1 - Strategic Inventories and Supply Chain Structure
Sudheer Gupta
We consider a competing supply chains framework where manufacturers sell differentiated products through independent retailers and decide on prices and inventory levels. Retailers can carry inventories forward to next period. We show that in equilibrium retailers will always carry inventories as a credible source of competition for the manufacturers even in the absence of traditional reasons for inventories. We show how intensity of product-market competition and ease of carrying inventories forward (holding costs per unit) affect prices, profits and equilibrium supply chain structure.

2 - Partially Observable Total-Cost Markov Decision Processes with Borel State Spaces and their Applications
Eugene Feinberg, Pavlo Kasyanov, Michael Zgrody
This paper describes sufficient conditions for the existence of optimal policies for Partially Observable Markov Decision Processes (POMDPs) with Borel state, observation, and action sets and with the expected total costs. Action sets may not be compact and one-step cost functions may be unbounded. The introduced conditions are also sufficient for the validity of optimality equations, semi-continuity of value functions, and convergence of value iterations to optimal values. We discuss applications of the results of this paper to inventory control.

3 - On Optimal Tax Planning and Inventory Systems with Perishable Items
Nilofar Varzegani, Suresh Govindaraj, Michael Katehakis
We explore the connections between a problem that arises in optimal tax planning in the finance literature and the problem of usage of inventory with perishable commodities. We show that a problem relating to the valuation of tax losses that can be used as tax shields against future income can be solved as an equivalent problem of valuing perishable commodities. Tax losses, like perishable goods, have a finite useful life. However, unlike in standard inventory problems, tax losses occur randomly and cannot be "purchased" or "ordered" like perishable comon

4 - Inventory Models with Omega-Distributed Demand
Lee Papayanopoulos
In our procurement model, a finite, stable set of retailers place orders for a commodity at random times. We show that total demand in a period is omega distributed when i) the size of the order from any given customer remains constant over time and ii) order placement from a customer in any period is Bernoulli with known expected value that may vary between customers. We also examine conditions under which the total demand distribution can be approximated adequately by a normal or other common, closed-form function. We demonstrate the usefulness of the omega distribution through simulation.
Advances on Demand and Supply Planning in Consumer Goods and Retailing

Stream: Demand and Supply Planning in Consumer Goods and Retailing
Invited session
Chair: Heinrich Kuhn
Chair: Winfried Steiner
Chair: Michael Katehakis

1 - Pricing and Rebate Strategy in Retail Platforms with Revenue Sharing
Hongyan Li, Shiming Deng

Given the intensive competition in retailing industries, all kinds of promotion are almost constantly running in various retailing platforms such as department stores and online retailers etc. However, given the complex operational context of large retailing platforms, many questions regarding promotion management remain unsolved. In this study, we address a pricing and rebate optimization problem in a retail platform which consists of multiple suppliers. The analytic results show the incentives of the system players. The optimal rebate strategies of the retail system is addressed in details.

2 - Cyclic Joint Replenishment with Total Volume Discounts
Guoqing Wang

We study the multiple item joint replenishment problem in which all items are ordered in cyclic manners and discounts dependent on the total order volume are involved. We develop a heuristic to deal with the problem and provide computational results.

3 - A Tractable Inventory Model with Random Lead Times
Michael Katehakis, Laurens Smit, Flora Speksma, Dwi Ertiningh

We present a model for computing the stationary distribution of the on-hand inventory in a continuous review system with Poison demand and Phase Type distributed lead time. We consider several additional scenarios such as lost sales and unreliable suppliers. It is shown that these models are successively lumpable. This leads to explicit analytical expressions for expected cost computations and minimization.

4 - Collaborative Supply Chains: A Case Study
Nicolas Danloup, Hamid Allaoui, Gilles Goncalves

Collaborative supply chains have become an important element for recent years for many companies to improve their supply chain efficiency. Moreover, to be competitive in industrial world, the implementation of collaborative supply chain should give positive effect that can be related to sustainable development. We first present several models of collaboration. Then we present a case study about the collaboration between several British retailers and some initial results.