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Attractors, bifurcations, and chaos. Nonlinear phenomena in economics. (English)

Zbl 0942.91001

Berlin: Springer. xii, 507 p. (2000).

This book consists of four mathematical chapters on nonlinear dynamics, more precisely on ordinary, partial differential and difference equations, bifurcation and catastrophe, and eight chapters devoted to nonlinear phenomena in economics. These chapters treat monopoly, duopoly and oligopoly, business cycles (in continuous and discrete time, and continuous space), dynamics of interregional trade and development (increasing complexity, multiple attractors).

The mathematical background is written in an introductory level making use of several examples, and is meant also for self-study by economics students, however the book is not designed as a textbook.

Some economic applications stem from a previous book of the same author [Nonlinear economic dynamics. 4th ed., Berlin.: Springer (1997; Zbl 0931.91024)]. Other applications are new, e.g. economic pattern formation in the geographical space economy. Some emphasis is put on perturbation methods. The concepts of complexity, catastrophe, chaotic behavior, fractals, attractors are discussed within specific economic development models. This book can be useful as a reference for several nonlinear economic models analyzed by mathematical tools from nonlinear dynamics theory.

Reviewer: [T.Zolezzi \(Genova\)](#)

MSC:

- [91-02](#) Research exposition (monographs, survey articles) pertaining to game theory, economics, and finance
- [37-02](#) Research exposition (monographs, survey articles) pertaining to dynamical systems and ergodic theory
- [37D45](#) Strange attractors, chaotic dynamics of systems with hyperbolic behavior
- [37N40](#) Dynamical systems in optimization and economics
- [91B62](#) Economic growth models

Cited in **35** Documents

Keywords:

[nonlinear dynamics](#); [bifurcation](#); [catastrophe](#); [nonlinear phenomena in economics](#); [oligopoly](#); [dynamics of interregional trade and development](#)