Bachelor Thesis or Project Work

Simulation of an Econophysical Financial Market Model

Course of study: Mathematics and CES
Kind of thesis: Monte-Carlo Simulations
Prior Knowledge: Basic knowledge in MATLAB or C++
Start: October 2015

Problem

One challenging task in economics is to explain the formation of *stylized facts* in financial data. *Stylized facts* are universal market properties, which can be observed at stock markets all over the world. One famous example are Pareto tails in income distributions and stock returns. There is evidence that these *stylized facts* are one reason of market crashes.

Econophysical financial market models try to reproduce financial data which exhibits *stylized facts*. In this thesis we want to have a closer look at the model by Hommes [1].

Tasks

The model should be implemented in *MATLAB* and be built in the existing framework. The main goals are summarized in the following outline:

- introduce the model of Hommes
- compare this model to related financial market models
- implement the model of Hommes
- reproduce the results and especially analyze the produced *stylized facts*

References

[1] Hommes, Carsien Harm,
Financial markets as nonlinear adaptive evolutionary systems,
Taylor & Francis, 2001.

Supervision

This project takes place in the research group *Computational Nuclear Engineering* (MathCCES) led by Prof. Dr. Martin Frank at the institute MathCCES. The project will be supervised by

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