

ISDA® Research Notes

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The ISDA Market Survey: What the results show and what they don't show

The ISDA Market Survey is the longest-running global survey of over-the-counter derivatives, and has reported on privately-negotiated derivatives activity since 1987. The Survey began by reporting notional amounts outstanding of interest rate swaps and options, and added credit default swaps in 2001 and equity derivatives in 2002. The only known prior effort was a study by the Bank for International Settlements, which estimated notional amount of interest rate swaps for 1984 and 1985 (BIS 1986).

ISDA surveys derivatives activity at ISDA Primary Member firms semiannually at mid-year and at year-end. Primary Members are institutions that deal in OTC derivatives, where “deal in” means to use derivatives for more than asset-liability management or otherwise hedging an entity’s own risks. As of this writing, ISDA has 221 Primary Members, of which 78 responded to the Mid-Year 2008 Market Survey. Participation in the Survey is voluntary, but all major derivatives houses have participated since the Survey’s inception. Charts 1 and 2 show the results of the Survey; the results of the latest Survey are described separately on the following page.

The objective of the ISDA Market Survey is to measure the scale and growth of over-the-counter derivatives activity. The Survey uses notional amounts outstanding as its measure, which leads to large reported numbers that routinely attract a great deal of attention and concern. Some question whether a survey in which participation is voluntary and limited to dealer members of ISDA can be a reliable indicator of derivatives activity. Far more point to the large reported numbers as indicators of a high level of risk. Unfortunately, many of the concerns are based on misinterpretation of what the Survey measures mean.

Chart 1
Interest rate derivatives, ISDA Market Survey, 1987-2008
Notional amounts in USD trillions

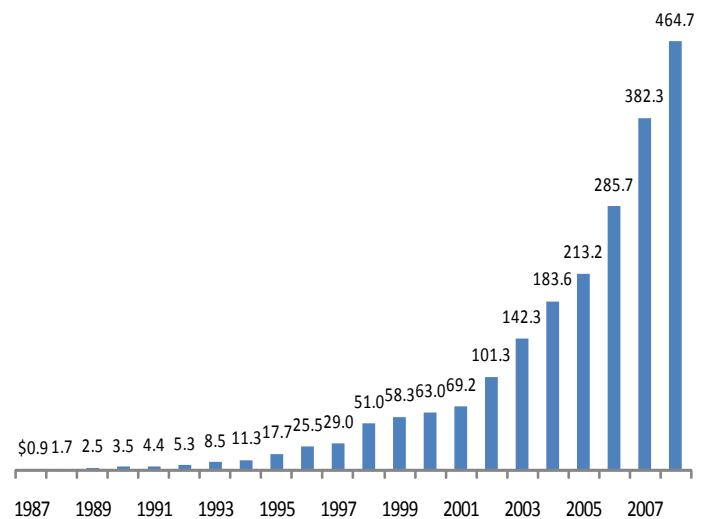
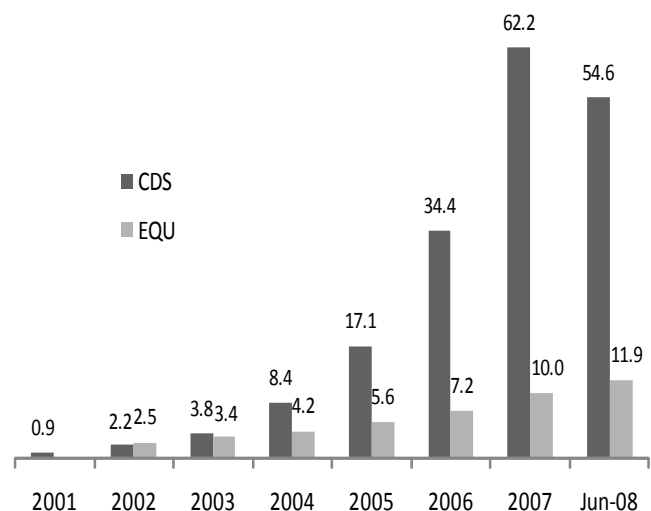


Chart 2
CDS and equity derivatives, ISDA Market Survey
Notional amounts in USD trillions



This note attempts to clarify the issue by discussing two aspects of the ISDA Market Survey. The first is the meaning of the Survey results, that is, what the Survey numbers show and what they do not show. Although notional amounts outstanding are a plausible though rough measure of derivatives activity, they are not a reliable measure of risk. The second aspect is the representativeness of the Survey results, that

is, the confidence one can have that the numbers are an accurate representation of over-the-counter derivatives activity. Both parts of the discussion involve comparison of the results of the ISDA Market Survey with the results of a parallel effort, namely, the Bank for International Settlements Semiannual Over-the-Counter Derivatives Market Statistics (BIS 2008).

Results of ISDA Market Survey Mid-Year 2008

In September, ISDA reported the following results of the Mid-Year 2008 Market Survey:

- As of the end of June 2008, notional amount outstanding of interest rate swaps and options, was \$464.7 trillion, a 22 percent increase from the end of December 2007.
- Notional amount outstanding of credit default swaps was \$54.6 trillion, a 12 percent decrease from December 2007.
- Notional amount outstanding of equity forwards, swaps, and options was \$11.9 trillion, a 19 percent increase from December 2007.

The most notable finding was the decrease in credit default swap notional amounts, due largely to efforts by dealers and service providers to decrease notional amounts by means of terminations. But the decrease masks a mixed picture of both increases and decreases among major dealers.

On the one hand, TriOptima reported \$17.4 trillion of notional amount terminations among its dealer clients during the first half of 2008. But on the other hand, of the twenty largest reporting dealers, eleven reported decreases in notionals and nine reported increases; the average reported decrease was 10 percent while the average reported increase was 16 percent. The reason for the net decrease was largely because the decreases tended to occur among the largest ten dealers. Given continuing portfolio compression efforts by dealers and service providers such as TriOptima and Creditex-Markit, it would not be surprising to see further notional decreases in future Market Surveys.

ISDA Market Survey results as of mid-year 2008

Notional amounts in USD trillions

	Interest rate	Chg (%)	Credit	Chg (%)	Equity	Chg (%)
Jun-07	347.09		45.46		10.01	
Dec-07	382.30	10.1	62.17	36.8	10.00	(0.2)
Jun-08	464.69	21.6	54.61	(12.2)	11.89	18.9

Notional amount, market size, and risk

The ISDA Market Survey collects and reports notional amounts of outstanding transactions as of the reporting date, where notional amount refers to the underlying amounts specified in OTC derivatives transactions. More precisely, for interest rate derivatives, notional amount refers to the hypothetical underlying amount used to calculate cash flow obligations. For credit default swaps, notional amount refers to the par amount of credit protection bought or sold, equivalent to debt or bond amounts, and is used to derive the coupon payment calculations for each payment period and the recovery amounts in the event of a default. And for equity derivatives, notional amount can refer to the hypothetical amount used to calculate equity swap cash flows, to the value of the delivery obligation for physically-settled equity forwards, or to the number of shares times forward price or strike price for an equity forward or option. In most of these transactions, cash flow obligations are a small percent of notional amounts.

The Market Survey uses notional amounts to measure the size of the market and the level of activity. The reason for using notional amount is that it is relatively simple to identify and gather, as well as similar to measures of underlying cash markets. In addition, it is consistent over time; that is, the notional for a deal does not change except in limited cases like equity swaps and amortizing swaps, neither of which is likely to have a significant effect on the overall measure. At the same time, however, notional amount most certainly overstates the level of activity because it represents a cumulative total of past transactions, many of which were used by dealers to make their daily adjustments to their risk positions. Even if activity were to fall during a reporting period, notional amount outstanding for the period would not necessarily fall.

More problematic is the misinterpretation of notional amount as some measure of risk. In fact, notional amounts are only loosely related to risk. Risk managers might, for example, monitor notional position amounts along with other measures, but only because

large concentrations or changes in notional amounts would suggest further investigation and not because notional amounts are in themselves a precise measure of risk. Indeed, in most OTC derivative transactions, cash flow obligations are a small percent of notional amounts and so are amounts at risk. The main exception is cross-currency interest rate swaps, which involve an exchange of notional amounts in different currencies, but cross-currency swaps are a small percent of OTC derivatives transactions.

In contrast to the ISDA Market Survey, the BIS Semi-annual OTC Derivatives Market Statistics report two numbers that are more closely related to risk than are notional amounts. The first is gross market value, which is the absolute value of positive and negative replacement values, where replacement value is the estimated amount that could be received or paid for unwinding a transaction on the reporting date. The second is gross credit exposure, which represents the current value of contracts that have a positive market value after taking account of legally enforceable bilateral netting agreements; in other words, it measures netted credit exposure between counterparties. Table 1 shows the difference between the two measures for Bank A's hypothetical portfolio of four OTC derivative transactions with Bank B; two of the transactions have a positive market value for Bank A and two have a negative value. Gross market value ignores the signs, so the gross market value is \$12 million, while gross credit exposure nets positive and negative values so the netted exposure is \$2 million.

Table 1
Bank A's OTC derivative transactions with Bank B
Amounts in USD millions

	Notional	MTM
Interest rate swap (5-year)	100	4
FX forward (6-month)	100	(3)
Gold forward (3-month)	50	(2)
Equity option (purchased)	20	3
Gross market value		12
Gross credit exposure (netted)		2

Note: MTM is current market (mark-to-market) value

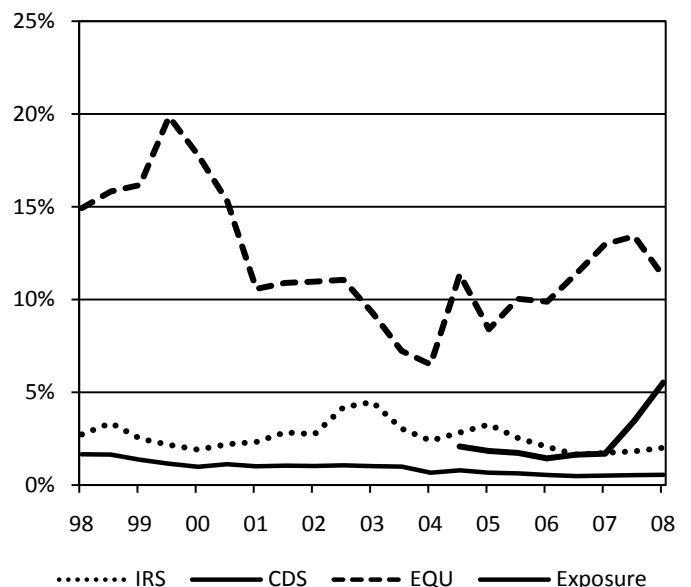
Some consider gross market value to be a measure of market risk, but in fact it gives only a snapshot of changes in market values that have occurred from the deals' inception dates to the reporting date. Gross market value actually overstates market risk because it does not allow for offsetting positions. Suppose, for example, that a dealer has an interest swap with an end-user client and hedges that swap with an offsetting swap in the inter-dealer market. If the swap with the client takes on a positive value, the swap in the

inter-dealer market will take on an offsetting negative value, but gross market value will simply add the two absolute values instead of offsetting them. Gross market value is therefore not a useful measure of market risk.

Gross credit exposure, which nets market values between counterparties, does not attempt to measure market risk. It does help measure credit risk, however, by summing the netted exposures between reporting banks and their counterparties. In effect, gross credit exposure measures the residual risk that might not be transferred if a counterparty were to default, although the measure is backward looking because it only gauges exposure as of the reporting date.

The ISDA Market Survey does not collect market values or credit exposures. But given the similarity between the ISDA and BIS samples, it is reasonable to assume that the BIS market value and exposure numbers yield some information regarding risks in the ISDA sample. Chart 3 shows ratios of market value and credit exposure to notional amounts for interest rate, credit, and equity derivatives since the inception of the BIS statistics in 1998. Although notional amounts have grown significantly over the past ten years, mark-to-market values and credit exposures as percent of notional have been far lower and have shown no discernible trend other than a gradual de-

Chart 3
Ratio of market value to notional amount, BIS statistics



Notes: interest rate swaps (IRS), credit default swaps (CDS), and equity derivatives (EQU) are ratios of market value to notional amount for respective products.

Exposure is ratio of gross (netted) credit exposure to notional amount across all products.

Source: Bank for International Settlements

crease in credit exposure. Interest rate and credit derivatives have remained stable and below 5 percent, with the exception of the increase of CDS mark-to-market values to 5.5 percent of notional amount in the latest BIS statistics. Equity derivatives, in contrast, show more volatile mark-to-market values, which likely reflects the relative importance of equity options compared with equity forwards and swaps. Finally, close-out netting tends to reduce credit exposure to less than one percent of notional amount—or, about 25 percent or less of gross mark-to-market value—reflecting the benefit of booking transactions under master agreements with enforceable netting provisions. The chart shows only one number for credit exposure: Because interest rate, credit, and equity derivative exposures are netted against each other under a master agreement, it is not meaningful to break the netted credit exposure down further among products.¹ The gradually decreasing ratio of netted exposure to notional amount reflects an increase in the netting benefit over time.

Representativeness of the Market Survey

There are several factors that affect the degree to which the ISDA Market Survey is a reasonable representation of OTC derivatives overall. The first is the focus on Primary Members, which leaves out active derivatives participants such as hedge funds and government sponsored entities. This should not be a problem, however, because such participants virtually always transact through dealers. Hedge funds do not deal directly with other hedge funds, for example, but through the intermediation of dealers; the same is true of government-sponsored entities such as Fannie Mae or the World Bank. Surveying only dealers should therefore pick up all significant OTC derivatives activity.

The focus on dealers, however, could in fact lead to the opposite problem, over-counting, because a significant number of OTC derivatives transactions are interdealer hedging transactions that will be reported separately by two respondents. Because inter-dealer transactions are reported twice, it is necessary to adjust the reported results for double counting. ISDA Market Survey respondents do not specify the proportion of transactions with other respondents, however, so ISDA calculates an adjustment that is based on a separate data set, namely, the BIS OTC Derivatives Market Statistics.

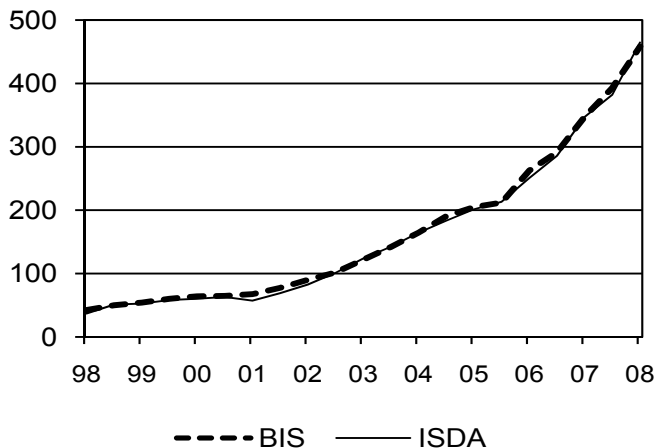
¹ Currently, only US-based entities net CDS exposures with other derivatives exposures in the numbers they submit to the BIS.

The BIS collects its statistics on the same schedule as the ISDA Survey, that is, at mid-year and at year-end. But unlike the ISDA Market Survey, which is based on data provided voluntarily by Survey participants, the BIS statistics are submitted by regulated institutions to central banks or regulatory agencies and are designed to be consistent with other regulatory reporting requirements. The two samples overlap substantially but not completely: For the first half of 2008 statistics, the BIS collected data from 57 institutions in 11 countries; for the Mid-Year 2008 Market Survey, ISDA received responses from 78 institutions in 21 countries. And of the twenty largest ISDA Market Survey respondents for interest rate swaps, nineteen also submitted data to the BIS; similarly, seventeen of the twenty largest CDS respondents and eighteen of the twenty largest equity derivatives respondents also provided data to BIS. Finally, the ten largest ISDA respondents in each of the three categories all contributed to the BIS statistics. It is therefore reasonable to assume that the ISDA and BIS samples overlap substantially and share the same characteristics.

Given the similarity between the two samples, ISDA calculates an adjustment to the data submitted by respondents for each of the three product categories. The adjustment is based on the BIS results, which include the amounts transacted with dealer and non-dealer counterparties. The adjustment factor is equal to the ratio of (1) total adjusted BIS notional amount to (2) total adjusted BIS notional amount plus notional amount of transactions with other dealers reporting to BIS. ISDA multiplies the adjustment factor by the total notional amount submitted by respondents; the effect of the adjustment is to reduce the reported notional amounts by factors ranging from about 25 percent to about 35 percent, depending on the product category. ISDA recalculates the adjustment factors with every new set of BIS statistics.

Another consideration regarding the the representativeness of the ISDA Market Survey is that it is based on results provided voluntarily by responding firms. This voluntary participation could conceivably call into question the reliability of the survey results because significant market participants could decline to respond. Although the BIS statistics are also provided under a voluntary program, one might presume that official sponsorship by regulators and central banks might provide additional incentives to participate. One way to resolve the issue would be to compare the results of the ISDA Market Survey with those of the BIS OTC Derivatives Statistics: If the voluntary ISDA numbers are less reliable than the regulator-

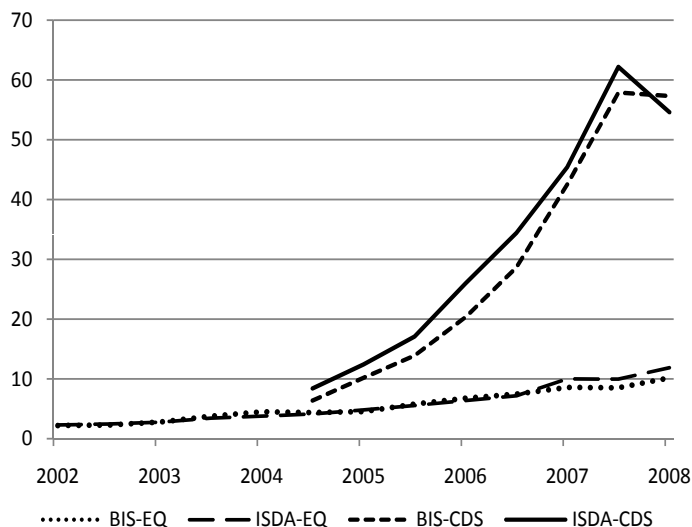
Chart 4
Comparison of BIS and ISDA notional amounts
Interest rate derivatives
USD trillions



sponsored BIS numbers, one would expect the ISDA numbers to fall consistently below the BIS numbers because firms would feel less obligated to respond to a voluntary ISDA effort than to an officially-sponsored effort. Charts 4 and 5 compare the results. Chart 4 shows the interest rate numbers, which show some variation but generally close tracking between ISDA and BIS. Notional amounts reported by ISDA are lower than those reported by BIS in a majority of years, but the difference might be partly because ISDA asks respondents to exclude forward rate agreements while BIS includes FRAs.

Chart 5 compares CDS and equity derivatives results. Until recently, ISDA consistently reported a larger CDS number than BIS since BIS began collecting and reporting detailed CDS information in 2004. The con-

Chart 5
Comparison of BIS and ISDA notional amounts
Credit and equity derivatives
USD trillions



sistent difference might be the result of the different samples, or it might be the result of the ISDA correction factor underestimating the percent of inter-dealer transactions; a more accurate result might reduce the ISDA number closer to the BIS number. For equity derivatives, in contrast, the differences between BIS and ISDA have been both positive and negative, although they track each other closely: In mid-2007, for example, both ISDA and BIS numbers were essentially flat from the previous period. Overall, given the close tracking between the voluntary ISDA numbers and the officially sponsored BIS numbers, it is unlikely that the voluntary nature of the ISDA Market Survey has an adverse effect on accuracy.

Conclusion: What do the numbers show?

The foregoing discussion suggests that the ISDA Market Survey numbers are a reasonable measure of market size and growth. First, using notional amounts has the advantage of simplicity but the disadvantage that it overstates the amount of activity because it is a cumulation of past activity. Second, the Market Survey is a representative sample of the market, as suggested by the reasonably close tracking between the ISDA and BIS results. Current efforts to reduce notional amounts of interest rate and credit derivatives are likely to lead, first, to reduction in outstanding amounts and, second, to survey results that are less dominated by older activity and more representative of the amount of activity during a reporting period.

The Market Survey results are not, however, a reasonable measure of risk. For most OTC derivatives, cash flow obligations are normally a small percent of notional amounts and so are mark-to-market exposures. Further, netting of obligations under a master agreement reduces credit exposures to less than one percent of notional amount, and this benefit has increased even as notional amounts have decreased.

Given the increasing awareness that notional amount outstanding is not a useful measure of risk, there are efforts to provide more meaningful data. An example is the recent decision of the Depository Trust & Clearing Corporation to publish notional amounts of credit default swaps registered in its Trade Information Warehouse (see Credit default data from DTCC on the following page). The data, updated weekly, include gross and net notional amounts of all index transactions and of single-name transactions for the 1,000 most common reference entities. Net notional amounts will be useful as a measure of risk because

Credit default swap data from DTCC

In November 2008, the Depository Trust & Clearing Corporation began publishing aggregate notional amounts of CDS transactions registered in its Trade Information Warehouse (DTCC 2008a).¹ The data, updated weekly, include gross and net notional amounts of index trades and single-name trades for the 1,000 most common reference entities. The data include notional amounts outstanding as well as weekly changes in notional amounts. In addition, the data break out gross notional amounts by customer type and by reference entity sector.

The total gross notional CDS amount reported by DTCC was \$30.6 trillion as of December 5, 2008, compared with \$33.6 trillion reported as of October 31. The decrease in notional amount is largely the result of industry portfolio compression efforts involving mutual tear-ups.

There are three general differences between the DTCC statistics on hand and the ISDA Market Survey and BIS Derivatives Statistics on the other. First, DTCC updates its data weekly while ISDA and BIS publish their results semiannually. Second, the DTCC data only include trades registered in the warehouse, so they might not pick up some CDS activity that is picked up by ISDA or BIS. And third, because both sides of each trade are registered in the DTCC warehouse, there is no need for DTCC to adjust for double counting.

The DTCC data proved helpful recently following the Lehman Brothers bankruptcy. Press accounts reported that post-credit event pay-outs by protection sellers "could reach a gross \$360 billion" (van Duyn and Weitzman 2008). But DTCC reported that the notional amount of credit default swaps referencing Lehman Brothers registered in its Trade Information Warehouse was in fact \$72 billion. Allowing for multilateral netting of the obligations in the DTCC warehouse, the net amount paid to protection buyers by protection sellers was \$5.2 billion (DTCC 2008b).

A future Research Note will discuss the DTCC data in more detail.

¹ The DTCC data can be accessed at www.dtcc.com/derivserv

it will be possible to determine the extent of credit exposure to a default involving a particular reference entity. Although the DTCC data do not involve as large a universe of CDS transactions as either ISDA or BIS—the DTCC data only cover trades in its warehouse—the data are widely acknowledged to pick up most significant CDS activity.

In light of current credit problems, it is likely that there will be further attention by the industry and by policy-makers to developing meaningful risk measures and data for derivatives and structured products (Roach 2008). The problem will be determining which risks to measure and how to capture them. As with all measures, the challenge will be in finding metrics that are simple enough to collect and interpret but comprehensive enough to provide a meaningful measure of risk.

David Mengle, ISDA Head of Research
dmengle@isda.org

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