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Abstract

This book serves as an introduction to game theory for economists. The content of the book covers all areas of the theory that an economics student needs to know. Specifically, it presents non-cooperative and cooperative games, static and dynamic games, games with complete/perfect and incomplete/imperfect information, bargaining games, and their applications in economics. The introduction of the book discusses the significance of game theory, its historical development, and its current position within the field of economics. The main analysis begins with static, non-cooperative games with complete information. The fundamental mathematical framework is analyzed, and the basic solution concepts are presented, with the primary focus on Nash equilibrium. Numerous applications from the economic sciences are provided. Next, the analysis moves to games with incomplete information and introduces Bayes-Nash equilibrium. Applications in auctions, oligopolistic competition, etc., are given. Following this, extensive form games, repeated games, and their solution methods are analyzed, focusing on dynamic games with perfect information. The book then presents the theory of cooperative games. The fundamental mathematical framework is analyzed, and the main solution concepts of such games, such as the core and the Shapley value, are presented. Applications of the theory in economics and political science are provided. Subsequently, the theory of negotiations is analyzed. Both the axiomatic theory (Nash bargaining solution, Kalai-Smorodinski solution, etc.) and the non-cooperative theory (Rubinstein bargaining model) are presented. Emphasis is placed on the relationship between the two approaches to bargaining theory and their applications to economic problems. The book concludes with an analysis of dynamic games with incomplete information, emphasizing signaling games.