

An Owen Value for Cooperative Games with Pairwise a Priori Incompatibilities

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Abstract : A game with a priori incompatibilities is a triple (N,v,g) where (N,v) is a cooperative game, and (N,g) is a graph which establishes initial incompatibilities between some players. In these games, the negotiation has two stages. In the first stage, players can only negotiate with others with whom they are compatible. In the second stage, the grand coalition will be formed. We introduce a value for these games. Given a game with a priori incompatibility (N,v,g) , we consider the family of coalitions without incompatibility relations among their players. This family is a normal set system or coalition configuration Ig . Therefore, we can assign to each game with a priori incompatibilities (N,v,g) a game with coalition configuration (N,v, Ig) . Now, in order to obtain a payoff vector for (N,v,g) , it suffices to calculate a payoff vector for (N,v, Ig) . To this end, we apply a value for games with coalition configuration. In our case, we will use the dual configuration value, which has been studied in the literature. With this method, we obtain a value for games with a priori incompatibilities, which is called the Owen value for a priori incompatibilities. We provide a characterization of this value.

Keywords : cooperative game, game with coalition configuration, graph, independent set, Owen value, Shapley value

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