

Foreword to the Special Issue of Computational Economics on Complex Dynamics in Economics and Finance

Proceedings of the MDEF (Modelli Dinamici in Economia e Finanza) Workshop, Urbino 23rd–25th September 2010

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This special issue of *Computational Economics* contains a collection of refereed papers presented at the sixth MDEF Modelli Dinamici in Economia e Finanza (Dynamic Models in Economics and Finance) International Workshop held at the Department of Economics and Quantitative Methods of the University of Urbino, Italy, on the 23rd–25th of September, 2010.

Scientific meetings certainly derive their value from the scientific results presented during the formal sessions, the discussions after the conferences often leading to a comparison of different methods and results. However equally important is the atmosphere created amongst the participants during the breaks, dinners and other social events that afford them the opportunity to catch up with old acquaintances and to make new ones. During the six editions of MDEF, which has taken place every two years in Urbino since 2000, many collaborations have been established among the participants and several papers and books written as a result of such fruitful collaborations have been planned and developed thanks to these meetings, including some of the papers published in this special issue.

The sixth MDEF workshop was held two years after a severe global economic crisis, one turning out to be the worst since the 1930s, as has been widely commented. The crisis has not only had widespread influence on social and economic life in many

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countries, but also poses a challenge to what had developed as the mainstream economic consensus from about the mid-1970s. This challenge is highlighted by the fact that in order to manage the crisis policy makers in the major economies have had to adopt policies that run counter to the principal tenets of that mainstream orthodoxy. It therefore seemed very apposite against this backdrop to hold a workshop on issues devoted to complexity, nonlinearity and heterogeneity in economic science. Many of the papers presented at MDEF 2010 have taken up the challenge of proposing an alternative paradigm to the mainstream viewpoint.

The papers which appear in this issue deal with a number of different topical areas involving the application of concepts from the theory of nonlinear dynamical systems, from new kinds of dynamic models that describe the time evolution of financial markets with heterogeneous agents to evolutionary games used to model the nonlinear interactions between economic activities and the environment, as well as some classical topics like nonlinear oligopolies and overlapping generations models for the description of public provision of health investments or endogenous labour supply in the presence of credit market imperfections.

Such a wide spectrum of applications, as well as various mathematical methods used to analyse the corresponding models, are intended to bring together the different streams of the growing literature in this field. It is thereby our hope that this will stimulate further collaborations among researchers from different fields, through a fruitful trade-off between theoretical issues and applications. We hope furthermore that this special issue will help the reader to gain an entrée into the main topics in nonlinear dynamics applied to economics, finance and social sciences, as well as their recent advances.

Before ending this foreword, we wish to thank the various academic colleagues around the world who have provided prompt and insightful referee reports on all the papers that were submitted to this special issue. Thanks are particularly due to Ji Won (Stephanie) Ough who greatly assisted the editors in the collection and delivery of the papers, and all the anonymous referees who, with their serious and competent analysis of the manuscripts, helped the editors to enhance the quality of this special issue. We would also like to express special thanks to Professor Hans Amman, the Editor of *Computational Economics*, who facilitated the publication of the special issue and carefully guided the entire editorial process. Finally, we thank all the participants at MDEF 2010, whose efforts gave rise to a very interesting series of fruitful seminars, and who submitted to us so many interesting papers.