

economic unit in an attempt to minimise own-contribution and extract maximum net benefit from the interaction process. Some rough approach to Pareto-optimal public goods supply can, however, quite reasonably be predicted, especially when we remember the smaller organizational costs and less formidable information problems involved in small-group agreements (33).

In general, however, it seems necessary to consider the large-number case in the public goods context. Since a pure public good provides the same service to *all* economic units without any « capacity limit », the efficient size of the sharing group is literally infinite; and efficiency requires an agreement effectively embracing *all* individuals. At the other extreme we have what we might call the « club good », the joint benefits of which extend only to a very limited subset of individuals, as in the case of a swimming pool or golf course. As our analysis suggests, the club good may be fairly efficiently supplied through a voluntaristic system of market-type agreements (34). The club good thus constitutes the central concept for an economic theory of clubs or voluntary associations; whereas the public good provides the paradigm case for the theory of the state (35) (36).

Although the large-number framework is generally relevant in the public goods context, it is important to notice that significant elements of the small-number case may exist even where the number of economic units is literally large. Thus private organisations, such as a few large firms, may coexist with many small units such as households. These large firms may find themselves in an effective

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(33) Analogously, some approach to the maximisation of joint profits through a similar process of small-number interaction is a familiar assumption of modern oligopoly theory - just as the breakdown of cartel arrangements where numbers are large is a familiar theme of empirical studies. For a more detailed discussion and comparison of interaction in small and large-number groups, see especially OLSON, *op. cit.*, Ch. I.

(34) It is interesting to notice that perfect competition may closely approximate Pareto-optimal provision of a « club good » through optimal replication of the facility in question. See, for example, SAMUELSON, *op. cit.* (1966).

(35) This crucial distinction was apparently very clearly recognised by Lindahl, who particularly emphasises the « all-inclusive » aspect in his discussion of the appropriate definition of a public good. See E. LINDAHL, *Die Gerechtigkeit der Besteuerung*, Lund, 1919, pp. 57-58.

(36) For further discussion of club goods and optimal sharing arrangements, see J. M. BUCHANAN, « An Economic Theory of Clubs », *Economica*, 1965. As the discussion is extended to goods for which optimal « club size » is large, we approach the theory of « coercive organisations » such as unions, local governments etc. Olson's discussion (*op. cit.*) is primarily concerned with the problems of the larger functional economic groups.