

Exploiting Value Function-Based Reformulations for Solving Some Classes of Stochastic and Bilevel Integer Programs

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Abstract. Some classes of two-stage stochastic integer programs can be solved exploiting a value function reformulation for both stages. One of the advantages of such approaches is their somewhat reduced sensitivity to the number of variables and scenarios, though this may come at the price of increased sensitivity to both the number of constraints in each stage and the magnitude of right-hand sides. We overview our work in this area, discuss various theoretical and computational considerations including conditions under which such approaches may be effective. Finally, we also touch upon applications of value function-based reformulations for solving some classes of bilevel integer programs.