

Introduction to Systemic Risk Analytics Minitrack

Peter Sarlin

Department of Economics
Hanken School of Economics, Helsinki, Finland
RiskLab Finland at Arcada
peter@risklab.fi

Tuomas A. Peltonen

European Systemic Risk Board Secretariat
Frankfurt, Germany
Tuomas.peltonen@ecb.int

In the aftermath of the global financial crisis of 2007/2008, there is an acute interest in analytics for early identification and assessment of risks and vulnerabilities that eventually may lead to a systemic financial crisis. This session bring together recent advances on computational tools for systemic financial risk identification and assessment, including early-warning, stress-testing, and contagion models. The key aim of the session is to adopt methods and techniques from other disciplines, such as computer science and physics, that make use of computer-intensive approaches, novel data sources, visual representations or interactive interfaces, among others.

For a minitrack with one session, we unfortunately had to reject several submissions to reach the space limits of three papers. Further, the author of one of the accepted submissions had to cancel, leaving the minitrack with only two contributions. The included two papers both focus on measuring cross-sectional systemic risk and the systemic relevance of entities, partly through a network perspective.

The first paper “The effect of diversification on financial contagion” is authored by Xian Cheng (University of Science and Technology of China), Xinbo Sun (Northeastern University), Stephen Shaoyi Liao (City University of Hong Kong), Zhongsheng Hua (University of Science and Technology of China), Xiaolu Yang (City University of Hong Kong), and Mengshen Huang (City University of Hong Kong). They model a network of financial cross-holdings based on a Leontief input-output framework to study the effects of diversification of interbank exposures and interbank connectivity on the importance of financial contagion. Their results show that a few but relevant cases diversification has negative influence on financial stability.

The second paper “An R-SOM Analysis of the Link between Financial Market Conditions and a Systemic Risk Index based on ICA-factors of Systemic Risk Measures” by Patrick Kouontchou

(University de Lorraine), Amaury Lendasse (Univ. of Iowa), Yoan Miche (Aalto University), Alejandro Modesto (Variances), Peter Sarlin (Hanken School of Economics), and Bertrand Maillet (Univ. of Paris-Dauphine). The authors put together a broad palette of systemic risk measures, and aggregate them through dimension reduction methods, including Empirical Orthogonal Function, Principal Component and Independent Component Analysis, and Robust Self-Organizing Maps. The authors show that the aggregated measure is directly linked to market crises and a strong link between return and systemic risk.

These both papers contribute to the track’s goals by helping to develop analytical approaches to understand systemic risk. Building and testing new computational tools and techniques to inform macroprudential policy is a key challenge in the coming years, as the policy framework is being set up. The first paper contributes in particular to the understanding of cross-holdings, diversification and connectivity overall. The second paper contributes more to our understanding of systemic relevance at the level of financial institutions by assessing a multidimensional space of approaches for measuring systemic risk through an aggregation. We hope these analytical contributions to systemic risk measurement will help guide the development of both models and policy in the future.