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Cost sharing in electricity transmission grid. (English) ⟦Zbl 1185.91057⟧
Petrosjan, Leon (ed.) et al., Game theory and applications XIII. Selected papers based on the presentations at the 3rd Pan-Pacific conference on game theory, Beijing, China, October 20–22, 2006. New York, NY: Nova Science Publishers (ISBN 978-1-60456-297-2/hbk). 17-29 (2008).

From the introduction: The lack of appropriate pricing or regulatory policies on transmission infrastructures induce serious incentive consequences, most notably the network congestions and/or under provision of transmission capacity due to inappropriate property rights allocations. In a separate paper [*B. Dong, Y. Wang* and *L. Zhang*, "Surplus sharing in electric power transmission market – a comparison of selected cooperative and noncooperative methods", UIBE (2006)], comparison of different solutions including average sharing, Shapley-Shubik mechanism, Aumann-Shapley pricing, serial cost sharing, dual serial cost sharing methods, and Cournot equilibrium is given.

The current paper aims to fill this gap by considering lines as players and introducing a new sharing rule to better characterize electricity transmission situations. In this paper, we still take serial approach but consider the case in which the returns of the technology is increasing. We point out that in this case an alternative serial rule should be used. We propose an dual-serial rule which is more conceivable than the serial rule in the case of concave cost function (increasing returns). This rule enjoys the same normative properties but does not have the similar strategic properties of the serial rule of *H. Moulin* and *S. Shenker* [J. Econ. Theory 64, No. 1, 178–201 (1994; Zbl 0811.90008)].

For the entire collection see [Zbl 1181.91008].

MSC:

91A43   Games involving graphs
91A44   Games involving topology, set theory, or logic