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Therefore, we provide a methodology to identify, categorize and quantify the impact of disruptions and potential mitigation options to support decision-making. The kernel of the project is the development and use of a two-stage stochastic optimization model to analyze the complex supply chain interdependencies and dynamics in an integrated way. By exploiting the property that supply chains are generally only disrupted for a fraction of the time, we drastically reduce the model size and associated computational requirements compared to similar models presented in literature.

Based on a case study of a European supply chain of a global chemical company, our study shows the trade-off between long-term expected costs minimization and short-term risk minimization, where the latter leads to a more aggressive investment policy.

A stochastic program to evaluate disruption mitigation investments in the supply chain

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