

## OTC Derivatives Market Analysis Year-end 2011

June 2012

### *Introduction*

ISDA produces its Market Analysis to correspond with the release of the Bank for International Settlement's (BIS) semi-annual statistical release. The BIS's most recent release covered the period ending December 31, 2011.

Our reporting aims to integrate market data to show the impact of clearing, netting, compression and collateral on notional amounts and risk exposures in the over-the-counter (OTC) derivatives markets. Counterparty credit losses from the Office of the Comptroller of the Currency (OCC) report are also presented.

The Market Analysis draws on information sources including LCH.Clearnet's SwapClear, TriOptima, the DTCC Trade Information Warehouse, Markit, ICE, CME and ISDA Research. Links to data sources are at the end of this paper. ISDA welcomes suggestions from readers regarding additional improvements to the Market Analysis.

## ***Executive Summary***

### **A. OTC Derivatives Market**

1. Adjusted volumes of over-the-counter (OTC) derivatives declined by 10.3% from June 2011 to \$440 trillion, a smaller amount than reported in all periods except the second half of 2010. (Table 1)
2. Cumulative compression activity in the interest rate swap (IRS) and credit default swaps (CDS) markets have reduced notionals by just over \$200 trillion.

### **B. OTC Interest Rate Derivatives Market**

1. Adjusted volumes for interest rate derivatives products – which includes interest rate swaps (IRS), forward rate agreements (FRAs) and interest rate options – fell 10.5% from June 2011 to \$362 trillion but are modestly higher (7% or less) than volumes reported for all other periods. (Table 2)
2. Adjusted volumes for IRS alone fell 10.3% from June 2011 to \$262 trillion but are modestly higher than volumes reported in most other periods. (Table 2)
3. Uncleared IRS volumes fell 15.1% from June 2011 to \$122 trillion and are smaller than volumes reported for all other periods except 2010. (Table 2)
4. IRS compression totaled \$120 trillion on a net, cumulative basis as of year-end 2011. Compression of cleared IRS reduced the ratio of cleared IRS to total IRS from 60.2% to a still high 53.5%.

### **C. CDS Market**

1. Adjusted volumes for the CDS market fell 12.5% from June 2011 to \$25.9 trillion (Table 3), the lowest level since year-end 2006.
2. ISDA estimates the total amount of trades that cannot be electronically confirmed (Copper trades) is no more than \$2.8 trillion as of year-end 2011. Only \$530 billion of these are multi-name transactions.
3. Approximately 10.6% of adjusted CDS have been cleared as of year-end 2011. (Table 3)
4. CDS compression totaled \$82 trillion on a net, cumulative basis as of year-end 2011.

### **D. Credit Exposure Management**

1. Gross Market Value, a BIS measure for the gross credit exposure in the OTC derivatives market, increased significantly to \$27.3 trillion, the highest level since 2008 (Table 4). The increase was primarily due to lower interest rates globally.
2. The benefits of netting reduced credit exposure by 85.7% globally and by 92.1% among US banks. (Table 4)
3. Collateralization also reduces credit exposure. Based on the metrics in ISDA's Margin Survey (which is also the basis for past Market Analyses), the combined effectiveness of netting and collateral is 95.9%. Netting and collateral reduce credit exposures to 4.1% of the Gross Market Value and 0.2% of the notional amount. However, another method for determining the effectiveness of collateral produces a slightly lower effectiveness rate of 92.3%. ISDA will continue its work on collateral in an effort to reconcile two entirely independent survey results.
4. Credit losses on OTC derivatives among US banks totaled \$4.4 billion from 2007 through 2011. (Table 5)

## A. OTC Derivatives Market

Table 1, Adjusted OTC Derivatives Market Overview, contains summary market data and also adjusts BIS data to give a more consistent picture of the OTC derivatives market. The adjustment subtracts from the Grand Total on BIS Table 1 (page 12 of the BIS statistical release at end-December 2011) both foreign exchange (FX) contracts as well as one-half of the amount of cleared IRS, FRAs and CDS.

ISDA believes that FX contracts differ meaningfully from other OTC derivatives contracts. FX contracts typically reach maturity within a few months while other OTC derivatives mature over much longer time periods. The US Treasury has also recommended that FX swaps and forwards be exempt from the clearing and execution requirements enacted under the Dodd-Frank Act.

The clearing of OTC derivatives transactions increases notional values by 100%. If two parties execute a \$100 million swap on a bilateral basis, only one \$100 million contract exists. If the same transaction is booked through a clearinghouse, it will be booked as two \$100 million contracts or \$200 million in total. For this reason, we reduce notionals by 50% of cleared IRS, FRAs and CDS. The cleared IRS and FRA data come from SwapClear while the BIS now reports cleared CDS figures.

The BIS semi-annual release is based upon a survey of large dealers conducted by 13 central banks. This survey is less comprehensive than a broader survey that is conducted every three years. To align the two releases, the BIS produces an estimate of the volumes it misses in the semi-annual survey. The BIS does not allocate this estimate to individual products and any analysis of products will not include these uncounted amounts. The estimates for each period are shown as a memo item on our Table 1.

Our Table 1 indicates that the OTC derivatives market fell 8.4% from \$706.9 trillion as of June 2011 to \$647.8 trillion as of year-end 2011. Looking further back, the market has increased 10.6% from \$585.9 trillion as of year-end 2007.

Adjusted figures tell a different story. Adjusted volumes of OTC derivatives declined by 10.3% to \$440.1 trillion in the second half of 2011. The \$440.1 trillion level appears to be more consistent with historical data than the spike that was reported in the first half of 2011. Table 1 shows the OTC derivatives markets, as adjusted, are now smaller than the markets as reported in 2007 (\$475.3 trillion). It is difficult to project the future size of the market as the effects of OTC derivatives regulation are unknown.

In the Market Analysis covering June 30, 2011 data, ISDA indicated that there may have been reporting inconsistencies in prior year's figures. This might have been caused by different sets of reporting institutions. For example, some members of LCH.Clearnet's SwapClear are not included in the BIS semi-annual survey. ISDA cautions readers that inconsistencies might still exist but believes the trends contained in the Market Analysis reveal accurate movements in the marketplace.

Table 1

**ADJUSTED OTC DERIVATIVES MARKET OVERVIEW**

(Based on data from the BIS Semiannual Review)

<b>Notional outstanding - US\$ trillions</b>	<b>Dec. 2007</b>	<b>Dec. 2008</b>	<b>Dec. 2009</b>	<b>Dec. 2010</b>	<b>June 2011</b>	<b>Dec. 2011</b>
Total contracts - OTC derivatives	585.9	598.1	603.9	601.0	706.9	647.8
Foreign exchange adjustment	56.2	50.0	49.2	57.8	64.7	63.3
LCH SwapClear volumes, adjusted for double-counting	54.4	75.8	107.7	124.3	148.8	141.7
CDS clearing volumes, adjusted for double-counting				2.2	2.8	2.7
<b>OTC derivatives, adjusted for FX, SwapClear &amp; CDS cleared</b>	<b>475.3</b>	<b>472.3</b>	<b>447.0</b>	<b>416.7</b>	<b>490.6</b>	<b>440.1</b>
Memo: Unallocated	70.7	62.7	63.3	39.5	46.5	42.6

## B. OTC Interest Rate Derivatives Market

Table 2 below, Adjusted Interest Rate OTC Derivatives Market, provides information regarding the largest derivatives asset class – interest rates. Table 2 adjusts volumes for the double counting of clearing for all rates products and for IRS alone. With respect to all rates products, unadjusted volumes declined from \$553.9 trillion in June 2011 to \$504.1 trillion at year-end 2011. Since 2007, however, unadjusted volumes increased from \$393.1 trillion. On an adjusted basis, the increase has been much smaller – from \$338.7 trillion in 2007 to \$362.4 trillion. Adjusted volumes for rates products fell 10.5% from the end of June 2011.

With respect to IRS (gray section of Table 2), the adjusted figures (\$262.3 trillion) show a 10.3% decline from the end of June 2011 but are largely unchanged from 2007-08 levels.

ISDA believes it is important to report on industry progress in clearing, particularly in IRS. There are three reported amounts to monitor: notional amount of cleared IRS; percent of total IRS cleared; and notional amount of uncleared IRS. The headline measure – the amount of cleared IRS – is somewhat misleading as it does not include IRS that had been cleared but have since been compressed or torn up. The percent of cleared IRS is misleading for the same reason. That is why the third measure – the notional amount of uncleared IRS – is most meaningful in ISDA’s view.

Table 2

### **ADJUSTED INTEREST RATE OTC DERIVATIVES MARKET**

(Based on BIS notionals and SwapClear clearing data)

<b>Notional outstanding - US\$ trillion</b>	<b>Dec. 2007</b>	<b>Dec. 2008</b>	<b>Dec. 2009</b>	<b>Dec. 2010</b>	<b>June 2011</b>	<b>Dec. 2011</b>
<b>OTC Interest Rate Derivatives</b>	393.1	432.1	449.9	465.3	553.9	504.1
Adjustment for double-counting of cleared Interest Rate Derivatives	54.4	75.8	107.7	124.3	148.8	141.7
Adjusted OTC Interest Rates Derivatives	338.7	356.3	342.2	341.0	405.1	362.4
<b>OTC Interest Rate Swaps</b>	309.6	341.1	349.3	364.4	441.2	402.6
Adjustment for double-counting of cleared Interest Rate Swaps	54.4	75.8	107.7	124.3	148.8	140.3
Adjusted OTC Interest Rates Swaps	255.2	265.3	241.6	240.1	292.4	262.3
IRS volumes cleared, %	21.3	28.6	44.6	51.8	50.9	53.5
IRS, uncleared	200.8	189.5	133.9	115.8	143.6	121.9

Clearing's results since 2007 are also in the lower portion of Table 2. The level of uncleared swaps has declined 15.1% from \$143.6 trillion as of June 2011 to \$121.9 trillion. This is more consistent with the trend seen prior to the June 30, 2011 figures. It reflects new IRS products becoming eligible for clearing at SwapClear in the latter part of 2011 and very modest amounts of client clearing. Looking ahead, it may be difficult to make much further progress on the notional amount of uncleared IRS until client clearing begins in earnest in 2013. SwapClear is now clearing 53.5% of all IRS.

### ***IRS Compression***

Compression involves the tearing up of matched trades or trades that do not contribute risk to a dealer's portfolio. Great strides continue to be made in compression in IRS.

IRS compression began in 2003 among groups of banks organized by TriOptima. In 2010, compression began in earnest at SwapClear. As of year-end 2011, IRS compression has reached a gross amount of \$240 trillion, including \$64 trillion in 2011 alone. Gross compression figures need to be reduced by 50%, which produces cumulative net compression of \$120 trillion and 2011 net compression of \$32 trillion. IRS compression for the first four months of 2012 totaled \$33 trillion on a gross basis. As explained in ISDA's recent paper, "[Interest Rate Compression: A Progress Report](#)", the industry is devoting more resources and more effective techniques to IRS compression. It is hoped these improved results will enable adjusted notionals to continue the decline experienced since 2007.

Compression distorts the percentage of IRS that has been cleared. Compression of cleared IRS reduced the ratio of cleared IRS to total IRS from 60.2% to a still high 53.5%.

### C. CDS Market

The BIS produces CDS information in its tables 4 through 8 in the semi-annual release. These tables include important data for the past two or three six-month periods. Our Table 3 contains data from the past three six-month periods. This coincided with when the BIS first produced information regarding cleared CDS. Table 3 indicates the unadjusted CDS market declined in volume by 11.7% in the second half of 2011 to \$28.6 trillion. Adjusted volumes fell as well. Adjusted volumes fell 12.5% in the second half of 2011 to \$25.9 trillion. ISDA believes adjusted CDS volumes are now below year-end 2007 volumes due to the substantial effects of compression.

In the last edition of the Market Analysis, ISDA indicated that clearing CDS poses considerable risk management issues, relating to liquidity and volatility of prices. This was also evidenced by the New York Fed study of CDS activity released in 2011. Our Table 3 indicates progress has been made but is well below what has occurred in the IRS market. In all, 10.6% of existing trades have been cleared. This includes 8.0% of single name reference entities and 14.5% of multiple name transactions.

Table 3

#### **ADJUSTED CDS MARKET DATA**

(Based on data from the BIS Semiannual Review)

<b>Notional outstanding, US\$ trillions</b>	<b>Dec. 2010</b>	<b>June 2011</b>	<b>Dec. 2011</b>
Total Market	29.9	32.4	28.6
Adjustment for Clearing	2.2	2.8	2.7
<b>Adjusted Total</b>	<b>27.7</b>	<b>29.6</b>	<b>25.9</b>
% Cleared	7.9%	9.5%	10.6%
Single Name	18.1	18.1	16.9
Adjustment for Clearing	.8	1.1	1.3
<b>Adjusted Total</b>	<b>17.3</b>	<b>17.0</b>	<b>15.6</b>
% Cleared	4.6%	6.5%	8.0%
Multiple Names	11.8	14.3	11.8
Adjustment for Clearing	1.4	1.6	1.5
<b>Adjusted Total</b>	<b>10.4</b>	<b>12.7</b>	<b>10.3</b>
% Cleared	13.5%	12.6%	14.5%

### ***Copper Trades***

The BIS CDS year-end 2011 data are \$2.8 trillion greater than the data the DTCC Trade Information Warehouse provided to the public as of December 30, 2011. The difference between the two data sources includes so-called “copper” trades which are bespoke transactions that cannot be confirmed electronically. DTCC has copper trades in the warehouse but does not publish information regarding these trades. The difference also includes, we believe, a modest amount of trades not reported to DTCC by participants such as small banks. Presumably, these transactions are mostly older trades as almost all participants now confirm single name CDS electronically. As in any comparison of two independent sources of data, there may be other elements of noise making the analysis not quite correct, but we believe our analysis indicates that copper trades are no greater than \$2.8 trillion.

The \$2.8 trillion difference between the BIS figures at year-end 2011 and the DTCC data is composed of \$2.2 trillion of single-name CDS and only \$530 billion of multi-name transactions. It has been assumed that multi-name copper transactions include “impaired” transactions such as synthetic CDOs of subprime mortgages. ISDA’s estimate indicates the relatively small size of this market segment, and we will continue to monitor its size going forward. We do note that the difference between multi-name transactions reported by the BIS and DTC narrowed by \$865 billion in the second half of 2011.

### ***CDS Compression***

For CDS, compression continues to reduce operational risk and enables more efficient management of capital requirements. A large majority of CDS compression has been executed through TriOptima but important contributions have been made by the Markit/Creditex joint venture. Through 2011, some \$163 trillion (gross) has been compressed, including \$13 trillion in 2011. After adjustment, this means cumulative net compression has been \$82 trillion, more than three times the current adjusted CDS market.

## D. Credit Exposure Management

Notional principal amounts are not an accurate reflection of credit exposure as they do not reflect the market value of the underlying contracts and the benefits of close-out netting and collateral.

Table 4 shows the risk mitigation benefits of netting and collateral.

Gross Market Value is a BIS measure for the gross credit exposure in the OTC derivatives market. Gross Market Value is an estimate of the total positive market value of contracts held by reporting dealers plus the absolute value of contracts with negative market value with non-reporting counterparties. Gross Credit Exposure applies the benefits of netting to Gross Market Value.

During the second half of 2011, Gross Market Value increased from \$19.5 trillion to \$27.3 trillion, a figure only exceeded in 2008. BIS data indicates that \$6.8 trillion of the \$7.8 trillion increase occurred in interest rates with the balance in FX (\$219 billion), CDS (\$241 billion) and in the unallocated estimate (\$563 billion).

Gross Credit Exposure was 14.3% of Gross Market Value because of netting agreements. This percentage has only been matched in 2008 but was not enough to offset the increase in Gross Market Value. As a result, Gross Credit Exposure increased from \$3.0 trillion to \$3.9 trillion.

Collateralization further reduces credit exposure. In the Market Analysis for the period ending June 30, 2011, ISDA, as in prior reports, relied on the latest Margin Survey. However, in the last report, ISDA used the percentage of trades covered by collateral agreements (70%) rather than the slightly higher figure of the percentage of credit exposure covered by collateral (73%).

The results of the 2012 Margin Survey show small improvements in collateral metrics, including a small improvement in percentage of trades covered by collateral agreements (to 71.4%). We used 71% in Table 4.

After applying the 71% reduction to Gross Credit Exposure, the remaining exposure was only 4.1% of Gross Market Value. The dollar amount (\$1.1 trillion) was higher than June 30, 2011 (\$0.9 trillion) but was comparable or less than remaining exposures in all the other periods presented in Table 4. In all, netting and collateral reduced Gross Market Value by 95.9%.

Table 4

**BENEFITS OF NETTING AND COLLATERAL**

(Based on data from the BIS Semiannual Review and ISDA research)

	<b>Dec.</b>	<b>Dec.</b>	<b>Dec.</b>	<b>Dec.</b>	<b>June</b>	<b>Dec.</b>
<b>Notional outstanding - US\$ trillions</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2011</b>
<b><u>BIS Data*</u></b>						
<b>Gross Market Values, Total OTC</b>	15.80	35.28	21.54	21.30	19.52	27.28
<b>% of Notional Amounts</b>	<b>2.70%</b>	<b>5.90%</b>	<b>3.57%</b>	<b>3.54%</b>	<b>2.76%</b>	<b>4.21%</b>
Gross Credit Exposure (after netting)	3.3	5.0	3.5	3.5	3.0	3.9
<b>% of Gross Market Value</b>	<b>20.6%</b>	<b>14.2%</b>	<b>16.3%</b>	<b>16.3%</b>	<b>15.2%</b>	<b>14.3%</b>
<b>% of Notional Amounts</b>	<b>0.6%</b>	<b>0.8%</b>	<b>0.6%</b>	<b>0.6%</b>	<b>0.4%</b>	<b>0.6%</b>
<b><u>ISDA Estimates</u></b>						
Exposure collateralized, avg, all OTC deriv, ISDA Margin Survey	65%	66%	69%	70%	70%	71%
Gross Credit Exposure (after netting and adjusted for collateral)	1.1	1.7	1.1	1.1	0.9	1.1
<b>% of Gross Market Value</b>	<b>7.2%</b>	<b>4.8%</b>	<b>5.1%</b>	<b>4.9%</b>	<b>4.6%</b>	<b>4.1%</b>
<b>% of Notional Amounts</b>	<b>0.2%</b>	<b>0.3%</b>	<b>0.2%</b>	<b>0.2%</b>	<b>0.1%</b>	<b>0.2%</b>

\*Some figures have been revised by the BIS since the year-end 2010

ISDA recognizes that the use of the percentage of trades covered by collateral produces only an estimate of the effectiveness of collateral. In the OCC report (see next section), collateral offsets 66% of netted credit exposure that US banks face. In all, netting and collateral reduce 97.4% of US banks' gross credit exposure. Another method to estimate the effectiveness of collateral is to use one-half of the value of collateral in circulation (to avoid double-counting). The ISDA Margin Survey, which is the industry's only source for collateral in circulation, indicates there is \$3.6 trillion of collateral. Utilizing \$1.8 trillion means collateral only covers 46% of Gross Credit Exposure, leaving \$2.1 trillion of credit risk. This analysis implies that the total benefits of netting and collateral reduce Gross Market Value by 92.3%. ISDA will continue to work on collateral issues for future Market Analyses but warns that reconciling results from three independent surveys is a very difficult matter.

### *OCC Quarterly Report of Derivatives Activity among US Banks*

In its quarterly reports, the Office of the Comptroller of the Currency (OCC) examines the risks in the U.S. banking system related to OTC derivatives products (as well as related to exchange-traded derivatives). In the report for the end of 2011, the OCC noted its version of gross exposure – just the gross amounts owed to banks – was \$5.5 trillion. But netting enabled the banks to reduce their exposures by a record 92.1% to \$430 billion as of year-end 2011. The OCC reports that collateral covered 66% of the netted exposure, bringing the exposure after netting and collateral down to \$146 billion for the US banking system. In all, the US banking system had reduced its gross credit exposure by 97.4% through netting and collateral. Admittedly, this measures the effectiveness of the banks' credit exposure management, rather than their clients. The OCC reports that hedge fund overcollateralization may have inflated the effectiveness of collateral protection somewhat.

The OCC also reports charge-offs from derivatives contracts by quarter since 1998. These are not trading losses. These are losses caused by the failure of counterparties. The amounts for the banks since 2007 are listed below in Table 5:

Table 5

**US BANK COUNTERPARTY LOSSES**  
(Based on OCC Quarterly Report, US\$ millions)

2007	138.0
2008	1,073.4
2009	757.6
2010	617.6
2011	1,826.8
<b>Total</b>	<b>4,413.4</b>

The figures for 2008 reflect any losses attributed to the failure of Lehman Brothers while the amounts in 2011 include \$1.6 billion in the first quarter. The vast majority of this amount was attributed to a monoline exposure that was only realized in 2011. Additional amounts were taken in non-bank subsidiaries and the OCC has some concern with reporting inconsistencies among banks relating to CVA charges during this period. However, based upon current reports to the OCC, the conclusion remains that derivative counterparty losses in the US banking system were quite modest. (ISDA Research in 2011 [identified \\$50 billion+ globally of losses on monoline insurance company derivative defaults](#). Little was found in the banking subsidiaries of US banks.)

One final fact from the OCC report: credit losses in the second half of 2011 were \$157.8 million.

## DATA SOURCES AND REFERENCES

### *Bank for International Settlements*

BIS figures are based on their report, “Semiannual Over-The-Counter (OTC) Derivatives Markets Statistics”: <http://www.bis.org/statistics/derstats.htm>. As noted in the report, the published data may be subject to revisions so ISDA market analysis conclusions may vary according to BIS reports.

BIS figures are adjusted for double-counting of positions between reporting institutions (Notional amounts outstanding are adjusted by halving positions vis-à-vis other reporting dealers):

[http://www.bis.org/publ/otc\\_hy1105.pdf](http://www.bis.org/publ/otc_hy1105.pdf)

### *ISDA Margin Surveys*

<http://www2.isda.org/functional-areas/research/surveys/margin-surveys>

### *ISDA papers mentioned in this Analysis*

Interest Rate Swaps Compression: A Progress Report:

<http://www2.isda.org/attachment/NDAzMw==/IRS%20compression%20progress%20report%20-%20Feb%202012.pdf>

Counterparty Credit Risk Management in the US Over-the-Counter (OTC) Derivatives Markets, Part II: A Review of Monoline Exposures:

[http://www2.isda.org/attachment/MzcyMQ==/Counterparty%20Credit%20Risk%20II%20\(Monolines\).pdf](http://www2.isda.org/attachment/MzcyMQ==/Counterparty%20Credit%20Risk%20II%20(Monolines).pdf)

### *LCH.Clearent SwapClear volumes*

<http://www.lchclearnet.com/swaps/volumes/>. Volumes are adjusted for double-counting.

### *Office of the Comptroller of the Currency (OCC)*

OCC Quarterly Report: <http://www.occ.gov/topics/capital-markets/financial-markets/trading/derivatives/derivatives-quarterly-report.html>

### *Federal Reserve Bank of New York*

Staff Report, “An Analysis of CDS Transactions: Implications for Public Reporting”:

[http://www.newyorkfed.org/research/staff\\_reports/sr517.pdf](http://www.newyorkfed.org/research/staff_reports/sr517.pdf)

### *Portfolio compression data*

Creditex: [https://www.theice.com/post\\_trade\\_processing.jhtml](https://www.theice.com/post_trade_processing.jhtml)

Markit: <http://www.markit.com/en/products/data/cds-pricing/portfolio-compression.page>

TriOptima: <http://www.trioptima.com/resource-center/statistics/triReduce.html>