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Backorder minimization in multiproduct assemble-to-order systems

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Abstract

We consider a multiproduct assemble-to-order system. Components are built to stock with inventory controlled by base-stock rules, but the final products are assembled to order. Customer orders of each product follow a batch Poisson process. The leadtimes for replenishing component inventory are stochastic. We study the optimal allocation of a given budget among component inventories so as to minimize a weighted average of backorders over product types. We derive easy-to-compute bounds and approximations for the expected number of backorders and use them to formulate surrogate optimization problems. Efficient algorithms are developed to solve these problems, and numeric

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