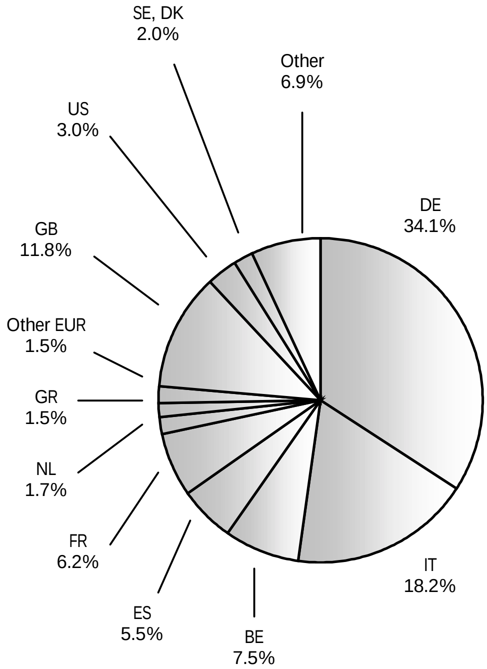


Figure 5 Collateral analysis

Most collateral was issued by central governments (over 91%). In Germany, 85% were government securities and 9% were pfandbrief. Non-government securities were a significant proportion of collateral issued in Denmark (41%), Finland (26%), Ireland (26%), the Netherlands (16%), Sweden (17%) and Luxembourg (85%).

If the collateral analysis is compared with the cash currency analysis, there appear to be discrepancies between the figures for countries in which the collateral was issued and the corresponding currency. This point is illustrated in the following table.

| **Collateral analysis** | | **Cash currency analysis** | | **Discrepancy** |
|---|---|---|---|---|
| Eurozone | 76.2% | EUR | 73.3% | 2.9% |
| UK | 11.8% | GBP | 11.2% | 0.6% |
| Sweden, Denmark | 2.0% | SEK,DKK | 1.6% | 0.4% |
| US | 3.0% | USD | 9.5% | 6.5% |
| Japan | | JPY | 3.1% | |
| Other | 6.9% | others | 1.3% | 2.5% |
| Sum of discrepancies | | | | 12.9% |

Discrepancies between cash and collateral currency

At first glance, these discrepancies would appear to reflect cross-currency business. They imply that collateral denominated in GBP, SEK and DKK, but in particular EUR and other currencies, have been repoed out for US dollars. However, the sum of the discrepancies is much larger than reported cross-currency business, which is only 2%. There are three likely reasons for this difference:

- First, there may be errors due to the fact that only 46 banks and branches completed the collateral analysis, but all participating banks and branches completed the cash currency analysis. However, adjusting for this problem (by eliminating from the cash currency analysis banks who did not complete the collateral analysis) only reduces the sum of the discrepancies to 12.2% (although cross-currency repo represents 2.4% of the 46 banks' business, reducing the net sum of the discrepancies to 9.8%). Adjusting further (by eliminating from both the cash currency and collateral analyses all banks who did not report any cross-currency business) increases the sum of the discrepancies to 13.4% (although cross-currency repo represents 5.3% of their business, reducing the net sum of the discrepancies to 8.1%).
- Second, cross-currency business may have been under-reported. The small number of banks (14) reporting cross-currency business suggests that it may have been difficult for some to measure this activity. In particular, some banks may have unable to report cross-currency repo undertaken under tri-party arrangements. This is particularly likely to be the case with tri-party repo transactions in which banks lent cash. Tri-party repo cash-lenders do not take delivery of collateral (which is held by the tri-party repo service provider). As the collateral accepted by the tri-party repo service provider on behalf of the cash lender has to conform to agreed eligibility criteria, other than to check that eligibility criteria are being satisfied, the cash lender may not be interested in the precise composition of collateral from tri-party repo and may therefore not record those data.
- Finally, the collateral analysis is framed in terms of the country in which collateral was issued, not the country of the currency in which the collateral is denominated. In the case of Eurobonds, the two are

different (Eurobonds are bonds denominated in a currency other than that of their country of issuance). Eurobonds are therefore cross-currency by definition. As eurobonds tend to be issued in London or Luxembourg, one would expect this fact to show up as a major discrepancy between the share of collateral issued in the UK and the share of GBP as a cash currency (the same discrepancy will not show up in the case of Luxembourg because, being part of the eurozone, it does not have its own currency). For example, euro-denominated bonds issued in London by German entities should be counted as UK collateral, but when used in repos against euro-denominated cash would not be counted as cross-currency. This should open up discrepancies between the collateral analysis and the cash currency analysis. Unfortunately, it is more likely that banks in practice measured their cross-currency repo business on a transaction-by-transaction basis and classified collateral by currency rather than by country of issue (a case of the wrong method giving the right answer). Indeed, there is some evidence of this. If banks had classified by country of issue, one would have expected a much larger discrepancy between collateral issued in the UK and GBP as the cash currency, but this was just 0.6%. Whilst a much larger share of collateral might have been expected for Luxembourg, in fact it was only 0.1%.

These discrepancies will be investigated further ahead of the next survey.

*Contract analysis (1.4)*

Some 84% of reported outstanding repo contracts were classic repo, 8% were sell/buy-backs documented under agreements such as the PSA/ISMA or TBMA/ISMA Global Master Repurchase Agreement (GMRA) and only 8% were undocumented sell/buy-backs.

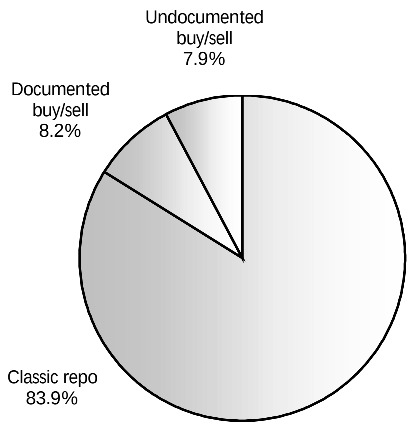


Figure 6 Contract analysis

Discussions within the ERC Committee suggested that sell/buy-backs were under-represented. This may reflect the limited numbers of banks in the survey that were headquartered in countries where the domestic market is composed largely of sell/buy-backs (e.g. Italy and Spain).

*Repo rate analysis (Q1.5)*

Some 90% of outstanding contracts paid a fixed rate of return, 5% were floating-rate and 4% were open repos (meaning they had no fixed maturity but were terminable on demand by either counterparty subject to an agreed period of notice).

Again, the view within the ERC

Committee was that both floating-rate and open repos were under-represented. The problem in the case of floating-rate repos, which account for a large proportion of the French market, is likely to reflect the small number of French banks participating in the survey. No conclusion was reached about the small percentage of open repos.

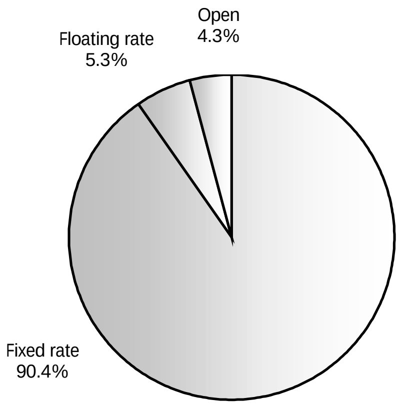


Figure 7 Repo rate analysis

*Maturity analysis (Q1.6)*

The survey asked banks to analyse their outstanding contracts in terms of their remaining term to maturity. The bulk of contracts (62%) had less than one month remaining to maturity but there was significant business out to one year. Some 14% of contracts had one day remaining to maturity, 30% had between two and seven days, 18% had between eight days and one month, 11% had more than one month and up to three months, 7% had over three months and up to six months, and 11% had over six months and up to twelve months. Some 9% were forward-forward repos (with a value date more than two business days in the future).

Whilst most banks are able to provide information on maturities, a difficulty arises in the sense that there are overlaps between some of the time buckets. For example, overnight transactions agreed on Wednesday, June 13 for value on Friday, June 15 will have a term to maturity of three days and be classified in the 2 to 7-days time bucket rather than the one-day bucket, where they properly belong. The 2 to 7-days bucket is therefore likely to be inflated at the expense of the one-day bucket. In addition, one-day transactions with corporate value dates (T+3) will be classified as forward-forwards, as these were defined for simplicity as transactions that have a value date more two days in the future.

*Product analysis (Q2)*

The survey asked banks to measure how much securities lending and borrowing was conducted on their repo desks (separately from

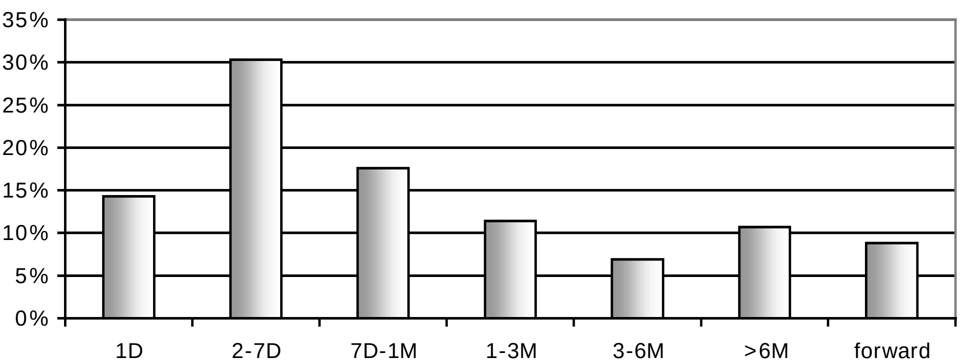


Figure 8 Maturity analysis

their securities lending and borrowing desks). Of the banks surveyed, 31 undertook securities lending and borrowing from their repo desks. Some 17% of the total business on participants' repo desks was found to be securities lending and borrowing. Of this, 56% was domestic and almost 44% was cross-border (split down into 24% with counterparties in eurozone countries and just less than 20% with counterparties outside the eurozone). Some 72% of this securities lending and borrowing was for a fixed term and 28% was on an open basis.

The ERC Committee was surprised at the high proportion of fixed-term securities lending and borrowing. This business has traditionally been conducted on an open basis. It may be that some of the securities lending and borrowing contracts reported by banks as having fixed terms included rights of substitution as an alternative to being structured as open contracts. Both mechanisms allow a lender to recall loaned securities before the maturity of the securities loan.

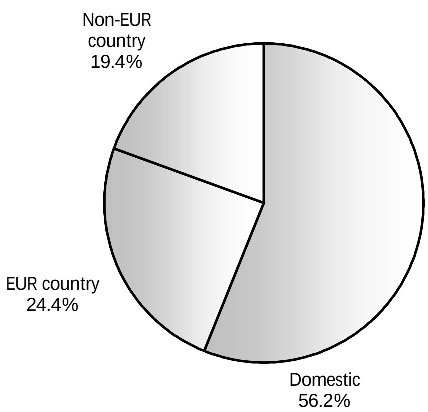


Figure 9 Counterparty analysis of securities lending

*Concentration analysis*

The top ten banks taking part in the survey accounted for some 64% of total reported business. The top twenty accounted for 88%. The top thirty accounted for 97%.

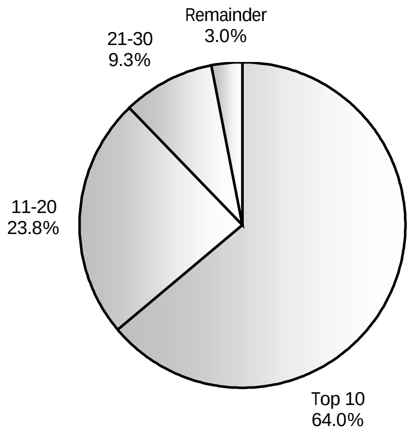


Figure 10 Concentration analysis

This analysis can be misleading. It shows a high degree of market concentration, but this should not be confused with market power. A better measure of the concentration of market share, which is often used in competition analyses, is the Herfindahl Index[2]. The Herfindahl Index for the survey was 0.05, which is very low, showing a very healthy degree of competition.

[2] 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 participant has a dominant market share and/or the more insignificant the market shares of all the other participants. A market in which several participants have very large market shares can therefore have a relatively low index.

# CHAPTER 4
# CONCLUSION

The ISMA survey conducted on June 13, 2001 revealed that the European repo market is somewhat larger than EUR1,863 billion in terms of outstanding contracts. This is a very substantial number and indicates the importance of repo to individual banks and to the European financial system as a whole. As more banks participate in the survey in its six monthly cycle, the more complete the market picture that will emerge.

The June survey showed that, among the sample of 48 banks participating, the largest share of repo business was transacted between domestic counterparties (53%), but that cross-border business was very significant (42%).

The bulk of reported business was transacted directly between banks (47%) or via voice-brokers (46%). Electronic trading via ATSs was widely (but so far modestly) used by banks participating in the survey (8%).

Tri-party repos also constituted a small share of participating banks' business (6%).

A very large share of reported repo business was in EUR (73%), but GBP (11%) and USD (10%) business was also important. Most collateral was issued in the eurozone (76%), notably in Germany (34%) and Italy (17%), and to a lesser extent, Belgium (8%), France (6%) and Spain (6%). However, a significant share of collateral was issued in the UK (12%). Collateral overwhelmingly took the form of central governments' securities (91%), although the collateral issued in a number of smaller European countries included large proportions of non-government securities. Pfandbrief was an important source of German collateral (9%).

The maturity profile of reported repo business was skewed towards the short term, with most contracts (62%) having less than one month remaining to maturity, although there was a reasonable spread of business out to one year. Forward-forward repos are an important part of the market (9%). Reported contracts were very largely classic repos (84%) with the share of sell/buy-backs smaller than expected, although these particular results should be treated carefully. Caution also needs to be applied to the reported predominance of fixed-rate repos (90%) compared to floating-rate (5%) and open repos (4%).

The repo desks of many of the banks participating in the survey also executed securities lending and borrowing. This activity accounted for 17% of the total business on these desks. The majority was between domestic counterparties (56%) and for fixed terms (72%), although the relatively high share of fixed-term business has been questioned.

The ten largest banks participating in the survey accounted for most of the reported business (64%), but the market would appear to be very competitive.

The next survey will take place on December 12, 2001. As well as expanding the number of banks participating in the survey, it will be possible to start monitoring trends in the size and composition of the European repo market.

# 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 June 13, 2001.

### European repo market survey

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, June 13, 2001; and various breakdowns of these amounts. Please complete as much [of the form] as possible.

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 this 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 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.

### General guidance

(a) Give the value of the cash side of all repos and reverse repos (not the value of collateral) that are still outstanding at close of business on Wednesday, June 13, 2001.

(b) Include only principal amounts, i.e. exclude repo interest accrued on the cash, unless this has been capitalised by rolling over the transaction.

(c) Outstanding means repos and reverse repos which will mature or roll-over on or after Thursday, June 14, 2001. You should therefore include all open repos and reverse repos that have been rolled over from June 13, 2001 to a later date and all forward-forward repos and reverse repos.

(d) Give separate totals for (a) repos and sell/buy-backs and (b) reverse repos and buy/sell-backs.

(e) Include all classic repos, sell/buy-backs and similar types of transaction (e.g. pensions livrées). There is a separate question on securities lending and borrowing transactions (including securities lending and borrowing against cash collateral) - see question (2).

(f) Exclude repo transactions undertaken with central banks as part of their money market operations.

(g) In the case of equity repo, please include the value of synthetic structures.

### Guidance on specific questions in survey form

(Q1.1) Transactions (1.1.1) direct with counterparties or (1.1.2) through voice-brokers all repos should exclude all repos transacted over an ATS. These should be recorded under (1.1.3).

(Q1.1.3) ATSs are automated trading systems (e.g. BrokerTec, Eurex Repo and MTS/EMTS, and also voice-assisted electronic systems such as e-speed, Garban-Intercapital's ETC and GFInet). Anonymous transactions through an ATS with a central counterparty (e.g. RepoClear or Clearnet) should be recorded in (1.1.3.4).

(Q1.4) Classic repos include transactions documented under the PSA/ISMA GMRA or TBMA/ISMA GMRA without reference to the Buy/Sell-Back Annex. Classic repos include pensions livrées. Classic repos are characterised by the immediate payment of a manufactured or substitute payment to the seller upon receipt of a coupon on the collateral by the buyer. All open repos are likely to be classic repos. Sell/buy-backs include all transactions that are not documented. In the unlikely event that a coupon is paid on collateral during the term of a sell/buy-back, the buyer reinvests the coupon until the maturity of the sell/buy-back and deducts the substitute payment (including reinvestment interest) from the repurchase proceeds due to be paid by 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 Annex to the 1995 PSA/ISMA GMRA and TBMA/ISMA GMRA), adjustments to the relative amounts of collateral or cash - which, for a classic repo, would be performed by variation margins - are likely to be made by early termination and repricing.

(Q1.6) This section asks for the remaining term to maturity (not the original term to maturity) of the fixed-rate repos reported in (1.5.1) and the floating-rate repos reported in (1.5.2) to be divided up on the following basis:

(Q1.6.1.1) all transactions for value up to and including Wednesday, June 13, 2001, that will mature on Thursday, June 14, 2001: this includes overnight, tom/next and spot/next transactions; ideally, this should also include corporate/next transactions.

(Q1.6.1.2) all transactions for value up to and including Wednesday, June 13, 2001, that will mature on Friday, June 15, 2001, and any day thereafter up to and including Wednesday, June 20, 2001.

(Q1.6.1.3) all transactions for value up to and including Wednesday, June 13, 2001, that will mature on Thursday, June 21, 2001, and any day thereafter up to and including Friday, July 13, 2001.

(Q1.6.1.4) all transactions for value up to and including Wednesday, June 13, 2001, that will mature on Monday, July 16, 2001, and any day thereafter up to and including Thursday, September 13, 2001.

(Q1.6.1.5) all transactions for value up to and including Wednesday, June 13, 2001, that will mature on Friday, September 14, 2001, and any day thereafter up to and including Thursday, December 13, 2001.

(Q1.6.1.6) all transactions for value up to and including Wednesday, June 13, 2001, that will mature on Friday, December 14, 2001, and any day thereafter.

(Q1.7) Please confirm whether you have included your tri-party repo business in (1.6).

(Q1.8) Eurobonds should be included as bonds issued "by other issuers" in the countries in which the bonds are issued. This will typically be the UK (1.8.14) and Luxembourg (1.8.15).

(Q1.8.16) US but settled across Euroclear or Clearstream means only domestic and Yankee bonds. This includes Reg.144a bonds, but excludes Eurodollar and US dollar global bonds.

(Q2) 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.

# APPENDIX B
# PARTICIPANTS IN THE SURVEY

ABN Amro Bank
Artesia Banking Corporation
Banca d'Intermediazione Mobiliare IMI
Banco Privado Portugues
Bank Brussels Lambert
Bank of Åland
Bankgesellschaft Berlin
Barclays Capital
Bayerische Landesbank
BBVA
BHF Bank
BNP Paribas
CDC Ixis Capital Markets (Frankfurt)
Commerzbank
Confederación Española de Cajas de Ahorros (CECA)
CSFB
Daiwa Securities SMBC Europe
Deutsche Bank
Dexia Hypothekenbank (Berlin)
DGZ-DekaBank
Dresdner Bank
Erste Bank der oesterreichischen Sparkassen
Fortis Bank
Goldman Sachs International
GZ-Bank
Halifax
Hamburgische Landesbank
HypoVereinsbank
IntesaBCI
JP Morgan Chase
KBC
Landesbank Baden-Württemberg
Landesbank Rheinland/Pfalz Girozentrale
Landesbank Sachsen Girozentrale
Landesbank Schleswig-Holstein
Maple Bank
Merrill Lynch International
Mizuho International
Morgan Stanley
National Bank of Greece
Nomura International
Norddeutsche Landesbank Girozentrale
Raiffeisen Zentralbank Österreich
Sal Oppenheim
Sampo Bank
Schroder Salomon Smith Barney (Citigroup)
UBS Warburg
Westdeutsche Landesbank

Company names provided here are as supplied by those involved in producing this survey. Not all names precisely reflect the names of firms as listed in ISMA's Members' Register.

# APPENDIX C
# ISMA'S REPO COUNCIL STRUCTURE

The International Repo Council (IRC) is a special interest group established by ISMA for members active in the international repo markets.

Beneath the level of the IRC, regional repo councils may be established to represent the repo market of a particular geographic area.

The European Repo Council (ERC) is the first such regional council to have been established. Its members comprise the major banks and securities houses active in Europe's cross-border repo markets.

ISMA members wishing to know more about the repo council and committee structure should refer to section 1000 of ISMA's Rule Book or read the overview provided on ISMA's web site.