

New Economic Windows

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Econophysics of Agent-Based Models

 Springer

Econophysics of Agent-Based Models

New Economic Windows

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Preface

This proceedings volume is based on the conference on ‘Econophysics of Agent-based models’ held at Saha Institute of Nuclear Physics, Kolkata during November 8–12, 2012. Agent-based modeling is one of the most powerful tools, now being widely employed for understanding problems of market dynamics, leading on to very important developments in this area. In most conventional economic models, in order to keep them mathematically tractable, there is usually the ‘representative agent’, who is assumed to be ‘perfectly rational’ and uses the ‘utility maximization’ principle while taking action. There are not many tools available to economists for solving non-linear models of ‘heterogeneous adaptive agents.’ In this respect, the very flexible and diverse multi-agent models, which originate from statistical physics considerations, allow one to go beyond the prototype theories with the ‘representative agent’ in traditional economics.

The Econophys-Kolkata VII conference held last year (2012), the seventh event in this series of international conferences, was dedicated to address and discuss extensively these issues, approaches and the recent developments concerning agent-based models in Econophysics. This event was organized jointly by the École Centrale Paris, the Saha Institute of Nuclear Physics, with the addition of Kyoto University for the first time, and was held at the Saha Institute of Nuclear Physics, Kolkata.

This proceedings volume contains papers by distinguished experts from all over the world, mostly based on the talks and seminars delivered at the meeting, and accepted after refereeing. For completeness, a few articles by the experts who could not participate in the meeting due to unavoidable reasons, were also invited and incorporated in this volume.

These proceedings volume is organized as follows: A first section dedicated to “agent-based models” in the social sciences. A second section on “miscellaneous” presents other on-going studies in related areas on econophysics and sociophysics. We have included in the third section “discussions and commentary”, an extensive note on “evolution of econophysics” which had been intensively discussed during the conference and contributed informally, though significantly, by many formal participants. Two other shorter write-ups—a discussion and a critique on econophysics, arisen out of the various interesting and informal exchanges amongst the

participants that took place during the conference, have also been incorporated in this section.

We are grateful to all the participants of the meeting and for all their contributions. We are also grateful to Mauro Gallegati and the Editorial Board of the New Economic Windows series of the Springer-Verlag (Italy) for their support in getting this Proceedings volume published as well, in their esteemed series.¹

The conveners (editors) also express their thanks to Saha Institute of Nuclear Physics, École Centrale Paris and Kyoto University for their support in organizing this conference.

Châtenay-Malabry, France
 Kyoto, Japan
 Kolkata, India
 Châtenay-Malabry, France
 Kolkata, India
 May, 2013

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¹Past volumes:

1. Econophysics of systemic risk and network dynamics, Eds. F. Abergel, B.K. Chakrabarti, A. Chakraborti and A. Ghosh, New Economic Windows, Springer, Milan, 2013.
2. Econophysics of order-driven markets, Eds. F. Abergel, B.K. Chakrabarti, A. Chakraborti, M. Mitra, New Economic Windows, Springer, Milan, 2011.
3. Econophysics & economics of games, social choices and quantitative techniques, Eds. B. Basu, B.K. Chakrabarti, S.R. Chakravarty, K. Gangopadhyay, New Economic Windows, Springer, Milan, 2010.
4. Econophysics of markets and business networks, Eds. A. Chatterjee, B.K. Chakrabarti, New Economic Windows, Springer, Milan, 2007.
5. Econophysics of stock and other markets, Eds. A. Chatterjee, B.K. Chakrabarti, New Economic Windows, Springer, Milan, 2006.
6. Econophysics of wealth distributions, Eds. A. Chatterjee, S. Yarlagadda, B.K. Chakrabarti, New Economic Windows, Springer, Milan, 2005.

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