

The replacement principle for the provision of multiple public goods on tree networks

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Abstract

We study the problem of providing two public goods on tree networks, in which each agent has a single-peaked preference. We show that if the number of agents is at least four, then there exists no social choice rule that satisfies *efficiency* and *replacement-dominance*. In fact, it is shown that these two properties are incompatible even if agents' preferences are restricted to a smaller domain of symmetric single-peaked preferences. On the other hand, for rules on an interval, we prove that Miyagawa's (2001) characterization that only the left-peaks rule and the right-peaks rule satisfy these two properties also holds on the domain of symmetric single-peaked preferences. Moreover, if agents' peak locations are restricted to either the nodes or the endpoints of trees, rules exist on a subclass of trees. We provide a characterization of a family of such rules.

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Keywords: Single-peaked preferences; Public goods; Pareto efficiency; Replacement-dominance; Trees.

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