

Cross-border derivatives exposures: how global are derivatives markets?

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Introduction

This paper attempts to answer the question: How global are derivatives markets? The answer has implications for financial stability. Most of the largest derivatives dealers around the world are large, systemically important financial institutions, many of them large internationally active banks.² The more global derivatives markets are, the more likely it is that financial shocks can be transmitted across countries. Although globalized derivatives markets can mitigate the effect on any one country of a financial disruption, it may also spread the disruption to other countries.³

In order to answer this question, I focus on U.S. data on the counterparty credit exposure arising from derivatives contracts (exposure from derivatives). The benefit of using the U.S. data is that they provide a longer time series and additional detail than do the BIS statistics of which they are a part. In addition, in some cases, it is useful to match data from the two sources for the same set of reporters, which I can do using the U.S. data. On the other hand, focusing on the U.S. data may limit the conclusions that can be drawn to the extent that the U.S. data are not representative of global OTC derivatives activity.

The data show that the activity of U.S. dealers within the global OTC derivatives market is quite international. That is, a large fraction of U.S. derivatives dealers' exposure from derivatives is to foreign (i.e., non-U.S. counterparties), although there is no evidence of a trend toward greater foreign exposure. It seems likely that the activity of other large, non-U.S. derivatives dealers is also quite international, although this remains a question for further research. The data also show that exposure from derivatives is concentrated in counterparties in developed countries, although there is a very modest trend toward greater activity in emerging market countries and financial centres. When exploring the sector of the counterparty, the paper runs into the issue that the sector breakdowns from the two data sources I use are not comparable. Foreign exposure from derivatives is concentrated in banks and the nonbank private sector. Global exposure from derivatives is concentrated in reporting dealers and all other the financial firms.

Data Sources

This paper makes use of two sources of U.S. data on exposures from derivatives. The Country Exposure Report, which is collected by U.S. bank supervisors on the FFIEC 009

¹ Division of International Finance, Board of Governors of the Federal Reserve System. The views expressed in this paper are my own, and do not necessarily reflect the views of the Board of Governors of the Federal Reserve System or its official staff.

² Although in the United States, some of our largest dealers are large investment banks, these institutions are nonetheless likely to be systemically important.

³ Greater globalization of derivatives markets also suggests that competition in derivatives markets is best judged at a global, rather than national, level.

report form, collects data on U.S. banks' exposure from derivatives by the country of residence of the counterparty.⁴ The FFIEC 009 is the source for the U.S. contribution to the BIS consolidated banking statistics, and it also collects data on other types of exposures to foreign residents. The Semiannual Report on Derivatives Activity, which is collected by the Federal Reserve on the FR 2436 report form, collects data on large U.S. derivatives dealers' global exposure from derivatives.⁵ The FR 2436 is the source for the U.S. contribution to the BIS regular OTC derivatives statistics, and it also collects data on the gross market values and notional values of outstanding derivatives contracts, broken out by type of contract and type of underlying risk.

For an individual reporter, the data on exposure from derivatives should be comparable across reports. Both reports collect data on a consolidated basis, and both permit netting of claims and liabilities from derivatives contracts only when the contracts are with the same counterparty and are covered by a legally enforceable master netting agreement. However, the reports do not collect data from the same group of reporters, which means that the aggregate data from the two reports are not entirely comparable. The Country Exposure Report (FFIEC 009) is collected from 65 U.S. banking organizations that have exposures to foreign residents above a (modest) reporting threshold. The Semiannual Report of Derivatives Activity (FR 2436) is collected from 7 large U.S. derivatives dealers: 3 large banks and 4 large investment banks.

The FFIEC collects data quarterly, as of each quarter-end. The report began collecting data on exposure from derivatives in March 1997. The aggregate data from the FFIEC 009 are not confidential and are published quarterly by the FFIEC.⁶ The FR 2436 is collected semiannually, as of end-June and end-December. That report was implemented beginning as of June 1998. Aggregate data from the FR 2436 have not been published on any regular basis. For both reports, reporter-level data are confidential.

Exposure from Derivatives

As a first step in answering how global derivatives markets are, I use data from both the FFIEC 009 and the FR 2436 to estimate how much business U.S. derivatives dealers do with non-U.S. counterparties. In particular, I obtain data for banks that file both reports and calculate what fraction of their total exposure from derivatives is exposure to foreign counterparties. As shown in Figure 1, exposures to non-U.S. residents range from about 55 percent to 75 percent of total exposures from derivatives. Alternatively, only about 25 percent to 45 percent of counterparty credit exposures of U.S. derivatives dealers are to U.S. residents, which suggests that derivatives markets are very international.

I then combine the share of derivatives exposures to U.S. residents with data on the distribution of foreign exposure from derivatives by country of counterparty, using data from the FFIEC 009 report. As is shown in Figure 2, as of end-March 2008, estimated derivatives exposures to counterparties in the G-10 countries was 75 percent of total exposure, about 40 percentage points of which was exposure to the U.S. residents. Estimated exposure to residents of other developed countries is about another 10 percent of total exposures from

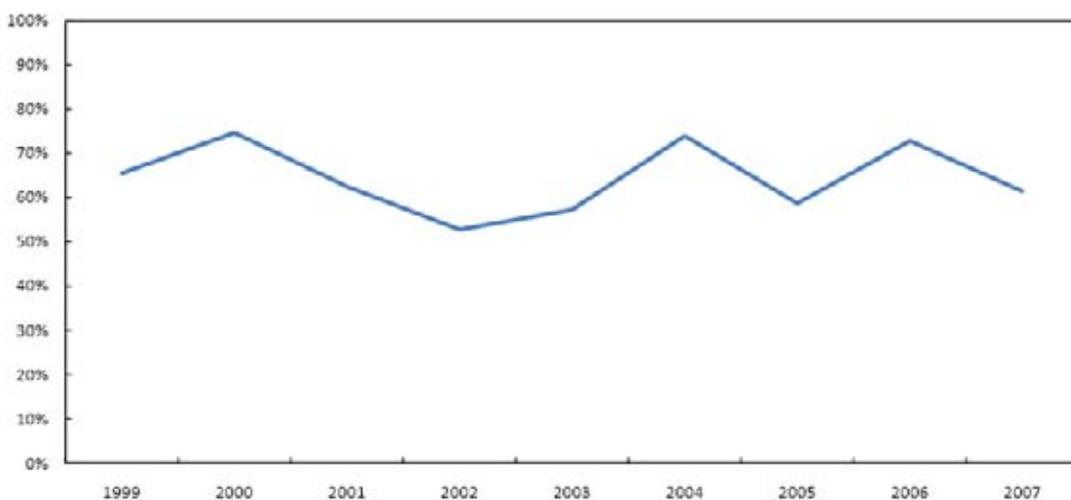
⁴ The report form and instructions for the FFIEC 009 can be found at http://www.ffiec.gov/PDF/FFIEC_forms/FFIEC009_20060331_f_i.pdf.

⁵ The FR 2436 report form for the can be found at http://www.federalreserve.gov/reportforms/forms/FR_243620090107_f.pdf, and the instructions can be found at http://www.federalreserve.gov/reportforms/forms/FR_243620090107_i.pdf.

⁶ The FFIEC's E.16 Statistical Release can be found at <http://www.ffiec.gov/E16.htm>.

derivatives. Thus, although derivatives exposures are quite international, they are concentrated in developed countries, mostly in the G-10. Estimated exposure to residents of emerging market (EM) countries was 8 percent and to residents of financial centres was 7 percent. The figure also hints at a gradual trend that has shifted exposures from developed countries and toward EM countries and financial centres.

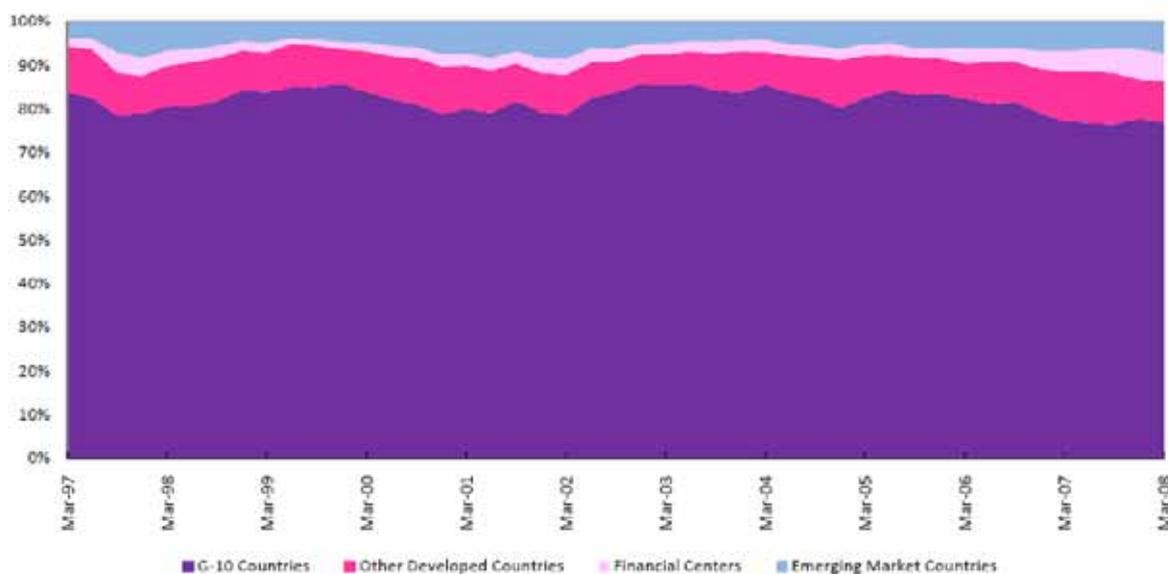
Figure 1
**Estimated foreign exposure from derivatives
as a percent of total exposure from derivatives**



Source: FFIEC 009 and FR 2436 reports.

Figure 2
**Estimated total exposure from derivatives
by country of counterparty**

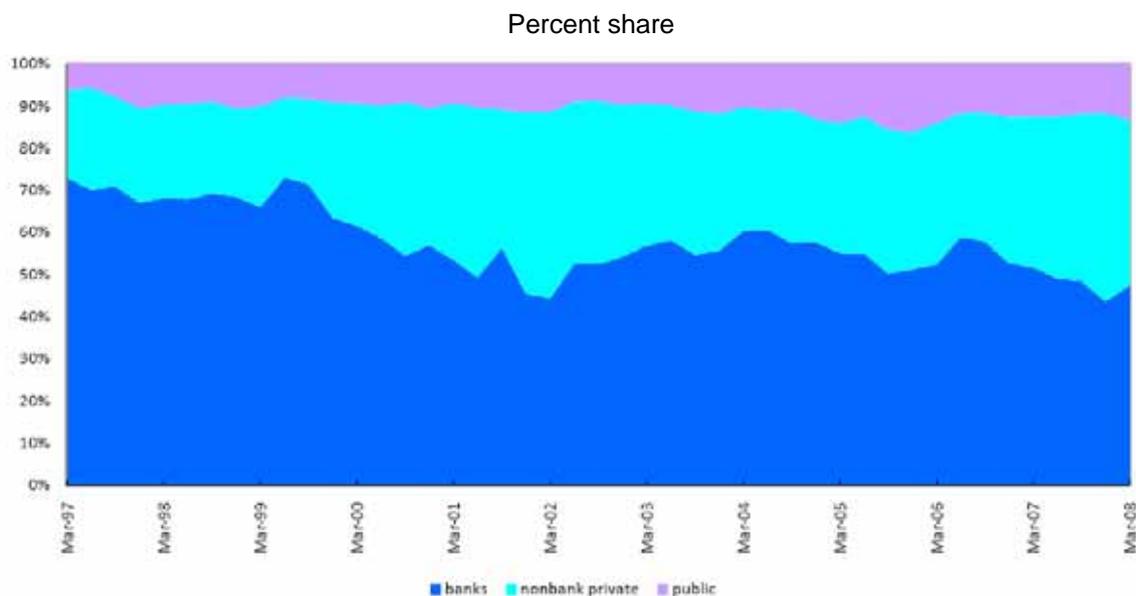
Percent share



Sources: FFIEC 009 report and author's estimates.

The FFIEC 009 data also include a breakdown by sector of counterparty of foreign exposure from derivatives. The three sectors are the banking sector, the public sector, and the nonbank private sector. The definitions of these sectors follow the definitions used for the sector breakdowns in the BIS consolidated banking statistics. As can be seen from Figure 3, almost half (47 percent as of end-March 2008) of foreign exposures from derivatives are to banks, and about two-fifths of foreign exposures are to the nonbank private sector (39 percent in March). A little over one-tenth (13 percent in March) of foreign exposure is to the public sector. As can be seen from the figure, there has been a trend toward greater exposure to the nonbank private and the public sectors over time.

Figure 3
**Foreign exposure from derivatives contracts
 by type of counterparty**



Source: FFIEC 009 report.

Figure 4 shows the sector distribution of exposure from derivatives for different country groups, as of March 2008. Two major differences across country groups stand out. First, banks account for the greatest fraction of exposure only in the G-10 countries.⁷ This almost surely results from the fact that the major derivatives dealers are headquartered in the G-10 countries and almost all of them are banks. Second, the nonbank private sector accounts for the greatest fraction of exposure in the other country groups, and particularly in the financial centres. In the financial centres, these nonbank private sector counterparties are very likely to be nonbank financial firms, and it seems likely that nonbank financial firms make up the bulk of nonbank private sector counterparties in the other country groups as well.

Data from the BIS regular OTC derivatives statistics suggest that financial firms are indeed likely to make up the bulk of nonbank private sector counterparties. Figure 5 shows the counterparty breakdown that is collected in the OTC derivatives statistics – which is reporting dealers, other financial firms, and nonfinancial entities.⁸ The breakdown is shown for the

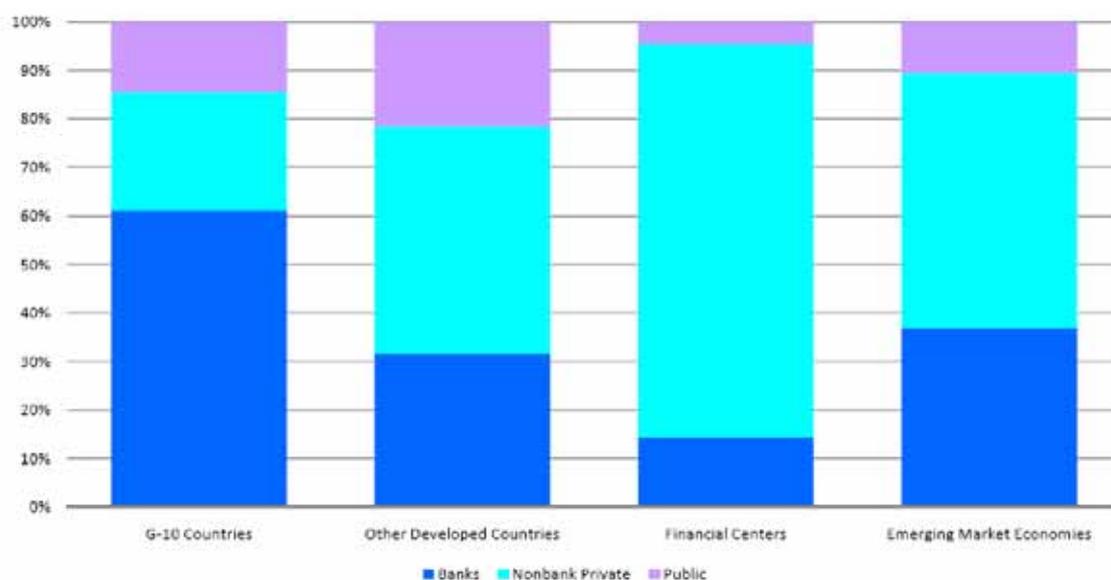
⁷ However, because exposure to G-10 counterparties make up the greatest fraction of all foreign exposures from derivatives, banks account for the greatest fraction of exposure globally.

⁸ The FR 2436, which feeds into the regular OTC derivatives statistics, uses these sector definitions.

gross market values of all interest rate, foreign exchange, and equity derivatives, because a full counterparty breakdown is not collected for counterparty exposures. The share of the gross market value of all derivatives contracts between reporting dealers has remained relatively stable at a little under 40 percent. The share of contracts with other financial firms – which are nonreporting banks and nonbank financial institutions – has risen somewhat in recent years, and is now a little under half. Contracts with nonfinancial entities – which include the public sector and nonfinancial corporations – are about 15 percent.

Figure 4

Foreign exposure by country group and counterparty sector

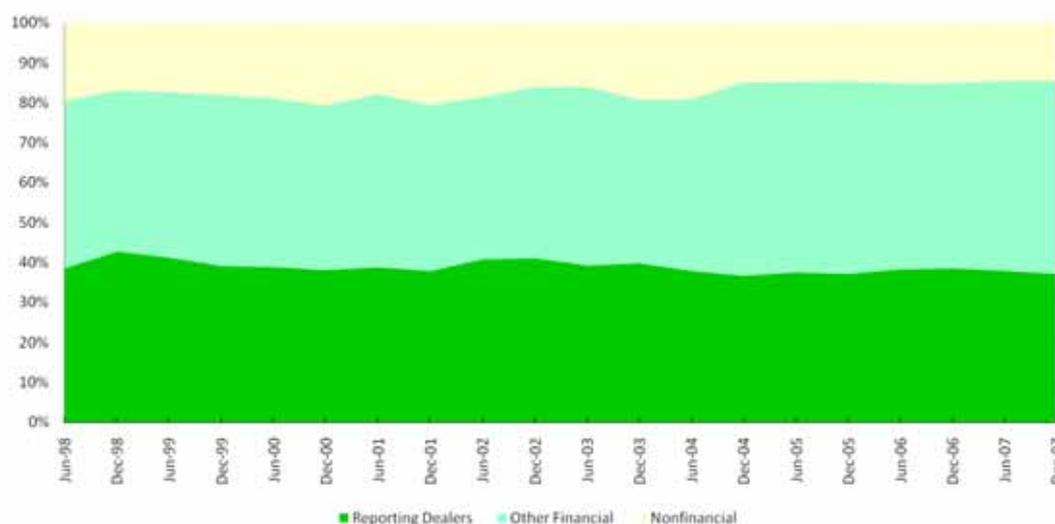


Source: FFIEC 009 report. Data as of end-March 2008.

Figure 5

Gross market value of derivatives contracts by type of counterparty

Percent share



Source: Regular BIS OTC Derivatives Statistics.

Conclusion

This paper looks at the distribution by country of the counterparty credit exposure of U.S. derivatives dealers, using data from two U.S. report forms. The data show that derivatives dealing is a very international business – well over half (and as much as three-fourths) of U.S. dealers' exposure from derivatives is exposure to foreign residents. Most of this exposure is concentrated in the G-10 countries, and other developed countries are the next most significant country grouping. The shares of exposure to emerging market countries and financial centres appear to be gradually trending up.

The data also show that foreign exposure from derivatives is concentrated in the banking sector, although this share has been declining. It is not possible to compare the counterparty breakdowns between foreign and domestic (or total) exposure from derivatives, because the breakdowns on the two separate reports differ significantly.

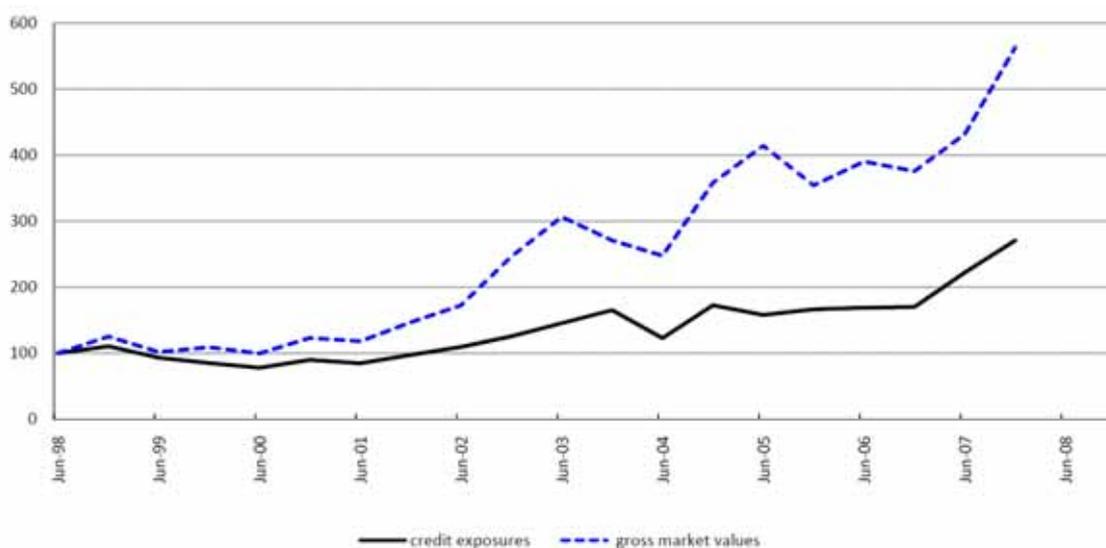
To what extent do these results allow us to draw conclusions about how global derivative markets are? Here are some caveats:

- U.S. data on exposure from derivatives may not be representative of the data for all derivatives dealers.
- Exposure from derivatives – which take account of netting when there are master netting agreements (that are legally enforceable) – may not be representative of other measures of derivatives activity, such as gross market values. For example, dealers will usually have master netting agreements with other dealers, because other dealers will be frequent counterparties. But dealers may be less likely to have a master agreement with a nonfinancial firm. As a result, business with between dealers will get less weight when measured by exposures than when measured by gross market values. Indeed, increased use of master netting agreements over the past decade to manage counterparty credit risk has caused credit exposures from derivatives to grow more slowly than the gross market values of derivatives contracts. This is shown in Figure 6.

Figure 6

Growth of the derivatives market

Index: June 1998 = 100



Source: Regular BIS OTC Derivatives Statistics.