

The Core and Nucleolus Allocations in a Public Goods Economy with Taxation

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Abstract

In this paper, we study a public goods economy with a certain tax system to finance public goods.

In this economy, coalitions are allowed to levy a tax upon the complementary coalitions according to the tax system and to improve current allocations under a rule restricting the resulting allocations. The core of this economy is the set of all allocations where no coalition can improve through the tax system and the rule. The nucleolus allocation of this economy is one that can be obtained by minimizing the coalitional excess lexicographically, which is an analogy of the nucleolus of TU-coalitional games. And, the coalitional excess in this economy is also defined in an analogous way to that of TU-coalitional games, in terms of a coalitional net wealth given by the allocation. This coalitional wealth may vary according to the tax system and the restriction on the level of the public goods to be provided.

The purpose of this paper is to show that the nonempty core is equal to the set of nucleolus allocations in the public goods economy with taxation. We also show a sufficient condition for the core to be nonempty.