Quantitative Finance ›
Volume 4, 2004 - Issue 6

Original Articles

Network topology of the interbank market

Michael Boss, Helmut Elsinger, Martin Summer & Stefan Thurner 4

Pages 677-684 | Received 19 Feb 2004, Accepted 06 Aug 2004, Published online: 18 Aug 2006

Abstract

We provide an empirical analysis of the network structure of the Austrian interbank market based on Austrian Central Bank (OeNB) data. The interbank market is interpreted as a network where banks are nodes and the claims and liabilities between banks define the links. This allows us to apply methods from general network theory. We find that the degree distributions of the interbank network follow power laws. Given this result we discuss how the network structure affects the stability of the banking system with respect to the elimination of a node in the network, i.e. the default of a single bank. Further, the interbank liability network shows a community structure that exactly mirrors the regional and sectoral organization of the current Austrian banking system. The banking network has the typical structural features found in numerous other complex real-world networks: a low clustering coefficient and a short average path length. These empirical findings are in marked contrast to the network structures that have been assumed thus far in the theoretical economic and econo-physics literature.

Acknowledgements

This work was supported by the Austrian Science Foundation project FWF P17621-G05. We thank J D Farmer for valuable comments to improve the paper and Haijun Zhou for making his dissimilarity index algorithm available. S T would like to thank the SFI and, in particular, J D Farmer for their great hospitality in the summer of 2003.

Notes

Author to whom any correspondence should be addressed.

Additional information

Notes on contributors

Stefan Thurner 4
Author to whom any correspondence should be addressed.

Related Research Data

A Set of Measures of Centrality Based on Betweenness
Source: Sociometry
Evolution of the social network of scientific collaborations
Source: Physica A Statistical Mechanics and its Applications
Financial flow of funds networks
Source: Networks
Financial networks with intermediation
Source: Quantitative Finance
Systemic risk in the netting system
Source: Journal of Banking & Finance

Zipf Distribution of U.S. Firm Sizes

Source: Science

Topology of Evolving Networks: Local Events and Universality

Source: Physical Review Letters

Related research

People also read | Recommended articles | Cited by 636

The multiplex structure of interbank networks >

L. Bargigli et al.
Quantitative Finance
Published online: 23 Oct 2014

Filling in the blanks: network structure and interbank contagion >

Kartik Anand et al.
Quantitative Finance
Published online: 28 Nov 2014

Modelling the emergence of the interbank networks >

Grzegorz Hałaj et al.
Quantitative Finance
Published online: 9 Jan 2015

View more