

SOE 14: Financial Markets and Risk Management I

Time: Wednesday 11:15–12:15

Location: H36

SOE 14.1 Wed 11:15 H36

Leads versus lags in the relationship between company performance and stock price in the automotive sector: An event coincidence analysis — PHILIPP KOLTERMANN¹ and REIK V. DONNER² — ¹Dresden University of Technology, Dresden, Germany — ²Potsdam Institute for Climate Impact Research, Potsdam, Germany

Enterprises traded at stock exchanges are obliged to regularly publish information on their economic performance, which is of great value for potential investors and shareholders in order to decide whether to buy, hold or sell stocks. Here, we aim to identify the associated time scales at which such decisions are made: Is there robust evidence for instantaneous and/or delayed responses of the stock price to particularly good/bad performance indicators, indicating that reported numbers act as external shocks to the market? Or vice versa: To what extent are economic figures already included in the stock price evolution prior to the reporting date, pointing to the relevance of investors' expectations based on the sectoral development? In order to test for the statistical significance of corresponding relationships, we apply the recently developed method of event coincidence analysis to an ensemble of nine German companies from the automotive sector (car manufacturers as well as suppliers) spanning the time interval from 2000 to 2015. After correcting for the sectoral evolution and the impact of the world economic crisis in 2008/09, our analysis reveals clear evidence for instantaneous and/or delayed responses, but no robust indication for anticipatory effects.

SOE 14.2 Wed 11:30 H36

Stability and hierarchy of quasi-stationary states: financial markets as an example — YURIY STEPANOV¹, RUDI SCHÄFER¹, THOMAS GUHR¹, JOACHIM PEINKE², and PHILIP RINN² — ¹Fakultät für Physik, Universität Duisburg-Essen, Lotharstr. 1, 47048 Duisburg — ²Institute of Physics and ForWind, Carl-von-Ossietzky University Oldenburg, Oldenburg, Germany

We combine geometric data analysis and stochastic modeling to describe the collective dynamics of complex systems. As an example we apply this approach to financial data and focus on the non-stationarity of the market correlation structure. We identify the dominating variable and extract its explicit stochastic model. This allows us to establish a connection between its time evolution and known historical events on the market. We discuss the dynamics, the stability and the hierarchy of the recently proposed quasistationary market states.

[1] YS, Rinn P, Guhr T, Peinke J and Schäfer R, J. Stat. Mech. 2015 (2015) P08011

SOE 14.3 Wed 11:45 H36

Gold, currencies and market efficiency — LADISLAV KRISTOUFEK^{1,2} and MILOSLAV VOSVRDA^{1,2} — ¹Institute of Information Theory and Automation, Czech Academy of Sciences, Czech Republic — ²Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague, Czech Republic

Gold and currency markets form a unique pair with specific interactions and dynamics. We focus on the efficiency ranking of gold markets with respect to the currency of purchase. By utilizing the Efficiency Index (EI) based on fractal dimension, approximate entropy and long-term memory on a wide portfolio of 142 gold price series for different currencies, we construct the efficiency ranking based on the extended EI methodology we provide. Rather unexpected results are uncovered as the gold prices in major currencies lay among the least efficient ones whereas very minor currencies are among the most efficient ones. We argue that such counterintuitive results can be partly attributed to a unique period of examination (2011-2014) characteristic by quantitative easing and rather unorthodox monetary policies together with the investigated illegal collusion of major foreign exchange market participants, as well as some other factors discussed in some detail.

SOE 14.4 Wed 12:00 H36

Statistical Properties of DAX Limit Order Books on Xetra — WINFRIED REIMANN and STEPHAN EULE — Max-Planck-Institute for Dynamics and Self-Organization, Göttingen, Germany

Most modern financial markets nowadays employ limit order books to temporarily store buy and sell orders and execute them. In these order books the central economic question of price formation can be investigated from a microscopic point of view using high frequency data. Prior analyses of such data have mainly focused on three different issues:

- (i) Statistics of price determining quantities such as price jump distributions and market impact;
- (ii) the influence of order placement and cancellations on those statistics;
- (iii) the effect of the order book's state itself on the dynamics of the order flow.

We apply such analyses for the first time to order books from Deutsche Börse's continuous trading market Xetra. Thereby we focus on the influence of the book's state on the order flow. The idea behind that is that financial markets as complex systems have their own internal dynamics with multiple feedback mechanisms, in which external information only partly influences the price formation. We aim at discovering such feedback mechanisms.