SOE 9: Economic Models II

Time: Tuesday 10:15–11:30 Location: MA 001

SOE 9.1 Tue 10:15 MA 001

Market Dynamics: Evidence from Lab Experiments — •Heinrich H. Nax — ETHZ; Clausiusstr 37 C3; 8092 Zurich

We discuss old and new evidence from controlled lab and online experiments concerning market dynamics. We discuss common features of human decision-making, and the resulting convergence properties of such behaviorally founded models. Particular attention is paid to equilibrium and out-of-equilibrium dynamics.

SOE 9.2 Tue 10:45 MA 001

Pauli Algebras in Economics: Econmathematics from Geometry to Didactics and back — •Martin Erik Horn — Berlin School of Economics and Law/HWR Berlin, FB 1 – Department of Business and Economics, FE Quantitative Methods

According to Hestenes, geometry links the algebra to the physical world. Therefore we start our journey with a closer analysis of the geometry of our world by questioning the Dirac belt trick: Obviously 4π periodicities are an elementary part of our world, and to describe this world, the mathematics of 4π periodicities – and thus Pauli algebras – are required.

Geometry also links the algebra to the physics of socio-economical systems. Consequently the mathematics of 4π periodicities – and thus Pauli algebras – can be applied to describe economic systems (for example in product engineering). A didactical approach to model such simple systems with Pauli algebras will be presented.

At the turning point of our journey we look back on an interesting econmathematical picture: problems which might be solved by using linear algebra can equally effective and sometimes even in a much simpler way be solved with Pauli algebra or generalized Pauli algebras.

SOE 9.3 Tue 11:00 MA 001

Implementing the analytic Unification of Economics with the Natural Sciences — •Hans Danielmeyer and Thomas Martinetz — Institute for Neuro- and Bioinformatics, Uni Lübeck

Sir Charles Bean (UK Office for Budget Responsibility) is the first Central Banker to confirm our natural theory's G7 level zero interest prediction and tough conclusions: "back to income tax (for pensions and social security) or outlaw cash and helicopter money"). UK implementation starts with reviewing the economic measurement system. Its global deficit is having no variables for demand that are compatible with supply. We resolved it with the only family of six analytic functions that can assimilate biologically generated demand (far above biologic needs) with technically generated supply. They reproduce all G7 level data taken during peaceful growth without any fitting parameter.

Therefore, implementation of the natural theory's solutions will and must go far beyond the horizon of political parties. This explains easily the electorate's observed G7 level disappointment and its preference for much younger statesmen. The G7 level lifestyle was and will be dominated not by money or socioeconomic utopias but by ingeniuity, longevity, and the capacity for defending both.

SOE 9.4 Tue 11:15 MA 001

Evolutionary ecological-economic modelling: Ecological instability and economic growth — Frank Beckenbach[1], •Sylvie Geisendorf[2], and Christian Klippert[2] — [1]University of Kassel — [2]ESCP Europe Campus Berlin, Heubnerweg 8-10, 14059 Berlin, Germany

The purpose of our contribution is twofold. It proposes a combined ecological-economic model that captures the link between the economy and the ecosystem in a more inclusive way than standard economic optimization models do. This is done in order to demonstrate the non-triviality of finding a policy mix that leads to a sustainable path of the coupled system.

To enable this analysis, the model has three characteristics distinguishing it from traditional environmental and resource economic models: (1) it implements a multi-dimensional link between the economic and the ecological system, considering side effects of production, and thus combines the analyses of environmental and resource economics; (2) following authors from biology it uses a difference equation approach for the biological resource instead of the typical differential equation, allowing for the whole range of stability regimes by means of a single equation, and (3) it links this resource system to an evolving, agent-based industry (on the basis of a Nelson-Winter model) instead of the standard optimization model.

Main results are that (1) in face of multiple influences of the industry on nature, the selection and calibration of policy instruments is highly important to avoid or minimize trade-offs between sustainability dimensions and (2) the most obvious political instrument in case of overexploitation, and the only working as a single instrument, should, surprisingly, be left out of a policy mix for sustainable development.