

# Power, control and coalition formation

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## Propositions

1. Given an  $n$ -player apex game, the core of the hedonic coalition formation game based on the Shapley value or the normalized Banzhaf value is empty (Corollary 2.4.12). However, the grand coalition is core stable with respect to the Banzhaf value.
2. Given a proper monotonic simple game and a continuous, individually rational bargaining solutions, there is a power configuration, specifying for each player in each coalition his power, which is stable with respect to renegotiations (Theorem 3.2.7). For the egalitarian bargaining solution the power configuration is unique, if the weight of marginal contributions in the disagreement points is strictly positive.
3. If the weight of marginal contributions in the disagreement points is zero, for each stable power configuration as in Proposition 2 there is an internally stable coalition which will not be unilaterally left by any player (Theorem 3.3.3).
4. Given any mutual control structure, repeated application of elementary substitutions leads to a unique invariant mutual control structure which does not depend on the order of substitutions.
5. A power index exhibits the paradox of smaller coalitions (Shenoy, 1975) if and only if it exhibits the paradox of new players (Brams, 1975).
6. Each strongly monotonic power index (Definition 2.2.5) exhibits the paradox of smaller coalitions on any proper monotonic simple game with a winning coalitions which does not only contain veto players and null players. A necessary but not sufficient condition to avoid the paradox is that the set of minimal winning coalitions is balanced.
7. Given a TU game and the egalitarian bargaining solution, there are claim functions such that a payoff configuration which is stable with respect to renegotiations coincides with Shapley value.
8. In a Cournot Oligopoly with symmetric players the Lerner market power index of all players in the Nash equilibrium might be independent of or even increase in the number of players.