Optimal Inventory and Pricing Policies for Supply Chain Networks

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Abstract

An optimisation-based control framework that simultaneously determines the optimal inventory and product pricing policies is developed for multi-product, multi-echelon supply chain networks. The optimisation problem aims at adjusting the available manufacturing resources, product distribution, inventories and prices for the entire supply chain network to satisfy demand while maximising network revenues over a specified time horizon. The control scheme employs model predictive control principles with local feedback inventory controllers for the satisfaction of the overall objectives. Customer demand responses to product prices are taken directly into consideration through the explicit utilisation of demand elasticities.