Sasser (standing), Naylor (seated)

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Duke University

Computer simulation of economic systems
...an example model

EARL SASSER is a research associate with the Econometric System
Simulation Program at Duke University. He received his under-
graduate degree in mathematics from Duke University and his
MBA from the University of North Carolina. At present he is a
candidate for the PhD degree in Economics at Duke University.

Mr. Sasser was formerly employed by West Virginia Pulp and
Paper Company, Charleston, South Carolina, in the commercial
analysis department. He still maintains his contact with industry
as a part-time management consultant.

During the summer of 1966 Mr. Sasser and Professor W. H.
Wallace of ESSP devoted their time to developing an econo-
metric model of the U. S. textile industry. Mr. Sasser is now con-
ducting simulation experiments with this model to test the effects
of various managerial and governmental policy decisions on the
behavior of the textile industry.

THOMAS H. NAYLOR, Associate Professor of Economics and
co-director of the Econometric System Simulation Program at
Duke University, received a BS degree in mathematics from Mill-
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his PhD in economics at Tulane University. Before joining the
faculty at Duke where he teaches econometrics, operations re-
search, and mathematical economics, he was an instructor in the
School of Business Administration at Tulane. He has also worked
for Sun Oil Company, International Paper Company, and Dow
Chemical Company.

Dr. Naylor is coauthor of *Computer Simulation Techniques*
published by John Wiley & Sons in 1966, as well as a number of
papers related to the economic theory of the form and design
of simulation experiments. He is currently engaged in a project
entitled "The Design of Computer Simulation Experiments for
Economic Systems" which is supported by the National Science
Foundation. Dr. Naylor is a member of the Institute of Manage-
ment Sciences, the Econometric Society, the American Economic
Association, the American Statistical Association, and SCi.

INTRODUCTION

With the publication in recent years of such important
works as Cyert and March's[8] behavioral models of the
firm, Cohen's[7] computer model of the shoe, leather, hide
sequence, Orcutt's[20] demographic model of the United
States, and the *Brookings-SSRC Quarterly Econometric
Model of the United States*[5], the potential of computer
simulation as a tool of economic analysis has become in-
creasingly evident. The objective of this paper is to provide
a rationale for the use of computer simulation in eco-
nomics and to outline a general methodology for planning
and implementing computer simulation experiments with
economic systems. With the aid of an example model we
shall describe the actual process of simulating an eco-
nomic system—paying particular attention to the tech-
niques used, problems encountered, and results obtained.
This will be followed by a cursory description of several
existing computer simulation models of economic sys-
tems. By indicating the wide spectrum of previous applica-
tions, we hope to increase the reader's awareness of the
potential uses of simulation in economics.

A RATIONALE FOR COMPUTER SIMULATION

For our purposes, we shall define simulation as a numeri-
cal technique for conducting experiments on certain types
of mathematical and logical models describing the be-
havior of an economic system (or some component there-
of) on a digital computer over extended periods of real
time.

In general, the principal motivation for using simulation
in economics is the pursuit of scientific knowledge about
the behavior of economic systems. When applied to eco-

Computer Simulation Experiments With Models Of Economic Systems

Thomas H. Naylor, James M. Boughton

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models In addition it is a valuable reference book and a road map for software developers and quality assurance experts or as a text for simulation methodology and software engineering courses This book details useful assessment procedures and phases discusses ways to tailor the methodology for specific situations and objectives and provides numerous assessment aids The reader can use these aids to support ongoing assessments over the entire life cycle of the model A Survey of Agricultural Economics Literature Lee R. Martin,1977 **Selected Issues in Experimental Economics** Kesra Nermend,Małgorzata Łatuszyńska,2016-03-24 The aim of this volume is to provide deep insights and the latest scientific developments and trends in experimental economics Derived from the 2015 Computational Methods in Experimental Economics CMEE conference this book features papers containing research and analysis of economic experiments concerning research in such areas as management science decision theory game theory marketing and political science The goal is to present possibilities for using various computer methods in the scope of experimental economics to further provide researchers with a wide variety of tools The field of experimental economics is rapidly evolving Modern use of experimental economics requires the integration of knowledge in the domains of economic sciences computer science psychology and neuroscience Recent research includes experiments conducted both in the laboratory and in the field and the results are used for testing and a better understanding of economic theories Researchers working in this field use mainly a set of well established methods and computer tools that support the experiments Methods such as artificial intelligence computer simulation and computer graphics however are not represented enough in experimental economics studies and most experimenters do not consider their usage The goal of the conference and the enclosed papers is to allow for an exchange of experiences and to promote joint initiatives to insight change in this trend *10th European Conference on Information Systems Management* Paulo Silva,António Guerreiro,Rui Quaresma,2016 **Global Systems Dynamics** E. O. Attinger,1970-10-15 *Mathematical Economics and Operations Research* Joseph Zaremba,1978 A Survey of Statistical Design and Linear Models Jagdish Narain Srivastava,1975 This book comprises of papers presented at an International Symposium on Statistical Design and Linear Models held in Colorado 1973 **Proceedings** American Institute for Decision Sciences. Meeting,1973 *Modeling and Simulation* ,1980 A Key Sector of Indian Economy Rajesh Chadha,1989 **Proceedings of the Business and Economic Statistics Section** American Statistical Association. Business and Economic Statistics Section,1966 **NBS Special Publication** ,1968 **Simulation Using GPSS.** University of Michigan. Engineering Summer Conferences,1982 *Econometric Models, Techniques, and Applications* Michael D. Intriligator,Ronald G. Bodkin,Cheng Hsiao,1996 This book surveys the theories techniques model building and data collection and applications of econometrics KEY TOPICS It focuses on those aspects of econometrics that are of major importance to readers and researchers interested in performing evaluating or understanding econometric studies in a variety of areas It reviews matrix notation and the use of multivariate statistics discusses the specification of the model and the development of

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web aug 31 2018   i want to solve the 1 d heat transfer equation in matlab with an insulator heat flux dt dx 0 t zero at left boundary condition and temperature at the right boundary t l t is zero and initial temperature 20 degree centigrade and length of the rod is 0 2m and thermal diffusivity alpha 0 001 by explicit finite difference method

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