Counterparty Credit Exposure among Major Derivatives Dealers
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- The largest derivative dealers have virtually complete Credit Support Annex (CSA) coverage of their counterparty credit exposures to other major dealers.
- The five largest inter-dealer exposures before taking account of collateral for the top 10 dealers averaged 10 percent of net derivatives exposure in 2006 compared with 14.5 percent in 2003. These same exposures were reduced by collateral to 2 percent of net exposure in 2006 compared with 1.2 percent in 2003.
- The five largest after-collateral inter-dealer exposures for the top 10 dealers averaged 3 percent of net derivatives exposure compared with 2 percent in 2003.
- The five largest non-dealer exposures averaged 11 percent of net exposure before collateral and 6 percent after collateral for the top 10 dealers. This sample was not analyzed in 2003. Exposures to hedge funds are apparently collateralized completely.

Background

At its 2004 Annual General Meeting in Chicago, ISDA released the results of its survey of inter-dealer derivatives counterparty risk concentration among ISDA Board member firms. ISDA conducted the survey in response to repeated expressions of concerns among some regulators and in the press about the size of inter-dealer exposures and the potential consequences of the exit of a major market participant. The results of the survey suggested that, based on 2003 reported exposure amounts, exposures among dealers are reduced to minimal levels after giving effect to netting and collateral.

Since that time, there have been occasional suggestions that, in the low volatility markets of the past few years, major dealers might be letting their guard down and allowing counterparty exposures to rise, possibly to unsafe levels. The objective of this survey is to determine if there is evidence of a significant rise in counterparty exposures among ISDA Board member firms. The results of this Survey suggest that such an increase in exposure has not taken place.

Survey methodology

The Counterparty Risk Concentration Survey collects data on the significance of the largest credit exposures to derivative counterparties among the major derivatives dealers, virtually all of which are represented on the ISDA Board of Directors. While the 2003-4 Survey collected exposure data only for exposures to other major derivatives dealers, the 2006-7 Survey goes farther by collecting data separately for exposures to that are not major derivatives dealers.

ISDA asked each respondent to provide the following information for (1) counterparties that are major derivatives dealers and for (2) other counterparties.

1. The five largest before-collateral counterparty credit exposure amounts (USD equivalents) and the corresponding exposures to the same counterparties after taking account of collateral
2. The five largest net-of-collateral counterparty exposures and the exposures to the same counterparties before taking account of collateral
3. Percentage of Master Agreements with counterparties that are subject to Collateral Support Agreements
4. Average collateral thresholds—that is, permissible uncollateralized exposures—for AA, A, and BBB-rated counterparties

In addition, the 2006-7 Survey collected data on exposure to the largest CDS counterparties. Finally, the Survey requested data on trading activities with hedge fund counterparties in terms of number of counterparties and percent of notional trade volume.

Respondents did not identify specific counterparties. We asked respondents to net out any exposures to legal entities within a counterparty firm so that each counterparty represents a single firm rather than a subsidiary of a firm. Further, we asked that negative credit exposures resulting from over-collateralization be omitted.

Eighteen firms submitted responses to the Survey, including the ten largest dealers by notional amounts outstanding. As in the 2003-4 Survey, one respondent was dropped from the sample because of differences in practices across jurisdictions that distort the results. In order to focus on risk management practices among the very largest dealers, we also show results for a sub-sample of the ten largest reporting dealers.

It should be emphasized that this study is based on data submitted by a small number of firms and that results based on small samples should be interpreted with caution. The inclusion or exclusion of one observation, for example, might have a significant effect on the measured results. In addition, variations from previous studies can occur because of this small sample effect and because of changes in the composition of the sample. The results of this study are nonetheless similar to those of the 2003-4 survey and point to the same conclusions.

I. Inter-dealer counterparty credit exposures

The Survey requested data on respondents' counterparty exposures to other derivatives dealers. For purposes of the Survey, dealers consist mainly of ISDA Primary Global members plus a small number of Primary International members; a total of 28 firms were included in the list provided to respondents by ISDA Research.

Credit Support Agreement coverage of inter-dealer exposures. Before derivatives counterparties exchange collateral on their credit exposures to each other, they typically execute a Credit Support Annex (CSA) to their Master Agreement. CSA coverage is therefore a reasonable indicator of the use of collateral and other forms of credit risk mitigation by market participants. Table 1 shows the results. For the full sample, average coverage ratio is 78 percent, while for the ten largest dealers the mean coverage ratio is 92 percent. And for the full sample as well as for the ten largest dealers, the median coverage ratio is 100 percent; in other words, a majority of respondents report

complete CSA coverage of exposures to major dealers. The difference between mean and median is the result of a small number of legal entities, which account for a small share of total exposure to a counterparty, for which CSAs have not been executed. For both the full sample and ten largest dealers, coverage is higher than in 2003.

Table 1 - Credit Support Agreement coverage of inter-dealer exposures

	Mean (%)		**Median (%)**	
	2003	*2006*	*2003*	*2006*
Full sample	82	83	95	100
Ten largest	84	92	95	100

Extent of risk reduction for inter-dealer exposures. Tables 2a and 2b show risk reduction due to collateral as a percent of original exposure. We calculate risk reduction for the five largest counterparties according to the following formula:

$$\text{Risk reduction}_i = \frac{\text{BCE}_i - \text{ACE}_i}{\text{BCE}_i}$$

where BCE_i is mark-to-market credit exposure to counterparty i before taking account of collateral and ACE_i is exposure to counterparty i after taking account of collateral.

Table 2a - Full sample

CP rank	**Mean (%)**		**Median (%)**	
N=17	*2003*	*2006*	*2003*	*2006*
1	86	88	95	89
2	83	74	94	85
3	80	66	92	85
4	77	77	89	83
5	78	66	88	79
Total	**81**	**77**	**92**	**85**

Table 2b - Ten largest dealers

CP rank	**Mean (%)**		**Median (%)**	
N=17	*2003*	*2006*	*2003*	*2006*
1	93	93	97	93
2	89	73	96	87
3	91	65	94	85
4	89	79	90	87
5	92	65	92	81
Total	**91**	**80**	**94**	**88**

Results are similar for both samples, although risk mitigation among the ten largest dealers is somewhat higher: Collateral coverage of the largest exposures averages about 77 percent for the full sample and 80 percent for the ten largest dealers. Median coverage

is higher, at 85 and 88 percent, which suggests that the majority of both samples reduce their exposures more than the averages might suggest. These coverages are lower than in 2003: In that year, risk reduction averaged about 80 percent for the full sample and 90 percent for the ten largest dealers. These results conflict somewhat with the results of the ISDA Margin Survey, which has reported gradually increasing collateral coverage of exposures, although the numbers reported by the Margin Survey are generally lower than those reported above for the largest exposures. It is likely that some of the variation is the result of changes in the sample compared with the 2003-4 survey as well as the small sample size.

Concentration of inter-dealer exposures. In order to determine the extent of inter-dealer counterparty risk concentration, we compare the five largest exposures to the total amount of credit exposure to all counterparties. In order to do so, we gathered total net derivatives credit exposures to all counterparties from public financial reports. We then measured exposure concentration as the sum of the five largest net exposures, both before and after collateral, as a percent of total net counterparty exposure. Because of data availability, especially changes in reporting requirements resulting from adoption of IFAS, the full sample size was reduced from eighteen to twelve firms. For comparability with the 2003 results, we present only the results for the ten largest firms.

The results are shown in Table 3, which shows mean exposures for 2003 and 2006. The exposures before collateral average about 10.0 percent of total counterparty exposure compared with 14.5 percent in 2003; median ratios (not shown) are lower than mean but not appreciably so. After adding the risk mitigation effect of collateral, the remaining net exposure from these five largest exposures falls to 2.0 percent of total exposure.

Table 3 - Mean exposures before and after collateral as percent of total exposure, ten largest dealers

CP rank	**Before collateral (%)**		**After collateral (%)**	
N=10	*2003*	*2006*	*2003*	*2006*
1	5.50	3.56	0.40	0.21
2	3.35	2.04	0.24	0.51
3	2.31	1.66	0.26	0.60
4	1.78	1.44	0.20	0.31
5	1.40	1.16	0.04	0.36
Total	14.49	9.87	1.15	2.00

Concentration of net exposures. In order to measure concentration of after-collateral exposure, we requested firms to provide their five largest net-of-collateral counterparty exposures to major dealers. We then measured exposure concentration as the sum of the five largest net (after collateral) exposures as a percent of total net counterparty exposure. Again, we present only the results for the ten largest firms.

Table 4 shows that the largest net exposures add up to an average of just under 2.1 percent of exposure after taking account of risk reduction due to collateral; the median ratio is even lower at 1.6 percent. The low exposure ratios suggest that dealers have

effectively reduced inter-dealer credit exposures and that there is no evidence to support concern with concentration of large inter-dealer exposures.

Table 4 - Largest after-collateral inter-dealer exposures as percent of total exposure, ten largest dealers

	Mean (%)		**Median (%)**	
CP rank	**2003**	**2006**	**2003**	**2006**
1	0.62	1.04	0.51	0.67
2	0.44	0.60	0.34	0.47
3	0.38	0.50	0.27	0.45
4	0.24	0.42	0.25	0.45
5	0.29	0.36	0.19	0.31
Total	2.08	2.92	1.58	2.35

Permissible risk exposure: collateral thresholds Finally, we requested data on how much credit exposure dealers were willing to accept from other dealer counterparties. In negotiating a CSA with a counterparty, an institution has to decide how much uncovered exposure it will allow before requiring collateral coverage. In order to determine the amount of permissible exposure, we requested firms to provide average thresholds for three credit rating categories, namely, AA, A, and BBB.

Table 5 - Average unsecured thresholds for dealer counterparties
USD millions

	Full sample		**Ten largest**	
Rating	*2003*	*2006*	*2003*	*2006*
AA	27	37	25	41
A	17	20	13	21
BBB	10	6	9	6

Mean results are shown in Table 5; median results (not shown) are virtually identical. Two differences between 2003 and 2006 stand out. First, thresholds in 2006 are somewhat higher among the ten largest than among the full sample except for BBB-rated counterparties. Second, thresholds are increasing for AA and A-rated counterparties but decreasing significantly for BBB-rated counterparties. It is conceivable that changes in sample composition account for this steepening of thresholds. But it is also possible that more highly rated counterparties have had thresholds increased as a way to reduce the operational overhead of the collateral process without exceeding prudent credit limits. Alternatively, threshold terms for lower rated counterparties might have grown tighter as banks manage their credit portfolios more actively.

II. Counterparty credit exposures to other financial institutions and end-users

In contrast to 2003, the 2006-7 Survey collected data on exposures to counterparties that are not major dealers. In addition, the Survey collected information regarding exposures to credit default swap counterparties and to hedge funds.

CSA coverage of non-dealer counterparties is lower than it is among major dealer counterparties. For the sample as a whole, mean CSA coverage is 32 percent and median is 22 percent; for the ten largest dealers, mean coverage is 39 percent and median coverage is 45 percent (Table 6). The divergence between mean and median for both the full sample and the ten largest dealers suggests wide variation in coverage. According to practitioners, one reason for the lower coverage is that this category of counterparty includes government sponsored entities and other official institutions such as Landesbanks, some of which do not routinely post collateral with dealers. The same is apparently true for insurance companies. Practitioners emphasize, however, that coverage of higher-risk counterparties like hedge funds is virtually complete and in fact higher than for others because collateral terms require that such counterparties post initial margin (independent amount) along with that required to cover exposures.

Table 6 - *CSA coverage of non-dealer counterparties*

	Mean (%)	Median (%)
Full sample	32	22
Ten largest	39	45

The lower CSA coverage shows up as lower risk reduction: Mean (and median) risk reduction of the five largest non-dealer exposures was 38 percent, compared with almost 80 percent for exposures to major dealers. The results were virtually the same for the ten largest dealers. But despite the lesser degree of risk mitigation, concentration measures were barely higher than those of dealer exposures: Table 7 shows that exposure to the ten largest non-dealer counterparties was just over 11 percent, compared with just under 10 percent for exposures to major dealers. Again, given lack of net exposure data, the results are shown only for the ten largest dealers.

Table 7 - Exposures to non-dealer counterparties as percent of total exposure, 2006

CP rank	**Before collateral (%)**	**After collateral (%)**
1	3.69	2.63
2	2.82	1.26
3	1.89	0.95
4	1.49	0.70
5	1.25	0.85
Total	11.13	6.25

Next, we considered the five largest non-dealer exposures net of collateral as a percent of exposure to all counterparties. Table 8 shows that the largest net exposures add up to an average of just over 8 percent of exposure after taking account of risk reduction due to

collateral, which is noticeably higher than the average of less then 3 percent for dealer counterparties. Although the uncovered exposure is larger than for dealers, it still is less then 10 percent of all exposure.

Table 8 - Largest after-collateral exposures to non-dealer counterparties as percent of total exposure

CP rank	**Mean (%)**	**Median (%)**
1	3.7	3.6
2	1.6	1.1
3	1.1	1.0
4	0.9	0.8
5	0.8	0.7
Total	8.1	7.5

Table 9 shows collateral thresholds for non-dealer counterparties. Compared with the inter-dealer thresholds in Table 4, thresholds for non-dealer counterparties are generally lower. Although one would expect lower thresholds to correspond to lower unsecured exposure, lower CSA coverage of non-dealer counterparties means that unsecured exposure is more significant for non-dealer than for dealer counterparties.

Table 9 - Average unsecured thresholds for non-dealer counterparties USD millions

	Mean threshold	
Rating	**Full sample**	**Ten largest**
AA	30	34
A	16	17
BBB	5	5

III. Credit derivative and hedge fund counterparties

The survey asked two other questions regarding counterparty exposures. First, respondents were asked to list the five largest exposures to credit default swap (CDS) counterparties. Table 10 (following page) shows that, for the ten largest dealers, the five largest CDS exposures—to the counterparty, not to a reference entity—are barely 2 percent of net credit exposure to all counterparties.

Table 10 – Exposures to credit default swap counterparties as percent of total exposure, ten largest dealers

CP rank	Mean (%)	Median (%)
1	0.80	0.48
2	0.44	0.44
3	0.34	0.21
4	0.27	0.20
5	0.22	0.19
Total	2.07	1.52

Second, the survey asked respondents about activities with hedge fund counterparties, both as percent of counterparties and as percent of notional trade volume. Table 11 shows mean results; median results were close to mean for both samples. As expected, hedge funds are less significant for the full sample, which includes regional banks with little if any hedge fund activity. We did not ask for collateralized versus uncollateralized exposures because of our understanding that virtually all hedge fund exposures are more than fully collateralized with independent amounts posted up-front and variation margin posted subsequently as exposures change.

Table 11 – Activities with hedge fund counterparties

	Full sample	Ten largest
Percent of counterparties	15	23
Percent of trade volume	6	8

IV. Conclusion

The above results suggest that major derivatives dealers are increasing collateral coverage of inter-dealer trades by means of bringing a greater proportion of counterparties under Credit Support Annexes to the ISDA Master Agreement. The results also suggest that dealers collateralize most of their inter-dealer credit exposure, although the coverage percentage has decreased slightly since 2003-4. But large inter-dealer exposures are less significant as a percent of total counterparty exposure than they were in 2003-4.

Collateral coverage of non-dealer counterparties tends to be lower than for dealer counterparties, both in terms of CSA coverage and coverage of exposures. But such counterparties tend to be highly rated, and are usually governmental or financial institutions. Such highly rated non-dealer exposures tend to be larger as a percent of total exposure than dealer exposures, but still do not make up a major proportion of total exposure. These findings of higher exposures do not apply to exposures to hedge funds, which are virtually always collateralized and to a higher degree than other counterparties.