

*The Hong Kong Polytechnic University
Department of Logistics and Maritime Studies
Research Seminar*

Push, Pull, and Delayed Payment Contracts When a Manufacturer Wants to Expand his Product Line

by

**Ms Xiaomeng GUO
PhD Candidate
Olin Business School
Washington University**

**Date: 29 March 2016 (Tuesday)
Time: 10:00am - 11:00am
Venue: N114, Block N
The Hong Kong Polytechnic University
(Conducted in English)**

Abstract:

When a manufacturer considers a new product development, he is often aware that his ability to sell the new product depends on a retailer's willingness to stock the product. Using a simple wholesale contract setting (i.e., a push contract), previous literature has shown that pricing alone may not be a sufficient incentive for a retailer to carry a product because there exist situations when the wholesale price required to make the product appealing to the retailer would render it unprofitable for the manufacturer. In a setting where demand is deterministic and production lead times are zero, previous research proposed a static approach under which a manufacturer induces a retailer to carry his product line by choosing product designs according to the retailer's preferences. The static approach, however, may become difficult to implement when the retailer faces delivery lead times and stochastic demand can make it difficult to predict the retailer's preferences.

As a complement to the static approach, we ask whether there are situations in which a manufacturer may be able to induce a retailer to carry his product line by offering her a delayed payment arrangement (i.e., a delayed payment contract) or a delayed ordering arrangement (i.e., a pull contract). The delayed payment arrangement allows the retailer to pay only for inventory that she actually sells. The delayed ordering arrangement allows the retailer to learn about demand before she orders. To answer this question, we construct a game-theoretic model of a supply chain with stochastic demand and assume that a manufacturer can introduce a product line that consists of either one or two product versions. We then identify situations when only one product version will be sold to consumers if the manufacturer offers the retailer his most preferred wholesale contract. However, when the retailer is offered either delayed payment or delayed order, she will sell the manufacturer's two product versions and thereby the manufacturer's expected profit will increase beyond the best he can do under the wholesale contract.

This is a joint work with Lingxiu Dong and Danko Turcic.

Bio:

Xiaomeng Guo received her Bachelor degree in Mathematics and Physics from Tsinghua University in 2010. Currently, she is a Ph.D. candidate in Operations Management at the Olin Business School, Washington University in St. Louis. Her research interests include the supply chain management, operations and marketing interface, omni-channel retail management, and behavioral operations.

Please email to irene.lam@polyu.edu.hk for enquiries.

All are welcome!