Summer Solstice 2018 Conference on Discrete Models of Complex Systems

Gdańsk, June 25-27, 2018

Can banks default overnight? Modelling endogenous contagion on the O/N interbank market

Tomasz Gubiec, *University of Warsaw*

We propose [1] a new model of the liquidity-driven banking system focusing on overnight interbank loans. This significant branch of the interbank market is commonly neglected in the banking system modeling and systemic risk analysis. We construct a model where banks are allowed to use both the interbank and the securities markets to manage their liquidity demand and supply as driven by prudential requirements in a volatile environment. The network of interbank loans is dynamic and simulated every day. We show how the intrasystem cash fluctuations alone, without any external shocks, may lead to systemic defaults, and what may be a symptom of the self-organized criticality of the system. We also analyze the impact of different prudential regulations and market conditions on the interbank market resilience. We confirm that the central bank's asset purchase programmes, limiting the declines in government bond prices, can successfully stabilize banks' liquidity demands. The model can be used to analyze the interbank market impact of macroprudential tools.

[1] P. Smaga, M. Wiliński, P. Ochnicki, P. Arendarski & T. Gubiec (2018) Can banks default overnight? Modelling endogenous contagion on the O/N interbank market, Quantitative Finance, DOI: 10.1080/14697688.2018.1438641