

Fuzzy voting games and power indices

Fabien Lange
Óbuda University

Abstract

We propose a model of fuzzy voting games, where each member of an assembly of n players can display a gradual membership in any coalition. This membership may represent the probability or the belief that the player takes part to the coalition. Consequently, a fuzzy coalition is represented by a vector with coordinates in the interval $[0, 1]$, and a fuzzy game is a mapping over all possible fuzzy coalitions. However, for a given bill, such a game has only two possible outputs for every coalition, namely, 1 or 0, depending on whether the coalition passes the bill or not, following the example of classical voting games. In this talk, we take an interest to weighted fuzzy voting games, which are a generalization of classical weighted games. We examine possible definitions of power indices for these games which are consistent regarding the expected power of the voters. In particular, we work out a generalization of the Shapley-Shubik power index having some rational properties.