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Concentration of OTC Derivatives among Major Dealers

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Summary

- According to the ISDA Market Survey for Mid-Year 2010, the largest U.S.-based derivatives dealers account for 37 percent of the global total notional amount outstanding of derivatives reported by Survey respondents.
- The largest fourteen derivatives dealers (G14) hold 82 percent of the total notional amount outstanding.
- Broken out by products, the G14 group holds 82 percent of interest rate derivatives, 90 percent of credit default swaps, and 86 percent of equity derivatives.
- Evaluated by traditional measures, concentration of notional amounts among major dealers appears to be low.

In its Mid-Year 2010 Market Survey, ISDA reported that as of June 30, 2010, the combined notional amount outstanding of over-the-counter interest rate, credit, and equity derivatives was $466.8 trillion after adjustment for double counting of inter-dealer transactions. Of the total amount, 93 percent was interest rate derivatives, 6 percent was credit derivatives, and 1 percent was equity derivatives. Seventy-one ISDA Primary Member firms in twenty countries responded to the Survey; all major derivatives dealers participated.

OTC derivatives market concentration

Because of the wide coverage of the ISDA Market Survey, it is possible to use the results to measure the extent of concentration of OTC derivatives activity among the largest dealers. The United States Office of the Comptroller of the Currency recently reported, for example, that the notional amount of derivatives outstanding at the five largest U.S.-based dealers[1] was $281.3 trillion as of June 30, 2010, which is about 95 percent of the $294.8 trillion notional amount reported by all U.S. bank holding companies. These numbers are not adjusted for double counting of inter-dealer transactions. But the OCC measure covers

[1] Measured by notional amount of OTC derivatives outstanding as of June 30, 2010, the largest U.S.-based derivatives dealers are Bank of America, Citigroup, Goldman Sachs, JPMorgan Chase, and Morgan Stanley.

only institutions based in the U.S. so does not take account of the global nature of derivatives activity: only six of the fourteen most active global derivatives dealers, which are known as the G14,[2] are based in the U.S. Further, although the OCC numbers capture the global derivatives activity of the largest U.S. dealers, they do not capture the U.S. activities of non-U.S. dealers. Because there are few barriers to entry by non-U.S. dealers other than the need to be well capitalized, foreign dealer activity in the U.S. is likely to be a significant factor in determining concentration.

In order to gain a more realistic estimate of the relative significance of the largest U.S. dealers, it is necessary to use a global measure of the OTC derivatives market; the ISDA Market Survey provides such a measure. Using the ISDA results, the amount reported by the five largest U.S.-based dealers was $172.3 trillion after adjusting for double counting, which is about 37 percent of the total amount reported by ISDA Market Survey participants (Table 1). Broken out by product, the five largest U.S. dealers hold 36 percent of the global amount of interest rate derivatives, 46 percent of credit derivatives, and 34 percent of equity derivatives.

Table 1: Notional amounts outstanding, ISDA Market Survey, Mid-Year 2010
Notional amounts in USD trillions

	All respondents	**G14 respondents only**		**Large 5 US respondents only**	
	Notional	*Notional*	*Percent*	*Notional*	*Percent*
Interest rate	434.1	354.6	81.7	158.1	36.4
Credit	26.3	23.7	90.4	12.0	45.7
Equity	6.4	5.5	86.2	2.2	33.9
Total	466.8	383.8	82.2	172.3	36.9

The above measure is an adaptation of the concentration ratio, which is defined the percent of industry output produced by a given number of the largest firms; economists sometimes use concentration ratios to measure the extent to which the largest firms dominate a market. Traditionally, the most commonly used concentration ratios have been the four-firm concentration ratio and the eight-firm concentration ratio. A four-firm concentration ratio above 80 percent, for example, is considered evidence of a "tight oligopoly," which facilitates collusion between the dominant firms, while a four-firm ratio below 40 percent is evidence of "loose oligopoly," in which effective collusion is impossible.[3] Table 2 shows the four- and eight-firm concentration ratios measured using the Mid-Year 2010 ISDA Market Survey. The cumulative share of notional held by

[2] Bank of America, Barclays, BNP Paribas, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan Chase, Morgan Stanley, Royal Bank of Scotland, Société Générale, UBS, and Wells Fargo

[3] William G. Shepherd, "Concentration ratios," *New Palgrave Dictionary of Economics*, First Edition (Basingstoke: Palgrave McMillan 1987).

Table 2: Four- and eight-firm concentration ratios and Herfindahl-Hirschman Indices, ISDA Market Survey, Mid-Year 2010
Notional amounts in USD trillions

	Four firm		Eight firm		HHI
	Notional	*Percent*	*Notional*	*Percent*	
Interest rate	173.5	40.0	272.9	62.9	629.4
Credit	10.7	40.8	18.4	69.9	738.5
Equity	2.7	43.0	4.5	70.8	747.9
Total	184.6	39.5	293.2	62.8	630.1

the four largest firms—the four-firm concentration ratio—was about 40 percent, while the share held by the eight largest firms—the eight-firm concentration ratio—was about 63 percent. The Survey results therefore suggest that OTC derivatives activity is moderately concentrated—a "loose oligopoly"—among the largest dealers.

An alternative adaptation of the concentration ratio uses the amount reported by the G14 dealer group described above. Using the Market Survey results, the notional amount reported by the G14 was $354.6 trillion, which is about 82 percent of the amount reported by all seventy-one respondents (Table 1). Within the G14, no single firm had a market share of more than 11 percent. Looked at by product category, G14 firms accounted for 82 percent of interest rate derivatives, 90 percent of credit default swaps, and 86 percent of equity derivatives. These ratios do not suggest high concentration.

Not all agree that concentration ratios are a reliable measure of market concentration. First, they provide little information on the composition of the market outside the largest four, eight, or fourteen firms. And second, they are not sensitive to differences in market shares among the largest firms. Economists therefore rely on an alternative measure, the Herfindahl-Hirschman Index (HHI), which is the sum of squared market shares for all firms in a market. According to the United States Department of Justice Merger Guidelines, a market is considered unconcentrated if its HHI is below 1,500, moderately concentrated if its HHI is between 1,500 and 2,500, and highly concentrated if its HHI is above 2,500. Table 2 shows the HHI results for the Mid-Year 2010 ISDA Market Survey. Using the Department of Justice criteria, the global market for OTC derivatives would be classified as unconcentrated for all products.

G14 concentration in interest rate derivatives

It is possible to provide confirmation of the above results for G14 group interest rate derivatives by performing a separate analysis using a combination of two non-ISDA data sources. The first data source, which contains data on the G14 group, is the OTC Derivatives Interest Rate Trade Reporting Repository, which commenced operations in January 2010 and is run by TriOptima. There are several differences between the ISDA and Repository numbers, which leads to somewhat different measures. First, the Repository covers a wider range of products than does the ISDA Market Survey. Second, the ISDA Survey collects data from a wider sample than the Repository, which at present collects data only from the G14 firms. Third, ISDA uses a statistical adjustment for double counting of inter-dealer trades, which is not necessary

for the Repository. And finally, the Repository reports transactions with central counterparties, so it is possible to adjust the Repository numbers for double counting of cleared transactions. Such an adjustment is not possible using the ISDA data alone.

The other non-ISDA source, the Bank for International Settlements Semiannual OTC Derivatives Markets Statistics, provides data on all firms globally. The BIS began reporting these statistics in 1998. The ISDA Survey and BIS Statistics yield similar but not identical results, largely because the two rely on somewhat different samples.[4] The BIS also conducts a separate survey of derivatives activity, the Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity, which is based on a considerably larger sample than the BIS Statistics and consequently leads to higher notional amounts. The result is the semiannual BIS Statistics contain an "unallocated" amount that reflects the differences between the two BIS surveys but does not distinguish between products. The following analysis will adjust for differences between the two BIS surveys (see Appendix for more detail on the adjustment).

Table 3 shows the results of the analysis using the Repository and BIS data. According to the Repository, notional amount outstanding of interest rate derivatives as of June 2010 was $343 trillion after adjustment for double counting of centrally cleared trades. And according to the BIS, interest rate derivative notional amount outstanding at year-end 2009 was $450 trillion, which we adjust

Table 3: Summary of Concentration Analysis

Repository (June 10)	
Counterparty Type	*Notional amount (USD trillions)*
CCP	212.1
G14 Dealer	90.3
Non-G14 Dealer	146.8
Total	449.2
(Double-counted CCP)	(106.0)
Adjusted total	343.2
BIS (December 2009)	
BIS interest rate derivatives	449.8
Reallocated amount	55.2
Adjusted BIS	505.0
(Double-counted CCP)	(106.0)
Adjusted for cleared	399.0
Assume 3% growth	410.9
G14 percent	83.5

[4] "The ISDA Market Survey: What the results show and what they don't show." *ISDA Research Notes*, Number 1, 2008.

in three ways. First, we increase the number to $505 trillion by reallocating the "unallocated" notional amounts that capture gaps in the BIS sample (Appendix). Second, we subtract out $106 trillion double-counted cleared trades reported to the Repository. And third, assuming that the notional amount of interest rate derivatives grows during the first half of 2010 at the same 3 percent rate that occurred in the second half of 2009, the estimated notional amount of interest rate derivatives increases to $411 trillion. The result is that the $343 trillion of G14 transactions are 83.5 percent of the $411 trillion population estimated from the BIS numbers, a result that is consistent with the 82 percent estimated from the ISDA Market Survey.

Conclusion

The above analysis suggests two conclusions regarding OTC derivatives market concentration. The first is that the level of concentration among the major dealers does not appear to be high if one takes into consideration the cross-border nature of OTC derivatives activity. The G14 dealers, for example, are based in five different countries but compete in all major markets internationally. The difference between the results of analyzing the market share of U.S.-based dealers using local and global market measures shows the importance of cross-border competition.

Second, while the most active derivatives dealers account for 82 percent of the market, they do not account for it all. Outside the G14, a variety of regional institutions play the role of financial intermediaries. A regional bank, for example, might enter into a swap with a local corporation and then hedge the transaction with one of the major dealers. Although no single regional institution has a significant market share by itself, collectively these institutions account for 18 percent of the global market, which is greater than any single dealer's market share.

Appendix:
Reallocating the BIS "unallocated" amount

The Bank for International Settlements maintains two series of statistics on OTC derivatives. One is the Semiannual OTC Derivatives Statistics, which are based on data reported by sixty major financial institutions located in eleven countries. The other is the Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity, which in 2007 covered about 1,260 institutions in fifty-four countries. The results of the 2010 Triennial Survey will be released in late 2010.

Because the two surveys rely on differently sized samples, the BIS corrects the Semiannual Derivatives Statistics for the lower coverage by adding a correction factor known as the "unallocated" amount. The unallocated amount is equal to the difference between the total amount reported in the Triennial Survey and the total amount reported in the Semiannual Derivatives Statistics, as of the period during which both surveys were conducted. In subsequent periods during which only the Semiannual Statistics are collected, the unallocated amount is increased by the growth rate in the amount reported during that period and then added to the amount reported by the Semiannual Statistics participants. For example, the table shows that the difference between the amount reported to the two surveys was $61,501, which was reported as the unallocated amount in the July 2007 Semiannual Statistics. By the time of the Semiannual Statistics reported in May 2010, the unallocated amount had grown to $73,456.

In order to reallocate the unallocated amount to the various products, Column 4 of the table shows the percent share of each product in the Triennial Survey relative to the total amount reported. In subsequent years, the unallocated amount is reallocated by multiplying the percent for each product by the unallocated amount and then adding the result to the corresponding product ("other" products are added to interest rate derivatives). For example, foreign exchange derivatives were 11.2 percent of the total amount reported to the 2007 Triennial Survey (Column 4). In order to reallocate the May 2010 unallocated amount for foreign exchange, 11.2 percent of $73,456 is added to the $49,196 foreign exchange derivatives amount (Column 5), giving an adjusted amount of $57,389 (Column 6). By performing the same operation for each product, the unallocated amount is distributed among the various products so the total is the same as the total notional amount for the Semiannual Derivatives Statistics.

Reconciliation of BIS Triennial Survey and Semiannual Derivatives Statistics

	Semiannual Nov 2007	Triennial Nov 2007	Triennial product shares (%)	Semiannual May 2010	Reallocated May 2010
Foreign exch.	48,620	57,597	11.2	49,196	57,389
Interest rate	346,937	388,627	75.3	449,793	505,084
Equity	9,202	10,760	2.1	6,591	8,122
Commodity	7,567	8,255	1.6	2,944	4,118
Credit	42,580	51,090	9.9	32,693	39,960
Other		78	0.0		
Subtotal	454,906	516,407		541,217	614,673
Unallocated	61,501			73,456	
Grand total	516,407	516,407		614,673	614,673

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ISDA, which represents participants in the privately negotiated derivatives industry, is the largest global financial trade association, by number of member firms. ISDA was chartered in 1985, and today has over 830 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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