



Pillage and property

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Abstract

This paper introduces a class of coalitional games, called pillage games, as a model of Hobbesian anarchy. Any coalition can pillage, costlessly and with certainty, any less powerful coalition. Power is endogenous, so a pillage game does not have a characteristic function, but pillage provides a domination concept that defines a stable set, which represents an endogenous balance of power. Every stable set contains only finitely many allocations, and can be represented as a farsighted core. Additional results are obtained for particular games, including the game in which the power of each coalition is determined by its total wealth.

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Property is theft.

*Proudhon*¹

Property is not theft but a good deal of theft becomes property.

*R.H. Tawney*¹

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¹ Bazon [2, p. 55].

1. Introduction

Some distinction between property and theft is a precondition of economic activity. In the absence of property rights, the strong can despoil the weak. There is strength in numbers but no security. Individuals can combine their forces to raid others, but are then vulnerable to treachery among themselves. As Hobbes envisioned this kind of anarchy,

...there be no Property, no Dominion, no *Mine* and *Thine* distinct; but onely that to be every mans, that he can get; and for so long as he can keep it (*Leviathan*, Part I, Ch. 13, italics in original).

Against this alternative the social benefit of property rights is obvious, even apart from potential gains from trade and investment. But Tawney's remark quoted above suggests an inherent instability. Any individual or coalition strong enough to create property rights has an incentive to make exceptions in its favor. The question is whether a stable distribution of wealth can emerge as an endogenous balance of power.

There is a substantial literature on allocation by force. As exemplified by Skaperdas [13], these papers pose noncooperative games in which various individuals have technologies for appropriating the property of others. Appropriation is costly and its outcome may be uncertain. An equilibrium can involve a positive level of continuing conflict, no conflict or extortion (see also Hirshleifer [8] and other papers by Garfinkel and Skaperdas [4], Usher [15], Hirshleifer [7], Skaperdas [14], and Konrad and Skaperdas [10]). This approach enables the explicit analysis of the effect of conflict technologies on the welfare and other properties of the Nash equilibrium allocations. In keeping with the noncooperative game methodology, this literature limits or precludes entirely the formation of coalitions.

The development of social institutions is naturally thought of as a group activity, so it seems useful to allow the formation of coalitions in modeling the emergence of property rights. The present paper introduces a class of coalitional games, called *pillager games*, representing Hobbesian anarchy. There is a single commodity, wealth, which must be allocated among a finite number of individuals. Opportunities for pillage are represented by a *power function* that specifies the power of each coalition as depending at least partly on the wealth of its members. Any coalition can take the wealth of any less powerful coalition. Since power is endogenous, a pillager game does not have a characteristic function, but pillage itself constitutes a binary domination relation over allocations that suffices to define the concepts of core and stable set (von Neumann–Morgenstern solution). A core allocation, by definition, is an allocation immune to pillage. Thus, at a core allocation, wealth is defended by the power of its owners without the aid of any social construct. As one would expect, the core is typically small and often empty. Proposition 2.6 shows that if no tyrannical allocation, in which one player owns everything, can be defended by its owner, then the core is empty.

A stable set is defined as a set of allocations that is internally stable, in the sense that a stable allocation cannot dominate another stable allocation, and externally stable, in the sense that any nonstable allocation is dominated by some stable allocation. A stable set embodies social expectations that are consistent in the sense that pillaging a stable allocation only invites further pillage resulting in another stable allocation. In this sense a stable set

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