

Forefront

New Ideas on Economic Policy from the FEDERAL RESERVE BANK
of CLEVELAND

The Future of Financial Market Regulation

INSIDE:

Slowing Speculation in Housing

Introducing the
Cleveland Financial Stress Index

A Bad Bank, for the Greater Good

PLUS:

Interview with Charles Calomiris

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Forefront
Federal Reserve Bank of Cleveland
PO Box 6387
Cleveland, OH 44101-1387

forefront@clev.frb.org
clevelandfed.org/forefront

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President and CEO: Sandra Pianalto

Editor-In-Chief: Mark Sniderman,
Executive Vice President and Chief Policy Officer

Managing Editor: Robin Ratliff

Editor: Doug Campbell

Associate Editors: Amy Koehnen, Michele Lachman

Art Director: Michael Galka

Designer: Natalie Bashkin

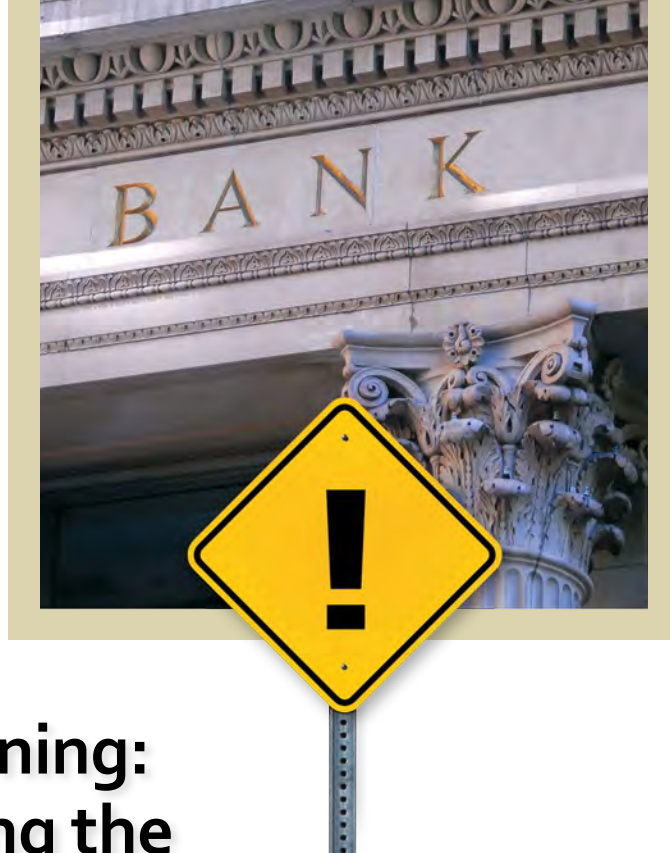
Web Managers: Stephen Gracey, David Toth

Contributors:

O. Emre Ergungor	Dan Littman
Thomas Fitzpatrick	Lou Marich
Elizabeth Hanna	April McClellan-Copeland
Joseph Haubrich	Jennifer Ransom
Natalie Karrs	

Editorial Board:

Ruth Clevenger, Vice President, Community Development
Kelly Banks, Vice President, Community Relations
Stephen Ong, Vice President, Supervision and Regulation
James Savage, Vice President, Public Affairs
Mark Schweitzer, Senior Vice President, Research
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Early Warning: Introducing the Cleveland Financial Stress Index

The financial crisis has raised interest around the world in developing models that can spot the emergence of systemic risk. Last year in these pages, we described the Federal Reserve Bank of Cleveland's new early warning system, SAFE—short for Systemic Assessment of the Financial Environment. (For an explanation of how SAFE helps supervisors monitor the financial landscape, see *Forefront* Spring 2010, "Spotting a Financial Crisis Before it Happens.") Now we'd like to describe one of its essential elements—an index that tracks financial stress.



Stephen Ong,
Vice President,
Supervision and Regulation

Building a model to forecast the condition of the financial system is daunting in and of itself. Before a condition can be forecast, it must be measured. And even before it can be measured, it must be defined. In developing SAFE as a robust tool for supervisors, we needed to take a fundamental step by first defining what systemic risk actually is and then creating a measurement of it.

The key to defining the slippery concept of systemic risk depends on the ability to recognize when stress in the financial market reaches critical levels. While there is no magic threshold, it's fair to say that the probability of

systemically risky financial conditions rises when financial stress measures become elevated. Stress may be observed in the movements of various financial market components, including swings in the stock market or the rates of interest required to issue debt.

That's where the financial stress index comes in. With this index, supervisors are better able to pinpoint when levels of financial market stress have reached worrisome levels. It's much like the Dow Jones Industrial Average or the S&P 500, which are designed to measure the level and activity of the equity markets. Each index consists of a

unique set of components that are combined using related index construction methods. Interestingly, prior to 2007, a public financial stress index for U.S. financial markets did not exist. Since then, several have been developed, each with its own unique elements and methods.

The Federal Reserve Bank of Cleveland has developed its own financial stress index for use with its SAFE early warning system. The Cleveland Financial Stress Index (CFSI) is a continuous index constructed of daily public market data. These data are collected from four sectors of the financial markets: credit markets, foreign exchange markets, equity markets, and interbank markets, providing broad coverage of elements that may be indicators of financial stress.

For example, components from credit markets include various interest-rate spreads associated with debt instruments such as bonds. These spreads indicate perceived risk in these instruments, and point to potential stress in the markets. When the spread on a typical corporate bond is large, for example, it suggests that investors have grown wary of the borrower's ability to stay current. Various components from the equity markets represent volatility and, therefore, the degree of stress in those markets. In total, 11 different components derived from these four markets are combined into a single index that represents relative stress in the financial markets.

Using historical data, figure 1 depicts the CFSI and its measurement of stress in the financial system since 1994. Also included are indications of periods of financial stress events. Notice that the index began to spike even before the events in 2008 made clear the depth of the financial crisis.

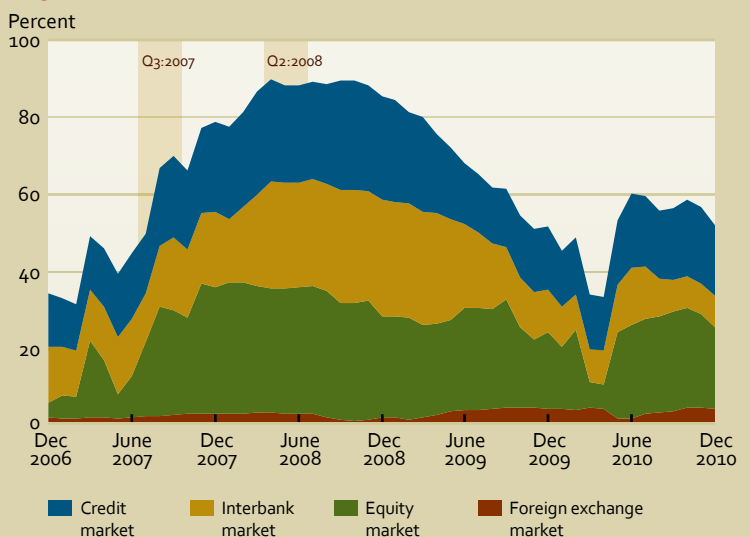
Figure 2 shows the movements of specific components within the FSI, providing insight into the amount of stress that the four distinct markets of the component inputs contributed to the overall index. As the figure shows, the component from the foreign exchange market contributed substantially less to overall financial stress than did the other markets. Measures from the credit, interbank, and equity markets indicate significant levels of stress from each, contributing to the overall financial stress of the recent crisis.

The CFSI is not designed to predict, but rather to reflect, current relative levels of systemic financial stress. It is what's known as a coincident indicator. That said, its use of daily data — rather than less-frequent data, such as weekly or monthly input — provides earlier indications

Figure 1. Cleveland Financial Stress Index



Figure 2. Components of the Financial Stress Index



Note: First shaded bar represents the onset of the crisis and the second-steepest rise on record; second shaded bar represents the peak of the crisis.

Source: Federal Reserve Bank of Cleveland.

of the existence of stress in the financial markets. Used in tandem with our SAFE early warning system, the CFSI acts as a robust measure of stress in the financial markets. In addition, the design of the index and its use of components from four distinct financial markets allow for identification of the origin of the stress. To supervisors charged with alleviating systemic risk, this is useful information indeed. ■



Coming soon

The Cleveland Financial Stress Index will be posted on the Bank's homepage. Watch for it at

www.clevelandfed.org