

Estimation of Agent-Based Models: A Simple Example

Simone Alfarano, Thomas Lux and Friedrich Wagner

*University of Kiel, Department of economics and Department of Physics,
Olshausenstr. 40, 24118 Kiel, Germany*

Corresponding author e-mail: lux@bwl.uni-kiel.de

The behavioral origins of the stylized facts of financial returns have been addressed in a growing body of agent-based models of financial markets. While the traditional efficient market viewpoint explains all statistical properties of returns by similar features of the news arrival process, the more recent behavioral finance models explain them as imprints of universal patterns of interaction in these markets. In this paper we contribute to this literature by introducing a very simple agent-based model in which the ubiquitous stylized facts (fat tails, volatility clustering) are emergent properties of the interaction among traders. The simplicity of the model allows us to estimate the underlying parameters, since it is possible to derive a closed form solution for the distribution of returns. We show that the tail shape characterizing the fatness of the unconditional distribution of returns can be directly derived from some structural variables that govern the traders' interactions, namely the herding propensity and the autonomous switching tendency.