

The analysis of accounting standards with cooperative game theory

–Depreciation game

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Abstract

This study develops a model that explains why accounting standards, known as Generally Accepted Accounting Principles, are "generally accepted". We focus on depreciation, for which multiple accounting procedures are permitted, and examine the reasons and conditions for acceptance of these procedures with cooperative game theory. We found that the solution concept of core works for explaining the rationality of existing practices. Cost allocations given by the straight-line method, which is conventionally used all over the world, are always in the core. On the other hand, cost allocations given by the fair value measurement, which has been recently supported by the International Accounting Standards Board (IASB), are in the core if the market value of the asset predicted by the lease company realizes and the firm (lessee) can obtain the information of the realized value. Furthermore, we examined the relationship between methods adopted in practice and solution concepts that give unique solutions, such as the Shapley value and the nucleolus. For the analysis of accounting standards, the core is too wide, and the Shapley value and the nucleolus are too narrow. Seeking for the original solution concept of accounting standards is our next step.