Agostino Capponi* (acappon1@jhu.edu), Baltimore, MD 21210, and Lijun Bo, Xi’an, Peoples Rep of China. Weak Convergence Analysis of Systemic Risk in Interbanking Networks.

We develop a weak convergence analysis for a mean field model of interbanking lending activities. We model the monetary reserves of each bank as a system of jump diffusion processes, interacting through a separable lending preference function consisting of both an idiosyncratic and a common component, with the latter depending on the average monetary level of the system. We develop an explicit characterization of the limit measure valued process in terms of two deterministic functions reflecting the interbanking interaction, and recovered as the unique solution to a nonlinear system of equations.

We use the limit process to construct law of large number approximation for popular banking stability measures, including average distance to default and joint probability of distress. We illustrate the predictive power and accuracy of our approximation framework via a detailed numerical analysis, showing that banking stability measures are highly sensitive to lending preference rates. The analytical tractability of our framework constitutes a useful tool for regulators to measure systemic risk and gauge its sensitivity to lending preferences, as well as volatility of monetary reserves. (Received September 17, 2013)