Unbundled Auction Procurement over Multiple Periods

Dolores Romero Morales
University of Oxford – Saïd Business School

Date: Thursday, January 11th, 2007
Time: 2 pm
Room: Lecture Theatre 11

Abstract: Consider a buyer having demand for a product upstream in the supply chain, where the buyer assigns orders to its suppliers via a second-price auction, i.e., a Vickrey auction. We will refer to this type of procurement auction as bundle auction, since the demand might in fact be an aggregate of demand over multiple time periods. In the scenario we consider in this paper, the buyer is alternatively considering auctioning this demand by breaking it down by time period and permitting bids for one or more periods, either as independent bids or as package bids. In this alternative auction, which we call the unbundled auction, the buyer will assign orders to his suppliers via the generalized Vickrey auction. The unbundled auction has many advantages for both the buyer and the suppliers, where the most important one is the closer representation of the planning costs in a supply chain. However, it also increases the competition of the suppliers against the buyer. In this talk we will show that, there are cases in which the buyer will be worse off with the unbundled auction; thus, in these cases, the buyer needs to pay more to satisfy his demand, despite the fact that the suppliers will be producing more cheaply. But, we will also show that the unbundled auction is, in many scenarios, better than the bundle auction. Finally, we will give a worst case bound on the loss of the unbundled auction with respect to the bundle auction. (This is joint work with Richard Steinberg, Judge Business School)

Bio: Dolores Romero Morales is a University Reader at Saïd Business School, University of Oxford. Her area of specialisation is Operations Research. She holds a PhD from Rotterdam School of Management, Erasmus University Rotterdam and an MSc from the University of Sevilla. She has previously held posts at the Universities of Sevilla, Cádiz, and Maastricht. The core topics of her research are Supply Chain Optimisation and Data Mining. Her research has appeared or is forthcoming in a variety of outlets, including Management Science, Operations Research, INFORMS Journal on Computing and European Journal of Operational Research. At Saïd Business School she teaches the Decision Science course in the core MBA programme and in the MSc in Management Research programme. Dolores can be reached through www.doloresromero.com and dolores.romero-morales@sbs.ox.ac.uk.