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## **WORKING PAPER**

# **Managing periodic review inventory systems with capacitated replenishments**

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## **ABSTRACT**

This paper studies periodic review inventory systems in which replenishments are capacitated. This capacity restriction implies that the order-up-to level may not always be reached at each replenishment, such that additional safety stock is needed to achieve the same service level as in the uncapacitated case usually assumed in the existing literature. To determine the required level of safety stock, and hence the order-up-to level, an iterative procedure is proposed which can be adjusted to either find an approximate solution quickly, or a more accurate solution when larger computation times are allowed. Computational experiments illustrate the impact of a restricted replenishment capacity on the required safety stock level, and the effectiveness of the proposed iterative method in calculating the required order-up-to levels.

**KEYWORDS:** Periodic review, Order-up-to, Base-stock, Safety stock, Fill rate.