



Econophysics and Physical Economics

By Peter Richmond, Jürgen Mimkes, Stefan Hutzler

Download now

Read Online ➔

Econophysics and Physical Economics By Peter Richmond, Jürgen Mimkes, Stefan Hutzler

An understanding of the behaviour of financial assets and the evolution of economies has never been as important as today. This book looks at these complex systems from the perspective of the physicist. So called 'econophysics' and its application to finance has made great strides in recent years. Less emphasis has been placed on the broader subject of macroeconomics and many economics students are still taught traditional neo-classical economics.

The reader is given a general primer in statistical physics, probability theory, and use of correlation functions. Much of the mathematics that is developed is frequently no longer included in undergraduate physics courses. The statistical physics of Boltzmann and Gibbs is one of the oldest disciplines within physics and it can be argued that it was first applied to ensembles of molecules as opposed to being applied to social agents only by way of historical accident. The authors argue by analogy that the theory can be applied directly to economic systems comprising assemblies of interacting agents. The necessary tools and mathematics are developed in a clear and concise manner. The body of work, now termed econophysics, is then developed. The authors show where traditional methods break down and show how the probability distributions and correlation functions can be properly understood using high frequency data. Recent work by the physics community on risk and market crashes are discussed together with new work on betting markets as well as studies of speculative peaks that occur in housing markets.

The second half of the book continues the empirical approach showing how by analogy with thermodynamics, a self-consistent attack can be made on macroeconomics. This leads naturally to economic production functions being equated to entropy functions - a new concept for economists. Issues relating to non-equilibrium naturally arise during the development and application of this approach to economics. These are discussed in the context of superstatistics and adiabatic processes. As a result it does seem ultimately possible to reconcile the approach with non-equilibrium systems, and the ideas are applied to study income and wealth distributions, which with their power law distribution functions have puzzled many researchers ever since Pareto discovered them over 100 years ago. This book takes a pedagogical approach to these topics and is aimed at final year undergraduate and beginning graduate or post-graduate

students in physics, economics, and business. However, the experienced researcher and quant should also find much of interest.

 [Download Econophysics and Physical Economics ...pdf](#)

 [Read Online Econophysics and Physical Economics ...pdf](#)

Econophysics and Physical Economics

By Peter Richmond, Jurgen Mimkes, Stefan Hutzler

Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler

An understanding of the behaviour of financial assets and the evolution of economies has never been as important as today. This book looks at these complex systems from the perspective of the physicist. So called 'econophysics' and its application to finance has made great strides in recent years. Less emphasis has been placed on the broader subject of macroeconomics and many economics students are still taught traditional neo-classical economics.

The reader is given a general primer in statistical physics, probability theory, and use of correlation functions. Much of the mathematics that is developed is frequently no longer included in undergraduate physics courses. The statistical physics of Boltzmann and Gibbs is one of the oldest disciplines within physics and it can be argued that it was first applied to ensembles of molecules as opposed to being applied to social agents only by way of historical accident. The authors argue by analogy that the theory can be applied directly to economic systems comprising assemblies of interacting agents. The necessary tools and mathematics are developed in a clear and concise manner. The body of work, now termed econophysics, is then developed. The authors show where traditional methods break down and show how the probability distributions and correlation functions can be properly understood using high frequency data. Recent work by the physics community on risk and market crashes are discussed together with new work on betting markets as well as studies of speculative peaks that occur in housing markets.

The second half of the book continues the empirical approach showing how by analogy with thermodynamics, a self-consistent attack can be made on macroeconomics. This leads naturally to economic production functions being equated to entropy functions - a new concept for economists. Issues relating to non-equilibrium naturally arise during the development and application of this approach to economics. These are discussed in the context of superstatistics and adiabatic processes. As a result it does seem ultimately possible to reconcile the approach with non-equilibrium systems, and the ideas are applied to study income and wealth distributions, which with their power law distribution functions have puzzled many researchers ever since Pareto discovered them over 100 years ago. This book takes a pedagogical approach to these topics and is aimed at final year undergraduate and beginning graduate or post-graduate students in physics, economics, and business. However, the experienced researcher and quant should also find much of interest.

Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler **Bibliography**

- Sales Rank: #1026853 in Books
- Published on: 2013-12-01
- Original language: English
- Number of items: 1
- Dimensions: 7.00" h x .90" w x 9.70" l, 1.55 pounds
- Binding: Hardcover
- 272 pages

 [**Download** Econophysics and Physical Economics ...pdf](#)

 [**Read Online** Econophysics and Physical Economics ...pdf](#)

Editorial Review

Review

"The authors present a novel approach to modern economic theory informed by empirical observations and ideas from physics, and in particular complex systems. Comprehensive in scope, and written in an engaging style, the text will be essential reading for students and researchers in the field." - Geoff J. Rodgers, Brunel University

"Adapting physics to understand economical problems may help us to develop new financial models. Science can help to change the world, not merely interpret it." - Ian Gibson, MP Norwich North, 1997-2009, Chair of House of Commons Science and Technology Committee 2001-2005, School of Biological Sciences, University of East Anglia 1965 - 1997

"This book is the result of a unique joint effort by three very complementary authors. The result of their cooperation is a down to earth and practical text which, at the same time, offers a mathematically sound exposition of how ideas based in physics help our understanding of finance and economic dynamics. It is a significant contribution to the task of introducing new scientific methods, concepts and ideas to the study of economies." - Sorin Solomon, Racah Institute of Physics, Hebrew University of Jerusalem

"This book discusses intriguing analogies between physical and economical phenomena. In fact, methodologies borrowed from physics were crucial for the development of economical models in the past, e.g. non-equilibrium statistical physics opened the gate for the financial derivative pricing. The book may catalyze a broader discussion among economists and physicists about roots of the current economical crisis and ways the global economy should be stabilized." - Janusz Hołyst, Warsaw University of Technology, Poland

About the Author

Peter Richmond, *Professor of Physics, Department of Physics, Trinity College Dublin*, Jurgen Mimkes, *Professor of Physics, Paderborn University*, Stefan Hutzler, *Associate Professor of Physics, Department of Physics, Trinity College Dublin*

Peter Richmond studied physics at Queen Mary College, University of London. His career included periods in academia including the Institute of Advanced Studies, ANU Canberra, and the Physics Laboratories, University of Kent. Most recently, in particular during the period spanning the volatile financial era from 1997-2007 and the great housing crash, he was with the School of Physics, Trinity College Dublin. During this period he introduced new research activity concerned with econophysics and gave a course on the

subject to final year undergraduates. From 2003-2012 he was chair of two major concerted actions spanning 26 countries across Europe and sponsored by COST; 'Physics of Risk' (2003-2007) and 'Physics of Cooperation and Conflict' (2008-2012). He holds a DSc from the University of London and is a Fellow of the UK Institute of Physics. His publications cover aspects of condensed matter physics, colloids, econophysics, and sociophysics.

Jurgen Mimkes studied physics at Georgia Augusta University, Gottingen and the Free University Berlin from 1959 to 1967. After a postdoctoral position at the University of Missouri, Rolla, USA he was Assistant Professor in solid-state thermodynamics at the Technical Universities in both Berlin and Clausthal. From 1977 to retirement in 2004, he was Professor of Physics at the University of Paderborn. He has held visiting appointments in College Park, Maryland, and Chuo University, Tokyo.

Stefan Hutzler studied physics at the Universitat Regensburg, Germany, and the University of Reading, UK. In 1997 he obtained his PhD from Trinity College Dublin, Ireland, where he is now Associate Professor in the School of Physics. He is also a Fellow of the College. His research interests are the physics of foams, packing problems, and complex systems. He has co-authored over 100 publications in these areas, including 'The Physics of Foams' (together with Prof. Denis Weaire), published by Oxford University Press in 1999.

Users Review

From reader reviews:

Grace McClellan:

The book with title Econophysics and Physical Economics has a lot of information that you can understand it. You can get a lot of gain after read this book. This particular book exist new know-how the information that exist in this reserve represented the condition of the world today. That is important to yo7u to understand how the improvement of the world. That book will bring you with new era of the glowbal growth. You can read the e-book on your smart phone, so you can read the item anywhere you want.

Willie Dreher:

This Econophysics and Physical Economics is great e-book for you because the content that is full of information for you who also always deal with world and possess to make decision every minute. That book reveal it information accurately using great coordinate word or we can point out no rambling sentences within it. So if you are read this hurriedly you can have whole info in it. Doesn't mean it only offers you straight forward sentences but tricky core information with lovely delivering sentences. Having Econophysics and Physical Economics in your hand like getting the world in your arm, details in it is not ridiculous one particular. We can say that no guide that offer you world with ten or fifteen small right but this publication already do that. So , this really is good reading book. Hi Mr. and Mrs. stressful do you still doubt that?

Paul Quintana:

As a pupil exactly feel bored in order to reading. If their teacher expected them to go to the library in order to make summary for some e-book, they are complained. Just minor students that has reading's heart and soul or real their interest. They just do what the professor want, like asked to the library. They go to presently

there but nothing reading significantly. Any students feel that reading is not important, boring in addition to can't see colorful pictures on there. Yeah, it is to be complicated. Book is very important for yourself. As we know that on this time, many ways to get whatever we want. Likewise word says, many ways to reach Chinese's country. So , this Econophysics and Physical Economics can make you truly feel more interested to read.

Wanda Hardin:

Publication is one of source of knowledge. We can add our information from it. Not only for students but also native or citizen will need book to know the up-date information of year in order to year. As we know those guides have many advantages. Beside many of us add our knowledge, also can bring us to around the world. By book Econophysics and Physical Economics we can take more advantage. Don't you to be creative people? To be creative person must prefer to read a book. Simply choose the best book that suited with your aim. Don't possibly be doubt to change your life by this book Econophysics and Physical Economics. You can more pleasing than now.

**Download and Read Online Econophysics and Physical Economics
By Peter Richmond, Jurgen Mimkes, Stefan Hutzler
#F9SL8MCJQZX**

Read Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler for online ebook

Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler books to read online.

Online Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler ebook PDF download

Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler Doc

Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler Mobipocket

Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler EPub

F9SL8MCJQZX: Econophysics and Physical Economics By Peter Richmond, Jurgen Mimkes, Stefan Hutzler