



## RESEARCH SEMINAR

*NIDA Business School cordially invites you to*  
**Feedback Stackelberg Games for Dynamic Supply Chains with Cost Learning**



by

**Suresh Sethi**

*The University of Texas at Dallas*

**August 09 2016 (Tuesday)**

**06:00PM – 08:00PM**

*NIDA Business School ♦ Room 812*

### **Abstract / Synopsis**

We consider a decentralized two-period supply chain in which a manufacturer produces a product with benefits of cost learning, and sells it through a retailer facing a price-dependent demand. The manufacturer's second-period production cost declines linearly in the first-period production, but with a random learning rate. The manufacturer may or may not have the inventory carryover option. We formulate the resulting problems as two-period Stackelberg games and obtain their feedback equilibrium solutions explicitly. We then examine the impact of mean learning rate and learning rate variability on the pricing strategies of the channel members, on the manufacturer's production decisions, and on the retailer's procurement decisions. We show that as the mean learning rate or the learning rate variability increases, the traditional double marginalization problem becomes more severe, leading to greater efficiency loss in the channel. We obtain revenue sharing contracts that can coordinate the dynamic supply chain. In particular, when the manufacturer may hold inventory, we identify two major drivers for inventory carryover: market growth and learning rate variability. Finally, we demonstrate the robustness of our results by examining a model in which cost learning takes place continuously.

### **About the Speaker**

Suresh P. Sethi is Eugene McDermott Professor of Operations Management and Director of the Center for Intelligent Supply Networks at The University of Texas at Dallas. He has written 7 books and published nearly 400 research papers in the fields of manufacturing and operations management, finance and economics, marketing, and optimization theory. He teaches a course on optimal control theory/applications and organizes a seminar series on operations management topics. He initiated and developed the doctoral programs in operations management at both University of Texas at Dallas and University of Toronto. He serves on the editorial boards of several journals including Production and Operations Management and SIAM Journal on Control and Optimization. He was named a Fellow of The Royal Society of Canada in 1994. Two conferences were organized and two books edited in his honor in 2005-6. Other honors include: IEEE Fellow (2001), INFORMS Fellow (2003), AAAS Fellow (2003), POMS Fellow (2005), IITB Distinguished Alum (2008), SIAM Fellow (2009), POMS President (2012), INFORMS Fellows Selection Committee (2014-16), Alumni Achievement Award, Tepper School of Business, Carnegie Mellon University (2015).

### **Registration**

*Kindly make your reservation by August 7, 2016 by sending an email to Ms. Intira Jedsadapitak at [ijedsadapitak@gmail.com](mailto:ijedsadapitak@gmail.com) or by calling 02-727-3937. We look forward to seeing you at this event!*

*For more information about our research seminar series, please visit <http://mba.nida.ac.th/seminar>*

*NIDA Business School ♦ National Institute of Development Administration 8<sup>th</sup> Floor, Boonchana-Atthakororn Bldg., 118 Moo 3 Serithai Rd., Bangkok, Bangkok 10240*