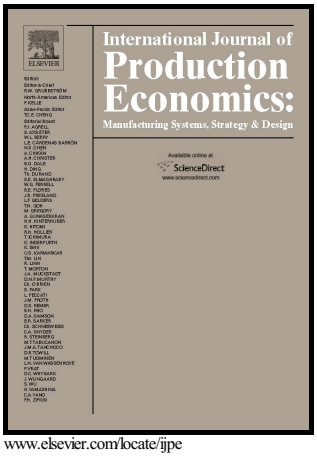

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The loss-averse newsvendor model with backordering

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Abstract: In this paper, we study the optimal order quantity in the loss-averse newsvendor model with backordering. We first obtain the optimal order quantity to maximize the expected utility. To hedge against the risk arising from the uncertainty of market demand, we introduce the Conditional Value-at-Risk(CVaR) measure and derive the optimal order quantity to maximize the CVaR objective about utility. It is found that the optimal order quantity with the CVaR objective is decreasing in the confidence level, and thus is smaller than the optimal order quantity to maximize the expected utility. It is proved that under the optimal order quantity with the CVaR objective, the loss-averse newsvendor's expected utility is decreasing in the confidence level. It further confirms that high risk implies high return and low risk comes with low return.

Key words: Inventory control, Conditional Value-at-Risk, Backorder, Lose-averse

1 Introduction

The newsvendor model is a famous model in inventory control literature and has been applied to various fields such as production plan and yield management. With the de-

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