In this talk information collecting (IC) situations and games (cf. Branzei et al., 2001 (a, b); Tijs et al., 2001) are central. They model decision-making situations where the outcome of any decision depends on the state of nature and the decision-maker is imperfectly informed. Collecting information from available agents who are more informed about the situation creates the potential for better decisions. More refined information to support the decision-making process yields, in principle, additional reward which is the source of compensating the informants. Different procedures for collecting information have given rise to natural compensation rules in the context of cooperative game theory. Relevant for the class of information collecting games are marginal-based compensation rules and bi-monotonic allocation schemes.

The state space and the action space in an IC-situation can be infinite. We consider possibilities of approximating such an IC-situation with a finite IC-situation where the state space and the action space are finite and we relate the original IC-game with the IC-games of finite approximations. The considered approximations turn out to be good in the sense that the corresponding games are nearby. So, continuity properties of relevant solutions for the class of IC-games are interesting. We compare relevant solutions such as the core, the set of bi-monotonic allocation schemes and marginal-based allocation rules of the approximate game with those of the original game, extending results from Lucchetti et al. (1987).

The procedures for discretizing the state space (going from an infinite state space to a finite one) and for reducing the dimension of the action space are basic ingredients for efficient algorithms to compute the compensation shares of the informants.

A decision support system (DSS) is designed to assist the decision-maker in selecting the procedural approach to collecting information and, consequently, to choose the desired compensation rule to be implemented.


References


