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Matrix analysis of Cournot game: perspective of algorithmic game theory and game econometrics. (Chinese. English summary) Zbl 07448754

Summary: For solving the application needs of Cournot game in business practice and economic empirical analysis, this paper constructs the matrix analysis framework of Cournot game system. In the aspect of system setup, the demand of consumers for products and the supply of products by producers are no longer required to be homogeneous. In the aspect of system solution, the strategy matrix of the game process and the equilibrium matrix of the game result are derived. In the aspect of system analysis, after relaxing the excessive and harsh assumptions of the classical model, this model is more explanatory and general than the classical model, and the classical model becomes a special case of this model. In the aspect of system application, this paper provides matrix algorithm of strategy selection for firms participating in Cournot game from the perspective of algorithm game theory of business intelligence. It provides matrix model to estimate market structure parameters for researchers of quantitative analysis of Cournot game from game econometrics of empirical industrial organization theory.

MSC:
91A68 Algorithmic game theory and complexity
91B54 Special types of economic markets (including Cournot, Bertrand)

Keywords:
Cournot game; matrix analysis; algorithmic game theory; game econometrics; business intelligence