

Selected Papers of the
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Preface

This volume presents a collection of selected papers that follow the talks presented at the 6th Polish Symposium of Physics in Economy and Social Sciences (called in Polish FENS). The conference was held in Gdańsk, Poland, 19–21 April 2012. It took place at Faculty of Mathematics, Physics and Informatics of the University of Gdańsk. We are obligated for the generous support of the Institute of Theoretical Physics and Astrophysics of Gdańsk University, Faculty of Technical Physics and Applied Mathematics of Gdansk University of Technology, Polish Academy of Science and the City of Gdańsk.

Complex systems are pervasive in many fields of science and we encounter them every day and everywhere in our life. Their example include financial markets, human economies, social relations. Therefore, many aspects of economy or sociology may be explained when based on mathematical models derived from the statistical physics. The objective of the symposium was to bring researchers working on interdisciplinary and multidisciplinary problems, and to provide them a forum for exchange the ideas and presentation of results of their research. We were given an invited lecture by prof. Zbigniew Struzik about critical slowing down that “characterizes an approaching catastrophic bifurcation in a variety of complex systems, including financial systems”. We discussed about “a great intellectual as well as practical challenge” consisting in “detecting imprints of deterministic patterns in the financial dynamics and identifying their origin” proposed by prof. Stanisław Drożdż. Together with prof. Ryszard Kutner we were fascinated by “the question of whether the early-warning signals are present in financial markets”. Then Prof. Krzysztof Kułakowski provided “a new phase diagram with ordered, disordered and non-stationary phases” for the modified Axelrod model, while prof J. Hołyst taught us “the method to artificially prolong the duration of discussion that relies on inserting into dialogues appropriate comments” which was based on observation of “emotionally annotated massive data from IRC”. Prof. Czesław Mesjasz ensured us that “the impact of physics upon social sciences, including also economics, management and finance, has been one of decisive factors of development of the later”. Finally, prof. Jarosław Kwiapięń persuaded that “it seems indispensable to attempt to characterize complex systems by analyzing manifestations of their complexity based on empirical data, in order to find properties of such systems and, possible to derive some laws that could be universal or at least common to a large group of complex systems”. All abstracts of the conference talks are given on the conference home page www.science24.com/event/fens2012/.

The papers collected in this volume were written after the conference was over. They were thoroughly reviewed and corrected according to the feedback received. We hope you will appreciate the efforts of a team of authors, reviewers and publishers to produce high-quality papers.

Danuta Makowiec and Dorota Wejer

Editors of Proceedings

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