A claims problem associated with international river management

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Abstract

We analyze a claims problem applied to the sharing water model proposed by Ambec and Sprumont (2002, Journal of Economic Theory 107, 453-462). Unlike the Ambec and Sprumont model, the present water model describes a situation where a river flows through several states with water shortage that is derived from endowments and minimal amounts of water to save people in each state. In the water claims problem, each state has a claim to benefit derived from its usage of waters. First, we show a unique downstream incremental distribution, which is the solution in the Ambec and Sprumont model. Next, we axiomatize the family of convex combinations of the proportional and equal awards rules for water claims problems. Finally, under a situation where the family of convex combinations of these rules is employed, we give a necessary and sufficient condition under which the downstream incremental distribution is emerged as the outcome chosen by the majority voting.

Keywords: international river; claims problems; axiomatization; proportional rules; equal awards rules; majority voting

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