Risk Aversion in Inventory Management

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Abstract – **Traditional inventory models focus on risk-neutral decision makers, i.e., characterizing replenishment strategies that maximize expected total profit, or equivalently, minimize expected total cost over a planning horizon. In this paper, we propose a framework for incorporating risk aversion in multi-period inventory models as well as multi-period models that coordinate inventory and pricing strategies. In each case, we characterize the optimal policy for various measures of risk that have been commonly used in the finance literature. In particular, we show that the structure of the optimal policy for a decision maker with exponential utility functions is almost identical to the structure of the optimal risk-neutral inventory (and pricing) policies. Computational results demonstrate the importance of this approach not only to risk-averse decision makers, but also to risk-neutral decision makers with limited information on the demand distribution.**