AKSOE 13 Dynamics of Groups and Organizations IV

Time: Thursday 14:00–15:30 — Room: BAR 205

AKSOE 13.1 Thu 14:00 BAR 205

Efficiency and evolution of hierarchical organizations — •Marco Lamieri [1] and Diana Mangalagiu [2] — [1]University of Turin, Piazza Albarello 8, Torino Italy — [2]Reims Management School, 59, rue Taittinger, 51061 Reims, France

We focus on the agent-based modelling of an organization considering the interplay between three views of it: a formal, a process and a social view. The formal view is the organizational hierarchy; the process view is the way the organization performs a complicated task; the social view represents the informal relations between the agents. Each view of the firm is dynamic and is modelled as a network, where the nodes represent the agents. The process emerges from the interaction between formal and social network and it affects the economic performance of the simulated organization. Each agent is autonomous, has skills and is able to perform a part of a task. The task is performed through agents' interaction until completion. The process network ties are defined by an evolutionary algorithm that reinforces the links used the most frequently and lowers the strength of the less used links. We investigate the influence of the three structures on the organization efficiency and the organization dynamics in different market conditions. We identify the emergence of a stable shape of the structure under particular market conditions and we test its robustness to exogenous shocks like movements of demand and product differentiation.

AKSOE 13.2 Thu 14:30 BAR 205

Shrinking World. The comparison of distance and entropy analysis. — •Janusz Miskiewicz[1] and Marcel Ausloos[2] — [1]Institute of Theoretical Physics, University of Wroclaw, pl. M. Borna 9, 50-204 Wroclaw, Poland — [2]S.U.P.R.A.T.E.C.S., B5 Sart Tilman, B-4000 Liège, Euroland

The analysis of similarities in development patterns of the leading world (mainly European) countries is performed. The economical situation of each considered country is described by its total GDP normalised to the GDP level of US dollar in 1999. For comparing cases, the yearly GDP increment time series are considered. The similarities between country developments are investigated by means of a statistical correlation distance and a distance based on Theil index, which could be considered as an entropy measure. The calculations are performed for a time window constant size, which is moving along the time axis. Next the time distance matrix is obtained and analysed by constructing two networks: the locally minimal spanning tree and the bidirectional minimal length path.

The time evolution of the mean distance between countries is investigated and the economy globalisation process thereby observed. The analysis is repeated for all possible time window sizes; a resonance time window size is then found; the latter could be interpreted as a globalisation time scale.

AKSOE 13.3 Thu 15:00 BAR 205

On the nature of business cycles — •H G Danielmeyer — Inst. für Neuro- und Bioinformatik, Lübeck, Ratzeburger Allee 160

The four business cycles of the USA between 1961 and 1992 are analyzed with non-linear market-coupled first order differential rate equations for one consumer and one supplier with different but constant planning horizons (PHs). The base period of this system's cycles turns out to be 2Pi times the square root of the product of their PHs. Agreement with the periods and asymmetry of the cycles is obtained with the calendar year for both PHs but different anticipation and damping attitudes in positive (the so-called Phillips curve) and negative cycle phases, resp. Each correction is generally causing the next. Business cycle policies are not improving long term structural growth.