

Augmented Lagrangian Methods for Solving Optimization Problems with Stochastic-Order Constraints

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Abstract: We investigate risk-averse stochastic optimization problems where risk-averse preferences are modeled with a stochastic order constraint. We propose augmented Lagrangian methods for the numerical solution of problems with multivariate and univariate stochastic order relations. The methods constructs finite-dimensional approximations of the optimization problem whose solutions converge to the solution of the original problem. In case of univariate order, we define augmented Lagrangian functions based on different formulations of the stochastic-order constraint. The performance of the methods is compared to other numerical algorithms, and shows the advantage of the augmented Lagrangian framework.