

AKSOE 12 Macro and Micro Economic Models

Zeit: Dienstag 16:30–18:30

Raum: TU P-N203

AKSOE 12.1 Di 16:30 TU P-N203

On the relationship of energy consumption, economic growth and standard of living — ●JÜRGEN MIMKES — Physik Department Universität Paderborn

The production factors labour (W) and energy (E) are related to economic growth (Q) by the first law of thermodynamics. Q is an inexact differential form, which may be transformed into the exact form of entropy (dS) by an integrating factor (T). This is the second law of thermodynamics. The factor T is the mean energy consumption per household, GNP per capita or standard of living. Inexact differential forms are important for cyclic production, one may pay little energy or capital going one way (C) and receive much coming back (Y). This is equivalent to the law of economic production. Economic production is a Carnot process, in the production of goods the process runs clock wise like in a motor. In the same time capital flows in the opposite way like in a heat pump. The functions of production (Y) and consumption (C) may be calculated from the entropy. For several production factors x, y, z the production function is related to the entropy of mixing.

AKSOE 12.2 Di 17:00 TU P-N203

Artificial consumer societies in risky markets - the case of food scares and information release strategies — ●VOLKER SAGGAU — Institut für Agrarökonomie, Uni Kiel, Olshausenstr. 40, 24098 Kiel

Our motivation is lying on the question How does a food scare and information of a food scare influence the buying decision of one single agent and the aggregate demand?. Since we investigate a society of consumers which do have their own decision functions, we can observe how new information could influence the behaviour of each consumer and more interesting the aggregate changes in the demand by creating a population of agents. This multiagent simulation can be used to investigate how different information releases and decision functions influence the aggregate demand. Our intention is to measure how different information strategies influence the aggregate demand. For this purpose we use a multiagent method in order to follow a bottom up approach where each agent acts individually. The interaction between the agents leads to an emergence of an aggregate demand that comes from the bottom up. Each agent follows its internal updating and decision algorithms so that on the aggregate level the demand changes according to the outcomes of the interaction and its related updating processes. After the communication phases the aggregation of the outcomes of each agent shows the result of the information strategy that was selected.

AKSOE 12.3 Di 17:30 TU P-N203

Herd Behaviour equal to Traffic Jams?: New insides in complex economic interaction with Many-Particle-Physics and Wavelet Theory — ●BODO HERZOG — Lichtenhaidestr.11; D-96052 Bamberg

Since Econphysics starts, new theories and models have been implemented in explaining pure economic phenomenon. The main focus was to learn something new and understand collective interactions in economic systems. One example is herd behaviour in economics that have a corresponding equivalent in physics (traffic jams). A wonderful by-product for the economic profession has been the emergence of a new research topic. But the models from physics does not fit the economic situation one to one. In the following paper we examine the phenomenon of herding behaviour in financial markets and try to build a new model. In the tradition of 'Many-Particle-Physics', particularly 'Traffic-Models', we explore in our new model herding behaviour in financial markets from an economic perspective. Moreover we propose an identification of herding behaviour in financial markets with wavelet theory. That approach helps us to show when herding behaviour starts. The current development in Econphysics helps to close the gap between natural and social systems. Conclusions from traffic models are relevant for the functionality, stability, reliability, and efficiency of societies, organizations etc. The theoretical understanding of traffic dynamics is a good starting-point for studying elementary human interactions under experimental conditions but we must go beyond that first step.

AKSOE 12.4 Di 18:00 TU P-N203

Asset Price and Wealth Dynamics with Heterogeneous Expectations under a Market Maker Scenario — ●FLORIAN HEITGER — Institut fuer VWL, Lehrstuhl fuer Geld, Waehrung und Int. Finanzmaerkte, Olshausenstr. 40, 24118 Kiel

The asset price model of Brock and Hommes (1998) is a prominent example of a behavioral model of financial markets in discrete time and considers heterogeneous economic agents who are faced with a standard asset allocation problem in each trading period using a traditional utility maximization scheme. The heterogeneity of agents is expressed in terms of different perceptions on the expectations of future price movements on the risky asset. A modified variant on that framework is proposed by Chiarella and He (2001) and assumes a more realistic type of utility function which generates both growing price and wealth processes. The model can be formulated as a stationary model in terms of the return on the risky asset and the wealth proportion among heterogeneous investors. Within this framework we consider a slightly different model setup under a Market Maker scenario which uses the main ideas of both the BH and the CH model, but, which, however, overcome some of the main inconsistencies (and unrealistic assumptions) detected in the original models (e.g. referring to a correct expectation formation of the heterogeneous agents at the fundamental price level).