

論文内容の要旨

論文題目 Theoretical and Experimental Analysis on Efficiency and Rationality
(効率性及び合理性に関する理論的、実験的分析)

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In economics, efficiency and rationality are important concepts. This thesis provides theoretical and experimental analysis on these concepts.

The first chapter provides a general view of overall chapters.

The second chapter studies how one forward-looking player plays an important role on efficiency of overall society. Concretely, this chapter studies a simple evolutionary model of local interaction with one forward-looking player and many myopic players. Myopic players are positioned along a circle, and each myopic player interacts with his two immediate neighbors and the forward-looking player. The stage game played during each period is a 2×2 symmetric coordination game in which each myopic player plays a strategy identical to that played by two or three of his neighbors in the previous period. If the forward-looking player is sufficiently patient, efficient equilibrium is uniquely selected as the long-run stochastically stable state. Furthermore, we derive the waiting time for reaching each equilibrium, which clarifies that, when the population is large, efficient equilibrium is still more persistent in the network with the forward-looking player, while it is not in the network without the forward-looking player.

Studies in the third and fourth chapters concern rationality of human beings in the strategic environment. In economic theory and game theory, players are assumed to be rational. However, deviation from the theory is often observed in many laboratory experiments. In the third and fourth chapters, we address the question how the degree of rationality of human beings changes in various laboratory settings. In particular, our interest is how the behaviors of human beings who play two-person zero-sum games in the laboratory are close to or far from the implications of minimax solutions which is one of the most important solution concepts in game theory.

The third chapter reports the experimental results in which the subjects are asked to play repeatedly a two-person zero-sum game with time intervals between decision makings. The purpose of this chapter is to assess whether time intervals between decision makings have the effect that enable subjects to randomize their actions, which is the implications of minimax solution. We consider three kinds of time intervals. Our experimental results show that there is no positive evidence such that these time intervals between decision makings have the effect that reduce the serial dependence in choices. Rather, subject's choices in the treatment with the time intervals are more dependent on the past event than those in the treatment without the time intervals.

In the fourth chapter, the behaviors of two-person teams and individuals who play a two-person zero-sum game in the laboratory experiment are analysed. Teams are more rational than individuals, and the behaviors of teams are as much rational as those of professional sports players. This implies that there is a substantial advantage to forming a team in this strategic environment, and this is a strong evidence that the rationality of professionals can be explained to some extent by the advantage of team play. Furthermore, teams are more rational than those with no communication which are defined as simple averages of choices of two individuals, indicating that communication with a teammate generates positive synergies in team play.