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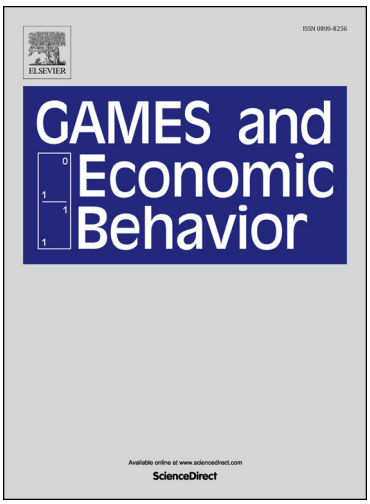

Fair Stable Sets of Simple Games

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Fair Stable Sets of Simple Games

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Abstract

Simple games are abstract representations of voting systems and other group-decision procedures. A *stable set*—or von Neumann-Morgenstern solution—of a simple game represents a "standard of behavior" that satisfies certain internal and external stability properties. *Compound simple games* are built out of *component* games, which are, in turn, "players" of a *quotient* game. I describe a method to construct *fair*—or symmetry-preserving—stable sets of compound simple games from fair stable sets of their quotient and components. This method is closely related to the composition theorem of Shapley (1963c), and contributes to the answer of a question that he formulated: What is the set $\mathcal{G}$ of simple games that admit a fair stable set? In particular, this method shows that the set $\mathcal{G}$ includes all simple games whose *factors*—or quotients in their "unique factorization" of Shapley (1967)—are in $\mathcal{G}$, and suggests a path to characterize $\mathcal{G}$.

JEL classification: C71

Keywords: fair stable set; simple game; compound simple game, symmetry; aggregation.

*Department of Economics, Harvard University. Email: talamas@fas.harvard.edu. I dedicate this article to the memory of Lloyd Stowell Shapley, whose work I deeply admire. I thank Benjamin Golub for encouraging me to write this article; his detailed feedback has greatly improved it. I also thank Aubrey Clark, Jerry Green, Rajiv Vohra and the participants of Harvard's *Games and Markets* and *Contracts and Organizations* seminars for useful comments. Finally, I thank the editor and an anonymous referee for useful suggestions. All errors are my own.