

The Hong Kong University of Science and Technology
Department of Information Systems,
Business Statistics and Operations Management

Seminar Announcement

***Integrating Long-term and Short-term Contracting
in Beef Supply Chains***

by

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Date: Friday, 25 March 2011

Time: 11:00 am – 12:00 noon

Venue: Room 4379, ISOM Conference Room (Lift 17/18)

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

**Abstract:** This paper analyzes the optimal procurement, processing and production decisions of a meat processing company (hereafter a packer) in a beef supply chain. The packer processes fed cattle to produce two beef products, program (premium) boxed beef and commodity boxed beef, in fixed proportions, but with downward substitution of the premium product for the commodity product possible. The packer can source input (fed cattle) from a contract market, where long-term contracts are signed in advance of the required delivery time, and from a spot market on the spot day. Contract prices are taken to be of a general window form, linear in the spot price but capped by upper and lower limits on realized contract price. Our analysis provides managerial insights on the interaction of window contract terms with processing options. We show that the packer benefits from a lower correlation between the spot price and product market uncertainties, and this is independent of the form of the window contract. Although the expected revenues from processing increase in spot price variability, the overall impact on profitability depends on the parameters of the window contract. Using a calibration based on the GIPSA (Grain Inspection, Packers and Stockyards Administration) Report (2007), this paper elucidates for the first time the value of long-term contracting as a complement to spot sourcing in the beef supply chain. Our comparative statics results provide some rules of thumb for the packer for the strategic management of procurement portfolio. In particular, we show that higher variability (higher spot price variability, product market variability and correlation) increases the profits of the packer, but decreases the reliance on the contract market relative to the spot market.

**Co-authored with:**

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**Bio:** Onur Boyabatli is Assistant Professor of Operations Management at the Lee Kong Chian School of Business, Singapore Management University. He holds B.S. and M.S. degrees in Industrial Engineering from Bilkent University, Turkey; and a Ph.D. in Technology and Operations Management from INSEAD, France. His research interests are in the area of integrated risk management in supply chains. In particular, his first research stream, *contracting and risk management in commodity markets (with a special focus on agribusiness)*, primarily focuses on the integration of input risk management (through sourcing decisions) with output risk management (through production and pricing decisions) in agricultural commodity markets, and studies several operational problems of commodity processors in this setting. His second research stream, *technology and capacity management including integration with financing and financial risk management*, studies technology and capacity management under financing frictions; and financial and operational hedging in supply chains.