Minimization of Costs in Interconnected Supply Networks with Transportation and Decision-Making Delays

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Abstract

Due to delays in product transportation and decision-making, supply network dynamics is governed by infinite dimensional differential equations, stability of which is non-trivial to analyze. A unique map revealing stability/instability behavior of the supply network is obtained in the parameter space of the delays, first. Next, an optimization scheme is proposed to choose stabilizing transportation delays that minimize a cost function related to transportation costs and excessive oscillations in inventories. A case study is provided.

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