

## DO&IT Seminar Series

**Speaker:** Omar Besbes  
Assistant Professor of Operations and Information Management  
The Wharton School, University of Pennsylvania

**Date:** Friday, April 17, 2009

**Time:** 2-3:30 pm

**Location:** VMH 1335

**Title:** On the Minimax Complexity of Pricing in a Changing Environment

### Abstract:

Pricing decisions often need to be made in changing and uncertain demand environments, introducing challenges associated with the detection of changes and the learning of new demand environments. The objective of this talk is to i) quantify the “complexity” associated with such settings and ii.) present possible prescriptions for decision-makers. To that end, we consider a pricing problem in an environment where the customers' willingness-to-pay (WtP) distribution may *change* at some point over the selling horizon. Customers arrive sequentially and make purchase decisions based on a quoted price and their private WtP. The seller knows the pre-change WtP distribution, but faces two sources of model uncertainty: the time at which the change occurs and the post-change WtP distribution. The performance of a pricing policy is measured in terms of regret: the loss in revenues relative to an oracle that knows both the time of change and the post-change WtP prior to the start of the selling season. The minimax regret is taken as a proxy for the “complexity” of the problem. In addition to i.) and ii.) above, our results will also highlight the role and depth of price experimentation involved in countering the two sources of uncertainty.

**Bio:** Omar Besbes is an Assistant Professor of Operations and Information Management at the Wharton School, University of Pennsylvania. He graduated from Ecole Polytechnique (Palaiseau, France) before earning an M.S. in Aeronautics and Astronautics from Stanford University and a Ph.D. in Decision, Risk & Operations from Columbia University. His primary research interests are in the areas of stochastic modeling, dynamic pricing & revenue management and service operations. His current research explores data-driven decision-making in uncertain and changing environments. At Wharton, he teaches the MBA core course, Operations Management: Quality and Productivity, as well as doctoral courses.