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### KEY=ECONOMY - ISABEL ADRIENNE

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#### COMPUTATIONAL MODELS IN POLITICAL ECONOMY

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MIT Press The use of innovative computational models in political economic research as a complement to traditional analytical methodologies. Researchers are increasingly turning to computational methods to study the dynamic properties of political and economic systems. Politicians, citizens, interest groups, and organizations interact in dynamic, complex environments, and the static models that are predominant in political economy are limited in capturing fundamental features of economic decision making in modern democracies. Computational models--numerical approximations of equilibria and dynamics that cannot be solved analytically--provide useful insight into the behavior of economic agents and the aggregate properties of political systems. They serve as a valuable complement to existing mathematical tools. This book offers some of the latest research on computational political economy. The focus is on theoretical models of traditional problems in the field. Each chapter presents an innovative model of interaction between economic agents. Topics include voting behavior, candidate position taking, special interest group contributions, macroeconomic policy making, and corporate decision making.

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#### HANDBOOK OF COMPUTATIONAL ECONOMICS

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#### AGENT-BASED COMPUTATIONAL ECONOMICS

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Elsevier The explosive growth in computational power over the past several decades offers new tools and opportunities for economists. This handbook volume surveys recent research on Agent-based Computational Economics (ACE), the computational study of economic processes modeled as dynamic systems of interacting agents. Empirical referents for "agents" in ACE models can range from individuals or social groups with learning capabilities to physical world features with no cognitive function. Topics covered include: learning; empirical validation; network economics; social dynamics; financial markets; innovation and technological change; organizations; market design; automated markets and trading agents; political economy; social-ecological systems; computational laboratory development; and general methodological issues. \*Every volume contains contributions from leading researchers \*Each Handbook presents an accurate, self-contained survey of a particular topic \*The series provides comprehensive and accessible surveys

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#### COMPUTATIONAL FINANCE 1999

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MIT Press This book covers the techniques of data mining, knowledge discovery, genetic algorithms, neural networks, bootstrapping, machine learning, and Monte Carlo simulation. Computational finance, an exciting new cross-disciplinary research area, draws extensively on the tools and techniques of computer science, statistics, information systems, and financial economics. This book covers the techniques of data mining, knowledge discovery, genetic algorithms, neural networks, bootstrapping, machine learning, and Monte Carlo simulation. These methods are applied to a wide range of problems in finance, including risk management, asset allocation, style analysis, dynamic trading and hedging, forecasting, and option pricing. The book is based on the sixth annual international conference Computational Finance 1999, held at New York University's Stern School of Business.

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#### COMPUTATIONAL MACROECONOMICS FOR THE OPEN ECONOMY

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Mit Press How to use nonlinear dynamic models in policy analysis. Policymakers need quantitative as well as qualitative answers to pressing policy questions. Because of advances in computational methods, quantitative estimates are now derived from coherent nonlinear dynamic macroeconomic models embodying measures of risk and calibrated to capture specific characteristics of real-world situations. This text shows how such models can be made accessible and operational for confronting policy issues. The book starts with a simple setting based on market-clearing price flexibility. It gradually incorporates departures from the simple competitive framework in the form of price and wage stickiness, taxes, rigidities in investment, financial frictions, and habit persistence in consumption. Most chapters end with computational exercises; the Matlab code for the base model can be found in the appendix. As the models evolve, readers are encouraged to modify the codes from the first simple model to more complex extensions. Computational Macroeconomics for the Open Economy can be used by graduate students in economics and finance as well as policy-oriented researchers.

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#### THE ART OF FAILURE

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#### AN ESSAY ON THE PAIN OF PLAYING VIDEO GAMES

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MIT Press An exploration of why we play video games despite the fact that we are almost certain to feel unhappy when we fail at them. We may think of video games as being "fun," but in *The Art of Failure*, Jesper Juul claims that this is almost entirely mistaken. When we play video games, our facial expressions are rarely those of happiness or bliss. Instead, we frown, grimace, and shout in frustration as we lose, or die, or fail to advance to the next level. Humans may have a fundamental desire to succeed and feel competent, but game players choose to engage in an activity in which they are nearly certain to fail and feel incompetent. So why do we play video games even though they make us unhappy? Juul examines this paradox. In video games, as in tragic works of art, literature, theater, and cinema, it seems that we want to experience unpleasantness even if we also dislike it. Reader or audience reaction to tragedy is often explained as catharsis, as a purging of negative emotions. But, Juul points out, this doesn't seem to be the case for video game players. Games do not purge us of unpleasant emotions; they produce them in the first place. What, then, does failure in video game playing do? Juul argues that failure in a game is unique in that when you fail in a game, you (not a character) are in some way inadequate. Yet games also motivate us to play more, in order to escape that inadequacy, and the feeling of escaping failure (often by improving skills) is a central enjoyment of games. Games, writes Juul, are the art of failure: the singular art form that sets us up for failure and allows us to experience it and experiment with it. *The Art of Failure* is essential reading for anyone interested in video games, whether as entertainment, art, or education.

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#### COMPUTATIONAL AND MATHEMATICAL MODELING IN THE SOCIAL SCIENCES

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Cambridge University Press Offers an overview of mathematical modeling concentrating on game theory, statistics and computational modeling.

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#### THE OXFORD HANDBOOK OF PHILOSOPHY OF SOCIAL SCIENCE

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Oxford University Press The philosophy of the social sciences considers the underlying explanatory powers of the social (or human) sciences, such as history, economics, anthropology, politics, and sociology. The type of questions covered includes the methodological (the nature of observations, laws, theories, and explanations) to the ontological -- whether or not these sciences can explain human nature in a way consistent with common-sense beliefs. This Handbook is a major, comprehensive look at the key ideas in the field, is guided by several principles. The first is that the philosophy of social science should be closely connected to, and informed by, developments in the sciences themselves. The second is that the volume should appeal to practicing social scientists as well as philosophers, with the contributors being both drawn from both ranks, and speaking to ongoing controversial issues in the field. Finally, the volume promotes connections across the social sciences, with greater internal discussion and interaction across disciplinary boundaries.

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#### THE OXFORD HANDBOOK OF POLITICAL METHODOLOGY

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Oxford University Press Political methodology has changed dramatically over the past thirty years, and many new methods and techniques have been developed. Both the Political Methodology Society and the Qualitative/Multi-Methods Section of the American Political Science Association have engaged in ongoing research and training programs that have advanced quantitative and qualitative methodology. The Oxford Handbook of Political Methodology presents and synthesizes these developments. The Handbook provides comprehensive overviews of diverse methodological approaches, with an emphasis on three major themes. First, specific methodological tools should be at the service of improved conceptualization, comprehension of meaning, measurement, and data collection. They should increase analysts' leverage in reasoning about causal relationships and evaluating them empirically by contributing to powerful research designs. Second, the authors explore the many different ways of addressing these tasks: through case-studies and large-n designs, with both quantitative and qualitative data, and via techniques ranging from statistical modelling to process tracing. Finally, techniques can cut across traditional methodological boundaries and can be useful for many different kinds of researchers. Many of the authors thus explore how their methods can inform, and be used by, scholars engaged in diverse branches of methodology.

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#### INTERNATIONAL ENCYCLOPEDIA OF POLITICAL SCIENCE

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SAGE Publications Request a FREE 30-day online trial to this title at [www.sagepub.com/freetrial](http://www.sagepub.com/freetrial) With entries from leading international scholars from around the world, this eight-volume encyclopedia offers the widest possible coverage of key areas both regionally and globally. The International Encyclopedia of Political Science provides a definitive, comprehensive picture of all aspects of political life, recognizing the theoretical and cultural pluralism of our approaches and including findings from the far corners of the world. The eight volumes cover every field of politics, from political theory and methodology to political sociology, comparative politics, public policies, and international relations. Entries are arranged in alphabetical order, and a list of entries by subject area appears in the front of each volume for ease of use. The encyclopedia contains a detailed index as well as

extensive bibliographical references. Filling the need for an exhaustive overview of the empirical findings and reflections on politics, this reference resource is suited for undergraduate or graduate students who wish to be informed effectively and quickly on their field of study, for scholars seeking information on relevant research findings in their area of specialization or in related fields, and for lay readers who may lack a formal background in political science but have an interest in the field nonetheless. The International Encyclopedia of Political Science provides an essential, authoritative guide to the state of political science at the start of the 21st century and for decades to come, making it an invaluable resource for a global readership, including researchers, students, citizens, and policy makers. The encyclopedia was developed in partnership with the International Political Science Association. Key Themes: Case and Area Studies Comparative Politics, Theory, and Methods Democracy and Democratization Economics Epistemological Foundations Equality and Inequality Gender and Race/Ethnicity International Relations Local Government Peace, War, and Conflict Resolution People and Organizations Political Economy Political Parties Political Sociology Public Policy and Administration Qualitative Methods Quantitative Methods Religion

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#### **SPINNING THE SEMANTIC WEB**

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#### **BRINGING THE WORLD WIDE WEB TO ITS FULL POTENTIAL**

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MIT Press A guide to the Semantic Web, which will transform the Web into a structured network of resources organized by meaning and relationships.

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#### **DEMOCRATIC POLITICS AND PARTY COMPETITION**

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Routledge This new book introduces innovative research on democracy from the leading Comparative Manifestos Project (CMP). It details the key achievements of the project to date, illustrates how its findings may be applied, lays out the future challenges it faces and examines how the field as a whole can advance. It also presents a special assessment of the dimensionality of party competition, presenting ways in which research can be extended and related to broader approaches in Political Science and Theory. Although CMP research is widely used and constitutes the major comparative data set on party positions and ideological location, it is also subject to challenge. The volume therefore provides the reader with a clear sense of the key debates and questions surrounding its work. This volume also honours the life-time achievement of Professor Ian Budge, who has provided distinguished intellectual leadership for the CMP over the last twenty-five years. This is an essential point of reference for all comparative research on the functioning of democracies. This book will be of great interest to all students and scholars of politics and of democracy in particular.

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#### **SOCIAL COMPUTING, BEHAVIORAL MODELING, AND PREDICTION**

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Springer Science & Business Media Social computing concerns the study of social behavior and context based on computational systems. Behavioral modeling reproduces the social behavior, and allows for experimenting with and deep understanding of behavior, patterns, and potential outcomes. The pervasive use of computer and Internet technologies provides an unprecedented environment where people can share opinions and experiences, offer suggestions and advice, debate, and even conduct experiments. Social computing facilitates behavioral modeling in model building, analysis, pattern mining, anticipation, and prediction. The proceedings from this interdisciplinary workshop provide a platform for researchers, practitioners, and graduate students from sociology, behavioral and computer science, psychology, cultural study, information systems, and operations research to share results and develop new concepts and methodologies aimed at advancing and deepening our understanding of social and behavioral computing to aid critical decision making.

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#### **QUANTITATIVE BIOLOGY**

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#### **THEORY, COMPUTATIONAL METHODS, AND MODELS**

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MIT Press An introduction to the quantitative modeling of biological processes, presenting modeling approaches, methodology, practical algorithms, software tools, and examples of current research. The quantitative modeling of biological processes promises to expand biological research from a science of observation and discovery to one of rigorous prediction and quantitative analysis. The rapidly growing field of quantitative biology seeks to use biology's emerging technological and computational capabilities to model biological processes. This textbook offers an introduction to the theory, methods, and tools of quantitative biology. The book first introduces the foundations of biological modeling, focusing on some of the most widely used formalisms. It then presents essential methodology for model-guided analyses of biological data, covering such methods as network reconstruction, uncertainty quantification, and experimental design; practical algorithms and software packages for modeling biological systems; and specific examples of current quantitative biology research and related specialized methods. Most chapters offer problems, progressing from simple to complex, that test the reader's mastery of such key techniques as deterministic and stochastic simulations and data analysis. Many chapters include snippets of code that can be used to recreate analyses and generate figures related to the text. Examples are presented in the three popular computing languages: Matlab, R, and Python. A variety of online resources supplement the text. The editors are long-time organizers of the Annual q-bio Summer School, which was founded in 2007. Through the school, the editors have helped to train more than 400 visiting students in Los Alamos, NM, Santa Fe, NM, San Diego, CA, Albuquerque, NM, and Fort Collins, CO. This book is inspired by the school's curricula, and most of the contributors have participated in the school as students, lecturers, or both. Contributors John H. Abel, Roberto Bertolusso, Daniela Besozzi, Michael L. Blinov, Clive G. Bowsher, Fiona A. Chandra, Paolo Cazzaniga, Bryan C. Daniels, Bernie J. Daigle, Jr., Maciej Dobrzynski, Jonathan P. Doye, Brian Drawert, Sean Fancer, Gareth W. Fearnley, Dirk Fey, Zachary Fox, Ramon Grima, Andreas Hellander, Stefan Hellander, David Hofmann, Damian Hernandez, William S. Hlavacek, Jianjun Huang, Tomasz Jetka, Dongya Jia, Mohit Kumar Jolly, Boris N. Kholodenko, Markek Kimmel, Michal Komorowski, Ganhui Lan, Heeseob Lee, Herbert Levine, Leslie M. Loew, Jason G. Lomnitz, Ard A. Louis, Grant Lythe, Carmen Molina-París, Ion I. Moraru, Andrew Mugler, Brian Munsky, Joe Natale, Ilya Nemenman, Karol Nienaltowski, Marco S. Nobile, Maria Nowicka, Sarah Olson, Alan S. Perelson, Linda R. Petzold, Sreenivasan Ponnambalam, Arya Pourzanjani, Ruy M. Ribeiro, William Raymond, William Raymond, Herbert M. Sauro, Michael A. Savageau, Abhyudai Singh, James C. Schaff, Boris M. Slepchenko, Thomas R. Sokolowski, Petr Šulc, Andrea Tangherloni, Pieter Rein ten Wolde, Philipp Thomas, Karen Tkach Tuzman, Lev S. Tsimring, Dan Vasilescu, Margaritis Voliotis, Lisa Weber

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#### **INTRODUCTION TO COMPUTATION AND PROGRAMMING USING PYTHON, SECOND EDITION**

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#### **WITH APPLICATION TO UNDERSTANDING DATA**

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MIT Press The new edition of an introductory text that teaches students the art of computational problem solving, covering topics ranging from simple algorithms to information visualization. This book introduces students with little or no prior programming experience to the art of computational problem solving using Python and various Python libraries, including PyLab. It provides students with skills that will enable them to make productive use of computational techniques, including some of the tools and techniques of data science for using computation to model and interpret data. The book is based on an MIT course (which became the most popular course offered through MIT's OpenCourseWare) and was developed for use not only in a conventional classroom but in a massive open online course (MOOC). This new edition has been updated for Python 3, reorganized to make it easier to use for courses that cover only a subset of the material, and offers additional material including five new chapters. Students are introduced to Python and the basics of programming in the context of such computational concepts and techniques as exhaustive enumeration, bisection search, and efficient approximation algorithms. Although it covers such traditional topics as computational complexity and simple algorithms, the book focuses on a wide range of topics not found in most introductory texts, including information visualization, simulations to model randomness, computational techniques to understand data, and statistical techniques that inform (and misinform) as well as two related but relatively advanced topics: optimization problems and dynamic programming. This edition offers expanded material on statistics and machine learning and new chapters on Frequentist and Bayesian statistics.

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#### **THE OXFORD HANDBOOK OF COMPUTATIONAL ECONOMICS AND FINANCE**

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Oxford University Press The Oxford Handbook of Computational Economics and Finance provides a survey of both the foundations of and recent advances in the frontiers of analysis and action. It is both historically and interdisciplinarily rich and also tightly connected to the rise of digital society. It begins with the conventional view of computational economics, including recent algorithmic development in computing rational expectations, volatility, and general equilibrium. It then moves from traditional computing in economics and finance to recent developments in natural computing, including applications of nature-inspired intelligence, genetic programming, swarm intelligence, and fuzzy logic. Also examined are recent developments of network and agent-based computing in economics. How these approaches are applied is examined in chapters on such subjects as trading robots and automated markets. The last part deals with the epistemology of simulation in its trinity form with the integration of simulation, computation, and dynamics. Distinctive is the focus on natural computationalism and the examination of the implications of intelligent machines for the future of computational economics and finance. Not merely individual robots, but whole integrated systems are extending their "immigration" to the world of Homo sapiens, or symbiogenesis.

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#### **MODELING AND VISUALIZATION OF COMPLEX SYSTEMS AND ENTERPRISES**

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#### **EXPLORATIONS OF PHYSICAL, HUMAN, ECONOMIC, AND SOCIAL PHENOMENA**

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John Wiley & Sons This book explains multi-level models of enterprise systems and covers modeling methodology. Presents a 10 step methodology for addressing questions associated with the design or operation of complex systems and enterprises Examines six archetypal enterprise problems including two from healthcare, two from urban systems, and one each from financial systems and defense systems Provides an introduction to the nature of complex systems, historical perspectives on complexity and complex adaptive systems, and the evolution of systems practice

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#### **REASSEMBLING SCHOLARLY COMMUNICATIONS**

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#### **HISTORIES, INFRASTRUCTURES, AND GLOBAL POLITICS OF OPEN ACCESS**

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MIT Press A range of perspectives on the complex political, philosophical, and pragmatic implications of opening research and scholarship through digital technologies. The Open Access Movement proposes to remove price and permission barriers for accessing peer-reviewed research work--to use the power of the internet to duplicate material at an

infinitesimal cost-per-copy. In this volume, contributors show that open access does not exist in a technological vacuum; there are complex political, philosophical, and pragmatic implications for opening research through digital technologies. The contributors examine open access across spans of colonial legacies, knowledge frameworks, publics and politics, archives and digital preservation, infrastructures and platforms, and global communities.

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#### REVISITING HAYEK'S POLITICAL ECONOMY

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Emerald Group Publishing Volume 21 of *Advances in Austrian Economics* exemplifies this focus by highlighting key research from the Austrian tradition of economics with other research traditions in economics and related areas.

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#### HANDBOOK OF COMPUTATIONAL ECONOMICS

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Newnes Handbook of Computational Economics summarizes recent advances in economic thought, revealing some of the potential offered by modern computational methods. With computational power increasing in hardware and algorithms, many economists are closing the gap between economic practice and the frontiers of computational mathematics. In their efforts to accelerate the incorporation of computational power into mainstream research, contributors to this volume update the improvements in algorithms that have sharpened econometric tools, solution methods for dynamic optimization and equilibrium models, and applications to public finance, macroeconomics, and auctions. They also cover the switch to massive parallelism in the creation of more powerful computers, with advances in the development of high-power and high-throughput computing. Much more can be done to expand the value of computational modeling in economics. In conjunction with volume one (1996) and volume two (2006), this volume offers a remarkable picture of the recent development of economics as a science as well as an exciting preview of its future potential. Samples different styles and approaches, reflecting the breadth of computational economics as practiced today Focuses on problems with few well-developed solutions in the literature of other disciplines Emphasizes the potential for increasing the value of computational modeling in economics

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#### COMPUTATIONAL ECONOMICS

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##### A CONCISE INTRODUCTION

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Routledge Computational Economics: A concise introduction is a comprehensive textbook designed to help students move from the traditional and comparative static analysis of economic models, to a modern and dynamic computational study. The ability to equate an economic problem, to formulate it into a mathematical model and to solve it computationally is becoming a crucial and distinctive competence for most economists. This vital textbook is organized around static and dynamic models, covering both macro and microeconomic topics, exploring the numerical techniques required to solve those models. A key aim of the book is to enable students to develop the ability to modify the models themselves so that, using the MATLAB/Octave codes provided on the book and on the website, students can demonstrate a complete understanding of computational methods. This textbook is innovative, easy to read and highly focused, providing students of economics with the skills needed to understand the essentials of using numerical methods to solve economic problems. It also provides more technical readers with an easy way to cope with economics through modelling and simulation. Later in the book, more elaborate economic models and advanced numerical methods are introduced which will prove valuable to those in more advanced study. This book is ideal for all students of economics, mathematics, computer science and engineering taking classes on Computational or Numerical Economics.

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#### AGENT-BASED COMPUTATIONAL ECONOMICS USING NETLOGO

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Bentham Science Publishers Agent-based Computational Economics using NetLogo explores how researchers can create, use and implement multi-agent computational models in Economics by using NetLogo software platform. Problems of economic science can be solved using multi-agent modelling (MAM). This technique uses a computer model to simulate the actions and interactions of autonomous entities in a network, in order to analyze the effects on the entire economic system. MAM combines elements of game theory, complex systems, emergence and evolutionary programming. The Monte Carlo method is also used in this e-book to introduce random elements. The 11 models presented in this text simulate the simultaneous operations of several agents in an attempt to recreate and predict complex economic phenomena. This e-book explains the topic in a systematic manner, starting with an introduction for readers followed subsequently by methodology and implementation using NetLogo. The volume ends with conclusions based on the results of the experiments presented. The e-book is intended as a concise and vital resource for economists, applied mathematicians, social sciences scientists, systems analysts, operations researchers and numerical analysts

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#### EVOLUTIONARY COMPUTATION IN ECONOMICS AND FINANCE

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Physica After a decade's development, evolutionary computation (EC) proves to be a powerful tool kit for economic analysis. While the demand for this equipment is increasing, there is no volume exclusively written for economists. This volume for the first time helps economists to get a quick grasp on how EC may support their research. A comprehensive coverage of the subject is given, that includes the following three areas: game theory, agent-based economic modelling and financial engineering. Twenty leading scholars from each of these areas contribute a chapter to the volume. The reader will find himself treading the path of the history of this research area, from the fledgling stage to the burgeoning era. The results on games, labour markets, pollution control, institution and productivity, financial markets, trading systems design and derivative pricing, are new and interesting for different target groups. The book also includes informations on web sites, conferences, and computer software.

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#### ANALYTICAL POLITICAL ECONOMY

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John Wiley & Sons Offering a unique picture of recent developments in a range of non-conventional theoretical approaches in economics, this book introduces readers to the study of Analytical Political Economy and the changes within the subject. Includes a wide range of topics and theoretical approaches that are critically and thoroughly reviewed Contributions within the book are written according to the highest standards of rigor and clarity that characterize academic work Provides comprehensive and well-organized surveys of cutting-edge empirical and theoretical work covering an exceptionally wide range of areas and fields Topics include macroeconomic theories of growth and distribution; agent-based and stock-flow consistent models; financialization and Marxian price and value theory Investigates exploitation theory; trade theory; the role of expectations and 'animal spirits' on macroeconomic performance as well as empirical research in Marxian economics

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#### THE SAGE HANDBOOK OF COMPARATIVE POLITICS

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SAGE Editors Landman and Robinson have compiled an excellent tour d'horizon of comparative politics. Distinguished contributors explore theoretical and methodological issues as well as examine the critical substantive domains that animate today's comparativists. Graduate students and academics will want to keep this volume on their book shelf - Professor Mark Irving Lichbach, University of Maryland 'The SAGE Handbook of Comparative Politics is a major new resource for scholars of comparative politics, and of political science more generally. The Handbook covers the field with admirable thoroughness, but does not sacrifice depth for breadth. The chapters are written by notable scholars who provide rich discussions of their topics, and help to move the sub-discipline forward' - B. Guy Peters, Professor, University of Pittsburgh The SAGE Handbook of Comparative Politics presents; in one volume, an authoritative overview of the theoretical, methodological and substantive elements of comparative political science. The 28 specially commissioned chapters, written by renowned comparative scholars, guide the reader through the central issues and debates, presenting a state-of-the-art guide to the past, present and possible futures of the field. The Handbook is divided into three parts. The first considers comparative methodologies and reviews the interactions between various sub-fields of comparative politics: political economy; political sociology; area studies; international relations; and institutional analysis. The second section examines nine 'classic' issues of concern to comparativists, including government formation, political behaviour and democratization. In the final section, nine new and emerging areas of comparative research are considered, such as terrorism, electoral corruption, human rights and regional integration. The SAGE Handbook of Comparative Politics is an essential resource for researchers in political science, political sociology, political economy, international relations, area studies and all other fields with a comparative political dimension.

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#### HETEROGENEOUS AGENT MODELING

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Elsevier Handbook of Computational Economics: Heterogeneous Agent Modeling, Volume Four, focuses on heterogeneous agent models, emphasizing recent advances in macroeconomics (including DSGE), finance, empirical validation and experiments, networks and related applications. Capturing the advances made since the publication of Volume Two (Tesfatsion & Judd, 2006), it provides high-level literature with sections devoted to Macroeconomics, Finance, Empirical Validation and Experiments, Networks, and other applications, including Innovation Diffusion in Heterogeneous Populations, Market Design and Electricity Markets, and a final section on Perspectives on Heterogeneity. Helps readers fully understand the dynamic properties of realistically rendered economic systems Emphasizes detailed specifications of structural conditions, institutional arrangements and behavioral dispositions Provides broad assessments that can lead researchers to recognize new synergies and opportunities

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#### EBOOK: ECONOMICS & MANAGEMENT

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McGraw Hill EBOOK: ECONOMICS & MANAGEMENT

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#### SOCIAL COMPUTING, BEHAVIORAL-CULTURAL MODELING AND PREDICTION

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#### 7TH INTERNATIONAL CONFERENCE, SBP 2014, WASHINGTON, DC, USA, APRIL 1-4, 2014. PROCEEDINGS

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Springer This book constitutes the refereed proceedings of the 7th International Conference on Social Computing, Behavioral-Cultural Modeling, and Prediction, SBP 2014, held in Washington, DC, USA, in April 2014. The 51 full papers presented were carefully reviewed and selected from 101 submissions. The SBP conference provides a forum for researchers and practitioners from academia, industry, and government agencies to exchange ideas on current challenges in social computing, behavioral-cultural modeling and prediction, and on state-of-the-art methods and best practices being adopted to tackle these challenges. The topical areas addressed by the papers are social and behavioral sciences, health

sciences, military science, and information science.

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#### MACROECONOMICS FROM THE BOTTOM-UP

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Springer Science & Business Media This book arose from our conviction that the NNS-DSGE approach to the analysis of aggregate market outcomes is fundamentally flawed. The practice of overcoming the SMD result by recurring to a fictitious RA leads to insurmountable methodological problems and lies at the root of DSGE models' failure to satisfactorily explain real world features, like exchange rate and banking crises, bubbles and herding in financial markets, swings in the sentiment of consumers and entrepreneurs, asymmetries and persistence in aggregate variables, and so on. At odds with this view, our critique rests on the premise that any modern macroeconomy should be modeled instead as a complex system of heterogeneous interacting individuals, acting adaptively and autonomously according to simple and empirically validated rules of thumb. We call our proposed approach Bottom-up Adaptive Macroeconomics (BAM). The reason why we claim that the contents of this book can be inscribed in the realm of macroeconomics is threefold: i) We are looking for a framework that helps us to think coherently about the interrelationships among two or more markets. In what follows, in particular, three markets will be considered: the markets for goods, labor and loanable funds. In this respect, real time matters: what happens in one market depends on what has happened, on what is happening, or on what will happen in other markets. This implies that intertemporal coordination issues cannot be ignored. ii) Eventually, it's all about prices and quantities. However, we are mostly interested in aggregate prices and quantities, that is indexes built from the dispersed outcomes of the decentralized transactions of a large population of heterogeneous individuals. Each individual acts purposefully, but she knows anything about the levels of prices and quantities which clear markets in the aggregate. iii) In the hope of being allowed to purport scientific claims, BAM relies on the assumption that individual purposeful behaviours aggregates into regularities. Macro behaviour, however, can depart radically from what the individual units are trying to accomplish. It is in this sense that aggregate outcomes emerge from individual actions and interactions.

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#### POLITICAL ECONOMY OF TRANSITION AND DEVELOPMENT

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##### INSTITUTIONS, POLITICS AND POLICIES

Springer Science & Business Media Political Economy of Transition and Development collects the proceedings of an international conference that brought the leading thinkers in this field to the Center for European Integration Studies of the University of Bonn in May, 2002. The contributions analyze the various interactions between institutions, policy choices, economic developments, and political outcomes in transition and developing countries. The first five chapters give a relatively broad assessment of the various reform paths and outcomes in the transition and developing countries. The remaining eight chapters proceed to analyze important aspects of transition such as voting behavior, political-regime choice, corruption, social capital, growth and inequality, and EU enlargement. The resulting volume thus combines a bird's eye perspective with a relatively narrow focus on selected key issues pertaining to the ongoing transition process in Central and Eastern Europe.

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#### ECONOMIC GROWTH

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##### THEORY AND NUMERICAL SOLUTION METHODS

Springer Science & Business Media This is a book on deterministic and stochastic Growth Theory and the computational methods needed to produce numerical solutions. Exogenous and endogenous growth models are thoroughly reviewed. Special attention is paid to the use of these models for fiscal and monetary policy analysis. Modern Business Cycle Theory, the New Keynesian Macroeconomics, the class of Dynamic Stochastic General Equilibrium models, can be all considered as special cases of models of economic growth, and they can be analyzed by the theoretical and numerical procedures provided in the textbook. Analytical discussions are presented in full detail. The book is self contained and it is designed so that the student advances in the theoretical and the computational issues in parallel. EXCEL and Matlab files are provided on an accompanying website to illustrate theoretical results as well as to simulate the effects of economic policy interventions.

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#### AGENT-BASED COMPUTATIONAL ECONOMICS

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##### HOW THE IDEA ORIGINATED AND WHERE IT IS GOING

Routledge This book aims to answer two questions that are fundamental to the study of agent-based economic models: what is agent-based computational economics and why do we need agent-based economic modelling of economy? This book provides a review of the development of agent-based computational economics (ACE) from a perspective on how artificial economic agents are designed under the influences of complex sciences, experimental economics, artificial intelligence, evolutionary biology, psychology, anthropology and neuroscience. This book begins with a historical review of ACE by tracing its origins. From a modelling viewpoint, ACE brings truly decentralized procedures into market analysis, from a single market to the whole economy. This book also reviews how experimental economics and artificial intelligence have shaped the development of ACE. For the former, the book discusses how ACE models can be used to analyse the economic consequences of cognitive capacity, personality and cultural inheritance. For the latter, the book covers the various tools used to construct artificial adaptive agents, including reinforcement learning, fuzzy decision rules, neural networks, and evolutionary computation. This book will be of interest to graduate students researching computational economics, experimental economics, behavioural economics, and research methodology.

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#### MINDS, MODELS AND MILIEUX

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##### COMMEMORATING THE CENTENNIAL OF THE BIRTH OF HERBERT SIMON

Springer This book is a collection of specially-commissioned chapters from philosophers, economists, political and behavioral economists, cognitive and organizational psychologists, computer scientists, sociologists and permutations thereof as befits the polymathic subject of this book: Herbert Simon. The tripartite of the title, Minds, Models and Milieux, connotes the three inextricably linked areas to which Herbert Simon made the most distinguished of contributions. 'Minds' connotes Simon's abiding interest in theorizing human behavior, rationality, and decision-making; 'Models' connotes his extensive computer simulation work in the service of his interest in understanding minds, but also in the service of minds that are situated in a complex social 'Milieux'. This collection while intended to commemorate the centenary of Simon's birth simultaneously offers a timely reassessment of some of his central insights and illustrates the exponentially growing interest in Simon's work from beyond the usual disciplines and constituencies.

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#### THE NEW PALGRAVE DICTIONARY OF ECONOMICS

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Springer The award-winning The New Palgrave Dictionary of Economics, 2nd edition is now available as a dynamic online resource. Consisting of over 1,900 articles written by leading figures in the field including Nobel prize winners, this is the definitive scholarly reference work for a new generation of economists. Regularly updated! This product is a subscription based product.

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#### PUBLIC ECONOMICS

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##### THE MACROECONOMIC PERSPECTIVE

Springer Today, the most pressing challenges for public economics are of macroeconomic nature: pensions, debt, income distribution, and fiscal sustainability. All these problems are compounded by the phenomenon of demographic transition and aging. This graduate textbook addresses these issues with the help of state-of-the-art macroeconomic tools that are based on a sound microfoundation and rooted in empirical evidence. Different from the standard partial-equilibrium analysis in traditional textbooks on public economics, the concept of general equilibrium helps to account for compensating or amplifying side-effects of economic policy. GAUSS and MATLAB computer code as well as teaching material (slides) are available as downloads from the author's homepage.

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#### THE ROUTLEDGE COMPANION TO PHILOSOPHY OF SCIENCE

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Routledge The Routledge Companion to Philosophy of Science is an indispensable reference source and guide to the major themes, debates, problems and topics in philosophy of science. It contains sixty-two specially commissioned entries by a leading team of international contributors. Organized into four parts it covers: historical and philosophical context debates concepts the individual sciences. The Routledge Companion to Philosophy of Science addresses all of the essential topics.

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#### COMPLEX SYSTEMS IN FINANCE AND ECONOMETRICS

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Springer Science & Business Media Finance, Econometrics and System Dynamics presents an overview of the concepts and tools for analyzing complex systems in a wide range of fields. The text integrates complexity with deterministic equations and concepts from real world examples, and appeals to a broad audience.

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#### MODELING ENVIRONMENT-IMPROVING TECHNOLOGICAL INNOVATIONS UNDER UNCERTAINTY

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Routledge The issues of technology and uncertainty are very much at the heart of the policy debate of how much to control greenhouse gas emissions. The costs of doing so are present and high while the benefits are very much in the future and, most importantly, they are highly uncertain. Whilst there is broad consensus on the key elements of climate change science and agreement that near-term actions are needed to prevent dangerous anthropogenic interference with the climate system, there is little agreement on the costs and benefits of climate policy. The book looks at different ways of reconciling the needs for sustainability and equity with the costs of action now. Presenting a compendium of methodologies for evaluating the economic impact of technological innovation upon climate-change policy, this book describes mathematical models and their predictions. The goal is to provide a practitioner's guide for doing the science of economics and climate change. Because the assumptions motivating different problems in the economics of climate change have different complexities, a number of models are presented with varying levels of difficulty: reduced-form and structural, partial- and general-equilibrium, closed-form and computational. A unifying theme of these models is the incorporation of a number of price and quantity instruments and an analysis of their respective efficacies. This book

presents models that contain structural uncertainty, i.e., uncertainty that economic agents respond to via their risk attitudes. The novelty of this book is to relate the effects of risk and risk attitudes to environment-improving technological innovation.

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**MULTI-AGENT APPLICATIONS WITH EVOLUTIONARY COMPUTATION AND BIOLOGICALLY INSPIRED TECHNOLOGIES: INTELLIGENT TECHNIQUES FOR UBIQUITY AND OPTIMIZATION**

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**INTELLIGENT TECHNIQUES FOR UBIQUITY AND OPTIMIZATION**

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IGI Global "This book compiles numerous ongoing projects and research efforts in the design of agents in light of recent development in neurocognitive science and quantum physics, providing readers with interdisciplinary applications of multi-agents systems, ranging from economics to engineering"--Provided by publisher.

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**RETHINKING ENVIRONMENTAL JUSTICE IN SUSTAINABLE CITIES**

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**INSIGHTS FROM AGENT-BASED MODELING**

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Routledge As the study of environmental policy and justice becomes increasingly significant in today's global climate, standard statistical approaches to gathering data have become less helpful at generating new insights and possibilities. None of the conventional frameworks easily allow for the empirical modeling of the interactions of all the actors involved, or for the emergence of outcomes unintended by the actors. The existing frameworks account for the "what," but not for the "why." Heather E. Campbell, Yushim Kim, and Adam Eckerd bring an innovative perspective to environmental justice research. Their approach adjusts the narrower questions often asked in the study of environmental justice, expanding to broader investigations of how and why environmental inequities occur. Using agent-based modeling (ABM), they study the interactions and interdependencies among different agents such as firms, residents, and government institutions. Through simulation, the authors test underlying assumptions in environmental justice and discover ways to modify existing theories to better explain why environmental injustice occurs. Furthermore, they use ABM to generate empirically testable hypotheses, which they employ to check if their simulated findings are supported in the real world using real data. The pioneering research on environmental justice in this text will have effects on the field of environmental policy as a whole. For social science and policy researchers, this book explores how to employ new and experimental methods of inquiry on challenging social problems, and for the field of environmental justice, the authors demonstrate how ABM helps illuminate the complex social and policy interactions that lead to both environmental justice and injustice.

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**WARMING THE WORLD**

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**ECONOMIC MODELS OF GLOBAL WARMING**

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MIT Press This book presents in detail a pair of models of the economics of climate change. The models, called RICE-99 (for the Regional Dynamic Integrated model of Climate and the Economy) and DICE-99 (for the Dynamic Integrated Model of Climate and the Economy) build on the authors' earlier work, particularly their RICE and DICE models of the early 1990s. Humanity is risking the health of the natural environment through a myriad of interventions, including the atmospheric emission of trace gases such as carbon dioxide, the use of ozone-depleting chemicals, the engineering of massive land-use changes, and the destruction of the habitats of many species. It is imperative that we learn to protect our common geophysical and biological resources. Although scientists have studied greenhouse warming for decades, it is only recently that society has begun to consider the economic, political, and institutional aspects of environmental intervention. To do so raises formidable challenges of data modeling, uncertainty, international coordination, and institutional design. Attempts to deal with complex scientific and economic issues have increasingly involved the use of models to help analysts and decision makers understand likely future outcomes as well as the implications of alternative policies. This book presents in detail a pair of models of the economics of climate change. The models, called RICE-99 (for the Regional Dynamic Integrated model of Climate and the Economy) and DICE-99 (for the Dynamic Integrated Model of Climate and the Economy) build on the authors' earlier work, particularly their RICE and DICE models of the early 1990s. They can help policy makers design better economic and environmental policies.