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A new axiomatization of the Shapley-solidarity value for games with a coalition structure

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Abstract: In this paper, we propose a new kind of players as a compromise between the null player and the A-null player. It turns out that the axiom requiring this kind of players to get zero-payoff together with the well-known axioms of efficiency, additivity, coalitional symmetry, and intra-coalitional symmetry characterize the Shapley-solidarity value. This way, the difference between the Shapely-solidarity value and the Owen value is pinpointed to just one axiom.

Key words: Transferable utility cooperative game, coalition structure, Shapley-solidarity value, Owen value.

Mathematics Subject Classification: 91A06, 91A12.

1 Introduction

Recently, Calvo and Gutiérrez [4] proposed the Shapely-solidarity value for transferable utility cooperative games with a coalition structure (henceforth CS-TU games) [1]. As the name suggests, this value is a combination of the Shapley value [17] and the solidarity value [18]. It is defined in the same two-step procedure as the Owen value [15]. First, all a priori unions play a quotient game and get its payoff according to the Shapley value. And then, all players belonging to the same union play an induced game [15] and get its payoff according to the solidarity value.

The Shapely-solidarity value shares many axioms with the Owen value, such

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