

Editorial

Financial Networks

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Financial networks have been on the research agenda since the financial crisis of 2008. Today, both regulators and the academia recognize that interconnectedness is a crucial component that had a key role in the amplification of losses in the last crisis. Therefore, understanding the structure of financial networks is important for assessing, monitoring, and regulating financial systems. In addition, it washed away the belief that supervising banks in an individual manner was sufficient to guarantee a safe financial system, as networks can largely amplify negative spillover effects. In this sense, we have seen an increasing effort in designing novel mechanisms for macroprudential regulation that include overseeing aspects of the entire financial system, including its structure.

Though understanding how financial networks amplify shocks is of uttermost importance for policymakers, especially for financial stability and systemic risk issues, the literature is still at its early stages in understanding the role of financial networks as a medium for shock amplification. This mainly occurs because modern financial networks are inherently complex to analyze as economic agents participate in a multiplex of interrelationships in several different markets.

Modeling this heterogeneity of interconnections stands as an important open problem because each connection can potentially create contagion transmission channels that can amplify losses. Another component that further increases the modeling complexity is that each risk channel that arises from this multiplex of interconnections is potentially dependent on each other and thus can additively increase systemic risk in nonlinear ways.

Complex networks evolve rapidly overtime and their topology changes substantially. Understanding this evolution

and its impact on systemic risk and financial stability is an important research question. There are many gaps in the literature and we hope to address some of them within this special issue.

The paper by K. Khashanah and T. Alsulaiman introduces an agent-based approach. They contribute to the literature by developing a metamodel of markets that leads to a financial economic environment simulator. They find that the simulated market is driven to instability in a similar manner to patterns observed in a crisis where all agents become homogeneous in information awareness of (negative) events.

The paper by S. Li and S. Wen studies a multiplex network of the guarantee market, which has three layers (different type of guarantee relationships). They provide empirical evidence that central companies in one layer are not necessarily central in another layer. The study contributes to the discussion on how to model multiplex networks.

The paper by C. M. Fan et al. provides a theoretical framework to manage the systemic risk of the banking system in Nigeria based on macroprudential capital requirements, which requires banks to hold capital that is proportional to their contribution to systemic risk. They find that, despite the heterogeneity in macroprudential capital requirements, all risk allocation mechanisms bring a substantial decrease in the systemic risk. The risk allocation mechanism based on ΔCoVaR decreases the average default probability the most.

The paper by L. He and S. Li investigates network entropy of dynamic banking systems. They find that network entropy is positively correlated with the effect of systemic risk in the three kinds of interbank networks and that network entropy

in the small-world network is the largest, followed by those in the random network and the scale-free network.

The paper by H. Fan et al. proposes a theoretical framework to reveal the time evolution of the systemic risk using sequences of financial data and uses the framework to assess the systemic risk of the Kenyan banking system. They study the case of Kenya and find several banks displaying characteristics of systemically important banks (SIB) and a case in which highly unusual interconnectedness may lead to contagion defaults.

The paper by M. Pollak and Y. Guan studies a calibrated network model of heterogeneous interbank exposures. Their results show that trends in capital buffers and the distribution and type of assets have a significant effect on the predictions of financial network contagion models and that the rising trend in ownership of banks by banks amplifies shocks to the financial system.

The paper by J. Eberhard et al. studies how changes in the structure of a brokers' transaction network affect the probability with which the returns and volume of the traded financial assets change significantly. They find that changes of this structure are significantly correlated with variables that describe the local and international economic-financial environments.

The paper by D. Cserecsik and H. J. Kiss introduces a new discrete time probabilistic model of depositor behavior, which takes into account the information flow among depositors. They study the role of connections and use variants of a simple example. They find in these examples that connections matter. The more connections the depositor has, the larger the optimal offer from the bank is. Consequently, the denser the connection structure is, the larger the expected payment of the bank to the depositors is.

The paper by I. Anagnostou et al. contributes to the portfolio credit risk literature by introducing a portfolio credit risk model which incorporates both common factors and contagion. They also use a credit stress propagation network constructed from real data to quantify the impact of deterioration of credit quality of the sovereigns on corporates. And they present the impact of accounting for contagion which can be useful for banks and regulators to quantify credit, model, or concentration risk in their portfolios.

The paper by T. Chen introduces an evolving network model of credit risk contagion in the credit risk transfer market. The model contributes to the explicit investigation of the connection between the factors of market behavior and network structure and also provides a theoretical framework for considering credit risk contagion in an evolving network context.

The paper by L. Rossoni et al. shows that the financial cost of capital of companies listed on the Brazilian stock exchange is determined by the social capital of the networks of directors and shareholders they have. The paper contributes to the field of board interlocking and corporate governance by studying the analysis of the social capital of the board and providing empirical evidence of how interlocking influences the cost of capital of these companies.

The paper by Z. Zhang et al. studies dynamic cross-correlations between mass media news, new media news,

and stock returns. They provide evidence of the existence of power-law correlations between two types of news and between news and stock returns. They also find a general increasing trend for the cross-correlation between the two types of news and between news and stock returns.

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