Thomas Naylor

COMPUTER SIMULATION EXPERIMENTS WITH MODELS OF ECONOMIC SYSTEMS

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The main aim of this study is to tackle the aspects linked with the computer simulation of the models of economic systems, full attention being granted to the experimental side.

Notions of simulation in general and notions of simulation directly linked with the models of economic systems are given in the first two chapters. Thus, it is considered that the computer simulation experiment of the models of economic systems consists of six steps, respectively: the statement of the problem, the formulation of the mathematical model, the formulation of the programme for the computer, the validation, the experiment designing and the data analysis.

Then, follow two chapters containing examples of various types of models, respectively in the third chapter — models of the science of management; models with expectation lines, models of stocks, production models, marketing models, financial models, operational games and in the fourth chapter — models of enterprise and of industrial enterprises as well as macroeconomic models.

The following chapters refer to methodological problems for whose exemplification figures are presented and real simulation experiments are examined. Thus, in the fifth and sixth chapters, the author is dealing with problems of validation and designing of the computer experiment, including among other things optimizing problems, sample dimensions, multiple answer, nonlinearity and convergence.

Chapters seven to nine refer to data analysis, respectively the dispersion analysis, the sequential analysis and spectral analysis, figures being given in these cases as well.

The following three chapters comprise a very interesting debate based on the present and future development of the methodological problems. The debate tackles the reduction of dispersion, stopping rules and comparisons between analytical and simulation solutions for solving economic models. Stress is laid on simulation as an instrument of models validation and as an instrument of economic analysis.

Finally, the last two chapters analyse three experiments of typical simulation, in the case of the U.S.A economy, for an econometric model in the tobacco industry, an econometric model for establishing the effect of various diagrams for the allocations of funds for educational purposes and a model of the financial system of the U.S.A.

This book contains at the end three very useful annexes.

The first annex contains generators of pseudorandom numbers.

The second annex refers to the generation of random variables (with a continuous probability distribution and with a discrete probability distribution). The third annex contains generalities about simula-

tion languages, about programming concepts in simulation and examples of special simulation languages: SIMSCRIPT II, SIMULA, CSL, GPSS /360 are further given. The future development of the simulation languages is also considered.

To cover the book, the reader must have some knowledge of differential and integral calculus of mathematical statistics and of computer programming.

R. Boconcios