Concordance among Holdouts[*]

[Extended Abstract][†]

Scott Duke Kominers
Department of Economics, Harvard University
& Harvard Business School
Cambridge, MA 02138 USA
skominers@hbs.edu

E. Glen Weyl
Harvard Society of Fellows
Cambridge, MA 02138 USA
weyl@fas.harvard.edu

ABSTRACT

When no agent has substantial influence on a public good outcome, he or she can demand the full surplus. Thus, in rich environments, private (voluntary and self-financing) provision of public goods—or bads such as land assembly—to a large number of self-interested citizens is impossible. This *holdout* problem is well-known and ubiquitous throughout economics: Holdout was first formalized by Cournot [2], and takes its precise modern form in the work of Mailath and Postelwaite [4]. Unlike in classical auction settings, where increasing competition may offset imperfections in market design ([1, 3]), there is no easy way around the necessity of social engineering to solve holdout. Consequently, holdout concerns have informed wide-ranging policy decisions, including eminent domain and corporate takeover laws.

In this paper, we study holdout in settings where a good owned by a disparate community of sellers is desired by a buyer only in its entirety; for concreteness, we focus on the particularly salient application of land assembly. In these settings, no mechanism can simultaneously achieve full efficiency and complete individual rationality ([4]). However, as we show, it is possible to strike an attractive balance between these two goals.

We propose two desiderata for holdout-alleviating market mechanism design:

1. *bilateral efficiency* – outcomes should always be as ef-
ficient as a bilateral bargain between the prospective buyer and a single agent representing the community of sellers in its entirety – and

2. *approximate individual rationality* – each individual should be assured of receiving as compensation at least an approximation to her value based on all but her own information.

As we show, these two properties are mutually consistent. Moreover, they are satisfied by any mechanism in a simple and intuitive *Concordance mechanism* class that we introduce and characterize.[1]

Concordance mechanisms are asymptotically efficient under truthful reporting by sellers, and exhibit tradeoffs between incentive-compatibility and budget-balance familiar from auction design. To implement Concordance mechanisms, market organizers do not need to know sellers' subjective valuations; rather, they need only an approximation of each seller's share of the total community value.[2]

Extensions of our approach yield mechanisms for classical collaboration and public goods problems.

Categories and Subject Descriptors: J.4 Computer Applications: Social and Behavioral Sciences – Economics; K.4.4 Computers and Society: Electronic Commerce

General Terms: Economics, Theory

Keywords: Holdout, Public goods, Mechanism design with complementarities, Land assembly, Patent pool formation, Concordance

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[4] MAILATH, G. J., AND POSTELWAITE, A. Asymmetric information bargaining problems with many agents. *Review of Economic Studies 57* (1990), 351–367.

[1]Our Concordance mechanisms are inspired Cournot's theory of collaboration—*concours*—among producers, hence we use the term "Concordance" directly derived from *concours*.
[2]The quality of this share approximation determines the degree to which approximate individual rationality resembles full individual rationality. If sellers' relative shares are perfectly assessed, then all Concordance mechanisms are fully individually rational.