
AGSOE 2: Financial Markets and Risk Management I

Time: Monday 9:30–10:15

Location: BAR 205

Invited Talk

AGSOE 2.1 Mon 9:30 BAR 205

Anatomy of financial crashes: an agent based model of the leverage cycle — ●STEFAN THURNER — Complex Systems Research Group, Medical University of Vienna, Währinger Gürtel 18-20, A 1090 Vienna, Austria — Santa Fe Institute, Santa Fe, New Mexico, USA

Much of the recent financial crisis originates from the common practice of financial firms of making investments with large fractions of borrowed money (leverage). The collateral for these borrowed funds is usually put up in the form of financial assets, which are far from being 'solid' values. The dependence of the value of collateral on asset prices is often the heart of a credit crisis. In an agent based model we study an 'ecology' of essential financial players such as un-informed noise

traders, hedge- or mutual funds, banks (as the providers of leverage) and investors to hedge funds. This model economy allows to identify the effects of leverage on the stability of the financial system. In particular it becomes possible to understand how minor random fluctuations can trigger a financial crisis, eventually leading to the collapse of the system. The main message is that simultaneous monitoring of a specific collection of indicators could be used to estimate the likelihood for the development of crisis. In terms of a physical classification, the model can be seen as a self organized critical system, which - as a side effect - produces realistic features of the associated price timeseries of financial assets, such as fat tailed return distributions and clustered volatility. It can be shown how details of these characteristics depend on actions of banks or regulators.