Early Warning and Systemic Risk in Global Banking: Financial Network and Market Price-based Methods

Sheri Markose[a,1,*], Nicolas A. Eterovic[1,2], Mateusz Gatkowski[1,3]

[a] *Wivenhoe Park, Colchester CO4 3SQ, UK.*

Abstract

This paper analyses systemic risk in global banking system using the market price-based methods and the asset-liability based network approach. For the latter we use the BIS consolidated banking exposures of 19 national banking systems to the core debtor countries for 2005Q4-2013Q4 and the network based systemic risk index (SRI) is developed from the spectral eigen-pair method of Markose (2012). We develop the market price based SRIs from the MSCI Financials for each of the 19 countries for the well known indexes of DCC-MES, DCC-ΔCoVaR and SRISK. We compare and contrast the network and market based SRIs for early warning signals and for the ranking of systemically important countries and those that are vulnerable over this period. We find that the eigen-pair method gives early warning before the financial crisis of 2007. It is also able to identify the increasing vulnerability of the Belgian and Portuguese banking systems before the bankruptcies of their major banks occured. The market price-based SRIs tend to be contemporaneous with the crisis and they are found to covary with standard risk management measures of risk, such as VaR, betas and liabilities.

Keywords:
Global Flows, Financial Networks, Systemic Risk, Early Warning Signals, Eigen-Pair Analysis and Spectral Analysis.

1. References

*Corresponding author
Email address: scher@essex.ac.uk (Sheri Markose)
[1]Economics Department, University of Essex.
[2]Economics Department, University of Essex.
[3]Centre for Computational Finance and Economic Agents (CCFEA), University of Essex.