13

A Comment on McCaleb's "The Size Principle and Collective-Consumption Payoffs to Political Coalitions"

RICHARD J. STOLL

Thomas McCaleb's article in the Spring 1974 PUBLIC CHOICE presents a comment on William Riker's size principle. He claims that it is an inappropriate model for analyzing public goods payoffs under certain conditions. While this is true, it is not true for the reasons he claims.

McCaleb argues that

> Implicit in this [Riker's] analysis is the assumption that the payoff to a coalition is perfectly divisable among the members—that is, that the payoff possesses the characteristics of the economist's private good.

> (McCaleb, p. 108)

He goes on to show that this implicit assumption is required by constructing an example where the payoff is a public good. That is, the characteristic function is

*Department of Political Science, University of Michigan.

$V(S)=a_i=\ldots\ldots=a_j$, i, j$\in$S
where S is the coalition,
$V(S)$ is the payoff to the coalition and $a_i \ldots a_j$ are the payoffs to the individual members of the coalition.

If this characteristic function has a slope of 0 as the membership changes, and a coalition of larger than minimal winning size is formed, there is no incentive to expel members until minimal winning size is reached.

Given McCaleb's assumptions, his argument holds true, although one wonders how often a public goods payoff could be restricted to just the winning side. But using his assumptions, he violates one of Riker's. Such a characteristic function is explicitly excluded by one of Riker's assumptions. This is the conidition of superadditivity which can be stated as

$V(S\cup T) v(S) + v(T), S \cap T = \phi$
where S, T $\subseteq$ N, the set of players
and $v(X)$ is te payoff to X $\subseteq$ N.

Thus, the condition requires that the payoffs to an individaul or coalition be pure private goods. So McCaleb's contention that there is an implicit assumption is wrong. However, it is interesting to speculate on how one would analyze public goods payoffs with a game theoretic format. It would seem that some reformulation of the assumptions would be necessary to allow this to be done.

BIBLIOGRAPHY

McCaleb, Thomas S., "The Size Principle and Collective-Consumption Payoffs to Political Coalitions", *Public Choice* 17 (Spring 1974), pp. 107-109.
Riker, William H. *The Theory of Political Coalitions*, Yale Univ. Press, New London, 1962.