

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-

*Kominers gratefully acknowledges the support of a National Science Foundation Graduate Research Fellowship, a Yahoo! Key Scientific Challenges Program Fellowship, the Danielan Fund, and a Terence M. Considine Fellowship in Law and Economics funded by the John M. Olin Center. Weyl is grateful to the Harvard Milton Fund for support, and to the Centro de Investigación Económica at the Instituto Tecnológico Autónomo de México (CIE-ITAM), which hosted him on a visit while he conducted parts of this research. Both authors additionally acknowledge the Harvard Real Estate Academic Initiative’s support of the excellent research assistance of Stephanie Lo, Balaji Narain and Will Weingarten, and appreciate numerous useful comments supplied on this research by their colleagues—especially those of Ted Bergstrom, Jeremy Bulow, Eric Budish, Andy Eggers, Ben Golub, Sonia Jaffe, and Alexandru Nichifor.

[†]A full version of this paper is available online at http://www.scottkom.com/articles/Kominers_Weyl_Holdout.pdf.

Copyright is held by the author/owner(s).
EC’11, June 5–9, 2011, San Jose, California, USA.
ACM 978-1-4503-0261-6/11/06.

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

REFERENCES

- [1] BULOW, J. I., AND KLEMPERER, P. D. Auctions versus negotiations. *American Economic Review* 86 (1996), 180–194.
- [2] COURNOT, A. A. *Recherches sur les Principes Mathématiques de la Théorie des Richesses*. Paris, 1838.
- [3] KLEMPERER, P. D. What really matters in auction design. *Journal of Economic Perspectives* 16 (2002), 169–189.
- [4] MAILATH, G. J., AND POSTELWAITE, A. Asymmetric information bargaining problems with many agents. *Review of Economic Studies* 57 (1990), 351–367.

¹Our Concordance mechanisms are inspired Cournot’s theory of collaboration—*concoures*—among producers, hence we use the term “Concordance” directly derived from *concoures*.

²The 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.