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Journal of Financial Economics

journal homepage: www.elsevier.com/locate/jfec

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

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ARTICLE INFO

Article history:

Received 18 July 2010

Received in revised form

10 November 2011

Accepted 15 November 2011

Available online 17 February 2012

JEL classification:

G12

G29

C51

Keywords:

Systemic risk

Financial institutions

Liquidity

Financial crises

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

[☆] We thank the editor, Bill Schwert, two anonymous referees, Viral Acharya, Ben Branch, Mark Carey, Jayna Cummings, Mathias Drehmann, Philipp Hartmann, Blake LeBaron, Gaelle Lefol, Anil Kashyap, Andrei Kirilenko, Bing Liang, Bertrand Maillet, Stefano Marmi, Alain Monfort, Lasse Pedersen, Raghuram Rajan, Bernd Schwaab, Philip Strahan, René Stulz, and seminar participants at the NBER Summer Institute Project on Market Institutions and Financial Market Risk, Columbia University, New York University, the University of Rhode Island, the U.S. Securities and Exchange Commission, the Wharton School, University of Chicago, Vienna University, Brandeis University, UMASS Amherst, the IMF Conference on Operationalizing Systemic Risk Monitoring, Toulouse School of Economics, the American Finance Association 2010 Annual Meeting, the CREST-INSEE Annual Conference on Econometrics of Hedge Funds, the Paris Conference on Large Portfolios, Concentration and Granularity, the BIS Conference on Systemic Risk and Financial Regulation, and the Cambridge University CFAP Conference on Networks for helpful comments and discussion. We also thank Lorenzo Frattarolo, Michele Costola, and Laura Liviero for excellent research assistance. We thank Inquire Europe, the MIT Laboratory for Financial Engineering, and the NBER for their financial support.

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