Mathias Staudigl

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Education

Ph.D. Economics, University of Vienna, *expected* 2010.

M.Sc. (Mag. rer.soc.oec) Economics with honors, University of Vienna, 2007.

Thesis: Evolutionary dynamics and rationality

Supervisor: Ana-B. Ania Martinez

B.Sc. (Erster Studienabschnitt) Economics with honors, 2006

High-school Diploma (Matura) with honors, 2003

Fields of Interest

Game theory, Evolutionary game theory, Complex Networks, Random graph Dynamics, Stochastic processes, Mathematical Economics

Academic Experience

Teaching Assistant, Linear Algebra for students in economics and statistics, Immanuel Bomze, Winter semester 2009/2010.

Teaching Assistant, Analysis for students in economics and statistics, Immanuel Bomze, Summer semester 2009.

Tutor, Advanced Microeconomics and Mathematical economics, Konrad Podczeck

Languages

German: Native speaker

English: Excellent written and spoken proficiency

Spanish: Very good written and spoken proficiency

French: Basic knowledge

Working Papers

Potential games played in volatile environments
(Submitted to *Games and Economic Behavior*. Currently under revision.)
Abstract: This papers studies the co-evolution of networks and play in the context of finite population potential games. Action revision, link creation and link destruction are combined in a continuous-time Markov process. We derive the unique invariant distribution of this process in closed form, as well as the marginal distribution over action profiles and the conditional distribution over networks. It is shown that the equilibrium interaction topology is a generalized random graph, as defined in Bollobás et al. 2007 [Random Structures and Algorithms 31, 2007]. Furthermore, we are able to characterize the set of stochastically stable states by proving a rather general concentration result of the invariant measure on the set of potential maximizers. This generalizes well-known results by Blume [Games and Economic Behavior 5, 1993] or Young [Econometrica 61 (1), 1993] to models with endogenous interaction structures.

Co-Evolutionary dynamics and Bayesian interaction games
Abstract: We present a model on the co-evolution of networks and play for settings where agents' preferences are diverse. This leads to a definition of structured Bayesian interaction games, close to the related notion of Bayesian population games introduced by Ely and Sandholm [Games and Economic Behavior 53, 2005]. We prove that under the logit dynamics of evolutionary game theory the co-evolutionary process is ergodic and we calculate its invariant distribution explicitly. We also derive a marginal distribution over Bayesian action profiles, as well as a probability measure over networks. This paper shows that the relationship between inhomogeneous random graphs and evolutionary dynamics extends this setup. We further perform two different limit operations to examine stochastically stable states in the small noise limit and in the large population limit, as suggested by Sandholm [Forthcoming: MIT Press, 2009].

On a general class of co-evolutionary dynamics
Abstract: This paper presents a unified framework to study the co-evolution of networks and behavior using the language of evolutionary game theory. The set-up is rich enough to encompass many recent models discussed by the literature. We completely characterize the invariant distribution of such processes and show how to calculate stochastically stable states by means of a tree-characterization algorithm. Moreover, specializing the process a bit further allows us to completely characterize the generated random graph ensemble.

Conference Presentations

Stochastik Kolloquium (Department of Statistics and Decision support systems). Organized by Immanuel Bomze

Mini-Workshop Evolutionary Game Theory (Department of Mathematics, University of Vienna). Organized by Josef Hofbauer.

Doctoral Workshop on Game theory, University of Konstanz (Germany). Organized by Carlos Alós-Ferrer.

Economic theory seminar, University of Pavia (Italy). Invited by Stefano DeMichelis.

QED conference 2009 in Amsterdam.

Summer meeting of the Econometric Society 2009 in Barcelona.

Honors, & Awards

2005 Prize for Academic Excellence (Leistungsstipendium), University of Vienna

2006 Scholarship "ERASMUS". I had the pleasure to visit the University of Alicante, Spain, for the winter term.

2008 *Würdigungspreis des Bundesministeriums für Bildung, Wissenschaft und Kultur Österreich*; prize awarded by the Austrian federal ministry of education and culture to the 40 best undergraduate students in Austria.

References

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Gerhard Sorger
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