

Department of Information and Systems Management
School of Business and Management
The Hong Kong University of Science and Technology

Seminar Announcement

*Beating the Accuracy Trap: Overinvestment in Demand
Forecasting and Supply Chain Coordination under
Downstream Competition*

by

Professor Tunay Tunca

Stanford University

**29 February 2008 (Friday)
11:00 – 12:30 pm
Room 4379, ISMT Conference Room (L17/18)**

~~~~~ All interested are welcome ~~~~~

**Abstract**

We study supply chain contracting with investment in demand forecasting under downstream competition. Supporting some recent industry observations, we show that under common pricing schemes, such as wholesale price or two-part tariff, downstream firms overinvest in demand forecasting. Analyzing the bounds and determinants of overinvestment, we demonstrate that the wholesale price and two-part tariff schemes can result in overinvestment up to twice the optimal level. As a result, the supply chain surplus can also suffer substantially as the wholesale price and two-part tariff schemes can result in nearly a full loss of supply chain efficiency. Further the losses with the best contracting scheme in the class of quadratic contracts, which also include the wholesale price and two-part tariff contracts, can amount to as much as half the first-best supply chain surplus. Examining the factors that determine the severity of the efficiency loss, we show that an increased number of competing retailers and uncertainty in consumer demand tend to increase inefficiency, whereas increased consumer market size, consumer price sensitivity and demand forecast costs reduce the loss in supply chain surplus. We propose a "market-based" contracting scheme that fully coordinates the supply chain in quantities and demand forecast investment, and demonstrate its desirable properties for implementability.

This is joint work with Hyo duk Shin.

**Biography**

Tunay Tunca is an Associate Professor of Operations, Information and Technology at the Graduate School of Business, Stanford University. He received his MS in Financial Mathematics (2000) and PhD in Business Administration (2002) from Stanford University, MS in Management Science (1997) from the University of Rochester and BS degrees in Electrical Engineering and Mathematics (1994), from Bogazici University, Istanbul, Turkey. He has been a faculty member at Stanford GSB since 2001. He also held positions as a visiting scholar at the Wharton School of Business at University of Pennsylvania (2003) and the Sloan School of Business at Massachusetts Institute of Technology (2005) and Hewlett-Packard Labs (2006-2007). Professor Tunca's research interests span a range in economics of Information Technology and procurement markets, including electronic business, economics of software security and digital goods piracy, interaction of supply chain and markets, and procurement auctions. His recent work examines such topics as private information and strategic spot trading for procurement, the role of user incentives on security of computer networks and the impact of P2P file sharing on copyright protection policy for digital goods. Professor Tunca has also been an Associate Editor for the journal Information Systems Research.