

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

**Risk Pooling Through Offline Probabilistic Selling\***

by

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**Venue: M802, Li Ka Shing Tower**

**The Hong Kong Polytechnic University**

**(Conducted in English)**

**Abstract:**

Research on probabilistic selling (PS) mainly focuses in the online setting, which benefits the retailer by hiding product information and postponing delivery of the probabilistic product depending on the inventory of its constituent specific products. In contrast, we study PS in the offline setting and explore its advantage of pooling risk through demand reshape. Specifically, under PS, the price gap that exists between the specific products and the probabilistic product causes demand reshape, i.e., the demand for the specific products switches to the demand for the opaque (probabilistic) product. Modelling demand reshape under PS, we address the question of how to set the price discount for the probabilistic product to induce optimal demand reshape and make inventory decisions. We also examine the effects of demand uncertainty, customer price sensitivity, and product differentiation on the performance of PS. We demonstrate through numerical studies that PS provides inventory flexibility for the retailer, enabling it to mitigate asymmetrical supply risk. We also obtain the following findings: PS can improve the retailer's profit at lower inventory levels with proper demand reshape induced by the optimal price discount. The optimal price discount increases with demand uncertainty. PS is more profitable with smaller product differentiation and higher customer price sensitivity. PS is a viable strategy to combat asymmetrical supply shortage that yields higher profit and service levels. Our analytical approach and the management implications of our research findings may help practitioners gain more insight on the risk-pooling effect of PS and facilitate their pricing-inventory related decision-making.

**Bio:**

Zhang Yi is currently a research assistant from Beijing Jiaotong University under the Joint PhD Supervision Scheme. Her research field is marketing-operations interface. Her PhD topic is inventory management under probabilistic selling.

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**All are welcome!**