Uncertainty in Mechanism Design

Giuseppe Lopomo*
Fuqua School of Business
Duke University

Luca Rigotti†
Fuqua School of Business
Duke University

Chris Shannon‡
Department of Economics
UC Berkeley

March 2, 2004

Abstract

We consider a standard one-object auction model, with private values, where each buyer perceives Knightian uncertainty over his opponents' types. Uncertainty is formalized using incomplete preferences as in Bewley (1986). We show that the seller can extract all gains from trade with a direct mechanism in which truth-telling is a Nash equilibrium, in the sense that no buyer has a unilateral incentive to misrepresent his type. In a Nash equilibrium, however, truth-telling and mirepresenting can be incomparable alternatives. Thus we also consider an equilibrium concept in which truth-telling is optimal, that is, (weakly) preferred to other alternatives. In this case the full extraction of all gains from trade is feasible only if there is sufficient disagreement in beliefs. Therefore, full extraction is not feasible if uncertainty over opponents' types is too large for all players. In these cases, we show that the English auction maximizes the seller's expected revenue.

*The Fuqua School of Business, Duke University; glopomo@duke.edu
†The Fuqua School of Business, Duke University; rigotti@duke.edu
‡Department of Economics, UC Berkeley; cshannon@econ.berkeley.edu