

# Economic order quantity of an inventory control system with order backlog and stochastic set-up times

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We present a mathematical model which evaluates the economic order quantity (EOQ) of inventory systems with order backlog. In terms of cost, we account for holding, set-up and backlog costs. Production starts when the inventory level goes under the threshold value and stops when stock capacity is reached. Moreover, orders are backlogged and coupled to the completion of products. The inventory problem is studied in a Markovian setting. Set-up times are phase-type distributed while order and product arrivals are modelled by a Markovian arrival process. By numerical examples, we determine optimal reordering thresholds under various parameter settings.