Modeling and Decoupling Systemic Risk into Endopathic and Exopathic Competing Risks

Speaker: Jingyu Ji (Fudan University)

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Abstract: In this talk, we propose a new nonlinear time series model: autoregressive conditional accelerated Fréchet (AcAF) model and introduce two new endopathic and exopathic competing risk measures for better learning risk patterns, decoupling systemic risk, and making better risk management. We establish the probabilistic properties of stationarity and ergodicity of the AcAF model. Statistical inference is developed through conditional maximum likelihood estimation. The consistency and asymptotic normality of the estimators are derived. Simulation demonstrates the efficiency of the proposed estimators and the AcAF model's flexibility in modeling heterogeneous data. Empirical studies on the stock returns and the cryptocurrency trading show the superior performance of the AcAF model in terms of the identified risk patterns, enhancing the understanding of the systemic risks of a market and their causes, and making better risk management possible.