REVENUE-CAPPED EFFICIENT AUCTIONS

Nozomu Muto
Department of Economics, Yokohama National University

Yasuhiro Shirata
Department of Economics, Otaru University of Commerce

Takuro Yamashita
Toulouse School of Economics, University of Toulouse

Abstract
We study an auction that maximizes the expected social surplus under an upper-bound constraint on the seller’s expected revenue, which we call a revenue cap. Such a constrained-efficient auction may arise, for example, when: (i) the auction designer is “pro-buyer”, that is, he maximizes the weighted sum of the buyers’ and seller’s auction payoffs, where the weight for the buyers is greater than that for the seller; (ii) the auction designer maximizes the (unweighted) total surplus in a multi-unit auction in which the number of units the seller owns is private information; or (iii) multiple sellers compete to attract buyers before the auction. We characterize the mechanisms for constrained-efficient auctions and identify their important properties. First, the seller sets no reserve price and sells the good for sure. Second, with a nontrivial revenue cap, “bunching” is necessary. Finally, with a sufficiently severe revenue cap, the constrained-efficient auction has a bid cap, so that bunching occurs at least “at the top,” that is, “no distortion at the top” fails. (JEL: D44, C72, L51)

Acknowledgments: We are grateful to the General Editor and two anonymous referees for insightful comments and suggestions. We thank Gabriel Carroll, Renato Gomes, Chiaki Hara, Kazumi Hori, Atsushi Iwasaki, Shinsuke Kambe, Takashi Kunimoto, Pei-yu Lo, Daisuke Nakajima, Takeshi Nishimura, Ryo Ogawa, Daisuke Oyama, Ryuji Sano, Shigehiro Serizawa, Steven Tadelis, Masanori Tsuruoka, Yosuke Yasuda, and participants in seminars at Hitotsubashi, Kyoto, NUS, Okayama, SMU, 2014 DC Conference in Japan, 2014 UEC Lisbon Meetings, 2015 JEA spring meeting, 11th World Congress of the Econometric Society, GAMES 2016, 10th Japan-Taiwan-Hong Kong Contract Theory Conference, Game Theory Workshop 2018 for helpful comments. Nozumo Muto gratefully acknowledges support via a JSPS Grant-in-Aid for Scientific Research (Nos. JP26780116 and JP16K17082). Yasuhiro Shirata gratefully acknowledges support via a JSPS Grant-in-Aid for Scientific Research (Nos. JP24830004 and JP15K20838). Takuro Yamashita gratefully acknowledges financial support from the European Research Council (Starting Grant #714693).

E-mail: nozomu.muto@gmail.com (Muto); yasuhiro.shirata@gmail.com (Shirata); takuro.yamashita@tse-fr.eu (Yamashita)

The editor in charge of this paper was Juuso Välimäki.