



Research School for Operations
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Cooperative locker location games

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More and more people are ordering products online, having their parcels delivered to their homes. This leads to more congestion, which negatively impacts the environment as well as public health and safety. To reduce these negative impacts, carriers can use parcel lockers to consolidate and serve their customers. The implementation of a locker network can, however, be financially challenging. To overcome this, carriers can decide to collaborate and invest in parcel lockers together. In this presentation, we introduce a stylized model in which a group of carriers can decide to position parcel lockers collectively. In this model opening a locker comes at a cost, while serving a customer via close-by lockers generates a customer-specific profit. By introducing and studying the associated cooperative game, we then investigate whether the carriers can allocate the joint profit in a stable way. For this game, we prove that a stable allocation is guaranteed for a particular class of networks. Generating a large set of instances, we furthermore conduct a number of numerical experiments, showing that a stable profit allocation is possible in most situations.