SOE 5: Financial Systems

Time: Thursday 11:15–11:45 Location: H3

SOE 5.1 Thu 11:15 H3

A New Attempt to Identify Long-term Precursors for Financial Crises in the Market Correlation Structures — •Anton J. Heckens and Thomas Guhr — Universität Duisburg-Essen, Lotharstr. 1, 47048 Duisburg

Prediction of events in financial markets is every investor's dream and, usually, wishful thinking. From a more general, economic and societal viewpoint, the identification of indicators for large events is highly desirable to assess systemic risks. Unfortunately, the non-stationarity nature of financial markets make this challenge a formidable one, leaving little hope for fully fledged answers. Nevertheless, it is called for to collect pieces of evidence in a variety of observables to be assembled like the pieces of a puzzle that eventually might help to catch a glimpse of precursors for large events - if at all in a statistical sense. Here, we present a new piece for this puzzle. We use the quasi-stationary market states which exist in the time evolution of the correlation structure in financial markets. Recently, we identified such market states relative to the collective motion of the market as a whole [1]. We study their precursor properties in the US stock markets over 16 years, including the pre-phase of the Lehman Brothers crash [2].

[1] A. J. Heckens, S. M. Krause, T. Guhr, Uncovering the Dynamics of Correlation Structures Relative to the Collective Market Motion J. Stat. Mech. 2020, 103402 (2020), preprint: arXiv:2004.12336

[2] A. J. Heckens, T. Guhr, A New Attempt to Identify Long-term Precursors for Financial Crises in the Market Correlation Structures (2021), preprint: arXiv:2107.09048