A Voluntary Participation Game through a Unit-by-Unit Cost Share Mechanism of a Non-Excludable Public Good

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Abstract

The strategic analysis of voluntary participation in the public good provision has shown two distinct results. First, when the provision of public goods is binary, there are Nash equilibria supporting efficient allocations, and these are Strong Nash equilibria of the game. On the other hand, in the model of a continuous public good, Saijo and Yamato (1999, Journal of Economic Theory) showed that the participation of all agents is not an equilibrium in many situations. This paper considers the provision of a public good that is discrete and multi-unit, and considers a unit-by-unit participation game. Namely, people are asked to participate in each unit of public good provision, and those who chose to participate share the marginal cost of public good. In this game of public good provision, unlike the case of Saijo-Yamato, there are subgame-perfect equilibria that are Pareto efficient. We also use the refinement concepts to eliminate inefficient subgame-perfect equilibria and also to characterize the efficient subgame-perfect equilibria.

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