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# ISDA Margin Survey 2011

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# **INTERNATIONAL SWAPS AND DERIVATIVES ASSOCIATION**

ISDA, which represents participants in the privately negotiated derivatives industry, is among the world's largest global financial trade associations as measured by number of member firms. ISDA was chartered in 1985, and today has over 820 member institutions from 57 countries on six continents. These members include most of the world's major institutions that deal in privately negotiated derivatives, as well as many of the businesses, governmental entities and other end users that rely on over-the-counter derivatives to manage efficiently the financial market risks inherent in their core economic activities.

Since its inception, ISDA has pioneered efforts to identify and reduce the sources of risk in the derivatives and risk management business. Among its most notable accomplishments are: developing the ISDA Master Agreement; publishing a wide range of related documentation materials and instruments covering a variety of transaction types; producing legal opinions on the enforceability of netting and collateral arrangements (available only to ISDA members); securing recognition of the risk-reducing effects of netting in determining capital requirements; promoting sound risk management practices, and advancing the understanding and treatment of derivatives and risk management from public policy and regulatory capital perspectives

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## SUMMARY

1. Collateral in circulation is a key measure of the total amount of collateral used to mitigate the credit risk of OTC derivatives. This measure of collateral fell 7 percent during 2010, from US\$3.2 trillion at end-2009 to US \$2.9 trillion, primarily as a result of the reduction in counterparty exposures. The reported decline in collateral in circulation is consistent with a 4 percent decline in gross credit exposure during the June 2009 through June 2010 period, as reported by the Bank for International Settlements (see Chart 2.2).
2. The Number of Collateral Agreements in use in the OTC derivative market was 149,518 by end-2010, of which 90 percent are ISDA agreements. Among firms that responded in both 2009 and 2010, the total number of collateral agreements slightly decreased over the past year. About 84 percent of all collateral agreements are bilateral, up from 83 percent last year. This latter result reflects a continuing trend toward the use of bilateral agreements.
3. Collateral agreements may be applied to all types of derivatives, and in practice the market trading conventions and credit risk considerations in different segments of the OTC derivatives market lead to a range of degrees of collateralization.
  - a. Among all firms responding to the survey, 93 percent of all credit derivatives trades executed were subject to collateral arrangements during 2010, the highest rate observed among all different types of derivatives transactions. Overall, 70 percent of all OTC derivatives transactions were subject to collateral agreements during this period. The total average of all OTC derivatives collateralized includes transactions with end-users and spot FX transactions, which due to the nature of these trade types, are not generally collateralized.
  - b. The fourteen largest reporting firms, representing the world's largest derivatives dealers, reported higher rates of collateralization. For this group, an average 96 percent of credit derivatives trades were subject to collateral arrangements during 2010. Overall, 80 percent of all OTC derivatives transaction executed by the large derivatives dealers were subject to collateral agreements.
  - c. Analyzing the data based on the type of counterparty, collateralization of risk ranged from a high of collateral covering 160 percent of outstanding exposures to hedge funds to a low of collateral covering 9 percent of exposures to local or regional government entities at the end of 2010.
4. Portfolio reconciliation, which refers to the matching of both the population and mark-to-market of outstanding trades in a collateralized portfolio, continues to be considered good market practice. About 73 percent of all survey respondents and 100 percent of the 14 largest OTC dealer banks indicated that they regularly performed portfolio reconciliations.
5. Cash used as collateral represents around 81 percent of collateral received and 80 percent of collateral delivered in 2010, which is broadly consistent with last year's results. Government securities constitute 10 percent of collateral received and 17 percent of collateral delivered this year, again consistent with end-2009.

## 1. INTRODUCTION

ISDA's Margin Survey, first published in 2000, provides information about the use of collateral in the OTC derivatives business. The Margin Survey is part of a broader set of ISDA initiatives in the area of collateral, including documentation, best practices and practitioner guidelines. The data used in the Margin Survey is sampled as of December 31 each year.

### 1.1. COLLATERAL AS A RISK MANAGEMENT TOOL

Credit risk exists whenever a firm has a relationship where a counterparty has an obligation to make payments or deliveries in the future. As discussed in ISDA's "Market Review of OTC Derivative Bilateral Collateralization Practices," there are a number of way of addressing the credit risk arising from a derivatives transaction, including: holding capital against the exposure, reducing credit risk through close-out netting; having another person or entity reimburse losses through financial guarantees; or by collateralizing the exposure.<sup>1</sup> Each of these methods has its advantages and disadvantages.

The decision to use collateral to mitigate risk is one evaluated carefully by credit risk managers in each firm that is a counterparty to a derivative transaction. This discretionary, prudential management of credit risk, which may include the use of collateral, is a common feature across a wide range of products in the capital and retail financial markets, including loans, derivatives, clearance and other types of transaction.

Collateralization works best in those cases where the volume of activity is sufficient to warrant bearing the operational and procedural burdens associated with the sophisticated collateral process. Not all derivatives users trade these instruments frequently enough to justify the operational burden and expense of collateralization. This latter group includes non-financial corporations whose business models cannot easily sustain the cash flows required for collateralization. Additionally, firms may face external restrictions such as legal and tax reasons that effectively prohibit the use of collateralization. Finally, there are cases where it is simply more cost efficient to rely on other methods of credit risk mitigation.

Nonetheless, collateralization remains among the most widely used methods to mitigate counterparty credit risk in the OTC derivatives market, and market participants have increased their reliance on collateralization over the years.

### 1.2. ABOUT THE SURVEY RESPONDENTS

A total of eighty three ISDA member firms responded to the 2011 Margin Survey; Appendix 1 lists the respondents. We classified respondents into three size groups based on the number of collateral agreements executed. The threshold for classification as a "large" program is more than 3,000 agreements. This sample includes fourteen of the largest OTC derivatives dealers. Respondents were classified as having medium-sized programs if they had more than 100 but less than 3,000 collateral agreements outstanding. Firms that reported having between zero and 100 agreements were classified as having small programs. For the 2011 Survey, 29 of the respondents were classified as medium, while 40 were classified as small firms.

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<sup>1</sup> ISDA's "Market Review of OTC Derivative Bilateral Collateralization Practices" was published on March 1, 2010, and can be found on ISDA's website at [www.isda.org](http://www.isda.org).

**Table 1.1. Profile of firms responding to the 2011 ISDA Margin Survey**

Size Class	Number of agreements	Number of respondents
Large	> 3,000	14
Medium	100 - 3,000	29
Small	0 - 100	40
Total		83

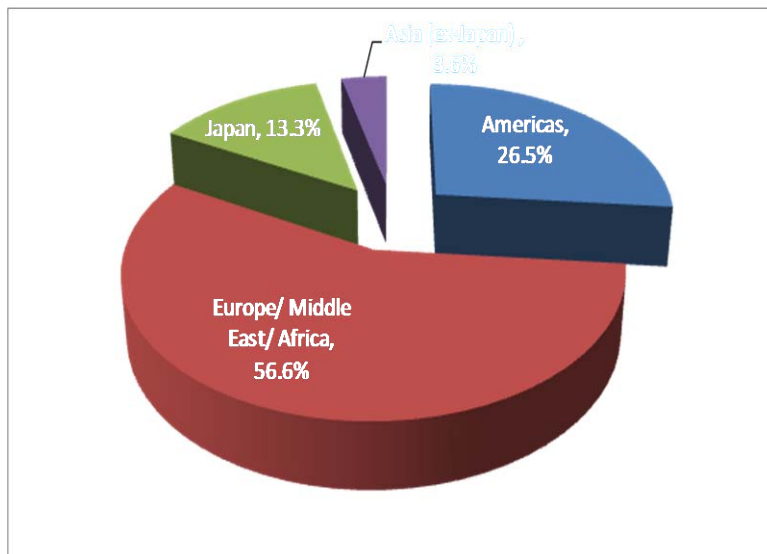
Table 1.2 classifies respondents according to firm or entity type. Sixty four of the eighty three respondents were banks and broker-dealers. The remaining respondents consisted of hedge funds, insurers, government agencies and government-sponsored entities.

**Table 1.2. Type of entity responding to the 2011 ISDA Margin Survey**

Bank/ Broker Dealer	64
Pension Fund	1
Energy/ Commodity Firm	4
Hedge Fund	1
Corporate	3
Insurer	1
Government-sponsored Entity	2
Government Agency	1
Other	6
Total	83

Chart 1.3 shows the geographic distribution of survey respondents. Over half were from institutions based in Europe, the Middle East or Africa, the Americas, 26 percent were based in the Americas.

**Chart 1.3 Geographic Distribution of Survey Respondents**



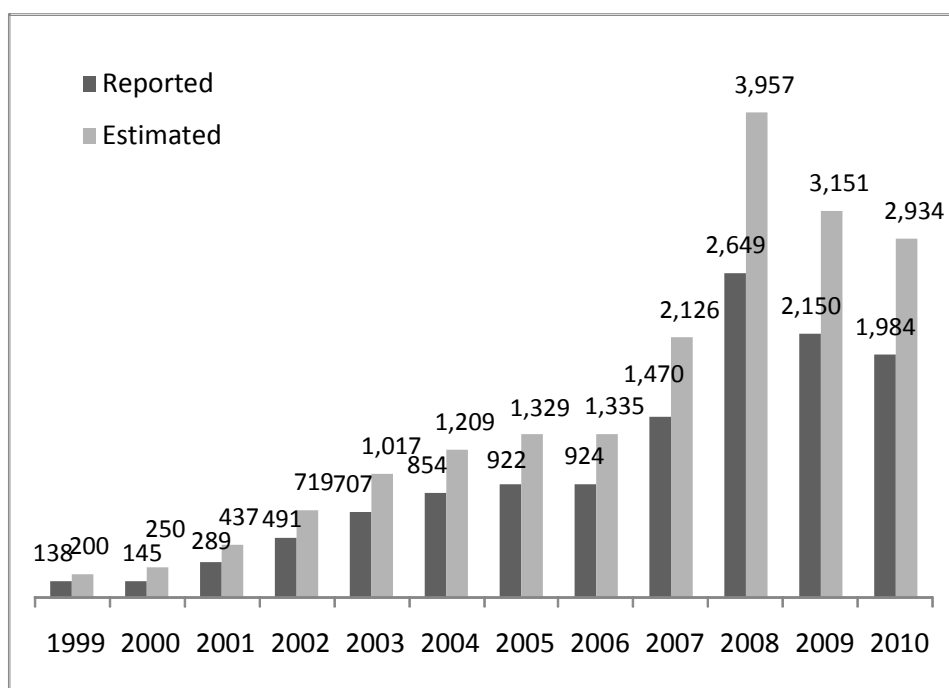
The 2011 Survey refers to the collateral management functions of respondents as of December 31, 2010. All amounts reported are in US dollars. As with all ISDA surveys, access to individual firm responses is strictly limited to selected ISDA staff and the data are not shared with the employee of any ISDA member firm or any other outside party.

## 2. COLLATERAL ASSETS

### 2.1. ESTIMATES OF TOTAL COLLATERAL OUTSTANDING

The estimated amount of Collateral in circulation in the OTC derivatives market at the end of 2010 was approximately \$2.9 trillion, which is down from last year's estimated amount of \$3.2 trillion<sup>2</sup>. The \$2.9 trillion estimate of total collateral in use is based on a total reported collateral amount of \$2.0 trillion. The estimation procedure is described in Appendix 2. Measured over a two-year horizon (2009-2011), estimated collateral has decreased at a compounded annual rate of 14 percent per year, while the three-year (2008-2011) compounded annual growth rate is 11 percent. Approximately 83 percent of total collateral— 88 percent of collateral received and 77 percent of collateral delivered—was reported by the fourteen large dealers in the sample.

**Chart 2.1. Growth of value of total reported and estimated collateral, 2000-2010 (USD billions)**



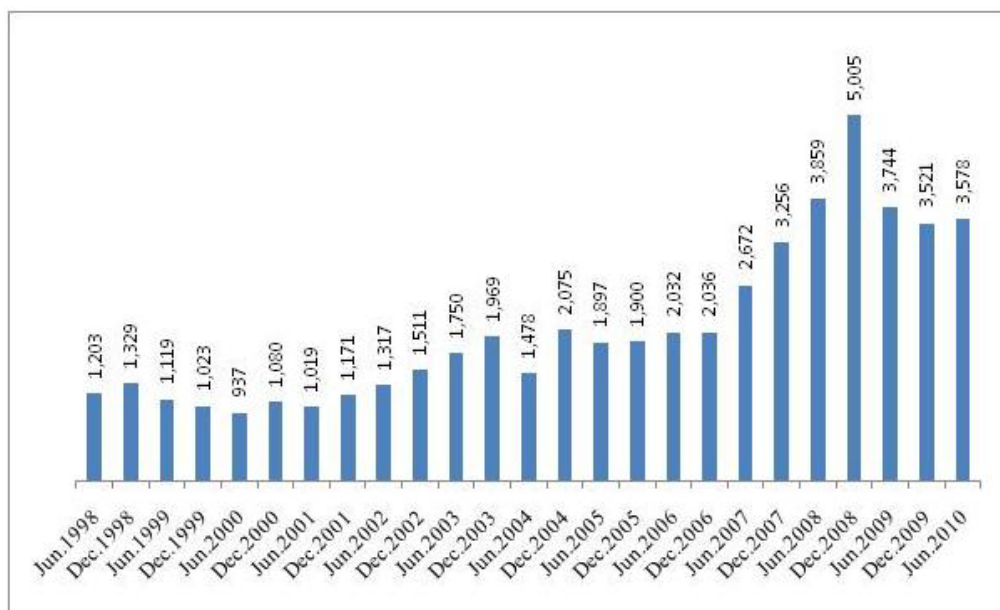
The decline in reported collateral can be attributed to several factors including counterparty consolidation and increased usage of central counterparties. Chart 2.2 below displays data on aggregate counterparty credit exposure collected by the Bank for International Settlements (BIS). The data reflects the net market-to-market value of counterparty exposures taking into account the benefits of close-out netting but before taking into account the effect of collateral in reducing risk exposure. As the chart shows, aggregate

<sup>2</sup> Counterparty consolidation, exclusion of intracompany collateral in the 2011 Survey and increased usage of central counterparties also had a slight impact.

counterparty exposure peaked at US \$5,005 billion in December of 2008 and fell to US \$3,578 billion by June 2010 from \$3,744 billion in June 2009, a 4.4 percent decline. In comparison, the total estimated amount of collateral in circulation fell 7 percent during the same period.

When compared, the data underlying these two charts reveals a trend toward a steady increase in collateral in circulation. Over the ten-year period from 2000 to 2010 the amount of collateral in circulation has grown at a 30 percent compounded annual growth rate while gross credit exposure, as measured by the BIS, has grown at a 14 percent compounded annual rate.

**Chart 2.2. Gross Credit Exposure of OTC Derivatives (USD billions)**



Source: Bank for International Settlements

Year-over-year changes in the reported quantity of collateral received and delivered varied across firms, sometimes significantly. The structure of the market changed significantly during the past year due to mergers involving several major dealers: many observed deviations from the norm involved banks and dealers involved in such mergers.

#### TYPES OF ASSETS USED AS COLLATERAL

Table 2.1 shows the breakdown of reported collateral by asset category. The results this year are broadly similar to last year's in terms of types of collateral. For many years cash and government securities exhibited a trend of increased use measured as a percent of total collateral. This year that trend shows signs of having peaked, with the share of cash and government securities as a percent of all collateral received and delivered being approximately the same as last year. Any changes from percentages reported last year are relatively small and can be attributed to sampling errors. The use of cash and government securities as collateral remains predominant despite an increased range of collateral assets deemed acceptable by market participants.

**Table 2.1. Value of collateral received and delivered by respondents, USD millions**

		<b>Collateral Received</b>	<b>Percent</b>	<b>Collateral Delivered</b>	<b>Percent</b>
<b>Cash</b>	USD	389,908	36%	325,678	36%
	EUR	429,500	40%	331,542	37%
	GBP	18,160	2%	21,020	2%
	JPY	24,232	2%	26,839	3%
	Other	15,752	1%	10,365	1%
	<b>Subtotal</b>		<b>877,552</b>	<b>81%</b>	<b>715,444</b>
<b>Government Securities</b>	United States	38,606	4%	48,409	5%
	European Union	22,943	2%	66,705	7%
	UK	10,948	1%	13,414	1%
	Japan	21,005	2%	17,438	2%
	Other	13,196	1%	8,854	1%
	<b>Subtotal</b>		<b>106,697</b>	<b>10%</b>	<b>154,821</b>
<b>Others</b>	Government agency securities/ GSEs	17,425	2%	10,075	1%
	Supranational bonds	2,067	0%	723	0%
	US Municipal Bonds	1,449	0%	-	0%
	Covered Bonds	6,545	1%	255	0%
	Corporate Bonds	28,514	3%	4,349	0%
	Letters of Credit	9,917	1%	600	0%
	Equities	25,453	2%	6,896	1%
	Metals and Other Commodities	101	0%	653	0%
	Other assets (Please Specify)	9,228	1%	5,592	1%
	<b>Subtotal</b>		<b>100,699</b>	<b>9%</b>	<b>29,143</b>
	<b>Total Collateral</b>	<b>1,084,949</b>		<b>899,408</b>	
	<b>Grand total</b>			<b>1,984,357</b>	

Note: Collateral Received differs from Collateral Delivered because Survey results are not based on the responses of all firms engaged in collateralized derivatives transactions.

Table 2.2 shows the composition of collateral received and delivered by program size. The results are fairly uniform across program size, with variations attributable to sampling errors. Again, this year's results are broadly similar to those reported last year. Observed changes in collateral composition tend to vary more from year to year for the group of firms with small programs than for those with medium and large programs, because of the relatively small size of the sample. No trend is evident in these observed changes.



**Table 2.2. Types of collateral received and delivered by program size (percent of total collateral)**

		Collateral Received			Collateral Delivered		
		Large	Medium	Small	Large	Medium	Small
Cash	USD	37.6	22.2	25.4	38.8	25.6	36.9
	EUR	39.0	48.0	30.6	34.0	47.0	42.9
	GBP	1.7	1.5	0.9	2.6	1.4	0.9
	JPY	1.6	7.1	7.7	1.2	9.9	4.9
	Other	1.0	3.2	9.1	1.0	1.6	1.4
<b>Subtotal</b>		<b>81.0</b>	<b>82.1</b>	<b>73.7</b>	<b>77.6</b>	<b>85.6</b>	<b>87.1</b>
Government Securities	United States	3.6	2.6	4.1	5.7	5.1	0.6
	European Union	2.0	1.0	8.4	9.1	1.8	1.7
	UK	1.1	0.2	0.0	1.9	0.0	0.0
	Japan	1.7	2.4	8.4	1.3	3.5	7.1
	Other	1.0	3.6	0.0	0.6	2.9	0.0
<b>Subtotal</b>		<b>9.5</b>	<b>9.8</b>	<b>20.9</b>	<b>18.7</b>	<b>13.2</b>	<b>9.4</b>
Others	Government Agencies	1.7	0.9	0.7	1.3	0.7	0.4
	Supranationals	0.2	0.6	0.0	0.1	0.0	0.0
	US Municipal Bonds	0.2	0.0	0.0	0.0	0.0	0.0
	Covered Bonds	0.6	0.0	1.2	0.0	0.0	0.0
	Corporate Bonds	2.8	1.2	2.0	0.5	0.0	1.6
	Letters of Credit	0.9	1.1	0.6	0.0	0.0	1.5
	Equities	2.3	3.7	0.9	1.0	0.0	0.0
	Metals and other commodities	0.0	0.0	0.0	0.1	0.0	0.0
	Other	0.9	0.7	0.0	0.7	0.5	0.0
<b>Subtotal</b>		<b>9.5</b>	<b>8.2</b>	<b>5.4</b>	<b>3.7</b>	<b>1.2</b>	<b>3.5</b>

## 2.2. DISPOSITION OF COLLATERAL DELIVERED

The 2011 Survey contains several questions regarding the disposition of collateral received and delivered. The first of these questions asked whether respondents had made arrangements to segregate collateral posted as Independent Amounts and what types of arrangements were made to secure that collateral. The second asked whether respondents rehypothecate collateral, and what percentage of collateral received in connection with OTC derivatives transactions is rehypothecated.

Table 2.3 below summarizes responses to the question of where Independent Amounts are held. Independent Amounts are analogous to initial margins required by futures clearinghouses to collateralize potential counterparty exposures. Like initial margin, Independent Amounts are designed to ensure that derivatives positions remain collateralized between margin calls.<sup>3</sup>

Survey respondents reported that most of the Independent Amount they delivered and received is commingled with variation margin, and much smaller percentages are segregated on the books and records of dealers or held in segregated custodial accounts.

<sup>3</sup> ISDA released an Independent Amount Whitepaper that contains a comprehensive analysis of the issues surrounding Independent Amounts. See, "Independent Amounts," ISDA (March 1, 2010), at [www.isda.org](http://www.isda.org).

**Table 2.3. Disposition of Independent Amount** (*percent of total*)

	Independent Amount Received		Independent Amount Delivered	
	all	large	all	large
Commingled with variation margin	71%	70%	76%	75%
Segregated on books and records of dealer	9%	9%	5%	4%
Segregated with custodian	6%	7%	3%	4%
Tri-party	14%	14%	16%	17%

Most Independent Amount received is commingled with variation margin. Six percent is segregated with a custodian or with a third party<sup>4</sup>. The similarity of reported results for the large dealers and the full sample can be explained by the fact that most respondents outside of the large dealers do not report receiving Independent Amounts: dealers are much more likely to require Independent Amount to be posted than non-dealers.

The practice of rehypothecation involves the re-use of securities delivered. A dealer receiving securities as collateral may re-use the same security, to collateralize its own exposure with its counterparties for example. In the case of cash collateral, rehypothecation involves either using the cash received as collateral to buy investment securities, or to lend on to others, or to collateralize other derivatives exposures. According to the 2011 Survey, approximately 96, 75 and 100 percent of collateral is in the form of cash deposits for large, medium and small firms, respectively.

**Table 2.4. Percent of collateral rehypothecated****Percent posted in connection with OTC derivatives transactions that is eligible to be rehypothecated**

	Large, Average	Medium/Small, Average	Medium/Small, Median
Cash	95.8	75.5	100.0
Securities	67.2	53.5	74.0
Other	30.8	9.5	0.0
Total	88.6	58.2	94.2

**Percent posted in connection with OTC derivatives transactions that is actually rehypothecated**

	Large, Average	Medium/Small, Average	Medium/Small, Median
Cash	89.0	56.5	95.3
Securities	44.4	10.8	0.00
Other	11.0	0.00	0.00
Total	73.6	28.3	0.00

<sup>4</sup> In the U.S., funds that are subject to the Investment Company Act of 1940 ("40 Act Funds") are required to have their Independent Amount segregated, which reflects the the majority of the Tri-Party number.

Rehypothecation practices are discussed more comprehensively in ISDA's " Market Review of OTC Derivative Bilateral Collateralization Practices," cited earlier.

### 2.3 CENTRAL COUNTERPARTIES

This year, the survey asked the 14 dealer respondents to report information regarding the independent amount and variation margin levels they had as both an executing broker and derivatives clearing member. Central Counterparties constitute a negligible fraction of the number of counterparties with whom derivatives users hold positions since the number of Central Counterparties is very small, even though the size of exposures to Central Counterparties may be a large and very important share of total exposure. The figures reported for Independent Amount received are significantly smaller than the other figures as, generally, Central Counterparties do not deliver Independent Amounts to their counterparties but hold it in separate accounts. The role of Central Counterparties in clearing trades and in managing collateral is of growing importance, and one which future surveys will address more comprehensively.

**Table 2.5. Collateral Outstanding with a Central Counterparty, Largest 14 Dealers  
USD millions**

**Collateral outstanding with a central counterparty: dealers acting as executing broker**

Independent amount/Initial margin - Delivered (USD)	20,422
Variation Margin - Received (USD)	31,711
Variation Margin - Delivered (USD)	16,023
Total - Received (USD)	31,711
Total - Delivered (USD)	36,445

**Collateral outstanding with a central counterparty: dealers acting as a derivatives clearing member**

Independent amount/Initial margin - Received (USD)	79
Independent amount/Initial margin - Delivered (USD)	4,206
Variation Margin - Received (USD)	4,329
Variation Margin - Delivered (USD)	782
Totals - Received (USD)	4,409
Totals - Delivered (USD)	4,989

### 3. EXTENT OF COLLATERAL USE

#### 3.1 NUMBER AND TYPES OF COLLATERAL AGREEMENTS

Respondents to the 2011 Margin Survey report 149,518 collateral agreements in place, compared with 171,869 in the 2010 Survey (see Chart 3.1 below), a 13 percent decrease. This is primarily due to counterparty consolidation, as referred to earlier in the Survey. Additionally, the 2011 Survey asked respondents to report the number of active agreements they had in place, which differed from Surveys done in years past.

**Chart 3.1. Growth of collateral agreements reported by respondents as of year end, 1999-2010**

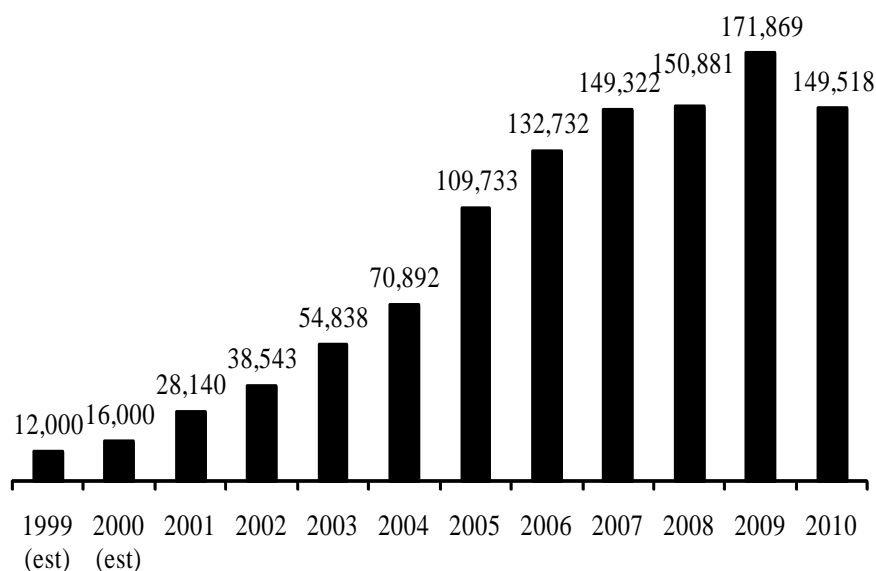


Table 3.1 shows the split between unilateral and bilateral agreements and between ISDA and non-ISDA agreements. As in previous years, ISDA credit support documentation is the most frequent choice among practitioners at about 90 percent. Non-ISDA documents include bespoke margin agreements, long-form confirmations with collateral terms, master margining agreements, commodity-specific margining agreements, and jurisdiction-specific agreements such as French AFB and German Rahmenvertrag. Respondents report that approximately 79 percent of their ISDA credit support agreements and 84 percent of all agreements are bilateral. These results reflect a continuing trend toward the use of bilateral agreements since the inception of the survey: last year respondents reported that 80 percent of all their ISDA credit support agreements and 83 percent of all agreements were bilateral.

**Table 3.1. Numbers and types of collateral agreement used by respondents**

Unilateral			Bilateral			Total Active
ISDA collateral agreements	Non-ISDA agreements	Total number Unilateral	ISDA collateral agreements	Non-ISDA agreements	Total number Bilateral	
16,724	6,680	23,404	117,564	8,550	126,114	149,518
11%	4%	16%	79%	6%	84%	100%

### 3.2 COLLATERALIZATION LEVELS

To measure collateral coverage, the Survey asks respondents to report (1) percent of trade volume subject to credit support agreements, and (2) OTC derivative credit exposure covered by collateral. Percent of trade volume is the number of OTC derivative trades subject to any collateral agreement divided by the total number of derivative trades. Percent of exposure collateralized is the sum of the ratio of collateral received from counterparties divided by the total counterparty credit exposure before collateralization.

Table 3.2 shows the percent of trade volume subject to credit support agreements by type of instrument. The results vary from a high of 93 percent of trade volume for credit derivatives to a low of 58 percent for foreign exchange transactions. The relatively low rate of collateralization of foreign exchange transactions is explained in part by the short maturities for most such transactions, which present relatively low risk and are often therefore not collateralized; another factor is the heavy use of foreign exchange derivatives by non-financial companies, for which collateralization is not always required. ISDA's 2009 Derivatives Usage Survey found that the use of foreign exchange derivatives and interest rate derivatives was almost universal among large multinational companies. Similarly, most users of commodity derivatives also tended to be non-financial companies, which are less likely to post collateral than financial firms.<sup>5</sup> In interpreting these data it is important to note that not all OTC derivatives are alike, and sub-segments of the market are traded under different market conventions and have differing risk profiles, which in turn lead to differing degrees of collateralization for different types of transactions.

**Table 3.2. Percent of trades subject to collateral agreements, by size of program**

	All, Average	Large dealers, Average	Medium/Small, Average
All OTC derivatives	69.8	80.2	66.3
Fixed Income derivatives	78.6	87.9	74.6
Credit derivatives	93.2	95.8	91.7
FX derivatives	58.2	65.2	53.0
Equity derivatives	72.1	73.2	71.5
Commodities, including precious metals	59.6	62.9	56.7

Collateralization rates are almost uniformly higher among the largest 14 OTC derivatives dealers than for the rest of the sample. Large dealers report that 80 percent of their overall trade volume is subject to

<sup>5</sup> See "2009 Derivatives Usage Survey," in *ISDA Research Notes* (2009), No. 2.

collateral agreements, compared to 66 percent of Medium and Small firms, with percentages ranging between 96 percent of their credit derivatives trades on the high end and 63 percent of commodity derivatives transactions on the low end. Readers should note that no comparison is given between the data in Table 3.2 and historical values. This is due to refinements in methodology that mean that year-on-year data are not strictly comparable between 2010 and 2011.

Table 3.3 shows collateralization levels across different types of counterparties. Hedge fund exposures tend to be the most highly collateralized of all types of counterparty exposures with average collateralization levels exceeding 100 percent of net exposures, a figure that reflects Independent Amounts posted by such firms. Positions with banks and broker dealers are the next most highly collateralized among the different counterparty types. Exposures to non-financial corporations and sovereign governments and supra-national institutions tend to have the lowest collateralization levels. The results also show that the major derivatives dealers tend to collateralize their net exposures more highly than other firms.

**Table 3.3. Collateralization levels by counterparty type**

	Large, Average	Med/Small Average	<b>ALL- Average</b>
All OTC Derivatives	72.2	73.4	<b>73.1</b>
Banks/Broker-dealers	88.6	73.6	<b>78.6</b>
Hedge funds	177.9	101.4	<b>159.9</b>
Mutual funds	79.1	128.0	<b>99.5</b>
Pension funds	73.4	n/a	<b>70.7</b>
Insurance companies	65.9	70.9	<b>67.5</b>
Energy/ Commodity firm	36.7	38.0	<b>37.2</b>
Nonfinancial corporations	42.7	24.3	<b>37.3</b>
Special purpose vehicles (SPV)	19.3	n/a	<b>19.3</b>
Supranationals	0.0	n/a	<b>24.2</b>
Government-sponsored entities/ Government Agencies	52.7	57.9	<b>54.1</b>
Sovereign national governments	13.9	n/a	<b>17.6</b>
Local or regional government entities	10.4	n/a	<b>9.4</b>
Other	59.4	38.0	<b>51.4</b>

#### 4. COLLATERAL MANAGEMENT

As in past years, the 2011 Survey asked respondents whether they reconcile their portfolios and how often reconciliation is performed. This year 100 percent of the 14 large dealer firms and 73 percent of all respondents indicated that they performed some form of pro-active portfolio reconciliation.

Respondents were also asked how frequently they performed portfolio reconciliations. Specifically, respondents were asked what percentage of trades were reconciled at daily, weekly, monthly, quarterly, annual intervals, or other. Table 4.1 below displays a summary of their responses to this question.

**Table 4.1 Frequency of portfolio reconciliation, percentage of trades reconciled at stated intervals**

	<u>Large</u>	<u>All</u>
Daily	61%	31%
Weekly	4%	10%
Monthly	8%	12%
Quarterly	0%	4%
Annually	1%	1%
Not regularly reconciled	26%	42%
Total	100%	100%

Large dealers tend to reconcile a higher percentage of trades on a daily basis than other respondents. It is standard market practice for large dealers to reconcile outstanding trades with each other on a daily basis, and a large percentage of trades executed by dealers is with other dealers.

## Appendix 1. Firms responding to the 2011 ISDA Margin Survey

### Largest 14 dealer banks

1. Bank of America Merrill Lynch
2. Barclays
3. BNP Paribas
4. Citigroup
5. Credit Suisse
6. Deutsche Bank
7. Goldman Sachs
8. HSBC
9. JP Morgan Chase
10. Morgan Stanley
11. Societe Generale
12. The Royal Bank of Scotland
13. UBS
14. Wells Fargo

### All other respondents

1. Absa Capital
2. Aozora Bank
3. APG Asset Management
4. Banca Monte dei Paschi di Siena
5. Banco Bilbao Vizcaya Argentaria
6. BayernLB
7. Bank of New York Mellon
8. Bank of Tokyo-Mitsubishi UFJ
9. Caja de Ahorros y Monte de Piedad de Madrid
10. Cargill International
11. Česká Spořitelna
12. Chuo Mitsui Trust and Banking Company
13. CIBC World Markets
14. Citadel LLC
15. Commerzbank
16. Confederación Española de Cajas de Ahorros
17. Co-operative Bank
18. Crédit Agricole Corporate and Investment Bank
19. Credit Industriel et Commercial
20. Dexia
21. DnB NOR Bank
22. DW Investment Management
23. DZ BANK
24. EGL
25. Eksportfinans
26. Eni s.p.a
27. Federal Home Loan Bank of Topeka

28. FMC Corporation
29. Freddie Mac
30. Generali Investment Italy Spa SGR
31. Government Debt Management Agency Pte
32. Hellenic Bank Group
33. Henderson
34. Hypo Vereinsbank , UniCredit Bank
35. KBC Bank NV
36. Landesbank Baden-Württemberg
37. Macquarie Bank
38. Maple Bank
39. MetLife
40. Mitsubishi UFJ Trust and Banking Corporation
41. Mizuho Capital Markets Corporation
42. Mizuho Corporate Bank
43. Mizuho Investors Securities
44. Mizuho Securities
45. National Australia Bank
46. National Bank of Greece
47. Nomura Securities
48. Norddeutsche Landesbank Girozentrale
49. Nordea Bank AB
50. Norinchukin Bank
51. Oversea-Chinese Banking Corporation
52. PNC Bank
53. Portland General Electric
54. Prudential Global Funding
55. Raiffeisen Bank International
56. Raiffeisen Switzerland Cooperative
57. Royal Bank of Canada
58. RWE Supply & Trading
59. SEB
60. Shinsei Bank
61. SNS Bank
62. Standard Chartered Bank
63. Sveriges Riksbank
64. Sumitomo Trust & Banking
65. TD Bank Group
66. UniCredit Bank
67. Wellington Management Company
68. WGZ BANK
69. Zürcher Kantonalbank



## **Appendix 2: 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—in which 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 were simply to measure the value of assets currently in use as collateral, it would then 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 nonparticipation in the Survey. The nonparticipation problem arises because the Margin Survey is compiled from the responses of ISDA member firms, among which large end-users of derivatives such as hedge funds are not as comprehensively represented as the dealers, all of which are investment and commercial banks. 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 firm 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, although the final number of \$2.9 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.