Lulli, Guglielmo; Sen, Suvrajeet
A branch-and-price algorithm for multistage stochastic integer programming with application to stochastic batch-sizing problems. (English) Zbl 1232.90314
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Summary: We present a branch-and-price method to solve special structured multistage stochastic integer programming problems. We validate our method on two different versions of a multistage stochastic batch-sizing problem (SBSP). One version adopts a recourse formulation, and the other is based on probabilistic constraints. Our algorithmic approach is applicable to both formulations. Our computational results suggest that both classes of problems can be solved using relatively few nodes of a branch-and-price tree. The success of our approach calls for extensions in methodology as well as applications.

MSC:
90C15 Stochastic programming
90C10 Integer programming
90C57 Polyhedral combinatorics, branch-and-bound, branch-and-cut

Keywords:
stochastic programming; integer programming; batch sizing; branch-and-price algorithm

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