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Econometric measures of connectedness and systemic risk in the finance and insurance sectors[☆]

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ABSTRACT

We propose several econometric measures of connectedness based on principal-components analysis and Granger-causality networks, and apply them to the monthly returns of hedge funds, banks, broker/dealers, and insurance companies. We find that all four sectors have become highly interrelated over the past decade, likely increasing the level of systemic risk in the finance and insurance industries through a complex and time-varying network of relationships. These measures can also identify and quantify financial crisis periods, and seem to contain predictive power in out-of-sample tests. Our results show an asymmetry in the degree of connectedness among the four sectors, with banks playing a much more important role in transmitting shocks than other financial institutions.

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1. Introduction

The Financial Crisis of 2007–2009 has created renewed interest in systemic risk, a concept originally associated

with bank runs and currency crises, but which is now applied more broadly to shocks to other parts of the financial system, e.g., commercial paper, money market funds, repurchase agreements, consumer finance, and

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