

Public-Good Provision in a Large Economy

By

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Abstract

The paper proposes a new approach to the normative analysis of public-good provision in an economy that is *large* so that any one individual is too insignificant to have a noticeable effect on the prices of private goods or the provision levels of public goods. In such an economy, the standard mechanism design problem of calibrating people's payments to the influence they have on public-good provision is moot in that any scheme that involves type-independent payments is incentive-compatible. If the public good comes as a single, indivisible unit, then, in the absence of participation constraints, the first-best provision rule of providing the public good if and only if the average *per capita* valuation exceeds the *per capita* cost, can be implemented by a mechanism with type-independent payments that provide for equal cost sharing. Equal cost sharing is actually necessary if the mechanism is to be *robust* in the sense of Bergemann and Morris (2005). However, the first-best provision rule with equal cost sharing is vulnerable to collective deviations in the sense of Laffont and Martimort (2000). Thus, people with valuations below the *per capita* provision cost would all benefit from a collective deviation inducing a downward bias into the assessment of the average *per capita* valuation. We develop a concept of coalition proofness as a property of robustness to the introduction of feasible, incentive-compatible, and stable collective manipulation mechanisms. We show that, under coalition proofness, a robust provision mechanism for the public good cannot condition on the average *per capita* valuation, but *only* on the *population shares* of people with valuations above and below the *per capita* provision costs. The result suggests an intriguing link between mechanism design theory for large economies and voting.