Putting Systemic Stress Into the Stress-Testing System

BY TONY HUGHES AND SAMUEL W. MALONE

As the old joke goes, a banker is someone who offers to lend you an umbrella when the sun is shining and asks for the umbrella back as soon as it begins to rain. This takes on new meaning when we consider that bankers often lend umbrellas to each other and that, for financiers, increased aggregate umbrella use makes getting wet in a thunderstorm more likely.

The "interconnectedness" of the umbrella market and the relationship to actual weather patterns is analogous to financial industry systemic risk. In their present incarnation, the Federal Reserve’s stress tests ask each bank whether it would be able to remain dry during a heavy downpour. Banks and regulators are far less advanced in addressing questions about umbrella distribution networks or the possibility of getting splashed by others as puddles start to form.


One set of measures, for instance, looks at causal statistical relationships between banks in terms of the dynamics of actual performance characteristics such as asset returns, leverage ratios, volatility, and probability of default. Banks with a lot of strong dynamic links to other banks will be found to be more systemically central than others. If many banks have many strong links to one another, the overall level of systemic risk will measure as high.

Other approaches to systemic risk use joint distributions of bank losses to infer the probability that total banking system losses will exceed some high threshold or evaluate the probability of a low market return in the event of institutional stress. Development of these measures continues, and we view it as inevitable that such indicators will take a critical position in the stress-testing architecture.

The importance of systemic risk measures

Recent evidence suggests that a number of systemic risk measures are leading indicators of economic downturns ([http://faculty.chicagobooth.edu/workshops/financelunch/pdf/systemicriskandthemacroeconomygiglio.pdf](http://faculty.chicagobooth.edu/workshops/financelunch/pdf/systemicriskandthemacroeconomygiglio.pdf)) and may also predict equity market returns ([http://www.sciencedirect.com/science/article/pii/S0304405X11002868](http://www.sciencedirect.com/science/article/pii/S0304405X11002868)) as well asset returns and default probabilities at individual banks. The current set of available measures, in other words, passes a key test of empirical relevance required for formal incorporation into stress-testing exercises.

Given the importance of systemic issues for the survival of banks under stress, we consider it imperative that regulators and banks adopt such measures in their stress-testing activities.
Systemic risk measures are missing in the Fed's stress-testing framework, but this could soon change. For the 15 too-big-to-fail institutions subject to the Large Institution Supervision Coordinating Committee framework, the Fed issued guidance in December 2012 stating that they should begin to develop and incorporate quantitative measures of systemic risk into their stress-testing exercises.

Specifically, the Fed cited the need to measure changes in “degree or form of financial interconnectedness,” or “other developments with implications for financial stability.” This drive to incorporate systemic risk considerations into stress tests could soon extend to banks outside the LISCC group.

How banks should implement such measures remains fuzzy, but following through on their implementation as stress-testing regimes mature will align strongly with the Fed’s mandate to support the stability of the financial system.

Getting individual banks to buy into a consideration of systemic risk is also key to the success of stress testing. Prior to the Great Recession, systemic risk was of no commercial concern for large financial institutions, since they knew, or assumed, that they could count on a bailout from the Fed in lieu of declaring bankruptcy in the event of a systemic crisis.

These days, however, a seemingly safe bank pursuing prudent profit-maximizing practices will not necessarily be bailed out if it is sunk by its associations with other, less prudent, institutions. Banks now have an incentive to know where they are in the umbrella distribution network and to take action to move to a safer locale if it starts to rain.

In this environment, mastering the systemic risk toolbox and relating it to bank-specific performance is vital. The goal for banks and regulators alike should be a system in which survival benefits accrue to institutions that are “too systemically prepared to fail.” A more explicit incorporation of systemic risk tools into stress-testing exercises would be a welcome push in this direction.

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Tony Hughes is a managing director of research at Moody’s Analytics. He is the head of a small group of high-caliber modelers, charged with identifying new business opportunities for the company. Prior to this appointment, he led the Consumer Credit Analytics team for eight years from its inception in 2007. His first role after joining the company in 2003 was as lead economist and head of the Sydney office of Moody’s Economy.com.

Dr. Hughes helped develop a number of Moody’s Analytics products. He proposed the methodology behind CreditCycle and CreditForecast 4.0, developed the pilot version of the Stressed EDF module for CreditEdge, and initiated the construction of the Default, Prepayment and Loss Curves product, which provides forecasts and stress scenarios of collateral performance for asset-backed securities and residential mortgage-backed securities deals worldwide. More recently, he championed the development of the Pre-Provision Net Revenue Factors Library, a tool that provides industry-level projections of key bank balance sheet line items. In the credit field, Dr. Hughes’ research has covered all forms of retail lending, large corporate loans, commercial real estate, peer-to-peer, structured finance, and the full range of PPNR elements. He has conducted innovative research in deposit modeling and in the construction of macroeconomic scenarios for use in stress-testing.

Dr. Hughes has managed a wide variety of large projects for major banks and other lending institutions. In addition, he has published widely in industry publications such as American Banker, Nikkei, GARP, and the Journal of Structured Finance as well as four papers in peer-reviewed academic journals. He obtained his PhD in econometrics from Monash University in Australia in 1997.

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