



Centre of Excellence in Supply Chain Management

## 9<sup>th</sup> Workshop on Logistics and Supply Chain Management

Louvain School of Management  
Université Catholique de Louvain

**Avril 20th, 2009**

**Facultés Universitaires de Saint Louis, Brussel**

### PROGRAM

- |               |  |
|---------------|--|
| 12:30 - 13:15 | Sandwiches in the meeting room   |
| 13:15 - 14:00 | <b>Guangyuan YANG,</b><br><i>"Service Parts Inventory Control with Lateral Transshipments"</i><br>Erasmus University Rotterdam, The Netherlands                      |
| 14:00 - 14:45 | <b>Ying WEI,</b><br><i>"Mean-Variance Analysis of Supply Chains under Wholesale Pricing and Profit Sharing Scheme "</i><br>Université Catholique de Louvain, Belgium |
| 14:45 - 15:00 | Break  |
| 15:00 - 15:45 | <b>Tanja MLINAR,</b><br><i>"Shared production capacities in a supply chain in the presence of setup times"</i><br>Université Catholique de Louvain, Belgium          |
| 15:45 - 16:30 | <b>Xavier BRUSSET,</b><br><i>"Incumbent effect under information asymmetry in transport contracts "</i><br>Université Catholique de Louvain, Belgium                 |
| 16:30 - 16:45 | Closing words, date for next seminar   |

## **Summary of Abstracts**

### *Service Parts Inventory Control with Lateral Transshipments*

Guangyuan YANG

#### **Abstract**

The aim of this research project is to contribute to the existing literature of service parts inventory control by formulating and analyzing a two-echelon model under central control, continuous review at all stock points and external stochastic demand at local service centers which is satisfied by on-hand stock, if available, or lateral transshipments, taking the non-negligible trans-shipment times and the timing of trans shipments incorporation with that of replenishments into account. Using this model, an expression for the average inventory cost given time based service level requirements, including holding, ordering, shortage and transshipment costs shall be presented, and a nearly optimal inventory control policy shall be found. Furthermore, the impact of the leadtimes (including transshipment leadtimes and replenishment leadtimes) on the inventory control policy shall be analyzed. Due to the complexities involved in the analytical modeling and the solution of multi-echelon supply chain problems, it is highly likely that we will attempt a METRIC approximation approach (Sherbrooke, 1966) and validation by simulation, in effort to maintain some degree of realism of the operational practice.

---

### *Mean-Variance Analysis of Supply Chains under Wholesale Pricing and Profit Sharing Scheme*

Ying WEI

#### **Abstract**

Most incentive alignment schemes in the supply chain literature aim at improving the supply chain's efficiency in terms of expected profit improvement, and ignore the risk aversion of channel members. In this paper, we analyze a two-echelon supply chain model with a newsvendor type of product under the mean-variance (MV) decision framework. We study the use of a wholesale pricing and profit sharing scheme (WPPS) for both the centralized and decentralized cases. We illustrate the detailed mechanisms on how an WPPS can be applied for addressing channel coordination issues in the supply chain with risk averse agents. We further elaborate on how the retailer benefits by pretending to be more risk averse in the case of information asymmetry, and how the manufacturer prevents the cheating by imposing a new measure on the WPPS contract. Finally, we report on an extensive numerical study and discuss managerial findings.

---

### *Shared production capacities in a supply chain in the presence of setup times*

Tanja MLINAR and Philippe CHEVALIER

#### **Abstract**

Production capacities in a supply chain play significant role in the process of decision-making. Here we consider different configurations of production capacities in the supply chain: (1) a production system consisting of two machines where each machine is owned by one supply chain partner and is dedicated to process only one type of items of a partner; (2) a production system consisting of two-times faster flexible machine where the machine is shared among two partners and can process both types of items of partners; and (3) a production system consisting of two flexible machines, similar to (1), but here any of partners may overflow its production to the machine of another partner. We construct simulations models and perform numerical experiments in order to investigate behavior of the production systems in the presence of different setup and switching times. When specific configuration policies are involved, we find that flexible systems can be more advantageous in terms of performance measurements than dedicated one. In particular, under the equal setup and switching times partners who overflow their production get more benefits from their configuration than partners who maintain their production independently.

---

### *Incumbent effect under information asymmetry in transport contracts*

Xavier BRUSSET

#### **Abstract**

How does a carrier evaluate the contract he must offer a shipper under various assumptions of information about this shipper's outside opportunities and the relationship specific investments to be made? We show how a carrier can benefit from contract renegotiation, even in the absence of information, when the shipper must invest in relation specific assets. We compare the contract in the full commitment case to the ones when shipper and carrier have the possibility of renegotiating. This paper presents a way to link the interactions of shipper and carrier over multiple periods or contracts under several scenarios of information available to the carrier. The first and second period Nash equilibrium contracts are presented for each case. We conclude with some insights for managerial practice.