Power indices, claims games and core selection

Summary

Both cooperative and noncooperative games are studied in this thesis. We investigate the power of players in cooperative games depending on the issues at stake, and the positions of players in marriage problems in Chapters 2 and 3, respectively. Chapter 4 considers resolving the Nash equilibria and subgame perfect equilibria in sequential claim games. Core selection is studied via a sequence of associated games in Chapter 5.

Closely inspired by the work of Owen and Shapley [50] on spatial games, Chapter 2 studies issue games. Power indices are then defined by weight vectors on the set of issues. Chapter 3 deals with the power indices of matching problems based on two kinds of 'effectivity functions'. The main parts of Chapters 2 and 3 are devoted to axiomatic characterizations of classes of power indices.

In Chapter 4 sequential claim games are considered, in which players sequentially put claims on an estate in a given order. Each part of the estate is then divided proportionally with respect to the number of claims on it. Our main results are, first, that under an additional restriction on strategies, myopic play is a Nash equilibrium; and, second, by including punishments for deviators, myopic play can also be turned into a subgame perfect equilibrium.

Chapter 5 defines a sequence of associated games to optimize the core of a transferable utility game. As the cores of the associated games are increasingly stable, the last one of the nonempty cores in this sequence is the final optimized set.