Abstract

The interdependence, dynamics and riskiness of financial institutions are the key features frequently tackled in financial econometrics. The speaker proposes a Tail Event driven Network AutoRegression (TENAR) model which addresses these three aspects. More precisely, his framework captures the risk propagation and dynamics in terms of a quantile (or expectile) autoregression involving network effects quantified through an adjacency matrix. The model is evaluated using the SIFIs (systemically important financial institutions) identified by the Financial Stability Board (FSB) as main players in the global financial system. In order to quantify systemic risk arising from the interplay of SIFIs, one needs to study the joint conditional dependency structure. Given that certain members or companies are at risk, one may then quantify how much another SIFI members is at stress. A network geometry based on adjacencies of joint tail events seems to be an appropriate analysis tool to study systemic risk. The dynamics of the tail events for the remaining components is explained by the network factor. The adjacency matrix is constructed based on tail event covariates. A centrality analysis of it identifies a rank of systemic importance of SIFIs and thus provides measures for the required level of additional loss absorbency. It is discovered indeed that the network effect, as a function of the tail probability, becomes more profound in stress situations.

About the speaker

Prof Wolfgang Härdle received his Doctor degree in Natural Sciences from University Heidelberg in 1982. He furthered his career as a research associate in Frankfurt University during 1983-1985 and Bonn University during 1985-1989 respectively. Prof Härdle joined Universite Catholique de Louvain as a full-time professor in 1990 and moved to Humboldt University of Berlin in 1992, where he is currently a professor of statistics.

Prof Härdle's research interests include smoothing methods, discrete choice models, statistical modelling of financial markets and computer-aided statistics. His more recent work deals with the modelling of implied volatilities and the statistical analysis of financial risk.

Prof Härdle was elected fellow of Institute of Mathematical Statistics (1992) and International Statistical Institute (1997). He was also elected the member of the Australian National Centre for Econometric Research during 2006-2010.

About the seminar series

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For attendees’ attention

The seminar is free and open to all. Seating is on a first come, first served basis.