

# ISDA<sup>®</sup>

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Markets

## ISDA Margin Survey 2014

April 2014

ISDA's annual Margin Survey provides information about the use of collateral in the OTC derivatives business. The data used in the 2014 Margin Survey is sampled as of December 31, 2013. Over the past 14 years, the Margin Survey has provided a consistent set of benchmarks for collateral use, and is part of a broader set of ISDA initiatives in the area of collateral, including documentation, best practices and practitioner guidelines.

[www.isda.org](http://www.isda.org)

## INTERNATIONAL SWAPS AND DERIVATIVES ASSOCIATION

Since its founding in 1985, the International Swaps and Derivatives Association has worked to make over-the-counter (OTC) derivatives markets safe and efficient.

ISDA's pioneering work in developing the ISDA Master Agreement and a wide range of related documentation, and in ensuring the enforceability of its netting and collateral provisions, has helped to significantly reduce credit and legal risk. The Association has been a leader in promoting sound risk management practices and processes, and engages constructively with policy-makers and legislators around the world to advance the understanding and treatment of derivatives as a risk management tool.

Today, ISDA has over 800 member institutions from 64 countries. The membership covers a broad range of OTC derivatives participants, including corporations, investment managers, government and supranational agencies, insurance companies, energy and commodities firms, and international and regional banks. In addition to market participants, the membership comprises exchanges, clearing houses and repositories, as well as law practices, accounting firms and other service providers.

ISDA's work in three key areas – reducing counterparty credit risk, increasing transparency and improving the industry's operational infrastructure – shows its strong commitment to achieving its primary goals: building robust, stable financial markets and a strong financial regulatory framework.

## EXECUTIVE SUMMARY

1. Estimated total collateral in circulation related to non-cleared OTC derivatives has decreased 14%, from \$3.7 trillion at the end of 2012 to \$3.2 trillion at the end of 2013 as a consequence of mandatory clearing.
2. The use of cash and government securities continues to account for roughly 90% of non-cleared OTC derivatives collateral, as has been the case in prior years. Cash received as a percentage of total collateral has decreased versus 2013, while cash delivered has remained relatively stable.
3. The number of collateral agreements (those with exposure and/or collateral balances) supporting non-cleared OTC derivatives transactions totalled 133,155 agreements at the end of 2013. Roughly 87% are ISDA agreements.
4. Eighty-seven percent of non-cleared OTC derivatives collateral agreements relate to portfolios of less than 100 trades. Only 0.3% involve portfolios of more than 5,000 trades as of December 31, 2013.
5. The use of collateral agreements is substantial. Among all firms responding to the survey, 91% of all OTC derivatives trades (cleared and non-cleared) were subject to a collateral agreements at the end of 2013.
6. Responding firms also indicated that 90% of non-cleared OTC derivatives trades were subject to collateral agreements at the end of 2013, marking a 20% increase versus the previous year.
7. On an asset class basis, 97% and 86% of bilateral transactions involving credit and fixed income derivatives respectively are performed under a credit support annex (CSA) or collateral agreement.
8. Portfolio reconciliation frequency has increased for larger-sized portfolios, with daily reconciliation increasing 5% for portfolios consisting of 100 to 499 trades at the end of 2013 compared to the end of 2012. Eighty-four percent of large firms surveyed indicated they reconcile their portfolio mix on a daily basis.

## METHODOLOGY AND PARTICIPANTS

**Introduction** ISDA’s annual Margin Survey provides information about the use of collateral in the OTC derivatives business. Each year, survey questions evolve slightly to reflect market developments in order to provide consistent, up-to-date benchmarks for collateral use. The data used in the 2014 Margin Survey is sampled as of December 31, 2013. This year, more attention is paid to the collateralization of cleared OTC derivatives, in addition to coverage of the bilateral, non-cleared OTC derivatives market.

First published in 2000, the ISDA Margin Survey is part of a broader set of ISDA initiatives in the area of collateral, including documentation, best practices and practitioner guidelines. As with all ISDA surveys, access to individual firm responses is strictly limited to selected ISDA staff and the data is not shared with employees of any ISDA member firm.

Please note there are various proposed and final regulations included in the Dodd-Frank Act and the European Market Infrastructure Regulation (EMIR) that pertain to collateral management. The results of this survey may reflect data gathered prior to the implementation of these new regulatory requirements.

### Participant Statistics

A total of 61 ISDA member firms responded to the 2014 Margin Survey. Participants were based in 20 different countries across three regions: Europe/Middle East/Africa (52%), the Americas (33%) and Asia (15%).

ISDA classifies participants into three size groups: large, medium and small, based on the number of active non-cleared OTC agreements<sup>1</sup>, as shown in Table 1. In the 2014 survey, 22% of participants were classified as ‘large’, having over 3,000 active agreements as of December 31, 2013. This percentage is similar to those participants classified as ‘small’, having 0-100 active agreements at this time. The majority of participants (51%) had between 100 and 3,000 agreements and fit into the ‘medium’ size category.

Comparing the percentage of large, medium and small firms between 2013 and 2014 surveys reveals that the percentage of large firms has again declined when compared to 2012, although the proportion is slightly higher than in 2013.. The medium category’, however, has grown in size when compared to 2013 and 2014. This is interesting as there were *more* banks and broker-dealers participating in 2014 as a percentage of total participants versus the past two years, as shown in Table 2.

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<sup>1</sup> An active agreement is a measure used to determine the size of a firm’s derivative program. An ‘active’ collateral agreement is considered an executed agreement when (i) there is an open exposure with active trades beneath it (whether or not collateral has been received/delivered), or (ii) where collateral has actually been received/delivered (even though there may be no open trades).

**Table 1: Profile of firms responding to the 2014 ISDA Margin Survey as of December 31, 2013**

|               | Number of agreements | 2014 | 2013 | 2012 |
|---------------|----------------------|------|------|------|
| <b>Large</b>  | >3,000               | 22%  | 18%  | 27%  |
| <b>Medium</b> | 100 – 3,000          | 51%  | 42%  | 45%  |
| <b>Small</b>  | 0 – 100              | 27%  | 40%  | 27%  |

Table 2 describes the type of entity that participated in the 2014 survey. Similar to previous years, banks and broker-dealers comprise the largest share, with the ‘other’ category – covering sovereigns, government-sponsored entities (GSEs), master trust banks and buy-side institutions – coming in second.

**Table 2: Entity type breakdown of firms responding to the 2014 ISDA Margin Survey as of December 31, 2013**

|                           | 2014 | 2013 | 2012 |
|---------------------------|------|------|------|
| <b>Bank/Broker-dealer</b> | 87%  | 81%  | 84%  |
| <b>Hedge fund</b>         | 2%   | 3%   | 2%   |
| <b>Other</b>              | 7%   | 8%   | 8%   |
| <b>Insurance company</b>  | 2%   | 3%   | 4%   |
| <b>Asset manager</b>      | 3%   | 6%   | 2%   |

## Collateral as a Risk Management Tool

Credit risk exists whenever a firm has a relationship in which a counterparty has an obligation to make payments or deliveries in the future. There are a number of ways of addressing the credit risk arising from a derivatives transaction, but the use of collateral has long been established as an effective means of mitigation.

In an evolving regulatory environment that broadly seeks to reduce the counterparty risk associated with derivatives, the continued use of bilateral collateralization has an increasingly important role to play in risk mitigation. This section details the use of collateral assets for this purpose.

## Collateral Assets

### Estimates of Total Collateral Outstanding for Non-Cleared OTC Transactions

The reported amount of collateral in circulation is defined as the collateral balances that have been received or delivered, respectively, by two counterparties to a bilateral OTC derivatives contract. In this year's survey, the combined collateral of 59 participants was approximately \$2.17 trillion at the end of 2013.

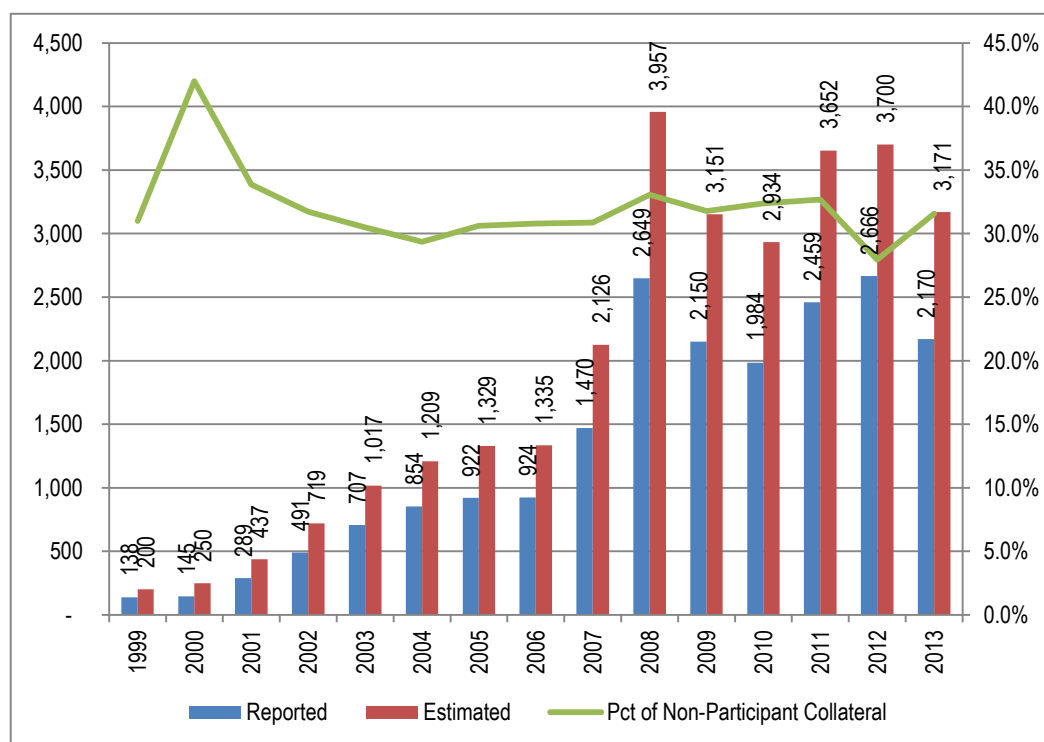
Chart 1 provides a history of reported collateral from the end of 1999 to the end of 2013. Each year, total reported collateral is adjusted for market participants that are not part of the ISDA survey. The green line denotes the percentage of non-participant collateral used to derive the estimate of total collateral in circulation figure each year. This metric has ranged from 28% to 42% over the entire period. Factors such as the number of participants and changing market and regulatory conditions drive this statistic<sup>2</sup>.

The estimated amount of collateral in circulation was approximately \$3.17 trillion at the end of 2013, representing a 14% decline from the previous year. Much of this decrease can be attributed to the rise in the amount of OTC derivatives that are now cleared.

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<sup>2</sup> The estimation procedure to derive the collateral in circulation metric is described in further detail in the Appendix.

**Chart 1: Growth in value of reported and estimated collateral (USD billions) as of December 31, 2013**



### Types of Assets Used as Collateral: Non-Cleared OTC Derivatives

Table 3 depicts the breakdown of reported collateral received and delivered against non-cleared OTC derivative transactions by asset category<sup>3</sup>. The use of cash and government securities continues to account for roughly 90% of collateral, as has been the case in prior years. Cash received as a percentage of total collateral has decreased versus 2013, while cash delivered has remained relatively stable.

Several other trends in assets used as collateral were evident in 2014. For example, the ‘other’ subcategory of cash has grown over the past three years, with Australian dollar, Canadian dollar and Swiss franc accounting for roughly 80% of non-G4 currencies received and delivered.

The ‘government securities by issuer’ category grew as a percentage of total collateral received in 2014, contributing 14.8% versus 11.6% in 2013. However, the percentage delivered was similar to 2013, but less than 2012 figures. Government bonds of the US, Japan and non-UK European Union member states made up 60% of the category. Sovereign bonds of Brazil, Canada, South Korea and Turkey comprised 90% of the ‘other’ subcategory.

<sup>3</sup> Underlying data can be found in Table A1 in the Appendix.

Meanwhile, ‘other securities’ received and delivered against non-cleared OTC transactions increased in 2014 as a percentage of total collateral. Equities have grown strongly as received collateral over the past three years, while the receiving of corporate bonds has increased slightly versus 2013 as well. These instruments also showed the largest change as delivered collateral, representing 37.5% of the category in 2014 versus 23.3% in 2013. Interestingly, the ‘other’ subcategory grew in 2014, with Canadian provincial bonds, asset-backed and mortgage-backed securities, Euroclear triparty and funds making up the majority of this subgroup.

**Table 3: Composition of collateral received and delivered against non-cleared OTC derivative transactions (USD billions) as of December 31, 2013**

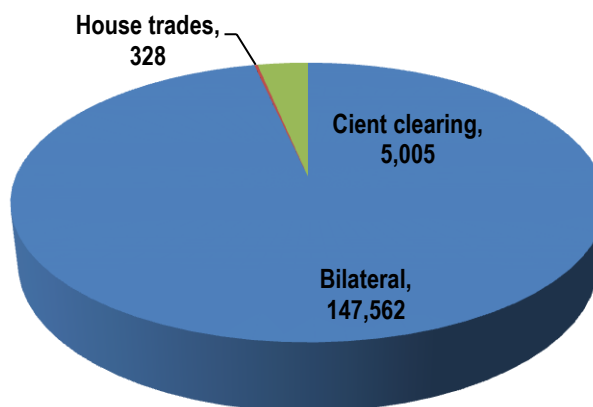
|  | Received     |              |              | Delivered    |              |              |
|--|--------------|--------------|--------------|--------------|--------------|--------------|
| Cash                                   | 2014         | 2013         | 2012         | 2014         | 2013         | 2012         |
| USD                                    | 42.3%        | 37.1%        | 41.9%        | 41.1%        | 36.6%        | 41.5%        |
| EUR                                    | 48.7%        | 55.5%        | 51.7%        | 48.8%        | 54.9%        | 50.9%        |
| GBP                                    | 2.5%         | 3.0%         | 2.3%         | 4.6%         | 4.1%         | 3.4%         |
| JPY                                    | 3.2%         | 3.1%         | 2.6%         | 2.6%         | 2.7%         | 2.9%         |
| Other                                  | 3.3%         | 1.3%         | 1.4%         | 2.9%         | 1.7%         | 1.4%         |
| <b>% of Total collateral</b>           | <b>74.9%</b> | <b>79.5%</b> | <b>78.8%</b> | <b>78.3%</b> | <b>78.7%</b> | <b>75.6%</b> |
| <b>Government securities by issuer</b> | <b>2014</b>  | <b>2013</b>  | <b>2012</b>  | <b>2014</b>  | <b>2013</b>  | <b>2012</b>  |
| United States                          | 29.3%        | 33.2%        | 40.1%        | 31.5%        | 34.3%        | 32.7%        |
| European Union                         | 20.5%        | 19.1%        | 20.2%        | 46.3%        | 40.3%        | 45.4%        |
| United Kingdom                         | 10.7%        | 12.9%        | 8.9%         | 7.8%         | 9.1%         | 9.4%         |
| Japan                                  | 19.5%        | 22.7%        | 21.7%        | 9.9%         | 13.1%        | 9.4%         |
| Other                                  | 20.1%        | 12.1%        | 9.1%         | 4.4%         | 3.2%         | 3.0%         |
| <b>% of Total collateral</b>           | <b>14.8%</b> | <b>11.6%</b> | <b>11.6%</b> | <b>18.2%</b> | <b>18.4%</b> | <b>21.2%</b> |
| <b>Other securities</b>                | <b>2014</b>  | <b>2013</b>  | <b>2012</b>  | <b>2014</b>  | <b>2013</b>  | <b>2012</b>  |
| Government agency/GSEs                 | 16.1%        | 24.7%        | 22.6%        | 30.0%        | 42.4%        | 34.7%        |
| Supranational bonds                    | 0.0%         | 0.8%         | 0.9%         | 0.0%         | 5.8%         | 5.8%         |
| US municipal bonds                     | 2.2%         | 3.3%         | 1.4%         | 1.4%         | 0.1%         | 0.0%         |
| Covered bonds                          | 0.0%         | 2.5%         | 0.7%         | 0.0%         | 6.3%         | 5.7%         |
| Corporate bonds                        | 28.4%        | 27.6%        | 32.1%        | 37.5%        | 23.3%        | 35.3%        |
| Letters of credit                      | 3.2%         | 4.9%         | 7.2%         | 3.7%         | 2.0%         | 0.0%         |
| Equities                               | 33.5%        | 25.1%        | 19.6%        | 9.0%         | 13.1%        | 2.4%         |
| Metals and other commodities           | 0.0%         | 0.0%         | 0.1%         | 0.0%         | 0.0%         | 0.0%         |
| Other                                  | 16.6%        | 11.0%        | 15.5%        | 18.5%        | 6.9%         | 16.2%        |
| <b>% of Total collateral</b>           | <b>10.3%</b> | <b>8.9%</b>  | <b>9.6%</b>  | <b>3.4%</b>  | <b>2.9%</b>  | <b>3.2%</b>  |



### Number and Types of Collateral Agreements

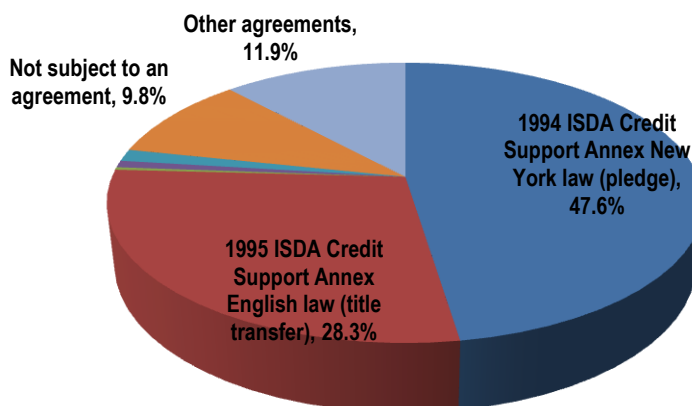
Respondents to the 2014 ISDA Margin Survey reported 152,895 active collateral agreements in place for both cleared and non-cleared OTC transactions, as shown in Chart 2 below. Of these agreements, 133,155 were bilateral, 322 related to house trades and 4,945 involved client cleared OTC agreements. There were 299,105 inactive agreements relating to non-cleared OTC transactions in the year, with an average of 5,752 across participants.

**Chart 2: Composition of active agreements as of December 31, 2013**



Over 90% of non-cleared OTC (bilateral) transactions were subject to collateral agreements in 2013, of which 87% were various ISDA collateral agreements. Chart 3 describes the composition of these agreements. The ‘other’ subcategory is mostly characterized by country-specific law and/or CSAs not included in Chart 4.

**Chart 3: Composition of active bilateral agreements as of December 31, 2013**



- 1994 ISDA Credit Support Annex New York Law (pledge)
- 1995 ISDA Credit Support Annex English Law (title transfer)
- 1995 ISDA Credit Support Deed English Law (charge)
- 1995 ISDA Credit Support Annex Japanese Law
- 2001 ISDA Margin Provisions
- Not subject to an agreement
- Other Agreements

## Collateral Coverage: Non-Cleared OTC Derivatives

Collateral coverage was measured in several ways in this year's survey. Participants were asked to provide the number of active non-cleared OTC derivatives collateral agreements according to portfolio size. Of the 129,671 agreements split by size, 87% related to portfolios consisting of less than 100 trades, as shown in Table 4.

**Table 4: Percentage of active non-cleared OTC collateral agreements by portfolio size as of December 31, 2013**

|                                       | 2014  | 2013  |
|---------------------------------------|-------|-------|
| <b>Greater than 5,000 trades</b>      | 0.3%  | 0.4%  |
| <b>Between 2,500 and 5,000 trades</b> | 0.3%  | 4.3%  |
| <b>Between 500 and 2,499 trades</b>   | 1.6%  | 2.4%  |
| <b>Between 100 and 499 trades</b>     | 11.0% | 5.6%  |
| <b>Less than 100 trades</b>           | 86.8% | 87.4% |

Participants were also asked to classify non-cleared OTC active collateral agreements by counterparty type. Survey findings reveal that 90% of total transactions, which involved dealers, banks and security firms and hedge funds, utilized a CSA or collateral agreement as shown in Table 5. Transactions by counterparties which did not utilize a CSA mainly involved non-financial institutions, governments and private firms or entities.

**Table 5: Percentage of active non-cleared OTC derivative collateral agreements by counterparty type as of December 31, 2013**

|   | CSA    | No CSA |
|---|--------|--------|
| <b>Dealers</b>  | 87.78% | 12.22% |
| <b>Banks and Security Firms</b>                           | 85.59% | 14.41% |
| <b>Insurance and Financial Guaranty Firms</b>             | 89.73% | 10.27% |
| <b>SPVs, SPCs, and SPEs</b>                               | 62.97% | 37.03% |
| <b>Hedge Funds</b>  | 92.72% | 7.28%  |
| <b>Pension Plans</b>                                      | 81.06% | 18.94% |
| <b>Mutual Funds</b>                                       | 84.79% | 15.21% |
| <b>Other Financial Firms</b>                              | 74.11% | 25.89% |
| <b>Non-Financial Institutions</b>                         | 32.24% | 67.76% |
| <b>Government-sponsored entities/ Government Agencies</b> | 81.60% | 18.40% |
| <b>Sovereign national governments</b>                     | 66.36% | 33.64% |
| <b>Local or regional government entities</b>              | 66.23% | 33.77% |
| <b>Other</b>  | 9.98%  | 90.02% |

Table 6 decomposes non-cleared OTC active collateral agreements by product type. Here we again see that the majority of all non-cleared OTC transactions are performed using a CSA or collateral agreement across each product type. CSAs were most prevalent in the largest derivatives categories: foreign exchange, fixed income, equity and credit derivatives.

**Table 6: Non-cleared OTC derivative collateral agreements by product type as of December 31, 2013**

|  | CSA | No CSA |
|--|-----|--------|
| Commodity derivatives                                      | 53% | 47%    |
| Credit derivatives   | 97% | 3%     |
| Equity derivatives   | 89% | 11%    |
| Fixed-income derivatives                                   | 86% | 14%    |
| Foreign Exchange derivatives (excluding spot transactions) | 70% | 30%    |

### Treatment of Collateral: Non-Cleared OTC Derivatives

#### Independent Amount (IA) and Variation Margin

The 2014 survey contained several questions on how firms treat collateral that is received and delivered to meet non-cleared OTC derivatives exposures. The first question focused on the independent amount (IA) and variation margin that was received and delivered over the period. Several participants indicated they commingle IA and variation margin and provided combined figures.

Table 7 compares the amount of IA, variation margin and commingled IA and variation margin across the three types of collateral received and delivered described in Table 3: cash, government securities by issuer and other securities. As would be expected, cash was most used to receive and deliver IA and variation margin. Other securities were more often received and delivered than government securities in relation to IA. The opposite is true with respect to variation margin.

**Table 7: Percentage of independent amount and variation margin received and delivered as of December 31, 2013**

|                         | Received |                           |                  | Delivered |                           |                  |
|-------------------------|----------|---------------------------|------------------|-----------|---------------------------|------------------|
|                         | Cash     | Govt securities by issuer | Other Securities | Cash      | Govt securities by issuer | Other securities |
| Independent Amount (IA) | 63.5%    | 13.7%                     | 22.8%            | 61.9%     | 14.1%                     | 24.0%            |
| Variation Margin        | 76.0%    | 14.8%                     | 9.2%             | 80.7%     | 16.9%                     | 2.4%             |
| Commingled IA and VM    | 72.5%    | 6.6%                      | 20.9%            | 87.0%     | 10.6%                     | 2.5%             |

Collateral received may have the right of re-use, known as ‘rehypothecation’<sup>4</sup>. Collateral re-use is common across the industry and serves an important role in reducing collateral funding costs and ensuring the global supply of high-quality collateral assets is not overwhelmed by demand, which could drive up the price of such assets<sup>5</sup>.

Participants were asked to report the amount of collateral assets that were *eligible* to be rehypothecated, as well as the amount of assets that were *actually* rehypothecated across the three types of collateral received and delivered. The majority of cash and government securities received are eligible to be re-used. Nearly 90% of cash was actually rehypothecated by participants, as shown in table 8.

**Table 8: Amount of collateral assets received eligible versus actually rehypothecated as of December 31, 2013**

|                                       | Cash    | Govt securities by issuer | Other securities |
|---------------------------------------|---------|---------------------------|------------------|
| <b>Total received (USD millions)*</b> | 905,187 | 179,366                   | 123,915          |
| <b>ELIGIBLE to be rehypothecated</b>  | 99%     | 85%                       | 55%              |
| <b>ACTUALLY rehypothecated</b>        | 87%     | 45%                       | 30%              |

\*Figures detailed in Table 3

Some interesting trends in the re-use of collateral emerge when compared with firm size. A high percentage of eligible cash collateral was rehypothecated by large, medium and small firms, as shown in Table 9. Over half of all government securities that were eligible for rehypothecation were re-used by large firms, with slightly smaller percentages for medium and small entities. Meanwhile, both large and medium firms re-used other securities to a far greater extent than small firms

**Table 9: Rehypothecated collateral as a percentage of eligible collateral by firm size as of December 31, 2013**

|  | Large | Medium | Small |
|--|-------|--------|-------|
| <b>Cash</b>                            | 90%   | 79%    | 96%   |
| <b>Government securities by issuer</b> | 56%   | 41%    | 37%   |
| <b>Other securities</b>                | 56%   | 46%    | 3%    |

<sup>4</sup> The practice of collateral re-use involves the pledging and re-delivery, sale, investment or other contractually permitted use of collateral received by a party. All collateral received under title transfer forms of collateral agreements has the intrinsic property of being re-usable, because title to the asset has been transferred. ISDA CSAs generally include the right of re-use unless parties specifically remove it.

<sup>5</sup> WGMR rules will significantly impact rehypothecation.

## COLLATERAL ASSETS FOR CLEARED OTC DERIVATIVES

### Extent of Collateral Use: Cleared OTC Derivatives

#### House Trades and Client Clearing by Counterparty and Product

This year's survey asked participants to provide additional information related to clearing and central counterparties (CCPs). Since clearing mandates have come into effect under Dodd Frank, the 2014 survey focused more on key statistics involving cleared derivatives rather than clearing readiness.

Of the 61 participants, 39 (64%) indicated they were clearing members of a CCP. The number of CCP memberships was observed to vary significantly, from 1 to 28. Clearing relationships maintained with other clearing member firms were also widely dispersed, ranging from zero to 85.

Not surprisingly, the largest component of cleared OTC derivatives house trades, involving a bank, broker-dealer, or clearing member occur directly with a CCP, representing about 70% of total cleared agreements. Client cleared transactions between a bank, broker-dealer or clearing member and a client are spread across many counterparty types. Hedge funds make up the largest share, accounting for 0.6% of total cleared agreements, or 27% of all client clearing agreements. These statistics are summarized in Table 10.

**Table 10: Percentage of active cleared OTC derivative collateral agreements by counterparty type as of December 31, 2013**

|  | House trades | Client cleared |
|--|--------------|----------------|
| Dealers                                | 19.8%        | 0.0%           |
| Central counterparties                 | 69.1%        | 0.1%           |
| Banks and security firms               | 8.9%         | 0.3%           |
| Non-Financial commodity dealers        | 0.0%         | 0.0%           |
| Insurance and financial guaranty firms | 0.0%         | 0.1%           |
| SPVs, SPCs, and SPEs                   | 0.0%         | 0.3%           |
| Hedge funds                            | 0.0%         | 0.6%           |
| Pension plans                          | 0.0%         | 0.1%           |
| Mutual funds                           | 0.0%         | 0.2%           |
| Other financial firms                  | 0.1%         | 0.3%           |
| Non-financial institutions             | 0.0%         | 0.0%           |
| GSEs/gGovernment agencies              | 0.0%         | 0.0%           |
| Sovereign national governments         | 0.0%         | 0.0%           |
| Local or regional government entities  | 0.0%         | 0.0%           |
| Other                                  | 0.0%         | 0.1%           |

Fixed income overwhelmingly dominates total active cleared OTC collateral agreements, accounting for 90% of house trades and 4% of client clearing, as shown in Table 11.

**Table 11: Percentage of active cleared OTC derivative collateral agreements by product type as of December 31, 2013**

|  | House trades | Client cleared |
|--|--------------|----------------|
| Commodity derivatives                                      | 0.1%         | 0.3%           |
| Credit derivatives   | 4.8%         | 0.6%           |
| Equity derivatives   | 0.1%         | 0.0%           |
| Fixed Income derivatives                                   | 90.0%        | 3.9%           |
| Foreign Exchange derivatives (excluding spot transactions) | 0.1%         | 0.1%           |

### Types of Assets Used as Collateral: Cleared OTC Derivatives

Banks, broker-dealers and clearing members were asked to provide information on the collateral assets received and delivered for both house and client cleared OTC derivatives trades, as shown in Tables 12 and 13<sup>6</sup>.

As in past years, cash represented nearly 100% of total collateral received to meet variation margin for house trades. However, cash represented a larger percentage of total collateral delivered to meet both initial and variation margin in 2014 versus previous years. For example, in 2013, cash represented 19% and 60% of total collateral delivered to meet initial and variation margin, respectively. This year, the figures are significantly higher at 61% and 99%, as shown in Table 12.

The 2014 survey results indicate that cash represented nearly 100% of total collateral received and delivered to meet variation margin for client clearing, which was also the case in 2013. This year, the amount received and delivered to meet initial margin was comprised almost entirely of cash and government securities.

<sup>6</sup> Underlying data can be found in tables A2 and A3 in the Appendix.

**Table 12: Composition of collateral received and delivered against cleared OTC derivative transactions (USD billions): House trades as of December 31, 2013**

| Cash                            | Amt rec to meet initial margin | Amt rec to meet variation margin | Amt del to meet initial margin | Amt del to meet variation margin |
|---------------------------------|--------------------------------|----------------------------------|--------------------------------|----------------------------------|
| USD                             | N/A                            | 35.0%                            | 28.8%                          | 39.8%                            |
| EUR                             | N/A                            | 37.4%                            | 31.6%                          | 30.9%                            |
| GBP                             | N/A                            | 9.4%                             | 26.6%                          | 5.2%                             |
| JPY                             | N/A                            | 4.5%                             | 3.0%                           | 7.8%                             |
| Other                           | N/A                            | 13.8%                            | 9.9%                           | 16.3%                            |
| <b>% of Total collateral</b>    | <b>N/A</b>                     | <b>100.0%</b>                    | <b>60.9%</b>                   | <b>99.2%</b>                     |
| Government securities by issuer | Amt rec to meet initial margin | Amt rec to meet variation margin | Amt del to meet initial margin | Amt del to meet variation margin |
| United States                   | N/A                            | 0.0%                             | 18.5%                          | 91.0%                            |
| European Union                  | N/A                            | 0.0%                             | 41.3%                          | 9.0%                             |
| United Kingdom                  | N/A                            | 100.0%                           | 8.4%                           | 0.0%                             |
| Japan                           | N/A                            | 0.0%                             | 28.1%                          | 0.0%                             |
| Other                           | N/A                            | 0.0%                             | 3.8%                           | 0.0%                             |
| <b>% of Total Collateral</b>    | <b>N/A</b>                     | <b>0.0%</b>                      | <b>34.0%</b>                   | <b>0.8%</b>                      |
| Other securities                | Amt rec to meet initial margin | Amt rec to meet variation margin | Amt del to meet initial margin | Amt del to meet variation margin |
| Government agency/GSEs          | N/A                            | 0%                               | 3%                             | 0%                               |
| Supranational bonds             | N/A                            | 0%                               | 39%                            | 0%                               |
| US municipal bonds              | N/A                            | 0%                               | 0%                             | 0%                               |
| Covered bonds                   | N/A                            | 0%                               | 0%                             | 0%                               |
| Corporate bonds                 | N/A                            | 0%                               | 56%                            | 0%                               |
| Letters of credit               | N/A                            | 0%                               | 0%                             | 0%                               |
| Equities                        | N/A                            | 0%                               | 0%                             | 0%                               |
| Metals and other commodities    | N/A                            | 0%                               | 0%                             | 0%                               |
| Other                           | N/A                            | 0%                               | 2%                             | 0%                               |
| <b>% of Total collateral</b>    | <b>N/A</b>                     | <b>0.0%</b>                      | <b>5.2%</b>                    | <b>0.0%</b>                      |

**Table 13: Composition of collateral received and delivered against cleared OTC derivative transactions (USD billions): Client clearing as of December 31, 2013**

| Cash                            | Amt rec to meet initial margin | Amt rec to meet variation margin | Amt del to meet initial margin | Amt del to meet variation margin |
|---------------------------------|--------------------------------|----------------------------------|--------------------------------|----------------------------------|
| USD                             | 90.9%                          | 60.3%                            | 68.5%                          | 16.5%                            |
| EUR                             | 6.8%                           | 28.7%                            | 23.8%                          | 81.6%                            |
| GBP                             | 1.7%                           | 3.8%                             | 2.5%                           | 0.6%                             |
| JPY                             | 0.0%                           | 1.5%                             | 1.0%                           | 0.3%                             |
| Other                           | 0.5%                           | 5.6%                             | 4.1%                           | 1.1%                             |
| <b>% of Total collateral</b>    | <b>66.6%</b>                   | <b>100.0%</b>                    | <b>51.7%</b>                   | <b>100.0%</b>                    |
| Government securities by issuer | Amt rec to meet initial margin | Amt rec to meet variation margin | Amt del to meet initial margin | Amt del to meet variation margin |
| United States                   | 75.6%                          | 0.0%                             | 95.2%                          | 0.0%                             |
| European Union                  | 0.0%                           | 0.0%                             | 0.5%                           | 0.0%                             |
| United Kingdom                  | 3.7%                           | 0.0%                             | 3.7%                           | 0.0%                             |
| Japan                           | 0.0%                           | 0.0%                             | 0.0%                           | 0.0%                             |
| Other                           | 20.8%                          | 100.0%                           | 0.7%                           | 0.0%                             |
| <b>% of Total collateral</b>    | <b>30.8%</b>                   | <b>0.0%</b>                      | <b>48.2%</b>                   | <b>0.0%</b>                      |
| Other securities                | Amt rec to meet initial margin | Amt rec to meet variation margin | Amt del to meet initial margin | Amt del to meet variation margin |
| Government agency/GSEs          | 68.9%                          | 0.0%                             | 100.0%                         | 0.0%                             |
| Supranational bonds             | 0.0%                           | 0.0%                             | 0.0%                           | 0.0%                             |
| US municipal bonds              | 0.0%                           | 0.0%                             | 0.0%                           | 0.0%                             |
| Covered bonds                   | 0.0%                           | 0.0%                             | 0.0%                           | 0.0%                             |
| Corporate bonds                 | 18.6%                          | 0.0%                             | 0.0%                           | 0.0%                             |
| Letters of credit               | 0.0%                           | 0.0%                             | 0.0%                           | 0.0%                             |
| Equities                        | 0.0%                           | 0.0%                             | 0.0%                           | 0.0%                             |
| Metals and other commodities    | 0.0%                           | 0.0%                             | 0.0%                           | 0.0%                             |
| Other                           | 12.5%                          | 0.0%                             | 0.0%                           | 0.0%                             |
| <b>% of Total collateral</b>    | <b>2.6%</b>                    | <b>0.0%</b>                      | <b>0.1%</b>                    | <b>0.0%</b>                      |



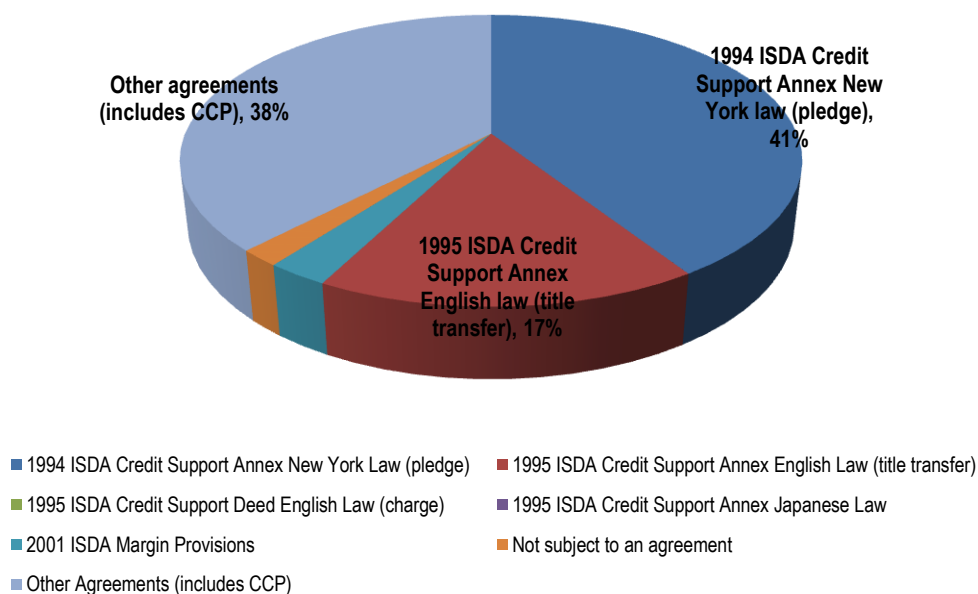
### Number and Types of Collateral Agreements

As reported in the previous section, 138,422 active collateral agreements were in place for both cleared and non-cleared OTC transactions as of December 31, 2013. Of these agreements 133,155 were bilateral, 322 related to house trades and 4,945 related to client cleared OTC agreements.

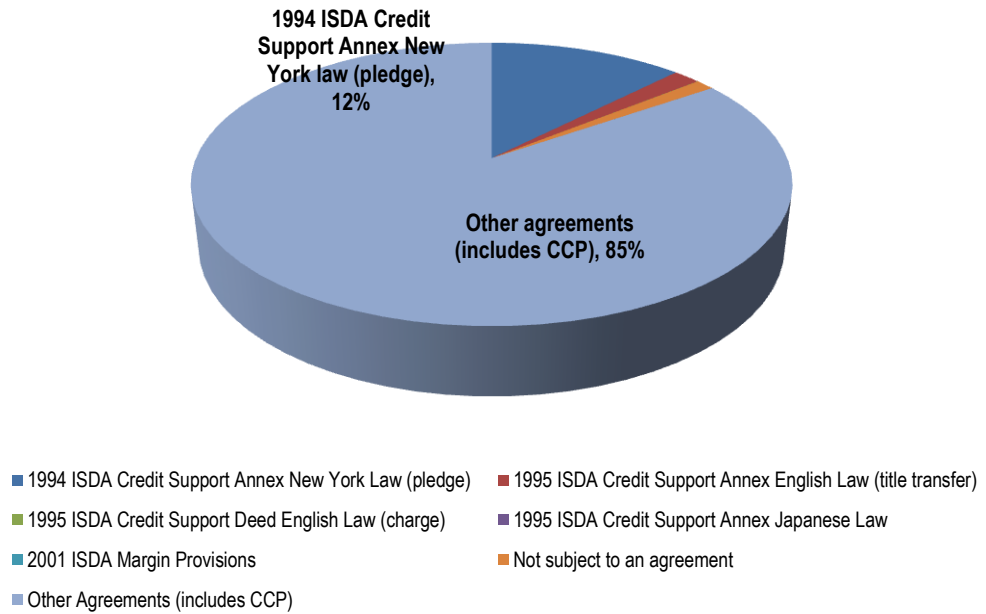
The majority of house trades were conducted under ‘other’ agreements (39%), which include agreements with CCPs. The 1994 ISDA CSA New York law (pledge) and 1995 ISDA CSA English law (title transfer) account for 84% of executed derivatives agreements when taken in tandem.

Eighty-five percent of client clearing is executed using ‘other’ agreements, most of which are various CCP agreements. Charts 4 and 5 detail the breakdown of agreements used when executing house and client trades.

**Chart 4: Composition of active cleared agreements: house trades as of December 31, 2013**



**Chart 5: Composition of active cleared agreements: client clearing  
As of December 31, 2013**



## MARKET PRACTICES

### Swap Valuation for Collateralized Transactions

#### CSA Discounting

There has been an increased focus on the valuation of OTC derivatives and the collateral agreements that cover them. This year, 66% of participants indicated they were referencing terms contained within their underlying CSAs when pricing derivatives transactions for collateral margining (CSA discounting).

Historically, many market participants valued swap cash flows using LIBOR. However, since the interest rate on cash collateral is based on the overnight indexed swap (OIS) rate in the applicable currency, we continue to observe a shift away from LIBOR towards OIS discounting in this year's survey, as shown in Chart 6. This change is motivated by a better funding alignment and the reduction of liquidity risk, and is most broadly observed in the interest rate derivatives category of swaps<sup>7</sup>.

**Chart 6: Composition of CSA discounting basis  
as of December 31, 2013**

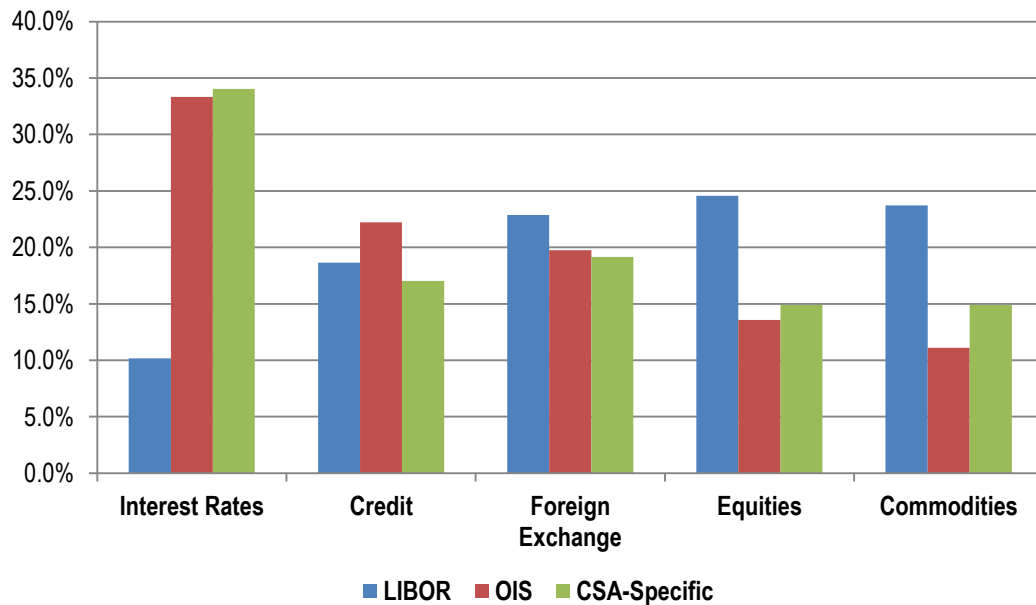


Table 14 summarizes the current state of implementation of swap valuation methodologies by region for the purpose of margining under collateral agreements. The use of OIS as a valuation tool for swap cash flows is most prevalent in Europe. The Americas continue to rely mostly on LIBOR, while Asia utilizes several different methodologies.

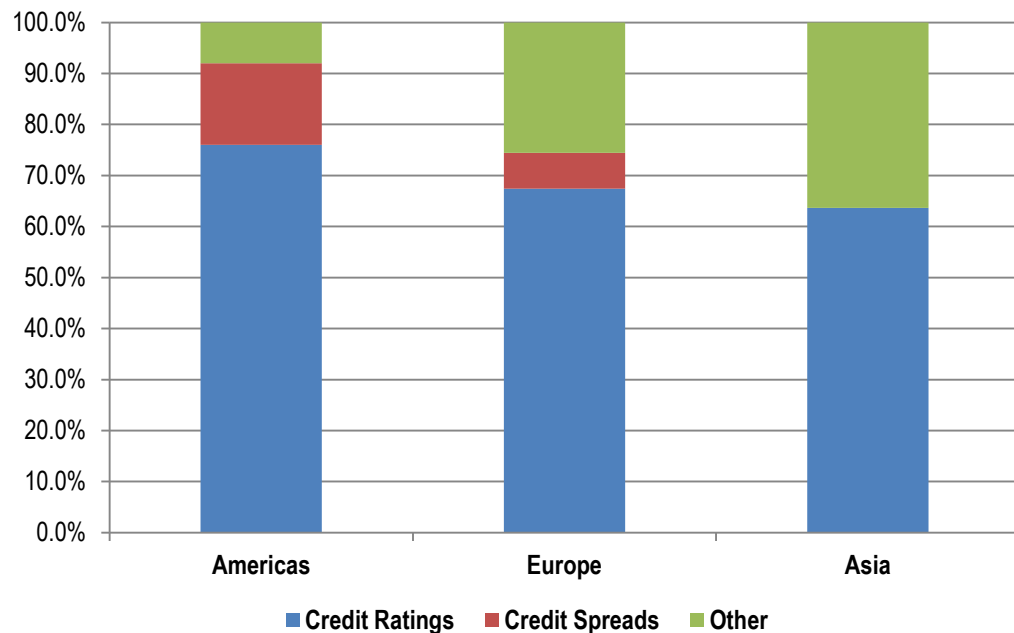
<sup>7</sup> This implementation of the most relevant valuation (MRV) basis, and in particular, the numerical difference between historical LIBOR valuation and the new funding-sensitive valuation is sometimes referred to as funding valuation adjustment (FVA).

**Table 14: CSA discounting methodology, by products and region as of December 31, 2013**

|                         | Americas |       |          | Europe |       |          | Asia  |       |          |
|-------------------------|----------|-------|----------|--------|-------|----------|-------|-------|----------|
|                         | LIBOR    | OIS   | CSA-spec | LIBOR  | OIS   | CSA-spec | LIBOR | OIS   | CSA-spec |
| <b>Interest Rates</b>   | 50.0%    | 29.6% | 25.0%    | 25.0%  | 55.6% | 68.8%    | 25.0% | 14.8% | 6.3%     |
| <b>Credit</b>           | 50.0%    | 22.2% | 12.5%    | 31.8%  | 61.1% | 75.0%    | 18.2% | 16.7% | 12.5%    |
| <b>Foreign Exchange</b> | 44.4%    | 18.8% | 33.3%    | 44.4%  | 62.5% | 55.6%    | 11.1% | 18.8% | 11.1%    |
| <b>Equities</b>         | 41.4%    | 27.3% | 28.6%    | 44.8%  | 54.5% | 71.4%    | 13.8% | 18.2% | 0.0%     |
| <b>Commodities</b>      | 42.9%    | 22.2% | 28.6%    | 50.0%  | 55.6% | 57.1%    | 7.1%  | 22.2% | 14.3%    |

Participants were also asked if they have CSAs with collateral thresholds, as shown in Chart 7<sup>8</sup>. While the threshold methodology is most commonly based on credit ratings in all three regions, several participants also rely on other methods such as net asset value, fixed amounts or percentage of notional. These ‘other’ methodologies were used in Asia almost as much as credit ratings as a percentage of the region’s total collateral threshold methodology mix.

**Chart 7: CSA collateral threshold methodology by region as of December 31, 2013**



<sup>8</sup> Thresholds set at a portfolio level induce non-linear effects on trade valuation because they reduce the amount of collateral collected as compared to the amount required to fund future swap cash flows. Trades executed while the collateral threshold has not been reached are uncollateralized. Once the threshold has been exceeded, the portfolio becomes partially collateralized.

## Collateral Optimization

The efficient and effective use of collateral, known as collateral optimization, has become more important to market participants<sup>9</sup>. As collateralization becomes more commoditized through process improvement and automation, there is an increasing trend to introduce business rules around maximizing the efficiency and minimizing the cost of collateral.

The practice of collateral optimization is particularly important in the event high-quality collateral becomes scarce. Nearly two-thirds of respondents (63%) indicated they optimize posted collateral. Of this group, 76% optimize collateral systematically. The majority of collateral optimization was performed daily (62%) and/or when needed (49%). Table 15 summarizes optimization statistics across various firm sizes.

**Table 15: Collateral optimization statistics by firm size as of December 31, 2013**

|                                | All   | Large | Medium | Small |
|--------------------------------|-------|-------|--------|-------|
| <b>Optimize collateral</b>     | 62.7% | 35.1% | 54.1%  | 10.8% |
| <b>Systematic optimization</b> | 75.7% | 39.3% | 46.4%  | 14.3% |
| <b>Daily basis</b>             | 62.2% | 47.8% | 43.5%  | 8.7%  |
| <b>When material</b>           | 48.6% | 33.3% | 55.6%  | 11.1% |
| <b>Other frequency</b>         | 2.7%  | 0.0%  | 100.0% | 0.0%  |

Collateral optimization appears to be best aligned as a front-office activity, particularly for large- and medium-sized firms. However, one-quarter of participants indicated their operations department manages this process, as shown on Table 16. One reason for the front-office focus could be that the optimization strategy is based on liquidity risk, funding costs, capital costs and other economic factors that are a part of everyday life on the trading desk. Meanwhile, rules-based methods for optimization may fall within the sphere of the operations group.

**Table 16: Collateral optimization function by firm size as of December 31, 2013**

|                           | All   | Large  | Medium | Small |
|---------------------------|-------|--------|--------|-------|
| <b>Front office</b>       | 35.2% | 44.4%  | 48.1%  | 7.4%  |
| <b>Operations</b>         | 25.0% | 42.9%  | 42.9%  | 14.3% |
| <b>Credit department</b>  | 16.7% | 38.9%  | 38.9%  | 22.2% |
| <b>Corporate treasury</b> | 14.8% | 60.0%  | 40.0%  | 0.0%  |
| <b>Other</b>              | 8.3%  | 100.0% | 0.0%   | 0.0%  |

<sup>9</sup> Optimization refers to the ability to post and re-use collateral according to delivery preferences such as cost of funding and delivery, liquidity and market capitalization, embedded haircuts in the CSA, availability of assets to the delivery party, cost of reinvestment and yield, ability to re-use and risk.

## Collateral Movement

### Collateral Margin Calls

Collateral management is typically an internal process. Over 85% of all firms surveyed indicated they manage 100% of their collateral process in-house. Not surprisingly, external management of collateral occurs most often at small firms. Of the entities that utilize external managers, 39% of this process on average is managed outside versus inside the firm. Table 17 summarizes the breakdown of internal versus external collateral management.

**Table 17: Internal versus external collateral management by firm size as of December 31, 2013**

|             | All   | Large | Medium | Small |
|-------------|-------|-------|--------|-------|
| <b>All</b>  | 0.0%  | 0.0%  | 0.0%   | 0.0%  |
| <b>Some</b> | 10.2% | 7.7%  | 9.4%   | 14.3% |
| <b>None</b> | 89.8% | 92.3% | 90.6%  | 85.7% |

In order to better understand the nature of margin calls and collateral movement, participants were asked to report the daily average amount of initial and variation margin received and paid for both bilateral and cleared transactions. Some participants were only able to provide commingled figures. Table 18 describes the range of values using quartiles by firm size. Large firms generally make up the third and fourth quartiles in each category.

**Table 18: Average daily collateral movement by firm size (USD millions) as of December 31, 2013**

| Quartile            | Average collateral received |       |       | Average collateral paid |       |       |
|---------------------|-----------------------------|-------|-------|-------------------------|-------|-------|
|                     | All                         | IM    | VM    | Comingled               | IM    | VM    |
| <b>1</b>            | 2                           | 13    | 61    | 3                       | 16    | 60    |
| <b>2</b>            | 8                           | 184   | 1,002 | 10                      | 178   | 1,010 |
| <b>3</b>            | 19                          | 499   | 1,880 | 23                      | 489   | 1,942 |
| <b>4</b>            | 131                         | 2,404 | 4,965 | 473                     | 2,317 | 4,202 |
| <b>Large firms</b>  |                             |       |       |                         |       |       |
| <b>1</b>            | 15                          | 1,746 | 1,837 | 23                      | 1,603 | 1,712 |
| <b>2</b>            | 27                          | 1,917 | 2,175 | 92                      | 1,941 | 2,228 |
| <b>3</b>            | 94                          | 2,175 | 2,773 | 123                     | 2,154 | 2,528 |
| <b>4</b>            | 131                         | 2,404 | 4,965 | 131                     | 2,317 | 4,202 |
| <b>Medium firms</b> |                             |       |       |                         |       |       |
| <b>1</b>            | 1                           | 16    | 220   | 2                       | 25    | 212   |
| <b>2</b>            | 5                           | 190   | 494   | 4                       | 178   | 273   |
| <b>3</b>            | 15                          | 398   | 783   | 14                      | 401   | 461   |
| <b>4</b>            | 29                          | 1,786 | 1,002 | 473                     | 1,860 | 1,010 |
| <b>Small firms</b>  |                             |       |       |                         |       |       |
| <b>1</b>            | 2                           | 9     | 4     | 6                       | 11    | 6     |
| <b>2</b>            | 3                           | 19    | 5     | 10                      | 16    | 7     |
| <b>3</b>            | 5                           | 56    | 33    | 13                      | 55    | 34    |
| <b>4</b>            | 7                           | 299   | 61    | 17                      | 384   | 60    |

Participants were also asked to provide the daily average count of outgoing and incoming margin calls of bilateral transactions. The majority of these movements are performed by the largest firms. Table 19 provides a quartile analysis by firm size.

**Table 19: Average daily collateral movement by firm size (USD millions)  
as of December 31, 2013**

| <b>Average daily count of incoming margin calls</b> |              |               |              |
|---|--------------|---------------|--------------|
| <b>Quartile</b>                                     | <b>Large</b> | <b>Medium</b> | <b>Small</b> |
| <b>1</b>  | 542          | 18            | 7            |
| <b>2</b>  | 601          | 44            | 7            |
| <b>3</b>  | 744          | 67            | 11           |
| <b>4</b>  | 154,489      | 630           | 23           |
| <b>Average daily count of outgoing margin calls</b> |              |               |              |
| <b>Quartile</b>                                     | <b>Large</b> | <b>Medium</b> | <b>Small</b> |
| <b>1</b>  | 651          | 18            | 5            |
| <b>2</b>  | 742          | 36            | 6            |
| <b>3</b>  | 843          | 67            | 9            |
| <b>4</b>  | 187,668      | 630           | 29           |

## PORTFOLIO RECONCILIATION & ELECTRONIC MESSAGING

### Portfolio Reconciliation Frequency

The 2014 survey asked participants how frequently they reconcile portfolios. As in the past, this year's summary statistics show that smaller portfolios are reconciled more frequently than larger ones. However, one interesting trend has emerged. Larger portfolios show an increased rate of portfolio reconciliation versus 2013. Portfolios containing 100 to 499 trades have an increased frequency of roughly 5% versus last year's figures. Dodd-Frank and EMIR regulations involving more rigorous and frequent portfolio reconciliation are expected to continue driving this trend. Table 20 describes the reconciliation frequency of each portfolio size as a percentage of total reconciled trades.

**Table 20: Count of reconciliation frequency by portfolio size as a percentage of total reconciled trades as of December 31, 2013**

|                                       | Daily | Weekly | Monthly | Qrtly | Yearly | Other |
|---------------------------------------|-------|--------|---------|-------|--------|-------|
| <b>Greater than 5,000 trades</b>      | 0.2%  | 0.0%   | 0.0%    | 0.0%  | 0.0%   | 0.0%  |
| <b>Between 2,500 and 5,000 trades</b> | 0.2%  | 0.0%   | 0.0%    | 0.0%  | 0.0%   | 0.0%  |
| <b>Between 500 and 2,499 trades</b>   | 1.1%  | 0.1%   | 0.0%    | 0.1%  | 0.5%   | 0.3%  |
| <b>Between 100 and 499 trades</b>     | 7.6%  | 1.3%   | 0.1%    | 0.6%  | 0.1%   | 1.2%  |
| <b>Less than 100 trades</b>           | 31.8% | 1.8%   | 1.2%    | 9.5%  | 13.2%  | 29.1% |

Firm size reveals additional trends relating to the frequency of portfolio reconciliation. Larger firms reconcile 84% of all portfolios on a daily basis. Medium- and small-sized firms reconcile 16% and less than 1%, respectively, at this frequency. Table 21 compares the breakdown of portfolio reconciliation frequency by firm size according to each frequency.



**Table 21: Count of portfolio reconciliation frequency by firm size as of December 31, 2013**

| <b>Large Firms</b>             | <b>Daily</b> | <b>Weekly</b> | <b>Monthly</b> | <b>Qrtly</b> | <b>Yearly</b> | <b>Other</b> |
|--------------------------------|--------------|---------------|----------------|--------------|---------------|--------------|
| Greater than 5,000 trades      | 0.5%         | 0.2%          | 0.1%           | 0.1%         | 0.0%          | 0.0%         |
| Between 2,500 and 5,000 trades | 0.4%         | 0.1%          | 0.2%           | 0.1%         | 0.0%          | 0.1%         |
| Between 500 and 2,499 trades   | 1.8%         | 0.6%          | 1.7%           | 0.4%         | 0.0%          | 0.8%         |
| Between 100 and 499 trades     | 17.4%        | 21.5%         | 4.7%           | 1.9%         | 0.2%          | 3.6%         |
| Less than 100 trades           | 63.9%        | 35.6%         | 33.9%          | 65.6%        | 38.6%         | 80.4%        |
| <b>Total</b>                   | <b>84.1%</b> | <b>58.0%</b>  | <b>40.6%</b>   | <b>68.0%</b> | <b>38.8%</b>  | <b>85.0%</b> |
| <b>Medium firms</b>            | <b>Daily</b> | <b>Weekly</b> | <b>Monthly</b> | <b>Qrtly</b> | <b>Yearly</b> | <b>Other</b> |
| Greater than 5,000 trades      | 0.1%         | 0.0%          | 0.0%           | 0.0%         | 0.0%          | 0.0%         |
| Between 2,500 and 5,000 trades | 0.1%         | 0.0%          | 0.0%           | 0.0%         | 0.0%          | 0.0%         |
| Between 500 and 2,499 trades   | 0.8%         | 1.2%          | 0.2%           | 0.5%         | 3.4%          | 0.0%         |
| Between 100 and 499 trades     | 1.0%         | 18.4%         | 1.7%           | 4.0%         | 0.1%          | 0.3%         |
| Less than 100 trades           | 13.7%        | 18.1%         | 46.5%          | 27.0%        | 57.1%         | 14.6%        |
| <b>Total</b>                   | <b>15.6%</b> | <b>37.7%</b>  | <b>48.4%</b>   | <b>31.5%</b> | <b>60.6%</b>  | <b>15.0%</b> |
| <b>Small firms</b>             | <b>Daily</b> | <b>Weekly</b> | <b>Monthly</b> | <b>Qrtly</b> | <b>Yearly</b> | <b>Other</b> |
| Greater than 5,000 trades      | 0.0%         | 0.0%          | 0.0%           | 0.0%         | 0.0%          | 0.0%         |
| Between 2,500 and 5,000 trades | 0.0%         | 0.0%          | 0.1%           | 0.0%         | 0.0%          | 0.0%         |
| Between 500 and 2,499 trades   | 0.0%         | 0.3%          | 0.4%           | 0.0%         | 0.0%          | 0.0%         |
| Between 100 and 499 trades     | 0.1%         | 1.4%          | 1.1%           | 0.0%         | 0.1%          | 0.0%         |
| Less than 100 trades           | 0.2%         | 2.7%          | 9.3%           | 0.4%         | 0.4%          | 0.1%         |
| <b>Total</b>                   | <b>0.3%</b>  | <b>4.4%</b>   | <b>10.9%</b>   | <b>0.4%</b>  | <b>0.6%</b>   | <b>0.1%</b>  |

## Electronic Messaging

The increase in collateral volumes driven by regulatory requirements of Dodd-Frank and EMIR are necessitating a migration towards electronic messaging and away from manually intensive processes. Firms are continuing to upgrade and automate their derivatives collateral management processes to ensure volumes can be absorbed given the integration of cleared, bilateral and legacy margin requirements subject to new rules.

The percentage of respondents utilizing an electronic messaging platform has risen since the 2013 survey. Currently, 36% of participants subscribe to an electronic messaging platform versus 19.2% in 2013. The count of active CSAs that are live on these platforms has also risen, increasing by a dramatic 300% from 225 in 2013 to 924 this year.

Table 22 compares 2014 and 2013 electronic messaging use by firm size. Results show that 100% of large firms responding to this question utilize electronic platforms to date. Although medium- and small-sized firms engage such platforms less frequently, use has also increased across these two groups.

**Table 22: Count of active electronic platform CSAs by firm size  
as of December 31, 2013**

|             | All   | Large  | Medium | Small |
|-------------|-------|--------|--------|-------|
| <b>2014</b> | 35.6% | 100.0% | 21.9%  | 7.1%  |
| <b>2013</b> | 19.2% | 85.7%  | 6.1%   | 3.2%  |

## FIRMS PARTICIPATING IN THE 2014 ISDA SURVEY

|                                     |  |
|-------------------------------------|--|
| AKK Govt Debt Mgmt Agency           | KfW Bankengruppe                             |
| Ally Financial                      | Landesbank Baden                             |
| ATB Financial                       | Maple Bank GmbH                              |
| AXA Bank Belgium                    | Master Trust Bank of Japan                   |
| Bank of America Merrill Lynch       | Mitsubishi UFJ Trust and Banking Corporation |
| Banca Monte dei Paschi di Siena SpA | Mizuho Bank Ltd                              |
| Banco BPI SA                        | Mizuho Capital Markets Corporation           |
| Banco Santander                     | Morgan Stanley                               |
| Bank of Montreal (BMO)              | National Bank of Canada                      |
| Bank Of New York Mellon             | National Bank of Greece SA                   |
| Bank of Tokyo Mitsubishi UFJ        | Nomura                                       |
| Barclays                            | Nordea AB                                    |
| BBVA                                | OCBC Bank                                    |
| Belfius Banque and Assurances       | PIMCO  |
| BNP Paribas                         | Royal Bank of Canada                         |
| Ceska Sporitelna                    | Royal Bank of Scotland                       |
| Citadel                             | Shinsei Bank Limited                         |
| Citigroup                           | Societe Generale                             |
| Commerzbank AG                      | Standard Chartered                           |
| Credit Agricole                     | Sumitomo Mitsui Banking Co                   |
| Credit Suisse                       | Swedbank                                     |
| Deutsche Bank                       | Swiss Re                                     |
| DNB Bank ASA                        | TD Bank Group                                |
| DZ Bank AG                          | UBS  |
| Freddie Mac                         | Union Bank                                   |
| Garanti Bankasi AS                  | VTB Capital                                  |
| Goldman Sachs                       | Wellington                                   |
| HSBC                                | Wells Fargo                                  |
| ING Bank NV                         | Westpac Banking Corporation                  |
| JPMorgan Chase                      | Zurcher Kantonalbank                         |
| KBC Bank NV                         |  |

## APPENDIX

## 2014 Collateral Asset Table Aggregate Data

**Table A1: Composition of collateral received and delivered against non-cleared OTC derivative transactions (USD millions) as of December 31, 2013**

|  | Received         |                  |                  | Delivered      |                  |                  |
|--|------------------|------------------|------------------|----------------|------------------|------------------|
|  | 2014             | 2013             | 2012             | 2014           | 2013             | 2012             |
| <b>Cash</b>                            |                  |                  |                  |                |                  |                  |
| USD                                    | 383,156          | 419,710          | 436,018          | 309,522        | 357,792          | 357,219          |
| EUR                                    | 440,872          | 627,725          | 537,450          | 367,652        | 537,440          | 438,191          |
| GBP                                    | 22,977           | 34,073           | 23,871           | 34,599         | 40,379           | 29,316           |
| JPY                                    | 28,557           | 34,736           | 27,222           | 19,605         | 26,322           | 25,267           |
| Other                                  | 29,624           | 14,357           | 14,988           | 21,885         | 16,670           | 11,722           |
| <b>Sub total</b>                       | <b>905,187</b>   | <b>1,130,601</b> | <b>1,039,549</b> | <b>753,263</b> | <b>978,603</b>   | <b>861,715</b>   |
| <b>Government securities by issuer</b> |                  |                  |                  |                |                  |                  |
| United States                          | 52,496           | 54,673           | 60,926           | 55,293         | 78,724           | 78,974           |
| European Union                         | 36,802           | 31,471           | 30,733           | 81,246         | 92,410           | 109,677          |
| United Kingdom                         | 19,104           | 21,286           | 13,459           | 13,649         | 20,861           | 22,736           |
| Japan                                  | 34,931           | 37,293           | 33,064           | 17,361         | 30,056           | 22,738           |
| Other                                  | 36,033           | 19,841           | 13,869           | 7,783          | 7,338            | 7,237            |
| <b>Sub total</b>                       | <b>179,366</b>   | <b>164,564</b>   | <b>152,051</b>   | <b>175,331</b> | <b>229,389</b>   | <b>241,362</b>   |
| <b>Other securities</b>                |                  |                  |                  |                |                  |                  |
| Government agency/GSEs                 | 19,956           | 31,223           | 28,607           | 9,879          | 15,356           | 12,861           |
| Supranational bonds                    | 0                | 1,044            | 1,090            | 0              | 2,112            | 2,139            |
| US municipal bonds                     | 2,786            | 4,225            | 1,789            | 448            | 29               | 0                |
| Covered bonds                          | 0                | 3,187            | 914              | 0              | 2,277            | 2,097            |
| Corporate bonds                        | 35,130           | 34,904           | 40,711           | 12,372         | 8,437            | 13,090           |
| Letters of credit                      | 3,904            | 6,138            | 9,125            | 1,221          | 728              | 0                |
| Equities                               | 41,563           | 31,809           | 24,815           | 2,959          | 4,748            | 902              |
| Metals and other commodities           | 31               | 34               | 148              | 0              | 0                | 0                |
| Other                                  | 20,544           | 13,976           | 19,661           | 6,088          | 2,505            | 5,997            |
| <b>Sub total</b>                       | <b>123,915</b>   | <b>126,540</b>   | <b>126,860</b>   | <b>32,968</b>  | <b>36,192</b>    | <b>37,086</b>    |
| <b>Total collateral</b>                | <b>1,208,468</b> | <b>1,421,706</b> | <b>1,318,460</b> | <b>961,562</b> | <b>1,244,185</b> | <b>1,140,163</b> |

**Table A2: Composition of collateral received and delivered against cleared OTC derivative transactions (USD billions): house trades as of December 31, 2013**

| Cash                            | Amt rec to meet initial margin  | Amt rec to meet variation margin | Amt del to meet initial margin | Amt del to meet variation margin |
|---------------------------------|---------------------------------|----------------------------------|--------------------------------|----------------------------------|
| USD                             | 689                             | 23,844                           | 12,182                         | 31,748                           |
| EUR                             | 2,297                           | 25,480                           | 13,376                         | 24,652                           |
| GBP                             | 10                              | 6,392                            | 11,269                         | 4,129                            |
| JPY                             | 1                               | 3,046                            | 1,264                          | 6,263                            |
| Other                           | 661                             | 9,418                            | 4,205                          | 12,997                           |
| <b>Sub total</b>                | <b>3,659</b>                    | <b>68,179</b>                    | <b>42,295</b>                  | <b>79,789</b>                    |
| Government securities by issuer | Amt rec to meet initial margin  | Amt rec to meet variation margin | Amt del to meet initial margin | Amt del to meet variation margin |
| United States                   | 827                             | -                                | 4,359                          | 579                              |
| European Union                  | -                               | -                                | 9,755                          | 57                               |
| United Kingdom                  | 83                              | 2                                | 1,976                          | -                                |
| Japan                           | -                               | -                                | 6,630                          | -                                |
| Other                           | -                               | -                                | 888                            | -                                |
| <b>Sub total</b>                | <b>910</b>                      | <b>2</b>                         | <b>23,608</b>                  | <b>636</b>                       |
| Other securities                | Amt Rrec to meet initial margin | Amt rec to meet variation margin | Amt del to meet initial margin | Amt del to meet variation margin |
| Government agency/GSEs          | -                               | -                                | 122                            | -                                |
| Supranational bonds             | -                               | -                                | 1,392                          | -                                |
| US municipal bonds              | -                               | -                                | -                              | -                                |
| Covered bonds                   | -                               | -                                | -                              | -                                |
| Corporate bonds                 | -                               | -                                | 2,013                          | -                                |
| Letters of credit               | -                               | -                                | -                              | -                                |
| Equities                        | -                               | -                                | -                              | -                                |
| Metals and other commodities    | -                               | -                                | -                              | -                                |
| Other                           | -                               | -                                | 62                             | -                                |
| <b>Sub total</b>                | <b>-</b>                        | <b>-</b>                         | <b>3,589</b>                   | <b>-</b>                         |
| <b>Total collateral</b>         | <b>4,568</b>                    | <b>68,181</b>                    | <b>69,492</b>                  | <b>80,425</b>                    |

**Table A3: Composition of collateral received and delivered against cleared OTC derivative transactions (USD billions): client clearing as of December 31, 2013**

| <b>Cash</b>                            | <b>Amt rec to meet initial margin</b> | <b>Amt rec to meet variation margin</b> | <b>Amt del to meet initial margin</b> | <b>Amt del to meet variation margin</b> |
|--|---------------------------------------|---|---------------------------------------|---|
| USD                                    | 10,935                                | 5,863                                   | 2,619                                 | 6,132                                   |
| EUR                                    | 820                                   | 2,788                                   | 911                                   | 30,332                                  |
| GBP                                    | 203                                   | 370                                     | 97                                    | 207                                     |
| JPY                                    | 4                                     | 150                                     | 40                                    | 113                                     |
| Other                                  | 63                                    | 547                                     | 155                                   | 407                                     |
| <b>Sub total</b>                       | <b>12,025</b>                         | <b>9,717</b>                            | <b>3,822</b>                          | <b>37,192</b>                           |
| <b>Government securities by issuer</b> | <b>Amt rec to meet initial margin</b> | <b>Amt rec to meet variation margin</b> | <b>Amt del to meet initial margin</b> | <b>Amt del to meet variation margin</b> |
| United States                          | 4,204                                 | -                                       | 3,387                                 | -                                       |
| European Union                         | -                                     | -                                       | 18                                    | -                                       |
| United Kingdom                         | 203                                   | -                                       | 131                                   | -                                       |
| Japan                                  | -                                     | -                                       | -                                     | -                                       |
| Other                                  | 1,155                                 | 4                                       | 24                                    | -                                       |
| <b>Sub Total</b>                       | <b>5,562</b>                          | <b>4</b>                                | <b>3,559</b>                          | <b>-</b>                                |
| <b>Other securities</b>                | <b>Amt rec to meet initial margin</b> | <b>Amt rec to meet variation margin</b> | <b>Amt del to meet initial margin</b> | <b>Amt del to meet variation margin</b> |
| Government agency/GSEs                 | 323                                   | -                                       | 6                                     | -                                       |
| Supranational bonds                    | -                                     | -                                       | -                                     | -                                       |
| US municipal bonds                     | -                                     | -                                       | -                                     | -                                       |
| Covered bonds                          | -                                     | -                                       | -                                     | -                                       |
| Corporate bonds                        | 87                                    | -                                       | -                                     | -                                       |
| Letters of credit                      | -                                     | -                                       | -                                     | -                                       |
| Equities                               | -                                     | -                                       | -                                     | -                                       |
| Metals and other commodities           | -                                     | -                                       | -                                     | -                                       |
| Other                                  | 58                                    | -                                       | -                                     | -                                       |
| <b>Sub total</b>                       | <b>468</b>                            | <b>-</b>                                | <b>6</b>                              | <b>-</b>                                |
| <b>Total collateral</b>                | <b>18,055</b>                         | <b>9,720</b>                            | <b>7,387</b>                          | <b>37,192</b>                           |

## **Adjustment to reported collateral to obtain estimated collateral**

### **Double counting of collateral**

The objective of the ISDA Margin Survey is to estimate the importance of collateralization in the market and not simply to estimate the value of assets used as collateral. The survey therefore tracks the gross amount of collateral – defined as the sum of all collateral delivered out and all collateral received by survey respondents – and does not adjust for double counting of collateral assets. Double counting takes at least two forms. The first occurs when one survey respondent delivers collateral to or receives collateral from another respondent. The collateral assets in this case are counted twice: once as received and once as delivered. The second source of double counting is collateral re-use – sometimes called rehypothecation – where collateral is delivered from one party to another, then delivered to a third party, and so on. A single unit of re-used collateral may consequently be counted several times by the survey as the collateral progresses down the chain of parties re-using it. But because each re-use represents the securing of a separate and distinct credit exposure between two parties, we believe it is valid to count the collateral as many times as it is used. If, in contrast, the objective was simply to measure the value of assets currently in use as collateral, then it would be necessary to adjust for double counting.

### **Adjusting for non-responding firms**

In order to arrive at an industry gross amount, we adjust the reported sample results for non-participation in the survey. The non-participation problem arises because the Margin Survey is compiled from the responses of ISDA member firms only. There are two possible distortions resulting from non-response to the survey. The first occurs when two firms, neither of which has responded to the survey, engage in an exchange of collateral with each other. The second occurs when a non-responding firm and a responding institution engage in an exchange of collateral, so the collateral posting is counted only once. We only adjust for the second, as we believe the amount of collateralization that does not involve a responding firm in the ISDA sample is of minor significance.

The adjustment is based on the following calculation. First, we poll several major dealer respondents for the percentage of collateral received from and delivered to entities that responded to the survey. We use the results to calculate an average percentage of collateral received from non-respondents and an average percentage delivered to non-respondents. We then adjust the total amount of collateral held by major dealers with non-respondents by adding in the collateral with non-respondents. The resulting number is significantly larger than that based only on reported amounts. The adjustment is conservative, however, in that it only adjusts the collateral held by the largest dealers. We therefore believe that, while the final number of \$3.17 trillion is a more accurate reflection of the amount of collateral use than the estimate based solely on the survey responses, it still understates the actual amount of collateral in circulation.