

Using trade repository data for systemic risk monitoring

Erik Heitfield¹

The 2008 financial crisis revealed significant problems with the functioning of over-the-counter (OTC) derivatives markets. In the years and months leading up to the crisis market participants were able to build up large counterparty risk exposures to AIG Financial Products and other highly interconnected institutions. When these institutions ran into trouble in the fall of 2008, lack of transparency contributed to a breakdown in the functioning of some segments of the OTC swaps market. While most firms presumably had a clear understanding of their own direct exposures to particular troubled institutions, they could not clearly identify the exposures of other potential trading partners to those institutions. Faced with an environment in which they did not know who was at risk and who wasn't, many market participant simply chose to withdraw from trading for a time, harming market liquidity and thereby making it more difficult for all firms to manage their risks.

A year after the crisis, in September 2009, the Group of Twenty (G20) leaders committed to a long list of reforms aimed at strengthening the foundations of the world's financial system. Among these were commitments that by year-end 2012 all sufficiently standardized OTC derivatives contracts should be traded on exchanges or electronic trading platforms and cleared through central counterparties and that all OTC derivatives contracts should be reported to trade repositories. In its October 2010 report, *Implementing OTC Derivatives Reforms*, the Financial Stability Board enumerated the benefits of having swaps data reported to trade repositories.

By providing information to authorities, market participants and the public, trade repositories will be a vital source of increased transparency in the market, and support authorities in carrying out their responsibilities, including (i) assessing systemic risk and financial stability; (ii) conducting market surveillance and enforcement; (iii) supervising market participants; and (iv) conducting resolution activities.

In the United States, the G20 trade reporting commitment is being implemented through Title VII of the Dodd-Frank Act, which requires that data on swaps transactions be reported to Swap Data Repositories regulated by the Securities and Exchange Commission or the Commodity Futures Trading Commission. The European Market Infrastructure Regulation (EMIR) includes similar requirements for swaps involving European entities.

The Federal Reserve Board is currently using data on credit default swap transactions from the Depository Trust and Clearing Corporation's (DTCC's) Global Trade Repository to monitor the CDS market with an eye towards identifying developments that may constitute sources of systemic risk. We approach this problem in two ways: by monitoring the risk exposures of individual institutions that may be systemically important, and by monitoring the network structure of the CDS market as a whole.

¹ Research and Statistics Division, Federal Reserve Board, erik.heitfield@frb.gov.

At the micro level, we use trade repository data to monitor individual institutions' exposures to counterparties and market risk factors. We examine institutions' exposures to their trading counterparties by measuring the notional value of trading positions with other market participants with respect to single-name reference entities and CDS indexes, broader industry sectors, and the CDS market as a whole. We monitor the exposure of individual institutions to important market risk factors by examining the net notional value of their positions with all counterparties at the same levels of aggregation (reference entity, industry and total market). In addition, we aggregate information on the maturity dates of institutions' CDS positions for relevant sub-markets (corporates, sovereigns, etc.) to understand how those institutions would be affected by shifts in the term structure of CDS spreads. Similarly, we track institutions' net positions in the CDS tranche market to understand how they would be affected by changes in market implied correlation of default rates across reference entities.

We apply network analysis tools to identify sources of risk concentration and frailty in the CDS market. We use measures of degree centrality to identify particular buyers or sellers within the network of bilateral CDS positions that are particularly highly interconnected to other market participants. Network-wide centrality statistics tell us how buy-side and sell-side network concentration has changed over time. Other network statistics, such as clustering coefficients and measures of connectedness, provide information on the extent to which trading is intermediated through third parties and on the robustness of the network structure to the removal of key nodes. While the economic interpretation of these types of reduced-form network statistics is not well developed, tracking them over time helps us to understand how the structure of the CDS market is evolving.

Our use of trade repository data for on-going systemic risk monitoring is at an early stage, but our experience thus far suggests that detailed data on bilateral swaps positions can be an important source of information on the risk exposures of systemically important institutions and the health of vital financial markets. We hope to expand our analysis of trade repository data beyond the CDS market into other swaps market segments including interest rate and commodity swaps as these infrastructures develop.