ABSTRACT

This thesis deals with outside options and centrality in cooperative
games. First, the question whether outside options actually matter is
investigated by a pilot experiment using glove games to model simple
negotiation situations. The finding that outside options *do* matter is
followed by the question of whether cooperative allocation rules can
be supported by the data. Motivated by this experimental finding, a
probabilistic cooperative forecasting model is used in theoretical sup-
port of the importance of outside options. Outside options are for-
malized and suitable axioms for a categorization into outside-option-
sensitive and -insensitive allocation rules are suggested and applied.
During this categorization it turns out that there is only one outsi-
de-option-sensitive allocation rule within the framework of networks.
This and further issues arising from the analysis of the forecasting
model lead to a deeper anaylsis of networks, especially the issue of
centrality and power indices. A new approach for centrality measures
and power indices is suggested which is based on the idea that not
only the failure of a whole node is of interest, but rather the failure
of a certain link. Axiomatic characterizations, a political application
analyzing the performance for forecasting government formation and
an application on centrality analyzing identification of top key nodes
are provided. While existing cooperative allocation rules either lack
sensitivity to outside options or ignore the difference in centralities
of agents, a combination possibility of the previously analyzed issues
follows. A new (axiomatically characterized) allocation rule for net-
work structures accounting for both outside options and centrality is
provided, enriched with an (axiomatically characterized) alternative
variant being more suitable for applications in political networks due
to moderate relative proportions and applicability in presence of in-
compatibilities. By the analysis of the explicit effect of outside options
on these new allocation rules it is found that this effect is more com-
plex for link-based allocation than for player-based allocation which
finally provides a deep and detailed understanding of outside options
and their effects.