In this paper we examine the problem of managing portfolios consisting of both, stocks and options. For the simultaneous optimization of stock and option positions we base our analysis on the generally accepted mean-variance framework. First, we analyze the effects of options on the mean-variance efficient frontier if they are considered as separate investment alternatives. Due to the resulting asymmetric portfolio return distribution mean-variance analysis will be not sufficient to identify optimal optioned portfolios. Additional investor preferences which are expressed in terms of shortfall constraints allow a more detailed portfolio specification. Under a mean-variance and shortfall preference structure we then derive optioned portfolios with a maximum expected return. To circumvent the technical optimization problems arising from stochastic constraints we use an approximation of the return distribution and develop economically meaningful conditions under which the complex optimization problem can be transformed into a linear problem being comparably easy to solve. Empirical results based on both, empirical market data and Monte Carlo simulations, illustrate the portfolio optimization procedure with options.

Contribution to Practice